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INTERREGIONAL AND INTERNATIONAL TRADE

BY

BERTIL OHLIN



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To

MY PARENTS

PREFACE

In this volume I have endeavoured to make a contribution towards the solution of the following problems:

(1) To build up a theory of international trade in harmony with the mutual-interdependence theory of pricing, — the universally accepted price theory to-day, — and thus independent of the classical labour theory of value. If it has been worth while to substitute the interdependence theory, as developed by such authorities as Walras, Menger, Jevons, Marshall, Clark, Fisher, Pareto, and Cassel, for the classical labour value theory, there is every reason for giving up the labour value analysis in the treatment of international trade problems as well. I have started from the Cassel form of the general price theory, but I think my theoretical system will also harmonise with the other forms of the interdependence theory of pricing.

(2) To demonstrate that the theory of international trade is only a part of a general localisation theory, wherein the space aspects of pricing are taken into full account, and to frame certain fundamentals of such a theory as a background for a theory of international trade, wherein the influence of local differences in the supply of factors of production and transportation costs *within* each country is duly considered. In this field collaboration between economists and economic geographers is urgently needed; the fact that the latter have received so little help and stimulus from the former seems chiefly due to the scanty attention economic theory has given to localisation problems.

(3) To analyse the domestic and international movements of the factors of production, and particularly their relation to commodity movements.

(4) To describe the mechanism of international trade variations and international capital movements under conditions of fixed foreign exchanges, e.g. a gold standard or gold exchange standard régime. This analysis will demonstrate, among other things, (*a*) that changes in the total *buying power* of each country are an essential part of such a mechanism, and (*b*) that a solution of the fundamental problem of foreign exchange (which since the War has chiefly been discussed with the purchasing power parity theory as a starting point) is tantamount to constructing a theory of international trade. On the other hand, I have dealt very little with the influence of monopolistic phenomena and with problems connected with the business cycle.

This book will, I hope, prove that I have tried to learn from the economists of all schools who have dealt with international problems — although references in footnotes are not numerous. My indebtedness to two schools of economic thought should, however, be expressly stated. Anyone conversant with the writings on international trade by the Harvard school of economists will find here many traces of their influence. Above all, the works of Professors Taussig, Viner, and Williams, as well as discussions with them and with Mr. W. Gardner, inside and outside the class room, have deeply influenced my views. On the other hand, my general theoretical background is coloured entirely by the ideas of the Stockholm group of economists, Professors Bagge, Brisman, Cassel, Heckscher, Myrdal, and others, and of the late

Professor Knut Wicksell. Like Dr. Rohtlieb of Stockholm and Professor Birck of Copenhagen, they have helped me also with fruitful criticism of earlier versions of this book. Mr. Carl Iversen of Copenhagen has read the manuscript and Mr. Tord Palander the second proof; both have made numerous highly valuable observations and criticisms. Messrs. Karl L. Anderson and J. T. Day have corrected the English and Miss Mona Williamsson has compiled the index. My thanks are due also to the Swedish Academy of Science, the American Scandinavian Foundation, and the Rask-Ørsted Foundation for financial aid in the preparation of this volume.

BERTIL OHLIN

STOCKHOLM COLLEGE OF BUSINESS
January 20, 1931

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INTERREGIONAL AND INTERNATIONAL TRADE

INTRODUCTION

THE theories of value, price, and distribution presented in modern treatises on economics may appear to differ greatly; as regards the nature of pricing, however, the differences are largely superficial. The law of supply and demand is everywhere developed into a system of general equilibrium, in which the principle of mutual interdependence is fundamental.

Whether more or less of the classical terminology, e. g. such concepts as real costs and labour costs, is retained makes no difference with regard to the nature of causation in pricing, although it is important in other respects. The chain of causation does not proceed from costs to prices or from prices to costs, but is always characterised by mutual interdependence.

The first part of the fundamental doctrine is usually based — more or less consciously and explicitly — on certain simplifying assumptions regarding "free competition," or rather full mobility. There follows an explanation of phenomena connected with the lack of mobility and divisibility, such as joint supply, overhead costs, economies of large-scale production, and monopoly.

In the discussion of these problems special consideration is given to the phenomenon of time, which renders reasoning in terms of equilibria inadequate and necessitates a more dynamic analysis. The time element is probably the chief cause of the obstacles in the way of a clear cut presentation of fundamental economic principles. "The difficulties of the problem depend chiefly upon variations in the area of space, and the period of time over which the market in question extends; the influence of time being more fundamental than that of space." [1]

No doubt every author of a treatise on general economics has agreed especially with the last part of the statement, for while the time element has in most cases been more or less fully considered throughout the analysis, the space element has been at first almost completely neglected, — only touched upon in the theory of

[1] Marshall, *Principles of Economics*, Bk. V, ch. XV, § 1.

rent, — and has later on been dealt with only from a special point of view in the theory of international trade. In fact the general theory of pricing is almost exclusively a *one-market* theory, wherein the idea of space hardly figures at all. It assumes the existence of only one market for the industrial agents.[1] Their total supply, not their distribution over a given area, has been regarded as one of the basic data of the problem. The problem of localisation of industry therefore in most treatises never arises at all.

As a matter of fact, the geographical distribution of productive factors is important. Industrial activity must be adapted to the varying supply of such factors in different places; for only to a limited extent can the supply itself be adapted to the demands of various industries. Some of the factors are, under certain conditions, freely mobile, it is true. But some are not, and all those which are usually placed in one group, called "nature," are completely immobile. This fact alone would necessitate a general analysis of the space aspects of the price mechanism.

Prices of commodities, as well as of productive factors, will be different from what they are under the one-market assumption. Commodities move with more or less difficulty, chiefly because of the costs of transport, another element of fundamental importance for the space aspects of pricing, but little considered in the general treatises, except in discussions of international trade.

The one-market doctrine evidently needs a superstructure for the consideration of the geographical or territorial aspects of pricing, i. e. the location of industry, and of trade between places and districts of various types. A theory of *international* trade alone would be inadequate, for space is relevant to pricing within countries also. The element of space must be given full consideration in the theory of pricing, through its extension *from one to a number of more or less closely related markets.* To effect such an extension is the object of the theory of interregional and international trade, which is hence an integral part of the theory of pricing, and is built upon the foundation laid by one-market analysis.

[1] Except natural resources.

The characteristic of a market is that the contacts between buyers and sellers are so intimate that only one price exists for each thing traded in. Beside this narrow "single price market," however, may be set a wider concept, the "multiple price market." The communication between its parts is hampered by costs of transport and other obstacles, and the prices, e. g. of a certain commodity or factor of production, differ between parts of the market exactly by the costs of overcoming these obstacles. This is the sense in which the term "market" is almost always used when one speaks of a "world market" for certain goods; if prices differ by less than the costs of overcoming the obstacles, or if it is impossible to overcome them, one has to do with different markets, although they may be indirectly communicating.

Current treatises on the principles of economics give more than passing attention to the existence of several markets only when considering (1) the rent of land, (2) international trade, and (3) price discrimination with regard to commodities. Non-competing labour groups are most naturally dealt with as different productive factors in *one* market, but may also be regarded as (4) price discrimination with regard to productive factors. The general price theory considers (1), (3), and (4); thus, the only attention there given to different *local* markets is in connection with the theory of rent, where the location of natural resources, but not the localisation of industry in general, is considered. This book deals with all the principal aspects of the existence of several markets which have to do with the difficulties of moving productive factors and commodities locally, i. e. from one place to another, not, however, with price discrimination in one place. Such a development of the one-market theory includes both the theory of rent and the theory of international trade as integral parts of the same doctrine.

In presenting this theory it will be found convenient to start with a somewhat simplified form of the one-market theory, resting on the assumption of full mobility. It is in that form that it is presented in the first part of many treatises on economic principles. In Chapters I and II this simple theory is extended to cover *several* markets through the introduction of a simple form of *geo-*

graphical immobility of the productive factors. Thereby some of the fundamental influences of space are laid bare, and light is thrown upon certain aspects of the localisation of industry and certain characteristics of interregional trade. Some special characteristics of trade between regions of one important type (international trade) will be studied in a preliminary analysis in Part II. In Parts III and IV the influence of obstacles to movements of commodities and productive factors is studied under realistic assumptions, and the theory is applied to domestic and international trade: in other words, the general space aspects of trade are considered. Lastly, in Part V the mechanism of international trade variations and capital movements is dealt with.

PART I

INTERREGIONAL TRADE SIMPLIFIED

CHAPTER I

A CONDITION OF INTERREGIONAL TRADE

§ 1. *Simplifications.* Space is important in economic life for two chief reasons: the industrial agents are to some extent confined to certain localities and move only with difficulty; and costs of transport and other impediments prevent free movement of commodities.

Let us first consider the industrial agents or factors of production. It would be difficult to analyse the influence of their geographical distribution and of their lack of full mobility without the aid of initial simplification; consequently some simplifying assumptions will be made in the following chapters and reality will be approached gradually. The principal steps may be indicated at once.

For more reasons than one it is convenient to think of the productive factors as located not in certain *places* but in certain *districts*. To be significant such a district must be in some respects a unit, which implies the fulfilment of two conditions: (1) it should be different from other districts from the point of view under consideration; (2) the differences between *parts* of such districts should be smaller than those between the districts themselves. In other words, there should be some kind of natural border line between districts more important than those between *parts* of each district. Such a district will in this book be called a *region*. With regard to the factors of production this means (1) that the districts should have different endowments as regards industrial agents, and (2) that there should be a certain uniformity as to this endowment within each district. Hence, in Part I we shall for the sake of simplicity think of the industrial agents as located in such regions, disregarding their locality within the region. The most typical case of this kind seems to be one where the factors are confined entirely to a certain region, i. e. are unable to flow over to another, whereas they are fully mobile within

the region (their situation in the region being therefore of no consequence). Such is the case with which the analysis will begin. In other words, we make the assumption that the factors of production are interregionally immobile but *intraregionally* freely mobile. The object of Part I is to explain the nature of trade between such regions, i. e. to describe how their existence affects production and prices. Later the interregional mobility of the factors, as well as the lack of such mobility and its bearing upon trade, will be taken into account.

The impediments to commodity movements it will be well to disregard altogether throughout Part I, which deals with the general aspects of interregional trade. When we come to a study of special types of regions, the obstacles to commodity movements across the borders as well as the costs of transport in general will be given attention.

Such a procedure may seem to remove parts of the treatise rather far from reality; this is, however, an inevitable disadvantage of a fruitful scientific method. Only by division into its component parts can a complicated problem be dealt with successfully. The "one thing at a time" method has its weaknesses, but in an analysis of an extremely difficult and many-sided question it is almost always preferable to introducing all the principal difficulties at once.

§ 2. *Interregional differences in productive factor endowment.* The rest of this chapter is concerned with a fundamental cause of division of labour and trade between regions, where everything is freely mobile, except that the factors of production cannot move from one region to another. Let us start by asking what are the causes of division of labour in general. Why do individuals trade with each other, instead of each one producing his own requirements? Why does division of labour increase the total efficiency of production? The reasons may be grouped under two headings, "varying ability" and "advantages of specialisation."

First of all, some individuals have greater ability for certain tasks than others. Varying natural aptitudes make one more fit to be an engineer, another better suited for the work of a physician or a lawyer. Some people take greater interest in gardening

than in other occupations, and hence probably make better gardeners than others. Examples could be multiplied. It is evident that the adaptation of tasks to varying aptitudes is conducive to greater efficiency.

Secondly, even if all individuals had exactly the same natural abilities, it would still be advantageous to have specialisation in one or a small number of occupations. In that way much greater skill can be acquired than if everyone produced everything for himself. Furthermore, the workman who constantly attends to one task wastes no time in changing over from one occupation to another; in short, there results an increase in skill and a saving of time when each individual is occupied in the production of a large number of one article instead of coöperating in the production of a small quantity of many different articles. This is one aspect of what are generally called the "economies of large-scale production." About these economies and their influence on interregional trade we shall have much to say in Chapter III. At present we confine our attention to the other side of the question, the differences in natural aptitudes.

Turning now from individuals to regions, we find that the latter, like the former, are very differently endowed with facilities for the production of various articles. The reason is that they are differently supplied with productive factors. One region may have plenty of iron and coal but little land for wheat growing, while another has plenty of wheat lands but a scanty supply of mineral resources; clearly the former is adapted better to iron production and less well to wheat growing than the latter. It is the proportion of the factors in a region which determines its fitness for specific industries.

This may need some further elucidation: a region cannot, of course, produce goods requiring factors of production which do not exist in that region. Copper ore cannot be produced without copper mines, nor machines without technically trained and educated labour. Tropical plants, like pepper, can only with extreme difficulty be grown in countries with a temperate climate. In the absence of natural facilities for pepper growing artificial means would have to be employed.

Many important differences in endowment of productive agents are not, however, of this type. Often a certain supply of the factors needed for some particular article is to be found in each region, at least if it is of a fairly large size. But some of them have relatively more of one set of factors and less of another. Australia has more agricultural land, but less labour, capital, and mines than Great Britain; consequently Australia is better adapted to the production of goods which require great quantities of agricultural land, whereas Great Britain has an advantage in the production of goods requiring considerable quantities of other factors. If both countries produced their own total consumption, agricultural products would be very cheap in Australia, but manufactured articles relatively dear, whereas the reverse would be the case in Great Britain, where owing to the scanty supply of land each acre would have to be intensely cultivated with much labour and capital to provide the necessary amount of food. The utmost economy would have to be exercised with land, and owing to the tendency to diminishing returns the yields of wheat, etc., from the last units of capital and labour would be very small. In Australia, on the other hand, the abundance of land would lead to an extensive method of cultivation, very little labour and capital being expended on each acre; hence the yield from each unit of capital and labour would be great.

No further illustration is needed to show how interregional variations in the proportions of factors of production result in different regional adaptations for the same type of production. In brief, each region is best equipped to produce the goods which require large proportions of the factors relatively abundant there; it is, on the other hand, least fit to produce goods requiring large proportions of factors existing within its borders in small quantities or not at all. Clearly, variation in equipment of industrial agents is a cause of interregional division of labour and trade, just as varying individual ability is a cause of individual exchange.

By such general observations the cause of interregional trade is, however, by no means adequately analysed. The immediate cause of trade is always that goods can be bought cheaper from

outside in terms of money than they can be produced at home, and vice versa. It remains, therefore, to be shown why, as a result of the varying equipment of industrial agents, some goods can be more cheaply produced in one region than in another. In other words, the real problem is to demonstrate what lies behind such inequality in prices, or, more precisely, to show in what way differences in equipment come to be expressed in differences in money costs and prices.

§ 3. *Differences in relative commodity and factor prices as conditions of trade.* First of all it should be noted that one region cannot possibly be superior to others in the production of *all* commodities, in the sense that it is able to produce all of them at lower *money costs*.

For the sake of simplicity, let us first confine our attention to two regions only, each having a free paper currency. We also assume that they have no economic relations with each other beyond the import and export of goods -- capital movements, tourists' expenses, etc., being thus excluded. Under these conditions, imports are paid for by exports, and it is clearly impossible that one region (A) should be able to produce all articles cheaper than the other (B). There would be a flow of goods from A to B, but not in the other direction. How could this import be paid for? B's demand for "foreign" bills could not be supplied, as nobody in B would be able to export anything and acquire a claim on A. The price of A's currency in terms of B's (the rate of exchange) would be forced up; hence all A's prices would rise in terms of B's currency until some of them were higher than B's prices. A point of equilibrium would be reached when B was able to export sufficiently to pay for the import from A.

Such a situation could fail to arise on one condition only, namely if the relative commodity prices in A and B were equal in the isolated state, i. e. without any trade between them going on at all. In that case no trade is possible and no exchange rate between their currencies is conceivable.[1] In other words, inequal-

[1] The reader is asked to keep in mind that the economics of large-scale production are not discussed until Chapter III.

ity as to the relative commodity prices in the isolated state is a necessary condition for the establishment of trade.[1]

We have evidently pushed the analysis one step further, to an inquiry under what circumstances relative commodity prices will actually be different in two isolated regions. The starting point for such an investigation is the fact that all prices, of goods as well as of industrial agents, are ultimately, in each region, at any given moment, determined by the demand for goods and the possibilities of producing them. Behind the former lie two circumstances to be considered as known data in the problem of pricing: (1) the wants and desires of consumers, and (2) the conditions of ownership of the factors of production, which affect individual incomes and thus demand. The supply of goods, on the other hand, depends ultimately upon (3) the supply of productive factors, and (4) the physical conditions of production. These conditions — the natural and unchanging properties of the physical world which are everywhere the same — determine the combinations of productive agents, i. e. the technical process, with due consideration of their prices, and thus influence the translation of demand for goods into demand for such agents.

In each region, then, we have a price mechanism, resting on these four basic elements, which determines simultaneously the

[1] This simple statement, which is nothing but a starting point for a real analysis, is evidently quite different from the classical doctrine of comparative cost. The statement in the text runs in terms of price and expenses of production, and the distinction between expenses and costs is fundamental in the classical theory. On the other hand, a statement in terms of price comes to very much the same thing as a reasoning in terms of "opportunity costs." Cf. Cournot, *Récherches sur les Principes Mathématiques de la Theorie des Richesses* (Paris, 1838), and Pareto, *Cours d'Économie Politique* (1896–97). See also a recent paper by Haberler, "Die Theorie der Komparativen Kosten und ihre Auswertung fur die Begründung des Freihandels," *Weltwirtschaftliches Archiv* (1930), Heft 2. The real cost of one unit of a commodity B is the extra quantity of another commodity A which one would obtain if one unit less of B and instead a greater quantity of A were produced, assuming the output of other goods to be unchanged. In the same way the cost of C can be expressed in terms of A. This, of course, comes to the same thing as reckoning in prices, using A as the monetary unit. A price scale like the one mentioned in the text counts exactly the same as a scale of opportunity costs. If C costs ten and B two dollars, then *on the margin* a reduction of the output by one unit of C permits an increase of the production of B by five units. Such a reasoning explains nothing unless connected with a mutual interdependence price system, and is as different from the doctrine of comparative cost as anything can be.

prices of commodities and of industrial agents. The question is evidently under what conditions these elements have a relation to one another, such that relative commodity prices coincide in two isolated regions, in which case no trade can arise. When the relation between them is different, relative commodity prices are also different, and interregional trade will come into existence.

Let us compare the situation in two isolated regions, *A* and *B*, with regard to these four elements, dealing, however, with the first two, which govern demand for goods, under one heading: demand conditions. The physical conditions of production are, as pointed out already, everywhere the same; consequently differences as to relative commodity prices depend upon the state of supply of industrial agents and upon demand conditions. Such differences are bound to exist, unless supply and demand conditions are exactly the same in *A* and *B*, or a difference between the regions as to equipment of productive agents is just balanced by a corresponding difference in the demand for commodities. Failing that, differences in relative commodity prices in the isolated state exist and lead to interregional trade, each region specialising in goods it can make cheaper than can the other.

It is not possible to say much in general of the relation between the demand and supply elements under which trade will exist. One thing may, however, be pointed out: if the relative prices of the factors of production in the two isolated regions are the same, these factors must be combined in the same way in various industries in one region as they are in the other. Costs of production of all commodities will have the same relation to each other in both regions, i. e. relative commodity prices will coincide.[1]

[1] Differences in technique are clearly unthinkable if the relative prices of *all* factors are the same; for the proportions in which the productive factors are combined — the technical coefficients — are functions of relative factor prices. The quality of the factors being the same, which is so far assumed, *the forms of these functions* must also be identical in the two countries. If relative factor prices coincide, the technical process must be alike in *A* and *B*. It is quite another story that the technical and organising labour may be different and therefore organise production differently, even if the relative prices of all *other* factors agree. In that case the difference in technique is due to the fact that relative prices of *all* factors are *not* the same. The technical and organising factor in region *A* is missing in region *B*, whereas the quality to be found in *B* is missing in *A*. These qualitative differences are important and will be analysed in detail in Chapter V.

Thus, instead of saying that inequality as to relative commodity prices in the isolated state is a condition of trade, one may direct attention to the industrial agents and say that inequality with regard to the relative prices of the factors of production is a necessary — but not sufficient — condition for the establishment of trade. But neither expression explains much. Both commodity and factor prices form part of a system of mutual interdependence. Behind the prices of commodities and factors alike lie the basic elements of pricing, and a searching analysis must therefore consider the nature of the whole price mechanism.

Coincidence in the relative prices of the factors of production in *A* and *B* of course assumes the same relation between supply and demand conditions in each region. It is not necessary that the equipment of industrial agents should be exactly the same in *A* as in *B*. Nor is it sufficient; for, if demand were different, the relative scarcity[1] of the agents would also be different. One can only say that, if differences in supply between the regions are balanced by differences in demand, the relative scarcity of all factors and relative commodity prices will be the same.

In regions with a very dissimilar equipment of productive facilities this condition can never be fulfilled. There is no reason why demand in a scantily populated region should turn especially to goods requiring much land and little labour, say wheat, and thus prevent rent from being lower, relatively to wages, than in a densely populated region, where, as people cannot after all do without food, land is necessarily scarce.

As a matter of fact, little attention need be given to the theoretical possibility of two isolated regions having the same relative scarcity of factors of production and the same relative commodity prices,[2] in which case no interregional trade can arise. Unless there is in a given case some special reason for the reverse supposition, we are justified in assuming that conditions of supply of factors and of demand are such that the relative scarcity

[1] The reader is asked to keep in mind that the term "relative scarcity" is synonymous with "relative prices."

[2] Neither is it necessary to discuss the conceivable combination of different relative factor prices with nevertheless equal relative commodity prices. This would be possible, e. g., if the factors were used in the same proportions in all industries. See Appendix I.

would be different in the two regions in an isolated state, differences in supply being probably as a rule more important than differences in demand. In a loose sense we may say, as we have said above, that differences in equipment of factors of production are the cause of trade. But we must be careful to remember the qualification which lies in the possible influence of differences in demand conditions. For the ultimate determinant of interregional trade, as of all price phenomena, is the relation between the factor supply and the demand conditions.

Interregional trade means that foreign demand is brought to bear upon the domestic factors and commodities, and vice versa; consequently everything which affects this demand is to be included among the elements which govern interregional trade. The conclusion is obvious: as prices of both goods and factors in all regions affect this reciprocal demand, and as interregional trade is governed by the same basic elements that govern pricing in the isolated region, their position in *all* regions affects the price system and trade in each.

Any statement concerning the nature of interregional trade which refers only to one, or not to all, of these elements is necessarily incomplete.

§ 4. *The price system in isolated and trading regions.* It may be worth while to illustrate this a little further by means of a simplified picture [1] of the price mechanism on the basis of the atomistic assumption which underlies the discussion in this chapter. On this assumption the price mechanism is always in equilibrium, for there is an instantaneous readjustment after all disturbances. Consequently the following six sets of relations hold true.

(1) Demand for commodities is equal to supply, i. e. production.

(2) To produce a certain quantity of each commodity a definite quantity (the "technical coefficient") of each factor of production is needed, if the technique be given. The total requirements of each factor in all industries taken together equal the supply of this factor.

[1] It resembles closely the one presented by Cassel for the one-market theory. Concerning the relation to other descriptions — e. g. that of the Pareto school — see Appendices I and II.

(3) However, the technique is not given *a priori*. The technical coefficients depend upon the physical conditions of production and the prices of the factors of production.

(4) Commodity prices are equal to the costs of production, which are obtained by multiplying the quantity of each factor required by its price.

(5) Demand for commodities depends upon their prices and upon individual incomes and tastes.

(6) Lastly, incomes are governed by the prices of the productive factors and the conditions of ownership.

These conditions suffice for the determination of factor prices and prices and produced quantities of commodities if the supply of factors is known.[1] The technical coefficients — the quantities of each factor used in each industry — are functions of the factor prices (see no. 3), the form of the function being determined by the physical conditions of production, which form part of the known data. Similarly, the forms of the functions in (5) and (6), where demand and incomes are functions of the prices of goods and factors, are determined by the wants and desires of consumers (the psychology of demand) and the conditions of ownership of the factors of production. These also are known data. The basic elements are thus the three function forms and the supply of productive factors.

Instead of assuming the supply of factors to be given, we may regard it as a function of factor prices, the form of the function being determined by the inclination of man to work and save (the psychology of effort and sacrifice), which then becomes one of the four known data that together govern the price system in one isolated region under these simplified conditions.

Now assume two regions trading with one another. What will the price system be like? Evidently it is not much changed in character. The total demand for each factor of production (no. 2) springs not only from production for domestic consumption but also from production for export. On the other hand, a part of the domestic consumption is supplied by imported goods; conse-

[1] For a fuller demonstration see Appendix I.

quently demand is not equal to production (no. 1). Instead we posit: demand minus imports is equal to production minus exports. The demand for productive factors is consequently changed.

If we know imports and exports, the equations in (1) and (2) can easily be adjusted. But they are not known; they depend upon the relation between commodity prices in the two regions *and the foreign exchange rate*, by means of which these prices can be compared. Each region exports the goods it can produce cheaper than the other region, and imports the rest. Thus, given certain prices, the foreign exchange rate determines which goods are imported and which exported. Evidently a new variable is introduced into the problem: the foreign exchange rate. On the other hand there is a new condition, that the value of imports and exports must balance, capital movements being left out of account. In this way the price system is determined.[1]

§ 5. *The character of interregional trade.* If this picture of the price mechanism is kept in mind, we may return to the ideas concerning equipment of productive factors and develop them a little further. Region *A* has a relatively large supply of some factors, which are therefore — unless this inequality of supply is balanced, or more than balanced, by an inequality of demand — comparatively cheap, and a relatively small supply of other factors, which are thus comparatively dear. *A* will be able to produce cheaply those commodities which require for their production a large quantity [2] of cheap factors, while the other commodities will be relatively dear if produced in that region. In *B*, where the factors scarce in *A* are relatively abundant, the cost of production of commodities requiring large quantities of them will be comparatively low. Other goods will be relatively dear.

When an exchange rate has been established, prices and costs of production can be compared directly. Goods requiring a large

[1] If we take into account the fact that some goods may be produced in both regions, the relations become somewhat more complicated, but not fundamentally different. See Appendix I.

[2] It may be recalled that productive factors are used in different proportions in the production of different goods; otherwise relative commodity prices in the various regions would coincide, and trade between them would be impossible.

quantity of factors cheaper in A than in B, and only a small quantity of other factors, can be produced at a lower cost in A and will therefore be exported to B. On the other hand, commodities requiring a large quantity of the latter factors and a small quantity of the former can be more cheaply produced in B and will be imported from that region to A. *Each region has an advantage in the production of commodities into which enter considerable amounts of factors abundant and cheap in that region.*

Australia has an abundant supply of agricultural land but a scanty population. Land is cheap and wages are high in comparison with most other countries; therefore production of goods which require vast areas of land but little labour is cheap. This is the case, e. g., with wool. Sheep raising requires great areas of land but little labour, and the shearing is a relatively simple process; hence, wool can be produced at a lower cost than in countries where land is expensive, even if wages there be somewhat lower than in Australia.

Similarly, regions with an abundant supply of labour, technically trained as well as unskilled, and of capital will find it natural to specialise in manufactures. For these factors of production are cheaper there than in Australia, where some of them are only available at high prices, if at all.

When reasoning in this way one must, however, be on one's guard against a misunderstanding. To say that one factor is relatively abundant in the isolated state and cheap in A — compared, of course, with the conditions in B — is to speak loosely. Even if a factor is cheap relatively to most other factors — using the position in the other region as a basis of comparison — it is not therefore certain that it will after the establishment of an exchange rate between the currencies be cheaper in this region than in the other, measured in the currency of either. This necessarily depends upon the position of the exchange rate, which is determined not exclusively by the series of relative scarcities in the isolated state but also by A's demand for B's goods (and vice versa) when trade has been opened up. Indeed it is this reciprocal demand alone that exercises a direct influence upon the rate, but the nature of the demand will of course depend partly upon price

conditions in each region. It is therefore impossible to know beforehand during isolation which factors will be cheaper in one region than in the other.

All this is an inevitable consequence of the mutual interdependence of all the elements touched upon in this paragraph, which forbids unqualified reasoning in one direction from cause to effect. It will perhaps be clearer if put in another way.

§ 6. *The exchange rate and interregional price differences.* *A* may very well export to *B* a much greater *number* of commodities than it imports, in spite of the fact that the *value* of imports and exports must balance. In other words, the cost of production of the majority of goods may be lower in *A* than in *B*. It is naturally also possible for a majority of factors to be cheaper in *A* than in *B*. The list of relative factor prices in the isolated state does not tell us how high the exchange rate will be, and therefore we cannot say which or how many factors will be cheaper in the one region than in the other.

Let us call *A*'s currency *sterling* and *B*'s *dollars*. One dollar can buy certain quantities of *B*'s factors during isolation. How much do *these quantities* of factors cost in *A* in terms of sterling? This question can be answered even in the isolated state, and we can draw this figure:

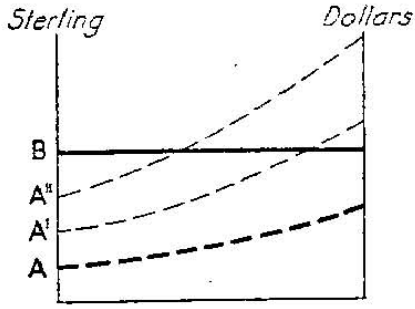

FIG. 1.

The curve B, a straight line, indicates the prices of these quantities of factors in *B*; they all cost one dollar. The curve A indicates the prices in sterling of the same quantities of the same factors in *A*, in the isolated state, of course. The cheapest factor in *A*, relatively, is placed at the left, then the next cheapest, and so on. Now, if the exchange rate which trade will establish is

£1 = $2, the *A*-factor price curve in terms of dollars will be A′, but if the exchange rate is £1 = $3, then the corresponding curve will be A″. In the former case almost all factors are cheaper in *A*; in the latter case the situation is reversed. Whether one or the other will emerge cannot be foretold *a priori*, as this depends upon the conditions of equilibrium between imports and exports and thus upon the intensity of reciprocal demand.

The industrial agents on the extreme left, i. e. relatively very cheap in *A* in the isolated state, will necessarily be cheaper in *A* than in *B* when trade has started and an exchange rate has been established. Similarly, the factors on the extreme right, which are relatively very dear in *A*, will certainly be dearer than in *B*. Therefore *B* will export goods requiring large quantities of these factors for their production, while *A* will export goods containing much of the former factors. Of the intermediate factors one can say nothing *a priori*.

It all comes to this: the nature of interregional trade is determined not only by the supply of productive factors, nor by the relative scarcities which that supply in relation to demand had created in each isolated region, but also by the play of demand in each region for goods from the other — the reciprocal demand. In fact a fundamental aspect of trade is that it places the demand of one region in touch with the supply of productive factors in the other. (Cf. § 4 and Appendix I.)

No essential part of what has been said above need be changed to apply to the case of several trading regions. To know which factors are relatively abundant and cheap one must compare with conditions in many regions instead of in one only. This will no doubt make it more difficult to say *a priori* of any one of the productive factors or commodities that it will be cheaper in a certain region than in the others when trade has been opened. In other words, it will be more difficult to say anything *a priori* as to which goods each region is to export; nevertheless the equipment of productive factors is sometimes of so dominating an influence that a consideration of demand conditions is not necessary to describe essential characteristics of the ensuing trade in concrete cases.

It must not be lost sight of, however, that even in such cases the condition of trade is always that the supply of factors and the demand conditions in each region call forth price discrepancies which make interregional exchange profitable. The real nature of interregional trade — the conditions of its existence as well as its consequences — cannot be adequately explained in simple terms referring to the factor supply only, or to any other single element in the great interdependence system of pricing. That system, as developed in the one-market theory, must be modified and completed through the introduction of demand from abroad. In that way it becomes valid as an explanation of pricing in a number of trading regions.[1]

Before going further, it may be convenient to give a few concrete examples of the influence of differences in the equipment of productive factors. It will then be seen that in spite of the effect of different demand conditions, the differences in equipment as between regions are sometimes so considerable that the fundamental nature of trade is determined by them. The simple reasoning used in the discussion of the Australian case above is therefore justified, if there be added to it a tacit qualification as to the influence of demand.

§ 7. *Illustrations.* Let us consider wheat growing in European countries. Excluding those which, like Finland and Norway, lack almost entirely the kind of climate necessary for wheat, we may divide the rest into two classes: those which export wheat or produce enough for their own consumption, and those to a large extent dependent upon foreign supplies. It is then seen that nations belonging to the former category have a relatively scanty

[1] The doctrine of comparative costs as presented by Ricardo and Mill is unsatisfactory, not only because the scale of labour costs is built upon extreme simplifications, which cannot be abandoned without bringing down the whole fabric, but also because it neglects the influence of demand conditions on these scales themselves. The mutual interdependence is lost sight of. A simple description of certain conditions of production in terms of comparative cost schedules is put forward as determining the nature of international trade, while the play of reciprocal demand is given a secondary place as influencing only the extent of trade and the barter terms. As a matter of fact, the scale of comparative costs is not given *a priori*, but as affected by the play of reciprocal demand, as demonstrated already by Mangoldt. This will be discussed in great detail in Appendix III, which is perhaps best read after Chapter II.

population and much arable land per head, but that the output per hectar sown with wheat is low. In 1925 Russia had an output per hectar of 8.3 decitons and Rumania 8.6 decitons. Hungary showed a considerably higher figure, 13.7. The wheat *importing* nations, on the other hand, had a much denser population, i. e. a scanty supply of wheat land per head, but produced much more per hectar, on an average fully twice as much. The figures for Holland and Denmark were 28.4 and 33.1, respectively. All this is just what one would expect. Regions with a relatively large supply of land which can be used for wheat growing produce wheat cheaply and export it to other regions. In the latter, prices are higher and much capital and labour is expended on each acre of land. A comparison between the three exporting countries and the two importing countries which were mentioned above is significant, for in neither case does the existence of special facilities for manufacture confuse the issue. The wheat exporting regions outside of Europe, — Argentina, Canada, and the western states of the United States, — like those of Europe, have a large supply of arable land per head and a small output per acre.

In Uruguay animals and products thereof supply more than 95 percent of the total exports; this country has plenty of land and a climate which makes it excellent for cattle breeding, but has a small supply of labour and capital, and no coal.

Another good example of how equipment of natural resources dominates production and trade may be found in Finland. This country has a relatively ample supply of land which is suited for another kind of vegetation — soft wood. It has a scanty supply not only of agricultural land but also of other gifts of nature, such as iron ores and coal fields. The result is that more than 90 percent of its exports consist of wood, pulp, and paper. In 1922, 43 percent of Canada's exports were vegetable products, 18 percent animal products, and 24 percent wood and paper. The influence of the large supply of wheat land, forests, and power is apparent.

A study of the localisation of the production of manufactured goods requiring much labour but little of other factors reveals that its domicile is to be found in fairly densely populated coun-

tries which are poor in most natural resources, and where consequently labour is the most abundant factor; many hand-made rugs, e. g., come from southwestern Asia. Although a great many countries have a large supply of land suitable for raw-silk production, many of them have little or none of this labour-consuming industry. This is true especially of the United States, a country with scanty labour supply. It is beginning to be the case also with France and even with Italy, although the supply of other factors per head is certainly much smaller there than in the United States, and labour is thus relatively more abundant. The raw silk industry in these two countries cannot compete with production in countries such as Spain, Hungary, Rumania, Turkey, China, and Japan, where output is increasing. They are all countries where labour is more abundant than in France or Italy, i. e. where the supply of other factors, except, of course, land fit for silk growing, is relatively scanty.

The growing of flax is also a laborious process. In the nineteenth century it was located chiefly in Western and Central Europe, but almost the whole European supply now comes from Russia and the Baltic countries. Hemp, another labour-consuming plant, is chiefly cultivated in Italy and Russia. The supply of Manila hemp comes from India and the Philippine Islands.

The sugar beet can be grown in most European countries and almost everywhere in the United States so far as soil and climate are concerned, but it must be given excellent care by human hands, which machines have not so far been able to supplant. It therefore tends to be produced in countries with a large supply of unskilled labour, such as Russia, Poland, Czeko-Slovakia, and eastern Germany; little of it is grown in the United States or Canada. Were it not for bounties and duties, its importance in most other countries with a scanty labour supply would be still slighter.

Like sugar beets, potatoes require much labour, a great deal more so than wheat. They may be grown on poorer soil and in a colder climate. Large quantities of potatoes are therefore naturally grown in the very countries in Europe which produce much sugar. This is, however, not exclusively due to the abundance of

labour and the relative scarcity of first-class agricultural land in these countries; the character of demand exercises an important influence. The relatively low standard of living and the absence of cheap grain — both consequences of the equipment of productive factors — naturally turns demand largely toward the other kind of cheap home-produced food, potatoes. Indirectly, this large consumption of potatoes means a great demand for labour and relatively poor land, and thus tends to increase the scarcity of these abundant factors; hence the relative scarcity of the various factors becomes more similar to that in other regions than a mere study of the differences in equipment would lead one to suppose. A complete investigation into the localisation of potato growing would entail a discussion of other circumstances, such as the feeding of hogs and the costs of transport; this would carry us too far at the present stage of our analysis.

The reaction of demand may also be seen in regions where land is abundant and much of it can be used to produce beef cattle with little expenditure of labour and capital. Meat will there be relatively cheap, and its consumption will, therefore, be unusually great. In such regions the standard of living is often high, as a result of the great supply of natural resources per inhabitant, a circumstance which tends to favour consumption of the more expensive animal foods; a good example of this is presented by the United States during the last century.

In some densely populated countries with little land per capita and little of other natural gifts, cattle breeding is an important industry, a fact which seems to contradict the statement made above. But the contrast is only apparent; such regions, e. g. Denmark, go in for milch cattle, which must be well taken care of and thus require much labour, but can to a large extent be fed with oil cakes from other regions and thus require little land.

These examples of the influence of varying equipment of labour and arable land suffice to illustrate the fundamental idea of the doctrine just presented. A significant passage from Professor Russel Smith's *Industry and Commerce* [1] may, however, be added,

[1] *London (1925), new ed., p. 661.*

as it presents a vivid picture of the situation in this respect, although some expressions are open to criticism:

> The sparse population seizes upon the raw products of nature, or produces raw materials requiring the least labour. A dense population, having few raw materials per capita, must fabricate them to a high degree to make value. In the new forest lands, one person to two or three square miles will make a satisfactory living by trapping fur-bearing animals and gathering gums, herbs, and roots. A population slightly more dense will cut down the forest and sell logs as lumber. A sparse population upon the open plain will employ itself in tending herds of sheep and cattle, and will export wool, hides, and animals. If the population increases and the climate is suitable, the level plain will be carelessly plowed up and sown to grain, which will be exported to the densely peopled region in exchange for manufactures. This, in brief, is the explanation of the great commerce of the second half of the nineteenth century and the present. The European peoples settling the comparatively empty lands of America have been producing wheat and sending it back to the better yielding wheat lands of Europe; they have been sending beef and pork to the European countries, where the pastures are better and cattle more numerous per square mile; they have been exporting lumber to the countries where the forests are better kept, because the European population is dense and the American population has been, and still is, relatively scanty. This is the chief explanation of the commerce of the newly settled lands in Dakota, Nebraska, or Saskatchewan with the older settlements to the eastward, whether in England or New England.

It must be kept in mind, however, that it is the supply of *all* factors in a region that counts, and that capital and various mineral resources and other factors are sometimes as important for the division of labour and trade as the supply of land per capita. Furthermore, the density of the population is, as we shall see later, itself to a large extent a result of the supply of other factors like coal and iron mines in favoured regions.

The necessity of considering each region's equipment as a whole in every analysis pretending to be more than an exemplification of certain special tendencies will be demonstrated more fully in the next chapter. Professor Smith overlooks this when saying: "It is a surprising fact that the United States with all its land and agricultural wealth has not become an important exporter of dairy products." [1] As a matter of fact, the rich supply of all sorts of natural resources and capital per capita in the United States,

[1] *Industry and Commerce*, p. 88.

or, what is the same thing looked at from the other side, the relative scantiness of labour, suffices to explain why labour-requiring dairy products are expensive and neither have been nor are likely to be exported from that country in the future.

The examples in this section have so far been chosen only from cases where the supply of labour and arable land has a decisive effect on the division of labour and thus on trade. In that way, it has been possible to keep the reasoning in very simple terms. It might be useful to add an example of the influence of the relative scantiness of the supply of capital. A more detailed analysis of various mineral resources, labour qualities, etc., is reserved for Chapter V.

The post-war period offers the greatest number of such examples, such as the extreme scantiness of capital supply caused in some countries by destruction during the war and the unsettled conditions since peace. Poland and the Baltic countries have had a rate of interest for business credits varying between 15 and 30 percent, ever since conditions became sufficiently stabilised for a comparison with money rates in other countries to have real meaning. In Czeko-Slovakia rates have been somewhat lower, but still out of proportion to quotations in Western Europe. The influence of this scantiness of capital on the direction of industrial development has been conspicuous. To take one instance only, new sawmills have been started here, there, and everywhere in the numerous forest districts in these countries, in spite of the fact that the quality of the wood is poor in many places. Pulp factories, on the other hand, which can use second-grade wood, have developed much less, simply because they require large amounts of capital, whereas the cost of sawmills of modern construction is far lower.

Finally, it should be observed that in studying the productive factor equipment in a region we must consider not only the scarce factors which have a price, but also to some extent the various kinds of land or "nature" which command no price. This may seem paradoxical from the standpoint of the ordinary, one-market price theory, in which it is usually stated as self-evident that factors which are not scarce fall outside the economic analysis.

There is no need for economising with them; yet after some reflection it becomes clear that in a study of pricing in many communicating markets attention must be given to factors which are scarce in some regions, even if they be free in others. This is only an extreme case of a different relative scarcity, these factors being in some places cheaper than elsewhere, so much so that they command no price at all in the former. The fact that land of a certain quality is practically free in some parts of Australia and Argentina, whereas it is scarce in some other parts of the earth, exercises a considerable influence upon the interregional distribution of production.

§ 8. *Summary.* The first condition of trade is that some goods can be produced more cheaply in one region than in another. In each of them the cheap goods are those containing relatively great quantities of the factors cheaper than in the other regions. These cheap goods make up exports, whereas goods which can be more cheaply produced in the other regions are imported. We may say, therefore, that exports are in each region composed of articles into the production of which enter large quantities of cheap factors. In brief, commodities containing a large proportion of dear factors are imported, and those containing a large proportion of cheap factors are exported.

When reasoning like this we must, however, bear in mind one thing: whether a factor is cheaper or dearer in region *A* than in region *B* can be ascertained only when an exchange rate between the two currencies has been established; and that rate depends upon the conditions of reciprocal demand, i. e. upon all the basic elements of pricing in all regions. These all lie behind the cheapness or dearness of the factors, a fact that must be remembered when we use the simple language of the previous paragraphs. Nothing less than a consideration of all the elements that constitute the price mechanism — the system of mutual interdependence — can adequately explain the nature of interregional trade. If, however, we do remember that, we can go even further in simplification and yet not lose sight of the fundamental point. There is no doubt that varying productive factor equipment is the main cause of those inequalities in costs of production and

commodity prices which lead to trade. One region has a very large supply of certain factors but little of others, compared with the other region. When there is nothing in the demand conditions to balance sufficiently the effects of this inequality of supply, the outcome is an inequality in relative prices of factors and goods in the isolated state, and, after the establishment of an exchange rate, a situation where *A*'s abundant factors are found to be cheaper than in *B*, and the scantily supplied factors dearer than in *B*. Keeping these qualifications in mind, one may therefore in such cases use the terms "abundant" and "scanty," where the terms "cheap" and "dear" would be more exact.

Australia trades wool and wheat against manufactures, because the former products require much land of grades to be found in large quantities in that region, whereas manufactures require large quantities of labour and certain gifts of nature, e. g. coal and iron mines, which are scantily supplied in Australia. Thus, certain grades of land are exchanged for labour and for other grades of land. Strictly speaking, Australia will export goods containing much land not because land is abundant, but because land will be found to be cheaper there than in other regions when trade has started. But this evidently comes to very much the same thing: only if demand conditions were so peculiar that land — in spite of the abundant supply — would not be cheaper than in regions with a scanty supply, could circumstances be different. Failing such extraordinary demand conditions, we can say that trade implies an exchange of abundant factors for scantily supplied factors.

§ 9. *Notes on similar-view points in works by earlier writers.* It is noteworthy and peculiar that the view point in this chapter has until quite recently been neglected in all current treatises on international trade. The fact that the productive factors enter into the production of different commodities in very different proportions and that *therefore* (relative prices of the factors being different in different countries) an international specialisation of production is profitable, is so obvious that it can hardly have escaped notice. Yet this fact has been given no attention in international trade theory. There can hardly be any other explanation than the

dominance of the Ricardian labour cost theory — in the form of the doctrine of comparative cost — which is built on the explicit assumption of proportionality between the quantities of all factors except land in all industries. This precludes the study of varying proportions (cf. Appendix III). In a consistent mutual interdependence theory of the international aspects of pricing, the idea is, on the other hand, necessary and self-evident.

It is not surprising, then, to find it first touched upon, not by the English classical school, but in French works. Professor Viner[1] has drawn attention to an interesting passage in Sismondi's *De La Richesse Commerciale*:[2]

> Il y a certaines manufactures qu'un très petit capital suffit pour mettre en mouvement, parce que la matière première est de peu de valeur, et qu'elle en acquiert une très considerable par le travail d'un seul artisan. Le point de la France et d'Alençon, la dentelle de la Flandre et celle de Mirecourt sont des exemples de cette espèce de manufactures. Les femmes qui les travaillent ne gagnoient que 25 à 40 centimes par jour suivant leur habileté. . . . Le bas prix de la main d'oeuvre permet donc toujours aux pays pauvres de vendre certaines productions à meilleur marché que les pays riches; aussi l'Angleterre, la nation la plus riche de l'Europe, a-t-elle toujours besoin de celles qui ont moins de capitaux qu'elle, non-seulement pour les productions qui ne sont pas propres à son climat, mais encore pour celles dont le prix est surtout composé de main d'oeuvre; tandis qu'elle peut vendre meilleur marché que toute autre nation celles dont le prix est surtout composé de profit; elle tire des dentelles et des toiles de la France et de l'Allemagne, de la bonnèterie de l'Ecosse, et elle distribue des étoffes, de la quincaillerie, et des marchandises qu'elle a importées des Indes, et non ouvré elle-même, à tout l'occident.

Sismondi did not develop the idea further; this was done three decades later by Longfield, an Irish economist of considerable originality. From his *Lectures on Political Economy* (1834) I make the following quotations:

> Suppose two countries between which existed a perfect freedom of intercourse, let them be similarly circumstanced as to soil and climate, but in one the inhabitants are all free, while in the other the labouring part of the population is in a state of slavery. The commerce between those countries will necessarily consist of exchange of the products of harsh disagreeable labour

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[1] Angell's "Theory of International Prices," *Journal of Political Economy* (1927), p. 622.

[2] I (1803), 256.

from the country of slaves, for the results of skilled and educated labour from the land of freemen. The master will not employ his slave in a more agreeable kind of labour, when he can gain a little more by a different sort, whatever be the hardship and disagreeableness. But the freeman will not sell so cheap this additional sacrifice of ease and comfort; but as his own interests, not those of his master, are concerned, he will learn every kind of skilled labour with greater facility and less expense than the slave.[1]

Later on Longfield says:

I have also shewn that in a highly civilized society, skill, intelligence, and integrity will be more general, and therefore will have a less effect in increasing wages; while on the other hand, the labourer already in possession of all the necessaries and comforts of life will not easily be induced to engage in a disagreeable and unhealthy occupation. To induce him to do so he must be highly paid for the hardships he encounters, and in consideration of the higher qualities which are employed. . . . Hence, independent of every difference of soil or climate, *the exchange between two countries, such as I have described, will consist principally of articles produced by that species of labour which in each country is relatively cheapest.*[2] The one will export articles where skill and integrity are required on the part of the workman and where intelligence and capital are required on the part of his manager.[3]

Longfield then proceeds to demonstrate that this country will have a low rate of interest and will export goods which require much capital, and continues:

But the case will be different in the less civilized country, where life and property are insecure, and capital therefore scarce, and profits high and the labourer needy, ignorant and dishonest. The exports of this country will consist of articles produced by the most unwholesome and disagreeable labour, but in making which skill and honesty are not required from the labourer; such exports, in short, as in a lecture of last term I said were naturally produced in a country where slavery was allowed.[4]

Curiously enough, John Stuart Mill, although he must have been familiar with Longfield's writings, seems never to have touched upon this line of reasoning. Not even Cairnes, who stressed the influence of non-competing groups on prices in general, arrived at an analysis of the effects on international trade of different scales of remuneration in different countries. Later writers, although touching upon the question, have not, so far as

[1] *Op. cit.*, p. 70.

[2] Note that Longfield does *not* think of cheapness relative to effectiveness, as did the classical economists.

[3] The italics are mine.

[4] *Op. cit.*, p. 240.

I know, made it the subject of analysis.[1] It is significant that Bastable's mentioning of this view point is not to be found in the chapter entitled "The Influence of Foreign Trade on the Distribution of Income," which considers only variations in the scarcity of land relative to that of other factors, but not the changes in relative scarcity of the productive factors in general. The influence of the classical approach, with its fixed scale of remuneration, etc., is evident; del Vecchio's *Teoria del Commercio Internazionale*"[2] contains some similar ideas. Europe has low wages and America low rents. Each district exports the products which require much of the cheap factors. Thereby, the demand for labour is increased in Europe and the demand for land in America.

Complessivamente sono favorite quelle forme di rimunerazione che in un paese sono piu scarse, e sono diminuite quelle che sono piu alte; la concorrenza internazionale essendo rivolta ad esportare quei prodotti che sono ottenuti con fattori di produzione piu a buonmercato. Si tende ad una relative livellamento per il fatto che sono favoriti nelle importazioni poco rimunerati.[3]

It is somewhat surprising to find that this idea is not followed up at all in the chapter on the effects of international trade on the distribution of wealth, but that attention is confined to the relation between rents and other incomes just as in the orthodox classical analysis.

Recently, however, some well-known writers have at last given close consideration to this set of problems. Taussig[4] discusses them only to arrive at the conclusion that the "modifications" of the classical theory which they make necessary are not very important. Eight years earlier, however, Heckscher published in Swedish a more comprehensive and very important analysis under the title *The Influence of Foreign Trade on the Distribution of Income.*[5]

[1] See Nicholson, *Principles of Political Economy*, II (1897), p. 313; Bastable, *Theory of International Trade*, 2nd ed., p. 32.

[2] Padova, 1923. [3] *Op. cit.*, p. 12.

[4] *International Trade*, 1927, pp. 50–75.

[5] *Ekonomisk Tidskrift* (Stockholm, 1919). This paper is available only in Swedish. A brief thesis of mine, containing a review of it, was read at the Harvard Economic Seminary in 1923 and circulated among some members of the staff.

Both Heckscher and Taussig regard their discussion as a modification and addendum to the classical theory. Heckscher, for instance, looks upon his paper as an analysis of "the antecedents of the law of comparative costs." I cannot share this view. As a matter of fact, I do not think that it can be fitted into the classical labour cost theory at all. The reasons for this view are explained in detail in Appendix III. It suffices here to point out that the assumption that the productive factors, except land, enter in the *same* proportion into *all* goods is vital to this theory. It cannot be ignored in any attempt at modification.

From the point of view of the mutual interdependence theory of pricing, the situation is quite different. No such assumption is made; hence a comparison of the price systems in two isolated countries which open up trade leads *immediately and necessarily* to conclusions concerning the influence upon the causes and effects of international trade of the different proportions in which productive factors enter into different commodities. This at least was my experience when working out a sort of interdependence theory of international trade.[1] As to the method of dealing with this question I was naturally much influenced by Heckscher's paper. Chapters I and II of this book have many traces of its influence, although, it goes without saying, the point of view, first introduced by Heckscher in international trade theory, cannot well be dealt with in the same way, when it is an attempt to modify and explain the real contents of the law of comparative costs, as when it is a central part of a mutual interdependence theory of international trade, where this "law" in the classical sense does not figure at all.

[1] *Handelns Teori* (Stockholm, 1924). Cassel's treatment of *this* problem in Part V of *Theoretische Sosialökonomie,* 4th ed., which was added in 1926, is largely the same as in that book, as indicated by him in a generous footnote.

CHAPTER II

ON SOME EFFECTS OF INTERREGIONAL TRADE

§ 1. *A tendency towards equalisation of factor prices.* The most immediate effect of trade between a number of regions under the conditions which have been assumed to exist is that commodity prices everywhere are made to tally. So long as no costs of transport or other impediments to trade are considered, all commodities must command the same prices in all regions. Trade has, however, a far-reaching influence also on the prices and the combination and use of the productive factors, in brief, on the whole price system. To explain this is the object of the present chapter.

Let us take first a very abstract and simple case, where only two regions and two factors, which we may call labour and land, are considered. The region with an abundant supply of land but a scanty supply of labour finds it advantageous to import goods requiring much labour and to export goods requiring much land, as they can be more cheaply produced "abroad." Instead of producing goods of the former type, the industrial agents are directed towards industries producing the latter. Industries which use great quantities of labour are reduced or disappear, hence the demand for labour is diminished. Industries which use great quantities of land expand, therefore the demand for land is increased. Thus the scarcity of labour is reduced and that of land is increased. In the other region, which has an abundant supply of labour but little land, the concentration on industries that use much labour means greater relative scarcity of labour and lesser relative scarcity of land. In both regions, therefore, the factor which is relatively abundant becomes more in demand and fetches a higher price, whereas the factor that is scantily supplied becomes less in demand and gets a relatively lower reward than before. *The relative scarcity of the productive factors is made less different in the two regions.*

This reasoning holds good also for the case of a greater number of factors. Some of them are relatively abundant in A — in the sense that they are, after the opening up of trade, cheaper there than in B. Their prices are raised in A and lowered in B. With the others the change is, of course, the reverse. Thus, if we compare prices in the two regions directly we can say that factors cheaper in A than in B have become more in demand and have risen in price in A, but have become less in demand and have fallen in price in B, whereas the other factors which are dearer in A than in B have risen in the latter and fallen in A.[1] The effect

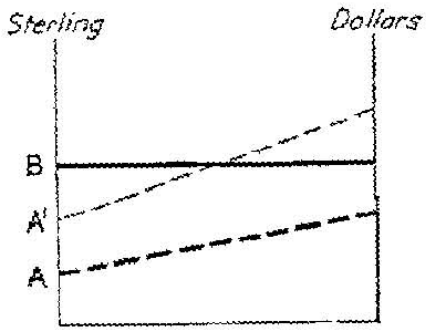


FIG. 2.

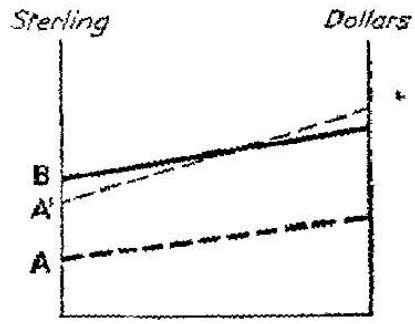


FIG. 3.

of interregional trade is a tendency towards equalisation of the prices of the productive factors.[2]

A graphical illustration may help to make this clear. If we use the same figure as above to illustrate the position before trade has had any influence on prices, then the situation brought about by trade in this respect, assuming the rate of exchange to be £1 = $2, may be pictured by Figure 3.

It is seen that the prices of the factors in A have relatively and absolutely been brought nearer to the prices in B. The curves A′ and B are closer together. The factors which were cheaper in A than in B (the left of the curve A′ below B in Fig. 2) now command a higher price than before in A and a lower price in B, whereas the other factors (to the right of the point of intersection) have been cheapened in A and become dearer in B.

[1] Compare, however, § 4, where it is shown that the fall is only *relative* to the price change of the same factor in the other region. In terms of goods its price may rise.

[2] Cf. Heckscher, *op. cit.*

We are here assuming that the number of factors is considerable but that there are only two regions. Evidently there is nothing in the reasoning which would not apply also in the case of several regions; each would find that its equipment with productive agents and the conditions of demand are such that after the opening of trade the costs of production of some goods would be lower than in any of the other regions, and that these goods would consequently be exported in exchange for the rest.

It is easy to give examples of this price equalising tendency of trade. Forests are cheap in northern Scandinavia and therefore wood products are exported. But if there were no export of such goods, the Scandinavian forests would certainly be much cheaper still. They would not, as they do now, feel the influence of the demand from other parts of the world. In the United States, on the other hand, forests are fairly dear, but would be still more so, if wood products could not be imported from Canada and Scandinavia.

If we take our familiar Australian case, agricultural land would evidently be still cheaper than it is now if no agricultural products could be exported. The same is true of Argentina. In Europe the situation would be the reverse, agricultural land reaching very high price levels if no food could be imported. Thus trade has raised the price of Australian and Argentine land but lowered the price of European land. *Relative to the price of land*, wages have been lowered in Australia and raised in Europe.

§ 2. *No complete equalisation.* This tendency towards an equalisation not only of commodity prices but also of the prices of the productive factors is the natural consequence of the fact that *trade allows industrial activity to adapt itself locally to the geographical extension of the factors of production.* Industries requiring a large proportion of certain factors gravitate towards regions where these are to be found in large quantities and therefore at low prices. The demand for productive factors no less than the demand for goods looks for the cheapest market. In brief, the uneven distribution of productive factors will, unless it is balanced by a corresponding geographical unevenness in demand, tend to make the factor prices different in the various regions, and

thereby bring about a certain division of labour and trade between them. Some commodities are produced exclusively in one region and exported to the others. If in the real world there were no costs of transport (the assumption underlying the present analysis), many commodities would belong to this group. But it is probable that in some cases several regions would produce the same commodity, some of them importing a little of it, others exporting. It is even conceivable that a region might produce exactly what it needs of a certain article. A discussion of these cases can, however, be undertaken more profitably when the impediments to commodity movements have been considered. It is, therefore, postponed until Part II.

We have seen that trade tends to counteract the original price inequality and bring about a more uniform price formation. One might ask if trade cannot in this way make prices in the various regions coincide exactly. In that situation trade would not disappear, as one might be inclined to think at first sight, for then the old price inequalities would immediately reappear. On the contrary, the price equality assumes a certain adaptation of demand to the supply of factors, i. e. the maintenance of a certain interregional division of labour and trade.

Such a result is, however, almost unthinkable and certainly highly improbable. The localisation of industry and thereby the demand for production factors cannot completely adapt themselves to the equipment with them in each region, chiefly because the industrial demand is always the "joint demand" for several factors. Their combination cannot be varied at will; on the contrary, the most economical combination is determined by the prices of the factors and the physical conditions. Consequently, the best adaptation of production to the geographical distribution of industrial agents, which would be the result of trade under the simple assumption of these first three chapters, cannot lead to a complete interregional price equalisation; some factors will still command higher prices in one region and lower in the others, and vice versa.

It is not worth while to analyse in detail why full equalisation does not occur; for, when the costs of transport and other im-

pediments to trade have been introduced into the reasoning, such an equalisation is in any case obviously impossible. Consequently, the analysis below is built on the fact that the prices of the productive factors vary from one region to another even after the establishment of interregional trade.

In this connection one thing should be noted. When a concrete case of trade is analysed, it is easy to point to the existing factor price discrepancies as the cause of trade. Australia and Argentina export wheat, partly, at least, because wheat land is cheaper in those countries than in Great Britain. Scandinavia exports wood products because forests are cheaper there than in most other countries. China, Japan, Turkey, and some other countries export raw silk not only to the United States but also to France, because silk requires much labour and wages are low in the former countries. In brief, each region will produce cheaply and export commodities requiring relatively large quantities of factors which are at present cheaper there than in the other regions.

This method of reasoning is, however, not quite satisfactory. The present price situation is in itself a result of the existing trade, i. e. of the conditions of demand which are called forth by trade. A real explanation must go further back to the question why wages or the price of forests are lower in certain regions than in others. This entails a study of the basic data of price formation, above all the relative abundance and scantiness of the endowment with the various factors in each region, and as a rule also the conditions of demand. On the whole it can be said that wages are low because the supply of other factors is very scanty, i. e. because labour is the relatively abundant factor. Similarly, forests in Scandinavia and wheat land in Australia are cheap because they are abundant.

§ 3. *The gain from interregional trade.* A complete local adaptation of production through interregional factor movements and the resulting complete price equalisation would make prices just the same as if there were only one region and no geographical distribution of the industrial agents. These would be used and combined just as it is explained in the one-market theory. Space would be of no consequence. In such a state prices would be

different from what they are, when we have a number of isolated regions. Clearly, the state of prices caused by interregional trade, under the assumptions in Part I, lies somewhere between these two extremes. The tendency is to push prices from the complete independence state to the complete equalisation state, but it is not carried through. The price differences as regards the productive factors are reduced, but they do not disappear.

The great inequality as regards factor equipment in the case of no trade means an enormous loss;[1] for it is not balanced by a corresponding inequality in demand. In one region wheat must be produced by an intensive application of labour and capital on each little bit of land, in another vast areas of land are barely used at all or cultivated with a very small amount of labour and capital. Compared with conditions in the first region this involves a wasteful use of the land, whereas capital and labour may in a sense be said to be used wastefully and inefficiently in the first region. Had there been only one region with the same total supply of productive factors as in all the existing regions together, the use of the factors would have been more efficient. The total production of all goods taken together would have been much greater. One would not in one place spend a great deal of capital and labour to increase production a little, when the same result could easily have been obtained through a slight increase in the cultivated area, while in another place land was subject to extensive and wasteful culture. Instead, labour and capital would be transferred from places where their marginal productivity is low to places where it is higher. The prices of the factors and their combination would everywhere be the same, and this would mean a much better utilisation of them than in the case of a number of isolated regions.

Now, when trade makes possible a local adaptation of industry to the basic conditions of production, somewhat the same result is reached as if only one region had existed. If the prices of the productive factors had been completely equalised interregionally, then the combination of the factors in the various industries

[1] "Loss" is a reduction and "gain" is an increase in the real national income in terms of commodities. See further in Chapters VII and XVI.

would have been exactly the same as in the case of one region only. As has been stated already, space would be of no consequence if production could be adapted perfectly to the geographical extension of the productive facilities equipment. Even though there will, as a matter of fact, be only a *tendency* in this direction, prices in each region being moved somewhat in the direction they would take in the case of one region only, yet a similar gain from better utilisation of the industrial agents will of course ensue. Land will still be cultivated more intensively in one region than in another, but the most inefficient part of capital and labour in the region poor in land will be withdrawn from wheat growing. Instead, wheat will be imported from regions having an abundant supply of land and therefore able to increase their production of wheat by adding comparatively little capital and labour. Much wheat for the British Isles is grown in Argentina with the use of less capital and labour than it would require in Great Britain. On the other hand, many manufactured articles for Argentine consumption are produced in the latter country with its wealth of coal, iron, and labour, with a similar saving.

Were the mobility of the productive factors between the regions free, then a levelling of their prices and a more efficient combination of them could be brought about through a movement from the region where some of them are cheap to others where these factors are dearer. This would diminish their supply and thus raise their prices in the former region and increase their supply and lower their prices in the others. E.g. a transfer of British coal and iron mines and labour to Argentina would equalise the equipment with productive factors and their prices and combination in various industries.

There are, however, many more or less important obstacles to such movements (they will be discussed in detail in Chapter XVI), and efficient combinations cannot be established in that way. There is nothing else to do but to use them where they are and bring about a localisation of production which suits the geographical distribution of factors as well as possible. In this indirect way a certain equalisation of their prices and adjustment of their combinations takes place through the interregional ex-

change of commodities. The total volume of production is increased. *Thus, the mobility of goods to some extent compensates the lack of interregional mobility of the factors:* [1] or (what is really the same thing), trade mitigates the disadvantages of the unsuitable geographical distribution of the productive facilities. This is the cause of gain from interregional trade.

§ 4. *Effects upon factor prices in terms of commodities.* There remains one most troublesome question concerning the effect of interregional trade on price relations. So far we have considered only its influence on the relation between commodity prices in the various regions — a complete equalisation as a result of trade — and on the relation between the prices of productive factors in the various regions, finding here a tendency towards equalisation. We must study also the not less important question of the effects of trade upon the relation between commodity prices and factor prices in *each* region.

The amounts paid for the use of all the productive factors during a year is always equal to the total value of the goods produced.[2] As trade and interregional division of labour means a more efficient production and a larger volume of commodities, the prices of the factors must obviously rise in terms of commodities. Assuming that the commodity price level in each region has been kept constant, factor prices expressed in terms of money must rise. Suppose, for instance, that as a result of trade an index number of factor prices for all regions taken together has risen by 50 percent, i. e. that the total output of goods has increased to this extent. Is it certain that an index number for factor prices in any one region has risen? What determines the extent of that rise? Evidently this is to ask if all regions reap any gain from trade and what determines the amount of the gain that goes to each of them.

First, is it conceivable that a certain region *A* might gain

[1] Longfield, in a discussion of trade between two countries of which the one has skilled, the other one unskilled labour, observes that "Commerce which exchanges the production of human labour has the same effect as if the labourers themselves could remove from one country to another, without greater expense or inconvenience than attends the removal of the goods which they manufacture." — *Lectures on Political Economy*, p. 239.

[2] Under the assumptions made above.

nothing at all, its factors being as an average neither dearer nor cheaper than before? The answer is in the negative. The change in production caused by trade implies a change in the relative scarcity of *A*'s factors, those contained largely in *A*'s export goods rising relatively to the others. Consequently, if *A* exports agricultural products and imports manufactures, the terms of exchange between these two classes of goods must now be more favourable to agricultural goods than they were when *A* was isolated. If the price level has been constant, such goods have become dearer, whereas manufactures are cheaper than before. This is an advantageous situation to a region which concentrates upon agriculture. It will receive more manufactured goods through imports in exchange for agricultural exports than it could produce for itself.

Only if trade did not change the relative scarcity of factors in *A* at all is it conceivable that the terms of exchange would be unaffected and *A* reap no gain at all. But such a case is impossible, for trade cannot fail to cause some change of the relative scarcity of the factors. In fact, no change in the direction in which *A*'s factors are used could take place except under the stimulus of a change in commodity prices in favour of its export goods. And interregional trade is inconceivable without such a change in production.[1]

Whereas it is evidently inevitable that each region reaps some gain, its price level for factors rising as a result of trade, we have said nothing as to how the gain will be divided between the regions. Indeed the whole idea that there is need for a *division* of a certain gain, which exists as a whole before being divided, is of doubtful value. It does not seem very fruitful either to ask under what conditions one region gains *more* than another, considering the limitations set to quantitive measuring of the gain. The question of gain assumes a much more realistic aspect in a discus-

[1] Bastable and others think it quite likely that the large region derives no gain whatsoever. This erroneous conclusion is the outcome of their disregard of other changes in the relative prices of the factors of production than those that have to do with rent, and their consequent assumption of constant cost as a normal case. Compare Bastable, *Theory of International Trade*, 2nd ed., ch. ii. Note, however, p. 44.

sion in how far certain *trade variations* are advantageous to one region and disadvantageous to another. (See Chapters VIII, XVI, and XXIV.)

At present we are satisfied to know that the total value of all productive factors in terms of goods will rise in all regions as a result of trade. In other words, it can be taken for granted that the level of factor price will rise in all regions. Consequently a relative decline in the price of one of them, say labour, compared to another, land, does not necessarily mean that the wage level is lowered in terms of goods. Should Australian labour be worse off because of international trade? Of course not.

Rent is usually a fairly small part of the total national income. Assume that it is 5 percent and rises to 10 percent, while the total income of the region is increased by 50 percent. In terms of goods rent is then three times as high as before. If wages are reduced from 65 to 60 percent of the total income, then its absolute share will still be much larger than before (60 percent of 150 being 90 as compared with 65). In terms of commodities rent has risen 200 percent and wages 38 percent. Wages are such a substantial part of the total income that it is almost unthinkable that a considerable rise of the latter could fail to raise total wages also, even if the percentage going to the labourers became somewhat reduced.

Other factors are in this respect probably in a very different position from labour. Import of foodstuffs into Great Britain has probably a lowering effect on the rent of agricultural land not only in a relative sense — its percentage of the national income being much smaller than it would be in isolation — but also absolutely, in terms of commodities.

Unfortunately, reasoning of the type which has been presented in this paragraph about the total gain from interregional trade and its division between the various regions and productive factors, is subject to such serious qualifications that it can claim only a limited interest. First of all, the use of the concept "constant price level" in an investigation into any fundamental change of the economic conditions is open to strong criticism. For that reason a comparison between the isolated state and a state of in-

terregional trade will always be somewhat lacking in concreteness. On the whole, a comparison of two cases of more or less trade — after, for example, a reduction of tariffs or costs of transport — is likely to be more profitable. An analysis of the results of the opening of trade between regions which have before been isolated does nevertheless seem necessary as an introduction, as it throws some light upon certain fundamental relations.

Secondly, the total supply of productive factors would certainly not be the same in an isolated state as it is now, e. g. in Great Britain. Many people would have starved to death before the population had reached anything like its present figure. Clearly the effects of interregional trade cannot be studied independently of its influence on the supply of productive factors. This aspect will be considered in Chapter VII. The analysis in the present chapter only paves the way for a fuller discussion later on.

§ 5. *A generalisation of one idea underlying the law of comparative costs.* There is one aspect of the interregional division of production which has always attracted much attention and been the subject of much intricate analysis, although it is in fact only one of a large class of phenomena, and easily explainable as such. From the point of view of the classical theory of value the fact that a country may import certain goods, although they could have been produced with less labour at home than in the exporting country, has naturally been considered as an extremely important, nay more, as *the* fundamental problem of international trade. From the point of view of a consistent equilibrium theory of prices this is not so.

We have found that each region will export the goods it can produce cheaper, in *money* costs, than others. The cheapest possible combination of productive factors is of course used, under all conditions, in so far as their localisation does not prevent it. This minimum cost combination naturally depends upon the prices of the factors. If one factor is too expensive another one will be used. Although a unit of it renders less service than the first one, the difference in price may more than make up for it, and costs of production will therefore be lower.

In central Europe the land which would yield the largest crop of rye per acre — assuming a certain amount of capital and labour to be spent on it — is practically never used for rye but for wheat growing. The reason is simple: wheat can afford to pay a higher rent for it. The cost of rye is found to be lower when grown on land which is not good for wheat. It yields less per acre, but this is more than compensated by the lower rent to be paid. Similarly, when wheat and wine compete for the same land, the latter is often the stronger. Demand for wine is so insistent that it can afford to pay a higher rent than wheat. This is the case in many places in Southern Europe, where wheat is grown on land which yields less than vineyards would if they were used for wheat.

The same applies to labour. A man with a $10,000 salary will not be used at a job which a $3000 man can handle almost as well. A banker does not do his typing himself even if he is better at it than his typist. One will always prefer to use a greater quantity of a cheaper factor than a smaller quantity of a dearer one, if the total costs become lower in that way. In fact it is not only in the application of productive factors that one will act in this way. The combination of raw materials and half-finished goods underlies the same principle.

So far we have dealt only with cases where the factors or elements to be used are all to be found in one region. The truth of the statement that the minimum (money) cost combination is chosen is then evident: there is nothing peculiar or calling for special "laws" in explanation. The ordinary price theory is clearly sufficient.

It is difficult to see why it should be otherwise, when the factors or materials are situated in different regions. The land which is best for rye, in the sense that a given amount of capital and labour will yield more rye than when it is applied on other sorts of land, may be used for wheat, and rye will be imported from regions which have only land of second-rate quality. This is exactly what happens in Northern Europe: to produce lace, fine cutlery, or surgical instruments, dear American labour will not be employed, even though it might produce a greater quantity of goods per day with the aid of a certain amount of other resources

than Belgian or German labour. The low wages of the latter more than make up for the lower efficiency.

In the same way, using the classical terminology, one may say that a unit of productive power — whatever that might mean — in one country can produce a greater quantity of a certain commodity than a unit of productive power of a different sort in another country, but that the commodity may nevertheless be exported from the latter to the former. The price of the unit of productive power in the former country is too high — which is only a way of saying that its superiority is still greater in other industries.

In all this there is nothing peculiar. A mutual interdependence theory of interregional trade — based on money costs (prices) and not on real costs — has no use for any special law of comparative cost, which gives a flavour of paradox to a fairly simple relationship, while being from other points of view a result of unnecessarily extreme simplifications. Indeed, this so-called law is only a special instance of the tendency to find the cheapest possible combination of productive factors.

The fact that regional borders for the movements of the factors of production influence the "minimum (money) cost combination," and thus the localisation of production, is due to the impossibility of combining factors located in different regions. It is this circumstance which makes it necessary to extend the one-market theory to cover pricing in several interrelated markets.[1]

Let us consider the growing of wheat and of potatoes, of which the latter requires much more labour than the former. The best wheat land would yield more potatoes per acre than does the poor land which is actually used for potato growing; but its rent is higher, and this makes the present distribution of the land between the two crops economical. Assume that such a district is divided into two regions, of which *A* has all the wheat land and *B* all the potato land. Clearly, it will still be advantageous to use

[1] The tendency to use the minimum cost combination is at work as before. Thus, no dualism in the treatment of the price problem need arise. When the classical labour value theory is applied to the phenomenon of international trade, the law of comparative cost, of which one has, curiously enough, heard nothing in the analysis of domestic trade, is introduced as a *deus ex machina*.

the land as before, unless there are differences in the supply of the other factors to account for a change. Assume, further, that rich iron ores and coal mines are discovered in *B*. Labour becomes relatively scarce in that region and wages rise over the level in *A*. This will tend to give *A* an advantage in both potato and wheat growing, but especially in the former, which requires plenty of labour. The outcome may well be that the potatoes and part of the wheat are grown in *A*, whereas *B* concentrates upon manufactures and some wheat growing, applying very little labour to each acre of land.

In this case, the inability to move labour from *A* to *B* prevents the most economical use of the land. The various qualities of land cannot be utilized as they would have been if they had been located in the same region, for the other coöperating factors are not to be found in the desired quantities. Still, the minimum cost combination will be chosen. As, however, the relative prices of the productive factors will be different from what they would be if there were only one region, it will be a different combination from that in the one-region case.

Similarly, were it not for the high rate of interest, pulp would be produced in Poland rather than in some other places where it is now manufactured, for both labour and forests are cheap in Poland, and this more than makes up for the fact that the forests may be of second quality. As it is, costs of production would be too high. The minimum cost combination for pulp is not one which includes Polish forests, capital, and labour, but forests, capital, and labour in some other region.

Only a study of the price mechanism in a world of trading regions can throw light upon the nature of the "distortion" of relative prices and the use of the factors which results from the localisation of the factors in different regions.

§ 6. *Summary.* We have found a condition of interregional trade to be that the fundamental elements of pricing in each region, the supply of factors and the demand for commodities, — behind each of them *two* basic data, — have such relations to each other that after the breaking of isolation certain factors are cheaper in each region than in the others and the costs of produc-

tion of certain commodities are lower. That this condition is fulfilled is chiefly due to the great differences in the equipment with productive facilities. Keeping in mind the influence of demand, one may say that a "sufficient" condition of trade is the inequality in the endowment of factors of production, for this inequality is never exactly balanced by the same inequality in demand.

The effect of interregional trade is to equalise commodity prices. Furthermore, there will be a tendency towards equalisation also of the prices of the factors of production, which means a better use of them and thus a reduction of the disadvantages arising from the unsuitable geographical distribution of the productive factors. From each region goods containing a large proportion of relatively abundant and cheap factors are exported, and these factors therefore become scarcer than before, whereas goods containing a large proportion of scantily supplied and scarce factors are imported, the latter hence becoming less scarce. The same result could have been obtained by a transfer of the factors. As it is, interregional trade serves as a substitute for such interregional factor movements.

The price even of the factors which are made relatively less scarce may well rise in terms of commodities, for the total volume of goods increases, owing to the more efficient use of the productive facilities made possible through trade, and the *average* prices of productive factors consequently rise in all regions.

The nature of the price mechanism is essentially the same as in the one-market theory, but its "construction," i. e. the relations which determine the actual height of prices, is different. Only a study of the whole price system can give a complete explanation of the interregional division of labour, or any other phenomenon of pricing.[1]

[1] For a mathematical presentation of the reasoning in Chapters I–II the reader is referred to Appendix I, which it is convenient to read before Chapter III.

CHAPTER III

ANOTHER CONDITION OF INTERREGIONAL TRADE

§ 1. *Modifications of the atomistic price theory.* The doctrine in the two preceding chapters has been built on the basis of a one-market theory of pricing, assuming *full* general mobility and divisibility. It must now be modified with regard to the conditions, contrary to this assumption, which are so characteristic of the modern economic world. Most books on economic principles recognise such modification in several respects, but ignore or pass over their space aspects. The object of this and some later chapters is to indicate the special significance of the lack of general mobility and divisibility for the space aspects of pricing, and thus to give a more realistic picture of trade. It should be noted, however, that until we come to describe exactly what kind of regions we are analysing, the picture must necessarily be lacking in concreteness. The generality of the theory of interregional trade gives it an abstract character which can only be remedied when applied to special cases.

An important modification of the theory of pricing which must be taken into account is that one cannot, as has been done above, assume that commodity prices are equal to costs of production — both, of course, expressed in money. A considerable amount of friction will make prices deviate for shorter or longer periods of time from the cost of production. Nor can one assume the prices of the factors of production to be uniform throughout a region. Unskilled labour in one industry will sometimes receive a much higher wage than labour of the same quality in another industry. This also is due to circumstances which may be grouped together as "economic friction."

A tendency towards a position of equilibrium will, however, exist; when variations have occurred, the price mechanism tends to restore it. Such reactions require more or less time; for that reason, every explanation of pricing which attempts more than

a statement of certain equilibria must consider time, and this is the chief cause of the difficulties a concrete theory of pricing encounters. It should also be noted that even if no new disturbances occurred, prices would nevertheless not return to the equilibrium which would have existed if this special disturbance had never happened at all; for in the "disturbed" situation forces are called into play which cause changes in the elements determining the equilibrium.

Another modification, but of a somewhat different character, is necessary. The equilibria towards which prices tend in a society characterised by friction do not correspond to the equilibria in an "atomistic" society; the variations or disturbances do not oscillate around the full-mobility equilibrium, i. e. they do not balance each other, but show a net effect in certain directions. A most important example of this is the fact that the utilisation of the factors and instruments of production is often incomplete. The use of the productive capacity in an industry may oscillate, for instance, from 60 to 100 percent, giving an average of about 80 percent. The prices of the products therefore tend in the long run to equal the costs of production when only 80 percent of the capacity is used, whereas in an atomistic society full capacity would always be used. The existence of overhead charges is hence of great importance for pricing under dynamic and frictional conditions.

The equilibrium towards which prices tend in a friction-dynamic society thus differs in important respects from what is explained under the atomistic theory. It would carry us too far to enter upon a detailed analysis of this question; we must suppose the general theory of pricing to be known and proceed to investigate how far the modifications which friction introduces in that theory have special bearing on the space aspects of pricing.

Three cases will be found to be of special importance: first, the temporary existence of unused capacity affects price policy. It makes producers sell at different prices in different markets. This price discrimination is significant for the space aspects of pricing in so far as space gives rise to a number of more or less sharply distinguished markets. This question will be dealt with

in detail, when we have considered the obstacles to commodity movements.

Second, a considerable amount of risk is inevitable when the productive factors are directed towards certain uses, for they cannot easily be turned into other channels. This is particularly the case with the binding of capital in fixed appliances of production, or in the aquisition of a certain training by human labour. Such risks, and the consequent losses when things go wrong, must — for society as a whole — be made up for in higher returns when conditions are normal; at least a tendency of this sort exists. Now, some of these risks are considerably greater in certain regions than in others, a fact that exercises some influence upon the interregional division of labour; almost the only regions of importance in this respect are nations, so this problem can best be dealt with in connection with international trade (Chapters VI and VII).

Third, the lack of divisibility and mobility makes production on a large scale more efficient up to a certain point than production in small quantities. Here we have an element of fundamental importance for the space aspects of trade; in fact, a revision of the doctrine of the causes and effects of interregional trade becomes necessary. This question we now proceed to analyse.

§ 2. *The lack of divisibility.* Although no parallel is entirely satisfactory, it may be said that regions, like individuals, reap certain advantages from specialisation, this quite independently of any difference in productive power equipment. Specialisation in certain commodities makes production on a large scale possible; and only when production is so organised can full individual division of labour be carried through and machines and tools of the most efficient size be utilized.

Most regions would be forced to produce a great many articles on a small scale if they imported nothing from "abroad." If manufactured for small "home markets" only, cash register apparatus, dye stuffs, complicated machines, tools, and many other things could be had only at considerably higher cost than at present, when they are produced for the world market. Clearly, the economies of large-scale production make interregional di-

vision of labour profitable, irrespective of differences in the prices of the factors of production. In other words, the advantages of specialisation resulting from large-scale production lead to interregional trade. Commodities which can be produced very cheaply in huge factories or in large groups of factories, and which when located together reap benefits from external economies, are spread over large markets, each factory or group of factories being sufficient to satisfy the demand of a large number of consumers. On the other hand, commodities which can be produced with the same or greater efficiency in small establishments, e. g. made-to-order clothing, will generally not travel very far; they will be produced where they are in demand, even if the demand in each region be comparatively small. The former kind of articles will figure prominently in interregional trade, but not the latter.

It would carry us too far to enter upon a general discussion of the nature of these economies of large-scale production; for this I refer the reader to books and articles by Bullock, Carver, Landry, Taylor, Knight, and J. M. Clark. Only a few observations will be made here.

If all original productive factors — raw materials, tools, and implements — were completely divisible, then any combination of them could be established, irrespective of their absolute quantities. The most economical combination — which gives the lowest cost of production per unit of commodity — would be equally possible on a small or a large scale. An optimum proportion — dependent, of course, upon the prices of the factors — would exist, but no optimum size.

As a matter of fact the size of the factory or establishment is very important. Only when fairly large quantities of certain factors and implements are used can the minimum cost combination be reached. This may be due to the fact that the least unit of certain instruments is large, or that a larger unit is relatively more "efficient" than a smaller one. In short, so-called internal economies are due to a lack of divisibility.

External economies of production are similarly attended by incomplete divisibility. To take an example, the advantages which an industry derives from concentration in a certain local-

ity are to some extent dependent upon the existence in such a place or district of a well-organised market for the various grades of labour. If a number of textile factories, for instance, were scattered over a large area this advantage would be lost. The normal amount of unemployment would be greater, leading to higher wages for the employed, yet the manufacturers could not be certain of finding instantly a sufficient supply of the special type of skilled labour they required. In other words, the labour market must be of a certain size to be efficiently organised; clearly this can be termed a sort of incomplete divisibility.

There are, of course, many other advantages of a geographical concentration of industry. But the well-organised labour market is often the most important one, particularly in industries where the skill of the workman is of great account. The little town of Pforzheim in Germany, e. g., has 1000 jewelry factories and about 30,000 jewelry workers.

It is not necessary to give further examples. Enough has been said to indicate that the various economies of large-scale production can conveniently be described as due to a lack of divisibility.

§ 3. *Large-scale economies as a cause of trade.* It was pointed out in the first section of this chapter that advantages of producing a large quantity of a single commodity instead of a little of all commodities must lead to interregional trade. Each region has a limited supply of productive factors and is unable to produce efficiently everything it wants. By specialising in certain articles it can produce more cheaply, and "export" a part of its output in exchange for other goods. To demonstrate the importance of this fact, let us assume that a number of regions exist isolated from each other, and that their equipment with productive factors and their demand are so balanced that the relative prices of factors and commodities are everywhere the same. According to Chapter I no trade can then arise when the isolation is broken. As a matter of fact, in so far as the market for some articles within each region is not large enough to permit the most efficient scale of production, division of labour and trade will nevertheless be profitable. Each region will specialise on some of

these articles and exchange them for the rest. The character of this trade will be entirely a matter of chance, if factor equipment is everywhere the same; for it is of no consequence whether a certain region specialises in one commodity or another, just as uniformly endowed individuals can with equal advantage specialise in any kind of work.

Trade of a different sort will also ensue. The demand for productive factors in the various industries, where large-scale production makes for cheap production, must vary. Some require relatively more labour, others more capital; consequently the growth of certain of these industries in one region and others in another causes a shift in the demand for factors of production and makes their relative scarcity unequal; certain factors become cheaper in one region than in the others. This must make further division of labour profitable, in accordance with the doctrine stated in the two first chapters. Each region will export goods containing relatively large quantities of the factors which are cheaper there than "abroad."

If a region has some large-scale industries requiring much capital and certain gifts of nature, like iron and coal resources, then labour and agricultural land will be less in demand and cheaper. Consequently industries using much of the latter factors will grow up as in a sense "supplementary" to those using much of the former ones.

One need not give further attention to this case, which would, of course, never be met with in reality. Equipment with productive facilities and conditions of demand are always such that in the isolated state relative prices of factors and goods must be unequal; therefore trade will arise from both sources. The tendency to division of production because of differences in equipment with productive agents is strengthened by the advantages of large-scale production in all cases where the most efficient scale is large compared to the need for the product. In some of these cases there might not be any original superiority in the endowment with factors of production at all. The localisation of one industry in one region and another in other regions might simply be due to chance, the given industry having gained strength in

that particular region and having reached an efficient scale. As it cannot profitably be carried on in every region, the total demand being too small, it tends to remain where it was first located. However, while such cases should not be ignored, they are probably not very important. On the whole, it is certainly the differences in the equipment with productive agents that determine the course of interregional trade — unless regions are small — whereas the advantages of large-scale production are more in the nature of a subsidiary cause, carrying the division of labour and trade a little further than it would otherwise go, but not changing their main characteristics.

If the actual localisation of production is not that which the equipment with productive agents would seem to indicate, the usual explanation is that this localisation was natural in earlier times, and that when certain industries have once been established in a place there is a tendency for them to remain there. Friction of various kinds here makes its effects felt; examples will be discussed later, e. g. the tendency of the glass industry to remain in regions with ample supplies of wood, after the time when much cheaper fuel in the form of coal became available in other regions. As time goes on, the tendency towards more economical localisation and trade will, however, break through. Indeed, it is more surprising that industries move about as easily as they do in spite of all deterrent elements, than that they tend to remain for some time where they have developed.

Industries are very differently situated as regards the advantages of large-scale production. Some derive practically no advantage from it once they have reached a certain minor stage of growth. Others can produce at competitive prices only with large factories, smaller establishments either becoming large or being quickly eliminated. The boot and shoe industry is often mentioned as a rather surprising example of the former case, while the automobile industry is the latter type. Of course the most important industry, where the small unit is supposed to be as good as or better than a bigger one, is agriculture. Great caution is, however, needed in every discussion of this question. Even in typical large-scale industries, small firms often seem to

do quite well for considerable periods of time. Nowhere is the importance of large-scale organisation more conspicuous than in agriculture; indeed the whole Danish farming industry is in important respects one unit. Scientific experiments, control of the quality of the products, the manufacturing and marketing of eggs, butter, and bacon, and many other functions of essential importance are performed by the farmers' coöperative associations, which form large economic units in close coöperation with one another. If it is true in a sense that the smallest productive unit for making eggs is a hen, and that it is also the most efficient one, one may say with equal justice that the whole Danish poultry industry is the economic unit, and that it would be relatively less efficient if it were only 10 percent or 1 percent as large. Thus Danish agriculture in a way reaps many advantages from large-scale organisation; and the fact that it was first organised on that basis still gives it a superiority over farming industries in some other countries — an advantage lost slowly, if at all, as the latter industries attain a similar organisation.

§ 4. *The effects of trade due to economies of large-scale production.* We now turn to the question of the effects of the type of interregional trade — or rather the extension of trade — caused by the lack of divisibility leading to the economies of large-scale production. Such trade means an organisation of industry which makes possible a more efficient use of the industrial agents than does production on a small scale. In other words, the disadvantages arising from the lack of divisibility are substantially reduced. One may even speak of a tendency towards utilisation as efficient as if the divisibility were complete. For various reasons, however, this tendency cannot be fully realised. An extension of the scale leads not only to better use of the industrial agents but also to waste in several respects. Beyond a certain point the disadvantages will more than outweigh the advantages, consequently the optimum size does not give the perfect balance which would characterise the case of full divisibility.

This conclusion, that interregional trade reduces the disadvantages arising from the lack of divisibility, corresponds to the conclusion in the previous chapter that trade mitigates the disad-

vantages of an unsuitable geographical distribution of productive facilities. If they were completely mobile their distribution could be made to suit demand; as it is, trade, or the mobility of the goods, was found to compensate to some extent for the lack of interregional mobility of the productive factors. Combining these two results one may say that interregional trade has a tendency to reduce the disadvantages of the lack of mobility and of the lack of divisibility of the factors of production. However, the earlier formulation can, perhaps, be regarded as including the latter; if the productive factors were completely mobile, then they could be so brought together that the lack of divisibility would mean the least possible disadvantage. The interregional trade caused by the lack of divisibility has a similar tendency. Thus, *all* interregional trade, whether due to the one cause or the other, might be regarded as a substitute for the lack of geographical mobility of the productive factors; however, it is more clarifying to say that trade is caused by the uneven[1] distribution of the factors and their lack of divisibility, and that it tends to reduce the disadvantages caused thereby.[2]

[1] "Uneven" being of course taken as relative to demand.

[2] To avoid misunderstanding it should perhaps be pointed out that the tendency of commodity prices to coincide with average costs may be weak, if many firms are below the optimum scale of output; marginal costs, i. e. the cost of an increase in output, then fall below average costs. Such a situation, however, is not compatible with long-run equilibrium. But it has to be analysed in the discussion of international trade variations, especially in their relation to the business cycle, and in connection with the influence of unused capacity. These questions are dealt with briefly in Chapters XV: § 4 and XXIII: § 6.

CHAPTER IV

A VARIATION OF INTERREGIONAL TRADE

§ 1. *Relative factor prices and terms of exchange after a demand variation.* In order to demonstrate the nature of interregional trade as clearly as possible, we have had to compare a state of complete isolation with one of trade. However, although it shows something about the fundamental effects of interregional trade, such a comparison is rather artificial. More light can be thrown upon the nature of existing trade and the price mechanism in trading regions by a study of some variations in trade similar to those which often occur in economic life. In the present chapter the reactions of the simplified price mechanism to a variation in demand will be briefly discussed as a preparation for the more concrete analysis in following chapters on the basis of less abstract assumptions.

Let us consider for the sake of simplicity two regions, in which all commodities are either import or export goods. In the absence of impediments to trade, the assumption maintained throughout Part I, this is the most probable situation, although it is conceivable that the costs of production of some commodities may be just the same in both regions and that no trade in them takes place.

Now suppose that B's demand for some of A's goods increases: the relative scarcity of the factors required for the production of those articles is also increased. To such an expansion of the demand for some goods there will be a corresponding slackening in the demand for other goods,[1] and a reduction of the relative scarcity of the productive factors concerned. The owners of the first factors get higher incomes than before, compared with the incomes of others. As most of these factors belong to A, its total income rises in relation to the total income of B. A buys more of

[1] We assume that this reduction in demand is evenly distributed over all other goods, whether produced in A or in B.

the joint product of both regions than before and *B* buys less. Assume, for instance, an increase in *B*'s demand for paper, pulp, and wood from *A*. The forests in this region must necessarily rise in value and afford their owners an increased income. If the total money value of the product of both regions is kept constant, *A* will get a higher, *B* a lower money income than before.

This reasoning holds good for two groups of productive factors in a single region. When demand changes in favour of the productive factors (e. g. manufacturing labour) belonging to a group of individuals, called *A*, then their income will rise and that of other people (e. g. farmers), called *B*, will fall. *A* will be able to buy a greater quantity of goods produced with *B*'s factors than before, whereas *B* has to be satisfied with a smaller quantity of its own goods, perhaps a smaller quantity of *A*'s goods, and certainly a smaller volume of all goods taken together. Neither of the two groups can buy for more or less than its total income, — unless one of them lends to the other, — so there is nothing peculiar in the maintenance of equilibrium between the "imports" and "exports" of each of them.

The change in the distribution of the joint production of A and B will have a special character when *A* and *B* are two separate regions, e. g. a wood country and a wheat country. *B*'s increased demand for wood products from *A* will raise the relative scarcity not only of *A*'s forests but also of other factors, e. g. labour, which combine with forests in the making of such products. Even if *B* has as great a supply of labour as *A* — and no other reason for buying products of that labour than its favoured position in a forest district — the general wage level in *A* will rise compared with that in *B*. Demand for commodities is always indirectly a *joint demand* for certain productive factors. In this case *B*'s greater demand affects not only the factor of forests but also *A*'s labour, which receives higher wages, whereas in the case of one region the mobility of labour between *A* and *B* prevents an unequal development of wages.

Thus, on the one hand, the scarcity of all *A* factors regarded as one group is increased in relation to the scarcity of all *B* factors. On the other hand, the factors used in relatively great quantities

in *A*'s wood industry grow more scarce compared with other factors in *A*. If the price level for factors in general in *A* and *B* taken together is kept constant, the level of *A* factors rises and that of *B* factors drops. But certain *A* factors — not used in the wood industry — may be cheaper than they were before.

Not only wood goods but others of *A*'s goods become more expensive than they used to be, to the extent that they use factors of the same sort as the wood industry. Other goods become cheaper, but the price level for commodities produced in *A* and exported therefrom rises. The level of prices for *B*'s goods, on the other hand, drops. The terms of exchange move in favour of *A*.

The balance of trade is automatically kept in equilibrium, in spite of the increased value of *B*'s wood imports from *A*, because of the fact that *A* has a greater buying power [1] and *B* a smaller one than before. Neither of them can buy for more or less than its income. *B*'s has been reduced, yet a greater amount than before has been spent on wood products; so that a smaller amount remains for purchases of other goods from *A* and of *B*'s own goods. *A*, on the other hand, has an increased buying power and will buy of its own goods, except perhaps wood products, as well as of *B*'s goods. *A* gets a larger and *B* a smaller share of the joint produce of both regions than formerly.

This analysis of the readjustment of the trade balance differs from the orthodox one, which is as follows: the increased demand for wood products means a tendency to an unfavourable balance of trade in *B*, its imports being in excess of its exports. To induce *A* to buy more of *B*'s goods and thus maintain the balance, *B* must offer its goods at cheaper terms of exchange: in Mill's language, it must "force an increased demand for their exports, by offering them at a lower value." [2]

[1] The term "buying power" is used in preference to "purchasing power" to escape the risk of misunderstandings, as the latter is most usual in the connection: "the purchasing power of money." Buying power is: total gross income, increased by borrowings and reduced by loans, and expressed in terms of money with reference to a *period* of time. See further in Chapter XVIII.

[2] *Principles of Political Economy*, Ashley ed. (1920), Bk. III, ch. xviii, § 4

Mill and his followers tacitly assume that the buying power or the total demand of each region is the same as before. In other words, in a study of demand curves like those of Edgeworth and Marshall it is assumed that these demand curves are unaltered, apart from the original variation which forms the object of the analysis. Only on that condition is it necessary for B to increase its exports by offering to A more tempting terms of exchange, although these terms, for other reasons as just explained, move in favour of A. This assumption is, however, clearly contrary to the facts. The original change in the direction of demand will change the relative scarcity of A's and B's productive factors — each considered as one group — in favour of the former; thus the total buying power in A is increased and that of B reduced. It is an essential part of the interregional price mechanism that the total buying power in each region, and thus its demand curves, be altered; to overlook this is to ignore a most vital connection. This will be demonstrated in detail when we come to a closer study of capital movements and the monetary mechanism of other variations (Part V).

One aspect in this classical analysis of variations in demand has been frequently discussed. B's offering of its goods on cheaper terms — in order to balance its increased imports — may induce A to buy a greater quantity of them, but if the elasticity of demand is below unit the total value of B's export will not rise but fall. In that way no equilibrium of trade can be established. It has been asserted in favour of the classical theory that if all goods are taken together the demand for them cannot have so low an elasticity. That may or may not be so; but even if the elasticity were much less than unity, equilibrium would be restored through the influence on the quantity of commodities demanded, which comes from the increase in A's buying power and the reduction in B's.

§ 2. *The reactions of factor supply.* Above no attention has been given to the existence of economic friction, except so far as the economies of large-scale production are concerned; friction blurs the lines of the analysis and makes it necessary to consider the time needed for the transfer of productive factors from one

industry to another, and similar questions. Furthermore, the reaction of the supply of factors in each region has been ignored and a tacit assumption made that it is unaffected by the price alterations involved. On that condition, the enhanced demand cannot fail to raise the price of the goods and of the productive factors concerned. The general tendency is that greater quantities can only be obtained at increasing cost, — cost meaning the same as expenses of production in terms of money, — although this tendency may be more or less modified through the influence of the economies of large-scale production. In the course of a short period after the original change, however, that influence is probably not very great. The rule is certainly that increased demand in the beginning leads to higher prices.

As time goes on, the organisation of production for a larger output of the articles that have come into greater demand will tend to reduce expenses more or less. Of still more importance, however, is the fact that the supply of many productive factors will react to the stimulus of increased reward. Labour qualities which have received increased pay may appear in larger quantities and their price will tend to recede; on the other hand, it is not impossible that the supply of them may be reduced: a higher standard of living may make people less inclined to undertake hard and disagreeable work. In this "price sensitiveness" of the factor supply lies the chief difficulty of the problem. To handle it adequately in general terms is clearly impossible. It is necessary to take concrete cases and inquire, for example, how far economies of large-scale production and the increased supply of industrial agents will cause a tendency toward price reductions for the goods in great demand — a tendency in the reverse direction from that characteristic of the first stage described above.

Study of the reactions of the supply of productive agents thus becomes of paramount importance; it has been entirely neglected above, the assumption being that the basic conditions of pricing — equipment of productive factors, desires and wants in general, physical conditions of production, and ownership of the productive factors — do not react to the opening of trade or to its variations, caused by some special change in the basic elements, e. g. in

the demand for wood goods. In that case the main characteristics of trade are those that have been explained in these four chapters. As a matter of fact, not only the supply of factors but also the desires and wants are subject to change under the influence of trade and its fluctuations. The increase in population in various regions, to take only one example, has perhaps been more affected by trade than by any other single circumstance; and trade has been potent in creating a new demand for new goods. The effects of present trade and of variations in trade are felt in the whole economic life, and the forces which govern the supply of productive factors and the demand for various articles, i. e. the so-called basic elements, do not remain untouched by it. Their reaction is, of course, largely a question of time, as has already been pointed out on several occasions. Every analysis of trade effects must in this respect be a description of a time-using process. Examples will demonstrate this clearly when we come to the concrete cases of special types of regions, above all, different countries.

PART II

INTERNATIONAL TRADE SIMPLIFIED

CHAPTER V

INTERNATIONAL COMPARISONS OF PRODUCTIVE FACTORS

§ 1. *Introduction.* Part II contains an application and modification of the doctrine presented in Part I. As nations are certainly the most significant of all regions, so the theory of international trade represents the chief application of the general theory of interregional trade. For the most important border lines for the movements of the industrial agents are the national frontiers; and mobility *within* the various countries is no doubt considerably greater than international mobility. The reasoning in Part I must therefore be helpful in a study of trade between nations, which fulfill so well the conditions established for regions. It cannot, of course, be applied without important modifications, for it was built upon drastically simplified assumptions. Above all, the supply of productive factors is not given once for all, nor is it variable only under the influence of circumstances which have nothing to do with trade and pricing; on the contrary, the supply of such factors is often decisively affected by price variations. Various labour qualities, for instance, are trained only in so far as they are needed and *because* they are needed; in short the supply of industrial agents may sometimes more adequately be described as the *result* of trade than as its cause, although its being the outcome of an *earlier* economic situation does not prevent it from explaining and determining the nature of present trade. This elasticity of the supply of productive factors is considered in Chapter VII.

Another simple assumption in Part I, that the regional borders offer no obstacles to commodity movements but exclude interregional transfers of factors, will not be relinquished in favour of a more realistic conception until Part III. There the influence of frontiers on commodity movements will be considered, as well as

the international mobility of productive factors and its significance for international trade. Part II provides proof that many essential features of international trade may be explained before all this is done, and without any attention being paid to the costs of transport of commodities or to the international immobility of factors of production.

On the whole, as has been pointed out, Part II contains an application of the theory of interregional trade to a special case, where the regions are different countries. It gives most attention to the traits which are characteristic of conditions in such regions. However, it also introduces the modifications in factor supply mentioned above in a way which will be helpful should the theory of interregional trade be applied to other kinds of regions.

One aspect of international trade, which differs radically from trade of other types, is its monetary mechanism. Its working under varying monetary conditions presents a great many important problems, which have always attracted the interested attention of economists. For pedagogical reasons the study of these problems is put off until Part V, which, however, does not deal with problems of paper standards and violent monetary fluctuations. We have in mind a situation like that of pre-war days, when most countries had a gold standard and no violent variations in the general price levels occurred.

§ 2. *Different groups of labour.* Before proceeding to examine the reaction of productive facilities to price variations, it is necessary to form a more precise idea of the meaning of the concept "factor of production" than has been possible in Part I. The many different industrial agents can and should be grouped together in different ways for different purposes. In this book there is no emphasis even on the particular classical three-factor distinction, although the terms labour, land, and capital are often used. For some problems an entirely different distinction, related to the elasticity of the supply of the various productive implements, whether human or not, is more fruitful and practical. However, when no special reasons militate against it the three-factor division is used as a starting point.

Let us start with labour. It has so far been regarded as one

factor just like capital, whilst several types of land have been mentioned. There are cases where, as our examples show, no finer classification is necessary, at least so long as we are content with broad outlines of the nature of the interregional division of labour and trade. Yet it cannot be overlooked that the various groups of labour perform different tasks and receive unequal wages, and that the flow of individuals from one group to another is not free and easy. Should not such groups of labour be regarded as different factors of production? Has not the fact that some of them receive relatively much higher pay in one country than in another anything to do with the international division of labour? Undoubtedly. Countries with a large supply of labour with high technical skill will be able to produce many manufactured goods more cheaply than countries with a scanty supply of this labour quality. And a rich supply of individuals with a good general education who receive salaries not much higher than the wages of unskilled labour — whilst in other countries they may receive twice or three times as much — must make for superiority in industries requiring plenty of educated labour. In brief, if differences in wages between groups of workers in a country last for a sufficient period of time, and influence the nature of the international division of labour, then these groups may well be regarded as separate productive factors, just as are different qualities of land.

A fine distinction between a great number of labour groups, however, meets with the difficulty that transition is comparatively easy. Labourers belonging to one trade may leave it and go to another, without any preparatory training or after a short one, if the requirements for skill are moderate. Such movements are likely to follow should wages in one trade rise considerably above wages in others of the same general standard. Considerable wage differences between labourers of the same grade cannot last very long, unless some kind of monopolistic policy interferes; in other words, the groups are not entirely non-competing. This is true to some extent even when we consider groups of different general standards. Unskilled labour may become skilled, and skilled labour of one kind may — sometimes easily — acquire the

skill needed for a different sort of work and thus change over to another group. The supply of the various grades will consequently, within certain limits, be able to adjust itself to the demand; and the state of supply on a certain date is not of great significance, since it can readily be changed. It will not determine the localisation of industries, but will itself vary enough to adapt itself to the kind of production which other and more permanent elements call forth.

What division into separate labour factors is to be used must depend upon the nature of the special problem under discussion. When the development of production and the tendency of trade under a relatively short period of time are considered, the discrimination may be fine. The change in supply that can take place under a short period of time is relatively small, and need not impair the conclusions. On the other hand, a study of thoroughgoing changes in international trade and the conditions of production, i. e. of the fundamentally determining elements, can be based only on a broad division of labour into large groups. Although such groups do not form watertight compartments, the transitions from one to another will either be small or can be taken into special consideration.

In other words, the reason for making a distinction between various labour groups is that changes in their relative incomes may occur and last for a considerable time, thus influencing production and trade. The basis for drawing the border line between them must be the difficulty of transfer. If it is very easy to go from one trade to another, such trades should be regarded as falling within the same group, for no important variation in relative wages is likely to arise, or at least to last any length of time.

By factors of production we shall mean, in the following pages, so far as labour is concerned, a group that for some period of time varying with the nature of the analysis is fairly non-competing with other groups. Such flow between them as does occur will be taken into account as an important part of the reaction of supply, with which the analysis will later on be particularly concerned.

In most cases a broad division into three factors only will suffice: (1) "unskilled labour," (2) "skilled labour," and (3) "technical labour." The second group comprises mechanics, foremen, office clerks, etc., while the third represents the technical and administrative leadership required in production. For some industries female and child labour is of special importance; in a study of the localisation of such industries these two kinds of labour must be treated as separate factors. Countries with a rich and cheap supply of them will attract these industries, if the conditions of production are in other respects comparable to what they are elsewhere. "Being able to use in greater degree the labour of women and children, the silk industry has tended to move to the regions where such labour is easily got and the laws regulating it are loose or loosely enforced."[1]

In some cases, however, "unskilled labour" consists of two or more distinct groups, having different qualities and recognisable as separate factors of production. A typical example is that found in countries with a population composed of several races: South Africa, for instance, has a considerable number of both black and white unskilled workers, drawing extremely unequal wages. Here the qualitative difference is notorious, and as transition between the two groups is naturally excluded, they should be regarded as separate factors of production, although they do no doubt compete for certain types of work.

It is doubtful, however, how far white labour in South Africa should be called "unskilled." In such cases the difference in usefulness between white and black labour is in most occupations not exactly offset by the difference in wages; hence there is a tendency for the native labour to take over almost exclusively the unskilled work, while the white population concentrates on semi-skilled and skilled work. This seems to be happening in South Africa. "The field of unskilled work has passed entirely out of white hands, and the field of semi-skilled toil is passing. . . . The white man demands, indeed needs, a very much larger wage than the native African. . . . In periods of industrial depression the employers find it necessary to close down or to dilute their white

[1] Taussig, *Some Aspects of the Tariff Question* (Cambridge, 1915), p. 232.

labour with black. And wherever the economic pressure is acute, it is only a matter of time before the white man will be ousted." [1]

When this process has been completed, the difference between wages in the unskilled trades, which are practically reserved for native labour, and the skilled trades, in which native labour plays an insignificant part, will be much greater than in countries with a racially uniform population. This cannot but affect the localisation of production and international trade, making South Africa a suitable place for manufacturing industries which can use great quantities of low-grade unskilled labour. For instance, a part of the gold mining industry is largely dependent upon the supply of cheap native labour.

It is clearly necessary to regard black and white labour as separate factors of production; greater scarcity of black labour will — in the same way as greater scarcity of natural resources — react unfavourably on the wages of the white man. The two labour factors are more "coöperative" than "competitive." [2]

For the question under discussion, special importance must be attached to the closed-shop policy of trade unions. A few decades ago it was considered impossible for trade unions to establish sufficient obstacles to movements between unskilled trades to create and maintain for any length of time considerable wage differences. Later experiences have shown that this policy can succeed. Still more successful has the closed-shop policy proved to be in the case of skilled trades: first, transition from one to another is naturally difficult, since it often requires long time and special training; secondly, the trade unions are able to exercise a considerable influence on the influx of young labour into such trades, thus regulating the supply. The latter fact is of great significance, for variations in supply brought about by wage discrepancies do not always take the form of a real flow from one trade to another, but may consist simply of a tendency on the part of the rising

[1] *The Nation* (January 14, 1928).

[2] "At the same time they (the white trade unions) are well aware that the high wages which the skilled white workers in South Africa enjoy are built up on a substratum of cheap native labour, and that a considerable increase in native wages would almost certainly involve a decrease in the wages of the more highly paid white workers." *The Times*, December 16, 1927.

generation to turn especially to the favoured trades, the influx into the others declining. In fact, by restricting the free choice of occupation trade unions are often able to influence the supply of labour both in skilled and unskilled trades, and thus to affect the relative wage levels. These wage discrepancies may last long and affect noticeably the international division of labour.

Examples are not difficult to find. Strong trade unions have often been able to raise wages in prosperous industries much above the level for similar work in other industries; they do, in fact, sometimes succeed in expropriating a part of the business profit, though as a rule only after severe and costly industrial warfare. The result is that the development of the industry is much hampered, while it may expand or fail to decline in countries with less favourable productive facilities which pay only the standard wage for labour on this general level. The special increase of wages for this labour group in the first country has exactly the same effect on the localisation of industry as a scanty supply of labour in general in that country. In the last resort, the closed-shop policy is nothing but an attempt to create an artificial scarcity of labour for certain jobs. There seems to be little doubt that some Australian trade unions, e. g. the wool shearers, have forced their wage demands to such a height that the expansion of certain "natural" industries has been seriously retarded.

In some countries the trade unions have succeeded in forcing the wage level in manufacturing industries considerably above the level of agricultural wages. This cannot but check the tendency towards a development of manufactures and maintain a greater volume of production in agriculture; the supply of industrial workers is evidently restricted, and that of farm labourers increased. These two groups should in such a case be dealt with as separate factors of production. In one country the wage discrepancy is probably greater than in another, and this cannot fail to affect seriously the lines of economic development and the course of trade.

When important differences continuing over fairly long periods exist between various groups of unskilled labour it is evidently convenient and fruitful to regard them as separate "*sub-*

factors," although all are parts of the same factor — unskilled labour. Skilled labour should, whenever necessary, be treated in a similar manner. There are many sorts of skill, and a lasting scarcity of one sort relative to others may make it advantageous to regard them as separate sub-factors. Often a distinction between skilled labour in a narrow sense and so-called semi-skilled labour is of great importance.

In the case of technical labour it may also prove necessary — especially in investigations of developments during fairly short periods of time — to use many different sub-factors. Electrical engineers and ship builders cannot do the same work, nor can mechanical engineers and chemists. A scarcity of electrical engineers, for example, may hamper the development of a new electrical industry even in a country where the conditions of production for that industry are in other respects excellent, and in spite of a great supply of chemists.

In a discussion of the broad characteristics of international trade and its long-run tendencies, however, the influence of wage differences between labour groups on the same general level — e. g. mature unskilled men or engineers with a university training — may as a rule be ignored. The three labour factors mentioned above (unskilled, skilled, and technical) may suffice as well perhaps as any other broad division. But female and child labour must be taken into account in special cases, just as must the existence of various labour groups caused by trade union policy or other kinds of monopolistic regulation.

It is evident that no clear-cut lines can be drawn, and that, whatever border lines may be drawn, no factor is ever perfectly uniform throughout. "Unskilled labour" covers a great many different types receiving varying wages, although the differences are not always so substantial as to necessitate a subdivision into minor groups. At one time a certain trade may get a slightly higher pay than the others, while at another the situation may be the reverse. Variations in economic life occur all the time, and economic friction prevents a smooth and instantaneous adjustment. Industries in one part of a country may be more prosperous at present than those in other parts, hence able to pay higher

wages, and such wage discrepancies are reduced but slowly. It must then be kept in mind that no labour factor is perfectly uniform; yet in spite of all qualifications the distinction between various groups of labour is important. It seems best to recognise this clearly from the beginning.

§ 3. *Different natural resources.* We now turn to a brief discussion of the productive factors usually called by the common name "nature." They are, of course, to be treated as separate. No description is necessary to show that natural resources differ immensely in quality — in fact, they have hardly anything in common except all being gifts of nature. Although many of these differences are from an economic standpoint unimportant, a sufficient number of economically essential inequalities remain to necessitate a division of natural resources into a great number of factors. Such a procedure does not present the same kind of difficulties as the subdivision of labour into several separate factors; for while transition from one labour group to another is in many cases comparatively easy and materially affects the supply within each, such transition between the different factors of nature is possible only in rare cases by means of capital investment. Even when considering long periods of time, a fine division into an arbitrarily great number of factors is possible.

For some purposes, however, it is convenient to handle a more limited number of groups, each containing factors essentially similar, their inequalities being more or less completely disregarded, at least in a preliminary analysis.

This grouping of natural resources may, of course, be effected in more ways than one — e. g. on the basis of usefulness for the various economic purposes requiring their coöperation. It is not necessary to consider qualities so common that they are to be found almost anywhere, e. g. the fact that the surface of land is in most places level and firm enough for the building of houses. Such qualities need be considered only in special cases. A simple way of finding out which properties of nature are generally relevant is to examine them from the points of view of various industrial activities. Five classes readily present themselves: are the natural resources in a place or country more or less suited for

(1) agriculture and forest growing, (2) fishing and hunting, (3) the production of minerals, (4) the production of water-power, and (5) transport activities? The establishment of a small number of qualities from each of these points of view will give a bird's-eye view of the equipment of natural resources in different countries, and some idea of the division of production and trade between them. The grouping is not invalidated by the fact, for instance, that coal and water-power can replace each other. So can labour and nature to a large extent.

In almost all cases it is, however, of paramount importance to reckon with a much greater number of factors, if we would know anything of the conditions governing international trade. The possibilities of qualitative differences with respect to soil, climate, wind, humidity, surface, etc., are immense. It is practical, therefore, further to divide each factor into a number of sub-factors. They differ in many ways, but these differences are in some cases of little economic importance and may be disregarded; in others they are essential. Sometimes even the qualitative differences between natural resources belonging to the same sub-factor have to be taken into close account.

§ 4. *Different capital factors.* For purposes of comparison between different countries the capital available in each of them is expressed as a sum of money which represents the cost of reproducing the capital goods in existence, after deduction for depreciation and obsolescence. The price of the use of this capital during a period of time is the rate of interest.[1]

However, the rate of interest varies with the conditions of the loan transaction. A sum of capital may be available for the borrowers during longer or shorter periods — a fact that cannot but influence its employment. When available only for short periods its use is inevitably restricted; for the combination of a series of short-time loans cannot fully make up for the capital's being lent for only a brief space of time. The "waiting" done by the capitalist may be said to be of a different quality if he wants the right to stop it on short notice from what it is when he promises to

[1] The fact that many existing capital goods have a technical form which differs considerably from what is most economical at present will be considered later.

wait a certain definite period of time. His reward — the rate of interest for "short" capital — is as a rule different from the long-time rate of interest. In some respects this difference resembles the inequality between a home labourer and a factory labourer. The former is not unwilling to work in a factory, but he wants the right to use his own labour at home any time he pleases. This difference between "long" and "short" capital is of a permanent character, and in some cases must be recognised by their being treated as separate factors of production.

To avoid misunderstanding it should be added that the expression "mobility of capital" refers to abstract capital, not capital goods. The incomplete international mobility of capital is due to the preference of capitalists for home investments and not to the difficulty in moving capital goods, taken care of in the analysis of the incomplete mobility of commodities. However, an upper limit to the *net* movement of capital from one country is set by the domestic supply of liquid capital, which comes from new savings and from the gradual making free of savings that were invested in capital goods during earlier periods.

These brief indications of the meaning of the term "factor of production" with regard to labour, land, and capital must suffice. It is unfortunate from the point of view of an analysis of inter-regional and international trade that the one-market theory of the Walràs-Cassel type has given so little attention to the question of defining and limiting the various productive factors, and thus leaves no recognised conclusions upon which the present many-market theory may build. That is the justification for the foregoing remarks.

§ 5. *The risk element.* Before proceeding to the subject with which this chapter is mainly concerned — international comparisons of productive factors — it is necessary to say a few words about another condition of industrial activity. Such activity is always built more or less on anticipations of future events, and is therefore inseparably bound up with *risk*: it assumes that there is somebody who is willing to undertake that risk. For that reason risk-bearing has sometimes been regarded as a separate factor of production.

Such a view is, however, rather misleading. Risk-bearing is not a special sort of economic activity, but a special side of all economic activities. Life itself is a risky business; the man who educates himself for a certain task, calculating that the demand for his services later on will be sufficient to ensure him a fair income, is undertaking much the same risks as the capitalist who buys a certain machine for the production of a commodity which he hopes to sell at remunerative prices.

The greater or less willingness of the people to undertake such risks will necessarily affect the supply prices of the various labour qualities, as well as the rate of interest on capital placed in more or less risky investments. Thus, if two occupations require the same qualities, but the reward in one is uncertain, with a chance of great prizes, while it is almost certain that the other one will give a fair income, the psychology of the population will determine whether the average pay in the former will be lower or higher than in the latter. One might well speak of two different labour qualities, for the tasks they fulfil are far from identical.

In the same way, capital available for risky undertakings is rendering a different service than capital for safe investments only, and may with advantage be treated as a separate factor. The distinction is similar to that between "long" and "short" capital. It seems not at all unlikely that the comparatively slow economic development in France before the War had something to do with the French capitalists' preference for safe investments, such as the Russian state bonds, ironical as such a statement may seem in the light of subsequent experience.

§ 6. *International comparisons of unskilled labour.* We now turn to the question of international comparisons of industrial agents, as defined in the foregoing section. It goes without saying that the thousand and one qualitative differences make such comparisons extremely difficult. One of the principal advantages of the method here adopted is that these difficulties come to the fore and must be faced at the outset. This may seem to make the doctrine more complicated, but it is certainly conducive to greater clarity in the long run; for an apparent simplicity which is gained

at the expense of ignoring fundamental aspects of the problem must ultimately prove a disadvantage.

Let us begin with labour. Is unskilled labour in one country the same as unskilled labour in others? Or, are there qualitative differences of importance? The answer to the latter question is of course in the affirmative. To demonstrate this more fully a somewhat detailed discussion is necessary. The unskilled work in different countries is carried out by many different kinds of people, varying widely in usefulness; a Javanese cannot render the same service as a Dutch worker, and a Russian is not so useful as an American. Even unskilled labour calls for a combination of qualities rarer among some peoples than among others. Some degree of reliability, honesty, discipline, general education, and other attributes are required by every man in modern factories, as well as in production outside of factories; deficiencies in one or several respects are reflected in lower productiveness.

The requirements vary, of course, from one occupation to another. For that reason native labour in the colonies may do better than the white population, when it comes to manual work in a warm and moist climate, while white labour is as a rule more efficient in almost all work in a suitable climate. The superiority is greater in occupations calling for exactly the qualities rare among natives, and smaller in trades where these qualities do not count for so much. All this is too well-known and self-evident to require elaboration here; it seems obvious that individuals belonging to different races must be regarded as different productive factors, if their usefulness is very unequal. That inequalities in climate, standard of living, and general education lead to differences in the usefulness of workers from different countries, but belonging to the same race, is equally obvious and need not be dwelt upon here.

There are, however, international differences in the "efficiency" of unskilled labour (among them some which have been much discussed) of which it is difficult to say whether they should be attributed to differences in its quality or to a greater supply of co-operating factors. An American worker in a cotton mill produces more than an English worker, at least in the lower grades of

goods; the superiority of the English over the Italian is perhaps still greater. But an Italian immigrant in the United States will, after adapting himself to the new conditions, produce more than the English worker in an English mill and probably as much as his English and American fellow workers in the American mill. To account for this by a change in his qualities does not seem practical; a much better way is to classify all individuals as belonging to the same labour group, if under similar conditions as regards machinery and organisation they are found to be fairly equal in efficiency, disregarding of course minor individual differences. This can probably be said of Italian, English, and American workmen, provided they live at a certain standard and have received a similar education.

The United States Tariff Commission states that the higher efficiency of American labour in cotton weaving is a matter, not of individual superiority on the part of the American weaver, but of difference in industrial policy. It is natural, therefore, to regard unskilled labour in Italy, Great Britain, and the United States as one and the same productive factor, notwithstanding inequalities in productivity arising from differences in the technical milieu. The output per head will be greater in a country like the United States, where comparatively large quantities of skilled labour, technical labour, and capital coöperate with each unskilled worker, and where production can be organised on a large-scale basis.

Clearly, then, the qualitative differences are not so numerous and important as they look at first sight. But enough of them exist to make it necessary to deal with unskilled labourers of widely different capacity as separate factors of production. "Unskilled labour" in most cases becomes a group of related factors, Chinese, Europeans, etc. Furthermore, even labourers belonging to the same factor show inequalities of great influence on trade, at least when they live at a very different standard. Compare, e. g., Swedes and Estonians, Englishmen and Italians. They may properly be regarded as different sub-factors. When dealing with some problems, e. g. Europe's trade with other parts of the world, it is not necessary to keep them apart to arrive at rough

conclusions. But for the foreign trade of the Baltic countries the fact that unskilled labour there is not the same as labour in the older manufacturing nations is of paramount importance.

In an analysis of present trade it is not worth while to ponder to what extent observed inequalities in ability are due to racial elements and to what extent they can be mitigated, for instance, through training and a higher standard of living in the backward countries.[1] It suffices to know that these differences exist for a period of time amply sufficient to influence radically the location of industries and the course of international trade. But, in a survey of a historical development and surmises as to future tendencies the degree of permanence of these differences is of course the most important thing of all.

However, unless the number of sub-factors is made very great, which would not be practical, some inequality in usefulness will exist even between labourers belonging to the same sub-factor. There are differences in mentality and outlook between Swedes and Danes which influence the organisation of industry and the course of international trade. The genius for coöperation demonstrated by the Danish farmer has been a potent factor in making Danish agriculture rather different even from agriculture in southern Sweden, where almost the same natural resources are found. In general, it should be observed that social institutions — large or small holdings, tenants or independent farmers, piece-rate or time-rate in manufacturing industries — exercise considerable influence on the capacity for producing various commodities. Such phenomena can be regarded either as aspects of the different quality of the various grades of labour in different countries or as differences in the "social conditions of production."

Another example is seen in the differences between English and French labour, which are often said to explain the export from France of articles of luxury requiring a certain taste and handicraft on the part not only of the technical labour but also of the unskilled and semi-skilled workers.

In studies of concrete problems of international trade it is convenient at first to consider only a limited number of labour fac-

[1] Cf. Taussig, *Some Aspects of the Tariff Problem* (Cambridge, 1915), pp. 194–196.

tors, ignoring inequalities between sub-factors such as Estonian and Swedish labour. The next step is to take into account the existence of such sub-factors, and finally to analyse national differences in aptitude for varying tasks which are to be found even among labourers belonging to the same sub-factor. It is only natural that the greater the accuracy and completeness demanded, the more complicated becomes the description. For that reason there are many advantages, at least of a pedagogical nature, in ignoring at the start certain minor circumstances, in this case the qualitative differences between closely related nations.

In principle, however, these differences add no difficulties to the task of giving a bird's-eye view of the system of mutual equilibrium which underlies the forces governing international trade. Different factors and sub-factors are each given a symbol in the system of equations; the fact that Danish and Swedish labour, although denoted by the same symbol, are not of exactly identical quality, can be taken into account through the use of different technical coefficients. Even if the relative prices of all factors in the two countries were the same, the combination of them in production would differ; consequently, the technical coefficients cannot in all countries be expressed as the *same* functions of the relative factor prices. On the contrary, the differences in quality as well as the differences in the social conditions of production, by influencing the selection of the most economical technique, affect also the forms of functions and the costs of production in each country.[1]

The forms of functions are known data of the problem; they hold the same position as the group of data called "the physical conditions of production." Consequently, the bird's-eye view of the price mechanism remains clear and simple, in spite of this new element.[2] It is only when a more concrete description is to be given that the whole relationship seems more complicated. For it is necessary to describe, not only demand conditions and the

[1] The consequences for international trade are discussed in the next chapter.

[2] The remarks above suffice to indicate the changes in Appendix I that are called for. Concerning the whole subject of Chapter V see Appendix I, § 4.

greater or smaller supply of industrial agents of fairly similar qualities, but also many minor differences in quality.

Only by taking all these elements into account can a correct picture of the international distribution of production be presented.

Yet certain differences in the equipment of productive facilities may be so dominating — and therefore certain to express themselves in a definite way in prices — that significant conclusions concerning international trade can be drawn from a brief comparison of the factor supply in various countries, even if this be made in simple terms and without consideration of all qualitative inequalities. Italy has a relatively greater supply of labour and a smaller supply of natural resources than Australia. This statement is not invalidated by the fact that labour in Italy and in Australia is not quite the same.

It cannot, however, be stressed too often that there is no simple and exact *a priori* description of the conditions of production and demand that will lead to a certain trade; or of the nature of trade called forth by certain of such conditions. As indicated in Part I several qualifications must be added to any simple description of the essential relationship between the play of domestic and foreign demand and the basic conditions of production.

We have now seen that not even the conditions of production, i. e. the supply of industrial agents, can be described in elementary terms. As already pointed out, a simple description cannot give an adequate account of a complicated world.

§ 7. *International comparisons of other labour qualities.* After this somewhat extended discussion of international comparisons of unskilled labour, we may deal more briefly with the other groups of productive factors. The difficulties in making such comparisons are similar, and the method of presenting them is consequently more or less the same.

Skilled workers in the United States and Germany, in Italy and Russia, do not perform the same tasks. One reason is that they are different, but a still greater influence is the variation in production organisation, due to differences in equipment of other factors and in the size of the home market. Although the quali-

tative differences between skilled labour in various countries are important, they are probably not enough so to make it disadvantageous — as a first simplifying assumption — to regard such labour as being everywhere the same factor.

All backward countries have some kind of unskilled labour, often different from unskilled labour in the leading manufacturing nations. If they have no supply of workers corresponding fairly well to skilled workers in the latter nations, we regard them as being devoid of this productive factor; hence skilled labour does not include such international inequalities as does unskilled labour. Whereas various sorts of unskilled workers must be regarded as separate factors, skilled labour can therefore be dealt with as one.

It goes without saying that skilled labour must be divided into a number of sub-factors, and that this circumstance must sometimes be given much attention. But it should be emphasized that the differences between such sub-factors — e. g. Italian and American skilled workers — are less than they seem at first, because they are in different technical milieus. When moved to places with similar industrial conditions the usefulness of such workers varies surprisingly little.

Higher grades of labour — called "technical labour" above — may be similarly dealt with. Although it is obvious that their qualitative differences are more numerous and important than those of skilled labour, it is true of technical labour also that the differences are less than they seem. The efficient organisation of production in the United States is probably due only to a small extent to its technical labour being different from that of Europe. Engineers emigrating from Europe are able to do exactly what American engineers do; at home, they seldom get a chance to organise production on a large-scale basis.

The fact that the supply of technical labour in Germany has been more abundant and relatively cheaper than in the United States, has been one of the most powerful factors which gave the German chemical industry a marked superiority before the War. Such a statement conveys a definite impression even though the qualitative differences are not touched upon.

As a rule, however, greater accuracy of statement is required. One must take into account that technical labour is trained for many different things. Electrical engineers cannot easily do the work of mechanical engineers, and vice versa. They are therefore best dealt with as separate sub-factors, except in a very general analysis. In international comparisons of the productive facilities for various industries, it is often important to note that one country has a greater supply of certain types of engineers, while another country has more of another sort. Such differences may be only temporary, but they exercise an influence similar to that of the non-competing groups of unskilled labour and cannot be wholly neglected (compare Chapter VII).

Great attention must also be given to those qualitative differences which cannot well be described in terms of even a great number of various sub-factors. Electrical engineers with fairly equal education and training in Germany and the United States are best dealt with as the same sub-factor; yet their qualities may differ in important respects. Technical processes and the whole organisation of production are thus affected, as are the costs of production of commodities and international trade.

This circumstance affects the nature of the mutual interdependence system of pricing in the same way as the qualitative differences of other factors, touched upon above. The technical coefficients in each country are not determined exclusively by the relative prices of the factors and sub-factors, but also by differences in quality; consequently these coefficients may be expressed as functions of the relative factors prices only if the forms of these functions in the various countries differ so as to take in the inequalities between workers (whether they be more or less skilled) who are treated as being the same sub-factor.[1]

Among elements in the quality of technical labour that play an important rôle three deserve special notice: capacity for organisation, inventive ability, and power of initiative. The development of the Russian manufacturing industries before the War seemed to be singularly dependent upon assistance from foreign engineers and business men, a fact that has been explained

[1] For the consequences of these differences see the next chapter.

as due to a lack of talent for organisation on the part of the Russian people. Nations vary much in inventive ability; the high development of manufacturing industries in certain countries is due to no small extent to this fact. An investigation into the Swedish export of machinery makes it clear that the industry is built almost wholly upon a series of inventions, which largely explains the existence in a small country without coal of large factories for ball-bearings, telephones, separators, turbines, lighthouse lights, etc. High-grade Swedish ores are exported freely and are available to foreign countries on equal terms with Swedish firms, and consequently play only a small part in the growth of the machine industry.

It is sometimes said that there are various sorts of inventive ability, and that Germany has more of one, the United States more of another; Germans are held to possess a natural bent for methodical painstaking research, and Americans distinct talent for new ideas. Whether that is so is hard to say; certain it is that whatever inventive ability a country possesses is usually turned to account in industries that are for some other reason already in existence. The result is that technical processes in those industries are improved; this tends to strengthen the other forces governing the international division of production, rather than to turn production into new channels. It is an example of the advantages of specialisation described in Chapter III.

Ability to take the initiative, to do new things, is in some ways allied to inventive talent; like the latter, it is more marked in some countries than in others, not only in the case of technical labour but in the lower grades as well. In a dynamic world it is a most valuable quality, which may powerfully affect the localisation of new industries and the trade between nations.

§ 8. *Comparisons of capital factors and natural resources.* International comparisons of capital equipment present difficulties like those of comparisons of labour factors. In a previous section it was pointed out that for some purposes capital may be regarded as a factor of production, being everywhere of identical quality, while for others it must be divided into several subfactors, e. g. "long" and "short" capital. Each of these species

can further be divided into capital for "safe" and capital for "risky" investments. Although naturally no sharp limits exist between such sub-factors, it is important to note that the relation between their prices affects the localisation of industry.

International comparisons of the equipment of industrial agents in various countries by means of these concepts are simple enough. The terms "capital," "long," "short," and "risk" have a universal meaning. Comparing France, Great Britain, and the United States before the War, for instance, we may say that France had a relatively greater supply of "safe" capital than Great Britain, and that the latter country had relatively more of it than the United States. France had little capital for risky enterprises, while in Great Britain a more substantial part of the total capital was so invested — far less, however, than the corresponding share of American capital. This state of things considerably affected the economic development of these nations, and the character of pre-war international capital movements was almost dominated by it.

Greater difficulties arise from the fact that capital takes the form — for a certain period of time — of special capital goods. In the long run it can be made free and acquire new forms, but the period that elapses before that is possible may be considerable, and may influence the international division of production and international trade.

In comparing the productive equipment in various countries one must give much attention not only to the quantity of capital but also to the technical form of the capital goods. To describe this situation in a country or to summarise the differences between countries in simple terms is clearly impossible: the inequalities are too numerous, and of widely different character.

One possible method would be to treat capital goods in the same way as natural resources, although the division into a number of separate factors and sub-factors would refer only to a definite period of time. Such a procedure thus resembles that used in treating allied labour groups between which transition is possible but slow. This method would, however, prove unnecessarily complicated; a country can always establish factories containing

capital goods according to the most economical technique. Its ability to "compete" with other countries is determined by the costs of these goods and the current rate of interest, not by the costs of capital goods of an unsuitable kind, e. g. old machinery. These have only the value they can earn in competition with new machinery. Consequently, contrary to the business man's impression, factories with old equipment, if they have any value at all, can produce as cheaply as can those with new equipment.

Thus, the fact that at a certain time some capital goods have an unsuitable technical form can hardly make a country *less* suited for production of the commodities in question than the height of the current rate of interest would imply.

It is possible, however, that new factories using capital goods of the most economical type are not remunerative in this country, whereas old factories are able to get somewhat more than their variable costs covered so long as their old buildings and machines are not worn out. Thus, for a time a country may have a *greater* competitive power in some industries than the height of the rate of interest and the prices of other factors would seem to indicate. This fact should be considered a modification of the theory which has been built upon an assumption of only one or two capital factors.

Striking illustrations of this kind are not difficult to find. The spinning of coarse cotton yarns in Great Britain has no doubt been kept on a higher level since the War through the existence of large plants with incomplete utilisation of capacity than would have been practicable had these plants not been constructed before or during the War in anticipation of a growing market.

Coming now to international comparisons of natural resources, we find difficulties similar to those encountered in the case of unskilled labour. This is not surprising, for is not such labour from one point of view a part of nature? The best method of comparison is to adopt a similar procedure, grouping the natural resources into a number of factors, each comprising some sub-factors.

§ 9. *International differences in the stability of productive conditions and risks.* Before concluding these remarks upon inter-

national comparison of the conditions of production, a few words more should be said about the influence of risk. These conditions may vary not only in respect of the supply of capital and labour available for more or less risky enterprises, but in respect of the risk a certain enterprise involves. The same type of production may mean a much greater risk in one country than in another; unforeseen losses and the *need* of risk-bearing may vary, even though the character of production in other respects is uniform.

The more stable the conditions, the more easily all significant changes may be anticipated, the lower will be the losses, *ceteris paribus*. In some countries the dangers of destructive frosts, plant diseases, floods, etc., increase the losses involved in agriculture, while manufacturing industries are less affected. The effect is naturally to discourage agriculture in comparison with other industries.

Frequent revolutionary upheavals exercise a similar effect, but in the opposite direction. They often cause the loss of such capital as buildings and machines, established markets, etc., and are therefore a greater burden on manufacturing industries than on agriculture. This fact has some connection with the slow expansion of manufacturing industries in South American countries.

Fraudulent and inefficient government, partial or powerless courts, low business morals, and many other factors, also increase the losses involved in carrying on business in a country. The danger of war and consequent interruptions of normal economic activity and loss of property is perhaps the best example of such influences. First-class foreign firms in the Baltic countries in 1926 were paying 15 to 18 percent interest on English credits invested in those countries, while the same firms could borrow English capital at 6 percent or less for investment in Scandinavia. The difference — a "premium" of 9 to 12 percent — was required chiefly to cover the risk of a war with Russia.

It is true that many such risk elements have something to do with the qualities of the natural resources and the population. Land under rapidly shifting climatic conditions is more uncertain in yield than land of equal fertility in all other respects, but in a more equable climate. A detailed description of the

various qualities of productive factors therefore takes account of the fact that the use of some of them leads to sudden losses and that they can be combined only with capital and labour of the risk-bearing type. Similarly, bad government and a danger of revolutions and war are "social" conditions of production which affect the cost computations and create a need of risk-bearing.

Nevertheless it seems best to regard *this variability of the productive conditions*, i. e. the absence of stability, as a special aspect of the equipment of productive factors and the social conditions of production at a given moment.[1] In any case, whether dealt with in one way or the other, the losses owing to instability and difficulties of making correct forecasts vary internationally, and must be considered in a study of international trade.

[1] The modifications of the analysis in Part I which this fact makes necessary are dealt with in the next chapter. Naturally differences in the social conditions of production can be regarded either as causes of differences in the forms of the functions which govern the technical coefficients or as cost elements of a special sort which have to be added to the costs for the use of certain quantities of industrial agents in the cost accounts of the various goods. See Appendix I.

CHAPTER VI

SOME FUNDAMENTALS OF INTERNATIONAL TRADE

§ 1. *Summary of some conclusions in Part I.* This chapter will be mainly concerned with a restatement and modification of the conclusions in Part I concerning the nature and effect of inter-regional trade. Simple reasoning must be abandoned in favour of a more complicated analysis on the basis of the results arrived at in the previous chapter concerning the meaning of the term "factor of production," and the possibilities of comparing the productive equipment in various countries.

First of all, it should never be left out of sight that the most exact description of trade — whether between countries or other sorts of regions — is obtained through an analysis of a mutual-interdependence system of pricing, which takes account of the existence of several markets for the productive factors. Inter-regional trade assumes that relative costs of production and prices would vary in different regions without trade, i. e. it assumes a different relation between the supply of factors and the demand for goods in each country. Differences in relative costs of production in an isolated state will express themselves in price differences after the opening of trade of such a nature that some goods become cheaper in each region than abroad (prices being expressed in terms of one currency by means of the foreign exchanges).

To give a more concrete meaning to the condition that different relations between the factor supply and the consumers' demand in the isolated state are necessary, attention was directed in Part I to the relative prices of productive factors. We reached the conclusion that inequality in the prices of factors in the isolated state is sufficient to cause different commodity prices and thus to cause trade. This condition is fulfilled when the equipment of productive factors is distinctly different in various regions, for it is practically inconceivable that a corresponding difference in the

consumers' demand, being indirectly a demand for factors of production, should exactly offset the difference in factor supply.

Roughly speaking, abundant industrial agents are relatively cheap, scanty agents relatively dear, in each region. Commodities requiring for their production much of the former and little of the latter are exported in exchange for goods that call for factors in the opposite proportions. Thus, indirectly, factors in abundant supply are exported and factors in scanty supply are imported.

This is, however, only one aspect of interregional trade. The economies of large-scale production also cause an interregional division of production; furthermore, they must be considered even in the study of trade due to different equipment of productive factors. The proportions in which the factors are used in the production of a commodity depends not only upon their prices but also upon the quantity to be produced. Consequently, different technical combinations may be used at the same time in different countries to produce the same commodity.

Such were the conclusions as to the character of trade arrived at in Part I. To what extent must they be modified and further qualified?

§ 2. *The influence of qualitative differences within the same sub-factor.* The fact that the number of productive factors is large and that yet some of them in many cases must be divided into several sub-factors is easily taken into account within the scope of the previous reasoning. For although the factors actually mentioned in Part I were comparatively few, the reasoning is in no way dependent upon there being only a small number of them. Weight is, however, lent to the qualifications, mentioned in Chapter I, which are necessary whenever it is said that abundantly available and cheap factors are exported. Knowledge of the equipment of factors is not sufficient to permit the formation of an opinion as to whether one of them is relatively abundant or not, i. e. whether it would be relatively cheaper than most other factors in the same country compared with factor prices in some other countries in an isolated state. Conditions of demand exercise their influence.

In this connection one fact deserves special notice. Many factors and particularly sub-factors perform the same or a similar

task: they are more "competitive" than "coöperative." Such is the case with various qualities of nature, e. g. lands of different fertility for wheat growing. Wheat land in general may be abundant in a country, even though there is a very small amount of some qualities of it. In such a case, the prices of these scantily existing qualities — which are dealt with as separate sub-factors — will be *low*. Consequently, when considering the supply of a sub-factor one must often take into account the supply of *other* sub-factors as well, to almost the same degree as the supply of the first one.[1] For its price is almost as much affected by their supply as by its own. Thus, in a certain sense none of these sub-factors is scantily supplied. The scantiness or abundance of supply is an economic concept.

This is, of course, only one special expression of the fact that the supply of one productive factor must be seen in its relation to the supply of the others and to the demand for the commodities to be produced, if one is to judge of the factor prices, and indirectly of commodity prices and the nature of international trade.

More serious qualifications are called for because of the more or less significant qualitative differences between productive elements treated as identical sub-factors.[2] In general this means that the reasoning and conclusions can make no such claim to precision as the wording in Part I seemed to imply. Costs of production in each country are not determined exclusively by the prices of the factors of production, but also by the qualitative differences. This was pointed out in the preceding chapter; hence the relation between commodity prices and factor prices is not everywhere of the same nature, even if the same factors be employed (i. e. the *forms* of the functions, expressing that relation, are *not* identical). In one country the combination of factors may differ from what it would be in other countries, even if relative factor prices were identical. For instance, labour in Sweden and Denmark is not quite equal in usefulness in all industries, and production is arranged with due regard to this fact; hence Danish

[1] For further discussion of such cases see § 5, below.
[2] Similar difficulties arise for the one-market theory.

and Swedish farming are differently organised — a fact which exercises a far-reaching influence on the trade of these countries.

In most cases the qualitative differences are a minor element. We can say that Australia has a greater supply of land and less capital and labour than England, without bothering much about the considerable differences in the quality of the land. That is an extreme case, it is true; but at least when a fine distinction in a number of factors and sub-factors has been made, the qualitative differences may for most purposes be wholly ignored or considered afterwards as a slight modification.

A comparison between wages of mature male and female factory workers in various countries may show differences so important as to overshadow minor variations in usefulness for special purposes; so an essential part of the explanation of why industries requiring much female labour are primarily located in certain countries may be given in terms of relative wages.

One may object that in other cases the qualitative difference is the deciding element. A few engineers in one country may have a special knowledge of a particular technical process — or may have patent rights to its exclusive use — and may for that reason, or chiefly for it, be able to produce more cheaply than other countries. In such cases it is no doubt best to regard the different kinds of technical service rendered as an expression of a qualitative difference between the engineers of such importance that they are to be treated as separate sub-factors. Indeed, the principle underlying the grouping of various industrial elements into factors and sub-factors is that a "factor" shall comprise elements that are fairly similar and a sub-factor elements that are similar in practically all economically relevant respects. It follows *ex definitione* that qualitative differences between elements belonging to the same sub-factor are of only minor importance.

§ 3. *Qualitative differences of commodities and services.* This chapter deals with modifications and amplifications of the previous reasoning. In § 2 account has been taken of the international differences in the qualities of productive factors, and the consequent impossibility of making a clear-cut, simple analysis sufficiently realistic. It may be practicable in this connection to

touch upon the influence of the varying qualities of the commodities traded.

The case of commodities is indeed parallel to that of factors of production. Just as unskilled labour in different countries is seldom of identical quality, so articles produced in different places show more or less significant inequalities. In fact, competing firms — whether in the same or different countries — rarely produce absolutely identical articles. In many cases the differences are so slight as to exercise little or no influence on trade; in others they are of considerable importance.

English and Czek boots for ordinary wear cannot be called identical; nor can one say that the former are "worth," for example, 10 percent more than the latter. If their price is 10 percent higher, a certain number of people will prefer the one kind and the rest the other. If the price difference increases to 20 percent some people will still continue to buy English boots; if it disappears others will still buy Czek ones. Sales will no doubt be affected by price changes, but only to a certain extent and after a certain time. To each price variation between the two kinds of product there corresponds a certain division of sales.

It has hitherto been assumed that a country will export things it can make cheaper than other countries and import the rest. That statement clearly assumes that the goods are identical in quality; as soon as this condition changes the relationship between prices and international trade becomes more complicated.

Similar examples are numerous: motor cars, cotton cloth, tea, even goods of standardised quality like wheat and iron, exhibit many differences important enough to affect international trade: English pig-iron is not quite the same as German; wheat from the United States and from Argentina, still more American and Egyptian cotton, differ widely.

There is no other way than to treat all these as different commodities. One might perhaps call the various qualities "sub-commodities" to indicate that they belong to the same class. Two types of wheat are more similar than wheat and rye, and compete more closely for the consumers' demand. Although their relative prices on a certain market may vary, there are as a rule

narrow limits for such variations, limits that do not exist for the relative prices of completely different goods.

According to customs statistics in many countries the same sort of commodity is both imported and exported. This is partly due to the costs of transport, about which more will be said later; to some extent it is to be explained simply by the fact that the imported and exported commodities are of different qualities. Before the war Denmark imported butter from Siberia and exported Danish butter to Great Britain; anyone who has tasted them knows the difference. A study of international trade statistics will reveal many similar cases.

To understand the conditions of competition in international trade, then, we must often regard articles produced in different countries as different commodities: they are closely related because able to satisfy similar wants. In other cases the qualitative differences are so slight that they are best disregarded at the beginning of an analysis; later a modification to include them may easily be made.

§ 4. *Qualifications of the statement that trade tends to equalise factor prices.* Having now dealt briefly with some qualifications to the reasoning in Part I concerning the nature of international trade, we turn to a description of its *effects*. The most general and exact description is obtained, as has been stated, by comparing the price systems in isolated countries with the price mechanisms in a number of trading countries. Such a comparison will show the price changes brought about by trade; they consist of equalisation of commodity prices and a tendency towards equalisation of the prices of productive factors. If we compare with the isolated state, we must speak of an equalisation of their *relative* prices, for no rate of exchange between the currencies can exist without trade, and the absolute prices in one country cannot be compared with the prices in another. Having in mind the situation when trade and an exchange rate have been established, we may say that each *part* of trade tends to equalise prices in terms of money, i. e. tends to reduce international price differences. Goods containing a large proportion of relatively abundant and cheap factors are exported, and thus

these factors become more scarce, whereas goods containing a large proportion of scantily supplied and expensive factors are imported and the latter become less scarce. Trade consequently acts as a substitute for the movements of productive factors and reduces the disadvantages arising from their immobility. The possibilities of producing on a larger scale reduce the disadvantages of their imperfect divisibility.

It will be seen that these conclusions hold good, with some important modifications, under the circumstances mentioned in the previous chapter. Does the fact that the productive factors are *numerous* complicate the question? The tendency towards an equalisation of their relative prices is most obvious when only two factors exist; when their number is great, the effect upon some of them may be the reverse. It is conceivable that a scantily supplied factor, relatively dear in the isolated state, should be used chiefly in the production of goods which for the rest require large amounts of factors that are abundant and cheap. This cheapness may more than offset the high price of the first-mentioned factor, and the commodity may therefore be exported. Trade consequently means increased scarcity of the expensive factor.

Such cases are certainly the exception. Most factors are used in a large number of goods, and trade in most of them will have the normal effect upon scarcity. For it is almost impossible that all goods into which the factor in question enters should otherwise chiefly require factors exceptionally cheap; and if that were so, the tendency towards price equalisation for these factors would be strong. There can be little doubt that the general tendency is to effect the price equalisation described in Chapter II.

Closer consideration must be given to the influence of the fact that the qualities of the productive factors and of the various commodities differ, even when they are treated as being the same factor or sub-factor or as the same commodity. This somewhat beclouds the statement that trade has a tendency towards international price equalisation.[1]

[1] A similar lack of precision is to be found in almost all parts of the central economic theory, e. g. the law of variable proportions, the principles of overhead costs, and the analysis of price level variations.

If an article can be more cheaply produced in one country than in others, with the use of a similar technical process, i. e. similar productive factors, then clearly some factors must be cheaper there than abroad. But what does it mean to say that some of them are cheaper, when their quality in different countries is not identical? There is, of course, no other way than to compare their prices with due regard to their quality and usefulness. As differences in this respect depend upon the conditions under which the factors are used, and these conditions are not the same everywhere, the comparison lacks a firm basis. In many cases, however, fairly narrow limits for the difference in usefulness may be drawn. A factor in one country may be from 10 to 20 percent more useful than the same factor of a slightly different quality in another country, the exact figure depending upon the conditions of production, but, under circumstances not widely different from those now existing in the two countries, within the limits set by these figures. If the better factor costs 40 percent more, we may say that with due regard to quality the country with the least efficient kind has the cheapest supply of this factor.

Unskilled labourers in Estonia receive about one third the wages of Swedish workers. Their lower standard of living and deficient education make them less useful, but, under the conditions of production prevailing in most industries, and likely to prevail, the difference in usefulness will not be so great as to invalidate the relative cheapness of unskilled labour in Estonia. A Swedish newspaper machine in an Estonian mill, for instance, — the most up-to-date in the country, — was attended by nine operatives in 1926, whereas the normal number in Sweden for a similar machine was five. If we conclude from this that five Swedes render the same service as nine Estonians in this industry we are almost certainly exaggerating the differences in usefulness, for it is probable that the technical management is better in Sweden and that this accounts partly for the different number of operatives.

Similarly, although the quality of Danish and German workers in the machine industry is not equal, it is certain that the Danish superiority, which does undoubtedly exist in some branches as a

result of better education and a higher standard of living, is too insignificant to offset the great difference in wages. Thus skilled labour of this sort is cheaper in Germany than in Denmark; this is one reason why the German exportation of machinery to Denmark is important, while the latter exports nothing but a few specialties; the demand for machine workers is increased in Germany and reduced in Denmark. This may well be described as a tendency to price equalisation of the productive factors.

§ 5. *Further qualifications.* The case is much the same if the qualitative differences of the factors in a certain industry in various countries are so great that one must speak of them as sub-factors. In order not to make the analysis unnecessarily complicated, we revert to an old postulate: that there are two countries only.

Assume first that certain sub-factors are used in country A and others in country B to produce the same or closely similar commodities. Two qualities of land may be so different that they are best dealt with as different sub-factors, although both are used for the growing of wheat. Country A has much land of quality q and a little of quality k, whereas country B has little of the former and much of the latter — which under the circumstances in the two countries is less valuable. If only k were considered, then we must say that B has much the greater supply of it. But if we consider both qualities together — wheat land as a whole — then A is clearly better endowed. For that reason the land k — and naturally q — is relatively cheaper in the isolated state in A than in B, in spite of the larger supply of the former factor in the latter country. Furthermore, A will be able to produce wheat more cheaply than B, *ceteris paribus*, and export it to the latter country. The price of both qualities of land is increased in A and reduced in B. This may be called a tendency towards equalisation. Clearly the supply of good and poor land must be considered together if we are to form an opinion of the "natural" course of trade. This is evidently due to the fact already mentioned, that many sub-factors are competitive to a very high degree, i. e. they may readily serve as substitutes for each other in the production of commodities of equal or similar quality.

The condition is essentially the same from an economic point of view, if the competitive character of the various sub-factors arises from the fact that they produce, not goods of a similar quality but goods that serve as substitutes for each other in consumption. Assume the country *A* in the isolated state to grow, not wheat but rye on its poor land. The consumption and cultivation of rye is given up when wheat can be imported from *B*, and other uses are made of the land. The effect upon factor prices is the same as in the case above. This statement of a price equalising tendency refers, however, only to cases where the same sub-factors exist in the various countries. If *A* has only good land and *B* only poor land, then the term "price equalisation" has a somewhat different meaning. However, as long as we have to do with sub-factors belonging to the same factor group, this term conveys an impression of some of the effects of trade. High-grade Swedish iron ores are exchanged for good German coal; Sweden has nothing but very poor coal mines, and Germany lacks ores of the highest quality. We have to consider the two sorts of coal-mine sub-factors together, and the two sorts of iron-mine sub-factors in the same way. Through trade German coal mines and Swedish iron mines get higher prices, while Swedish coal and German iron ore are cheapened. This is a sort of price equalisation. In other words, when sub-factors are highly competitive, they may be considered together, and in that case a certain price equalising tendency of trade is not to be denied.

§ 6. *Exceptions to the rule.* Trade does not tend to equalise factor prices when *quite different factors are closely competitive*, being used in one industry to produce the same or a similar commodity while rendering otherwise quite different services. This is by no means a rare case; on the contrary, a great many goods are produced by means of widely different technical processes.

Consider a few examples. Wheat is grown on large American farms with complicated and expensive machinery, much land, but little unskilled labour. How different from the Arabs' old-fashioned methods of cultivation in the north of Africa, which mean the use of fifty or one hundred times as much unskilled

labour per bushel, although of a different sort! Rice is produced in China and Japan in very much the same way as it was hundreds of years ago. In the last few decades its cultivation in the United States by means of newly invented machinery has begun. In spite of the enormous wage difference, the years after the War saw a not insignificant exportation of this grain to Eastern Asia. A similar case is flax growing, which requires much unskilled labour. It has long had its stronghold in countries with very low wages, like the Baltic countries and the parts of Russia bordering on them. In Scotland cultivation has been declining, wages being too high. Since the War, however, the invention of labour saving machinery for pulling and threshing the flax has led to a considerable cultivation of it in the United States and Canada.

The glass industry also offers good examples. For centuries window glass has been blown with the same simple tools, the only substantial improvement in methods of production being in the melting of the ingredients. In the last two decades American methods of machine blowing and Belgian methods of drawing the glass in sheets have been so much improved that they are now fast driving out the old methods, at least in high-wage countries. For glass bottles Owen's blowing machine effected a similar revolution a few years earlier; yet both window glass and bottles are still produced in considerable quantities by the old methods. In such cases technical labour and capital take the place of skilled and semi-skilled labour; probably with more highly skilled labour also used.

This is not the place to dwell upon the problem of why some commodities can be produced by such methods while others cannot, at least remuneratively. For our present purpose it suffices that many important articles are produced in various countries by means of widely different technical processes. In such cases the increased demand, when production is increased for the sake of exports, will affect quite different factors from those which will feel a lessened demand in the importing country when home production is rendered superfluous. An analysis of these cases upon our assumption of only two countries may throw light on the exchange of goods between two parts of the world, e. g. civilized

and non-civilized countries. It also serves as an introduction to the study of similar cases when the number of trading nations is considerable.

First, assume that two factors q and k, both of which can be used to produce a certain commodity at the same cost under present conditions, *exist in both countries*; trade in that commodity has for some reason or other been prohibited, but is suddenly liberated. In country A the factor q is much cheaper than in country B, whereas the factor k is a little more expensive. Consequently A uses the first factor, B the latter, to produce this article before trade in it is opened. In these conditions A has lower costs of production than B, and comes to export the commodity to the latter country. Demand for q is increased in A, while demand for k is reduced in B. So far as q is concerned, the price difference between the two countries is reduced, but for k it is *increased*. The latter factor becomes still cheaper in B, although it was already cheaper than in A.

This is, of course, not the entire effect of the new trade. Goods must be exported from B to A to pay for the new imports, and this will increase the demand for some B factors. It is conceivable that the factor k will be used so much in industries producing these exports that its price in B relative to its price in A will be as high as or higher than before. But it is not at all certain that this will be the case; the possibility, therefore, exists that the international price difference so far as k is concerned remains greater than before the new trade began. This is an important exception to the general rule.

In the theory of the optimum combination of the productive factors, i. e. the analysis of the laws of increasing and decreasing returns, the basic thesis is that a relative increase in the quantity of one factor (which means, of course, at the same time a relative decrease of the quantity of other factors) leads to lower relative scarcity for the former and greater relative scarcity for the latter. The important exception to this thesis is that some factors are so closely competitive that an increased quantity of one of them may lower the marginal productivity of the rest.

The conclusion reached above as regards the effects of inter-

national trade is entirely parallel. The factors may be so highly competitive that the result for relative prices is the opposite of what the general rule would lead one to expect.

How important are such exceptions? Are they so numerous and significant as to invalidate the usefulness of the general statement of the price equalising tendency of trade? This is the same as asking whether the various productive factors are mainly co-operative or competitive. In order to answer these questions, one should bear in mind that the productive factors may be competitive, not only through producing the same or a similar commodity, but in general in so far as one of them is used in industries rendered superfluous because of imports of goods produced by another factor.

It makes no difference, in the cases dealt with above, whether the commodity produced partly by the aid of q is quite different from the commodity no longer produced by k in the other country, e. g. after a lowering of the tariff wall. Production of certain goods is given up or reduced because of imports, and production of other goods is increased for the sake of exports; relative factor prices are thereby affected. But the commodities now imported in larger quantities than before and produced more than before abroad are not all the same or of exactly the same quality as those which this country has now ceased to produce; hence, the increased demand abroad does not affect the same factors as the reduced demand here. Consequently there is no reason for assuming a tendency towards an equalisation of factor prices in so far as the changes in industry are of this sort.

There can be no doubt that if trade did not affect the sort of goods consumed in each country, i. e. if imports served only as substitutes for identical goods formerly produced at home, then the scope for a complete substitution of different factors for each other would be relatively limited. As, however, many commodities are imported which would not be produced at all at home, and the production of other goods is reduced or given up altogether, the chances of an increase in the international price differences through international trade become much greater. The strengthening of demand in the exporting country may chiefly

concern other factors than the reduction of demand in the importing one.

Let us take an example. In Finland imported German coal takes the place of domestic wood as fuel; the price of forests is reduced, although they are much cheaper than in Germany, and the price discrepancy is increased. This assumes, however, that forests have other uses; otherwise they could not be dear in Germany. Trade in those goods is likely to have an equalising effect. This is certainly the case with the Finnish export of lumber, pulp, and paper. There can be little doubt that international trade as a whole increases the scarcity of forests in Finland and reduces it in Germany, thus bringing about a certain equalisation.

We thus see that the fact that most factors can be used in many different ways and that international trade comprises many commodities increases the possibilities for the price equalising tendency to dominate. It seems certain that a substantial restriction of trade would increase the international differences of the prices of productive factors. In a study of special cases of trade variations one must, however, count with the opposite result as a possibility.

All these circumstances call for another qualification of previous statements as to the effects of trade, namely, on commodity prices. The conclusion in Part I that a complete equalisation is brought about as soon as obstacles to commodity movements cease to exist is an expression of complete equalisation of the supply of commodities. If we now take into consideration the fact that some goods were not produced at all in one country and some not in the other in the isolated state, then the equalisation of supply conditions becomes something more than a price equalisation: it involves also the supply of new goods. It must be admitted, however, that this may be regarded as a supply of these goods at lower prices than those at which they could have been produced at home. The costs of production of tea in Scandinavia, e. g., would be exceedingly high, many times as high as import prices. But as the use of tea would cease at the same time as its importation, it is perhaps somewhat artificial to press all the effects of trade on supply of

goods into the formula of price equalisation. If this expression is used in the following pages, for the sake of brevity, it must be taken to include all the effects of trade so far as equalisation of commodity supply is concerned.

§ 7. *Trade tends to equalise costs of production.* The statement that trade tends to equalise factor prices internationally refers only to countries where the factors in question are to be found. Many factors, however, exist in certain countries only. Take the case of copper mines: the countries without such mines are in almost the same situation as countries having very few of them, where the price of this factor is naturally lowered by trade; their economic life is affected in virtually the same way.

Consider the case where one country has a world monopoly of a certain factor: trade raises its value, for world demand turns to it. But it cannot, strictly speaking, lower the value of this factor abroad, for there is no supply of it outside the borders of the first country. Thus, one cannot speak of a tendency towards international price equalisation in respect of this factor, although, as indicated above, the economic effects in countries lacking the factor altogether are similar to those in countries with a small supply of it. One inclusive statement for these various types of cases must run in terms of an equalisation of the costs of production, actual and potential. Countries without a supply of this factor may be able to use entirely different factors to produce the same commodity, although at higher costs. If the commodity is imported, the prices of these factors and the potential costs of production are reduced. Evidently, in the cases touched upon in the last section, where the same commodity is produced in different countries by means of a radically different technique, and no factor price equalisation ensues, one may speak of a tendency to cost equalisation. The cost at which a commodity is produced tends to rise in the exporting country as a result of the increased demand for the productive factors, whereas the potential costs in the importing countries drop, owing to the smaller demand for the factors which would otherwise have been used to produce the import commodity at home. It is only to the extent that importation of one commodity replaces the production of entirely differ-

ent goods at home that the tendency towards cost equalisation fails to operate. This qualification should be kept in mind, but is probably of but little practical importance in a study of concrete trade variations, e. g. due to tariff changes.

§ 8. *Trade and economies of large-scale production.* More or less independently of the different equipment of productive factors, international trade is called forth by the economies of large-scale production; a certain geographical division of production becomes natural, as was explained in detail in Chapter III. No substantial qualifications of the reasoning in that chapter are required because of the fresh circumstances touched upon in Chapter V. Trade reduces the disadvantages arising from the incomplete divisibility of the factors, for it renders possible production on a scale which makes it less felt than in the case of small-scale production. This is especially important for small countries; without trade they would have to produce for themselves, and that could be done only in small technical units with comparative inefficiency.

The trade brought about by the economies of large-scale production, as pointed out in Chapter III, influences the international relations of factor prices. As trade and division of production is carried further than it would be otherwise, the demand for the factors used in the industries existing in each country will be increased there. It is quite possible that factors cheaper in one country than in another (this being the cause of the localisation of certain industries there) come into such demand, as a result of large-scale establishments, that their prices rise above prices abroad — but not so much as prices would have risen in other countries, had these industries been situated there.

Economies of large-scale production strengthen the tendency towards international division of production made natural by the varying equipment of productive factors. They consequently increase the trend toward price equalisation. But it follows from the foregoing that they may go further and cause *new* international price differences for the productive factors.

In considering the conditions of production in various countries, special attention must be given to the qualities of the productive

factors in respect of their greater or smaller divisibility. Factors but slightly plastic in this respect, i. e. those which can advantageously be used only in combination with large quantities of other factors, command relatively low prices when production is carried on by small firms. By making large-scale production possible, international trade increases the demand for them, relatively to other factors. In other words, trade favours the factors that count chiefly in large factories, e. g. certain types of technical and organisatory labour. This is obvious; it is confirmed by the fact that these factors get a relatively much higher reward in countries with a large home market than in small countries. In brief, international trade turns world demand in the direction of factors that count for much in large-scale enterprise.

There may be some international differences not easy to discern with respect to incomplete divisibility. Does American technical labour, working in a different technical and economic milieu from the European, possess qualities which can be made full use of only in large undertakings? Is that one reason why large-scale production plays a much larger rôle than in other countries? Or is this due solely to the larger market, the different relative factor prices (see below), and the youth of the United States as a manufacturing nation?

To these questions no definite answer can be given. But it is difficult to deny that the answer to the first one *may* be in the affirmative. If that is so, international trade must tend to raise the prices of American factors relative to factors in other countries.

It must be emphasized that the economies of large-scale production and the different equipment of factors are not independent "causes" of trade; on the contrary their effects are intermingled in several ways. The most suitable equipment of factors for the production of a certain commodity depends upon *how much* of it is to be produced; for a larger scale means a different technique. On the other hand, the economic advantages of large-scale production are influenced by the relative prices of the factors. Trade due to different factor equipment reacts by changing factor prices upon the advantages of large-scale production. In

countries with high wages for skilled labour this factor must be utilised to the utmost in large factories; small firms are unable to compete. In low-wage countries, on the other hand, the superiority of the big firm is as a rule not so considerable. Changes in the basic circumstances which cause variations in relative factor prices thus affect trade in a double way: partly as explained in Chapter I and in previous sections of this chapter, and partly by changing the scale of production most economical in each country.

It may be worth while to emphasise once more in this connection the fact touched upon in Chapter IV, namely that an increase in the volume of production in certain industries through expansion of trade and reduction of corresponding industries in importing countries need not affect costs of production in the same way as factor prices. Although prices of the factors used in large quantities in these industries fall in the latter countries and rise in the exporting ones, costs of production of the commodities concerned need not rise in the exporting countries; the increased economies of large-scale production may more than offset the higher factor prices. When we come to the analysis of demand variations in Part V this will be further considered. It does not prevent one from saying that trade tends to equalise actual and potential costs of production in different countries, although such a statement must be qualified with regard to the scale of production to which the costs per commodity unit refer.

§ 9. *Differences in the stability of economic conditions.* It now remains to consider another consequence of the analysis in the previous chapter, i. e. the influence of risk upon international trade. Two aspects of risk were dealt with separately in § 10 of that chapter. First, the various sorts of labour and capital have a different capacity or inclination for risk-bearing. This fact was taken into account through the system of factors and sub-factors. For instance, a distinction was made between capital available for risky enterprises and capital whose owners want to invest it safely. How this circumstance influences trade is fairly obvious.

In countries with an abundance of capitalists willing to take risks, the difference in interest between risky and safe invest-

ments will be relatively small; for that reason risky enterprises will be undertaken there rather than in other countries. As the risk is especially great when large sums of capital may be lost, industries which require much capital and are also risky will be located in such countries. The demand for risky capital is increased, while it is reduced abroad. The price of risk-bearing rises in these countries and falls abroad. Trade thus has an obvious tendency to equalise the prices of the different capital factors internationally.

This is entirely in harmony with our general thesis. The ability or willingness to bear risk is a quality like any other attaching to productive factors.

It should be noted, however, that capital available for risky undertakings is less tied to a certain country than perhaps any other factor of production. It can go to places where the conditions of production are best in other respects and add to the supply of risk-taking capital. This matter will be more closely examined when we come to deal with the international mobility of productive factors. Here it need only be said that the supply of such capital does not for that reason exert so great an influence upon the international localisation of industry as it otherwise would. And a further reason is that the risk can be concentrated on a part of the capital used in a certain place or industry.

Secondly, conditions vary internationally with regard to economic stability. In some countries the risk of making wrong forecasts, and thus incurring losses, is much greater than in others. Wars, revolutions, bad government, and the like may have this effect. Two results follow: (1) The need of risk-bearing is greater in countries of the former type; this is an important aspect of the conditions of production, which cannot be left out of account in a description of the productive facilities that are the basis of the international division of production. (2) Commodity prices in such a country must be sufficient to cover not only the reward for risk-bearing or "uncertainty-bearing" but also a *risk premium.* Whenever things go well there must be a surplus over and above the ordinary costs of production, including the reward for risk-bearing, to offset the losses that occasionally occur because of un-

foreseen changes. These risk premiums, which are similar to premiums for insurance against fire, accident, etc., in the long run constitute no income for the producers; they are exactly balanced by the losses. But they are important elements of the costs of production.

Let us say a few words more about these circumstances, beginning with the need for risk-bearing. It should first be emphasised that unstable countries naturally need it more than countries where conditions are unlikely to be much disturbed. If the natural bent for risk-bearing in countries of the former type were not greater than abroad, the price for risk-bearing would be very high and such countries would specialise in relatively safe industries. As to differences in supply, very little is known. Man adapts himself to circumstances, and it is probable that disturbances and risk-bearing are less disagreeable to people in unstable countries; thus the greater supply can more or less make up for the greater need of risk-bearing. But the latter element by itself will necessarily tend to keep out of the unstable countries industries for which instability means the greatest amount of "uncertainty."

Before going further, let us emphasise that knowledge of the facts concerning the influence of risk is so restricted that one cannot even say for certain whether the reward for "risk-bearing" is a positive or a negative quantity. In the above reasoning it has been assumed to be positive, otherwise the influence upon localisation of the varying need of risk-bearing will be in the opposite direction to that which our conclusions imply.

Much more important and easily discernible is the influence of the different height of the risk premiums. They are high in unstable countries, like the Central American states, and add to the costs of production there more than in other countries; this tends to keep down the prices of the productive factors in unstable countries. Industries for which the risks and the necessary risk premiums are relatively small tend to develop there, while industries that feel the instability more, and consequently must charge a higher premium, work under a handicap and tend to be located abroad.

On the whole, manufacturing industries producing on a large

scale, which use much fixed capital, are likely to be most adversely affected by forms of instability like revolutions, wars, and unreliable government; agriculture and similar industries will feel their effect less. The instability element consequently tends to keep the former industries out of countries like the Central American states. This sort of international division of production evidently diminishes the losses arising from the various disturbances: in other words, trade reduces the total amount of the risk premiums.

The quoted rate of interest is often not a pure rate, i. e. a reward merely for saving and a certain amount of risk-bearing. It includes also a risk premium. International differences in loan rates depend to a large extent on this circumstance. Compare the 18 percent rate in the Baltic countries with the 5 percent rate in the Scandinavian countries. The international division of production tends to diminish such differences.

§ 10. *Trade is affected by differences in taxation and other social conditions of production.* In the description of the price mechanism in Part I, certain social conditions have been ignored. Yet it is obvious that the effectiveness of industry and height of the costs of production are considerably affected by such factors as social institutions; a spirit of coöperation between employers and employees may in the long run contribute much to a greater output from the enterprise. The subject has been referred to in the foregoing discussion of the quality of productive factors, and comparatively few of its aspects call for special treatment in the present discussion of a general character.

Especially important in this field is the system of taxation. Taxes influence costs of production and international trade, as well as the prices of productive factors. As taxation weighs more heavily on certain industries than on others, it affects the course of production and trade.

Taxation is of course not only an extra cost item; it affects as well the height of the various factor and commodity prices which function as normal elements of cost. The whole price system in an isolated country is changed by taxation in a way which a theory of shifting and incidence of taxation would explain. The

price system in trading countries and the character of trade between them under the influence of various taxes is similarly to be explained only with the aid of an incidence theory. Little can be said in general terms, since everything depends upon how the taxes are imposed, the psychological reaction of the business world, and the like,[1] and no attempt to analyse these problems will here be made. As a concrete example, however, we may cite the fact that in some countries taxes weigh more heavily upon manufacturing industries relatively to agriculture than in others. Income from limited companies, for instance, is subject to double taxation, the costs of unemployment relief, losses through accidents, etc., being borne mainly by the industry instead of by the community as a whole. Naturally in such countries the development of manufacturing industries is retarded; in other countries such industries expand and the price of manufacturing labour is raised. This may be one reason why wages in these industries have risen much more compared with 1913 in the countries neutral during the War and in the United States than in the other belligerent nations.

In brief, in addition to the factors analysed above, taxation affects the character of international trade. Import and export duties constitute only a special sort of tax, to which special attention will later be given. The tendency of increased trade to equalise the prices of the productive factors internationally is supplemented by a trend in each country towards increased demand for the factors which "coöperate with low taxation," i. e. are used in industries relatively little taxed. Difference in tax cost may make a commodity move from country *A* to country *B*, or vice versa; the tendency towards factor price equalisation is thus to some extent checked. To what extent this occurs depends, of course, upon how greatly differences in taxation affect costs of production in various industries and countries.

Other social institutions which influence production and trade are prohibitions and monopolies. Even if they do not directly affect international trade, they affect prices in general and thereby

[1] A satisfactory analysis of the incidence of taxation must include the dynamic character of economic life, perhaps still more so than the analysis of most other price problems.

international trade. Furthermore, monopolistic regulation of international trade is common in many branches of industry. The principal exporting firms in industries producing such articles as matches, telephones, and artificial silk make agreements concerning the division of foreign markets; and when they compete, financial strength has as much to do with success in obtaining important orders as the quality of the products and their prices. The construction of the laws regulating patent rights in certain countries is another localisation element; production of the commodity in question within the national borders is a condition of the maintenance of patent rights. Such influences play an important part in international trade to-day, and their importance seems to be growing. They are not discussed here, chiefly because they do not lend themselves to general treatment; to explain the actual character of international trade in this and other respects a supplement to this volume is necessary.

§ 11. *Summary*. The reasoning in this chapter has shown that the circumstances governing the character and effects of international trade are more numerous, many-sided, and difficult to describe in precise terms than was indicated in dealing with interregional trade in Part I. The statement that the tendency of trade is to equalise factor prices internationally, it has been found, must be qualified in several respects. The difference in quality between productive factors in different countries, the possibility of using entirely different technical processes, the economies of large-scale production, and differences in economic stability and taxation not only blur the outlines of the previous analysis, but make it uncertain to what extent international trade as a whole actually tends to equalise factor prices. This uncertainty arises also from the fact that the kind of goods consumed within trading countries may be radically affected by the opening of such trade. These circumstances affect much less the conclusion that trade tends to equalise the actual and potential costs of production in different countries. Even this conclusion has, however, to be modified chiefly with regard to the possible influence of economies of large-scale production in each special case.

CHAPTER VII

REACTIONS OF DEMAND FOR GOODS AND SUPPLY OF PRODUCTIVE FACTORS

§ 1. *The reaction of taste.* It has been emphasised that the earlier reasoning as to the nature and effects of international trade is in part artificial, being based on a comparison between a state of isolation and one of active trade. If the primary elements of pricing (the conditions of demand for commodities behind which lie individual tastes and conditions of ownership, the conditions of commodity supply behind which lies the supply of productive factors and the physical qualities of nature) were unaffected by the existence of trade, such a comparison would tell the essential story.[1] As a matter of fact, they are not; conditions of both demand and supply are radically influenced by international division of production and trade. Evidently, then, only one aspect of trade has so far been studied. Dealing with one subject at a time, we have studied first the effects of international trade as they would be if the character of demand and the supply of industrial agents were unaffected. We now turn to a brief discussion of the changes brought about in these conditions, starting with those of demand.

Trade affects the character of the demand of an individual by changing his *taste*, but exercises no direct influence on the conditions of ownership. It is self-evident that in a certain country many goods would not be produced at home if they were not imported; there would thus be no supply of them at all, and no demand for them. The supply of imported spices, for example, creates a new demand. In general, international trade has been an extremely powerful factor in extending civilisation, and civilisation consists partly in the creation of "artificial" needs. This kind of influence is obvious even if a shorter view is taken. Trad-

[1] This comparison takes into account the fact that individual incomes are changed through the change in factor prices and that consumers' demand varies for this reason.

ers make it their task not only to supply goods people want, but to make people desire the goods they want to sell. A study of the foreign trade of China in the last half century brings out this fact very clearly.[1]

On the whole, the demand for commodities adapts itself more or less to supply conditions. Countries with poor facilities for wheat growing but with a climate more favourable for the cultivation of rye, acquire the habit of eating rye bread, a rare thing in countries not producing rye. This is brought out by the fact that only 2½ percent of the total world production of this grain passes national frontiers, whereas the corresponding figure for wheat is 16 percent. The larger part of this exported rye goes to countries which grow some rye themselves, like Czeko-Slovakia and Scandinavia. The enormous consumption of rice in Eastern Asia is another example.

The circumstances just touched upon in this paragraph imply a more far-reaching influence of international trade than the reasoning in previous chapters indicated. Nevertheless they tend to make the effects of a disappearance or serious reduction of trade less disastrous than they would otherwise be. Man adapts himself to circumstances. His change in tastes as supply conditions vary is only one aspect of this adaptability, which naturally renders him less susceptible to disturbances and changes.

§ 2. *The reactions of factor supply.* We now turn to the relation between international trade and the supply of productive resources. The influence of the former rests partly on the fact that changes in the prices of the factors of production alter their supply; as international trade affects factor prices it must also affect factor supply. To demonstrate the nature of this influence it will be well to commence with some observations on the elasticity of factor supply in general. For the sake of clearness we shall distinguish between two sorts of reactions of factor supply, namely towards changes in their *relative* prices and towards changes in the price of a certain factor *in terms of commodities*.

Let us begin with the supply of the various labour factors (unskilled, skilled, and technical labour), or a greater number of dif-

[1] See e. g. Remer: *The Foreign Trade of China* (Shanghai, 1926).

ferent types. A change of wages in favour of one of them will tend to increase the existing quantity of it. The greater the difference, for instance, between wages of skilled and unskilled labour, the better it will pay to acquire the necessary training to become a skilled worker. It is probably the general rule that supply reacts in this way positively towards changes in relative wages, although it may take a long time for any substantial effect to be produced. When considering the quantity of the supply reaction it is necessary above all to keep in mind that it will be small in the beginning and grow as time goes on. A quickly passing improvement in the economic position of a certain labour group may fail entirely to attract new members.

It is evident that supply of one labour quality may be as much — or more — affected by a variation in the wages of other groups as by a change in its own economic position. Higher wages for female factory workers will probably increase the number of women willing to go into the work-shops. On the other hand, a substantial improvement in wages for male workers will almost certainly tend to reduce the number of wives and daughters that undertake to do factory work. Thus, a general increase of wages may lead to a diminished number of female workers.

This leads to the question of a change in the price of labour in terms of commodities — a change in the standard of living, not in *relative* wages. While variations of this sort tend to call forth positive reactions, it is difficult to make predictions as to the reactions towards an improved position generally. It is by no means certain that a higher wage standard all round will increase the total quantity of labour through an increase either of population or of the working part of it; nor is it certain that there will be an increase of the number of hours worked per worker or of their "efficiency," whatever that may mean. A higher standard of living may take the form partly of more leisure time. It may lead to a restriction of the number of children and thus, in the long run, of the population, and to a reduction of the percentage of the population that is prepared to work. The only important conclusion concerning such difficult problems that can be reached without detailed analysis and painstaking collection of

facts seems to be that we know practically nothing of supply reactions towards higher wages in terms of commodities.

Returning to the influence of changed *relative* wages, we must emphasise that the smaller the labour groups treated as separate factors, the more important — relatively — supply variations will be. The transfer of individuals from one small group to another of a similar type is easier than the increase by the same percentage of the number of people in a large group, e. g. skilled labour. Consequently the greater the number of labour factors we consider the more attention we must give to supply reactions, even during relatively short periods.

The most important exception to this rule is probably due to the 'closed-shop policy of trade unions. A small but powerful union may succeed in forcing up its wages and regulating the number of its members. Higher wages for masons need not have any influence whatsoever on their number. In some countries the existence of strong unions pursuing successfully a policy of this kind seems an important part of the industrial situation, which cannot be ignored in a description of their equipment of productive resources. It may powerfully affect the earnings and development of various industries and the character of international trade. For instance, industries using extensive buildings may be much handicapped (especially in countries with a harsh climate, where the buildings have to be strong) if the building workers force their wages considerably above the normal wage level in the country.

So much for labour supply. Turning now to another group of productive factors, natural resources, one is tempted to state simply that the supply of nature does not react at all to price changes. That may be correct in a way. One has to remember, however, that investments of capital will often bring about practically the same result as increased quantities of nature. Drainage, irrigation, etc., increase the surface of the world available for agriculture. Holland has won considerable areas of land from the sea by means of a system of costly walls. The higher the price of land the more such enterprises will pay and be carried through. Increasing value of gold, copper, and the like, means more

energy will be used to find new mines; besides, poorer and poorer mines will be taken into use and worked with a great outlay of capital. In a way, the supply of nature is increased.

It is very doubtful in how far and in what direction the supply of capital will be affected by changes in the rate of interest. A very low rate would probably in the long run reduce savings, while a very high rate would increase them. But variations in the neighbourhood of the usual level may fail to have any influence at all, or may lead to a change in the opposite direction, a negative reaction: lower rates, greater savings. Here again one can say little more than that we know nothing for certain. I should, however, think it extremely probable that whatever the long-run reaction may be, the short-run effect of a lower interest rate would be reduced savings, — and vice versa, — for the simple reason that a considerable part of them come from interest incomes, and when the source itself is diminished or increased the flow into capital channels is likely to be correspondingly affected.

Capital available for risky enterprises will almost certainly appear in greater quantities when a change in its favour, compared to rates on safe capital, takes place. The greater the extra reward for uncertainty, the more people are willing to carry it. The same applies to the supply of labour in occupations where the return is very uncertain. Extra pay for the uncertainty will increase the flow of individuals into these occupations.

§ 3. *Trade increases the international differences in factor equipment.* As already indicated, international trade, through its influence on the prices of the factors of production, inevitably affects also the supply of them. This influences the character and extent of trade in a way which will be now subjected to a brief analysis.

Inequalities in the equipment of productive factors call forth trade, which tends to a large extent to raise the prices of the relatively abundant and cheap factors and to depress the prices of the rest.[1] How will this affect the supply of factors? In most cases

[1] Note, however, that this statement refers to *relative* factor prices. In terms of commodities, all or the large majority of them may receive a higher reward as a result of trade.

we found it probable that the reaction would be positive. The increased prices of the relatively cheap factors will call forth a still greater quantity of them, although they were already plentifully supplied. The reduced relative prices of the scantily existing factors will probably reduce their quantity. Evidently the outcome is *greater unevenness internationally as to the factor equipment,* and a strengthening of the tendency to trade. In so far as the existing differences in factor supply are increased, the character of trade will remain about the same, but it will be of greater volume. The division of production between the various countries will be carried further.

In the beginning of the nineteenth century Great Britain had more capital and highly educated labour than any other nation. That was one reason — its good transportation facilities and coal and iron mines being probably the most important of the others — why manufacturing industries came to develop in England and Scotland. Demand for capital and technical labour was increased. The high price paid for these factors called for their increasing supply, and the difference as against other countries was increased. The tendency to locate manufacturing industries in the British Isles and to depend upon imported food became accentuated.

Turning to the influence of trade on factor prices in terms of goods, one can state that this division of production brought so many advantages to Great Britain that most factors of production got their prices in terms of commodities raised, even if some of them got a relatively less favourable position than before. Probably only the value of certain natural resources like agricultural land underwent a decrease in price in terms of goods. A tendency towards higher real wages became apparent. It was met, however, by an extremely powerful reaction of supply; population increased by leaps and bounds. As even small children were used in factories, the increase in the number of industrial workers was rapid and land rents too rose in the long run.

The loosening of the fetters on international trade in the first half of the century in a great many countries helped to sustain this movement towards the concentration of manfacturing in-

dustries in Great Britain and the increase of its population. There can be little doubt that if for some reason or other this far-reaching international division of production and trade had not been possible, the population in that country would have grown much less rapidly than it actually did.

Let us turn to somewhat less revolutionary variations. Wages of technical labour are much lower in Germany than in Great Britain or the United States. As many modern technical processes depend upon the use of great quantities of such labour, Germany secures an advantage in the production of goods manufactured by these methods. It will, for example, export chemical products which "contain" a relatively large quantity of technical labour. International trade increases the demand in Germany for this factor, and tends to raise its price. But at the same time supply of such labour tends to grow under the influence of rising wages. The same circumstances which at one time made supply large (educational facilities, frugal living in the middle classes) call forth an increasing number of skilled technicians. Growing demand and supply go hand in hand. Consequently, in periods of increasing demand no rise in wages of this sort of labour need take place. Relatively to other wages they may even fall, assuming that the standard of living in the middle classes through the increase in their numbers is kept fairly constant; whereas the wage level for less educated labour qualities may rise in terms of goods as a result of the development of chemical and other industries in Germany.

Apparently international trade, through its tendency to equalise factor prices internationally, calls forth supply reactions which lead to greater international inequality in the equipment of labour factors. On the supply side there is a sort of defence against the price-equalising tendencies of trade.

We turn now to capital. Countries with cheap capital attract industries which require much of this factor; the demand for it is increased, and interest rates in these countries tend to rise, while falling in other countries. If savings reacted positively, the result would be increased international differences in respect to endowment with capital. But if reduced rates lead in the long run to

greater savings and increased rates to lower savings, then poor countries will catch up more or less with rich countries. In such a case trade will have a double effect towards price equalisation, directly through the redistribution of production and the consequent change in demand for productive factors, indirectly through its influence on factor supply. Unfortunately our knowledge of the elements that determine savings is insufficient as a basis for a judgment, but a positive reaction of supply in most cases seems probable.

Although the supply of nature does not, perhaps, react in the strict sense of the word, the investments of capital, which bring about the same result on pricing as real supply variations, are such that one can draw a close parallel with the positive reaction of various labour factors. Equalisation, more or less, of the value of natural resources will tend to restrain investments in countries poor in such resources, and increase them in countries where they are plentiful. The equipment of productive facilities is consequently made more uneven.

Clearly as in the case of labour supply conditions establish a sort of resistance to the price equalising tendency of trade.[1] This resistance is of varying strength, according to the *elasticity* of the factor supply.

We may call the elasticity complete if identical relative factor prices are maintained in spite of trade. The German case presents an illustration of this kind. It is quite possible that wages of technical, skilled, and unskilled labour are not in the long run changed in favour of the former factor, even though the demand for it may be greatly increased through trade relative to demand for the other two. A growing supply may entirely make up for it.

"In the colder North nature demands more of man. He will take factory work as readily as other work, for it is all strenuous. In the South people ask higher wages for factory work, for it is disagreeable relatively." [2] *Ceteris paribus*, factory work will be concentrated in the northern countries and a large part of the

[1] Similarly, supply reactions tend to offset the tendency which increased trade may have to increase factor price differences in certain cases. (See the previous chapter.)

[2] Russel Smith, *Industry and Commerce*, p. 175.

population will become factory workers, but they will not receive higher pay than other workers in these countries. On the other hand, the reduction of factory work in southern countries through trade need not diminish the wage discrepancy between the two sorts of workers so long as the basic circumstances, climatic and psychological, remain.

Such cases of complete elasticity of supply are probably rare. The rule seems to be that trade exercises a certain equalising influence on factor prices, and that supply reactions can only make it less considerable than it would otherwise have been.[1]

Another important conclusion from this analysis is that the fundamental conditions of international division of production and trade cannot be described in terms of the actual supply of factors at a given moment. One must study also the circumstances that lie behind this supply. A detailed investigation into the nature and influence of these factors, mostly psychological and physiological, would be out of place in this book. But in every study of concrete cases the reaction of factor supply must so far as possible be taken into account.

It goes without saying that the extent of the reaction is related to the length of the time that has passed since the original change of factor prices. In some cases little or no change of supply can be brought about in a year, in other cases a year suffices to re-establish the old relative prices, from which only temporary deviations of a few months' duration are possible. When individuals can pass freely and quickly from one group of labour to another price discrepancies are naturally of short duration. This will also be the case when new labour can be directed easily into the channels where reward has increased. Clearly, when speaking about elasticity of supply and supply reactions towards changes in international trade we must refer to a certain period of time. In

[1] Taussig (*International Trade*, p. 56) is of a different opinion. He thinks it unlikely that foreign demand will change the scale of remuneration, partly because this demand is small compared to domestic demand, partly because of the reactions of supply of various labour qualities. "The social stratification that results from the domestic conditions is well established and seems to be deeply rooted." It is clear, however, that foreign demand is important in small countries, although not perhaps in the United States.

general, the longer the time the reacting tendency has to work, the more it will offset the effects on prices of an original change. Let us look into this question a little more closely.

§ 4. *A dynamic viewpoint.* Investigations into variations of international trade must be descriptions of time-using processes, in which both demand for commodities and supply of productive factors vary more or less as time goes on. In such investigations use can profitably be made of the Marshallian concept "supply price." By the supply price of a certain factor is thus meant the price that has to be paid per unit of it to call forth a certain supply at a certain time.

Assume that an extension of international trade leads to an expansion of one industry and a falling off of another in a country, and that these two industries employ labourers of different qualities. Skilled and technical labour in one of them has not the same training and experience as the corresponding labour qualities in the other. In order to prevent a rise of wages in the expanding industry relative to wages in the declining one, a continued flow from the labour groups in the latter to those in the former is necessary. If the actual flow is smaller than this needed quantity, the reward to the labour groups in the expanding industry will rise in relation to wages of other groups, especially those in the declining industry. It is thus the relation of the flow of individuals between various labour groups [1] that means a complete adjustment of supply to the variation in demand, to the *actual* flow that determines the strength of the change in the scale of remuneration. In other words, it is the intensity of the original variation and the degree of mobility that have to be compared for the period in question. Such comparisons must be made on a number of different occasions, for as a rule the original variation is subject to gradual development, as is also the degree of mobility.

The result of the balancing influences of the demand variation and the supply reaction will at every moment be a change in the relative scarcity of the labour groups. The scale of remuneration

[1] Of course not only the flow between the groups but also the increased inflow of new labour into the favoured groups must be considered.

at any moment determines the list of supply prices for the needed quantities of factors.

This reasoning as to elasticity of supply can be extended to cover not only factors of production in the strict sense but also the various forms of capital goods. The prices of productive instruments naturally tend to equal their costs of production. In times of great demand they usually rise above this level, a fact that must be considered by industries desiring to increase their productive capacity immediately. It acts upon output and costs of production as does a temporarily increased scarcity of essential labour qualities.

On the other hand, the price of productive implements often falls below their cost of production, sometimes for considerable periods. If they cannot be used in other industries than those in which they were originally invested, the existing supply will be available even though prices fall very low. Experience shows that it is as a rule easier to increase the productive capacity of an industry by 50 percent than to reduce it in the same proportion. The elasticity of supply of implements is greater upward than downward.

Summarising this analysis, we may say that international trade, through its influence on the prices, both relative and in terms of commodities, of productive factors and implements, brings reacting tendencies of supply, which as a rule tend to offset the price equalising tendencies of trade by increasing the unevenness of the productive factor endowment. It is, however, possible that the change in supply will go in the opposite direction, i. e. in case a higher price leads to a smaller supply; in that case the productive factors will become more evenly distributed internationally. The nature of trade influences on productive resources, then, is complicated, and permits of no sweeping generalisations; however, there can be little doubt that as a rule supply reactions tend to offset the price-equalising tendencies of trade.

§ 5. *Trade changes the quality of labour and capital.*[1] We turn now to other phases of the effect of international trade on produc-

[1] The outstanding treatment of this question is Taussig's *Some Aspects of the Tariff Question*, in my opinion the most important contribution to international trade theory since Mill. I have made no attempt to summarise Taussig's conclu-

tive equipment. The reasoning above concerning the "price sensitiveness" of supply covers only the most direct of these effects. International trade changes the fundamental facts of economic life in trading nations, and cannot fail to affect in a thousand and one ways the factors governing the output of labour and capital. The far-reaching nature of the indirect influence is best realised if we ask what the world's population and the capital equipment would be like if there had been no international trade, and how different it would be from the present situation. We can only say that the difference would be enormous, and that it cannot be adequately dealt with in quantitative terms. Trade changes the *quality* of the people, teaches them to consume new things and to use old things in new ways. Technical knowledge is largely the result of specialisation, which trade has made possible. The character, not only of so-called technical labour, but also of skilled and unskilled labour is affected.

From a closer viewpoint more precise conclusions may be drawn. Trade means specialisation and large-scale production. It leads up to methods of production suited for large units of production, and affects the character of the various labour factors. Engineers specialise in automobiles in the United States, in dye stuffs and other chemicals in Germany, and in textiles in Great Britain. The direction in which labour is educated and trained is to some extent governed by trade. In this way a division of production, for whatever reason it has come about, tends to create a difference in productive resources, which in turn tends to maintain the existing organisation of production. This is one of the advantages which "old" manufacturing nations have of their early industrial development. It makes it necessary, in a study of present-day trade, to take into account the conditions of production and trade some decades ago.

The adaptation of labour to the requirements of industries where it is employed goes so far as to become a cause of *extended* trade. Acquired no less than inherited qualities which involve differences between the productive resources of various nations

sions here, — it would be difficult if not impossible to do so, — and refer the reader to the book itself.

lead to specialisation along different lines, i. e. to international trade. Trade thus engenders more trade, for two reasons: it causes variation in the qualities of labour, and it tends to increase the unevenness of the international distribution of factors of production. The former influence, like the latter, means that the international differences in factor equipment are increased.

In some ways analogous to the effects of trade on labour quality are the effects of trade on the technical form in which the capital goods appear. In each country this form is determined by the requirements of the industries which have existed and exist there. It has been mentioned in the last chapter that the difficulty of changing the technical form of capital goods tends to make present trade follow the same current as earlier trade, even though the price of liquid capital would make changes profitable.

§ 6. *The trend of future international trade.* The preceding analysis leads to an interesting question which has long been the subject of discussion among economists: Will international trade continue to attain larger and larger volume, or is the trend towards less and less trade?

The influence of international trade on the productive resources in various countries will, so far as it has been touched upon above, tend to increase the volume of trade in the future. But there are other elements of economic development which have a decided tendency to bring about a greater international uniformity. Up to now only a few nations have had manufacturing industries of any importance long enough for them to acquire the knowledge and training of paramount importance for efficiency. Other nations still remain at a more juvenile stage or have not started to walk. As time goes on, however, and the young industrial countries grow older, their working populations learn the traditions of factory work, acquire skill, and an increasing number of technicians are educated. The superiority of the older nations is reduced or disappears. In the middle of the last century Great Britain held a position in industrial development far in advance of any other nation. At present the United States and Germany, as well as other countries, have reached the same level.

This is not the place to analyse the dynamic forces responsible for this development. International trade probably helps to bring it about. The importation of machinery into a young manufacturing country is a necessary condition for a quick growth of factory production. Both directly and indirectly the stage when machines can be produced at home is brought nearer; international trade contributes to the spread of technical knowledge, and thus makes the quality of technical labour more uniform.

Some well-known economists believe that in the future an increasing number of nations will catch up with the pioneers in manufacturing; if that happens the character of international trade will be greatly altered. For trade between countries in the same phase is different from trade between countries on a different level of industrial development. Backward countries export raw materials and agricultural products, and receive in exchange manufactured products. When they have advanced to the next stage and taken up production of the simpler qualities of manufactures, their imports consist of high-grade finished and half-finished products and of machinery, for which they pay with the same products as do backward countries. Countries at the advanced manufacturing stage exchange highly specialised products like motor cars, electrical machinery, and chemicals; trade of this type goes on in a surprisingly large volume. It is by no means certain, therefore, that the development of young countries towards greater efficiency in manufacturing will reduce the international exchange. They will be able to produce at home many goods now imported, but on the other hand their demand for many goods which they are not yet used to or cannot afford to consume in large quantities will play an important part in future trade.

For an illustration let us turn to some figures concerning trade between certain leading manufacturing countries. In 1927 no less than 17.3 percent of the exports from the United States went to Great Britain and 9.9 percent to Germany; about one fourth of the German foreign trade was with the United States, Great Britain, and France; one fourth of the British trade was with the other three countries, while more than one third of French foreign

trade consisted of imports from and exports to the United States, Great Britain, and Germany.

Such figures lend no support to Marshall's opinion that "the percentage of the world's trade which is governed by differences in natural resources is increasing, while that which is governed by differences of industrial phase, and of aptitude for particular sorts and grades of manufacture, is less than formerly."[1] Marshall probably underestimated the importance of the fact that economies of large-scale production and specialisation increase rapidly and that they make one country better adapted to manufacture certain goods, while other countries specialise in others. An examination of the trade in machinery between the leading manufacturing nations brings out this fact clearly.

In addition, natural differences of the human factor, whether racial or acquired, are hardly less important than differences in natural resources, a fact that has been emphasised by Marshall himself. Speaking of America he says:

> The history of the Eurasian continent reproduced itself in America with great speed. Those districts which yield wealth least easily are now the richest; the northern states are richer than the southern; and the southern are much richer than those still nearer the Equator, which are peopled by races from Southern Europe. This stratification of human energy from north to south in the two continents largely influences the present courses of trade; but it is itself effect, rather than ultimate cause. For, in the long run, national wealth is governed by the character of the population more than by the bounty of nature.[2]

If that is so, human differences will continue to affect not only wealth but the direction of production and international trade, independently of differences in natural resources. Social institutions and the general way of approaching life will remain different. A people with little disposition for thrift and foresight and no genius for organisation or invention will always, however much they can learn from other peoples, be inferior in capital equipment and technical labour. It will pay them to specialise in goods that require little of these factors, and to import the rest. Industries adapt themselves locally to the qualities of man as they do to the qualities of nature.

[1] *Money, Credit, and Commerce* (London, 1923), p. 105. [2] *Op. cit.*, p. 99.

One might, however, put forward as an argument in favour of Marshall's view as to the dominating influence on trade of differences in natural resources, the fact that human inequalities are to some extent due to different natural surroundings. Climate and soil influence character; a benevolent nature makes man less energetic, indeed makes it difficult even for those who are energetic to work hard. "Climatic conditions have controlled the nature of man almost as much as that of vegetables." [1]

On the other hand, natural differences are also due to some extent to man. The qualities of nature which are unknown or non-usable are as if they did not exist; an extension of the knowledge of how to use nature means — in a certain sense — that nature has changed its qualities. For that reason natural resources in the temperate zones, where the white races live, tend to be more useful in some respects than resources in the tropics.

Both natural and human differences, whatever their relations to one another, tend in the long run to make north-south trade more important than east-west trade. But advantages of specialisation will probably cause the latter to remain of considerable volume.

§ 7. *Summary.* In restating our conclusions concerning the nature and effects of international trade, we shall leave out of account the qualifications of the last chapter and confine our attention to the conclusions of this one. In spite of the variability of the supply of productive factors, which is constantly undergoing variation in reaction to price changes, and for other reasons, the nature of trade is determined, *inter alia*, by the *actual* supply which is an element in the mutual-interdependence system of pricing. This represents the immediate viewpoint — a snapshot of the existing situation. Going deeper and considering the tendencies of development, we have seen that factor supply is greatly affected by trade and its variations. Past trade has much to do with the nature of present trade. The basis of the international division of production is not so much the actual supply of productive factors as the conditions which govern this supply and

[1] Marshall, *op. cit.*, p. 100

its reactions — such as psychological elements, social habits, and institutions, educational facilities, and the like.

The nature of trade of course depends also upon the demand for commodities. Here too it is the actual demand that counts at a given moment, but the development of demand is deeply influenced by international trade.

The essence of the matter is that international trade, supply of productive factors, and demand for commodities react upon one another. Pricing and trade are nevertheless the outcome of actual demand and supply conditions, as has been explained in the analysis of the mechanism of pricing in earlier chapters.[1]

In each concrete case one must examine how far supply and demand reactions necessitate a modification of conclusions reached without them. In general, investigations into minor variations of trade need give little attention to these reactions, unless the period of time considered is very long; such variations will not make much difference in the supply of productive factors, assuming that only fairly large labour groups are dealt with as separate factors. The development of the German chemical export industry is the result of the great supply of cheap intellectual labour of a certain quality; the reaction of the supply of such labour is a matter of comparatively small importance, so long as the question we have in mind is the explanation of the growth of this special industry. It is true, no doubt, that the growth of the chemical industry has made people study chemistry, but it can have exercised little influence on the supply of intellectual labour in general. The existence of a middle class with a capacity for methodical, painstaking work is probably intimately connected with the general economic development in Germany and thus with international trade. But it is not fundamentally dependent upon the existing German chemical export industry. Hence there is more reason for saying that this supply is one of the causes of the chemical industry than for saying

[1] It is superfluous to repeat that this mechanism has been in several ways simplified. Complications which have to do with *time* and call for dynamic analysis have been ignored, except in so far as it has proved necessary to consider them in the analysis of pricing in its relation to *space*, which is the subject of this book.

that this industry is the cause of the rich supply of intellectual labour.

The nature of supply reactions to variations in international trade is a complicated question. Besides, the facts of the case are very little known, consequently no sweeping generalisations can be made. A tendency towards a positive reaction in the case of many grades of labour (higher relative reward = greater supply) there undoubtedly is. Thus, in so far as trade tends to equalise factor prices internationally it will also tend to increase the international inequality of equipment of productive factors, in which way the first tendency is more or less counteracted. While the strength of the factor price equalising tendency is somewhat uncertain, the tendency to equalise actual and potential costs of production is clear. (See last chapter.) We now see that, to the extent that factor supply reacts positively, this tendency also is counteracted.

A simple description is inadequate for the added reason that international trade affects not only the quantity of the productive factors but their quality also. This influence is largely such as to lead to an extension of trade, but coupled with other general dynamic forces it may lead to a reduction of the international differences of labour in respect of skill and training.

One fact is certain, and of paramount importance in any study of concrete problems: the reaction of factor supply, like that of demand for goods, varies with the length of time it has to work itself out. If we are interested in the short-run effects of certain variations, these reactions may be left out of account altogether. A study of the play of the simple price mechanism — the economics of large-scale duly considered — then tells the essential story; the relations there considered in detail exercise a dominating influence. The further ahead we wish to look, the more attention we must give to factor supply reactions. In the long run they come to play an increasingly important, perhaps a dominating, rôle.

§ 8. *The gain from international trade.* Roughly speaking, the effects of international trade described above involve a "gain": the volume of goods is increased. But this expression lacks

meaning with reference to the relations we have analysed. The weaknesses of the index methods come to the fore in comparisons of situations that undergo radical changes; as an added difficulty, *the character of demand* undergoes a change. The individuals who set up the standards by which phenomena are measured alter, and want new goods or goods in different proportions; there is consequently no basis for comparison. Take the case of China; Professor Remer [1] sums up his conclusions in the following words:

> China is undergoing an economic revolution which may well be looked upon as the cumulative effect of the penetration of foreign trade. In its consequences China's trade is by no means a fact of little importance. It is rather the first and most easily measured of the whole interrelated set of phenomena which will make the China of to-morrow as different from the China of the past as is modern Europe from the Europe of the Middle Ages.

How impossible to describe the effects of trade in terms of gain.

Most serious of all is the fact that the *number* of subjects change. An increased volume of production may mean less goods and services per head. Is one to call it gain, if the output grows as much as the population, in spite of a fixed supply of natural resources? Evidently the fact that trade affects the character and number of the economic subjects makes all reasoning about the total gain, and still more attempts to *measure* it, arbitrary and valueless. It follows that the old question of how the gain from international trade is divided between the trading nations is also artificial and of little if any theoretical or practical importance.

The concept of gain has real meaning — like consumers' surplus — only when it refers to a minor variation of trade. It may then be possible to assume the character and number of subjects unaffected by the variation without too much violence to the facts. Strictly speaking, we must assume also that the distribution of income is not much changed. Under these conditions, an increase of an index of production or an index of available goods (national income in terms of commodities) conveys a real meaning, an improvement in the economic position, and the measure of the increase may be taken to represent the size of the gain.

[1] *The Foreign Trade of China*, p. 241.

Clearly one has to ask, not for the total gain from international trade, but for the gain from an extension of trade or for the loss from a reduction. This question will be dealt with later in connection with the analysis of various obstacles to international trade.

§ 9. *Some cases of localisation.* A few examples of the localisation of industry may give a more realistic impression of the relationships described earlier. The following cases are designed to demonstrate, not only how production and trade are governed by the equipment of productive factors, but to take account also of the influence of trade on that equipment. In a discussion of why a given country specialises in certain lines of production, we cannot rest content with references to the actual supply of productive resources; we must go further and inquire into the causes of this supply, indicating especially the part played by international trade. Unfortunately not much can be said without going into great detail and collecting a large number of facts. Such extensive investigations into the concrete situations of countries or industries fall outside the scope of this book. Brief description of a few simple cases must suffice by way of illustration.

In these cases the existence of a certain industry is to be explained, *not* the character of the economic life of the country. Consequently the localisation of all other industries is considered as a known datum.

To explain why a certain industry is located in one or a few countries and not in others it must be shown that costs of production on the basis of existing factor prices are lower than in other countries: certain factors are cheaper here than abroad, which accounts for that condition. We must also consider how far the supply and price of the various factors are the outcome of this particular industry's location in the given country. In some cases we may go further and examine the circumstances behind the factor supply in general.

Such an analysis of international localisation is similar to the investigation a business man would make before deciding where to place a factory. He would consider first the height in each place of the various cost elements (wages, prices of natural resources, etc.),

then the influence which the location of his factory there might have upon them, taking into account not only the effects his demand would have upon prices, if the actual supply of factors remained constant, but the possible effects of his activity upon that supply.

Let us first consider the textile industry. The outstanding fact in respect to its localisation is that practically all countries which have any manufacturing industry at all produce a considerable quantity of textile goods. The first phase of modern industrial development is textile production by means of imported up-to-date machinery. Why has it proved so much easier to establish this production in industrially young countries than that of other industries? Partly because of the tariff policy and the cheap transport of raw materials, but chiefly because the necessary supply of labour is to be found almost everywhere, at least in countries with a white and yellow population. The carrying on of hand spinning and weaving for centuries has made a large part of the population, especially in textile production centres, familiar with the handling of wool and flax and their manufacture into cloth. Besides, the skill and training needed to make a usable textile worker are relatively inconsiderable, however difficult it may be to acquire first-rate skill. Compare the machine industry, where workers are of little or no use unless they meet a definite standard of performance.

Considering the ease with which textile industries can be established, it is at first sight somewhat surprising that the British industry has acquired its dominant position. It is partly due to the advantages of an early start; by means of newly invented machinery, production had been firmly established on a modern basis in Great Britain long before it commenced under similar conditions in other countries. A skilled labour supply appeared, and organisation on an unprecedented scale brought many advantages. The commanding position of British trade and commerce also contributed largely towards the extension of exports to those very countries which had been slow in starting textile industries of their own.

Some of these causes of superiority are at present about to disappear, especially so far as coarse cottons and low-grade woolens

and worsteds are concerned, several other countries, among them Japan, Germany, Italy, France, and the United States, now having the same advantages of production; they also possess a good supply of trained labour, and use the same machinery as British firms. Some of them may not use it as well — and this is especially true of the Japanese — but their lower level of wages is a more or less compensating element.

Evidently an equalisation of production conditions in the textile industry of various nations has taken place, except that wages vary widely from one country to another. Greater productivity of industry in general in the Anglo-Saxon countries permits the maintenance of a much higher wage than in Germany, France, or Italy; compared with the level in Japan the difference is still greater. The British textile industry, like its competitors, has to accept these wage conditions as they are, a fact that naturally creates many difficulties, since its superiority as to other cost elements has been reduced and tends to disappear altogether in the production of simple grades.

Statistics concerning the consumption of cotton in 1913 and 1924 show the trend clearly. In Great Britain it fell from 4,274,000 to 2,718,000 bales, but in Japan it rose from 1,589,000 to 2,337,000 bales and in Italy from 790,000 to 942,000 bales.

While Italy and Japan are continually increasing their productive capacity (the number of cotton spindles rose by more than 100 percent from 1913 to 1924) almost no new cotton and woolen factories have been erected in Great Britain since the War; as a matter of fact, a large number of the existing establishments are unable to show satisfactory returns. The existence of fixed plants tends to keep British output and export on a fairly high level, for it is better to maintain production and get a small surplus over and above variable costs than to get nothing at all. The supply price of textile plants is consequently very low and competitive prices for cotton goods are quoted. But the tendency will be for this supply to diminish.

In goods of high quality the position of the British industry still appears strong. The supply of specialised skill among workers and engineers cannot be matched in other countries. The influence of an early start, i. e. its effect on productive conditions, is

still a source of superiority which offsets the disadvantage of high wages.

The linen industry presents a particularly interesting example. The north of Ireland and the south of Scotland grew much flax a century ago, and manufactured it on hand looms. For a long time they have grown very little, flax culture having passed to low-wage countries like Belgium and the Baltic group. Nevertheless the two districts mentioned are centres of the world's finest linen factories. For generations their technical skill has been turned into this channel, and the consequent supply of labour has been such a source of strength that the manufacturing industry has remained when the production of the raw material emigrated.

A highly centralised industry of an entirely different sort is the Finnish bobbin manufacturing industry. In 1928 it consisted of five fairly large factories, the largest with about 600 workers, and dominated the world market. What are the conditions that cause it to be located in Finland? First of all, wages in Finland are low. Few countries with a fairly high standard of manufacture pay less, or even so little. The low standard of living calls forth a great supply of female factory labour, which is therefore even cheaper than male labour. The bobbin factories employ chiefly women for the hand lathes, paying them (1928) 20 marks per day (50 cents) plus 30–50 percent extra for piece work; men are used only as mechanics and foremen. Secondly, Finland has an abundance of good birch wood, the raw material used in the industry. The importance of proximity to raw-material sources will be dealt with later. Rates of interest, on the other hand, are high (about 10 percent for industrial establishments); but as the bobbin industry uses simple machinery, the interest outlay is not excessive. In other countries expensive and wholly automatic machinery is used, but with present wages and interest rates it does not pay to introduce it into Finnish factories, partly because hand methods give a superior quality of product. The difference in cost of production between the new and old methods is, however, slight.

The standard of living, social conditions, habits, and other elements which affect the supply of female and child labour, are important factors in determining the international localisation of

production. To take one other example, the sugar beet is cultivated in Germany, Poland, and Czeko-Slovakia by means of much cheap labour of this sort. It is unlikely that a high-wage country like Great Britain, where women and children are not used to such hard work as in less fortunate countries, would succeed in establishing beet growing on a profitable basis.

Similarly, the great supply of home workers at low rates in poor countries or countries with distinct social habits is an important localisation factor. Toys in Germany and Austria, glass in Bohemia, lace in Belgium, are produced so cheaply that they can be exported even to the United States over the high tariff wall. In such cases also the "inherited" skill is of importance. The supply of cheap home labour may be especially dependent upon the existence of other industries which use labour chiefly at certain seasons of the year or at certain times of the day. The Belgian peasants make lace in the intervals of their farm work.

In general, the existence of one industry can sometimes be explained only by the conditions of a *supplementary* industry. The supply of productive factors must be considered from the point of view of both industries, or rather the fact that conditions are suitable for one is due partly to the existence of the other, and vice versa. Agriculture in northern Sweden stands and falls with the forest industry; the farmers work in the woods in the winter, cutting and transporting the lumber as long as the snow lasts, and concentrate on agricultural work during the brief summer.

It is evident that within limits a country may specialise in any one industry as well as in any other. Chance plays a significant part in determining the localisation of industry. An invention in a certain country may give rise to the manufacture of certain machines, while others are produced in other countries, partly as a result of inventions there. A different distribution of inventions would have caused a different localisation.

There are, however, strict limits to such influences of chance. No invention will make a country an important producer of the article in question, if the productive facilities are not fairly good. Besides, the direction in which inventive and administrative labour is turned depends much upon the existing industries and

the natural facilities of the country in question. For this reason, inventive and administrative genius will not so much affect localisation in an unpredictable way as it will enhance existing tendencies towards division of production.

Finally, let us consider as a whole the industry manufacturing for export. Which countries have the largest net per capita export of manufactures? Great Britain, Germany, Japan, and Switzerland lead; the first two have plenty of labour of all sorts, capital, and iron and coal mines, but a small supply of agricultural land and other natural resources. The other two lack mines and have slight natural resources, but possess an abundant supply of labour and capital. This supply of labour and capital is largely the result of earlier trade, which has brought an increase in population. Without imported food the present figures would be impossible; indeed, much lower ones would have called for the employment of so large a proportion of the productive factors in relatively inefficient food production that little wealth could have been amassed.

Clearly, the localisation of manufacturing industries in the twentieth century is to a large extent governed by earlier reactions of labour and capital supply. The reactions of nature are less marked; for this reason industries requiring the use of rare natural resources have a fixed localisation. This is the case with the production of many raw materials, as opposed to their manufacture into finished products. Once ready, raw materials may be transported long distances (cf. Chapters VIII and XII) to where manufacturing plants are located. Manufacturing is relatively independent of climatic conditions, although an unhealthy or hot climate is a great drawback. For these reasons manufacturing industries may in the future spread over much wider areas than raw-material production. As has already been emphasised, however, it is by no means certain that raw materials will form an increasing percentage of international trade. Human differences count for much, and although the supply of labour reacts, while that of nature does not, an even distribution of labour qualities and races over the earth is not to be expected (cf. Chapter XII).

PART III

COMMODITY AND FACTOR MOVEMENTS AND THEIR RELATIONS

CHAPTER VIII

INTERREGIONAL COSTS OF TRANSFER OF COMMODITIES

§ 1. *Introduction.* Ever since the classical economists erected that marvellous structure, the theory of international trade, the relative immobility of the factors of production has been regarded as the justification of a separate theory, independent of price theory in general. This opinion has been accepted by almost all later writers; a notable exception is Sidgwick, who suggested that what necessitates a special theory for the determination of international values is not the imperfect mobility of labour but "the fact of distance, which renders international exchange costly." [1]

This statement by Sidgwick cannot of course be accepted without qualifications; domestic trade is sometimes not less costly than international trade, but more so. Nevertheless, Sidgwick's impression that too little attention had been given to the various costs of transport was well founded. Modification of the general price theory is necessary because of such costs, no less than because of the immobility of productive factors. Both these elements make themselves felt in international as well as in domestic trade — a fact that will be fully demonstrated in the following chapters. The important distinction is therefore not between domestic and international trade theories, but between a *one*-market and a *many*-market theory of pricing.[2]

There are different markets for goods as well as for productive factors, and the obstacles to movements between these markets are all of importance for a general theory of localisation. It is true that international trade deserves special interest in a study of localisation, and that there the lack of factor mobility is per-

[1] *Principles of Political Economy* (London, 1883), p. 229.
[2] Cf. Introduction.

haps the most important element (although there are also special obstacles to international commodity movement which must be reckoned with). But international trade theory cannot be understood except in relation to and as a part of the general localisation theory, to which the lack of mobility of goods and factors has equal relevance.

To consider these questions is the object of Part III. It will be practical to build directly upon the theory of interregional trade under simplified conditions, developed in Part I, while keeping the qualifications from Part II in mind, and to introduce the complicating elements step by step. We shall first consider the obstacles to interregional commodity movements, the most important of which are costs of transport; the term "costs of transfer" indicates transportation costs as well as the costs of overcoming other obstacles, such as tariff walls.

In Chapter IX, interregional factor movements and their relation to interregional commodity movements will be analysed. The next two chapters will present in brief outline some aspects of a general localisation theory, with interior costs of transfer and obstacles to interior factor movements taken into account. A concrete discussion of international trade, based on this analysis, is given in Parts IV and V.

§ 2. *Preliminary analysis of the influence of obstacles to interregional commodity movements.* Costs of transfer of course vary greatly for different commodities; some are bulky, heavy, or easily spoiled, others may be sent round the world for an amount that is insignificant compared to their value.

As between various regions, commodity prices tend to differ by the costs of transfer. But this is true only of goods subject to interregional trade; if the costs of transfer are greater than the differences in the costs of production in the various regions, then naturally each region will produce such goods itself and they will not enter into interregional trade. They will here be called "home market goods" as opposed to import and export commodities, which together are called "interregional goods." This is a useful distinction, although it goes without saying that no fixed border lines exist between these two groups of commodities. In

the later analysis we shall sometimes find it convenient to divide home market goods into two classes, those which compete closely with import or export commodities, and those which meet little of such competition.

Goods and services which must be produced in the immediate neighbourhood of the place of consumption are naturally to be classified as home market goods, the term "goods" being taken in a wide sense and including personal services. As a matter of fact, the latter form a large and important part of home market goods, e. g. domestic services and the services of distributing commodities to the consumers. Other examples of home market goods are heavy and bulky commodities, such as bricks and milk, the transfer costs of which are high in relation to their price.

What now are the effects of costs of transfer on interregional trade? In other words, what changes in the price system in trading regions, presented in simple form in Part I, are required when the costs of interregional transfer are taken into account? These costs of course vary with other elements of the price system. The transfer of commodities from one region to another can be done only by means of certain productive factors; transportation requires the use of such factors as much as does production in a narrow sense. From this point of view, therefore, transportation services [1] hold the same place in the price system as do other services and commodities.

There are, however, more important differences. In Chapter I the relations which govern the price system under simple conditions were set forth; [2] additional elements must be considered when transportation services are introduced. The total demand for each factor of production comes not only from production for domestic consumption and export but also from transport activities. Costs of transport, like other services and goods, are governed by the prices and quantities of the factors required. Demand for "foreign" goods is based on their price abroad plus the costs of transport, and is, therefore, at the same time a demand for interregional transport services.

[1] As to other costs of transfer, see p. 145.

[2] See also Appendix I.

Furthermore, the relation between costs of production at home and the supply price of "foreign" goods, i. e. costs abroad plus transportation costs, determines whether a given commodity is to be imported, exported, or produced for the home market. This fixes the volume of imports and exports. Similarly, the prices of productive factors determine the amount of transportation services to be supplied by each region. Such services affect the balance between imports and exports. By the introduction of these relations a simplified picture of the price system for productive factors, goods, and transport services is obtained.

It should be noted that transportation as between regions *A* and *B* may require the use of productive factors in other regions as well. This is often the case when land transport is used; railways carry goods through the region *C* at costs which depend upon the quality and price of *C*'s productive factors. While it is true that the costs of transport are governed by the prices and quantities of the factors required, the factors in all regions must be included. There are, of course, many alternative routes and methods of transport between *A* and *B*, selection being made on the basis of cost, as in the case of the method and location of production.

Being part of the price system, transport services naturally vary with it under the influence of changes in demand, supply, and other elements. A study of railway tariffs or shipping rates reveals clearly that the relation between the charges for different goods depends upon the general economic situation, and changes with it. Furthermore, freights may be cheaper or dearer in one direction than in the other, according to the demand for transportation. Inward and outward freights are an example of joint supply; a relatively great demand for transportation in one direction raises its price compared to the price in the opposite direction.

Great Britain has as a rule high export shipping rates and low import rates, as the export of coal requires more tonnage than other important goods. In the British trade with Scandinavia, however, inward freights are higher than outward freights, for Scandinavian articles like timber and pulp are so bulky as to require even more tonnage than British coal.

In the nineteenth century the volume of goods exported from Europe to South America was much greater than the volume of those imported. Hence, freight rates to South America were generally higher than rates in the opposite direction. This situation has changed; South America now exports large quantities of grains, a comparatively bulky commodity; in addition to the payment for her imports she has to send goods to discharge the payment of interest on huge foreign loans.

Costs of interregional transfer other than transportation charges may be similarly dealt with, e. g. the cost of overcoming special difficulties in trade with regions where "economic customs," laws, and language are different. On the other hand, duties on imports or exports, belong to a special category. Payment in money is necessary to overcome these obstacles, but the sum is not given as reward for the use of certain productive factors, as in the case of transportation costs; consequently there arises on this account no demand for factors, except a few customs officials and clerks and labourers for the extra work required by compliance with customs formalities. This special contingency should be kept in mind in considering the place of interregional transfer costs in the price system. We may deal with all of them as analogous to costs of transportation, and consider the special circumstances later (Chapter XVI).

It now becomes easy to explain certain influences of the costs of transfer upon interregional trade. Naturally, if there were no such costs trade would take place in all or practically all commodities, whereas large groups of commodities are now excluded. In a word, costs of transfer reduce trade and weaken its effects upon prices. These effects were found in Part I often to be a tendency towards an equalisation of commodity and factor prices.[1] That tendency is vitiated by the costs of transfer, although the trade which goes on in spite of them must exercise a price-equalising influence so far as it goes. Trade means that the outside demand is brought to play on the inside supply and the inside demand on the outside supply. Costs of transfer interfere with this process, and lessen its influence upon prices in different markets.

[1] The modifications which have been discussed in Part II should be kept in mind.

A special influence arises from the fact that the transfer of goods requires productive factors in other proportions than do other sorts of economic activity. Long-distance transportation probably requires relatively great quantities of capital, iron ore mines, and coal mines, and the growth of long-distance trade has therefore doubtless tended to raise the relative scarcity of these factors. Much transportation makes use largely of natural resources employed little or not at all in industry, e. g. seas and rivers. These are very often "free"; the traffic is unable to create scarcity in them, i. e. to give them a price.

On the other hand, the reduction of interregional trade through high costs of transfer involves a reduction in the scale of production in many industries. Using the terminology of Part I we may say that the lack of divisibility of the productive factors is more felt than it would be if trade were not hampered by the costs of transfer.

The costs of transfer limit the size of markets and of units of production much more in some cases than in others. Certain regions are much larger than others, which considerably affects the character of trade between them.

The technique, i. e. the proportions in which the factors are used, varies with the scale of production. In the small technical unit most commodities are made by hand with little use of machinery; large-scale enterprise, on the other hand, has been able to substitute automatic and semi-automatic machinery for manual labour to a surprising extent. It follows that one region may be able to produce a commodity on a small scale cheaper than another, manual labour being cheap in the former, while the latter is able to produce the same commodity cheaper on a large scale, owing to its command of a great supply of capital and technical labour.

The United States produces and to some extent exports machinery which can be sold in large quantities, but imports machinery of which a slight amount is needed.[1] Why? Evidently because most machines under small-scale production require plenty of labour, the skilled variety in particular, but little capital

[1] See Taussig, *International Trade*, p. 191.

and administrative labour; skilled labour is expensive in the United States. When demand is heavy, however, and large-scale production possible, administrative labour and capital may be substituted for ordinary skilled labour, and costs thus lowered. In some cases they remain higher than in Europe, but the American industry is able to hold its own behind the shelter of the tariff wall. In other cases production is on a much smaller scale in Europe for one reason or another, — slight demand outside the United States, the existence of old factories, small markets, or the lack of administrative labour, — and the American industry may even be able to export.

The motor car industry is a case in point. Cheap and medium quality cars are exported from the United States, while high quality cars are imported. In many other industries, perhaps the majority, imports are confined to the most expensive qualities, the American industry supplying the rest. The explanation is the same: greater possibilities of standardisation and use of labour-saving machinery in the production of ordinary qualities. Evidently the size of the market, around which interregional costs of transfer raise a wall, is a condition of some importance to trade.[1]

§ 3. *Distance relations and the character of trade.* After this brief description of one side of the influence of costs of transfer, another aspect of it will be subjected to special analysis. What may be called the "transfer relations" of trading regions will be further considered, first of all the distance to the market. To begin with it is assumed for the sake of simplicity that costs of transfer are in proportion to the distance of transportation and that trade takes place only in finished goods, i. e. that the whole process of production is carried out in one region.

Two regions, A and B, are situated close together, while a third, C, lies further away. A is concentrating upon manufacturing industries, whereas B and C are predominantly agricultural. The former will naturally export manufactured goods to the other two, which will send agricultural products in exchange. They will not, however, export precisely the same sort of farm products to A; the long distance from C to A will put the former at a disad-

[1] For further analysis of this question see Chapter XIII, especially § 5.

vantage in the export of heavy, bulky, and easily spoiled commodities, consequently *B* will export chiefly such products, while *C* will send agricultural goods that are more easily transportable. Thus the difference in trade between *A* and *B* and *A* and *C* may be considerable, even though *B* and *C* have practically identical equipment of productive factors. Trade between *A* and *C* will be much less lively than between *A* and *B*. *C* will produce some manufactured goods for herself which *B* will find it advantageous to import from *A*. Evidently not only exports from, but also imports to, the two agricultural regions will be different.

Examples of the influence of distance are easy to find, although affected by many varying circumstances at the same time. If Denmark exports butter and eggs to Great Britain, while Australia sends wool, the explanation is partly to be found in the different distances to market.

Transfer costs are of course affected also by conditions other than distance — for instance, the character of the earth's surface over which transportation takes place. *C* may not lie further away from *A* than does *B*, but may use expensive land communications for its exports to *A*, whereas *B* is able to use the cheaper sea transport. The economic result will, however, be the same.

§ 4. *The relation between the costs of transfer for raw materials and for finished goods.* The problem is more complicated when the transfer of raw material, auxiliary materials, machinery, etc. to the places of production is concerned. In many cases the process of production is divided between several regions; iron ore, for instance, may be produced in one place and be smelted in another. Evidently costs of production at the higher stages of the process include the costs of transferring raw material, etc. from the various sources of supply.

Whether a certain commodity *f* is to be produced in the region *A* for the home market or is to be imported depends not only upon how cheaply *f* can be manufactured from the raw material *r*, but also upon the relation between the costs of transferring *f* and *r* from the region *B*, where *r* is produced. If it costs more to transfer *r* than *f*, then manufacturing of the latter in *B*, which has

the local supply of *r*, means a saving compared to the manufacturing of *f* in *A*. If, nevertheless, this commodity is to be manufactured in *A*, the reason must be that the manufacturing process itself can be carried out more cheaply. On the other hand, if the finished good *f* is more difficult to transfer than *r*, production for *A*'s consumption tends to be located in *A* itself, unless there is some more than compensating disadvantage which raises the costs of manufacturing in this region.

There is a tendency for the commodity most difficult to transfer to govern localisation. When it is *f*, production takes place close to the market; when it is *r*, it is better carried out in the neighbourhood of the raw-material resources. If the costs of transfer are equally high there is of course nothing in them which tends to make any point on a line from *B* to *A* better for localisation than another. Both these two regions and all others on that line are equally suitable as far as transfer conditions are concerned. Note, however, that this is true only of production of *f* for consumption in *A*. The situation is different when the most favourable localisation — in *A* or *B* — for export of *f* to region *C* is to be determined. In this case, the manufacture of *f* in *A* and its transport to *C* will entail extra costs of transfer, unless *A* is situated on the line of cheapest transportation from *B* to *C*. If the same factory is to export to many places. *A* cannot be as good a location as *B*. In general, transfer relations tend to make the region with raw material supply the most favourable for the location of industries manufacturing for export to other regions.

In cases where production on a large scale is more efficient and cheaper than output in small quantities, and the market in each region is not very great, the superiority of raw material regions for production for export may give them advantages of scale which other regions are unable to obtain. For this reason they may be able to do the manufacturing so cheaply that they can export even to regions where the supply of productive factors is equally suitable for these industries, but where production has not reached the optimum scale. This situation, together with the fact that raw materials are often more difficult to transfer than goods made from them, explains largely why manufacturing processes are

in so many cases concentrated in the regions with raw material supply.

Usually, however, the transfer relations between various regions are much more complicated. The raw material *r* is perhaps produced not only in *B* but also in *D* and at different costs. Whether *C* is to import *f* from *A*, *B*, or *D* depends not only upon the costs of manufacturing and the costs of transfer in these regions, but also upon differences in the supply price of *r* with which they have to reckon. To be at some distance from a cheap supply of raw materials may be as advantageous as to be close to a more expensive source.

Furthermore, in many cases several raw and auxiliary materials and several sorts of machinery are required for the manufacture of *f*. It may be cheapest to import them from different regions. *A* may have a cheaper supply of some of them than *B*, whereas the latter may have a corresponding advantage with regard to others. The iron industry is dependent upon easy access to ore, coal, and markets. Given the localisation of the three, it is easy to compute where the iron industry must be located in order to meet minimum costs of transfer. But whether this is the most advantageous location depends upon the costs of manufacturing the iron, and upon the chances of obtaining coal or iron more cheaply from other sources of supply when the manufacturing is done elsewhere.

To each localisation of production of *f* corresponds a certain localisation of production of raw materials and certain total costs of transfer. Thus one must compare the costs of the *total* process of production, even though it may be divided between several regions, plus all the costs of transfer, in all possible different cases, before one can know anything about the minimum cost localisation. If there are other causes of cost differences than those having to do with transfer, they must, of course, be considered.

The localisation of industry and character of interregional trade, which is in harmony with a static equilibrium, are characterised by the fact that no enterprise can reduce costs of production, with due regard to transportation costs, by choosing another location. The demand of one region for producers' goods

from other regions is a function of the localisation of industry, which determines what sorts and quantities of raw materials, machinery, etc. are needed. This demand has to be added to consumers' demand in the "equation of reciprocal demand." That is still another modification [1] of the system of equations presented in Part I and Appendix I to illustrate the price mechanism.

We shall present a more general treatment of transfer relations in Chapter X. It should be pointed out here that a change in the relation between costs of transfer of goods at lower stages of production and goods at higher stages may radically affect localisation. An obvious example is the effects of import duties on finished goods: they make it cheaper to import raw materials and manufacture the finished goods within the protected region. Thus, to some extent the later stages of production are moved from the raw material region to the market region. Trade in raw materials takes the place of trade in finished goods. Pulp instead of paper may go from Scandinavia to Great Britain.

It should be observed also that the height of the costs of transfer is greatly affected by the volume of trade. Trade connections become more intimate and transportation cheaper between regions which exchange great quantities of commodities. In this way, regions which are densely populated and rich in capital, and therefore carry on a large volume of trade, are, so to speak, brought economically "nearer" to their markets than poor regions with scanty population in a position otherwise similar.

No simple formulation of the influence of transfer relations upon localisation and trade is possible. Similarly no simple exact description can be given of the nature of the trade between a number of regions with different facilities for production. In the latter case, however, we may say, if certain qualifications are kept in mind, that each region tends to specialise in commodities which require relatively large quantities of the productive factors that are relatively abundant there. As to transfer conditions, no corresponding statement seems possible. We must be content to know that they take their place in the mutual interdependence system of pricing by which trade, costs of transfer, and the inter-

[1] Others were mentioned in § 2.

regional distribution of production and markets are all determined. The essence of our conclusion can be given only in the form of a further analysis of special aspects of the relationships within this system.

§ 5. *Interregional price relations.* We now turn to the price aspects of the economic relations of trading regions, starting, for the sake of simplicity, with the assumption of two regions only, and studying commodity prices on that basis.

Export goods are cheaper in one region than in the other, while import goods are more expensive. If the costs of transfer in both directions raise the prices of import goods by the same amount, then the level of prices of interregional goods must be the same in both regions, assuming of course that equal weight is given to the two categories of commodities in the calculation of the price level. If, however, the costs of transfer weigh more heavily in one direction than in another, — if import prices in *A* are raised less over export prices in *B* than the import prices of the latter are raised over the export prices of the former, — the level of interregional prices must evidently be lower in *A* than in *B*.

Such differences in the costs of transfer may be due to the fact that *A* imports goods that are easier to transport than the import goods of *B*. The effect of this may be accentuated through lower freight rates to *A* as a result of a lesser demand for transportation in that direction. Import duties may also raise interregional prices in *B* widely over *A*'s level. There is no foundation for the widespread impression, prevalent in the post-war monetary discussion, that international differences in price levels must be due only to differences in home market prices.

Whereas interregional prices tend to differ between regions by the full amount of the costs of transfer, prices of home market goods usually differ *less* than these costs. That is, of course, the reason why they are produced in both regions, i. e. are home market goods. Within the limits set by the costs of transfer — which are often relatively higher for home market goods than for interregional goods — prices of the former may move differently in different regions. There is nothing to prevent houses from becoming cheaper in Sweden at the same time that they are becom-

ing more costly in Great Britain. However, home market prices in one region are in several ways indirectly tied up with home market prices in other regions. This is a complicated question which should be considered in some detail.

Let us put the question in this way: To what extent are interregional discrepancies in home market prices kept within narrow limits not only through the potential trade in these goods themselves, which would come into existence if interregional price differences came to exceed the costs of transfer, but also through the actual trade in *other* goods?

It should be noted that goods in different stages of production — raw materials, half finished goods, auxiliary materials like tools and machines, finished consumers' goods — are subject to interregional exchange. In some cases only the finished products are traded in, in other cases only the raw materials. Nevertheless, prices of all categories are more or less influenced in an equalising direction. The cost of a house in *A* and *B* will differ less when the import of timber from *A* to *B* reduces the price difference for this commodity to the costs of transfer, than if timber were produced in *B* at high cost. The price of bread in various regions differs less than it would if there were no interregional trade in wheat. Interregional trade in butter tends to prevent large differences in milk prices, in spite of the fact that milk hardly enters into such trade at all. In regions which produce some butter themselves although they import large quantities of it (i. e. Great Britain), the price of milk holds a fairly definite relation to the price of imported butter. The price of milk in the exporting region (i. e. Denmark) is also governed by the same butter price, after deduction of the costs of transfer. In this way the butter trade keeps the interregional difference in milk prices within narrow limits.

Evidently, trade in goods in the earlier stages, including machinery, tends to make costs of production and prices of home market goods in later stages of production more nearly similar in various regions than they would otherwise be. Similarly, trade in goods in later stages affects the prices of home market goods in earlier stages. In cases of rival supply, when different products

are made from the same raw material, the special price ties concern all these goods. Cheap furniture and building timber, which are both made from fir wood, afford an example.

The case is similar when two or more commodities are subject to joint supply, i. e. are manufactured in one process of production out of a common raw material; their prices are naturally intimately related. If in certain countries only one of them enters international trade, the prices of the others belonging to the home market group are affected by their trade. Increased demand for the former commodity and its higher price in these countries will tend to depress the prices of the other goods. In other words, home market prices tend to vary in the same way in all these countries.

There is another influence of a similar although still more indirect character. The factors of production are not subject to international trade and resultant price equalisation; factor prices thus hold a position analogous to that of home market prices. But the trade in commodities of whatever sort tends to bring factor prices in various countries closer to each other; thereby costs of production of goods that do not enter international trade — home market goods — are brought more into harmony. The price at which a flat can be hired depends greatly upon the height of the rate of interest. If the interregional differences in interest levels are reduced through trade, a tendency towards equalisation of the price of flats is clearly brought about.

In brief, in so far as prices of interregional goods and productive factors in one region are made to differ less from what they are in other regions, costs of production and prices of home market goods are also made more nearly equal. Assume that demand for home market goods falls off in A and increases in B. Home market prices will fall in A and rise in B, and the prices of the various factors of production will be affected in the corresponding direction. In this way the conditions of production of international goods and the trade in them is necessarily influenced. It may be extended or reduced as the case may be. In any case the variation in factor prices is counteracted, and the change in home market prices kept within more narrow limits.

Assume further that the impediments to interregional trade are considerably reduced, and the prices of interregional goods are consequently more nearly equalised in various regions. In so far as these goods enter as costs in the production of home market goods, the prices of the latter also approach equality. This concerns the supply aspect of home market goods. Let us turn to some aspect of demand conditions, tending to maintain a connection, albeit an elastic one, between home market prices in different regions.

Prices of home market goods naturally cannot differ much from prices of import or export goods, if the latter offer intense competition. If the price of domestic electrical machinery is raised, while import prices for the same articles are not, demand will turn to the latter. Thus, demand for "competing home market goods" easily reacts so as to counteract any tendency towards price variations in one region exclusively. Although a certain commodity is an export commodity in *A* (exported to *C*) and a home market commodity in *B*, the prices will not vary arbitrarily; a special case of this sort is "rival demand," which exists when one commodity can be substituted for another. International trade in margarine tends to prevent great differences in butter prices between countries where the latter is a home market commodity.

Furthermore, prices of competing home market goods in *B* and *C*, which are both importing similar products from *A*, will move more or less in harmony. If competition between imported and domestic goods is very close, then home market prices in *B* and *C* tend to be equal, and to exceed *A*'s export prices by the costs of transfer.

Special attention should be given to one category of home market prices, the prices of personal services. Most of them are only slightly affected by trade in commodities that enter into the costs of production of the services, for practically the whole cost consists of wages. Thus, prices of services in various countries are affected by trade only through its effect on the prices of the productive factors, in this case the height of wages. Now, it is apparent that nominal wages are by no means completely equal-

ised interregionally, and that for this reason the prices of personal services, as every traveller knows, vary from one region to another more than almost any commodity price.

Evidently the relation between home market prices in different regions is governed (1) by the prices of the productive factors affected by trade in any sort of commodity, and (2) by the possibilities of trading in some goods belonging to a group of commodities of which the prices are so interdependent that trade in one of them affects the prices of the others.

On the whole, the interrelation of home market prices in different regions is more fixed than appears at first sight.[1]

This discussion of home market prices applies to the case of many trading regions as well as to that of only two. It remains to describe briefly the relations between prices of interregional goods in the former case.

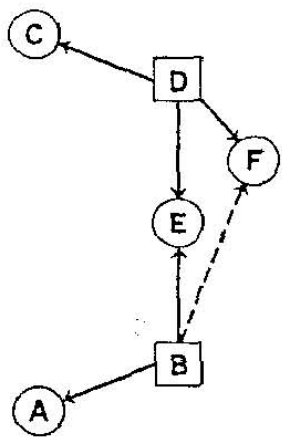
§ 6. *Interregional price relations, continued.* Consider four regions of which A imports certain goods from B, while C obtains the same goods from D. Costs of production in B and D may differ considerably, perhaps as much as the costs of transfer between these regions. Furthermore, the costs of transfer from B to A and from D to C may be quite unequal. It follows that the import prices of A and C may also differ, although not more than the costs of transfer between them. The difference will in most cases be smaller, but no general rule can be given as to its dimensions. Interregional price relations are fixed by the costs of transfer only with regard to the regions which trade with one another in the goods concerned. Prices of interregional goods in two groups of regions which do not trade in them are not directly related.

Evidently, even if the group of commodities called "interregional goods" contains the same articles in A and C the level of interregional prices in these two regions may differ, not only because of differences in the costs of transfer but also because of the existence of more than one exporting region. Costs of production and export prices may be much higher in the region supplying A than in that supplying C. Most countries buy pulp from

[1] For variations in their relations, see Chapter XXIV.

Scandinavia, but certain countries on the Continent buy from their neighbours, e. g. Hungary from Czeko-Slovakia. Prices in both these countries are lower than Scandinavian prices plus costs of transport.

These remarks lead to a conclusion which has been often ignored.[1] To say that prices of interregional goods tend to differ by the costs of transfer is saying nothing. Such a statement refers only to a certain exporting region, and the regions which import a particular commodity from it. It is not true of a comparison between prices of this commodity in the various importing re-



gions; the price differences will often be less than the costs of transfer between them. Neither is it true of a comparison with regions belonging to a different group, i. e. not trading in this commodity with the first group.

Often, however, different exporting regions have common markets which connect their prices. This is the case with pulp; thus, price variations in Scandinavia affect import prices not only in regions which import pulp from various countries, but indirectly also pulp prices in other exporting regions and thus almost throughout the world. The relation between prices in various producing regions is nevertheless far from fixed, even if variations in costs of transfer are disregarded: the position of the common market may vary.

[1] See, e. g. Keynes, *A Treatise on Money* (London, 1930), chapter v, Sec. 2, where the viewpoints on international price relations are otherwise similar to those in this book.

In the figure above, B and D have a common market in E. If A's demand falls off, prices decline in B and E. D may be forced out of this market by B and the latter region may invade F, which used to buy only from D. Assuming that the exporting regions quote the same prices at the factory for all their customers, prices fall more in A, B, and E than in C, D, and F. Evidently it is not justifiable, except in the case of goods produced in one region only, to refer to a world market price, to which simply the costs of transfer have to be added when one wishes to know the price in a certain region.

Knowledge of interregional price conditions implies knowledge of the costs of production and prices in the various producing centres, and of the currents of trade from these centres to the various importing regions. A bird's-eye view of interregional price relations is secured through a system of equations which take the interregional costs of transfer into account. The character of such a system has been indicated in previous sections of this chapter (cf. Appendices I and II). The analysis given above shows that such a price mechanism is far from being characterised by equality of general price levels or even of levels of interregional prices.[1] Prices in all trading regions are interrelated, but not in such a simple fashion that brief statements of equality of price levels may be regarded as satisfactory; the interdependence is closer for home market goods and less close for interregional goods than appears at first sight.

§ 7. *Difficulties with price index comparisons.* In connection with this reasoning certain difficulties of price index comparisons should be mentioned, as they make it clear that great caution is required.

One special reason for care in the use of the "level of interregional prices" is that the commodities entering interregional

[1] The discussion of foreign exchange problems after the War has suffered a great deal from unpractical assumptions of equality of price levels. Even writers like Hawtrey and Cassel have made themselves responsible for such reasonings. See such recent writings as those of 1926: Hawtrey, *The Economic Problem*, p. 113, and Cassel, "The Foreign Exchanges," Encyclopedia Britannica, New Volume 1, p. 1080. For a view affiliated with that in the text see Wicksell, *Geldzins und Güterpreise*, chapter x, and Keynes, *A Treatise on Money*, chapter vii.

trade are not identical in all regions. Not only are there many differences in quality which impair the accuracy of price comparison; much more serious is the difficulty arising from the fact that a commodity belonging to the home market group in one region may belong to the interregional group in another. A price index for all interregional goods in *A* is therefore not comparable to a price index for all interregional goods in *B*. As a rule, the distinction between home market and interregional prices and the price level concept in general is of greater use in comparisons of conditions on two different dates in the same region than in comparisons between different regions.

Difficulties inherent in the index method also make themselves felt. The result depends upon how the weighting is done. Strictly speaking, all comparisons rest upon the tacit assumption that the commodities or groups of commodities or productive factors or factor groups are fairly equal in the various regions. The costs of living, for instance, can be compared if the budgets used are identical or similar. The greater the difference between the things to which the sum of prices refers in various regions, the less significant the comparison can be.

If some goods play a much more important rôle in the budgets of *A* than in *B*, and other goods are consumed only in one of the regions, a comparison of the costs of living becomes artificial. But if there are fundamental similarities, two indices of the costs of living for each region may be computed by means of the budgets used; in case the relation of the index in *A* to that in *B* is similar for the different computations, the result attains a certain validity.

Comparisons of the absolute heights of the general wholesale price levels in various regions are often much less significant. The aggregates of goods which must be used as a basis for the computation differ considerably if the weighting is to be based upon the economic importance of the goods in each region. As a comparison of price indices is nothing but a comparison of the total value of a certain "bale" of commodities in the various regions, the result is void of interest when the aggregate of goods is not approximately equal. And if identical aggregates are chosen,

they cannot be considered as satisfactory representatives of economic life in the different regions.

Evidently, general price indices for regions with considerable inequalities in their economic structure do not throw much light on price conditions. A statement that the general price level of commodities or productive factors in *A* is 10 percent higher than that in *B* often lacks meaning. If comparisons are to be made, they must be based on special indices, constructed for some special purpose. If, for instance, the food habits of the populations are similar, one may say that an index of food prices is 10 percent higher in *A* than in *B*. Again, if a certain industry uses the same raw materials in both regions, and practically in the same proportions, the height of the raw material prices may be expressed by means of indices. Similarly with regard to factor prices, they may be compared interregionally only if they refer to factors or groups of factors which are approximately equal in the various regions. Curiously enough, these qualifications of the use of price indices, although self-evident, are often overlooked, the general commodity price levels in various countries being consequently compared in unqualified terms.

It is important to distinguish the problem of comparing the absolute height of prices with that of comparing price *variations* in different regions. In the latter case the comparison is not between prices in *A* and prices in *B*. Instead, we wish to know whether prices in *A* have changed more or less than prices in *B*. The computation of the change in the price index involves only a comparison between conditions at two different times in the *same* region. From 1900 to 1914, for example, the general wholesale price level may have risen by 20 percent in *A* and by 30 percent in *B*. Such a comparison is permissible even if *A* and *B* produce and use many different goods, or the goods used are more important in one region than in the other.

Different indices can of course be employed here also for different purposes. Particularly interesting is computation of the change in the net money value of all goods produced. This is the same as a comparison of the value of the use of the total productive factors in the region during two periods of time, including

profits, i. e. the change in the national income, expressed in money. The fact that this income fluctuates more in one region than in another, when certain changes in the economic situation occur, has great significance (see Part V).

The price *changes* of productive factors, individually or by groups, can, of course, be compared, like commodity prices. We may say that the wages of manual workers have risen by 20 percent in *A* and by 30 percent in *B*, even if the proportion of skilled and unskilled workers is different in the two regions; for the comparison does not assume that the figures refer to identical objects.

§ 8. *Relations of prices of productive factors in different regions.* These relations can best be illustrated by an analysis of assumed cases. Suppose that of the three regions *A*, *B* and *C*, given in § 3, *B* and *C* have a similar equipment of productive factors (farm land, etc.). *C* is either situated further away from *A* than is *B*, or its means of communication with this region are for other reasons not so good as those of *B*. Costs of transport for import and export goods are assumed to be about equal.

It follows from what has been said in the preceding section that *B*'s productive factors will be in relatively greater demand than *C*'s, in other words that their prices will be higher. The general level of commodity prices, as measured by a wholesale price index of the ordinary type, is therefore also higher in *B* than in *C*. It is true that import prices are higher in *C*, but export goods common to these two regions command higher prices in the ports of *B* than in *C*, since they are closer to the market in *A*. The consequent relative cheapness of *C* factors tends to make home market goods in *C* also cheaper than in *B*. Observe, however, that some home market goods in *C* are *import* goods in *B*. They may well cost more in the former region. On the other hand, certain goods which *B* is able to export are home market goods in *C*, and will probably cost less than in *B*. These two qualifications do not impair the conclusion that the general price, as commonly computed, is lower in a region far from its markets than in another with similar equipment of productive factors but situated closer to the main markets.

The fact that import goods from *A* cost more to *C* than to *B* means that *C* obtains less for its exports and pays more for its imports than its rival. Evidently, the long distance to *A* or other circumstances which render trade costly are a disadvantage to *C*. The prices of its productive factors in terms of goods are lower than in *B*.

In general, productive factors situated close to the demand for their products — or so situated that these products can be easily moved there — obtain higher value than more distant factors. Out-of-the-way regions have cheap factors, and for this reason are able to produce for themselves many commodities which more favourably situated regions with higher income levels would import. This is one aspect of the restriction of interregional trade by the costs of transfer, the other being the upward influence on import prices; both of them tend to make home production profitable.

The trade with *A* obviously affects the prices of factors and commodities differently in *B* and in *C*. Relative prices in these two regions may differ more when actual trade is going on than otherwise. The statement that trade tends to equalise the prices of the factors of production therefore refers to the situation as a whole,[1] but need not be true of relative factor prices in any two regions. Yet trade between two arbitrary regions (in this case *B* and *C*) cannot but exercise an equalising influence on price conditions in *these* two regions.[2]

§ 9. *Differences in factor equipment and price relations.* It is evident that the price conditions in different regions are so profoundly influenced by the transfer relations that any explanation which disregards this aspect of the problem is inadequate.[3] It is equally clear that the differences in factor equipment, described in terms of the quantities of factors in each region and irrespective of their local distribution within it, affect interregional price relations. Other things being equal, home market prices will be

[1] The price equalising effect may be measured by an index of interregional factor price differences. For reasons analogous to those applicable in the study of "total gain" it is not worth while to give much attention to such measurements.

[2] As for qualifications to such statements see Part II.

[3] Cf. Taussig, *International Trade*, chapter v.

low in regions where the factors of production important to home market industries are cheap.[1]

The influence of the productive equipment is particularly clear in regions with an uneven supply of natural resources; they have a high general price level, as measured by a wholesale price index of the ordinary type, for they lack many of the factors which play a leading rôle in home market industry. In the southern part of Argentina almost nothing but oil is produced; consequently it is cheap, while almost everything else is expensive. This illustrates the influence of both the costs of transport and the supply of factors of production. First, the price level is high because the transport of import goods costs more than that of oil. Thus, the increase in import prices above the level in regions where the goods are produced is greater than the difference in oil prices between southern Argentina and oil-importing regions. Secondly, oil will not count heavily in a general price index, but expensive food will.

Another case is found in gold-producing districts. Alaska, for instance, is a rather barren country apart from its gold mines. Almost everything has to be imported and is, therefore, more expensive than in the places of production. Gold, on the other hand, is a little cheaper than elsewhere, though very little indeed, but this does not lower the general price index, as gold is not included among the commodities of which account is taken.

Another circumstance which affects price relations is the size of the market. Home market goods, *ceteris paribus*, tend to be cheaper in regions where the home market is large, i. e. the number of people great, their standard of living high, and their demand for the commodity in question lively.

§ 10. *Friction and interregional price relations.* It has heretofore been assumed that the prices of interregional goods differ by the precise amount of the costs of transfer. This is by no means always the case.

Note, first, that commodities do not, so to speak, sell themselves automatically. Many are what Professor Angell calls

[1] See Chapter XIV, where this reasoning is further pursued and illustrated.

"partially traded goods."[1] It is not easy to establish with full certainty the quality of the product, nor is it possible to sell it in a new market without incurring heavy marketing expenses;[2] hence the differences between the prices of such goods in different countries may much exceed the combined costs of transport, duties, and similar expenses. One must either carry on a marketing campaign and build up and pay for a sales organisation to sell a large quantity of the product in country *A*, or not sell at all, even if able to sell considerable quantities in other countries where such an organisation already exists. The initiative, enterprise, and willingness to carry risks called for if one is to "conquer" new markets are not always forthcoming. Besides, the lack of information concerning marketing conditions abroad for goods of this sort — as opposed to the important staple goods — acts as an obstacle. This lack of data is especially significant when output and prices in the main exporting countries vary irregularly, e. g. under the influence of climatic variations. The course of trade changes considerably from one year to another; timber prices, for instance, rose from 1926 to 1927 (autumn season) as follows: Finland, 55 percent; Sweden, 20 percent; Germany, 25 percent; Jugoslavia, 30–60 percent; Latvia and Poland, 20–40 percent.

Turn now to the relation between home market prices. Much of what has been said in the two preceding sections concerning the connection between prices in different regions is valid only when interpreted as referring to long-run tendencies. Prices of home market goods in different regions are connected only loosely by reactions which, when changes have occurred, may come about slowly and with little precision.

Consider first elements on the supply side which tend to cause a parallel development of home market prices in several regions. These elements all have to do with the costs of production of the

[1] See Angell, *Theory of International Prices* (Cambridge, 1926), pp. 379 ff.; Schüller, *Schutzzoll und Freihandel* (Wien, 1905), pp. 88 ff.; and the latter's "Zur Theorie der Handelspolitik" in *Die Wirtschaftstheorie der Gegenwart* (Wien, 1928), Band IV.

[2] In this amount is included the sums by which marketing expenses in this market would exceed similar expenses in countries where a certain firm is already selling the product.

various goods. Raw materials and other goods used in industries manufacturing certain goods may be subject to interregional trade and their prices may therefore tend to move more or less in harmony. Secondly, trade affects also the prices of the factors of production and thereby the production costs in home market industries. This influence is doubly indirect, and, from a short-time point of view, uncertain. The cheapening of a certain factor in region *A* may lead to a drop in the reward given the units of this factor employed in region *B*'s export industries. But for some time, at least, other units of the same factor in *B*'s home market industries may retain their old pay, because of trade union policy or other sorts of lack of mobility. For the time being, home market prices in *B* may fail to move downward as they have in *A*.

From a short-time point of view such units when used in home market industries constitute a different factor than the units employed in export industries. And it is clearly only in so far as the same factors are used in these two groups of industries that trade in interregional goods can affect directly factor prices and costs of production in home market industries.

Turn now to demand. As certain home market goods compete closely with interregional goods, price variations in the latter tend to be reflected in the prices of the former. This does not, however, happen instantly. A drop in import prices may bring a corresponding change in the prices of competing home market goods only after some time, when an attempt to maintain prices has led to reduced sales and increased imports. On the other hand, trade in goods in a late stage of the process of production (e. g. paper) is probably often effective in bringing about quick reactions in the prices of raw materials (e. g. wood), even if they are not subject to interregional trade. But even in this case some time may pass before the expected variations occur.

An entirely different element of supply largely explains temporary discrepancies in the development of prices in different regions. Factor and raw material prices affect supply only indirectly, through their influence on costs of production; while in the long run this influence is no doubt decisive, and the simple assumption of coincidence between costs and prices is justified, it is

equally clear that temporarily production costs and prices often differ considerably. Profits are high in certain industries, while others are working at a heavy loss. If profits tended to develop in a similar manner in all regions, commodity prices would also tend to move in harmony. As a matter of fact, it often occurs that while a certain industry is prospering in one region and declining in another, costs are falling in both. Similarly, a variation in costs between regions in an industry need not at once make selling prices move in a parallel direction.

Lastly, it should be mentioned that costs of production relating to individual commodities are not exact quantities. The division of overhead costs between different products of the same process or between different "bales" of goods even when of identical quality is more or less arbitrary. This opens up possibilities for price policy which may be developed along different lines. The most conspicuous example is the use of "dumping," or price discrimination in general. Electrical energy, for instance, is sold to private households and factories at different prices, according to the use made of it. The traditions of such discrimination in Sweden and Norway are different; it is quite possible, therefore, that a reduction in costs would not affect the prices of electricity in the same way in these two countries. Private householders might reap the chief benefit in one, and factories in the other.

§ 11. *Summary.* This chapter has been concerned with an analysis of the influence of interregional costs of transfer on the character of trade. It has been demonstrated that they not only hamper interregional trade but change its course and, to some extent, its effects. The relation between commodity and factor prices in different regions has been illustrated and described. The connection between prices of interregional goods has been shown to be less direct and that of home market goods more so than might be assumed at first sight. From a long time point of view the price system of mutual interdependence ties them firmly together, but temporarily considerable discrepancies in their development in different regions are possible.

CHAPTER IX

INTERREGIONAL FACTOR MOVEMENTS AND THEIR RELATION TO COMMODITY MOVEMENTS[1]

§ 1. *Factor movements as an alternative to trade.* Having dealt in the last chapter with the influence of obstacles to interregional commodity movements, we now come to the question of interregional movements of productive factors. So far these factors have been assumed to be completely mobile within the regions but unable to move at all between them; in neither regard does the assumption correspond to reality. We must consider not only the possibility of transferring factors from one region to another, but also the obstacles to their movement within the regions. These obstacles, and the corresponding difficulties in the way of intraregional commodity movements, are discussed in the next chapter. At present we shall examine the interregional factor movements and their influence on interregional trade, as well as the effects of trade on such factor movements, without giving attention to the price discrepancies which exist *within* the regions.

It goes without saying that the obstacles to interregional factor movements vary to some extent with the sort of region under consideration. They are generally more important when the regions are individual countries than when they are parts of the same country. A realistic description of these obstacles is consequently possible only in a study of a special sort of region. We shall return to this question in the chapters on international trade. In general it may be said, however, (1) that natural resources are immobile, (2) that obstacles to labour movements consist not so much in actual expenses of transporting the labourer, his family and his personal property, as in a psychological

[1] The fact that international movement of labour and capital had been much neglected in orthodox treatises and that a theory of such movements need not be subordinated to a theory of commodity movements was drawn to my attention by Professor John H. Williams during my studies at Harvard University in 1922–23. Cf. his paper, "The Theory of International Trade Reconsidered," *Economic Journal* (1929).

aversion to changes, particularly those to something more or less unknown, and (3) that obstacles to capital movements are similarly psychological.[1] Such obstacles therefore cannot, as in the case of commodities, be reckoned in definite costs of transfer.

However, the stimulus which makes labourers and capitalists overcome the obstacles is chiefly a desire to receive a higher price, i. e. higher wages or interest rates (see Chapter XVI). The difference in price sufficient to induce a transfer of labour or capital is insufficient to call forth a greater transfer. Thus, if the height of the obstacle is measured by the stimulus necessary to overcome it, it is clear that different labourers and different units of capital meet obstacles of differing heights. In this respect there is a lack of analogy to the obstacles to commodity movements such as difficulties of transportation and duties which from an economic point of view appear as costs of transfer. In other respects, however, the obstacles to factor movements may be dealt with in an analogous manner.

As factors move from regions where their prices are relatively low to regions where they are dear, their scarcity, i. e. reward in the former, is increased, while their prices in the latter fall, unless there is at the same time some counteracting tendency. Interregional mobility tends to make prices more uniform in the regions concerned, just as the interregional movements of commodities were found to do.

These tendencies, being in the same direction, cannot but affect one another. Through the exchange of commodities not only *their* prices but also those of the productive factors are to some extent equalised, i. e. interregional discrepancies in factor prices are reduced; interregional factor movements are thereby made superfluous. The movement of goods takes the place of movement of factors. In other words, if no trade took place the price discrepancies and consequently the movements of the productive factors would be more considerable. Trade renders unnecessary, in part, in some cases wholly, the interregional movement of capital and labour.

[1] The difficulties of adjustment of the trade mechanism to the existence of capital movements is another matter; see § 5.

On the other hand, the exchange of goods cannot bring about a complete equalisation of factor prices. Interregional differences remain, and call forth factor movements, whenever the difference is great enough to overcome the obstacles. Factor prices are in this way brought into completer harmony as between regions; the need for interregional trade, and consequently its volume, are reduced. Thus factor movements act as a substitute for the movements of commodities. Interregional price equalisation seems to be furthered either by both movements, or by the one which meets with less resistance.

If the mobility of the factors increases, a new transfer of them will take place, and the consequent greater harmony between their prices in different regions will obviate part of the exchange of commodities. On the other hand, a reduction in the costs of transport through improvements in the technique of transportation will increase trade, and the often resultant decrease of the factor price discrepancy may diminish interregional factor movement. Everything depends upon the intensity of the reaction of factor prices and therefore factor movements when trade varies; and upon the intensity of the reaction of commodity prices and therefore trade when factor movements vary.

In some cases the exchange of goods may operate alone. It may cause such a high degree of price harmony between regions that no interregional movements of capital and labour are called forth. The margins between wages and interest rates in different regions may be too small. Under such circumstances the mobility of the productive factors has only potential importance: it does not affect production and prices, but would do so if either the factor price discrepancies or the mobility increased.

It is theoretically conceivable that in other cases factor movement, but no trade, takes place between two regions. Both may find it profitable to trade exclusively with other regions, but this may be compatible with so different factor prices that factors move between the two regions. For all practical purposes, however, we may assume that either commodities alone or both commodities and factors move between the various regions.

A study of variations in interregional trade — whether the

cause be changes in demand, technique, or anything else — must consider the reactions of both these tendencies towards price equalisation. Variations which would increase price discrepancies will be counteracted both by a change in trade, which directly affects commodity prices and indirectly factor prices, and by a change in factor movements, which affects the latter prices directly and the former indirectly. The tendency towards price equalisation thus operates in two ways.

§ 2. *The influence of factor movements on the volume and character of trade.* We may now consider the reactions of trade when the primary cause of the economic variation lies in a changed factor mobility, and also the reaction of factor movements when the primary cause is a change in the obstacles to trade.

Assume that the interregional mobility of productive factors is for some reason considerably increased, and that under the circumstances, the existing discrepancy in factor prices is large enough to cause factor movements which contribute to the equalising of interregional factor prices. When price differences have in this way been reduced the factor movements tend to cease again. What then will be the situation with regard to trade?

We should suppose from the previous reasoning that the volume of trade would be reduced, since it has been partly obviated through the direct equalisation of factor prices, implying in many cases greater similarity in the equipment of productive agents. Such will be the case, for example, if A exports capital to B while B sends labour to A. If the total income in A, i. e. the sum of the prices of all productive factors, maintains about the same relation to that of B as before, trade will be reduced.[1] Note, however, that the redistribution of productive factors will increase the real income in both regions taken together, — in terms of commodities,[2] — and that this condition, *ceteris paribus*, tends to increase trade. It is conceivable, but improbable, that this tendency should be stronger than the one just mentioned.

[1] Under dynamic conditions national income may differ from the sum total of factor prices. For our present purpose this fact need not be considered.

[2] The concepts "volume of trade" and "volume of production" must be used with caution. Cf. Chapter XVI.

The outcome is still more uncertain when the quantity of productive factors is reduced in one region and much increased in the other, i. e. if the total income in one declines considerably compared to the total income in the other. If *B* is a new country with plenty of natural resources the movement of factors may go one way only, both labour and capital flowing to *B* from *A* or from several other regions. The total income is increased in *B* but reduced in *A*. If income in *B* has been considerably smaller than in *A*, then a more even distribution of income between them must tend to increase trade. There can be little doubt that trade between Europe and South America has been greatly increased through the flow of labour and capital from the former to the latter, in spite of the fact that these movements have made South America's equipment of productive agents more like Europe's than formerly. Economic life in South America has experienced an enormous growth, which would have been impossible without the influx of labour and capital.

The volume of trade is dependent upon the absolute quantity of productive agents in the various regions as measured by the figure of total income, not alone upon the inequality of their endowment; or better, the strength of the demand, which is governed by the quantity, prices, and conditions of ownership of productive factors in the various regions, as well as the taste of its inhabitants, affects the volume of trade no less than do the conditions of supply. Trade between England and Iceland, despite the greater inequality in the latter respect between the two, is smaller than between England and Holland.

Of course, if the total income in *B* is greater than in *A*, an increase in such superiority tends to reduce interregional trade. The more productive factors, and thereby consumers, are concentrated to one region, the less will the need be for interregional trade, at least if this concentration means at the same time a step towards an equalisation of factor prices.

As a matter of fact, labour and capital movements have usually gone to regions with scanty supply of these factors and relatively low sum total of incomes. The migration has considerably increased that sum, and has thus tended to increase interregional

trade. It seems probable that in many cases this trend has been stronger than that toward reduction in trade because of greater similarity in factor prices. On the other hand, factor movements without considerable influence upon relative total incomes have in most cases almost certainly reduced the volume of interregional trade.

It goes without saying that there is no fixed relation between the size of total incomes and trade, even disregarding the direct influence of changes in conditions of production on the need for interregional trade. Factor movements imply not only such changes but also, at least in some cases, a change in the direction of demand. The immigrant labourer need not demand the same goods as did the expatriated capitalist.

In brief, the volume of trade depends upon (1) the inequality of factor equipment, (2) the size of the respective national incomes, i. e. the volume of demand in different regions, and (3) the direction of demand. Factor movements affect all three [1] of these elements, the second in two ways: they may change the *relations* between total incomes in various regions; and the redistribution of factors means increased effectiveness in their utilisation, i. e. tends to raise the volume of production and income everywhere.

§ 3. *The influence of factor movements on trade (continued).* A few similar subjects remain to be considered; the first has to do with the so-called "economies of large-scale production" in the widest sense of this expression. Under certain conditions the prices of the factors which increase in quantity through influx from other regions need not fall relative to the prices of factors which are not augmented at all. A region with a great supply of natural resources may receive an influx of capital and labour without any reduction of interest rates and wages. It is well known that when the quantity of one factor is increased and the quantity of other cooperating factors is constant, the return per unit of the former may in the beginning increase. Four thousand

[1] The volume of trade is, of course, governed by all the basic circumstances in the price system. But some of them, like conditions of ownership, are not affected by factor movements, and therefore are not touched upon here.

men will probably produce more than twice as much in a new country as two thousand men. The tendency to diminishing returns as regards the factor that is increased, only makes itself felt after a certain point has been reached. A new region with a scanty supply of labour and capital may, owing to external economies, get a higher output per head and unit of capital when the supply of labour and capital is increased, which has been abundantly illustrated by economic history.

It should be observed that the point where a further influx of labour will reduce wages may not be reached, even though the tendency to diminishing returns is active in the individual enterprises. Density of population is necessary for the opening and maintenance of communications, educational facilities, etc. Although each farm would get less output per head by employing one more man, indirect advantages would come to all of them from an increase in density. It is quite possible, therefore, that the flow of labour and capital into South America towards the end of the last century had no tendency to reduce wages or even interest rates, — at least, in the beginning, — but on the contrary raised them relative to rents; the change in factor prices during this period may thus have been of the same sort here and in Europe, where the outflow of labour and capital must have raised wages and interest rates. If that is so, factor prices have not moved closer together, and trade has had no tendency to diminish. Nor have factor movements had any tendency to change the character of trade; goods containing relatively great quantities of natural resources have always been the natural export articles in South America.

After a certain point has been reached, however, labour and capital in the regions of immigration will fail to rise as fast as rents. Relative factor prices thus tend to move together interregionally. Still more this must be the case, when wages and interest rates tend to fall under the influence of increased quantities of labour and capital. In such cases the reasoning at the opening of this chapter applies, with the modifications indicated.

The last qualification is that the large-scale economies effected when the market is enlarged through the influx of labour and

capital affect the various industries quite differently. If these economies are felt chiefly in export industries, trade will tend to increase. On the other hand, increased effectiveness, particularly in industries which produce goods competing with import commodities, must have the opposite effect on the volume of trade. Which of these alternatives is most probable in new countries which receive both labour and capital from abroad it is impossible to say. It is true that internal economies are greatest in manufacturing industries, and would tend to reduce imports of manufactures in new regions. But external economies are perhaps even more important in agriculture, and tend to increase export. The higher factor prices, in terms of goods, which must follow, counteract these tendencies, and a balance between imports and exports is maintained; the volume of trade can just as well be increased as reduced. The same thing may be expressed by saying that the proportions in which productive factors are needed change as a result of large-scale economies. This may affect the character and volume of trade in a way impossible to describe in general terms.

Evidently, the number of acting and counteracting tendencies set at work by international factor movements is great, and the net result on the volume and character of trade is correspondingly varied.

It is often but not always true that factor movements tend to equalise productive factor equipment in the various regions. The stimulus to factor movements lies in the interregional price differences, which would exist even if the equipment were the same. Differences in demand, transfer conditions, social conditions, and the like, would cause differences in factor prices, which might be sufficient to call forth factor movements.

Consider three regions, A, B, and C, of which the two latter are similarly equipped, while C lies much further away from A than B. A being an important market for the goods of the other two regions, the prices of most factors tend to be higher in B than in C; consequently some of them may move from the latter to the former, and the equipment of B and C will then differ more than before. Evidently factor movements mean economic adaptation

to the existing supply of other factors and to demand, transfer conditions, and other basic circumstances.

This adaptation implies more than a change in the conditions of production in a narrow sense; variations in factor supply and factor prices also change the costs of transfer in two different ways, thus affecting the distribution of industry and interregional trade. In the first place, costs of transfer naturally depend upon the prices of the productive factors needed for transportation. By influencing factor prices, interregional factor movements also affect costs of transfer. Transport services hold a place in the price system analogous to that of other services and commodities. Secondly, large-scale economies affect the prices of transport services in much the same way as the prices of commodities; since factor movements, to new countries for instance, greatly increase the need of transportation services, a cheaper supply of them is made possible. Harbours and railways, for example, may be built and cheaply operated. It goes without saying that this must markedly affect the volume and character of trade.

So much for the different effects of interregional factor movements upon interregional trade. Although no general statement can be made, the foregoing analysis throws light on the relations between factor and commodity movements.

§ 4. *The influence of changes in trade on factor movements.* As factor movements depend upon interregional price differences, any variation in the basic elements of the price system may affect factor movements by causing a change in these price differences. Thus, in order to throw light upon the relation between trade and factor movements we must outline their place in the price system. The basic elements of pricing so far presented are wants and desires, conditions of ownership, supply of productive factors, and physical conditions of production. The conditions governing large-scale economies, social conditions of production, and economic stability have also been discussed (see Part II). In the last chapter we analysed the costs of transfer, i. e. the prices of transfer services, whose place in the price system is similar to that of other services. Productive factors at certain prices must be used, their quantity depending upon the qualities of the fac-

tors and commodities, i. e. the natural properties of the materials. In other words, the same physical conditions govern production in a narrow sense as those which control transportation. To be explicit, the fourth group of basic elements may be called the physical conditions of production and transportation.[1] But social conditions also enter in: duties and taxes, for instance, play the same part in interregional trade as do taxes on production in industry, increasing the costs of transfer or of production.

Interregional factor movements require slight use of productive factors. A little shipping room for emigrants is perhaps all. Whether capital movements require extra means of transportation is doubtful. They need not increase the total volume of trade, since they may reduce commodity movements in one direction as much as they increase them in the opposite one. At any rate, the consequent demand for transportation services is analogous to the demand for them for purposes of travel and the like. The only essential change in the price mechanism arising from the existence of factor movement is that the total demand in each region is not governed solely by individual taste, supply and ownership of factors, and their prices. It is in the nature of capital movements for buying power to be transferred from the lending to the borrowing region. To modify the system of equations which illustrate the price mechanism in this respect is simple enough. The essential implications of this transfer of buying power and the transformation of economic life caused thereby will be analysed in detail later.

An entirely separate effect of factor movement is to change the factor supply in each region. This leads to no alteration in the status of the price system where the *actual* supply of factors at a given moment is of importance. Whether this supply is due not only to domestic sources but also to influx from or efflux to other

[1] The expression "transfer conditions," which is convenient in many cases, refers to the productive factor equipment in *all* regions and to the physical conditions of production and transportation, both regarded from the point of view of transfer of commodities. The quality of the surface of the earth in various parts of the world is, perhaps, particularly important, together with the distance relations between the regions. The term "conditions of production" refers to the supply of factors in the various regions and to the physical conditions of production and transportation, both regarded from the point of view of production.

regions is immaterial; is it nevertheless practical in a study of economic variations, where reactions of factor supply are taken into account, to distinguish sharply between the reaction of supply from domestic sources and its changes through interregional factor movements.

After this discussion of the basic elements of pricing, let us examine further the relation between factor movements and trade.

The previous section contains an investigation into the effects upon the price system, and particularly upon the volume and character of trade, of primary changes in factor mobility which induce interregional factor movements. Analysis of the effects of primary variations in the basic elements, with special attention to the reactions of interregional factor movements, is postponed to Part V, with the following exception. From the point of view of interregional trade, those basic changes which affect transfer conditions are particularly interesting. They affect interregional trade directly and thence other parts of the price mechanism, e. g. factor prices and interregional factor movements. This is evidently the reverse of the case considered in the previous section: a change in factor mobility can influence nothing but factor movements directly, and trade, etc., indirectly. An analysis of these two types of cases is best suited to throw light on the relation between the interregional movements of commodities and factors. Having discussed the latter case, we now turn to the former, beginning with the influence upon factor movements of changes in trade due to technical improvements in transportation.

The effect of such changes may be for factor prices to be so nearly equalised that factor movements which would otherwise have taken place are rendered superfluous. On the other hand, it is quite possible that out-of-the-way regions may become natural locations for certain industries, and will, therefore, attract labour and capital, whereby interregional factor movements are increased. Interregional discrepancies in factor prices may well be widened in some cases and reduced in others, with consequently diverse effects upon factor movements. This statement holds good for both reductions and increases in the costs of transfer —

for instance, the effect upon factor movements of a policy of high protection. For further discussion of this question see Chapter XVI.

In the preceding chapter it has been demonstrated that the effect upon trade of changes in transfer costs cannot be explained in terms of increase or reduction in the total volume: the currents of trade are altogether transformed. Evidently the same may be said of the possible influence of changed costs of transfer upon factor movements. Factors are attracted to regions which now have become suitable for the location of important industries. The distribution of factors over the earth is changed without the least contribution toward a more even equipment in different regions; on the contrary, factor equipment is altered to correspond to the new conditions of transfer.

A study of variations of the price mechanism of several trading regions will naturally explain what happens in each case. The present analysis is an attempt to characterise the relationship in that mechanism as a whole.

§ 5. *Various combinations of commodity and factor movements as alternatives.* The preceding sections demonstrate that under certain circumstances factor and commodity movements are alternative, while under other conditions new movements of one cause greater movements of the other.

We turn now to a consideration of the fact that some factor movements take the place of others just as some commodity movements take the place of others. The latter phenomenon is self-evident: import duties on manufactured goods, for example, often lead to the production of similar goods at home by means of imported raw materials. Thus, raw materials go instead of finished goods. In general, the interrelation of transfer costs determines whether under given conditions of production goods at a later or earlier stage of manufacture are traded.

Similarly, then, one factor may move from A to B, where other factors are relatively abundant. If this movement is made difficult, the result may be that other factors move from B to A. Instead of capital going one way, for instance, labour may move the other as a result of checks on interregional capital movements.

On the other hand, capital and labour movements may complement each other. European emigration to South America would have been unthinkable in the last century if European capital had not also moved. Yet even in such cases we may say that certain factor movements replace others. As natural resources could not go from South America to Europe, other factors had to go in the opposite direction. The outcome in this case has been increased interregional trade; so that it is perhaps more accurate to say that factor movements and trade of one sort have replaced trade of another sort.

Generally speaking, one combination of factor and commodity movements may take the place of another. Variations in difficulties of transfer may lead to such substitutions, as may all other sorts of economic variation.

Factor and commodity movements are the reactions of the economic mechanism. Both imply a local adaptation of the supply of goods to the conditions of demand. *Factor* movements chiefly reflect adaptation of conditions of production to conditions of transfer and demand,[1] at the same time implying an adaptation of transfer conditions and local distribution of demand. *Commodity* movements, and the interregional distribution of production which they express, represent an adaptation of local supply to local demand, given certain conditions of production and transfer.

One might group factors and goods in one class, consisting of many species. Innumerable combinations of movements are possible in various directions between regions, and occur along the line of least resistance; they represent the economic adaptation to existing conditions, while exercising a fundamental influence upon them.

The controlling element in local adaptation is in the long run the fact that natural resources are immobile, while labour and capital must be distributed. Most other factors (there are, of course, many different labour factors) are fairly mobile, and most

[1] For the sake of brevity it is not each time repeated that conditions of stability, taxation, and the like, play a similar rôle to that of other conditions of production, demand, etc.

goods may be transported between many regions. The number of combined movements which are feasible is therefore enormous. To this is largely due the fact that tariffs and other hindrances to interregional economic relations have in many cases had only little effect.

§ 6. *Some dynamic aspects of factor movements and their relations to trade.* So far this analysis has been concerned with comparisons of the situation before and after a certain change has taken place; such a comparison is essentially static. Factor movements require time. It is not sufficient to inquire into the situation when they are completed: new economic variations which affect factor prices may constantly occur, so that factor movements likewise continue indefinitely; furthermore, certain factor movements have special effects while they are actually in progress, so that the situation must be considered as it develops.

Capital holds a unique position in one respect: it can move from one region to another only in the form of goods or services. Export of capital assumes an excess of commodity exports over imports in regions where the invisible items in the balance of payments are equal. On the other hand, a region which wishes to import capital must either import more or export less than before, or do a little of each. It may therefore be said that capital movements are in a sense commodity movements.

The characteristic of capital movements in this respect is, however, rather that they assume a certain *relation between* commodity movements in the directions of export and import. This relation can only be brought about by a thorough change in the general economic situation of the various regions. The nature of this change (the mechanism of interregional capital movements) will be separately analysed from the standpoint of domestic and of international movement. (Part V.)

It should be noted in this connection that if capital moves while the capitalist does not, the borrowing region must pay interest to the lending one in the form of commodities or services. Such payments affect trade in the same way as original capital movements, except that they do not give rise to new interest payments. The effects of capital movements and interest payments in opposite

directions are obviously neutralised so far as the mechanism of trade is concerned: the net sum alone moves in a given direction the form of goods or services. An analysis of interregional capital movements must consider the growth of interest payments and the net sums moving at various times, even though the influx of capital proceed at an even rate; for this and other reasons such an analysis must be an account of a time-using process.

Let us turn now to the other circumstance mentioned: the fact that new changes constantly occur, and that therefore the discrepancy between factor prices in different regions may always be so considerable that factor movements continue. It is true that with some exceptions, and certainly after some time has elapsed, these factor movements tend to reduce the price differences; but other economic changes may increase them as much or more.

Assume that labour moves from A to B: wages in the latter tend to fall relatively to wages in A as well as to other factor prices in B. Economic progress and improvements in methods of production may, however, be so much more rapid in B that wages there rise in terms of commodities as quickly as in A; that is to say, no relative decline occurs. This is self-evident; greater interest attaches to the fact that the factor movements — and the changes in trade which go hand in hand with them — may be the direct causes of other economic changes which counterbalance many effects which would otherwise operate.

It has already been pointed out that capital movements imply a transfer of buying power and, therefore, exercise a far-reaching influence upon interregional pricing as long as the capital movements or interest payments continue. What we now have to deal with is a *different* sort of relation between factor movements and the basic elements of pricing. It has been explained (in Chapter VII) that the influence of trade upon factor prices must alter the supply of factors from domestic sources; new savings, education, births, and the like. Now, factor movements also affect factor prices, and thus act more or less upon factor supply from these sources. The outcome depends, of course, upon the price sensitiveness of such factor supply. Export of capital tends to raise

the rate of interest and thus increase savings; the importation of labour may indirectly reduce the birth rate in the immigrant region.

It is possible that factor supply reacts not only to these changes in factor prices, but also to changes in trade which are the concomitants of factor movements. British export of capital in the nineteenth century not only raised the interest level in Great Britain; it also increased the production of food in transatlantic countries, and thus cheapened the food supply of the mother country. This may have had considerable influence upon the economic development there, including the volume of savings.

It follows from all that has been said in this chapter that in a study of economic variations, and particularly their influence upon interregional trade, attention cannot, as in Part II, be confined to the domestic reactions of factor supply to changed factor prices; we must ask also how far interregional factor movements are induced and what is the influence thereby exerted upon factor prices and trade, and upon the domestic supply of factors. Some of these reactions come about quickly, others after some time; some last long, while others are exhausted within a brief period. An analysis must therefore cover a time-using process consisting of various opposing tendencies.

An investigation into the nature and variations of interregional trade thus becomes a study of variations of the many-market price system in general; the part played by interregional factor movements, directly and indirectly, cannot be disregarded. The theories of interregional trade and of interregional factor movements to a great extent overlap; only the special aspects of the latter may be ignored in this treatise.[1]

[1] The reader is asked to postpone forming an opinion as to the practical usefulness of this abstract analysis until after a study of Part IV, which is in part an application of the results reached in this chapter.

CHAPTER X

INTERIOR COSTS OF TRANSFER AND FACTOR MOVEMENTS; SOME ASPECTS OF A GENERAL LOCALISATION THEORY

§ 1. *The Thünen case.* In the two preceding chapters attention has been confined to the costs of transfer of commodities and the movements of productive factors *between* regions of the same general character as in Part I. The lack of interior mobility of both goods and factors has been disregarded, and will now be examined.

No use of the regional concept will at first be made, the basis of the study being a district, the frontiers of which are not described. How does the lack of mobility of goods and factors affect localisation of production and trade within this district? For the sake of simplicity we shall assume that labour and capital are completely mobile in the sense that each quality of them has one price in terms of commodities throughout the district; in other words, the influence exerted by the immobility of nature and of the transfer costs of commodities upon production and trade is the subject under discussion in this chapter.

A few simple cases will first be dealt with. In them all the surface of land is assumed to be the same over the whole district so far as suitability for transport of commodities is concerned; this common element will be termed "uniform transport features." In later sections of this chapter the influence both of transport features and of "transport facilities" (transport features as modified by man) — e. g. some parts of the district having railways, others not — will be analysed.

Our first case is virtually the same as that so admirably studied by von Thünen.[1] In the middle of the district is a centre of natural resources such as coal and iron mines, required for important

[1] *Der isolirte Staat*, new ed. (Jena, 1910).

manufacturing key industries. It is surrounded by land of uniform quality and suitable for farming. Consequently, a city develops in the centre and buys food from the surrounding country, sending manufactured products in exchange.

If only one farm product is produced the case is simple: its price in each part of the district will be that in the town reduced by the cost of transport. The rent of land will be lower the farther it is from the town, its intensity of cultivation lower, and its population less. At a certain distance [1] land will be free; still further away no cultivation will take place.

The case is of course much more complicated if several farm products are produced; still their prices will be higher in the vicinity of the town by the costs of transport. But where will each of them be produced? Will heavy products or goods otherwise difficult to transport be produced close to the town, and the others further away? Under the present assumption the answer is in the affirmative. Animal foodstuffs, for example, which are usually more difficult to transport than vegetable foods, will be produced in the neighbourhood of the city. If, however, different pieces of land are of varying quality this statement will not hold. Nor is it true to say that each product will be grown on the land best suited for it. A certain quality may give the highest returns both of wine and wheat; for what will it be used? Naturally, for the product which is able to pay the highest rent; the other will be grown on land which is from its point of view only second-best. In many countries the best wheat land is, as a matter of fact, used for wine growing. Similarly, wheat is only a secondary crop in the American corn belt. Loosely speaking, one may say that the area available for corn growing is more limited than that for wheat growing. The correct statement is, however, that the product able to pay the highest price for the land wins. The fact that, *ceteris paribus*, heavy goods are produced closer to the town than light ones is only a consequence of the former's ability to pay a higher rent, owing to the greater saving in transportation costs resulting from nearness to market.

[1] *Which* distance need not be analysed here. For a systematic treatment see the next chapter.

Determination of which products can pay higher rents than others is possible only by means of a general price system of mutual interdependence.[1] A simplified picture is presented when in the ordinary one-market price system, various pieces of land of the same quality but different localisation are dealt with as if their quality were different; when, in other words, localisation is regarded so far as land is concerned in much the same way as fertility. The "technical coefficients" indicate how much of other factors each piece of land requires for the production (including transportation to market) of each product. Through such a price system it is determined, how the various productive factors — including land with different localisation — are to be combined and for what sort of production they should be used.[2]

§ 2. *The relative transportability of raw materials and finished goods in simple cases.* We shall now consider the possibility of dividing production, so that the raw material is made in one place and the finished product in another. The first part of the analysis (§§ 2–3) deals with the influence of the immobility of nature and the costs of transfer of commodities. Uniform prices of labour and capital throughout the district are assumed. Assuming furthermore that transport features and facilities are equal throughout the district, we analyse first the localisation of secondary stages of production as dependent upon (*a*) the transferability of various goods (raw materials and finished goods), and (*b*) the distance from different manufacturing centres to the sources of raw material and to markets. The localisation both of consumers' markets and of raw material production (including crude food) is assumed to be known.[3] The localisation of industries producing raw material and of markets is next analysed (§§ 4–5). The

[1] See the next chapter.

[2] In most treatises on economic principles the theory of rent is dealt with in this way: it is assumed that consumption takes place only in one place; otherwise the localisation of consumption — the quantities consumed at various places — has to be considered, as it affects the localisation of production. The following sections will show that such a theory at its best is nothing more than a first step towards a real theory of rent.

[3] A thorough analysis of this type of case has first been made by A. Weber in his well-known work *Ueber den Standort der Industrien* (Tübingen, 1909); it is available in a recent American edition. This book has profoundly influenced the material presented in the next five or six pages.

second assumption is then given up, i. e. the conclusions are modified with regard to differences in transport features and facilities, the costs of transfer, and large-scale economies. The next chapter is concerned with local differences in labour and capital supply and their effects upon industry and trade.

Returning to cases of the Weber type, we begin with a commodity made from one raw material only. How is the manufacturing to be located in relation to the source of the raw material and an important market? The answer is simple enough. There are two different cases. If the finished goods are more difficult to transport than the raw material, as in the case of beer or bread, production tends to be located close to the market. All the disadvantages of distance from the market are of importance in such cases, not alone the actual difficulties of transportation.

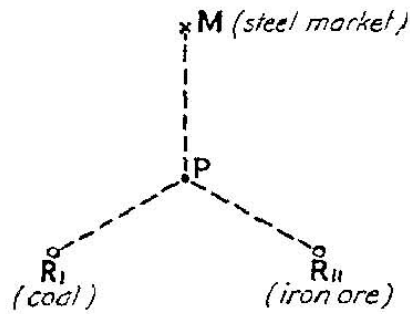
Strictly speaking, bread baking is an industry which uses several raw materials, but only one is costly to transport. Similarly, paper manufacturers use many raw materials, but pulp predominates. In the eighteenth century the textile industry and some others went where water-power could be found; for wool, cotton, and finished cloth could be more easily transported than power.

If, on the other hand, the raw material is more difficult to transport than the product made from it, production tends to be placed near the former. In many cases the raw material weighs much more than the share of it which forms a part of the product, i. e. is "weight losing." This is one reason why threshing, for example, is usually done on the spot, where cereals are harvested. Butter is transported, not milk; and bricks, not clay. Canning industries grow up in districts with a surplus production of vegetables. It follows that improvement in the transportation of finished goods must tend to move industry closer to the raw material sources. Hermetical sealing and artificial refrigeration have moved slaughtering and packing plants to the centres of the cattle raising districts from the great consuming centres.

Next let us consider the fact that most commodities are produced from several raw materials often to be found in different places. Materials to be found everywhere — "ubiquities" —

have of course no direct influence: there is no need for transporting them. One must compare the cost of transport of finished goods and that of *localised* raw materials. Note, however, that "ubiquities" in many cases tend to make finished goods relatively heavy compared to localised raw materials.

In many cases several of the localised raw materials used are costly to transport — more so than the finished product.[1] Both coal and iron ore are weight losing materials; hence the iron and steel industry is "raw material localised" rather than "market localised." But if coal and iron mines are at some distance from one another, where is the best place for the industry?



The answer is that a "point of minimum transportation cost" may be found, as indicated by the adjoining "localisation figure" (*standortsfigur*). The more costly the transportation of steel, coal, and ore, and the greater the consequent attraction of the market, the coal mine, or the iron mine, respectively, the closer will the steel industry come to them. The expenses of loading and unloading, however, are often so heavy that two short journeys cost more than a single long one. For this reason total transportation costs are in many cases lowest if the manufacturing industry is placed in one of the raw material centres, e. g. the iron and steel industry in the coal district (P and R_I coinciding). In this industry the ore usually goes to the coal, whereas in other metal industries, copper, for instance, the coal goes to the ore. Naturally the economies from a reduction of the number of transport journeys may also cause the industry to move from the neighbourhood of

[1] If it is more difficult to transport the latter, "market localisation" is, of course, the outcome as above.

the main market (in cases where its distance from the raw material centres would make such a location advantageous) to the market centre itself. If, however, the goods are costly to transport and the lengthening of the journey would be considerable should manufacturing be conducted in one of these centres, it will pay to choose some other place and carry the expense of a greater number of journeys.[1]

§ 3. *The relative transportability in complicated cases.* Let us now consider a more complicated case, that of several markets and raw materials, and many similar sources of the latter. We shall call the raw materials *a*, *b*, *c*, etc. The sources of the first are A_I, A_{II}, A_{III}, etc., the sources of the second B_I, B_{II}, B_{III}, ... and so on. The markets are M_1, M_2, M_3. Is the market M_1 to be supplied with goods produced with raw materials from A_1, B_1, and C_1, or some other combination?

Each conceivable raw material combination gives a minimum cost of transportation point for the manufacturing industry with reference to each market. If the raw material prices were equal at all raw material points, the case would be simple. The lowest of the minimum cost transportation points for each market would be chosen as the place of manufacture, and the sources of raw materials belonging to it would be used. The same raw material source may of course supply several markets. However, the prices of raw materials may be quite different at the various sources; the effects of this will be analysed later in this chapter. Furthermore, large-scale economies in production tend to reduce the number of manufacturing points; each of them may supply several markets. Consequently the points will be chosen which ensure a definite scale of output and cause a definite saving in costs of production, with the least possible increase in the costs of transport. The manufacturing units will of course tend to reach the size where further increases would cause greater expenses than economies.

If the markets to be supplied from a given combination of raw material sources lie in different directions from them, the attraction of each market for the manufacturing point will be more or

[1] An important reason for choosing such intermediate points is that breaks in the journey may be necessary there in any case. See § 7, this chapter.

less balanced by the attraction of the others, and a location close to the raw materials, particularly if they are weight losing, is probable. This is another reason (one was mentioned in the last section) why raw material localisation occurs more frequently than the simple localisation figure above would seem to justify.

Markets are often not concentrated at particular places, and one must speak of "market areas." In each such area a number of consumption points exist or may be conceived to exist, each having the "weight" of the consumption there and in the surrounding district. Each such point may be treated as a concentrated market. Minimum costs of transportation points may be computed and the advantages of large-scale weighted against the increases in transportation costs.

Like raw material areas, raw material collecting points may be ranked as concentrated raw material sources. Their relation to other raw material supplies and markets will be that explained above. If advantages of scale weigh heavily, one manufacturing point may draw raw materials from a great area and distribute the manufactured goods over a large district. Buffalo mills are able to collect wheat from all sections of the United States and from Canada, and to distribute flour throughout the Eastern States and to Europe. Kansas holds a similar position in the southwest district. If this localisation of the milling industry is compared, for example, with that of creameries, which also draw their supplies from points scattered over an area, the influence of high costs and other difficulties of transportation of the raw material, in the latter case milk, is evident. Creameries are in no case large, and are distributed throughout the agricultural districts.

As a matter of fact, production is in many cases divided not into two stages — raw materials and finished goods — but into many. Wood, pulp, and paper furnish an example of three stages. The localisation of production of the semi-manufactured pulp is determined as explained above; the only difference is that the market is not a consumers' market but a producers' buying market. This is the case with all producers' goods; the chief demand for machinery, e. g., comes from the manufacturing industries. Market

localisation means that the semi-manufactured goods and machinery (which are in the following called "half materials") are produced in the same places as the finished goods. Typical examples are Worcester, Massachusetts, which makes textile machinery, and Denver, which produces heavy mining machinery; an agricultural machinery centre is to be found in Chicago. In general, the machine tool industry is located where machines are used and repaired. In this case not only do costs of transport play their part, but the advantages of easier contact with customers above all call forth all sorts of so-called subsidiary industries.

The localisation of producers' buying markets (e. g. the manufacturing of paper), on the other hand, depends upon the localisation of consumers' markets for the finished products and upon the localisation of "half material" production (pulp). Thus we see that the governing elements are (1) the transportability of the various goods and (2) the location of raw material producing industries and consumers' markets, as described above, with the modification that production may be divided into several stages, of which each acts as a market for the preceding one. The place where half materials are manufactured is at the same time a producing point and a "raw material" source. Thus, given a certain local distribution of raw material sources and markets, the localisation of the later stages of production is governed by the relative transportability of the different sorts of commodities. In other words, it is governed by *the relative transportability of commodities and the distance relations of different places with regard to raw material supply and markets.*

§ 4. *The localisation of raw material production.* The location of raw material production next engages us. Even if all raw material sources were of equal quality, demand for some of them would be greater than for others, owing to the difference in distance from important purchasing markets. In some cases only a limited quantity can be supplied; as a rule greater quantities can be extracted, although only at the cost of higher expenses. Consequently the supply prices of a given raw material will differ considerably between one source and another.

Iron ore from well situated mines close to iron and steel centres commands a much higher price at the pit head than ore from out-of-the-way districts without coal mines. Many potential sources of iron ore are so poorly located that they are not used at all. Similarly, most lime and clay deposits are void of economic interest; Portland cement is manufactured almost exclusively in districts where they are located close together and not far from a good harbour.

Natural resources differ not only in localisation but also in quality; each may be used for different purposes. An infinite variety of climate and soil is significant for agriculture. The use of all these resources, varying both in quality and location, is of course governed by pricing. The use of each productive factor which is able to pay the highest price for it, gets control over it. In that way it is determined where raw materials are produced, in what quantities, and at what costs. We see that the localisation of raw material industries — given a certain local distribution of markets — is affected by the local distribution of the various natural resources. In other words, it is governed by the distance relations of markets and different natural resources.[1]

The markets for raw materials are the centres of the later stages of production, whose localisation is determined by the relative transportability of various goods and by the distance relations with regard to consumers' markets and raw material supply.

Evidently the localisation of the first stage and of the later stages of production affect one another. Elements governing them all are (1) the local distribution of natural resources and consumers' markets, (2) the transportability of goods. In other words, localisation of industry depends upon (1) the distance relations of all places with regard to natural resources and consumers' markets, and (2) the transportability of various goods.

The chief reason for the separate treatment of production of goods of the first order — called "raw materials" — and later stages of production is that natural resources are much more im-

[1] Raw material production in some cases of course requires the coöperation of considerable quantities of machinery and other "half materials." Their places of supply have an influence analogous to that of raw material sources.

portant for the former than for the latter. Coal cannot be produced in places where there are no coal seams, nor wheat where there is no land suitable for wheat growing. But iron and wheat flour may be manufactured almost anywhere, and the coöperation of nature is restricted to offering a small area of land for a factory. Many other natural conditions must of course be fulfilled, but they exist equally almost everywhere, hence this does not affect the location of production at later stages. The important exceptions to this statement all have to do with the fact that man is unable or comparatively unwilling to live and work under certain conditions of nature, e. g. in a particular climate.

Apart from this, the qualities of nature affect the process of manufacturing very little.[1] Cotton spinning is favourably affected by a moist climate; to provide moisture in a dry climate involves some expenses. There are analogous cases, but they need not long detain us. On the whole, apart from transportation features, the localisation of manufacturing industries is affected by nature only through its influence on the local distribution of (1) raw material supply and (2) labour and capital supply. The first has already been dealt with, the latter will be studied in the last sections of this chapter.

§ 5. *The localisation of consumers' markets.* So far the localisation of production has been investigated on the assumption that the localisation of consumers' markets is known. As a matter of fact, it is as much a result of the play of economic forces as is the distribution of industry. On the whole, people consume where they live and work and draw incomes; thus a movement of labourers from one place to another means at the same time a transfer of a consumers' market. In more general terms we may say that the local distribution of productive factors governs the localisation of consumers' markets.

The movements of labour and capital and their influence upon the distribution of productive factors will be analysed in the later sections of this chapter. At present we assume the distribution

[1] They do affect transportation a great deal and transportation and manufacturing must go hand in hand. The influence of differences in the transport features of the earth is considered in §§ 6–7.

not only of natural resources but also of labour and capital to be known, and inquire as to the relation of the localisation and size of consumers' markets to this distribution of factors. The matter would be simple if all incomes were consumed on the spot and nothing saved, and if the land and capital in a district were owned by the people living there. Let us assume this to be the case.

Incomes are equal to the prices paid during a particular period for the productive factors.[1] Consequently, if we know the local distribution of these factors and their prices as governed by the price system, then we may ascertain the income or "buying power" in each place. Given the individual wants and conditions of ownership of the productive factors, the income of each individual and his demand for consumers' goods as a function of their prices may be discovered. Thus are the character and distribution of consumers' markets determined.[2]

However, a part of the incomes in any given district is consumed elsewhere, while part of the incomes in other districts are consumed in this district. Some of the natural resources or capital in the district, here called A, may be owned by people living and spending outside it. On the other hand, the inhabitants of A may draw incomes from other districts. Such circumstances affect the volume of consumers' goods bought and sold in A and other districts. The size and character of consumers' markets in each place depends not only upon the local distribution of productive factors and upon individual wants and desires,[3] but also upon the conditions of ownership of productive factors.

Another complicating fact is that a part of the money earned is not consumed but saved, i. e. used to buy capital goods, not consumers' goods, either inside or outside the place where it is earned. When savings are invested in the same place the market for

[1] In a more dynamic treatment of this problem the existence of profits must, of course, be considered.

[2] The local distribution of demand for raw materials, semi-manufactured goods, and machinery is governed by the localisation of production in the way explained in previous sections.

[3] Travelling and other forms of consumption outside one's "home district" must also be considered in special cases, but are as a rule of little importance.

consumers' goods is weakened and the market for capital goods is increased. When the money is invested in other places there is a transfer of buying power, — just as when money is consumed "abroad" or incomes are drawn from outside, — and the market for capital goods is increased in the places to which the savings move.

To sum up, the markets for consumers' goods are reduced everywhere by savings, and increased or reduced by the inflow or outflow of buying power compared with their amount when governed exclusively by the sum total of the prices of all productive factors in each district. Secondly, the market for capital goods [1] is increased by the amount of new savings invested in each place.

Keeping these qualifications in mind, we may say that the character and size of the consumers' markets is governed by the local distribution of the productive factors.

§ 6. *Local differences in transportation resources and facilities.* We have found so far that the localisation of industry is governed by (1) the local distribution of natural resources, (2) the transportability of goods, and (3) the local distribution of productive factors. In other words, the character of production in a given place depends upon *the distance relations of that place to the natural resources and consumers' markets and upon the transportability of the various goods*, while the local distribution of consumers' markets depends chiefly upon the local distribution of natural resources, labour, and capital. We shall return to the distribution of labour and capital in the following chapter.[2]

Before proceeding with our analysis, we must consider some elements which have until now been virtually disregarded. First of all, the surface of the earth does not offer uniform opportunities for transportation, nor are man's means of transportation uniformly distributed; on the contrary, important differences in transport features and transport facilities influence localisation. Secondly, the accumulative and dispersive tendencies — which

[1] The markets for capital goods, the influence exercised upon them by depreciation of old capital goods, etc. should be dealt with here. However, everything not strictly necessary for an understanding of the general trend of the reasoning is left out in this chapter, which is nevertheless too long.

[2] A few preliminary remarks are made in § 9.

have only been touched upon in the form of economies of scale — must be examined.

In this section account will be taken of the fact that the costs of transport are not proportional to the distance a commodity is to be moved. The cost per ton-mile, to take the most obvious example, is much higher for traffic on land than on sea. Furthermore, it may be far easier to carry a commodity one way than another. The previous reasoning must, therefore, be modified. Instead of transport distance we must think of cost of transport. Von Thünen's "rings" are not circular, but extend farther away from the city along the good transport lines. Of two points close to each other, one may have much easier access to most other points than the other one. Localisation is affected by the transport relations of each place to natural resources and markets; these relations in turn depend upon the local distribution of resources and markets (distance relations), as well as upon the transport features of the earth's surface, other transport resources, and transport facilities.[1]

We shall now attempt to illuminate the character of transport relations in general and their influence upon localisation.

It has already been mentioned that sea transport is cheaper than land transport, at least when the distance exceeds a certain minimum. For this reason all places close to the sea have relatively favourable transport relations with all other places similarly situated, provided harbour facilities are not lacking. The Atlantic Coast districts of the United States are really nearer in an economic sense to the coastal districts of Europe than to some parts of the Middle West. In general, coastal districts and interior regions of a continent show marked differences in transport relations. Particularly valuable is a long and irregular coast line, offering numerous natural harbours. The economic superiority of Europe in the Middle Ages over Africa was probably due in no small degree to marked differences in this respect.

A similar influence is exercised by the interior waterways, such as lakes, navigable rivers, and canals, especially if they enable

[1] The meaning of this concept will be made clear in what follows; in brief the character of transport resources means the quality of natural resources from the point of view of transportation.

ocean-going vessels to reach interior ports. Traffic statistics show the enormous importance of these means of transport. Non-navigable rivers also play an important part in transportation, e. g. for timber, as do lakes without communication with the sea. It goes without saying that there are innumerable differences in the quality of such means of water transportation.

The same holds true for land transportation resources, owing to topographical conditions, temperature, and the like. Plains offer less resistance to road or rail transport than mountainous areas; extremely hot and extremely cold districts offer many obstacles to the construction and operation of transport routes.

This leads us to consider the fact that the transport resources of a district have to do with more than the surface of the earth. *Power* above all is required for all sorts of transportation, and the cost at which it can be obtained substantially affects costs of transport. The influence of good coal mines or water-power resources is obvious. There is, however, this difference between their influence and that of the earth's surface, that power may be procured from other districts. Thus, power holds much the same place in transportation, in a narrow sense, as do raw materials in production. Costs of transport in a district are affected by its transfer relations with sources of power supply, and the transportability of the various sorts of power. A district which is close to a cheap coal supply and has good communications with it, for example, may have fairly good transport relations in general, even though the topographical conditions are unfavourable to transportation.

Differences in transport relations are often not so marked between *districts* as between *places*. Transport facilities do not generally cover whole areas, but follow narrow lines, except in the case of seas and lakes. Valleys offer better conditions for railways than the surrounding regions. A railway network, like a caravan net work, is necessarily a system of lines which incompletely covers an area. Rivers and canals are likewise much more useful to places along the line they follow than to those some distance away. Districts along such transport lines are comparable with coastal districts; the others hold a position similar to that of in-

terior areas. The former are more advantageously equipped with transport facilities, i. e. have better transport relations with most places in the world.

§ 7. *Local differences in transportation resources and facilities, continued.* Points where transport lines converge or touch transport areas of course have exceptionally intimate transport relations with other places. The most important are the great ports, where sea-going traffic connects with a network of converging railway lines, and sometimes a navigable river. Such transportation centres acquire special superiority from the fact that a change from one transport system to another, e. g. from ship to rail, involves unloading and reloading; these places offer relatively favourable transport relations to manufacturing industries for *two* reasons: (1) the existence of a network of transport lines and (2) a reduction in the number of times goods have to be reloaded. For instance, to manufacture imported raw materials in a port saves the expense of loading them on railway cars, which must be done if the industry is located close to a railway station at some distance from the port. Similarly, consumers' goods in a transportation centre are often cheap, since the costs of one unloading and reloading are saved.

As soon as there is a break [1] in the transportation network the tendency is to evade the costs of it by locating production and consumption there. A centre of converging transportation routes of the same sort, e. g. railway lines, does not constitute such a break: cars may be switched from one line to another. For this reason such centres offer much less attraction to industry than places where different transport systems meet. It is quite another matter that the centre is a better position for the distribution of commodities to a number of places in the railway system than points nearer the circumference. If production on a given scale [2] is much cheaper than in smaller units, and one factory therefore supplies a large district, the transportation centre will be the natural location, even if there be no break in the transport route.

[1] For an interesting discussion of these problems, see Hawtrey, *The Economic Problem* (London, 1926), chapter x.

[2] For economies of large-scale production see below, § 8.

It is easy to give examples of these influences. Practically all the great cities of the world are also important ports. Manufacturing takes place there on a large scale, even though in some cases practically all raw materials are transported from far away. Distance relations with regard to raw materials are unfavourable, but excellent transport resources and facilities more than make up for them.

Another well-known example of the fact that places where transport lines converge and break may have excellent transport relations with raw material sources, even if the latter are far away, is the iron and steel industry in the Chicago district. It is a centre of railway and interior shipping lines, receiving coal from Kentucky and ore from the Lake Superior district. Other places in the Chicago district have equally good or better access to coal and ore, but Chicago [1] city profits from a large local market, selling to the agricultural machinery industry, the manufacturers of locomotives, etc. Therefore its transport relations to markets and raw material resources are on the whole so favourable that the iron and steel industry has been rapidly expanding there.[2]

Another example is the localisation of industry some two hundred years ago. In those days of water transportation, waterfalls were important breaks; they were also a source of power which could not economically be transported. Thus for a double reason many industries were located in their neighbourhood and cities grew up. Particularly industries with a need for large water supply, such as paper and wool factories, were naturally placed close to waterfalls.

The Scandinavian exporting pulp industry is chiefly located in the small ports where rivers, on which the timber is floated, touch the Baltic sea, — a typical case of "break localisation." Pulp for paper manufacturing within Scandinavia is to a large extent pro-

[1] "The tendency of the industry to shift to the Lake Shore points is due to the economy that results from having the blast furnace located beside the ore dock where the lake steamer unloads; this is possible at any point on the shores of the lakes from Buffalo to Chicago." — Russel Smith, *Industry and Commerce*, p. 179.

[2] "It is one of the surprises of American industry that iron manufacturing on a huge scale should be undertaken at such points, distant alike from ore and from coal." — Taussig, *Some Aspects of the Tariff Question*, p. 125.

duced in other districts, where conditions are good for the location of a paper industry.

The high costs of unloading and reloading, compared with other transportation costs, make longer journeys relatively much cheaper than short ones. This is particularly true in sea transport, where the length of the journey matters comparatively little. La Plata freight rates to the harbours of Northern Europe are practically the same whether Danish or Swedish ports in the Baltic are chosen, in spite of the somewhat longer distance in the latter case. For this reason one long sea transport is much cheaper than two shorter ones of the same combined mileage. It has already been pointed out that whereas the point of minimum transport costs would often lie far away from both raw materials and markets if costs of transport were proportional to distance, it is as a matter of fact often advantageous to choose a raw material or market centre. Thereby the number of journeys is reduced by one, which may more than offset a greater total transport distance.

The effectiveness of motor transportation for short distances is due to the fact that the goods can be brought directly to the consumer and the unloading and reloading at the railway station saved. Here, too, the initial and final expenses count heavily. For this reason the superiority as to transport relations of factories in the neighbourhood of railways has largely disappeared; if the goods must be transported from the railway station by motor trucks in any case, location is of little importance. But factories with their own side tracks, which bring the railway trunks to their doors, can save the costs of reloading.

It is evident, then, that the transport relations of different districts and places with regard to raw materials and markets are exceedingly unequal, even if the districts are not far from each other. Certain places are from an economic point of view much nearer to most important markets and raw material sources than other places in the vicinity. This fact influences localisation of industry in a decisive way; for, as already pointed out, it is transport relations, not distance relations, that have economic importance.

It goes without saying that one place may have more favourable transport relations with regard to certain raw material sources and markets than another, while the latter may have a superiority with regard to other such sources and markets. This is precisely the reason why some industries go to the first place and others to the second.

Let us bear in mind that each producing unit will be placed where the costs of production are lowest, i. e. where the total costs of transportation are at a minimum, or only so little above the minimum that cheaper natural resources or cheaper raw material supply more than compensate. Both costs of transport and differences in the prices of natural resources and raw materials are governed by the transport relations of each place to natural resources and consumers' markets. The latter are governed chiefly by the spread of natural resources, labour, and capital. For each commodity the total costs of transportation do, of course, depend also upon the transportability of the various raw materials and goods of "higher order," as explained in preceding sections. Thus one may say that *localisation of industry depends upon the transport relations of each place and product with regard to natural resources and upon the distribution of productive factors which govern the distribution of consumers' markets.*

§ 8. *The economies of large scale in transportation and the pricing of transport services.* There is one group of circumstances which have as yet only been touched upon, although they exercise a profound influence upon the costs of transport, and thus upon transport relations and the localisation of industry. So-called large-scale economies are important in transport industries no less than in production in a narrow sense. Let us deal first with economies in the supply of transport services.[1] Traffic can be handled much more cheaply per unit if there is much of it. This is true, although in a varying and limited degree, of the loading, etc., done in harbours or railway stations, and of transport itself, by water or rail. Furthermore, it is important that a large volume of traffic shall make possible regular and direct lines, and frequent sailings from a given port to other important ports throughout the world.

[1] Concerning economies of large-scale production in general, see § 10.

Industries in small harbour cities must either wait long for a suitable shipping opportunity, or must send goods to a big port and collect goods there by means of small ships. Similarly, the volume of goods to be transported by land determines whether it is to be handled on roads, or whether a railway can be built, how it can be operated, etc.

Other things being equal, places have better transport relations with one another if the volume of traffic is considerable. Thus, differences in transportation costs depend not only upon differences in distance and transport resources but also upon how far large-scale economies can be utilised in the organisation of transport services, i.e. influence the character of transport facilities. This is parallel to the fact that differences in costs of production are affected not only by the equipment of productive factors but also by the larger or smaller scale upon which production is organised.

In some desert districts it is impossible even to build roads, and transportation by means of camel caravans is the only possibility. Even so, there is a great difference between places touched by the regular caravan routes and distant points from which camels are occasionally sent down to places along the routes.

A fertile agricultural district can as a rule support a scattered railway network connecting it with a harbour. Only in densely populated manufacturing districts is the amount of traffic so considerable that the most efficient organisation and combination of the various means of transport is possible.

In brief, the height of the costs of transport, like the prices of other services, are determined by supply and demand conditions. They are affected by distance, by the transport resources, — the surface of the earth and transport relations to power sources,[1] — and by the character and scale of transport facilities. Of course, the character of the commodities is also very important; if, for instance, the goods sent from a district by sea are much heavier and bulkier than the goods imported in that way, some ships will return without cargo and return freights will tend to be low relative to outgoing freights. As a matter of fact, trade is usually

[1] Local differences in the supply of labour and capital are considered below.

fairly reciprocal, both as to value and transport requirements; but where it is not, transportation costs are profoundly "dislocated" and localisation of industry is consequently affected.

While considering pricing in transport markets we should also note that the importance of overhead costs, e. g. in railways, makes the fixing of the rates somewhat indeterminate, and leaves room for varied forms of tariff policy, that of "charging what the traffic can bear," and others. Firmly established and prosperous industries in a district may have to pay relatively high railway charges, while less advantageously located and weaker firms in other districts pay less. In general, the policy of charging higher rates per ton-mile for goods of little bulk and weight in relation to value works to the disadvantage of the transportation of finished goods — as compared with raw materials — and hence favours market localisation of industry.

§ 9. *The local distribution of labour and capital.* We have now dealt briefly with a number of circumstances having to do with local differences in transport relations. In this connection it is convenient to say something of the influence of movements of labour and capital upon transport relations (although a fuller discussion of these movements is put off until later). Just as transport lines adapt themselves to the demand for traffic, so the latter adapts itself to transport conditions. Places with favourable transport relations, i. e. easy access to raw materials, including food, and markets, attract labour and capital. The conditions for many sorts of activities are better than elsewhere, and mobile productive factors therefore gather here. In this way the volume of traffic is increased, and large-scale economies further reduce the costs of transport. Regular trade routes — shipping lines and railways — are organised, and give to these places a greater superiority as to transport relations than they would otherwise possess. Transport facilities are organised where there is need for them, as is usually the case when the transport system is already adequate. They are thus as much the effect as the cause of the local distribution of industry.[1]

[1] Cf. the conclusions in Chapters VII and XI concerning the supply with productive factors.

Transport relations are improved in another way by the concentration of labour and capital where they are already advantageous. Such points become important markets, and to place industries there means proximity to them. Furthermore, the nearby supply of semi-manufactured goods as well as of tools and machinery is increased. The distance of transportation is thus reduced in many cases. On the other hand, raw materials as a manufacturing centre grows have to be collected from places farther and farther away, and other goods must be sent greater distances to pay for these imported raw materials.

In sea transport a lengthening of the journey is, as mentioned already, not very costly, whereas the advantage of having markets and supplies close at hand and thus reducing the number of journeys may well be considerable. The great ports offer excellent illustrations of the tendency of good transport relations to become still better through the concentration of labour and capital.

§ 10. *Economies of concentration of industry.* The improvement of transport relations through a local concentration of economic activity where they are already good tends to concentrate population and production still further. There are many other advantages of concentration for the localisation of industry and the interlocal trade; they are not necessarily related to differences in transport resources, but might operate anywhere. As, however, differences in transport resources tend to draw production to certain places and districts, such economies of concentration augment the effects. They may be considered under three categories: (1) economies of concentration of industry in general, (2) external economies of concentration of a particular industry, and (3) internal large-scale economies of a producing unit.

Economies in the first category almost all depend upon improvement in transport relations, as already explained. External economies also fall partly under this heading. Subsidiary industries spring up which supply the main industry with materials and accessories. Small distance and intimate contact with buyers and sellers constitute favorable transport relations in the broad sense of the word;[1] but external economies consist partly in the

[1] See § 12 concerning *transfer* relations as opposed to transport relations.

existence of a fully developed market of skilled and specialised labour. For discussion of these local differences in labour supply see the following chapter. Internal economies have little to do with transport relations. Purely technical circumstances, such as the smallest size of a certain machine and other forms of non-divisibility, play a dominating part. All these economies, whether or not they have to do with improved transport relations, tend to concentrate industry in a small number of places. Other things equal, the tendency is to place industries where the transport resources are best.

Such agglomerating tendencies, however, are met by opposing deglomerating ones. Longer transports of raw materials and products mean higher costs of transportation. If a factory of a group of factories is to supply a large district, the average distance to the consumer will be much longer than if factories are scattered over the district. Secondly, agglomeration in a district raises the prices of natural resources, whereby costs of production there are increased. This affects chiefly the location of industries requiring considerable areas of land, like agriculture, or specialised natural resources, such as the mining industry; the level of land rents in cities influences the location of most manufacturing industries. A third group of circumstances has to do with some effects of diversification of industry; their bearing upon agglomerative and deglomerative tendencies, and upon the localisation of industry in general, will now be briefly discussed.

We may follow Professor Black [1] in calling the production of a commodity an "enterprise." Clearly many producing units — a factory or farm — contain several enterprises. What are the reasons? Why is not specialisation in one product preferred? The answer is that these enterprises are supplementary to one another, in raw materials or in something else. In the former case they are often called joint-product enterprises. A well-known example is the dye industry, which uses tar to manufacture a number of different products. Similarly cotton and cotton seeds are produced together. Enterprises may also be supplementary to one another by making possible a better utilisation not of ma-

[1] *Production Economics* (New York, 1926).

terials but of labour or tools and implements. One enterprise may use the productive elements more in one season than in another; it is often advantageous to add another enterprise which can use them in the slack season. As it is not possible to transfer them to another place for a few months, the second enterprise must be located in the same place as the first. Another reason for combining several enterprises in one producing unit (farm or factory) is that important advantages of large-scale production may result. Under certain conditions the production of several commodities may be necessary to keep a minimum-sized plant busy, to use a certain machine, or to utilise marketing organisation and management.

Important examples of the influence of these reasons for combining supplementary enterprises are to be found in agriculture, in the retail trade, and to a surprising degree in manufacturing industries — in fact, in almost every kind of industry and trade.

From the view point of localisation it is well to deal with various forms of supplementary relations in different ways. When by-products are used as raw materials for other processes of production in close connection with the main process, the case is evidently one of those already discussed: the greater difficulty of transporting the raw materials, as compared with the finished product of the supplementary line, tends to make manufacture on the spot advantageous. The first stage of supplementary production, whereby in the *same* process two goods are produced, e. g. coke and gas, may be regarded as a unit; the localisation problem offers no difference from that in the case of one product, other than that the various markets for both products exercise attraction upon the manufacturing point.

Turn now to the seasonal variations[1] in labour requirements, which lead to supplementary lines of production for utilising labour in the slack season. The supplementary relationship may exist *within* a firm or between different firms having their peak requirements for labour at different seasons. In either case production may be drawn to places where it would not otherwise be

[1] Analogous differences in work to be done at different times of the day may be similarly regarded.

located, evidently because the supply of labour in the slack season is cheaper there than elsewhere. This is then an instance of insufficient mobility and of local differences in labour supply, which are discussed in the next chapter.

As to economies of large-scale production which owing to the limitation of markets are in some cases available only if several enterprises are combined in one producing unit, their influence on the localisation of industry differs little from cases where only one product is manufactured. Industry is concentrated to a smaller number of units and of places than it would be without them; for they more than balance the increase in costs of transportation. This is a deviating force which somewhat changes the localisation that would result from local distribution of natural resources and transportability of the various goods. It is not possible to generalise upon such deviation, except to say that it is of an agglomerating sort.

Disregarding for a moment differences in natural resources and transport resources, we may say that the concentration and spread of industry are so governed that agglomerating and deglomerating tendencies balance. The greater the costs of transport, the more evenly each industry will be spread over the area and the smaller the market areas supplied wholly or partly from each productive unit. The greater the superiority of large producing units to small, and of those concentrated in a district to isolated ones, the more each industry will be concentrated in certain places and districts. The greater the general economies of concentration, the more industries will be located close to one another.

The reaction of industries to these accumulative and dispersive tendencies varies. The result is that some, like brick manufacturing, are spread over a large area, while others, like the automobile industry in Detroit, supply practically the whole world.

To sum up, the economies of large-scale production tend to concentrate production of each commodity or group of commodities at places having the best transfer relations, both with the natural resources required for the production of sufficient raw materials for a certain volume of this commodity or group of commodities, and with the markets which consume it. We must of course

weigh the differences in the supply prices of raw materials at various sources, as well as the differences in selling prices and the difference in wages and interest expenses per unit of commodity, as against differences in total transportation costs, before we can say which places furnish the best points of localisation.

§ 11. *A review of localisation according to the previous analysis.* So much for agglomerative and deglomerative elements of localisation. Let us now view all the localisation elements dealt with in this chapter: they are (1) the spread of natural resources and markets [1] (distance relations), (2) the transportability of various goods,[2] and (3) the local differences in transport resources [3] and facilities. The three together govern the transport relations of each place and commodity with regard to natural resources and markets. If unaffected by other elements, they would bring about a certain localisation. There are, however, (4) certain agglomerating tendencies the effects of which are added to those of the other three elements. Furthermore, (5) certain deglomerating tendencies counteract all tendencies towards concentration, and restrict the size of productive units and their local concentration. Elements (4) and (5) thus cause a deviation of localisation from what would follow from the first three.

For an example, certain districts in California have climatic and other conditions which make them eminently suitable for the growing of fruit and vegetables (1). Certain of these products are as easily transportable as the goods to be made from them and are sent as they are a long distance to various markets, where some of them are prepared for consumption; others relatively difficult to transport are prepared on the spot and then transported (2). Some parts of the United States and the rest of the world have good transport relations with these California districts and buy their products, while others buy from competing producers like Florida and Italy (3). Within the fruit and vegetable

[1] The spread of markets depends chiefly upon the distribution of the productive factors, natural resources as well as labour and capital.

[2] Both (*a*) the transportability of raw materials versus goods at later stages of production and (*b*) the relative transportability of goods in general.

[3] This is the same as the character of all natural resources regarded from the point of view of transportation.

producing parts of California are many small specialised districts which produce citrons, peaches, plums, tomatoes, etc., a concentration which is largely due to external economies (4) and other economies of concentration, including improved transport relations of the various products which large-scale transport makes possible (3). However, the high rents in some of these districts — and the high costs of transport to many parts of the world — prevent a further concentration of specialised production in these districts (5).

After this special example let us make some concrete remarks about the influence of these five circumstances on the localisation of industry in general.

We have seen that districts with good transport relations tend to attract plenty of labour and capital and become important markets; consequently they tend to specialise in industries which (1) are market localised and show important advantages from large-scale production, and (2) produce goods which are difficult to transport. On the other hand, districts with poor transport relations become scantily populated and tend to specialise in goods which are easy to transport and can be advantageously produced on a small scale.

This holds true under the assumption of other things being equal, i. e. that the districts have a similar supply and local distribution of natural resources. The difference in transport relations would in that case arise not from different distance relations but from better or worse resources and facilities for transportation. However, differences in transport relations are usually to a great extent due to different supply and distribution of natural resources. Consequently the direct influence of this inequality in factor supply must be considered together with the indirect influence of unequal transport relations.

First of all, it is evident that raw materials and crude food products — goods of the first order — must be produced in districts where nature is fairly favourable. Places which fulfil this condition attract such production if transport relations are fairly good, and so they will be, if other valuable natural resources are to be found in the neighbourhood or if transportation is easy.

"Goods of higher order" are produced close to the raw material sources, if these materials are "weight-losing" or more difficult to transport than the semi-manufactured or finished goods. As a rule, several sorts of raw materials are required. Industry tends to be located close to the sources of the materials most difficult to transport. On the other hand, those goods of a higher order, which are conveniently produced close to the main markets, come to be produced in places where population is concentrated for other reasons. From the localisation point of view these goods are "passive." Tailor-made clothes are an example. More or less "active" are the goods of the first order which require special qualities of natural resources. They are particularly active if they are "weight-losing" or for other reasons call forth manufacturing industries near the sources of raw material. Of course, the greater the quantities of labour and capital required for the utilisation of a certain concentrated supply of natural resources and the production of the goods of higher order based on them, the more important the market which is created there, and the greater the activity of these goods from the localisation standpoint.

Coal is probably the most active of all goods. (1) It is an important raw material in many industries. (2) The mining of coal requires a great quantity of labour and capital in a comparatively narrow district. (3) Being exceedingly weight-losing, it tends to call forth manufacturing industries near the sources of raw material. (4) Some of these industries are such that large-scale economies play an important part, and concentration of production in large units and manufacturing districts is advantageous. For all these reasons important markets grow up where coal is produced, and passive goods also come to be produced in great quantities.

Wool is an example of a commodity of the first order which is rather passive. It has limited uses, and both wool and its products are easily transported. Sheep raising and wool shearing require comparatively little labour, and may be conducted on a small scale. This industry is therefore eminently suited for relatively barren agricultural districts with little other natural resources, scanty population, and poor transport facilities. The

Falkland Islands, for instance, have 2200 inhabitants and 300 sheep per capita.

If transfer relations with places where other important goods of the first order can be produced are unfavourable, the attraction of even such goods as coal will naturally be small. Very little of it is produced on Svalbard, although coal mines there are rich. On the other hand, if other important goods, principally iron ore and food, can be produced in the neighbourhood or easily brought there, transfer relations are favourable and the coal centres become centres of population and industry, unless unfavourable climate acts as a deterring element.

To sum up, natural resources influence localisation of industry, i. e. they have a power of attraction, in proportion as (1) the goods produced with their aid are more important and weight-losing, (2) the use of labour and capital is intensive, and (3) they are situated near to other natural resources or have good transport facilities. If these other resources also have a great power of attraction, the combined attraction of all tends to draw a large part of the world's economic activities to these districts; and the natural resources with the greatest attracting power of all those which have good transfer relations with each other (principally coal and iron mines in the same place) profit most, benefiting from the united attraction of all the resources, and concentrating production, where these specially attracting resources are to be found, more than would have been the case had the latter not had the help of the other resources. For instance, the combined attracting power of natural resources in Europe, which fulfil to a high degree the three above-mentioned conditions, has tended to concentrate economic life in this part of the world; and the special attraction of the iron and coal districts has brought to them a colossal concentration of European industry.

§ 12. *Other costs of transfer than transportation costs.* Attention has so far been confined to the costs of transport, and other obstacles to commodity movements have been almost completely disregarded. There are many such obstacles, among them the reduction in quality and value of easily spoiled goods through transportation; great distance from the market, with the consequent

lack of intimate contact with customers; and duties on imports and exports. All are included below in the term "costs of transfer"; we must therefore discuss transfer relations instead of transport relations.

The costs of transfer are, of course, not proportional to the distance the goods are transferred. For transportation costs this has been abundantly illustrated; in particular, breaks in the journey are expensive since they involve reloading. Such breaks are avoided whenever possible, i. e. there is a tendency to reduce the number of journeys. As stated above, this is accomplished chiefly by placing the successive processes of manufacture at points where breaks occur in the transport of raw materials. This is one way of arranging so that raw materials of one district may be used as finished goods in others with low costs of transfer.

Similarly, in the case of high import duties, raw materials free of duty or slightly taxed are sent instead of manufactured goods with heavy duty charges. Production is located inside the tariff wall, just as it is inside a district which can be conveniently reached by trucks from the break point. In both cases, localisation of industry is similarly affected. Duties and breaks are thus important aspects of transfer relations.

Evidently the reasoning in previous sections of this chapter holds good for costs of transfer other than transportation costs. It explains certain aspects of localisation in districts with scattered transportation routes of different sorts, converging points, breaks, and tariff borders.

It must be borne in mind that transfer costs are of slight importance to trade in many leading goods easily transportable and not subject to duties. This does not mean, however, that transfer costs in general do not affect them; on the contrary, transfer costs of other goods affect factor supply and factor prices in various places and hence the localisation of *all* industries. To explain this and other important relations we must give up the assumption upon which the reasoning has been built in this chapter, i. e. that wages and interest rates are everywhere the same. We must study the influence on localisation of local differences in labour and capital supply.

CHAPTER XI

LOCAL DIFFERENCES IN LABOUR AND CAPITAL SUPPLY LOCALISATION THEORY, CONTINUED

§ 1. *Equalising differences in wages.* The assumption that wages are everywhere equal (for the same quality of labour) is not the same as the assumption of free mobility of labour. Labour is interested in real wages, i. e. the goods and services the wage can buy, not in the money wage itself. For this reason, full mobility would lead to lasting and considerable local differences in nominal wages, as the retail prices [1] of food, clothing, and housing vary considerably from one place to another. In Sweden the cost of living has been found to be about 50 percent higher in the more expensive places than in the cheaper ones. Nominal wages of course tend to be low in the latter and high where the cost of living is high.

Let us assume that nominal wages differ locally in the same way as the costs of living, and call the variations "equalising differences in wages." Consumers' goods are then to be looked upon as raw materials from the point of view of industry; the price of the goods a worker buys is the cost of his labour to the employer. Thus the wage bill is eliminated from the cost account. Evidently the transfer relations of these goods affect localisation in the same way as those of ordinary raw materials and semi-manufactured goods. This would be a simple way of taking into account the local differences in money wages and their influence on the localisation of industry. We shall return to this question of the effects of equalising wage differences. Unfortunately, the meaning of the term is vague; the worker's budget is not composed in the same way everywhere even in the same country, and is still less so when different countries are compared. Habits of food and

[1] The farming population obtains *many* food products at wholesale prices, whereby its cost of living is reduced below the level with which other people, even in low-cost towns and villages, have to reckon.

clothing naturally adapt themselves to climatic conditions and are strongly influenced by tradition. The standard of living concept is, therefore, rather loose. Even if this difficulty did not exist, one could not expect freely mobile labour to equalise real wages. Districts with disagreeable climatic conditions, for example, would have to pay an extra high wage to attract people. It would seem natural, therefore, to take account of this by saying that equalising local wage differences are those which lead to equal attractiveness. This would, however, be a most unpractical mode of procedure. What is agreeable to one is disagreeable to another; taste and habits are different. Two men of different nationality, or coming, one from an agricultural district, the other from a mountainous district, both find it disagreeable to move and settle down in the other's habitat. It seems best to treat all such facts as restrictions of mobility, to deal with all inequalities in wages which have to do therewith as real differences, and to regard as equalising those which correspond to differences in the cost of living. It must, however, be kept in mind that the concept "equalising difference" is necessarily loose, and is most useful for comparisons between places with fairly equal habits of living.

With this terminology we may say that real wage differences exist at any given moment only because of lack of mobility, which may cause permanent real differences to a limited extent and still greater differences temporarily until labour flows have had time to reduce them. Differences of the latter sort may last a long time, if new economic changes tend to create them as quickly as the labour flow tends to extinguish them. This is seen, for example, in a comparison of wages in progressive and declining districts.

§ 2. *The influence of equalising wage differences.* In the last chapter it was indicated that all prices are determined in a mutual-interdependence price system, in which the transfer relations of each place and commodity with regard to natural resources and markets are included. Now suppose the existence also of local wage differences parallel to the costs of living. As pointed out, the simplest way to do this is to regard the commodities which enter into the workers' budgets as raw materials and enter them in the cost account instead of the wages bill. Districts at a great dis-

tance from food resources or having poor transfer facilities with them, i. e. an expensive supply of food, are in a position similar to that of districts which pay high prices for coal or other raw materials. They will be suitable as places for production only if they have either good natural resources or excellent transfer relations as regards raw materials other than food. Of course if the quantity of labour required in the industry is small, food is a relatively unimportant raw material. Places with poor transfer relations as to food attract such industries rather than industries which require plenty of labour, i. e. food; the latter will be located there only if some special advantages are available with regard to natural resources or raw material supply.

Let us look at a few examples of the influence of equalising wage differences on localisation. Densely populated districts generally have poor transfer relations for food; for they need to draw food from far away. Consequently nominal wages are high; so are site rents. For these reasons certain industries keep away from densely populated districts; while others settle there, since they can thus reap great advantages from (1) good transfer relations with regard to markets and often also with regard to raw materials, (2) special natural resources, or (3) large-scale economies.[1] The excellence of the district in these three respects is, as a matter of fact, the chief cause of the dense population.

Many scantily populated districts have natural food resources or good transfer relations for food but poor ones for other raw materials; consequently food is cheap and wages low. These low wages make it possible to manufacture cheaply other goods which require plenty of labour; while goods enjoying favorable transfer relations in the three respects mentioned are imported from other districts and are relatively expensive. On the other hand, scantily populated districts which have good natural resources or good transfer relations for a *small* number of raw materials but poor ones for others, including food, get high wages. They import everything but the goods for which their natural resources or transfer relations are particularly advantageous. In such cases population is scarce because of a lack of natural resources requir-

[1] Or from the existence of a concentrated labour market; see § 3.

ing an intensive application of labour, or because of poor transfer relations in most respects ("out-of-the-way districts").

As food is probably the most important raw material (wages are a significant cost item for most productive processes), good natural food resources or good transfer relations with such resources will generally attract a substantial population. Other natural resources have a more specialised use (in the production of special raw materials for special commodities) and hence have less power to attract production and mobile productive factors. Such districts have a relatively monotonous sort of industry and "import" most goods, including food, from other districts; they produce only goods for which their natural resources and transfer relations give them exceptional facilities outweighing the high wage level.

As an illustration the following Swedish figures for the price of food entering a worker's budget deserve interest. The first group of districts (3 län) have good transfer relations in most respects, a fairly dense population, and many-sided industries. The second group (6 län) are largely of the out-of-the-way type of agricultural district, and are more scantily populated. The third group (4 län) embraces the North of Sweden, where agriculture is handicapped by a severe climate, industry is based on the forests and mines, and population is scarce. It will be seen that the differences between the districts are considerable.[1]

SWEDISH RETAIL FOOD PRICE INDEX NUMBERS FOR 1927

District	Agricultural districts	Manufacturing districts	Towns
I	1462	1526	1593
II	1356	1384	1453
III	1630	1635	1713

In certain cities in the third group the prices of food and fuel were 30 percent higher than in cities of the same size in the second group.

Important also are price differences between cities and small towns having to do with the agglomeration of population. The following figures are illustrative:

[1] The figures are computed from unpublished material collected by the Social Board for 1927.

RETAIL PRICE INDEX NUMBERS IN SWEDISH TOWNS IN 1927

Number of inhabitants	Cost of food and fuel	House rent[1]
<5000	1757	363
5000–20,000	1803	478
>20,000	1840	588

Another difference in the productive facilities of various districts which affects price and wage conditions has to do with the transportability of its "export" materials and commodities. If the natural resources and transfer relations are such that chiefly easily transportable goods are "exported," their prices will be only slightly lower at home than in other districts. "Import goods," on the other hand, being difficult to transport, cost considerably more than in other districts; the price level and costs of living, and consequently wages, are high, a fact which tends to discourage production. The reverse is the case in a district which exports goods difficult to transport, for example, heavy and bulky agricultural products: they are much cheaper than in the districts which "import" them. Other agricultural products are also cheap, the supply of land being rich and rents low. As such products play a large part in determining the cost of living, the latter will be low. There are, of course, also consumption goods belonging to the class of manufactured goods and therefore somewhat more expensive in such a district, but they are easily transported and their importance in the budget is probably smaller than that of agricultural goods. Furthermore, the service of distribution will be relatively cheap, reckoned in money, as a result of the low prices of food and low rents, which make for low nominal wages. Of course not only distribution, but most other services that are necessarily produced on the spot, will also be cheap.

§ 3. *Real wage differences.* It is well known that local wage differences are not only "equalising," but that wages are higher in some districts than in others by much more than what corresponds to higher costs of living. As a matter of fact, as already pointed out, the cost of living concept and the real wage concept are both vague. While differences in nominal wages are easy to

[1] The quality of the housing is probably higher in the larger towns, which impairs the comparability of the figures.

establish, a computation of the differences in real wages can never be accurate. For this reason, it is best to follow a different course than that used in the last section, and to take the existing nominal wage differences as the starting point, studying differences in the costs of living only as one of several circumstances which explain why labour movements fail to equalise the nominal pay.

Other elements which cause local wage differences are variations in working conditions and climate. The miners in the North of Sweden, with its dark, cold, and gloomy winters lasting half the year, receive wages which are more than twice as high as the miners in Central Sweden. Professor Russell-Smith mentions an example of the opposite influence, the attraction of the glorious climate in southern California. "The sudden influx of persons attracted by the search for health rather than by resources," he says, "has caused many occupations to become overcrowded. Salaries, therefore, have become surprisingly low in comparison with the general level in the western country." [1] He also states that "The farm labourers in the Northern Mississippi Valley near to free land got nearly twice as much wages as those in the valley of the Potomac." [2]

Differences in nominal wages between agriculture and manufacturing are in many countries considerable. It was found that digging and construction of small roads in an agricultural district not far from Stockholm was done by farm labourers as a part of their ordinary job, at a rate of pay only about one third of the wages paid at the same time (1928) for the same work to town labourers belonging to the trade union of building and construction workers.

The average wage in Swedish manufacturing industries is 70 percent higher where costs of living are highest than where they are lowest, while the difference in the cost of living is estimated at 50 percent. More complete evidence is found in the table below; [3] places in Sweden where manufacturing industries are located are arranged in seven groups, according to the costs of living:

[1] *Industry and Commerce*, p. 170.
[2] *Ibid.*, p. 169.
[3] *Sociala Meddelanden* (Stockholm, 1926).

Group	Index of costs of living	Workers' income per hour (in öre, 1st quarter of 1926)
G	>1230	167
F	1171–1230	125
E	1111–1170	115
D	1051–1110	108
C, B, A	<1051	98

The difference is probably due only slightly to the fact that skilled labour forms a larger share of the total in the most expensive places.

A comparison with Denmark — a densely populated country with almost equal costs of living in all manufacturing places — shows much less differences in nominal wages. In the last quarter of 1928 the income per hour for unskilled workers was 136 öre in Copenhagen and 120 öre on the average in other places.[1] In 1914 the corresponding figures were 47,5 öre and 40, 8 öre respectively, showing a difference of the same relative magnitude.

These examples show that nominal wage differences are important. One must not overlook, however, that the labour in the cities may be superior in quality to that in small towns and country districts. The employer may be able to pay a higher wage per hour in the former than in the latter, and yet get the same labour cost per unit of product. In some countries, at least, there seems to be a tendency for cities to attract the best workers.

It is of course impossible to compare the price of a "unit of effectiveness" instead of the wage per hour. From the point of view of one industry the higher wages per hour in the cities are more than balanced by greater effectiveness, while for another there is no compensation at all in greater productivity. Note also that if one worker produces 10 percent more than another, it may pay the employer to give him 20–30 percent higher wages, as the fixed capital is better utilised. The best way to deal with these qualitative differences is to regard unskilled city labour and country labour, for instance, as different "sub-factors" (cf. Chapter V). In many cases the differences have little economic importance and may be ignored; when necessary they are taken into consideration.

[1] *Statistiske Meddelelser*, ed. by the Department of Statistics (København, 1929).

Summarising, we may say that local differences in wages are far from proportional to the prices of food and other commodities and services entering into a worker's budget, as was assumed in a preceding section. The local differences in labour supply, while largely influenced by the different costs of living, must be dealt with like local differences in natural resources. It should also be noted that large cities with their concentrated labour market possess qualities of labour entirely absent in the country. The advantage of access to such a labour market, where any quality of worker can be found readily whenever needed, is an important element in the localisation of many industries. The fact that these advantages are unavailable in small places can be regarded as a lack in mobility of certain labour factors.

While the last-mentioned differences in labour supply are important, and hold a place in the price system analogous to that of differences in natural resources, their ultimate influence on localisation is somewhat different. They cause certain industries to be located in big cities and others in country districts, but they do not prescribe *where* in the country the cities shall be located. The labour market in a large city in one part of the country may well have the same characteristics as that in a city in another part. The localisation of cities depends chiefly upon transfer relations, and among them not so much upon distance relations as upon differences in transport resources, to which transport facilities adapt themselves. Apparently labour supply also adapts itself; the agglomerating tendencies which bring together a large number of people in big cities affect also the quality of the labour supply as contrasted with what it is in more scantily populated districts. A similar influence on labour supply is exercised by local specialisation of industry in agricultural districts. It has been pointed out that specialisation has been carried through to a surprising degree in certain parts of the United States, where certain districts concentrate on a single product — no doubt partly because of the special skill which so to speak permeates such districts.

This is not the place to inquire more closely into the circumstances which govern local differences in labour supply and wages

within a country. What has been said suffices to show that these differences are important and follow no simple rules. The division of labour and trade between two districts is profoundly influenced by the fact that in one of them the transfer relations lead to the creation of a large city, with a special labour market as the result, while, in the other, transfer relations are different and nothing but small cities develop.

We should, however, mention the fact already touched upon above, that certain industries use much more labour at certain times of the year than at other times. Hence labour is cheap in off seasons, and the conditions of labour supply favourable for industries which can use labour at that particular time of year. There would be very little agriculture in northern Sweden were it not for the fact that the small farmers work all winter in the forests cutting trees and transporting logs to the rivers. An analogous supplementary relationship is seen in the relatively high wages of female labour and low wages of male labour in some districts which concentrate on the textile industry, with its great demand for female labour. The result is that such districts have attracted mechanical industries which use male workers almost exclusively.

So far in this section we have dealt exclusively with domestic differences in wages and labour supply. As international differences have been analysed in some detail in Part II it is unnecessary to describe them again. At present, we need only dwell upon the fact that their influence on the localisation of industry is of exactly the same character as that of domestic differences in wages and labour supply. Trade between northern Sweden and the rest is certainly more influenced by such differences than is trade between southern Sweden and Denmark.

§ 4. *Interest differences.* Local differences in the supply of capital are in most cases of slight importance within a country; nevertheless they cannot be altogether disregarded. The interest rates in Danish savings banks in 1927–28 were as follows in some typical districts.[1]

[1] *Statistiske Meddelelser* (København, 1929).

	Interest paid on deposits	Interest charged on loans, etc.
Copenhagen	3,83 percent	4,96 percent
North Sjælland	4,56 percent	5,18 percent
Jutland (except the South)	4,74 percent	5,56 percent
South *Jutland*	4,69 percent	6,02 percent

The considerable margin between the deposit and the loan rate in South Jutland (the district received from Germany in 1919) was probably due to a greater element of risk, owing to unsettled and less favourable economic conditions there than in the rest of the country. Certainly the interest level in the former district would have been higher still if public policy had not directed capital to its credit institutions.

As to conditions in the United States, we may again quote Professor Black:[1]

> Local interest rates are nearly twice as high in Montana as in Massachusetts. They are high in all the Southern States. They are two percent higher in western South Dakota than in eastern South Dakota; and in northern Minnesota than in southern Minnesota. For large enterprises, however, eastern capitalists are willing to invest their capital in the West and South at only slight premiums.

Evidently capital is more or less mobile depending on the purposes for which it is to be used.

Another interesting statement is made in the Bulletin of the National Conference Board (May, 1928):

> The lack of industrial employment in the South has been the main cause of lower wages there than in other parts of the country. Wages are uniformly highest where capital is in largest supply, and until comparatively recent years capital was scarce in the South.

No doubt there were other reasons than scanty supply of capital and high interest rates why industry did not expand much in the South in the last century; but the character of the capital supply in the South compared to that in the East must have affected the location of industry. Under the influence of a more even supply of capital certain American industries have in recent years shown a tendency to move southward, evidently attracted by the lower wage rates prevailing there. This has been the case particularly with the cotton industry.

[1] *Production Economics*, p. 199.

The considerable *international* differences in interest rates are too well known to need illustration here (see Chapters I and V). They are, of course, often much larger than the domestic differences, but the latter influence trade and localisation in the same way.

§ 5. *The influence of local differences in the supply of labour and capital.* It goes without saying that local differences in the supply of labour and capital affect both the rents of natural resources and the prices of commodities in various places. *Ceteris paribus*, rent is lower in a district where the wage or interest level is high than it would be with that level as low as in other districts. A striking proof of this influence lies in the fact that rents of agricultural land at a distance from large cities a little outside the horticultural circle are *lower* than the rent of land further away, in spite of the better position of the former; the reason is that the wage level is higher in the neighbourhood of the city.

Land in certain low-wage districts of Sweden would have no value at all, if the higher wages elsewhere had to be paid; at present, rents are considerable. In the same way rents are higher south of the Danish-German frontier, and lower north of it, than they would be if the wage level in both districts lay somewhere between the higher Danish and the lower German level.

Obviously, commodity prices also are affected by local differences in labour and capital supply. Wages are an important cost item in the production of most goods; most personal services, for instance, are very expensive in the cities, except for those where large scale is a decisive factor. Services are also generally dearer in high-wage countries like the United States than in European countries with their lower income levels.[1]

In brief, the price of any commodity or productive factor in one place depends more or less directly upon the prices of all other commodities and productive factors in that place and upon the prices in all other places. The height of land rents in a district is affected both by wages and interest rates and by commodity prices; and all these are the result of the play of all the basic elements in the price system, which governs not only prices but the

[1] Cf. Chapter VIII, §§ 3–4, and Chapter XIV.

localisation of production as well. It is therefore impossible to explain, for example, the influence of the local distribution of natural resources on their value without considering at the same time the local distribution of other productive factors and of markets, and the local differences in wages, interest rates, and commodity prices. Obviously, the theory of rent is part of a general localisation theory, and cannot without extreme simplification be incorporated in a one-market theory of pricing, where the local distribution of natural resources is dealt with as that of special qualities of the land, and the local distribution of economic life is otherwise disregarded.

The influence of such local differences in labour and capital supply upon localisation of industry has been partly explained above in § 2, where the reasoning in the last chapter was modified with regard to equalising wage differences; food was treated as a raw material of industry, and substituted for the wage bill as a cost element. We now must account for the influence of differences in labour and capital supply without the simplifying assumption of parallelism between wage rates and costs of living in different places. Unfortunately, generalisation on this basis is difficult; previous results contain an element of truth in spite of such simplification. Industries much hampered by the high wages of cities or other districts avoid them, unless there is some special advantage which more than compensates. This is very often the case; cities have good transfer relations from the point of view of certain industries, i. e. with regard to raw material sources and markets, or offer a useful labour market. In § 2 these compensatory advantages of special characteristics of the labour supply were not dealt with; the qualitative differences of labour must be now weighed against the differences in nominal wages; at the same time, it must be remembered that differences in wages may be both greater and smaller than differences in the costs of living. Needless to say, differences in interest rates must also be considered.

As an example of industries which avoid high-wage districts the hand production of furniture may be mentioned; only for high quality goods is intimate contact with the customer of paramount

importance. On the other hand, industries manufacturing ready-made clothes, hats, gloves, shoes, etc., are usually located in cities. Similarly, some industries avoid high-wage countries and dear-capital countries; many examples have been given in Part I. If transfer relations are favourable, however, even commodities requiring relatively great quantities of labour may be produced in high-wage countries. On the other hand, certain industries may derive such an advantage from low wages that they are to a large extent located in low-wage countries, even though transfer relations are better in other countries. In this way, large cities may grow up in countries where only small cities would exist were it not for the international wage differences. This accumulation affects the quality of the labour supply, and offers increased possibilities of large-scale production, thus indirectly affecting the international distribution of production.[1]

Localisation is affected by a number of circumstances; one may draw production to certain places, another may make for low expenses of production elsewhere. It is only natural that the outcome should be fairly equal costs for the same commodity in many places and countries. It is therefore to be expected that even industries producing easily transferable goods should be found in many places in the world.

§ 6. *The interaction of factor and commodity movements.* The various circumstances affecting the localisation of industry which have been touched upon above cannot all be regarded as basic elements — known economic data. They are to some extent as much the effect of as the cause of localisation, as indicated briefly in the last chapter. Local differences in labour and capital supply in particular [2] are due in part to the play of economic forces, and the working of these forces must be explained.

Evidently we must face the problem *why* the supply of labour and capital in various places is what it is. The question was par-

[1] Incidentally, this shows the inadequacy of the analysis of the localisation of cities made by economic geographers in terms of transfer relations alone.

[2] For the reactions of the other elements see the next chapter. As shown by the previous analysis, local differences in labour and capital supply affect the localisation of industry in two ways: by changing the conditions of production and transportation as well as the localisation of consumers' markets.

tially answered in Chapter VII, through analysis of the reaction of factor supply within each country; equally important, however, is the matter of labour and capital movements between districts.[1]

The preceding analysis of the causes of localisation of industry applies to some extent to the distribution of labour and capital. The same circumstances which make it advantageous to locate industries in given districts tend also to draw labour and capital to them. Assume a certain distribution of productive factors and a certain localisation of industry at a certain moment; local price differences between some places and productive factors are considerable, but are unable to elicit factor movements, for the mobility of factors is small. Where it is great, factor movements have already reduced price differences to insignificant proportions. This price situation assumes that trade is going on. At the same time, the distribution of labour and capital is a result of the price situation and the mobility of factors. Any change in the price system can, by changing factor prices, bring about factor movements. The consequent new distribution of labour and capital forms the basis for a new localisation of industry and new trade.

Suppose that transfer relations vary through reduced costs of transport for several commodities; interlocal trade is changed and so are factor prices. It may, for example, be advantageous to carry on manufacturing close to the market instead of close to the raw material sources. Demand for labour and capital increases in the former and decreases in the latter; wages and interest rates tend correspondingly to rise and fall; a movement of capital and labour is induced, if the obstacles are not too great. Similarly, a reduction in the obstacles to factor movements may cause more of such movement, whereby the spread of labour and capital is changed.

Such movements affect the distribution of productive factors; without them the distribution would be equal to factor supply at earlier times as modified by births, deaths, savings, etc. We may say, therefore, that actual distribution at any given moment is a

[1] This question was touched upon in §§ 9–10 of the last chapter, but deserves closer attention.

function of (1) localisation at earlier times, (2) changes in domestic supply through births, savings, etc., and (3) interlocal movements which the local price differences are able to effect in spite of the incomplete mobility of labour and capital. And the prices and price differences at any one moment are governed by the mutual interdependence price system, in which all the various elements operate together.

Evidently no simple explanation or description of the local distribution of mobile factors is possible, as would be so if their mobility were such as to equalise their nominal prices. In that case the system of relations which governs prices would also govern their distribution. As it is, a concrete description of the actual distribution of labour and capital assumes an investigation into the circumstances behind elements (2) and (3). Such an investigation would fall outside the scope of this treatise. We must regard the spread of factor supply, as one of the basic elements of pricing, although partly due to prices of earlier times, and give careful consideration to changes in this distribution [1] in every analysis of economic variations.

Certain general observations should, however, be made. First of all, as factor movements depend upon the price system, or rather upon all the circumstances affecting it, factor movements imply an adaptation of factor supply to these circumstances which is "advantageous" from the point of view of price economy. Districts with excellent transfer resources or natural resources attract labour and capital. The result is, thus, not at all an "equalisation of factor supply" everywhere. On the contrary, as districts will always differ decisively as to transfer and natural resources, so they will also differ with regard to labour and capital supply, for the latter adapts itself more or less to the former. Of course if there are considerable differences in demand conditions, it adapts itself to them also. This will be taken for granted in what follows.

Secondly, labour and capital movements are as a rule greater within countries than between them. Thus the supply of these factors adapts itself better from the standpoint of price economy

[1] Whether due to factor movements or to reactions of domestic supply of capital and labour.

to domestic differences in natural and transport resources; local conditions of production are more influenced by these differences. Nevertheless, the equipment of productive factors varies greatly between districts in the same country and this exercises the same influence on the localisation of industry and trade as do international differences on international trade. The problem is the same, only the reactions of factor supply through factor movements are quicker and relatively more effective — although *not always much more so — in the case of domestic trade.*

Thirdly, labour movements make possible an enormous agglomeration of population in cities, where wages, both nominal and real, are usually higher than in country districts. It is even conceivable under certain circumstances that factor movements lead to increased local differences in factor prices.

How do such factor movements affect trade? In general, factor movements — like commodity movements — tend to equalise factor prices in different districts;[1] these two movements may act as substitutes for each other. If costs of transport of commodities are high, industry — and the necessary labour and capital — can move instead of them.[2] But if factor movements are difficult, industry will remain stationary, and trade will continue. Such trade is costly, but not costly enough to permit sufficient factor price differences to make factors move in the place of commodities. On the other hand, certain factor movements not only enhance the inequality in factor supply between different districts, but also increase the local differences in factor prices; in so far as this is the case, trade is increased by factor movements. The advantage of concentration of economic life arising from improved transfer relations and economies of large-scale production often underlies such a development.

§ 7. *Illustrations.* That changes in the transportability of commodities affect the localisation of industry and the distribution of labour and capital is seen, for example, in districts with

[1] The reasoning below is a restatement of the conclusions in Chapter IX.

[2] "The greater the rôle played by expensive land transport in the economic life of a people, the more numerous and strong the tendencies to industrial wanderings will be." — Schumacher, *Die Wanderungen der Grossindustrie in Deutschland und in den Vereinigten Staaten*, p. 2.

natural facilities for the production of perishable products like vegetables, fruits, meat, and fish; the advent of canning and freezing meant a decisive improvement in transportation which gave such products and districts access to the world market and meant an enormous stimulus to industrial development.

Better facilities for supplying districts without access to cheap coal with other power sources have contributed much and are likely to contribute more to a changed localisation of industry. "The utilization of new forms of power such as petroleum or hydroelectric energy, and the new possibilities of electric transmission of power, have made possible the use of machinery in localities not supplied with coal." [1]

Examples of how new railways have revolutionised economic life in a district are too numerous and well-known to require discussion. In the seventies American industry was concentrated in the Northeast, while the Northwest specialised in corn and the South in raw cotton. In the latter districts population was scarce; small local markets and poor transport facilities meant poor transport relations. Neither population nor industry could develop much until railways had been built; and the latter were as necessary for migration as for transportation of goods. Thus, the building of railways which at first did not pay was necessary for rapid economic development. When communications had improved and population increased — and, thereby, transport relations improved — conditions were found to be suitable for many manufacturing industries which had formerly been located in the East. Similar shifts of industry may, of course, take place between countries. "The discovery or making practicable of a new trade route may direct trade from one country and give the benefit to others." [2] "It would be easy to give examples of the decay of towns and cities and of large tracts of country, whilst the rest of a nation flourishes. In precisely the same way, a nation may suffer — though the world may gain — by the transference to another nation of any great staple industry." [3]

[1] Edie, *Economics, Principles and Problems* (London, 1926), p. 660.
[2] Nicholson, *Principles of Political Economy*, 2nd ed. (London, 1908), p. 326.
[3] *Ibid.*, p. 327.

The economic history of Germany shows clearly how easier transportation by means of new railways and improved waterways leads to a concentration of economic life in certain districts in the west and the east. Labour and capital were not, as in the United States, spread more evenly; rather the reverse took place. This was partly due to the fact that cheaper transportation increases the size of the most economical units of production in many industries, and therefore tends to attract industry to the districts where conditions of production are best, while other districts lose their part of these industries.

CHAPTER XII

INTERREGIONAL TRADE THEORY AS LOCALISATION THEORY

§ 1. *Introduction.* One fact has been abundantly described and illustrated in the preceding pages, namely, that everything depends upon everything else in economic life. The last chapter described briefly how the distribution of factor supply, the location of transportation facilities and of production, and the various prices affect one another.

It is important to note that our interregional analysis, as modified in Part III, applies to geographical districts, even though certain productive factors may be mobile between some of them; it applies to domestic as well as to international trade. Factors command varying prices in different parts of the same country; these differences in local factor supply affect the localisation of production and interregional trade within countries in the same way as international differences affect foreign trade. Besides, differences with regard to transfer relations characterise the various regions just as much as differences in factor equipment do.

It is necessary to stress the fact that even if there were free mobility for labour and capital between all districts within a country, and no mobility at all between countries, a similar interregional theory would nevertheless apply to both domestic and international trade. The only difference — an important one, it is true — would be that in the former case greater attention would have to be given to the reactions of factor supply in studies of the short run effects of economic changes. Anybody interested in the long run effects would have to give full attention to the reactions of factor supply through variations in domestic supply and inter-district movements in both cases, although they would be called intra-regional in the international case. As a matter of fact, even small and nearby districts show substantial and lasting

differences in natural resources, transfer resources and facilities, and labour supply. Such differences are to a large extent causes rather than effects of localisation of industry.

§ 2. *A bird's-eye view of pricing.* Let us assume the world to be divided into a great number of districts, so small that the costs of transferring goods within them may conveniently be included in the costs of production. Production, of course, always includes much transportation, — in a certain sense is nothing else, — so there is nothing artificial in this assumption.

Clearly, reasoning of the Walras-Cassel type, similar to that used in Parts I and III and illustrated in Appendix I, will show the character of pricing under static conditions. Assume the prices of the productive factors to be known: we then also know, and can reckon as functions of commodity prices, the demand from consumers in each place[1] for the various commodities; we know further the costs of production and prices of the commodities — hence the actual demand — and the costs of transferring[2] them between different places. From this we may infer (1) what commodity each district can supply more cheaply than the others, and (2) to which districts it can supply it more cheaply, considering the difference in costs of production and transfer. As there must be a balance between production and consumption for each commodity, we can also tell how much each district must produce. The productive factors required for this output (at the assumed factor prices) must be equal to the supply of factors in each region.

The foregoing holds true on the assumption that all districts have a common monetary system. If they are in two groups, each with its own currency, there is one more unknown factor: the foreign exchange rate. Another equation, however, also applies: the demand for foreign currency must equal supply, i. e. the balance of payments must be in equilibrium. As to demand for "foreign" goods, — the main item in this balance, — the demand for con-

[1] Given certain conditions of ownership and taste; the demand for capital goods from new savings is left out of account for the sake of simplicity in this review. See Chapter X.

[2] When we know the quantity of the various productive factors in each small district, we also know the quality of nature from a transportation point of view, i. e. what has been called the "transport resources."

sumers' goods derives directly from the character of each individual's demand. The demand for producers' goods is, of course, directly dependent upon what each district produces and what producers' goods it has to import.

In case many groups of districts exist, each with a separate monetary system, one such equation applies to the relation of each group with the rest: if there are n groups there are also n equations. However, as the content of the last of them is to be found in the n-1 first equations, there are just enough for determination of the exchange rates.

§ 3. *The importance of the region concept.* Districts united in the same monetary system have specially intimate relations in some ways and it is often convenient to treat them as a region. From other points of view other modes of regional division are desirable. In general we may say that there are certain groups of districts between which factors or goods or both move less easily than between the districts themselves, and that such groups should on that account in many cases be regarded as separate regions. Analysis of the reactions of factor supply in different districts is thus simplified, as is that of commodity movements.

Regions of different types have to be analysed. Wages and interest rates in some of these differ only slightly, owing either to marked mobility of labour and capital or to original similarity in factor equipment, but they differ sharply in others. Furthermore, commodities and factors may move easily between some regions and with great difficulty between others. It is convenient, therefore, to think of the world as consisting of a number of large regions, each of which consists of smaller regions (sub-regions), the latter containing a great number of very small districts. How this regional division can best be effected obviously depends upon the kind of problem under analysis.

Neighbouring districts may be regarded as belonging to the same sub-region if natural or transfer resources are similar, if labour and capital move easily between them, or if goods move freely between them but with greater difficulty to another group of districts. In each case the grouping is effected in a manner of essential importance for the problem in hand. Uniformity with

regard to the monetary system, for example, is of little ultimate consequence in a study of localisation, but very important in a study of the mechanism of trade adjustments.

Special attention should be given to certain large regions (countries), yet the small interior sub-regions and districts cannot be left out of account. Distribution of productive factors and transfer resources and facilities within the countries affects not only the internal localisation of industry but also the international distribution of production and trade. Countries with good interior transport resources attract industries different from those drawn to countries with poor ones, although other conditions of production may be similar. A wage level uniformly high within one country and varying between parts of another country, but with the same average level in both, affects the international trade of these countries.

Only if the large regions, for example, countries, are similarly made up of sub-regions or "cells" [1] can the circumstances which concern primarily interior localisation be disregarded in a study of the division of production and trade between large regions. In most cases such similarity does not exist, and an analysis like the classical theory and that given in the first nine chapters of this book, which fails to consider interior localisation, ignores essential parts of the problem.

§ 4. *The reactions of the so-called basic elements of pricing.* Reasoning like the foregoing, where all the so-called "basic elements" are assumed to be known and to vary for reasons outside the economic problem, tells only part of the story. As already pointed out [2] such elements react to changes in the price system. In other words, the basic elements react to price variations and are consequently more or less the result of previous localisation, while they govern the changes in localisation taking place at present. We begin with the supply of factors of production.

Little need be said about the influence on supply of natural

[1] I. e., have similar distribution of productive factors and similar equipment with coast lines, harbour, land surface and other aspects of transfer resources.

[2] In § 3, which contains little more than a summary of viewpoints to be found in the two previous chapters.

resources from the location of industry in bygone days. It is obvious that mines, for example, may be exhausted or become more difficult to work, forests be cut down, and agricultural land be exhausted and made more or less fertile. Such influences play their part in international as well as in domestic trade.

More important is the fact that the supply of various qualities of labour is affected by the type of industry carried on in each region. (A brief discussion in the case of countries has been presented in Chapter VII.) The volume of savings also reacts. Further, we have the inflow and outflow of factors. In the last chapter the relation of such interregional factor movements to changes in the price system was analysed; numerous examples will later be presented to show that such movements are of great consequence as regards international trade. Variations in the price system sometimes affect labour supply within each country considerably, both by causing migrations and by affecting the sources of domestic supply.

That labour supply within smaller — or greater — regions than countries reacts to economic variations in similar ways has already been pointed out. These reactions vary in strength, and few general rules can be given, except that migration, in modern times at least, seems easier within a country than between nations.[1] Obviously, in each case under discussion the character and strength of the reaction must be considered, with due attention to the situation soon after the primary change (the effects of which are analysed) and at different times later on. The question of how the price system, and thus the localisation, will be affected must be answered in terms of time.

So much for factor supply; the transfer facilities, which profoundly affect localisation and trade, also react to economic variations, as indicated in the last chapter. Railways and harbours are built where they are needed, etc. This means that trans-

[1] The differences in the supply of labour and capital between towns and country districts are the result of factor movements, which are due chiefly to differences in transport resources and economies of concentration. "It has often been observed that in every nation the principal trade is between the towns and the country; it is the exchange of manufactures against food and raw materials" (Nicholson, *Principles*, p. 325).

port resources alone do not govern conditions of transport; the latter are affected, for example, by investments of capital, which create transport facilities. As a matter of fact, many capital investments affect nature permanently or for a long time, alike from the point of view of transportation and of production. In other words, no sharp line can be drawn between transport resources and transport facilities, or between natural resources and capital goods. In many discussions it would be best not to attempt to draw any line, but to deal with material means of production under one heading.

The character and distribution of the material means of production and transportation is to a very large extent a result of adaptation to economic conditions of earlier times. Some, such as raw materials, can be moved easily if a new localisation is found advantageous, others can be transported only with difficulty or not at all. But if they last a limited number of years, the annual amortisation becomes floating capital and may be transferred to other regions. Thus, in a study of economic variations the possibilities of moving material means of production and transportation directly or indirectly from one place to another, and of changing their technical form, must be dealt with in a manner analogous to that of variations in the location and quality of labour types.

It follows that an accurate account of the localisation of industry must describe a historical process, and that the analysis of the price system in more static terms, as in § 2 of this chapter, explains only the character of the relationship. That is, however, important enough; for the direct effects of the various changes in the basic elements on prices and localisation are indicated by the price system.

It is not necessary to discuss in detail actual cases of present localisation to demonstrate that the effects of earlier localisation of industry upon basic elements are important. Inventions may by chance lead to manufacture in one country or place when others would do just as well; yet the industry tends to remain where it was first located, for the quality of the labour factors adapt themselves and so do capital investments in production and

transportation and in trade connections. A force of considerable strength may be required to move production to other places. The ability of a locality to hold an industry greatly exceeds its original ability to attract. Many industries are still placed in the neighbourhood of water-power, although a different localisation would be natural now that electrical energy can be transported cheaply. The household glass industry in many countries has remained in the old forest districts, where it grew up centuries ago because of the supply of cheap fuel; yet coal is nowadays transported to these places from distant mines.

§ 5. *The arbitrary elements in localisation.* The historical influence discussed in the last section can lead to an uneconomical localisation of industry. From the point of view of the individual firm,[1] the term "uneconomical" can be used only when the savings in current production costs would more than balance the expenses of transferring the industry to other places. The fact that an old industry remains where it has settled is therefore not by itself a proof of an uneconomical localisation.

In many cases, however, production is from the beginning localised in by no means the most profitable way. Those people who decide, for example, where a factory is to be placed, in many cases base their decisions upon deficient knowledge of the actual facts and cannot judge correctly the future changes equally relevant to the location. In a word, mistakes play an important rôle in localisation. It is obviously impossible to lay down any principles,[2] but it should be noted that a mistake in the localisation of one line of industry reacts on the location of other lines of production in several ways. The markets for firms which sell raw materials and semi-manufactured goods are located where the later stages of production are carried out, and move with them. Besides, the demand for productive factors in a district from an industry which would better be located elsewhere may

[1] It seems unfruitful to speculate on the difference between the actual localisation and the optimum localisation which would give maximum national income.

[2] Localisation is governed by what happens in a small number of cases. Hence, chance is likely to exercise a greater influence than when the number of elements is great.

raise the prices of some factors in that district and thus make it unsuitable for industries which would otherwise settle there.

It should be observed in this connection that the location of consumers' markets is to some extent governed by other than economic considerations. The capital and other centres of government, as well as army and navy stations, acquire an extra importance as markets.

It may be mentioned here that the organisation of government affects localisation profoundly through taxation also, particularly in countries where local rates differ considerably between districts without offering corresponding advantages to industry. The post-war economic development in Great Britain shows many examples of new industries evading the "devastated areas" where the old and unprofitable industries are located, and where unemployment is excessive and local rates burdensome. It goes without saying that such local differences in rates may affect local differences in wages and particularly in rents; to discuss this question here would carry us too far afield. International inequalities in taxation also affect the prices of productive factors and international trade as mentioned in Chapter VI.

One circumstance which increases the influence of chance on localisation is that the elements which affect costs of production are so numerous and varied that several places may each offer nearly equal advantages. One may be more suitable with regard to raw material supply, another with regard to labour. Economies of large-scale production may restrict the number of producing units, and in that case it is more or less a question of chance as to which place will receive the industry in question.

In some branches of industry the costs of production and prices play a comparatively minor rôle as relates to sales. This is particularly true of goods with style, individuality, and artistic properties in general. For such goods the location of production in places which would give the lowest costs is of relatively little importance and the stimulus to place it there is relatively weak.

Observe also that firms may produce at very different costs but sell at virtually equal prices.[1] Low-cost firms are generally

[1] In the Swedish iron industry the costs of ordinary iron were found to differ in 1927 by almost 50 percent.

growing; high-cost firms are as a rule declining. In many cases the latter have a disadvantageous location; as long as they continue to exist, they contribute an element of irregularity to the localisation map.

It should be noted also that a commodity may be produced by several different processes, and that the best location for a firm using one of them may be different from that for firms using another. Often, however, the various processes result in goods of differing quality. There is nothing peculiar in the fact that firms producing different grades of goods are differently located; it is, strictly speaking, a matter of different industries. The better grades of men's ready-made clothes are manufactured in Berlin, where there is a specialised market for skilled labour, and where it is easy to observe fashion changes. The poorer grades, on the other hand, are produced chiefly in villages and small towns in an agricultural district of Germany, where the farmers' families do part of the work. Here, too, certain external economies accrue, for example, the establishment of a labour market, but the preponderating influence is cheap labour supply.

All these and many other circumstances explain why few manufactured goods or raw materials have well-defined market areas. Irregularity in the trade currents is a constant characteristic.

It goes without saying that this reasoning applies to international as well as to domestic trade — although in some cases high tariffs make market areas coincide with countries and thus give the former distinct borders. International trade is between firms, not between nations. Certain firms export while others do not; some export only to a few special foreign markets, others to a number of them. Some firms are able to hold a part of the home market against foreign competition, others succumb. We must, therefore, expect continued importation of goods which the country is well able to produce for itself; and it is only natural that international trade currents should exhibit irregularities which at first sight seem to defy all principles. To what extent that is actually the case only an analysis of concrete examples can demonstrate. Under all circumstances it is clear that the localisation of industry, whether national or international, cannot be

completely explained by an analysis such as the one presented in sections 1–4.

§ 6. *Arbitrary local price differences.* Other qualifications, like those in the last section, bridge the gap between abstract theory and reality. Both in this and in previous chapters commodity prices have been assumed to differ by the costs of transfer between different places, so far as goods which pass between them are concerned. As a matter of fact, trade is not enough to guarantee this result. An investigation into local price differences at any time shows irregularities not explained by the costs of transfer.[1] Price equalisation is particularly difficult to bring about, hence temporary interlocal price discrepancies are great, for commodities affected by seasonal variation, such as agricultural products. These price discrepancies call forth cross transports and other irregular trade currents. Such waves on the price surface are, however, comparatively unimportant. Price averages for long periods — several years — seem to show relations which do not deviate much from what the costs of transfer make natural; and what influences the location of industry is the price situation during a fairly long period, not its daily or irregular variations.[2]

Evidently the time and space elements are interrelated, for surely local forces which may affect prices in an irregular manner for short periods may offset one another during longer periods. Professor Black points out that with regard to daily price averages Chicago and St. Paul are by no means part of the same livestock market; with regard to monthly averages the differences are much less marked; and with regard to yearly averages all significant elements are virtually identical.

Another complicating aspect of the question of local price relations, and one which may affect localisation, is the habit prevalent in some industries of buying or selling commodities at the same price in a district, regardless of transportation costs. Danish cooperative slaughter-houses, for instance, pay the farmers' trans-

[1] See particularly the extensive investigations by the United States Bureau of Railway Economics.

[2] The investigation into the prices of oranges in the United States made by the Bureau of Railway Economics shows very considerable irregularities in prices on any one day, but a surprising regularity in price averages for a whole season.

portation costs for pigs, whether the farm is distant or close by; all farmers get the same net price. The Danish cement industry has at times been quoting the same price for cement in all Danish ports.[1] Such a policy tends to restrict the number of factories, i.e., makes it more difficult to start new factories in districts far away from those already in existence; it affects the price structure, for example, that of agricultural rent.

[1] On the other hand, there is active price discrimination between buyers of different types.

PART IV

INTERNATIONAL TRADE AND FACTOR MOVEMENTS

CHAPTER XIII

INTERNATIONAL TRADE

§ 1. *Introduction.* In this part the results reached in Part III will be utilised in an analysis of international trade problems, particularly those having to do with the obstacles to commodity and productive factor movements, which were not dealt with in Part II.

We have seen that countries are special types of regions, and that conclusions concerning trade between the latter therefore hold true for international trade. This is so when the lack of interior mobility of commodities and factors is disregarded, as in Chapters I–IX. When, however, the costs of transport *within* regions and countries are to be taken into account, there is need for a general localisation theory, which considers at the same time regions and districts of many different kinds, among which are the various countries. Trade between them is explained by such a localisation theory: for since it shows in which districts industries settle, it accounts *ipso facto* for trade conditions both within and between countries. A theory of international trade must therefore be founded upon the general localisation theory; indeed it consists of a localisation theory which gives special attention to circumstances arising from the existence of a number of countries.

This volume does not aim at a presentation of a general localisation theory, even in its outlines, but deals mainly with international trade, and includes, therefore, only so much abstract localisation theory as is needed for the special discussion of international trade problems.

The reason for dealing with such problems to some extent separately from other localisation and trade problems (e. g. the relations between towns and country districts) is that national borders are different from, and in some respects more important

than, the borders within countries. They act differently as obstacles to both commodity and productive factor movements. Furthermore, varying currency systems cause the mechanism of trade between countries to differ from that of other sorts of trade. There is also a community of interest [1] between the members of one nation which makes such a study interesting in itself and valuable as a guide for national policy. Lastly, many important economic variations are common to all districts within a country but not to districts in other countries. This makes it natural to treat a country as a unit and to study its relations with other countries. Numerous social institutions concern the inhabitants in a certain country but affect foreigners only indirectly. For instance, collective agreements concerning wages and labour conditions usually affect a whole national industry, but do not influence the same industry abroad. Changes in state taxation and state regulations in general also affect economic life in all parts of a country more directly than that in other countries.[2]

It would be a great mistake to think of any one of these circumstances as the sole reason for giving special attention to international trade apart from other localisation problems. The classical economists put too much stress upon the difficulty with which factors of production move internationally.

It is, as already asserted, worth while to study separately other sorts of trade, e. g. between districts, large or small, which show

[1] This community of interest is founded partly on sentiments only. However, the factor mobility contributes also; for example, the great interior mobility of capital creates common interests among all capitalists in a country.

[2] From a certain point of view a "national economy" (*Volkswirtschaft*) is an *organic unity*, and must therefore be one of the basic concepts in any localisation and trade theory. There is a fundamental difference in character between international trade and trade between other regions smaller or larger than individual countries.

This viewpoint has not influenced the treatment of international trade in this book. The author is convinced that only a purely analytical discussion which discards the use of such concepts as *organisms* which are different from a sum of the cells which make them, can lay a firm basis for international trade theory. An analysis of a non-quantitative, qualitative sort may be added afterwards. There can be no advantage in attacking the problem from two angles and with two different sets of instruments at the same time; confusion is bound to ensue. For a discussion of these questions see Harms: *Volkswirtschaft und Weltwirtschaft*, 3rd ed. (Jena, 1915). *Weltwirtschaftslehre* as a new branch of economic science in Harms' opinion has to study international economic relations on the basis of an organic national economy concept. Compare Wieser, *Theorie der gesellschaftlichen Wirtschaft* (Tübingen, 1924).

a uniformity of nature (the tropics versus the temperate zone) or uniformity of population (the white race versus other races). Trade between cities and country districts also presents important problems. Studies of these and other forms of trade properly belong to a general and complete localisation theory.

The object here is to explain why trade between nations is what it is, and to analyse some problems connected with international economic relations. Part of the explanation has already been given in Part II, where a simplified picture of international trade was presented. We now deal rather with the circumstances which were then disregarded: the mobility of productive factors and transferability of commodities, the transfer relations of places, and the accumulative and dispersive tendencies related to them. It will be well to review the most important conclusions on these questions reached in Part III, and deal in turn with their international aspects. This will be done in Chapters XIII–XV. Import duties play such an important part in determining localisation and trade that they deserve special treatment (Chapter XVI); international movements of the factors of production and their relation to international trade are discussed in the last chapter of Part IV.

§ 2. *Obstacles to international commodity movements.* Such obstacles, e. g. costs of transport, reduce trade; the distance commodities go and the ways they pass depends upon the height of these costs and upon the differences in the costs of production in various places. Europe imports enormous quantities of vegetable food from America and Australia, but produces a much greater proportion of its animal food within its own borders, because the former is relatively much easier to transport.

National frontiers also serve as obstacles to trade, and exclusively to international trade. The influence of tariff walls is obvious; other circumstances are the differences between nations as to language, laws, banking systems, habits, and traditions, in a word everything that makes it more difficult to trade in foreign countries than in one's own, and more difficult in certain foreign countries than in others. Professor Ansiaux speaks of all this as "moeurs économiques." Another class of circumstances is more

directly connected with national frontiers: cumbersome customs formalities, government preference for domestic products, movements and preconceptions which induce people to prefer such products to foreign goods, and the like.

These factors all influence more or less the course of international trade. The importance of some, or rather of their absence, is evident from the large extent of trade between different nations within the British Empire, despite the high import duties in some of them. For instance, in 1927 the British Empire outside of Great Britain took 46 percent of British exports, and 49 percent of the British exports of fully manufactured goods.

The influence of differences in "economic customs" is difficult to illustrate with figures, as statistics for the trade between various parts of one country are almost entirely lacking. It is clear, however, that trade is to a very great extent dependent upon close contact between the producer and his market, and that this contact is difficult to establish when the "economic customs" exercise their influence. A little country like Denmark with low duties and cheap water transportation from other countries produces about 75 percent of all the manufactured goods it consumes, while the export of such commodities is inconsiderable. This goes a long way to illustrate the importance of being close to the market in the special sense in which we are at present interested: having the market within one's own country. On the other hand, Denmark offers examples of the fact that large-scale trade — the export of bacon and butter — when specially directed to certain markets abroad, may overcome several obstacles at slight cost. Danish butter is sold cheaper by the retailer in London than by his colleague in Copenhagen. Such cases are, however, exceptional. Butter and bacon meet no protective tariff in England and very little prejudice in favour of domestic products. It is unusual, also, for producers to specialise so intensively in production for a special market.

For certain goods the impediments are so great that international trade is unprofitable. The differences in the costs of production are insufficient to take the goods over tariff walls and other obstacles; each country satisfies its own needs of such goods.

As observed in Chapter VIII, they are in this book called "home market goods," a term which includes all goods which are on the whole produced only for the home market; commodities that enter into foreign trade are called "international goods." They fall into two categories, import and export goods.

In some cases import goods and home market goods compete for the consumers' demand. A country may produce all the coarse cotton goods it needs, but import the finer qualities. For certain uses the question which quality is to be preferred is governed by the ratio between prices; thus the various qualities are more or less closely competitive. In other cases different goods may easily act as substitutes for each other. Tiles may be a home market commodity, while other material for the covering of roofs is imported. They naturally compete for the consumer demand. Evidently prices of such goods tend to move in harmony. When imports are obtained more cheaply, the corresponding home market goods also command lower prices; if they did not, demand would turn to the foreign commodities. There are other home market goods which feel no direct competition from the latter, and their prices frequently change quite differently from import prices. We will call these "non-competing home market goods" as opposed to the first sort, "competing home market goods." This distinction is important in an analysis of relative price variations, for while the latter group feels the influence of variations in import prices and to some extent affects them, the former group has a more independent position.

Certain home market goods of course compete with goods exported from the country in question. Their prices tend to move like export prices.

In summary, the various classes of goods are as follows: international goods, subject to international trade, competing home market goods, in more or less close competition with international goods, and non-competing home market goods, a large group with a less direct connection with other goods. International goods may be either import or export goods, consequently competing home market goods may compete with either the former or the latter.

It goes without saying that there are no fixed border lines between these groups.[1] Any change in the economic situation may cause international trade in some commodities to cease, or may move others from the home market to the international class. This fact does not impair the usefulness of such distinctions, but it makes discrimination in handling them of paramount importance.

In 1919–23 exports made up the following percentages of total production: in the United Kingdom 23 percent, Germany, 23 percent, Canada 29 percent, Japan 20 percent, and the United States 10 percent. In German manufacturing industries in 1925, 43 percent of the workers were employed in industries producing export goods, while 10 percent produced goods of which small quantities were exported. The remaining 47 percent were employed in home market industries. In Great Britain 4,300,000 out of 11,600,000 insured persons belonged to the exporting group of industries in 1924, according to estimates by the Balfour Committee.

What kind of commodities belong to the different classes? Are generalisations possible for a number of countries which differ considerably in productive resources? Of course, the import goods of one country are the export goods of another. But what about the line between international and home market goods? Do not certain commodities fall on the same side of it everywhere?

Obviously, commodities that are difficult to move tend to be produced where they are used, and thus belong to the home market category. This is true of a large part of the most important goods and services. Cooked food is seldom transported long distances; it is in the literal sense of the word "produced at home." Houses are built where they are to be used. Thus two very important productive processes are, without significant exceptions, located in the country that uses their results; international division of production is virtually out of the question.

Services are supplied at home. The rendering of a service is almost always effected a short time before its "consumption," a

[1] This classification disregards the fact that owing to the costs of transport a certain commodity may be imported across one frontier and exported across another, as in the case of bricks in Sweden; the classification refers to conditions in the country as a whole, and abstracts from minor local circumstances.

fact that excludes any possibility of importation. Not only cooking but all sorts of housework falls within this category. So does retail distribution, and practically the whole work of wholesale distribution.

This is true of all countries. Besides, each country has its own home market goods, which may be international goods from the point of view of other nations. In Germany, important home market goods are: brown coal, building materials except cement, clothing, wood, woolen goods, furniture, and many articles of food. Taxes on imports are frequently prohibitive in countries like Spain, while they play a slight part in Great Britain. Whether goods belong to one class or the other thus depends largely upon the tariff system; no generalisations are possible.

As a rule, however, import duties on raw materials are fairly low, and rise, even as a percentage of the value of the commodity, the higher manufactured it is. For that reason raw materials in most countries are found among import or export goods, despite the fact that costs of transport weigh more heavily upon trade in them. Finished goods frequently meet such high import duties that domestic production takes the place of importation.

§ 3. *The division of national markets.* It would seem natural that the impediments to international trade are either so high that domestic industries get complete control of the home market or so low that foreign producers supply all that is required of a certain commodity. For manufactured products — or rather goods not at the first stage of production — this is, as a matter of fact, the rule. Statistics, it is true, imply that the sort of commodities that are imported are also to a large extent produced at home; but the figures are misleading.

"A duty on a manufactured product commonly is either so high as to keep out all imports, or so low as to admit all and thus to be in effect merely a revenue duty. True, imports often appear to continue, and a division of the supply between domestic and foreign quotas often appears to be brought about. But the appearance is deceptive; the two sets of goods on examination prove to differ in quality, or to be for other reasons not in reality competitive." [1]

[1] Taussig, *Some Aspects of the Tariff Question*, p. 10.

To this statement by Professor Taussig it should be added, however, that foreign and domestic commodities sometimes differ in quality and yet compete so closely that it would be impractical to regard them as different commodities. The difference may even be imaginary, consisting simply in a belief, created through advertising of a certain brand, that the produce of one firm is superior to that of another. Boots and shoes are imported into many countries which produce the larger part of what they need of such articles in domestic industries. The home market is divided between foreign and domestic producers. The explanation is to be found, partly at least, in the fact that — at existing prices — imported grades are preferred for some purposes by some persons and home products by others. Another example is as follows: none of the large automobile exporting countries do without the importation of foreign motor cars, which differ little in usefulness and price from domestic cars. Not even is the United States an exception to this rule, despite its high import duties and general superiority in the motor car industry.

Thus certain commodities are at the same time import goods and competing home market goods in the same country.

The fact that prices of some foreign commodities are neither so low as to make domestic production unprofitable nor so high as to fail of access to the domestic market in competition with domestic products is, however, largely to be explained by other circumstances, above all the existence of interior costs of transport. The market area over which a certain commodity is distributed from a certain centre of production does not stop at the national borders, except in so far as the latter are important obstacles. Often they are not, and goods pass the borders, i. e. enter into international trade. Some of them, like bricks, may not go far into other countries but only to the parts which are within easy reach. In the case of bricks, producing places are scattered and the numbers of more or less communicating markets is great. The market areas for certain producing places in southern Sweden extend into Denmark, while the market areas for some brick factories in Norway and Finland reach into neighbouring parts of Sweden.

No explanation referring to conditions in a country as a whole

can explain such trade currents. The analysis must run in terms of conditions in regions or districts, or, more exactly, in the places which constitute them. Germany's southwest is part of a district extending through northern France and Belgium, which is rich in coal and iron and has excellent transport resources and facilities. It exports goods for which these conditions mean low production costs to surrounding agricultural districts, some within, some outside of Germany. On the other hand, agricultural districts in northern and eastern Germany import similar products from Great Britain and Poland.[1] British coal is sold in the North of Germany simply because of lower costs of transport than from coal mines in western Germany. The preferential railway charge from Westphalia to Hamburg is 8 marks, which is almost twice the combined rail, dock, and shipping charges on British coal from the pit to Hamburg. British coal and iron sell in western France for the same reasons. The Nova Scotia coal-mining industry suffers from stiff competition with imported coal, while the collieries in British Columbia export coal to the United States.

It is evident that division into home market goods and international goods — which would be clear and significant were there no interior costs of transport and high costs of transfer between nations — must be handled with caution. Among import goods, some are imported only to certain ports; even substantial price variations might fail to change very much the proportion of this import to the total domestic consumption. Other import goods easily pervade all parts of the importing country. If they compete closely with goods produced at home, important variations in the volume of imports may follow minor price changes. There are, of course, corresponding differences between the various export goods.

Among other circumstances contributing to the division of national markets for certain goods between domestic and foreign producers is the fact that different firms produce at very different costs,[2] which goes a long way to explain the situation. The low

[1] Cf. Marshall, *Money, Credit, and Commerce*, pp. 104–105.

[2] See Black, *Production Economics*, p. 825, and Schüller, *Zur Theorie der Handelspolitik*, p. 51.

cost firms can hold their own against foreign competition and keep part of the home market, while they are unable to drive out foreign goods altogether. It would carry us too far to inquire into the causes of the superiority which these firms have over former or potential competitors among firms of the same nationality — better location, easier access to power and raw materials, more efficient management, etc. Some of these circumstances do not permit increased production at equally low cost per unit, and consequently any attempt to conquer the entire home market is obstructed. In some cases the low costs of production of certain firms may be due to temporary conditions, and as time goes on these firms get weaker and disappear, leaving the whole market to the foreign producers. Conversely, a domestic industry may through inventions or other favourable changes have won such a superiority over its foreign competitors that the latter are about to be driven out. That process requires time. The best foreign firms, and those having the best hold of the market, fight for some years before they quit the contest. During such periods the home market is supplied partly with domestic and partly with imported goods.

It should not be overlooked that competition does not depend upon price differences alone. The marketing of many products continues successfully, even though competing firms sell similar products at lower prices. This is only partly due to real or imagined differences in quality; it is due also to manifold conditions of modern marketing, which have to do with good will, trade marks, exclusive selling rights given to a limited number of retailers, etc. For example, a firm manufacturing goods like ready-made clothes for women often finds it advantageous to sell its articles through a limited number of retailers in large places and through only one retailer in every small place. As other retailers also carry such articles, one firm cannot capture the whole domestic market; there is room for others, domestic or foreign, selling goods that are inferior, prices being considered. A Swedish firm which dominates this branch of industry has found it impossible to supply more than 50 percent of the total home demand. The rest is divided between small domestic and large foreign manufacturers.

In other cases marketing depends as much upon business connections and affiliations as upon ability to offer the best value for the money. Such, for instance, is the case in the telephone industry, where each of the half a dozen large manufacturing concerns has affiliated concession companies which buy from it; and in the manufacture of electrical appliances. Such affiliations seem to be growing in significance.[1]

Lastly, it should be observed that price discrimination makes it possible for a firm in one country to invade the market in another, where costs of production are equally low. Dumping is a means of gaining new markets and is used as a substitute for or supplement to real marketing costs. It may also be a means of disposing regularly of the surplus output which exceeds the requirements in the main market. The Swedish firm mentioned above used to sell its goods 10 percent lower in Denmark, exclusive of import duty, than in Sweden, and found it profitable to retain the Danish market even during boom periods in Sweden.

These matters are complicated; to give them the *cliché* "economic friction" explains nothing. We have merely indicated the sorts of circumstance that lead to a division of the home market between foreign and domestic producers.

So far we have dealt chiefly with manufactured products. The case of many primary products from agriculture and mining is in one respect somewhat different. Increasing quantities of such commodities can as a rule be supplied only at increasing prices. Their import price is often one which maintains a domestic output short of domestic demand; consumption is therefore partly satisfied with foreign goods. Reduced import prices would lead to diminution of domestic production but not to its cessation. Examples are abundant. Most European countries grow wheat and import it from transatlantic countries, and this is due only partly to the fact that mixing imported and European wheat gives a better flour. Access to cheap American wheat in the latter half of last century did not lead to the disappearance of wheat growing in Europe. In manufacturing industries, on the other hand,

[1] Monopolistic elements of pricing play an important part in such cases. They are not further analysed here, as this volume consistently leaves them out of account.

cheapened importation often leads to complete cessation of domestic production. The use of machinery for Belgian and American window-glass is at present rapidly driving out hand methods in a number of countries, which must either adopt the new method or give up the industry.

The difference between agricultural and mining products on the one side and more highly manufactured products on the other in this respect exists only so far as the costs of the former contain large elements of rent of natural resources, which have few competitive uses. Lower wheat prices reduce the price of wheat land, but it may still be more profitable to subject certain lands to an extensive cultivation of wheat than to the growing of other grains. The supply price of this wheat land is low. It is not so with capital and labour, for which there are always many competing uses. Only for a limited period can wages far below the general standard be paid. And the reward to capital can be kept much below the normal rate of interest only if it has been tied up in certain capital goods, which cannot easily be turned to other uses, and only so long as these goods last; failing sufficient reward, no new capital will be invested in these channels. Reduced prices for a commodity will consequently eliminate its production unless relatively large amounts of rent can be reduced, serving as buffers for the blows of price reductions. Manufactured goods seldom fulfil this condition, but, within limits, many agricultural and mining products do. They are often produced at home and imported at the same time, whereas manufacturing goods, were it not for the circumstances that have been indicated above, would be produced either in sufficient quantities to satisfy the whole home market or not at all.

The elements touched upon in the present section go some way towards explaining not only the division of the market in country A between producers in A and in one foreign country, but also the fact that producers from *several* foreign countries compete in A, with or without competition from domestic firms. It is, of course, by no means necessary that costs of production in these several countries be equally high, for the impediments to international trade may put a greater obstacle in the way of ex-

port from *B* to *A* than from *C* to *A*. Ties of common language and habits, tariff preference, etc., may unite the two latter nations. Furthermore, the difference in quality between goods that cannot even so be treated as different commodities tends to create a division of the market in the way indicated between three or more competitors quite as much as between two; the fact that different firms within the same country have varying costs, and the special marketing conditions of many articles, also contribute to this result. All this has special significance for competition in manufactured goods; as regards agricultural and mining products, a division of the market is still more natural. Wheat is exported from Argentine and Canada to many European countries no less than from the United States.

Having dealt chiefly with obstacles to commodity movements across national frontiers, we come to a consideration of lack of mobility in general, first from the point of view of different goods (§ 4) and second from that of different places (§ 5).

§ 4. *The relative transferability of goods on different stages of their production.* The analysis in Chapter VIII demonstrated that one aspect of the fact that different goods are more or less easily movable, namely the relation between the costs of transferring goods at different stages of production, deserves special interest from the point of view of the localisation of production. Other things being equal, it was shown, certain industries become "market localised," i. e. situated close to the market centres, while others become "raw material localised." If several raw materials are used, industries of the latter type tend to settle near the sources of materials which have the largest weight.[1] The iron and steel industry is in most cases situated not far from the coal mines; the ore goes to the coal.

It makes no difference whether or not the places are in the same country, except so far as movement across the national borders meets special difficulties — which they usually do. Such obstacles, e.g. import duties, affect localisation and trade by changing the relative transferability of raw materials, semi-manufactured

[1] Not the one which is most weight losing, as I used to believe, a fact which has been pointed out to me by Mr. J. Palander, a specialist on localisation problems.

goods, and finished products. So far as they impede the movements of finished goods more than goods at earlier stages, they make the latter more mobile and thus distribute the various stages of production between countries.

Owing to differences in transferability, some natural resources exercise a much greater influence upon the local distribution of economic activity than others. Resources used to produce raw materials for market-localised industries are relatively "passive" in that respect, i. e. have little power to attract economic activity. On the other hand, resources which give rise to raw material-localised industries are "active," as they attract not only these industries but also, owing to the implied growth of markets, many market-localised industries. Coal mines, for example, have proven particularly "active" when iron mines are in the neighbourhood and transfer relations are good.

The differences in total costs of transfer when production is located in different places are of course only one element in determining localisation. Differences in productive factor equipment which lead to differences in costs of production contribute their influence, as described in Parts I and II.

§ 5. *Local differences in transfer relations.* Let us next turn to the transfer relations of different places and their influence upon international trade.

In Part III we discussed the influence of distance relations, transport resources, and facilities. Through the price mechanism these elements — as well as the supply of labour and capital — and the economies of scale in transportation, affect the costs of transport and lead to differences in transport relations of different places. As other things than costs of transport are also relevant, we found it useful to speak of "transfer relations." These conclusions are now applied to the case of countries, with special emphasis upon the influence of obstacles to international commodity movements. Such obstacles make transfer relations within a country more intimate, other things being equal, than those between countries. Duties have a similar effect, as will be further discussed in Chapter XVI.

First as to conditions within countries: if the distances to be

covered are small (the necessary raw materials close to one another and to markets) or if transportation between them is easy (owing to navigable rivers, good railways, etc.), costs of transportation will be low; this is of special advantage in industries using several heavy raw materials. The British iron and steel industry owes much to superiority in this respect. Ore and coal mines, blast furnaces, steel works, and shipping ports are within a ten-mile radius in some areas. It has been computed that the British average haulage distance is under 30 miles, compared with 150 in Germany, 200 in France, and 500 in the United States. "The cost of assembling all the raw materials and then carrying the finished steel to a port of shipment is $14.20 in the United States, and only $5.05 in Great Britain when home ore is used." [1] Even the Belgian steelmakers pay more in transport rates per ton than the British. Conditions for the manufacturing of Portland cement are good in places with cheap supply of chalk, clay, and coal — usually harbour districts where the two former are to be found.

In the United States excellent means of transportation in many industries atone to a large extent for the long haulage distances. In Russia, on the other hand, the lack of good communication has prevented the utilisation of natural resources at some distance from each other; this was one cause of the slow development of manufacturing industries in that country before the War.

Other things being equal, countries with good interior transfer relations, such as those with plenty of natural resources, produce relatively great quantities of goods per individual and have a large foreign trade.[2] Both real and nominal wages are on a high level. Countries with poor interior transfer relations tend to specialise in goods with easily transportable raw materials. The standard of living is, other things being equal, comparatively low.

As to the transfer relations between countries, much that has been said in Chapter VIII holds true. Countries which consist chiefly of places far from outside raw material sources and mar-

[1] *The Times*, Trade and Engineering Supplement, October 1, 1927.

[2] "The expansion of a country's foreign trade depends largely on her facilities for internal transport." Marshall, *Money, Credit, and Commerce*, p. 112.

kets, or which have poor communications with most of them, will export chiefly easily transportable goods. Switzerland specialises in fine cotton and silk fabrics, watches, and machinery of high value. Such countries, like the rest, of course produce market localised goods for home consumption. It goes without saying that for every country special productive factor equipment may outweigh advantages or difficulties in transfer relations. Iron ore of exceptionally high grade is produced in the extreme north of Sweden and the interior of Chile. At present, we concentrate attention first on the influence of differences in transfer relations.

Good transfer relations, inside and outside, depend in many cases, however, upon the character of the factor supply. A country with many and important natural resources has as a rule better such relations than a country of similar size with less natural resources. Resources may be situated close by in some other country, but the probability is that they are further away.[1] The fact that a larger country has a greater number of resources than a smaller one does not of course make it probable that it has better transfer relations, except in so far as tariffs or similar obstacles intervene. A country like Denmark has better such relations for most manufacturing industries than certain parts of Great Britain,[2] Germany, and the United States. Coal, iron and steel, and machinery can be obtained relatively cheaply. It is only natural, therefore, that Denmark and Holland should have manufacturing industry, although they lack all the important raw materials; they also have a high standard of living.

It is often overlooked that what is important for the production of goods in the higher stages is not natural resources but good transfer relations. Favourable transportation resources — navigable rivers, etc. — are as important as natural resources: both make for good transfer relations. If nature is rich in means of communication she atones for poverty in raw materials. The population problem in individual countries is thus entirely dif-

[1] In average, points within a district are closer to points within the district than to those outside.

[2] The Portland cement factories in Denmark have a cheaper supply of British coal than their competitors by the Thames.

ferent from what it is in the world at large. It is often thought that the so-called law of diminishing returns from land comes into effect when the population of a country increases, and that this explains why the standard of living will fall if no other influence intervenes. The matter, however, is not so simple: it is only for agriculture and mining that land as such is required in special qualities and in relatively large quantities. Production of goods at later stages is fairly independent of nature, and is affected chiefly by transfer relations and the supply of labour and capital. Thus what makes for lower economic productivity when population grows in countries where the quality of labour is suitable for manufacturing is not the scarcity of nature but of capital, and above all the character of transfer relations. Raw materials and food have to be imported from further away, and the manufactured products have either to be sent in exchange to more distant markets or forced into the usual ones in greater quantity. The supply of "manufacturing services" of the sort in which this country specialises is increased relative to other productive services in the world, and the reward for the former tends everywhere to fall. Other countries, therefore, turn to other things, and markets are made for the first country, but only at the expense of a double loss, from less favourable terms of exchange on the foreign markets and from greater transportation costs for raw materials and finished goods.

Let us now return to comparisons of countries with different transfer relations. It is obvious that small countries are disadvantageously situated. All places within a certain country meet the obstacles of national borders and thus, other things being equal, have transfer relations with foreign places inferior to those with domestic ones. Now, in large countries there is a greater number of domestic places than in small; the use for communication with places abroad is smaller, and the obstacles are less. This means more to some industries than to others. Of course, commodities which pass the national frontiers with great difficulty, and which are best produced on a large scale, are better situated in large countries than in small ones. A good example is the motor car industry, in which only large-scale enterprises seem

able to compete. To place such an enterprise in a small country would result in the larger part of the output's having to be sent abroad at high costs of transfer.

Countries with good transfer relations with other countries will secure a large amount of foreign trade. They will have a superiority in industries which require much transportation for the collection of heavy raw materials from different countries, and for the distribution of heavy finished goods. In this respect European countries are better situated than, for example, New Zealand and Australia. In Europe countries with good harbours have an advantage above countries like Czeko-Slovakia. If the latter were an island like Great Britain, its industries would certainly be more important and its standard of living distinctly higher than at present.

Changes in transfer relations, e. g. through new transfer facilities like the Suez or Panama canals or through the growth of important markets in the neighbourhood, may affect the economic life of a country profoundly. India and Persia have come economically much closer to Europe through the Suez Canal. The economic growth of the United States has improved the position of Canada much more than that of European countries. On the other hand, the Baltic countries suffer decidedly from being virtually cut off from the Russian market, which before the War took the larger part of their export commodities. They have not, like Finland, been able to reorganise their economic life and find new markets in the West.

It goes without saying that reasoning in general terms about transfer relations must be conducted carefully. All countries have transfer relations good in some respects and poor in others as regards the supply of raw materials or the marketing of products. Such differences affect profoundly the character of industry and trade.

§ 6. *Transfer relations, the equipment with productive factors, and the character of industry.* As pointed out above, the character of industry and trade depends not only upon transfer relations, but also upon productive factor equipment and other basic elements. The competitive power may be great in spite of unfavour-

able transfer relations, if the productive factors needed are cheap. Of course, transfer relations and factor supply react upon each other. The distribution of labour and capital is largely governed by economic circumstances, of which transfer relations are one. Transfer relations, on the other hand, are affected by factor supply: for example, markets are where the factors are to be found, and transfer is easier when on a large scale; besides, costs of transport, like costs of production, are affected by factor prices.

Regions with good transfer relations attract labour and capital, which move from other districts within the same country, and to some extent from other countries; furthermore the domestic supply may increase through extensive savings and a high birth rate. In old times poverty tended to keep back the growth of population, and prosperous regions therefore had a more rapid increase than other regions.

In general, regions with good transfer relations get densely populated; they become important markets, and profit from large-scale economies in transportation. On the other hand, raw material and food supplies must be drawn from far away. The point is reached where further concentration of population lowers productivity. Evidently such regions will specialise in goods requiring (1) the collection of raw materials from different and distant sources, (2) large-scale production, particularly those difficult to transfer, and (3) plenty of labour, perhaps also of capital, and little land (for the last-named factor is scarce in densely populated regions). If, however, there is a special supply of natural resources (which is often the case), goods using them are also produced.

Northwestern Europe has a fully developed transport system, a labyrinth of canals and navigable rivers, excellent harbours, and, partly as a result of dense population, a network of good railways and roads. It has a supply of coal and iron deposits, and particularly good transfer relations for the iron and steel industry. The latter is important. Regions with good transfer relations, particularly for "active" natural resources (which is often the same as to have such natural resources within their own borders), attract more productive factors than regions with good transfer relations for "passive" natural resources.

Obversely, countries with poor transfer relations and little or no active natural resources tend to be scantily populated and to specialise in goods which can be produced on a small scale and require plenty of the natural resources to be found there; among them goods easily transferred are preferred for export.

If some other productive factor than nature (e.g. technical labour) is necessary for the production of goods in the first stage of manufacture, and is to be found only in certain of the districts which have the natural resources, this factor will attract raw material-localised industries on later stages of production, and like the natural resources will be more or less "active."

All this applies to countries as well as to districts and regions. Further discussion of the international distribution of productive factors and its changes is to be found in Chapter XVII.

Summarising briefly, countries are groups of places. Because of obstacles to commodity movements, inside as well as outside, transfer relations affect the localisation of production and international trade. In other words, both the spread of productive factors and markets through the world and the local differences in transfer resources and facilities are important. Thus not only the supply of productive factors but also its local distribution is a governing element. Similarly the local distribution of demand and the relative transferability of goods at different stages of their production are also relevant.

It goes without saying that in particular cases one or another aspect may dominate. For some localisation problems the character of nature is decisive, and all other elements may be disregarded. Deserts and arctic zones are "death belts." Among the "life belts," the tropics produce colonial goods and certain fruits; the cold temperate zones produce wheat, etc. In other cases, one may ignore international differences in transfer relations and concentrate attention on the supply of productive factors within each country. This approximates the procedure followed in Part II. For many localisation problems, however, transfer relations and transferability of different goods are of decided influence. Furthermore, the localisation of one sort of economic activity more or less influences the localisation of the others. Evidently

a deeper understanding of the local distribution of industry and international trade is impossible unless transfer relations and transferability are thoroughly analysed. In order to reach correct conclusions in special cases we must grasp the way in which all elements work together in determining localisation. This applies especially to the forces which govern the local distribution of labour and capital and hence international trade.

§ 7. *Localisation as a product of economic development.* In Chapter VII the reactions of the supply of productive factors were examined. Their supply is itself a product of the earlier situation. If a country has for one reason or another obtained certain manufacturing industries, technical labour will be educated and trained and other industries started because of its supply. Fixed capital will take on a technical form which affects localisation. In the same way, the local distribution of productive factors and markets, and hence transfer relations, are results of a historical development. Furthermore, transport facilities such as harbours and railways grow up where they are needed and tend to remain.

The European economic superiority in the nineteenth century was due much more to the fact that labour had been technically trained and excellent transport facilities arranged than to permanent superiority in natural resources and transportation resources. Western Europe had almost a monopoly in the manufacturing of many goods from raw materials procured from other parts of the world — raw materials which from the view point of transfer resources alone might have been more advantageously manufactured elsewhere. The rapid economic progress in North America was to be expected when population and capital had grown sufficiently to make possible efficient utilisation of these resources.

Evidently some so-called basic elements of localisation and pricing are more fundamental than others, i. e. adapt themselves less. The character of nature, as "natural resource" or "transportation resource," seems to be decisive in the long run. Population, taste, capital supply, and transportation facilities are subject to a slow change which is decidedly affected by

economic development at the same time that it influences this development.

Let us look at a few illustrations. Coal and iron mines, in districts with good transportation resources, have been able to attract economic life to a large extent not only for the reasons mentioned above, which make them particularly active from a localisation point of view, but also because the industries which were naturally placed there have had a much more educative influence upon labour than, for example, agriculture. The development of modern manufacturing processes has been to a considerable extent due to the qualities acquired in the iron and steel industry and during efforts to utilise its products.[1] Such international differences in the quality of labour, which are indirectly to a large extent due to differences in transfer relations, explain why the machine-producing industries are to be found almost exclusively in the iron and coal districts.

Great Britain got the lead in the eighteenth century largely because no other country then had excellent transport resources and facilities, interior and exterior, and coal and iron deposits close to one another. Her invention of textile machinery and the locomotive were not a result of inherited technical superiority,[2] but were the outcome of concentration of energies on manufacturing industries in general and the textile industry in particular, which latter had developed in the seventeenth century because of the moist air and plentiful supply of water-power. When cotton became cheap, England was ready with coal, iron, constantly improving technical labour, and excellent transport resources and facilities, which were further developed. The economic expansion made possible an enormous increase of population — the rise in wages was limited — and the expansion continued. This labour supply can be regarded rather as the response to a stimulus than as a cause of the development in the sense suggested above.

[1] To make it possible for this industry to start, a supply of technical labour is, of course, necessary. This has been lacking in China, where the iron and steel industry has consequently been insignificant until recently.

[2] John Erikson, the Swedish inventor of the propeller, had constructed a locomotive which was in many respects superior to Stevenson's. Yet no railways were built in Sweden. And Erikson had to emigrate to the United States to find scope for his genius.

Similar considerations explain why the textile industry has virtually everywhere been the first field for the development of manufacturing industries with modern machinery. This industry profits from contact with the market and uses easily transportable raw materials. It therefore tends to be "market localised." This, however, is only part of the explanation. A machine-using textile industry requires a minimum of technical skill on the part of leaders and workers. This skill has been easy to acquire, partly because the handling of wool and flax has been familiar for centuries. As familiarity with the handling of machinery has grown, other industries have been taken up until a later stage has been reached, when the machines are to a large extent manufactured at home instead of imported.

The growth of education and development of skill naturally tend to disseminate industries which have been concentrated in certain localities owing to their superiority therein. The trade resulting from such superiority has been largely in the east to west direction; some authorities believe that in the future trade will be rather in the north to south direction; which, being due chiefly to differences in nature, is not likely to be much reduced. "No exchange of culture, no equality in education or skill, no emigration of peoples evening up density of population can change the temperature and make tropic fruit grow in the land of arctic fur, or cotton grow in the land of spring wheat." [1]

As indicated in Chapter VII, even the east to west trade is unlikely to fall off considerably. One reason for its continuance is the lasting difference in transport resources between districts in similar latitudes. It seems probable that these differences will entail others in labour and capital supply, both as to quantity and as to quality. The relative backwardness of certain parts of Australia and Asia, for example, is as great today as fifty years ago, perhaps more so. The trade between highly industrialised countries such as Great Britain and Germany shows no sign of falling off,[2] although the trade with other countries is growing more rapidly.

[1] Russell-Smith, *Industry and Commerce*, p. 665. See also Black, *Production Economics*, p. 767.

[2] The fear that Europe will be unable to export manufactured goods to pay for

§ 8. *The international trade of the United States.* Let us now examine the case of the United States. What circumstances make its export and import what it is, and different from that of other manufacturing nations? Its exports of finished manufactures in 1928 amounted to $2,260,000,000. Automobiles and machinery were the most important articles. For each the advantage of a large market and good transfer relations is great; the automobile industry in particular finds a market in the United States many times greater than that of any other country. Besides, the incentive to invent labour-saving machinery is particularly strong in a high wage country; an unusual supply of highly efficient technical labour has therefore developed. Among the exports of finished manufactures there are also specialties which seem to be produced in the United States simply because by chance some invention originated there and sustained effort maintained technical superiority. All manufacturing nations have such specialties.

The export of crude materials and food stuffs — such as copper, petroleum, wheat, cotton, and tobacco — is clearly due to the great supply of the corresponding natural resources, just as the importation of such goods — e. g. sugar, raw silk, coffee, rubber, and furs — is due to their absence.

Manufactured food stuffs — e. g. meat and wheat flour — are also important export articles. The fact that they are manufactured in the United States and not, like the rest, exported in crude form, is chiefly to be explained by the transfer relations: easy access to great quantities of the raw materials and to large markets. It is, however, probably also due to some extent to a supply of specialised technical labour, which counts for much, e.g. in the meat packing industry. The export of semi-manufactured goods — iron and steel goods — is also due partly to the transfer relations, which make the further manufacturing close to the steel plants advantageous; it is partly due to access to cheap fuel and power and to technical skill.

its importation of food and raw materials, if the economic development and tariff policy in countries exporting the latter continues along present lines, is on the whole unfounded. The terms of exchange may vary to the disadvantage of European exports, but probably not to any serious extent, unless tariff walls are raised many times their present height or population is violently increased.

Next among the imports after crude materials and food stuffs are finished manufactures, which are imported in considerable quantities across a high tariff wall. Here we find goods which for no obvious reason have become the specialties of one foreign country or another. Chiefly, however, the imports are goods requiring relatively large quantities of labour, such as high grade textile goods. The high wage level in the United States makes the production of such goods expensive. As such industries have not, despite high protection, reached a full development, the technique in many cases is not comparable to that in the countries which specialise in them.

Some semi-manufactured goods, such as pulp, are imported, being much more easily transportable than the raw materials, and natural resources for production of the latter at home being insufficient.

Many more goods would, of course, be imported were it not for the high tariff. Commodities made from foreign raw materials would in many cases be cheaper produced abroad and transported more cheaply in finished form. The duties affect the "relative transferability" in such a way that production comes to be localised in the United States despite the higher manufacturing costs.

It would carry us too far to inquire into the character of technical labour in the United States, compared to that in Europe, and its influence on industry and trade.[1]

§ 9. *What is meant by effects of and gain from international trade.* Various aspects of the localisation of industry and international trade have been separately discussed. In Parts I and II the controlling elements on the demand side were found to be (1) individual tastes and the desire of groups, and (2) conditions of ownership of productive factors. On the supply side the controlling factors are (1) the physical properties of nature, i. e. of both productive factors and commodities, (2) the supply of productive factors, (3) the conditions of economic stability, (4) the social conditions of production (taxes on industry, etc.), and (5)

[1] See the brilliant and instructive analysis by Professor Taussig in *Some Aspects of the Tariff Question*. See also Chapter VII.

the lack of divisibility of the productive factors. Strictly speaking, (5) is included in (1).

We have seen also that localisation is profoundly affected by (6) transportability of commodities, (7) distance relations, i. e. local distribution of the productive factors, (8) transport resources, and (9) transport facilities and social transfer conditions (e. g. duties). Like (5), element (6) may also be included in (1). Element (8) is one aspect of the qualities of productive factors (regarded from the point of view of transportation) and may also be included therein.

The basic elements governing localisation may be thus singly described: (*a*) tastes and desires of man, (*b*) physical properties of nature in a wide sense (including the qualities of both goods and factors from the point of view of production and transportation), (*c*) quantity and local distribution of productive factors (including, of course, fixed capital in all forms and transport facilities), and (*d*) the social conditions of ownership, production, stability, and transfer.

As already explained, these conditions are not independent of price variations. Changes in any one of them changes more or less the whole price system — among other things international trade — and this reacts on the other circumstances. The domestic supply of factors of production, for example, is affected and taste changes, etc. Yet these reactions are on the whole so uncertain in character and extent that it is often best to treat them separately; whereas the reactions of prices and quantities in the price system which are not basic react in a much more direct and predictable way.

In this light let us examine the expression "effects of international trade." How much would the situation differ in its absence? We must first decide what change in the basic circumstances is assumed to bring about a situation where there is no international trade. There can be no doubt that the tacit or explicit assumption in this respect always made is a change in the transfer relations, i. e. the creation of obstacles which prevent all international commodity movements. Similarly, when speaking of the effects of increased trade one means the change in the situ-

ation called forth through a reduction in the obstacles to international commodity movements.

As the other basic conditions would be very different if there were insurmountable obstacles to international trade, it is not worth while to pursue the analysis of the effects of such trade very far on the assumption of fixed basic conditions. Still less is there any reason for discussing the question of the total gain from international trade or its division between the trading nations. As the number and taste of the individuals which set the standards by which to judge the results of economic activities are much affected by trade, the basis for comparison of "total gain" is entirely lacking.[1] An analysis of the effects of international trade as a whole must run largely in terms of the changes in the basic circumstances, e. g. in the amount of population[2] due to such trade.

It is much more worth while to speak of the gains and losses of changes in international trade due to reductions and increases in the obstacles to international commodity movements.[3] For the

[1] Cf. Chapter VII. The usual reasoning concerning the total gain from international trade or "the variable distribution of transport costs" evidently offers little of interest. One cannot say how much of the burden of transportation costs each country carries without knowing how much its position would be improved by their disappearance.

[2] The present number of inhabitants in Great Britain would be much less if there had been no foreign trade in the last two hundred years. It would probably be much reduced if all international trade disappeared.

[3] It is a little artificial to give to these effects of changes in the obstacles to international commodity movements the term "effects of international trade." Variations in demand conditions, factor supply, etc., also cause changes in the price system which involve among other things changes in the foreign trade. E. g. changes in the supply of various labour groups which affect relative wages go hand in hand with changes in the terms of international trade. (The national income of one country may well be increased, while the income of the country which imports goods produced by high-wage labour may fall off. Cf. my paper "Protection and Non-competing Groups," Weltw. Archiv, 1931.) Yet the changes in the price system caused by a new demand or a new supply are not said to be due to the changes in the foreign trade. The most logical method is to inquire into the effects on the price system of changes in the various basic conditions. A treatise on international trade thus differs from a general price and localisation theory only by giving special attention to these effects so far as they concern international trade, and, *perhaps*, by studying most carefully the effects of variations in that sort of basic element — the obstacles to international transfer — which has most *directly* to do with international trade. Cf. Chapter VII, §§ 7, 8.

effects of such variations can largely be explained in terms of changes of the price system, on the assumption that the other basic circumstances remain unaltered. In other words, it does less violence to reality to abstract from the influence on the number of inhabitants in a country, etc., in a study of e. g. protective duties than when we have in mind the disappearance of foreign trade altogether. However, and particularly in the long run, all variations in international obstacles cause reactions in the other basic elements. The only satisfactory method, therefore, for an analysis of the effects of reduced international obstacles, is to consider both the changes in the price system which would occur if the other basic elements were unaffected, and the changes due to the actual reactions of these elements.

Special interest attaches to the question how the volume of available goods [1] in the various countries is affected. If it increases, one may speak of a "gain," and if it declines, a "loss." Note, however, that these words are not used in any normative sense. It is beyond the scope of this work to inquire how far a gain of this sort means greater "satisfaction" in a case where both the taste of consuming individuals and the distribution of income have changed as a result of the changed transfer conditions.[2]

§ 10. *The effects of and gain from a reduction in the obstacles to international trade.*[3] Compare two situations, one with higher and the other with lower costs of transport between countries. According to the previous analysis, the latter situation will be characterised by greater international trade and, as a rule, by less international inequality in factor prices. Production can to a greater extent adapt itself locally to differences in productive factor equipment and other basic elements. National income in

[1] For an individual country this quantity which is a measure of the national income is the volume of production plus imports minus exports and adjusted with regard to the foreign ownership of certain natural resources and capital and with regard to present international capital movements.

[2] Whether one thing or another is desirable is for politicians, not for economists, to say. The development of the national income is in most cases of great interest for the forming of such judgments; hence it is worth while for economists to analyse its variations. Cf. Appendix III.

[3] Certain aspects of this question have been briefly discussed in Chapter VIII.

terms of goods and services [1] is increased. In some cases, the combinations of factors and the effects upon the volume of production are the same as if productive factors had been moved from one country to another.

Even if there is no tendency towards equalisation of factor prices as a result of increased trade, the tendency to an equalisation of cost of production, actual or potential, in various countries is a sign of a change in the economic situation, which means a greater volume of world output. Consider, for instance, the case where iron and coal mines are more expensive in country *A* than in country *B*, and yet the former country is able to produce iron more cheaply because the resources there are much closer to one another, which brings a saving in costs of interior transport. If a reduction in the costs of transport between the countries makes it possible for *A* to export to *B* a part of the iron *B* needs, then the prices of resources will be raised in the former country still more over their level in the latter. Evidently the saving in cost of transport more than makes up for the more expensive resources in the iron industry in *A*.

The other aspect of the effects of reduced obstacles, the reactions of the basic circumstances, is discussed in Chapter XVI (below) in the case of changes in import duties.

[1] For proof and exceptions see Chapter XVI, § 3, where difficulties connected with the different possibilities of weighting, when an index of the volume of goods and services is computed, are also discussed.

CHAPTER XIV

INTERNATIONAL PRICE RELATIONS

§ 1. *Commodity prices.* This book is an investigation into the character of the price mechanism as it operates in a world of space, not in the well-nigh spaceless world of the so-called theory of pricing and distribution. Special attention has been given to relations between the price systems in different countries. It would be superfluous to summarise the conclusions here; instead, the reader is asked to review again the account given in §§ 5–10 of Chapter VIII of the special connections between prices, and of typical cases. In the light of previous analysis an attempt will be made in this chapter to illuminate a little further the nature and extent of international price differences.

Let us begin with commodity prices. The table below illustrates the fact that wholesale prices of food are much higher in some countries than in others, even if the comparison be confined to countries with a similar economic life. It shows the wholesale prices of important articles of food in four countries as a percentage of the prices of the same articles in New Zealand.

FOOD PRICES IN PERCENTAGE OF NEW ZEALAND PRICES[1]

	July, 1914	February, 1929
United States	129	132
Canada	125	128
Australia	105	115
South Africa	141	110

Before the War food prices were substantially lower in Australia than in South Africa. At present the situation is rather the reverse.

It goes without saying that retail prices also differ widely. The figures in the table below leave no doubt that even though all qualitative differences cannot be eliminated, the price differences

[1] *Statistical Yearbook for New Zealand* (1930), p. 832.

are much too large to be due to this factor alone, and are hence real enough.

INDICES FOR RETAIL PRICES OF FOOD, FUEL, LIGHT, AND SOAP IN CERTAIN TOWNS [1]

Estonia	78	Portugal	98	Great Britain	100
France	104	Holland	105	Spain	114
Germany	114	Sweden	116	Denmark	118
Canada	120	Australia	123	Italy	125
United States	138				

§ 2. *Wages, interest rates, and rents.* International differences in wages are still more glaring. Remember, however, that the usefulness, skill, and dependability of workers in various countries differ considerably, and that for this reason the figures are not strictly comparable. An investigation made by the machine industry union in Switzerland [2] into wages in that industry in some manufacturing countries of Europe gave the following result.

EARNINGS PER HOUR, 1928 (IN SWEDISH ÖRE)

	Skilled	Semi-skilled	Unskilled
Sweden	129	120	107
England	113	.. [3] 76	..
Switzerland	109	.. [3] 88	..
Holland	102	89	75
Germany	98	89	71
Austria	73	66	58
Italy	71	55	45
France	66	53	44
Belgium	50	47	38

The British Dominions and the United States would, of course, show still higher figures, but comparable statistics are not available. The average weekly income for male workers in manufacturing industries in 1928 was $13.90 in Sweden,[4] but no less than $31.74 for skilled and semi-skilled, and $25.17 for unskilled labour in the United States. In 1926 white labourers in manufacturing industries in South Africa earned more than $32.[5]

[1] *International Labour Review*, II (1929), 580 and 867.

[2] *Verkstäderna* (Stockholm, 1929), 6.

[3] Only figures for unskilled workers, probably including also semi-skilled workers, are available.

[4] *Sociala Meddelanden* (Stockholm, 1929), p. 844. The annual income is divided by 52.

[5] *International Labour Review*, II (1929), 113 ff.

From the point of view of production costs and international competition, the height of *money* wages and the quality of labour are the vital circumstances. The worker, on the other hand, is interested in the things his wages can buy, his *real* wages in terms of commodities and services. They differ almost as much as money wages from one country to another. The International Labour Office has calculated the index figures in the table below. It is evident that such figures cannot be regarded as reliable indices for the standard of living of manufacturing workers in different countries, as the manner of living differs so radically. However, the use of several different sorts of budgets as a basis for real wage computations has demonstrated that the figures in the table are not markedly altered when the commodities and the weighting are changed to closer correspondence with actual conditions.[1]

INDICES OF REAL WAGES IN 1928[2]

Portugal	32	Germany	71	Denmark	104
Estonia	41	Holland	85	Australia	143
Italy	42	Great Britain	100	Canada	171
Spain	45	Sweden	101	United States	191
France	53				

Real wages are more than six times as high in the United States as in Portugal, and almost five times as high as in important manufacturing countries like Italy. Money wages are almost nine times as high as in Portugal, and five times as high as in Italy and France.

Statistics of wages in agriculture are still more difficult to obtain in comparable form. It may be worth while, however, to quote the following figures from Professor Black.[3]

ANNUAL WAGES OF FARM LABOUR IN 1913 (IN DOLLARS)

Japan	26 (plus board).	Germany	200
China	42	England and Wales	222[4]
Italy	100	United States	364
Sweden	180	South Africa	480
Denmark	185		

[1] Differences in social insurance constitute another complicating factor which must be disregarded.

[2] *International Labour Review*, II (1920), 580 and 867.

[3] *Production Economics*, p. 946.

[4] Figures for 1910.

It is not necessary to add further statistics to show that the short-time and long-time rates of interest, in particular the latter, also differ considerably from one country to another. In northern and western Europe industry is paying about 5 percent for borrowed capital in 1930, whereas not further away than in the Baltic nations the level is four or five times as high.

Similar differences exist, of course, with regard to the rent of land, although figures for comparable grades are difficult to obtain.[1]

§ 3. *Why are wages so different in various countries?* The basic circumstances of pricing being what they are, prices of goods and factors cannot be otherwise.[2] This may be further illustrated by reference to the figures above.

How can wages stay at such different levels in countries which compete more or less closely in several lines of industry? The extremely low wages of Asiatic farm labour are, of course, partly to be accounted for by the different kinds of labour there represented. But they are also very largely due to an element which is also probably the chief cause of wage differences between European farm labourers of different nationalities, namely the equipment of coöperating productive factors, i. e. natural resources, technical labour, and capital. The following table is illuminating.

	Agricultural Workers per Square Mile Agricultural Land	Live Stock per 100 Agricultural Workers[3]
Japan	503	23
China	260	?
Italy	89	117
Germany	80	251
Sweden	50	372
Denmark	44	760
United States	11	878
Australia	1	5360
Argentina	1	8821

Evidently the smaller the area of agricultural land with which each worker cooperates, the smaller is also the number of live

[1] Differences in rent play a greater rôle in the determination of localisation within countries, for example, between cities and villages and within cities.

[2] The impossibility of commodity price levels being equally high in all countries is obvious in the light of the enormous differences in factor prices.

[3] Black, *Production Economics*, p. 945.

stock per man. We may take this to indicate that the quantity of natural resources and capital per farm worker is lowest in Japan and China and greater for any one country the lower down on the table it is placed. Compare these figures with those of farm wages in the preceding table: it is evident that the latter are higher the greater the quantity of cooperating factors. This must be a causal relationship,[1] and not a mere coincidence.

There can be little doubt that the quantity of capital and natural resources per worker in manufacturing industries also differs widely in different countries. Besides, the number of labourers of a technical and organising sort per hundred of manual workers is also much higher in certain countries than in others. For these and other reasons the quantity of output per manual worker in certain industries such as coal, iron, cotton, and window glass,[2] tell very little as to differences in the quality and effectiveness of the manual labourers in various countries. Certain it is, however, that such differences exist, although there is no possibility of comparing their direct economic importance.

The best illustration, albeit no more satisfactory, is probably obtained from the cost accounts of firms producing similar articles in many different countries. The result of cost comparisons is in most cases that even substantial wage differences lead to surprisingly small differences in costs per unit produced, in spite of the fact that the technical equipment is almost the same in all the factories. An American firm which puts out a standardised article had the following wage and cost figures a few years after the War.[3]

As interest and depreciation costs probably differ only slightly, the wage differences in this case lead to substantial differences in wage expenses per unit, although by no means of the same relative magnitude.

[1] One must not expect complete correlation, for the quality of land, transfer conditions, etc., are different. As it is doubtful whether wages were really higher in Germany than in Scandinavia, the only important exception to the expected relation is that wages were higher in the United States than in Australia and Argentina.

[2] Cf. Taussig, *International Trade*, chapter XV.

[3] These figures were obtained from the firm, and have not been formerly printed.

	United States	England	Germany	Italy	France	Belgium
Wages	$5½	$2½	$2¼	$¾	$1	$1
Costs (cents per unit)	20	20	18	14	12½	12

Corresponding sets of figures, e. g. those compiled by the General Motors Company factories, confirm the impression that wage differences are larger than the differences in usefulness of manual labour under equal conditions of production. It would, of course, be rash to draw conclusions as to production in general from a small number of rather special industries. Nevertheless, such figures give some support to the view that the actual wage differences are to a great extent due to other circumstances than differences in the quality of the manual labour, e. g. to the equipment of other productive factors, transfer conditions, etc.

§ 4. *Why is the commodity price level higher in the United States than in Europe?* Returning now to international differences in commodity price levels, we may discuss the causes of a high price level in a special case, that of the United States. Why, for example, is this country usually regarded as more "expensive" than Europe?

First of all, international goods are more expensive in the United States than in most European countries. The cause lies not in the greater cost of inward transportation compared with outward transportation, but simply in the high tariff wall. As described above, the latter tends to raise not only import prices but also the prices of productive factors, and thus cannot fail to heighten home market prices. Besides, a highly protected home market in many cases leads to exportation at dumping prices, and thus makes prices on some American goods lower in a country such as Great Britain than in the home country.

Protection is, however, only partly responsible for high prices in the United States. Even without protection their general level, measured by ordinary wholesale price indices, would certainly be higher than in Europe. The supply of factors of production in these two parts of the world is such as to raise the relative prices of home market commodities higher in the former than in the latter.

The United States is a country of great natural resources and a relatively meagre population, if measured by European standards. Labour must be regarded as the relatively abundant factor of production in Europe and the relatively scanty one in America.

This is true of common labour, both skilled and unskilled. Highly qualified labour with capacity for organisation and technical leadership is less rare in the United States than in Europe, owing not to racial differences but to differences in opportunities and training having to do with social organisation and the customs of society, and the rapid development of economic life. There is at present in the United States a greater wealth of certain types of organisers and technical leaders. It is in industries where the gifts of nature, such as wheat land, and copper mines, together with the type of labour just mentioned, are vital factors that American industry has been most successful; practically all the important export industries belong to this group. In spite of high wages for common labour they have been able to produce as cheaply as or more cheaply than other countries, deriving advantage from the rich supply of nature's gifts and human talent for organisation. Dependent to a high degree upon natural resources are such commodities as wheat, cotton, and metals; dependent rather upon administrative talent are machines, automobiles, and possibly films.

Among the home market industries we find some that for the same reasons produce rather cheaply, requiring large quantities of the relatively abundant and cheap factors. The cotton spinning and weaving and boot and shoe industries are among those dependent upon technical labour, the fruit growing industry among those dependent chiefly upon a rich supply of natural resources. On the other hand, some goods and services need above all common labour, skilled or unskilled, which, it must be remembered, is a relatively scarce factor in the United States. Most personal services belong to this class, as well as such high quality goods as tailor-made clothing, glass, and furniture. To this group belong most of the products from industries where standardisation and mass production play a small part; these commodities are much more expensive in the United States than in Europe.

Retail distribution is another large and expensive group of services which makes little use of automatic machinery. Like restaurant and hotel services, they are on the whole dearer than in Europe, although differences in quality make comparison dif-

ficult. All require buildings and servants, both of which are expensive in the United States because of the high nominal wage level.

In Europe, on the other hand, one expects to find goods requiring large quantities of common labour to be relatively cheap. This, as a matter of fact, is so. The production of goods which cannot be standardised and manufactured by automatic machinery is cheaper than in the United States, for the simple reason that wages of common labour are so much lower. Now, it happens that a great many home market goods and most of the personal services belong to this class, and are therefore cheaper in Europe. On the other hand, few home market goods require such quantities of technical labour and natural resources and so little common labour as to more than make up for the higher wages of the latter in the United States. This has much to do with the fact that on the whole the economies of large-scale production, which American manufacturers have been particularly able to make use of, count for less in home market industries than in export industries. Many goods are produced cheaply and exported by the United States chiefly because large-scale production can be rendered extremely effective.

For these reasons few home market goods are cheaper in the United States than in Europe. In particular almost all goods and services bought by the wealthy class cost a great deal more than in the Old World.

It thus appears that home market prices in the United States are higher than in European countries because of the relatively scanty supply of common labour.[1] A high level for wages goes hand in hand with a high commodity price level. The wages paid to ordinary skilled or unskilled manual labour is by far the most important cost element so far as home market goods and services are concerned.

It would be erroneous, however, to say that high home market prices always follow high manual wages, and *vice versa*. Differ-

[1] Abbreviated statements of this sort must not be taken to mean that one basic element has greater influences than others. The character of the relationship in the price system should be borne in mind.

ences between two countries in the following four respects may well make prices higher in the country with the lower wage level: (1) The grade of labour may be different; (2) the prices and quantities of other productive factors used may differ; (3) interior transfer conditions may cause higher transportation costs; (4) exterior transfer conditions may raise the price level of international goods, and to the extent that they are used in the production of home market goods the price of the latter will be raised also. Besides, whether one finds home market prices high or low depends much upon the particular goods desired; and differences in the quality of commodities make clear-cut comparisons impossible.

In the case of the United States none of these circumstances tends to depress the level of home market prices below the European level sufficiently to offset the influence of the high wage level [1] and the forbidding tariff wall.

One fact stands out: there is no simple relation between nominal wages and the level of home market prices in different countries. The relation between the prices of labour and other factors and those of commodities of all sorts must be described in terms of interrelated price systems.

§ 5. *Criticism of Taussig's theory.* The attempt made by Professor Taussig to develop the classical doctrine, chiefly expounded by Cairnes, suffers from the fact that it takes into account only the nominal wage level and the effectiveness of labour, and explains the height of home market prices in different countries in these terms.[2] Taussig starts from the effectiveness of labour in the export industries, and asserts that if it is high the nominal wage level in the country must be high compared with other countries. High wages mean high home market prices, unless there is a superior effectiveness in home market industries. Whether home market prices are high or low depends upon the relation between nominal wages and the effectiveness of labour in home market industries in different countries. A country may well have a high wage level and yet low home market prices, if the superi-

[1] See the end of § 5 below.

[2] *International Trade* (1928), chapter v.

ority in home market industries is even greater than in export industries.

This theory may be criticised as inadequate, in that the size of the export industries and their prices and effectiveness are not known *a priori*. Which goods a country is to export, how much and at what prices, are questions which cannot be answered irrespectively of the quantities and prices and wages in home market industries. Hence it is not determined what wages are to be in export industries *before*, — in a causal sense, — it is determined what home market prices are. There is no one-sided causal relationship; wages in export industries do not govern wages and prices in home market industries any more than the latter govern the former. Conditions of demand, supply, etc., in all industries, i. e. the whole price system, govern all prices and wages.

How is the effectiveness of labour to be measured? Evidently as the product per worker on no-rent land in accordance with the usual classical practice. But a large output per worker may be due to the coöperation of much capital, for which interest has to be paid, and is not therefore identical with low cost per unit produced. Thus, if one is to draw conclusions from the relation between wages and effectiveness as to costs of production, effectiveness must be taken to mean the *marginal* productivity of labour. If it is 20 percent higher in one country than in another, with wages only 10 percent higher, costs of production per unit at the margin are evidently lower in the former country.

Even if one disregards the inescapable fact that the margin is not given *a priori*, but is a variable in the price problem, such a procedure is open to criticism as highly impractical; for it is as a rule impossible to find statistics which measure the marginal product of labour in terms of the quantity of commodities. And it should be the marginal productivity when the capacity of the fixed appliances is fully utilised, otherwise the costs at the margin are not equal to average costs per unit produced. It is not surprising, therefore, to find Taussig in his attempts at verification measuring the effectiveness of labour simply by the output per worker,[1] which is something quite different from marginal productivity.

[1] *International Trade* (1928), chapter xv.

As already indicated, the average output depends not only upon the quality of labour but also upon the quantity of natural resources, technical labour, and capital per worker, and upon interior and exterior transfer conditions. In other words, it is impossible to reason from the relation between average output and wages in different countries to costs of production! The table in § 3 shows clearly how much more of coöperating factors labour may have in one country than in another; hence the cost accounts include very different interest, management, and rent expenses. Furthermore, the transfer conditions may make imported raw materials expensive and the home market goods manufactured from them therefore dear. If all these circumstances are taken into account, the classical doctrine as expounded by Taussig says only that when the costs of home market goods are lower in one country than in another their prices are lower. Nothing short of a description of the whole price mechanism can explain how the various basic circumstances affect price conditions. No group of prices can be accounted for by reference to only part of the relations and circumstances which constitute the price mechanism. In a study of concrete cases, such as that of the United States given above, both productive factor equipment and transfer relations must be considered, and their effects judged against the background of a description of the price mechanism in a world of trading countries.

§ 6. *Note on Ricardo and Senior.* Ricardo and Senior place more emphasis than does Taussig on costs of transport in explaining international differences in price levels.[1] A country secures a low price level if it obtains its gold dearly in terms of labour, for this means low money wages. Now, high costs of transport for the country's export goods to the gold or silver producing countries make the prices of these goods at home lower than they would be if costs of transport were lower. Thus, high transportation costs mean low money wages and a low price level. On the other hand, countries close to the gold or silver producing coun-

[1] Ricardo, *Principles of Political Economy and Taxation* (ed. Gonner, London, 1925); Senior, *Lectures on The High Cost of Obtaining Money* (London, 1830).

tries and having good communication with them attain a high price level.[1]

It is clear that this reasoning concerns countries which export the same sort of goods and sell them to the gold producing countries. There is also with Ricardo the tacit assumption that the effectiveness of production is the same, but Senior went further and examined the influence of differences in this respect,[2] leaving it to Taussig to discuss the different relative effectiveness in export and home market industries.

Of course, other things being equal, high costs of transport for export goods make for low prices compared with other countries, which carry the same export goods more cheaply to the market. But it is not the costs of transport to the gold-producing countries which count. There is no country which sends the larger parts of its exports there. Any country may obtain the gold it wants through indirect exchange, selling goods to other countries, which in their turn sell to the gold-producing ones, obtain gold in payment, and send it to the first. Thus the distance to the gold countries has no special significance for the height of export prices and the whole price situation. It would be exactly the same during a paper standard régime, if each country bought for industrial purposes the gold which they now buy for monetary uses. From the point of view of international price relations gold is a commodity like all others. Ricardo was right in stressing the influence of transfer conditions on relative price levels, but gave an all too simple analysis of them.

§ 7. *Domestic price differences.* The relation between price conditions in various countries cannot be adequately described in terms of price levels or individual prices which refer to each country as a whole; prices in different districts within the same country differ considerably. In many cases such domestic differences are greater than the price differences between districts in different countries, in spite of the fact that labour and capital are

[1] Senior, *Lectures*, p. 13: "In a country not possessing mines the value in gold and silver of all those commodities which are not subject of a monopoly" depends "on the gold and silver which can be obtained by exporting the result of a given quantity of labour at the current rate of profit."

[2] *Lectures*, p. 11.

usually more mobile within countries than between them. Out-of-the-way districts tend toward low prices if the goods they send to other districts are difficult to transport. Regions with a very one-sided productive factor endowment tend to be expensive. The agglomeration of population has much to do with regional price conditions. All these and other factors have been analysed in Part III; it suffices to emphasize that it is an exaggerated simplification which assumes in international price comparisons that price conditions are uniform throughout each country. A true picture of price relations can be obtained only if the influence of differences in factor equipment and transfer relations within countries is taken into account, as well as the corresponding influence of international differences.

There is as little tendency for domestic as for international price differences to disappear. They are founded upon differences in the basic circumstances, and change only with the latter; and there is certainly no tendency for factor equipment and transfer relations, or other basic elements, to become equal everywhere.

CHAPTER XV

SOME ASPECTS OF DUMPING

§ 1. *Different sorts of dumping.* So far we have assumed that commodity prices have a tendency to correspond to the costs of production. Temporarily, it is true, some of them rise above or fall below this level, but when this happens a closer correspondence with costs is caused by increased or reduced supply.

These differences between prices and costs, although belonging to the category of "short-run phenomena," are by no means unimportant. Supply reactions may come about slowly. For many years one country may continue both to produce for the home market and to export goods at prices which do not cover the *total* costs, whereas other countries with lower expenses earn handsome profits by selling at the same prices. Such has been the situation of the British and French iron and steel industry in recent years. Similarly, as already observed, different firms in the same country may continue for long periods to sell at equal prices, although their costs differ.

The simple reasoning which assumes correspondence between prices and costs, while useful as a first approximation [1] and correct as to long-run tendencies, has another weakness: [2] it fails to take account of important facts having to do with the indefiniteness of the concept "cost of production," when referring to a single unit of a commodity. Not all costs vary with output. Some remain constant, others vary, but less than the quantity produced: only the rest vary in proportion to output. These phenomena are usually discussed as "overhead costs."

The existence, except under times of unusual business activity, of unused capacity in most manufacturing industries and perhaps

[1] It is used also in the following, but modified in cases where a different development of costs and prices is probable and significant.

[2] Already indicated in § 8, Chapter VIII.

also, although to a lesser extent, in certain branches of agriculture, keeps the additional cost per unit of output caused by a small increase of the latter considerably below the average cost. In other words, the existence of fixed cost elements makes the marginal costs fall below average costs.

How much the latter exceed the former depends upon the circumstances. In general, it may be said that although lack of divisibility makes the curve of marginal costs an irregular line, the latter have a tendency to rise when production approaches the limit set by the capacity of the most "fixed" appliances of production. But this is not the place to analyse the relation between varying output and cost.[1] It suffices for the present purpose to state that ordinarily the production capacity is so little utilised that marginal costs fall below the level of average costs.

Now, if prices come more or less close to the latter, as they will in a "normal" state, they must exceed the marginal costs. Consequently an extension of production and of sales at these prices will bring substantially increased profits. Even if prices are reduced a little, in order to increase sales, profits may grow. For this reason there is always a strong temptation for any firm in a competitive industry to try to capture a part of the market of its competitors.

If prices can nevertheless be kept comparatively stable the explanation lies chiefly in the fear of spoiling the market. A business man never knows what the influence of a slight price cutting on the whole market situation would be. Competing firms may resort to further price cutting in self defence, confidence in prices may be undermined, and buyers may hold back. Experience has taught business men to carry on a price policy wherein the height of marginal costs is no more than one of many determining elements. There is no tendency to offer sales at prices which approach these costs. In times of brisk demand prices are often raised, although they may considerably exceed the cost at which in the existing situation additional quantities of goods may

[1] Cf. J. M. Clark, *The Economics of Overhead Costs* (New York, 1923). The reasoning in this chapter is on the whole applicable also to the case where marginal costs fall below average costs owing to economies of large-scale production in firms of less than optimum size.

be produced. When demand is slack, on the other hand, prices are reduced, but not as a rule to the level of marginal costs.

The existence of a number of different markets in which a firm may sell brings, however, a new element into this picture of price policy. Marginal costs acquire a special significance for sales in outside markets. The deterring factor, the fear of spoiling the market, which tends to prevent price cutting, may be entirely eliminated if the larger part of the output is disposed of in a certain "ordinary" market. The surplus capacity, which remains when the demand on the ordinary market has been satisfied, can profitably be used to produce and sell goods in outside markets at prices little above marginal expenses. In brief, the existence of separate and slightly communicating markets leads to price discrimination, i. e. a policy of selling at different prices in different markets.

When talking about national markets such price discrimination is usually called "dumping." This term involves, however, something more, namely that prices in the "extraordinary" markets shall be lower than prices in the market, which is normally of greatest importance to the dumping producer; this is of course almost always the home market. Consequently the term dumping is usually taken to mean "sales for export at lower prices than those charged at the same time and under like circumstances to buyers for the domestic market." [1] But it happens that firms aim chiefly at selling in a certain country abroad, which is therefore the normal market, and that lower prices are charged in other countries. Such practices are best included in the concept of dumping. Besides, as the price charged in the ordinary market is practically never lower than the prices in the other markets, dumping may well for the sake of convenience be defined as "price discrimination between national markets."

There are various types of dumping, widely different in character and effects. Only a few brief remarks, void of much desirable qualification, may be presented here.

Dumping may be resorted to sporadically when a firm or an

[1] Viner, *Dumping*, a memorandum prepared for the International Economic Conference. Geneva, 1927.

industry suffers from temporary over-production or an unusually large surplus capacity. This may have resulted from unusual circumstances, or may recur periodically in periods of depression. Crop variations play an important part; the German potato crop, for instance, fluctuates, and potato prices consequently do likewise. Such price fluctuations are considerable, since potatoes cannot be readily disposed of in foreign markets, chiefly because of the high costs of transport. When the crop exceeds the German need, prices fall very low. The starch industry makes use of this fact in dumping starch in Denmark. Such dumping may occur also when potato prices are high in Germany, but it is facilitated when costs and prices are depressed. Prices in Denmark are likely to fluctuate less because of the ease of importation from many nations, due to ready access to the sea.

"Exchange dumping," which is not dumping in a real sense, occurs when a country's currency is depreciating or has recently been depreciating, and its wage and price level in terms of gold is temporarily abnormally low. Sales at low prices to secure participation in a new market also constitute dumping of a special sort; so does a similar policy adopted to eliminate rising competitors or defend a foreign market against new competitors attempting to invade it.

All these practices belong to the category of sporadic dumping. The other type, dumping continued during a long period, differs in important respects. That marginal costs should fall below average costs, owing either to the existence of unused capacity or to economies of large-scale production, is a necessary condition. So much is simple; the most difficult but also most interesting question is whether continued dumping is possible in industries where competition between many firms in the same country is active. Will not all the competitors prefer selling in the ordinary market — usually, that is, the domestic market at a higher price — to dumping at a lower price? If they do, will not competition between them force down the domestic price to the same level as the export price?

The answer to these questions would seem to be in the affirmative. Barring some agreement concerning price policy, e. g. a

cartel which fixes the domestic price but leaves the export price unregulated, the competing firms will not continue to export at lower prices, but will attempt instead to increase their sales in the home market. Yet, such an unconditional answer would certainly be misleading. Similar experience and reasoning which deter competitors in any market from price cutting, although prices are far above the marginal cost, may well deter them from conquering a larger part of the home market by offering lower prices. Instead they will attempt by advertising and efficient selling to increase their sales at home, content in the meantime to export their surplus production at lower prices. In brief, competitors follow "the rules of the game," in this as in other cases.

It may clarify the matter to make a comparison with the marketing of electrical energy. Competing power companies determine prices not only on the basis of cost, e. g. the load factor, but also in an effort to charge what the traffic will bear. Two sorts of consumption, exactly equal from a cost point of view, may be charged different prices. It would clearly be advantageous to any of the competing firms to sell a greater part of the energy to the class of consumers who pay the higher price, possibly by offering energy a little cheaper to them. As a matter of fact, they do not as a rule attempt to do so. The result would be a tariff war, which would probably make it impossible for any of the competitors to cover their expenses. For this reason, competition may fail to cause deviations from certain settled rules of price policy. These rules may be quite different in different countries, — a comparison of the electrical power industries in Sweden and Norway shows such variation in a surprising degree, — but once adopted they are not easily departed from. For some sort of rules there must be, if competition is not to prevent the price discrimination which attempts to charge what the traffic will bear, and which is often essential to profitable production.

Returning to commodities, it should be noted that as a rule no market is "ideal," i. e, characterised by full and free mobility. Business connections, impressions made on the public by advertising, and the like, serve as temporary restrictions, which not only make possible slight price differences between goods from

different firms, but also make it difficult for one of them to increase its sales quickly without great extra selling expenses or heavy price reductions. This is particularly the case when trademarks and brands play a leading rôle in marketing. Under such conditions it may well happen that several firms continue to export their products at lower prices than those charged in the domestic market.

The chances of continued dumping are, however, decidedly greater when one or two large firms dominate the home market, and particularly when there is some sort of monopoly or monopolistic agreement. In such cases costs lose most of their influence on prices. The rule no longer holds that the dumping price over a long period will be over marginal costs but below average costs. It may easily exceed the latter as well, although lower than the domestic price.

§ 2. *Is dumping important?* What kinds of goods are likely to be dumped? To answer this question one must bear in mind that the difference between the price at which a commodity is sold f. o. b. to foreigners and at home can only temporarily exceed the costs of transferring the commodity from the country of production to the foreign market and back again. Thus, the higher the costs of transport and the import duties, the greater room there is for price discrimination. If prices differ more than the costs of transfer in both directions, commodities will return to the home market and reduce their prices there, unless foreign buyers have undertaken not to resell the goods directly or indirectly to the country of origin.

Thus, heavy and bulky goods and those highly protected are readily subject to dumping; among them, readily marketed goods are most liable to sporadic dumping; commodities most liable to continuous dumping are those which are "products of large-scale mass production industries in which a single concern, or a very few concerns, or a syndicate or cartel of producers, dominate the industry, or branded, trademarked, patented, or otherwise individualised specialties." [1]

Is dumping carried on by manufacturing industries in a few

[1] Viner, *Dumping*, p. 5.

countries only, or is it prevalent in the international trade of all countries? Although the absence of statistics on dumping renders the answer uncertain, almost all writers agree that manufacturing industries, but rarely agriculture, have recourse to dumping at least temporarily, in free trade countries as well as in protectionist countries. It was, however, a common impression before the War that Germany with its high protective tariff and many monopolistic agreements practised dumping on a larger scale than other countries. Since the War several American industries have carried on an extensive policy of the same character. A particularly interesting example, which concerns a highly competitive industry, is the sale of American typewriters in Great Britain at prices far below the price in the United States; in fact the price paid by the British consumer in 1923, of some makes at least, was on about the same level as the American retail price, in spite of the $33\frac{1}{3}$ percent import duty. This policy was probably due to a desire to check the rising British production of typewriters.

If industries in practically all countries resort to dumping, can it be said also that all countries are subject to dumping from abroad? Here, too, the answer is probably in the affirmative. Protection offers no good defence against the inflow of commodities at dumping prices, unless the tariff is so high as to exceed substantially the difference between foreign and domestic prices, i. e. unless the duties are not fully utilised to raise domestic prices above the outside level. In countries pursuing a policy of high and inclusive protection there will probably always be some duties which fulfil this condition and thus serve as an obstacle to foreign dumping. It may be assumed, therefore, that such countries feel dumping less than free trade countries or those with a moderate tariff likely to be utilised to the full. But this is no more than speculation, for factual knowledge is lacking.

Furthermore, some protectionist countries attempt, although apparently with only moderate success, to check dumping by means of special anti-dumping laws which permit the raising of duties on goods considered to be in one sense or other dumped.

Nor is it possible to say with certainty whether a large or a small part of international trade in manufactures has to do with

dumping. It seems to be the general impression among business men that the latter is widely resorted to. Certainly it would be quite natural for the growing tendency towards coöperation, agreements, and cartels between producers of a country and the stiffening of competition in world markets to lead to increased price discrimination. The author's impression is that, at least since the War, a substantial part of international trade in manufactured goods, but not in raw materials or food, has been characterised by lower prices in foreign than in home markets.

§ 3. *Some effects of dumping.* The consequences of dumping for international price relations are evident. Prices do not tend to differ with the costs of transfer from one country to another, but less. Some goods may even be cheaper abroad than in the country of origin, although less so than the costs of transfer back to it. As a result, international trade and division of production are carried further than we have previously assumed. The costs of transfer tend to reduce them, but the practice of dumping, largely due to the existence of separate markets caused by the costs of transfer, tends to increase them. If we add to this influence of a dumping policy probably increasing in extent, the effects of the tendency to pay lower wages in export industries than in the typical home market industries, we find that there has been since the War a tendency to push international exchange further than the difference in productive factor equipment, transfer resources, and other basic elements would warrant *per se*.

Besides, the influence of dumping on the location of industries does not end here. When semi-manufactured goods are dumped abroad, foreign industries which use them for further manufacturing will obtain an advantage over domestic competitors, who are hampered in their export and may even have to fight against an inflow of foreign finished goods to the home market.

For a long time before the War the German iron and steel industry charged higher prices to domestic buyers than for export, as indeed it has also been doing since the stabilisation of the mark. In this way English and Dutch ports obtained iron and steel more cheaply than German ports, and attained a favourable situation in their competition with the latter not only in world markets but

even in Germany itself. It is well known, for instance, that the river steamers on the German rivers were largely made in Holland.[1] To prevent such effects it has become usual for the dumping industries to sell their goods at world market prices to domestic buyers who export their products.

This policy has not been much practised by the coal industry on the Continent, which has since the War been selling coal at considerably higher prices at home than abroad, a fact that cannot but react on the competitive power of several manufacturing industries which consume large quantities of fuel.

Consider, however, the price policy of the Polish coal concerns in 1928, which, although affected by a desire to maintain the new foreign markets acquired during the English coal strike two years earlier, seems to be more than a temporary expedient.[2]

> For coal sold in competitive foreign markets they have recently been quoting 11s. to 12s. a ton fob Danzig or Gdynia. This gives a pit head price of only 7s. 6d. to 8s. 6d. and a loss to the producer of 1s. 6d. to 2s. 6d. a ton. About 16 to 20 percent of total production is being sold in this way. On the other hand, exports to Austria, Hungary, and Czekoslovakia yield a satisfactory margin of profits; about 10 percent of production is exported to these states. The principal source of profit to the coal producers, however, is the internal market. . . . Altogether about 60 percent of production is sold in Poland. A scale of maximum pit head prices for sales within the country is fixed by the government, . . . 16s. 6d. a ton for large coal. The maximum prices are not, however, charged in the case of all coal sold internally. Both the State and the railways make more favourable bargains, and the municipalities also are supplied at lower prices. The cheap coal obtained by the railways is some compensation for the low freight rates. In addition, a few industries receive special terms. The coal thus sold gives a small profit, but no more, over total costs.

Sporadic dumping is, of course, less able than continuous dumping to affect the localisation of industry. Yet obviously in countries where there is great risk of having the market spoilt by sudden sales of foreign goods, at exceptionally low prices, conditions for producing such commodities will be less favourable, *ceteris paribus*, than elsewhere.

[1] Similarly, export bounties on sugar in several countries on the continent made sugar very cheap in Great Britain and fostered British production of chocolate, canned fruit, marmalade, etc. This is not really dumping, as the producer quotes the same price for export sugar as for sugar sold in the home market.

[2] *The Times*, London, September 21, 1928.

§ 4. *Effects of dumping on prices and national incomes.* Coming to the question whether the effects of dumping are favourable to the various countries, we may turn first to the widespread opinion that dumping tends to keep prices higher on the home market than they would otherwise be. In general this is not so. True, prices of dumped goods often seem very high in the country of origin, but the cause is not the existence of dumping but rather the existence of some sort of monopoly. Dumping is responsible for this state of things only as it makes it easier to arrive at and maintain agreement upon a monopolistic price policy in the home market, the surplus products being disposed of abroad.

Leaving the influence of monopoly aside, we may say rather that as the dumped goods sell for somewhat more than the extra costs they cause, they go some way towards covering the overhead costs, and tend to make the products cheaper on the home market. Dumping is one way of arriving at a more complete utilisation of the productive capacity in industries with much fixed capital, which certainly opens a possibility of lower prices all around.

It can have this effect, however, only in so far as it does not in the long run lead to greater investments in fixed capital than would take place otherwise. It seems probable that if dumping were impossible greater reticence would sometimes be exercised in this direction, and that dumping is thus in the long run responsible for some fixed costs, not alone for the marginal costs upon which the dumping industry calculates in a given moment. For this reason it is uncertain whether prices in the dumping countries are subject to a downward or upward tendency as a result of the policy of price discrimination.

On the other hand, it is almost certain that prices in the importing country are pushed to a lower level than they would otherwise have been. In the case of sporadic dumping it is inevitable. Even continued dumping, although it may well imply only sales at the ordinary prices quoted in foreign markets, will in the long run tend to depress these prices. It brings a new source of supply within the reach of the foreign market and makes superfluous some of the most expensive of the other sources. There can be

little doubt that this is advantageous from the point of view of the importing country. Cheap imports, if they continue during long periods, and if national production is adapted to them, clearly increase the national income. But if dumping is sporadic it is apt, like any sudden change, to cause disturbances and losses which more than outweigh the advantages of cheap imports — in other words to reduce the national income in terms of goods.

A judgment concerning the balance of advantage is still more difficult as regards the exporting country. Obviously, the firms that dump consider it an advantage. This granted, the presumption is in favour of those who maintain that it is also a good thing for the nation as a whole — a standpoint that is further strengthened by reference to the possibility of arriving at a more complete utilisation of the productive capacity of the fixed appliances of production. But if fixed capital investments are in the long run maintained on a higher level than they would otherwise be — i. e. if not only the costs that seem to be marginal from the short-time point of view which govern the actual price policy but also some fixed costs are due to the dumping export, which is unable to cover these additional expenses — then the dumping country may turn out to be a loser.

Thus, no definite answer is possible. In the special case where raw materials or semi-manufactured goods command higher prices at home than abroad, which places the domestic manufacturing industry under a handicap, the chances of loss to the dumping country is greater than in other cases. But even here the outcome is by no means certain. A full analysis of this complicated problem would, however, carry us further than its practical importance and the scope of this book warrant.

§ 5. *Dumping and monopoly.* Lastly, a few words should be said concerning the connection between monopolies and dumping, a question that has already been touched upon in passing.

The spirit of coöperation between competitors which is so characteristic of economic life of recent decades cannot but leave its traces in the field of international trade. Experience shows that agreements to regulate competition are often confined to sales on the home market, while exportation remains unregulated.

This is partly due to the fact that the home market interests all producers, the foreign markets usually only a few, but due most of all to the impossibility of controlling sales policies abroad, and the futility of attempting to do so when foreign competitors can follow whatever policy they choose. Evidently this natural limitation of regulating agreements to the home market tends to stimulate dumping. It is probably largely responsible for the increasing practice of this policy, which so many economists have observed in recent decades.

It goes without saying that the existence of strong monopolies in the home market will lead to dumping even more than mere agreements between independent firms. In this case the price discrimination in favour of foreign markets need not by any means involve sales abroad at prices below the average costs of production. On the contrary, export prices may well suffice to cover all expenses, while prices on the domestic market may be kept still higher.

It has been mentioned that protective tariffs bar the different national markets from one another more completely than the other costs of transfer could do alone. In this way, they increase the likelihood of dumping policies' being adopted. However, they also stimulate monopolistic agreements and real monopolies, and thus tend to increase dumping still further. It may be assumed, therefore, that a universal free trade system would substantially reduce the use and importance of dumping.

In this connection it may be well to point out that monopolies exercise a far-reaching influence on international pricing and the division of production in general. Groups of firms with a monopolistic position in one country compete in other countries with other monopolistic organisations. Sometimes this competition is mitigated or entirely regulated by means of international agreements like the international steel cartel. In other cases real international monopolies like the Swedish match trust are formed. The influence such organisations exercise on trade is naturally great, but it does not lend itself to generalisations, partly because of the greater liberty of action which always characterises monopolies and competition between a small number of subjects,

partly because purely political considerations play a great part in the determination of their economic policy. For this reason the question of monopolistic influences on international trade, as already indicated, will not be dealt with in this treatise. It is a subject best elucidated by monograph treatment of individual cases, at least in the present state of economic research. Later on, when the recent influential international agreements and regulations have been more fully individually analysed, a general discussion may prove feasible.

CHAPTER XVI

SOME EFFECTS OF IMPORT DUTIES

§ 1. *Tariffs and the localisation of industry.* Like all impediments to international trade, tariffs exercise upon it a restricting influence.[1] The international division of production goes less far than it would under free trade. In each country industry becomes less specialised and more diversified. The price equalising tendency of trade is thereby weakened. This is true both of commodity and productive factor prices. Greater international differences in commodity prices exist behind the shelter of tariff walls. In each country demand for the relatively scarce factors is increased and demand for the relatively abundant factors reduced. The localisation of industry is adapted to the conditions of productive equipment, transfer and other basic elements in a different way.

In the terminology of preceding chapters import duties, like other duties not dealt with here, affect transferability and change transfer conditions. The tariff problem is one aspect of the problem of changed transfer conditions, which affect the localisation of industry, nationally and internationally, and perhaps the distribution of labour and capital.

In some important respects this influence is different from that of other impediments to international trade. The costs of transport, for instance, are as a rule greater for raw materials than for the goods made from them, a fact which obviously tends to restrict trade in the former. Import duties, on the other hand, are often relatively heavier on goods in later stages of manufacture, and therefore tend to make raw materials move, their manufacture into finished goods taking place in the countries where they are consumed. Internationally, market localisation of secondary

[1] The analysis in the present chapter runs chiefly in static terms, i. e. compares a state of duties with one of more or less — or nothing at all — of them. A more dynamic viewpoint is taken in Chapter XXIII.

industries is favoured and raw material localisation is counteracted.

The fact that tariffs are generally comparatively higher for goods in the later stages of production means that they affect the localisation of final processes more than that of earlier stages. All countries seem to think it an advantage to produce all sorts of finished goods for themselves, even if suitable conditions are lacking, but are much less eager to produce all sorts of raw materials. Even though the localisation of raw material industries is very little affected by protective duties on such materials, the indirect effects of other duties must be considerable. By putting a premium on manufacturing in countries which would otherwise carry on a greater production of raw materials, their output elsewhere is increased. Free trade countries are made to produce more of them because of protection of manufacturing industries abroad.

Evidently countries which have special facilities for the later stages of manufacture and countries specialising in food, also heavily taxed, are particularly sensitive to protection in foreign countries. It tends to reduce the demand from abroad for the very services which the former are best qualified to render. For instance, protection affects the localisation of the mechanical industries much more than that of coal and copper mining. While countries with plenty of natural resources clearly feel the effects of a protectionist policy of this sort abroad less than others, it is also clear that the attracting power of such resources as to industries covering later stages of production is considerably reduced.

It goes without saying that as international trade is so largely handled by sea transport, countries with great shipping industries are affected by protection, but it is uncertain whether it causes an increase or reduction in demand for shipping services.

§ 2. *The influence on imports and exports.* The fact that national markets continue to be supplied with the same or similar goods by producers from different countries in spite of tariff walls has been discussed in Chapter XIII. In a protectionist country the ability of certain industries to charge much higher prices than they otherwise could more than compensates for the increased

expenses of production through higher prices of raw materials, higher nominal wages,[1] etc. Such industries profit from protection and expand because of it. Others are incompletely compensated for increased costs, and the export industries generally not at all.

Now, different firms have quite different costs of production. Low cost firms which would be able to supply a part of the home market needs without protection expand somewhat behind the tariff wall; for reasons mentioned in Chapter XII, there are limits to this expansion. Besides, firms with somewhat higher costs are able to compete, but there may still be room for importation from other countries. In the export industries, the low cost firms continue to export in spite of the handicap of increased costs, but certain firms with higher costs drop out of the market. For goods difficult to transport the exporting industries may continue to hold that part of the foreign markets most easily accessible, but relinquish the markets which can only be supplied at the price of heavy transportation charges.[2]

Evidently, both imports and exports are reduced. How much they decline depends, of course, on the slope of the domestic supply curves[3] in protected industries, the reaction of demand towards price increases, etc., as well as upon corresponding supply and demand reactions abroad.

It is often asserted, however, that industries which meet severe foreign competition on the home market, but are nevertheless able to export to other countries, would be able to *increase* their exports if the home market were reserved for them through import duties. One must first ask why it is that such exporting industries cannot better withstand foreign competition on the home market. In most cases the explanation is to be found in qualitative differences, the goods which are imported and exported being really different commodities. Such was largely the case in

[1] The influence of protection on the prices of the factors of production is discussed below.

[2] It is not necessary to repeat here why differences in the quality of the articles and other circumstances also lead to lasting divisions of national markets.

[3] Their character is, of course, governed not only by the factor equipment but also by transfer-relations (interior localisation), etc., i. e. the whole price system.

1929 with regard to the British trade in woolen woven goods. Certain ladies' dress goods were imported in large quantities from France at prices which did not cover the costs in England, and could be produced there only if prices were raised by a tariff. There seems to be little reason for assuming that such goods could become a British export article. Nor does it seem likely that the exportation of other grades not at present subject to importation could be increased as a result of duties either on them or on the first mentioned ones.

From a short-time point of view, the object of the duty is only to make possible a full utilisation of capacity and a consequent reduction in costs per unit. The possibility of temporarily increasing exports in that way cannot be denied. It is also possible that duties may enable growing firms quickly to reach the size where full economies of large-scale production can be reached and exportation rendered feasible. In both cases, however, the same result could be reached in other ways. The increase in exportation relative to a state of free trade will almost certainly be slight and temporary: the percentage of capacity used will fall after the next period of good general business conditions and expansion. The foreign firms driven out of the protected market will turn with greater energy to other markets to which the protected industry used to export (it may be the home market of these firms); so the result of this intensified competition will in many cases be reduced instead of increased exportation.

To such dynamic questions, looked at from a short-time point of view, no definite answers can be given. It is safe to say, however, that in the long run—barring the case of "educating duties" — exports from protected industries will be reduced. That *total* exportation will be reduced when imports are restricted is obvious, for the simple reason that in the long run imports pay for exports.[1]

§ 3. *The national income.* The effect of trade obstacles on the national income was analysed in §§ 9–10 of Chapter XIII. It follows from this analysis that duties, like other obstacles to in-

[1] Except in the rare cases where other items in the balance of payments are considerably affected. See Chapters XVII and XXIII.

ternational trade, reduce the national income, and thus in a certain sense cause a loss. It may be useful, however, to demonstrate this more clearly. The ordinary reasoning that a greater quantity of labour or "productive power" is used to produce protected goods than would be necessary to produce export goods to pay for their import is not conclusive, as the proportions in which the productive factors are used in the different industries are different, and further, relative factor prices, and thus the combination of the factors, are changed by protection. Let us instead put it this way: If a free trade country by means of a new duty calls forth domestic production of a small quantity of a certain commodity *a* at a cost 50 percent higher than the import price, then the loss is approximately 50 percent of what the import value would have been. At the margin the quantity of productive factors used may be measured by the sum of money paid for them, reckoning on the basis of the free trade position in respect of factor prices. If, on the other hand, a number of other duties have already been introduced, the level of factor prices has thereby been increased, and the commodity *a* will cost not 50 but 90 percent more to produce than to import.[1] Thus reasoning at the "margin of protection" gives a higher figure for the loss from each individual duty. If we add up the "free trade margin losses," a figure for the quantity of productive factors "lost" through protection is obtained which is not increased by the rise in the general level of factor prices through the tariff wall. This figure is a minimum expression for the total loss which corresponds approximately to the figure for the total loss obtained by a calculation of the index of available goods, using free trade commodity prices as weights. If prices in the state of protection are used as weights the figure for the loss becomes greater. Which system of weighting one should use depends upon the special aspect of the question which one has in mind. It may be quite as natural to use the situation in a state of protection as a basis as to use the free trade position. The latter is in most countries much affected by state interference

[1] The actual cost when only one duty is introduced will be $(50 + \epsilon)$ percent, where ϵ is very small, at least when the duty has been in force a certain period of time.

of different sorts, e. g. taxation, and by trade unions, monopolies, etc.[1]

This reasoning has not accounted for the fact that in certain cases the terms of exchange in international trade are changed by the duties, usually to the advantage of the protectionist country, and that this gain may more than offset the above-mentioned tendency towards a loss. However, as later analysis will demonstrate, it is not probable that any country can gain much in this way. The slight changes in terms of exchange are likely to mean no more than a reduction of the loss which would otherwise fall on the protectionist countries, and an increase of the loss accruing to outside countries.[2] In any case, the duties reduce the combined incomes of the countries concerned.

While the "division of the total gain" from international trade has little real meaning, there is evidently some justification for asking how the loss from trade restrictions is divided between trading nations. It seems artificial, however, to portray first a certain loss to the world, and then its division. In reality there is no such division. There is a reduction of the index of available goods in each country, which depends on the shift in production as well as upon changes in trade terms.[3] These changes will be

[1] It is conceivable that certain duties compensate for a certain monopoly or tax. In such cases the index of available goods may be greater when these duties and the monopoly or tax exist at the same time than when only one of the latter exists, assuming that the calculation is based on the commodity price situation when neither of them is in existence. Thus, the existence of labour groups, between which the flow is restricted through monopolistic measures, may be an argument not only for temporary protection (see my paper, "Protection and Non-competing Groups," *Weltw. Archiv*, 1930), but also for permanent protection, if duties make the distribution of labour and production change in the direction it would have in the absence of the monopolistic policy.

[2] Barone (*Grundzüge der Nationalökonomie* [Bonn, 1927] §§ 93–97) expresses the opinion that a country may gain from protection if considerable and frequent fluctuations in world market prices would lead to corresponding shifts in industry during free trade, and thus to losses on fixed capital, which one cannot transfer from one industry to another. Closer analysis of this problem shows, however, that this can be so only if and when the firms refuse to produce and sell at prices which cover the variable expenses. For certain aspects of this question see Chapter XXIII, § 6, below.

[3] It is not correct to say that there is a loss from less efficient production in each country, which is increased or reduced by changes in the terms of exchange. It is not at all certain that protection reduces the volume of *production*, if the volume index uses as weights the commodity prices in the state of protection. This has

analysed in Chapter XXIII. At present we assume that no considerable variations in these terms take place.

The losses from protection are relatively much greater for some countries than for others. Tariffs split markets into smaller ones much more than other impediments could alone; industry must therefore be carried on in smaller productive units. This is true of all countries. They produce exclusively for the home market in cases where under a free trade system they would also manufacture for export; and goods needed in relatively small quantities in each country, which would otherwise be imported into most of them, are now produced at home on a smaller scale. In a word, tariffs discourage large-scale production,[1] most of all in small countries. Large nations can produce most goods in big units in any case. Corroborative statistics are abundant; I mention only that in the United States (in 1923) 40 percent of the workers were employed in factories with a staff of 500 or more, while the corresponding figure in Switzerland, a small manufacturing country, was 20 percent.

Small countries consequently lose relatively more because of an inefficient organisation of industry. Their small home markets may, furthermore, compel them to carry on production in small units, or even render impossible the operation of industries where small markets are much less economical than large ones. A business must be strong enough to export at once, otherwise all attempts to start it will fail. Not so in countries where the market is large enough to support several firms of adequate size: there it is relatively easy to build up firms with sufficient strength to take care of the export trade. Thus, if the productive factor equip-

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been pointed out to me by Professor Myrdal. As a matter of fact, it is the volume of available goods and not the volume of production in an individual country that is of interest. One would not produce in this way unless trade were going on; when it is, then the volume of goods produced for home use plus imports is available.

[1] It is, of course, conceivable in special cases that an import duty may increase the size of a certain industry, which would exist anyhow, and thus give it some advantages of large-scale production. It is improbable, however, that these external advantages would be so large as to make the extra production a cheaper way of procuring this commodity than by way of importation. In my opinion Graham makes far too much of the theoretical possibility. See his article on "Some Aspects of Protection further Considered," *Quarterly Journal of Economics*, 1923.

ment and transport conditions in a small and a large country are on the whole equally advantageous in other respects, such industries will be localised in the latter.

This fact has special significance in new industries. In the beginning consumption of new articles, e. g. motor cars before the War, is large enough to support large firms only in the great countries. Once developed there, and having acquired a firm hold of the export markets, such industries tend to remain, and it is particularly difficult for the small nations to establish firms of a competitive size.

The situation under discussion evidently tends to direct demand to the productive factors in the large countries, i. e. it tends to raise their prices relative to those of corresponding factors in smaller states. As previously mentioned, almost all machinery is exported from the United States, Great Britain, and Germany. Demand for skilled labour and organising ability in these countries is increased, while it is retarded in smaller machine producing countries such as Switzerland and Sweden. To the latter there is a double loss from the small size of markets, which is partly due to protection. In other words, freer trade would be of particular benefit to small countries with a good supply of factors needed in large-scale production.

§ 4. *The distribution of income.* The question how protection affects the real income of various classes in society is important from the point of view of economic policy. Unfortunately little can be said of it except in general terms.

The money prices of productive factors tend to rise more or less; some may even fall, slightly; commodity prices, on the other hand, also rise. The real income of an individual is moved upwards if his income rises more than the prices of the commodities he used to buy and wants to buy.

Consider first the manufacturing labourer. His real wage is most likely to increase if protection is given to industries which use exceptionally large quantities of labour and produce goods of little importance in a worker's budget. He will then get the benefit of increased scarcity of manufacturing labour, i. e. a considerable rise in money incomes, while the things he wants to buy be-

come only slightly more expensive. Free trade in such cases would reduce the standard of living of the manufacturing labouring class. Nicholson rightly insists on this possibility in a much criticised passage.[1] If manufacturing and agricultural labourers form two non-competing groups, high protection of manufacturing industries may raise the real wages of the workers in these industries at the expense of the other factors. Nicholson is wrong, however, in asserting that the country as a whole may get a lower income if protection is given up; this is possible only under conditions not dealt with by him (see § 3 above).

Questions of this sort have been curiously neglected in economic literature.[2] One of the few economists who have touched upon them — along similar lines as those above — is Professor Cassel, who discusses the following case:[3]

Gold production is the important industry in a scantily populated country, which decides upon protection of agricultural products. Factors of production in general tend to get higher prices, especially those which become relatively more in demand than before, namely labour and agricultural land. On the other hand, factors used more in the gold industry get a relatively less advantageous position, and their value may fall substantially. Such is the case with capital and the gold mines. In agriculture, labour is offered higher wages than before; wages rise also in the gold industry, a part of it becomes unprofitable, and the working of certain mines is terminated. Concomitant with this reduction of gold production is a drop in the value of the mines; as demand for capital is reduced, the rate of interest also tends to fall.

Commodity prices naturally rise, except that of gold and perhaps of some goods requiring exceptionally great proportions of capital. Professor Cassel nevertheless thinks it not unlikely that

[1] *Principles of Political Economy*, Part II, pp. 315 ff.

[2] International trade theory has, in my opinion, given far too much attention to the effects of certain variations, for example, in duties, on the national incomes, and too little to the effects on individual incomes. The national incomes, however, are not units to be divided, but sums of individual incomes. In many cases, changes in the sums count for very little, while changes in the individual incomes are distinctly relevant. For a similar opinion, see Cannan, "Was der allgemeinen Wirtschaftstheorie gegenwärtig Not tut," *Wirtschaftstheorie der Gegenwart*, Bd. IV (1928).

[3] *Theoretische Sozialökonomie*, 4th ed., § 87.

real wages will be higher than before the introduction of protection. That will be the case, so far as I can see, only under very special conditions. As workers buy much of agricultural products and little gold, the higher prices of the former are to their disadvantage. Even though other goods which the workers buy may not rise much in price, an increase of real wages assumes that nominal wages rise almost as much as agricultural prices. But agriculture was unprofitable without protection; if the prices of its products rise only a little more than its wage expenses, the rate of interest must fall sharply, if production is to be profitable. Such a fall seems improbable. Agriculture requires a great deal of capital, even if less per worker than does gold production; besides, a sudden change in the direction of economic life involves losses of capital sunk in fixed investments which are no longer useful.

It seems beyond doubt that the tariff policy pursued during the last half century has not raised the standard of living of the labouring classes. It is doubtful if agricultural duties increase the relative scarcity of manual labour compared with other factors, and they certainly raise the cost of living for the working classes. In Switzerland a few years ago import duties were calculated to have raised the cost of food by 12 percent.[1]

It is, however, true that manufacturing duties tend to depress the rent of farm land. Some sources of raw materials for manufacturing industries probably increase in value, while others decrease. It is on the whole not at all unlikely that the sum total of rent is reduced in countries with high manufacturing duties. In free trade countries the foreign manufacturing duties of course affect rents in the opposite way. In most countries, however, the sum of rents is small compared with the sum of wages to manual workers. Even a substantial reduction of the former brings only a slight increase in the latter. In view of the fact that the total national income is reduced, such an increased percentage is not likely to mean an enlarged absolute quantity.

The effect of manufacturing duties upon the relative scarcity of

[1] Reichlin, "Die Zollbelastung der schweizerischen Lebenshaltungskosten," *Zeitschrift für schweizerische Statistik und Volkswirtschaft* (1925).

labour and capital is rather to the advantage of the latter, although lack of statistical material prevents reliable conclusions. It seems probable that manufacturing industries in Europe require a greater amount of capital per labourer than agriculture; in the United States, where agriculture is more industrialised, it seemed before the War to require as much capital per worker as other industries.[1] A shift in production from the latter to the former industry in Europe would mean a relative increase in the demand for capital and a rise in the rate of interest.

The situation would be different if manufacturing duties were placed specially upon products from industries using little capital and much manual labour. But such is not the case, at least in the countries for which statistical material is available.

We must conclude that there is no reason for assuming that the share of the labouring class in the national income has been so much increased by the tariff policy pursued in the last half-century that the depressing effect of this policy on the size of the national income has been more than offset. On the contrary, free trade seems to be to the interest of the working classes.[2] Certainly the poorest classes benefited when Great Britain turned to free trade in the middle of the last century. They obtained a double advantage from (1) the tendency toward increased scarcity of manual labour at the expense of land, and (2) the marked cheapening of imported goods, of which they are large consumers.

The chances of an improved standard of living for certain small groups fairly non-competing are much greater than for the labouring class as a whole. Protection may favour them at the expense of other labour groups, and perhaps of capital and natural resources.

Skilled workers in the United States, for instance, may profit from protection. The gap between skilled and unskilled wages in this country is unusually large, a fact that is no doubt partly due to the inflow of unskilled immigrant labour, which tends to de-

[1] Woytinski, *Die Welt in Zahlen* (Berlin, 1926).

[2] A viewpoint of a different sort leads to the same conclusion. If protection is resorted to whenever one industry or another is in distress the shareholders will be more or less free from losses, but it is very doubtful whether unemployment is reduced.

press the remuneration of this factor. The relatively high expenses incurred as soon as skilled labour is employed would tend to keep back industries which use much of this factor, if protection did not prevent competition from foreign industries with lower costs of production. As a matter of fact, among American manufacturing industries more or less dependent upon tariff protection a large place is taken by those producing high quality goods (textiles, shoes, etc.) and using much skilled labour. The tariff consequently increases the demand for this factor, and tends to keep its remuneration on a higher level than it would reach under free trade.

> It is among the characteristics of our general industrial conditions that the gap between the wages of skilled and unskilled is greater than in other countries. The mechanic, the craftsman, the man of quick eye and deft hand, gets an unusually high rate of pay. . . . Any industry which calls for such men must pay wages at the current rates; and if it cannot secure from them results commensurable to the pay, and if its products are subject to foreign competition, it "needs" protection and clamours for it. Precisely this seems to be the case in the woolen manufacture.[1]

If the skilled workers are favoured by the American tariff, the owners of natural resources are, on the other hand, almost certainly put in a less favourable position. The rise in nominal wages which is the inevitable outcome of such extensive protection lowers the prices of other factors much used in export industries. Land in agriculture and mineral resources in industries which produce and export raw materials, e. g. copper, belong to this category.

The chances of favouring manufacturing labourers at the expense of farmers and land owners are great in countries which export agricultural products. High duties on finished manufactures in a country like Denmark, for instance, would probably raise nominal wages in manufacturing industries, but would not much increase the costs of living of the working population. It might raise real wages of manufacturing labourers while much depressing the standard of living of the farming population, which would have a very small chance of moving to the more favourably.

[1] Taussig, *Some Aspects of the Tariff Question*, p. 359.

situated groups, protected as they are by unusually strong trade unions.

§ 5. *The effects of the Swedish tariff.* Let us consider as a concrete case the effects of the Swedish tariff system on the height and distribution of income.

Take first the duties on manufactured goods and their influence upon the development of various manufacturing industries (leaving their relation to agriculture for later study). Can it be assumed that all industries protected with considerable import duties have been stimulated while all unprotected industries have been kept back? Of course not. Some of the former would no doubt have grown under free trade as much as or more than they have under protection, which has given them greater security on the home market but has increased their costs of production. Most industries exporting a considerable part of their output probably fall into this category.

The Swedish Tariff Commission in its final report of 1924 deals with four different groups: (1) Export industries, which send more than half their output abroad. Most of these are unprotected and, in any case, the import duties on their products are of little consequence. (2) Exporting "tariff" industries, which export from 20 percent to 50 percent of their production. Protection has some importance for their sales on the home market. (3) Non-exporting "tariff" industries, which export little or nothing. Some of them are absolutely dependent on protection for existence. Others would remain but in reduced form under a free trade régime.[1] (4) Local industries which have nothing directly to do with international trade, such as house building and baking.

It seems certain that the first group, export industries, would have grown more rapidly under free trade than it has done under protection. Furthermore, it is probable that the larger part of the second group has also been kept back by protection, for in the long

[1] How much their output would be reduced depends partly on the question whether there are at present firms with low costs and high profits, and partly on the reactions of the prices of the productive factors which would fall more or less and reduce the cost level.

run the increased costs play a greater part than security in the home market. It is not inconceivable, however, that some of these industries have been educated by means of protection and would never have reached their present strength without it. The third group would certainly be smaller under free trade, and the fourth is practically independent of the tariff policy.

Under these assumptions can one say anything of the influence of protection upon the distribution of income? Let us begin with natural resources.

The most important Swedish export commodities are timber, wood goods, pulp and paper, iron ore, iron and certain machines, stones, and matches. These goods are all produced chiefly from Swedish raw materials, indeed for a large part consist of raw materials. In other words, Swedish export industries use great quantities of Swedish natural resources, such as iron mines and forests. The non-exporting tariff industries, on the other hand, use chiefly imported raw materials. Although their workers are not more than one third of the total number, their import of raw materials from abroad comprises three fourths of the total. Each labourer in these industries uses five times as much foreign raw materials as his comrades in the exporting "tariff" industries, and ten times as much as the workers in the export industries.

This state of things is not surprising, although the difference is unexpectedly large. It is quite in keeping with the theory developed above that Sweden exports commodities containing relatively great quantities of the productive factors abundantly supplied in this country, and so located that transfer relations are good.

As protection causes an expansion of industries using foreign raw materials, while it retards the rest, it must necessarily tend to diminish the demand for Swedish natural resources, e. g. forests. The distribution of income is altered to the detriment of the owners of natural resources.[1]

[1] This is the effect of the *Swedish* tariff. If protection in other countries also favours the use of imported raw materials — among them Swedish timber, pulp, and iron ore — then protection as a whole need not depress the relative scarcity of the Swedish natural resources.

Turn now to capital and labour. The proportions in which these factors are used in different industries vary considerably. The Tariff Commission [1] found the following relation between the wage bill and the capital expenditure (6 percent on all capital invested) in each of the four groups of industries.

Non-exporting tariff industries	261
Exporting tariff industries	378
Export industries	324
Local industries	279

Clearly the first group, which is favoured by protection, uses less labour than the second and third, which would have grown more under free trade; consequently the tariff on manufactured goods must have turned the distribution of income in favour of capital at the expense of labour. On the other hand, both these factors have gained at the expense of natural resources, so it is doubtful whether labour is receiving a greater or smaller share of the total national income than it would have done under free trade; but natural resources receive less, and capital more.[2] It is quite another matter that the levels of prices and wages are moved upwards by protection, and that the total of wages *in money terms* is greater than it would be under free trade.

Has the tariff affected the ratio between the wage levels in various industries — raised it, for instance, in the branches favoured by the duties? Probably not to a consequential extent. Before the War Swedish trade unions were not strong enough to sustain widely different wage levels by the closed shop policy. Improvements in the economic position of labour in one industry led to inflow of labour from other occupations, and to extensive recruiting of young labour. Such supply reactions tended strongly to equalise wages for labour of the same general standard.

Thus the greater demand for labour in the textile industries, which would probably not have developed greatly under free trade, caused no improvement in the position of the textile workers compared to other groups, but simply increased their numbers. On the contrary, statistics show that male workers in this

[1] Final Report, p. 98.

[2] Supply reactions are disregarded; see § 7 below.

industry are and have long been worse paid than workers in most other industries.[1] It should be added, however, that the increased demand for *female* factory labour may have brought its reward on a substantially higher level. In 1913 the percentage of female labourers in the four groups was as follows: 38.2 percent in non-exporting tariff industries, 5.2 percent in exporting tariff industries, 4.5 percent in export industries, and 13.5 percent in local industries. An expansion of the former group may well have raised women's wages. Whether the influence has been substantial depends, of course, on the willingness of the women to move from other occupations, housework and farming, to factory work.

Since the War there has been a marked tendency in Sweden, as elsewhere, for trade unions in non-competing home market industries to force up their wages far above those for similar work in industries which have to fight against international competition. A high protective tariff may be assumed to have transferred some industries from the latter to the former category, giving them full command over the home market, and thus to have increased the chances of such a policy. A study of wage figures reveals, however, that the Swedish tariff has not been high enough to cause any noticeable change in this respect. With one or two exceptions, wages in the non-exporting tariff industries are on about the same level as those in the export industries, and far below wages in the typical "local," i. e. non-competing home market industries such as house building. In general, mobility in the labour market seems to have been great enough to prevent considerable variations in wages due to protection. Its chief effect has probably been to raise the general level of wages, in money terms.

This statement implies that the export industries, like the rest, have encountered higher wage costs than under free trade. A study of wage statistics for 1913 reveals one or two probable exceptions. For instance, the manufacturing of wood goods, largely for export, has since long been located in the forest districts in the southern parts of the country, which possess poor communica-

[1] This may be partly due to the fact that the wives and daughters earn more in textile districts than elsewhere.

tions and land inferior for agriculture. The absence of effective competition from other large industries in this district kept wages before the War much below the general standard of the country. But at present this phenomenon has virtually disappeared.

So far we have confined our attention exclusively to manufacturing industries and the duties on their products. We may now consider the effects of the food tariff upon the direction of production within agriculture, postponing consideration of the combined tariffs.

The situation is fairly clear. Sweden exports some animal food, — butter and bacon, — and production of these goods therefore benefits little or not at all from protection. On the other hand, duties on wheat, rye, and sugar keep prices of these products much above the world market level, although in the case of wheat and rye considerably less than the amount of the duty. Output of vegetable food has consequently been kept at a higher level than it would have reached under free trade, while production of butter and bacon has been discouraged. Comparison of the development of agriculture in the districts of Sweden which resemble Denmark with Danish farming corroborates this opinion. Now, production of animal food requires more labour per acre of land than that of grains. Whether it means the use of more or less capital per worker is impossible to say. Probably, the difference is small. The outcome of these circumstances must be a rise in the value of farm land at the expense of capital and labour.

Having thus dealt separately with manufacturing and agriculture, we may consider whether either has been expanded and the other restricted under their combined protection. The detailed investigations of the Tariff Commission leave no ground for this assumption. The material does not, of course, warrant decided opinions, but it seems as possible that agriculture has on the whole been kept back by protection as that it has been advanced.

Under such circumstances it is probable that the value of farm land has increased much less than necessary to offset the fall in the value of forests and mines. The total rent of natural resources must have been somewhat reduced by protection com-

pared with the reward to labour and capital. As to the relative position of these two, a change in favour of capital is more probable than the reverse. It is possible, however, that labour's percentage of the national income is being increased like that of capital, although the latter probably takes the larger part of what natural resources have had to surrender.

Note, however, that this increase in the percentage of the national income which goes to wages is necessarily insignificant. For the annual rent of natural resources is small, probably not above 10 percent of the national income, and even a considerable percentage reduction in its amount would mean a comparatively slight addition to total wages.

Consequently, since the national income has been reduced the workers' standard of living must have been lowered by the protectionist policy. There are a number of small and comparatively inefficient factories in the non-exporting tariff industries which are kept going only with the aid of protection. Besides, their average size is probably reduced in many cases, even in industries which would also exist under free trade.[1] These and other causes of inefficiency indicate that the volume of available goods is kept considerably lower under protection — a noticeable improvement in the terms of exchange with other countries is out of the question — than it would be under free trade. A small rise in labour's percentage share — and it is highly doubtful if there is any such rise — cannot offset the effects of this reduction in the national income. There is another fact which makes a reduction in the standard of living still more certain: the prices of many commodities such as bread and sugar which weigh heavily upon the worker's budget, are raised considerably by protection.

These statements are all subject to modification as concerns reaction of factor supply or a change in its quality. If the higher rate of interest increases savings or leads to an influx of capital from abroad, the position of labour is naturally affected favourably.

[1] It is true that import duties may help some firms to expansion and greater economies of large scale in cases where the home market would remain divided between them and foreign producers under a régime of free trade. But this is the exception. In the long run, small markets mean small firms.

§ 6. *How would free trade affect the United States?* Let us consider briefly what the effect would be if the United States turned to free trade or introduced a very low tariff. Naturally many American industries would be unable to compete with imported products, and would have to cease operation or concentrate on a few articles. Unemployment would develop and depress nominal wages. Profits in export industries would rise and attract great quantities of capital and labour, both that of the cheaper grades and that possessing inventive and organising ability.

As incomes in agriculture are at present far below the standard in manufacturing industries it is doubtful whether wages of farm hands and incomes of independent farmers would be much depressed by a greater supply of labour. Manufacturing wages may suffer a decided drop without making it profitable to turn to farm work, and should that occur export industries would probably have expanded so much as to make use of most of the surplus labour from industries unable even at the lower wage level to face foreign competition. Nevertheless, as agriculture derives little or no advantage from the present high tariff, but has to bear a large part of the burden of higher prices, it seems probable that expansion of this industry would follow upon a substantial tariff reduction. Cheaper machinery, reduced costs of transportation, and, perhaps, a somewhat lower wage level would make extended production profitable.

Such changes would raise the value of natural resources. Farm land would be more in demand, and the utilisation of forests, mines, etc., would be extended. On the other hand, industries using large quantities of labour, particularly of the skilled type, would be reduced. The distribution of income would thus change in favour of natural resources, while the relative position of labour would be less advantageous.

Whether demand for capital would rise or fall is difficult to say. A superficial study of American industries gives the impression that those dependent upon protection use more labour and less capital than the export industries. If that is correct, an expansion of the latter would mean a tendency to a higher rate of interest. But the supply of capital would, perhaps, be affected both through

greater volume of savings and a reduced export of capital. (Compare the next Chapter.)

The strength of the various trade unions would, of course, exercise a great influence upon the degree of wage reduction, the extent of unemployment, and the flow of labour from and to the farms, and thus upon the shifts in production and trade. It is equally obvious that the slight reduction of labour's percentage of the national income need not mean a lower standard of living, for the national income would rise when some of the least efficient industries were weakened or disappeared. It is true, however, that this increase would probably be comparatively unimportant in a country so large as the United States, where the advantages of large-scale production are available even under protection. Besides, it is not entirely unthinkable that the terms of exchange in international trade should be somewhat less favourable under free trade than now (compare Chapter XXIII). Considerable wage reductions in manufacturing industries would lower export prices in industries where competition between American firms is keen, e. g. those producing motor cars, moving pictures, and certain types of machinery. Even farm products like wheat and cotton might fall a little if production expanded, as it might well do. It is not certain, therefore, that the national income in the United States would be increased by a free trade policy, still less that the standard of living of the manufacturing workers would rise. But the farming population would benefit.

For Europe, on the other hand, the advantages would no doubt be considerable. Many industries producing high quality goods and using much labour would expand, and commodities imported from America would be obtained at lower prices. In other words, the larger share of the gain from American free trade would fall to Europe. Other continents which largely export raw materials are not so much hampered by the American tariff and would thus not profit so much from its disappearance or reduction as would Europe.

§ 7. *The reaction of the supply of productive factors.* Protection tends to change the relative scarcity of industrial agents and may do so to a considerable degree, at least if the duties are high. The

supply of these agents naturally reacts more or less to such price changes.[1] The effect of protection, therefore, consists to a large extent in the changes brought about in the supply of productive factors.[2]

When new duties are imposed or old ones increased, certain industries expand and increase their demand for labour. The situation becomes favourable for a trade union policy which tends to raise wages. At the same time labour flows from other occupations and young people turn to the expanding trades, but the unions may succeed in maintaining a somewhat higher wage level than formerly, relative to wages elsewhere. In other words, the supply of labour of the quality needed may fail to adapt itself completely to the new conditions.

In many European countries home market industries insensitive to foreign competition pay higher wages than industries which feel that competition more directly. If the tariff is increased, some industries move to the former group, and the chances of raising wages in them above the level in other industries are considerable. The experience of Australia after the War offers numerous examples of this. In most countries, however, protection is not so high that the protected industries fail to feel foreign competition. On the contrary, duties are often raised because and when these industries have difficulties,[3] so as to offset the advantages of foreign competitors, while leaving a certain amount of competition between them and domestic firms. It frequently occurs, therefore, that protected industries pay relatively low wages. Such is the case, for instance, with the Swedish textile industry. The existence of periodical unemployment during times of business depression and the closed-shop policy of

[1] Cf. Chapter VII.

[2] This question has been analysed along similar lines in Professor Heckscher's paper, referred to several times above, in my own "Theory of Trade," both in Swedish, and in Cassel's *Theoretische Sozialökonomie* (4th ed., Berlin, 1926). Building on the latter Dr. Mackenroth, then a student in Stockholm, has presented a similar analysis in "Zollpolitik und Produktionsmittelversorgung," *Weltw. Archiv* (1929).

[3] The effects of duties do of course differ to some extent according to the business situation existing when they are imposed. A special analysis of the tariff problem would have to give much attention to such dynamic circumstances.

trade unions in more prosperous industries explains why a sufficient labour supply has nevertheless been available.

In the case of non-competing groups of a more permanent kind, — e. g. skilled and unskilled manufacturing labour, — the difficulties in the way of movements from one to the other are naturally greater. The reaction of labour supply if protection raises the reward to one of them is therefore necessarily slow. Yet in the long run it may be considerable. Take, for instance, the case of skilled labour in the United States. Protection not only increases the demand for it and its market price but also the opportunities for acquiring training and experience. A much greater number of people get a chance to become mechanics and the like. Probably the number gifted by nature with the necessary qualities for such work is great. It is not certain, therefore, that the relation between wages of skilled and unskilled labour is in the long run changed by protection much to the advantage of the former. It is even possible that the flexibility of supply is so great as to make only temporary changes in the scale of remuneration necessary to induce people to undergo the required training, in which case the old wage ratio returns. As a matter of fact, supply reactions, once started, may go even further and cause a relative decline in skilled wages.

Manufacturing and agricultural labourers have since the War in many countries formed two fairly non-competing groups, as excessive unemployment has served as a barrier against the flow of farm labourers to the factories, where much higher wages, even considering the lower costs of living in the country, are being paid. The high tariff in countries like Canada and Australia seems to have been effective in raising the demand for manufacturing workers and their corresponding reward, while exercising a depressing influence on real wages in agriculture by raising the costs of manufactured products and of transportation. Unemployment, trade union policy, and the stimulus to immigration of farm labour has so far prevented the adjustment of labour supply which would have restored the old scale of wages.

The most direct influence is exercised by protection on the supply of so-called technical or organising labour. The quality of

such labour needed in one industry differs from that required by others. By stimulating the growth of certain industries the tariff leads at the same time to education and training for the technical labour required. In many cases, however, this means only that technical labour is specialised in certain directions rather than in others and need not be treated as a changed supply, especially if there is no change in its total quantity. The so-called "infant industry argument" is based largely on the fact that the necessary qualities of technical and skilled labour are created. Note that successful experiments of this sort do not with any certainty imply a gain. The "educated" industry should be able not only to stand on its own legs but also to repay the indirect support it has received through protection in its youth. Even then it is doubtful whether the effect is more than that a certain amount of technical labour — inventive and organising ability — has been turned into other channels than under free trade. If it had not gone to the protected industries, it could have been used — and probably to as good effect — in other industries. In so far as concentration means increased efficiency the effect would have been still more marked.

If there is to be a gain from protection through the education of technical skill, it must be because the total quantity of skilled and technical labour is increased and the quality of ordinary unskilled labour improved. This may occur when a "new" country introduces protection for manufacturing industries. It increases the chances for people with technical training and experience, and tends to raise their income. This means an attraction of energies in this direction rather than toward agriculture. At the same time the opportunities for acquiring the qualities called for are much increased. It is uncertain, therefore, whether after a period of transition the reward to technical labour is relatively higher than before the imposition of the duties. But the quantity of such labour may be much greater than before, which may conceivably mean a greater national income, if its wages are higher than those of leading agricultural labour.

It is even possible that the sum of the various national incomes — world income — may rise. Education which improves the

quality of labour can, of course, increase incomes. As protection is one way of educating labour, — under given circumstances, — it may, although involving some misapplication of productive energy, be worth what it costs and more.

The situation is, of course, very different in this respect in old and new manufacturing countries. The effect of protection on the quality of labour is probably greater, the more primitive is the stage of industrial development, after a definite level has been reached. The "infant industry argument" should be called instead the "infant country argument." This influence on the quality of labour may in the long run be far and away the most important side of protection. Friedrich List had in mind something of this sort when he said that the wealth-creating forces are more important than wealth itself. Future incomes may be greatly increased if present incomes are somewhat reduced and wealth-creating forces are thereby developed.

In countries which have reached a certain standard of industrial development, having passed the "infant" state, there seems to be little chance of improving labour qualities, in particular of increasing the supply of technical labour. On the contrary, the custom in some protectionist countries of meeting all industrial difficulties with tariff increases — making the tariff a "sleeping cushion" — cannot but prevent the invigorating influence of serious competition from exercising its favourable influence upon quality.

It is evidently impossible to prophecy how labour supply will react towards changes in the scale of reward and other circumstances brought about by protection. It goes without saying that the influence of tariff policy upon the growth of population is absolutely unpredictable. For this reason it has heretofore been assumed to be non-existent.

The difficulties are not much less in a discussion of the reaction of capital supply to changes in the rate of interest brought about by protection. These reactions will probably be similar to those which occur when the interest rate changes for other reasons. We may, therefore, refer to the analysis in Chapter VII. It may be observed, however, that if a change in the distribution of income

to the advantage of the capitalist, at the cost of relatively lower wages, leads to increased savings (which seems rather likely to happen), labour will in the long run benefit more or less from the tendency to increased scarcity. The foregoing discussion of the development of national income has disregarded alike such changes in the quantity of capital and the possible changes in population. Where it is probable that savings are affected, this aspect of the matter must of course be taken into account in judging the effects on the size of the national income.

Changes in the total supply of labour and capital due to international movements of these factors because of tariff policy have been consistently omitted from our analysis. They will be dealt with in the next chapter.

Lastly, it should be observed that descriptions of the reaction of factor supply must be relative to time. The effects of protection in this respect will be different in the beginning and later. The first three or four years will certainly see changes in the relative incomes of different factors of production — changes which supply reactions are unable to prevent. After a decade or two, the latter will probably be so important that their character will dominate the situation and determine whether or not one factor maintains an improved position relative to the other. As supply reactions grow even more uncertain as time passes, nothing can be said of the effects of protection on the distribution of income and the supply of industrial agents half a century later.

§ 8. *Interior localisation.* So far the effects of tariff policy on the localisation of industry *within* countries have not been considered. Interior local differences in price conditions as affected by protection have also been disregarded, and will be discussed in Chapter XXIII.

As to the former phenomena, it is obvious that if a country chooses to impose a tariff of some significance, the localisation of industry must be affected: some industries are stimulated, others retarded. There is no reason for assuming that the former should be located in the same way as the latter. Export industries tend to be located so as to have good transfer relations with other

countries, e. g. close to good ports. A tendency to market localisation will cause them to settle there if the country has advantages in labour and capital supply which make it unprofitable to locate the industry abroad. Market-localised home market industries, on the other hand, which may well expand owing to protection at the expense of export industries, locate a large extent in the centres of population some of which are in the interior of the country. Protection may thus move industry away from the coast districts to those in the interior.

Even among home market industries and industries producing goods which are also imported, the effects of protection will be in a distinct variety of ways. The Swedish Tariff Commission [1] has furnished evidence indicating that the Swedish tariff favours agriculture in the South and checks it in the North. Grain is cultivated almost exclusively in the former district, farmers in the North, who work in the forests during the winter, being unable to produce even enough for their own consumption. They do not, therefore, derive any advantage from the duties on grain. The duties on animal food, on the other hand, are low and largely ineffective. It seems probable that in most countries the tariff wall leads to a redistribution of national wealth between geographical districts. Further analysis of this problem, analogous to that of tariff unions and preferential duties, would carry us too far.[2]

It goes without saying that protection abroad must also influence localisation within the country. Foreign tariff walls change the transfer relations with foreign markets, acting very much as expensive breaks in the journey. Given certain raw material supply sources, such changes cannot but affect the localisation of manufacturing industries. Besides, the localisation of raw material production may be influenced as well. Note further that foreign tariffs cause home market industries to expand at the expense of export industries. The raising of many tariff walls since the War has tended to reduce British export trade and to retard

[1] In the Final Report, 1924.

[2] See H. G. Brown, *International Trade and Exchange* (New York, 1914), Chapter V, § 6.

the export industries largely located in the North, and to stimulate home market industries, which tend to settle in the South.[1]

Such variations of course go hand in hand with an adaptation of interior transport facilities, which in its turn paves the way for a changed localisation. A closer analysis of such problems would fall outside the scope of this book. The above must suffice to indicate that in specific cases an important part of the effect of protection may be changes in the interior localisation of industry.

[1] In the years 1924–26 the number of persons insured under the Unemployment Insurance Acts increased by 11.6 percent in the South England area as compared with 5.2 percent in the Midlands, 2.6 percent in the North Eastern and 3.4 percent in the North Western district.

CHAPTER XVII

INTERNATIONAL CAPITAL AND LABOUR MOVEMENTS[1]

§ 1. *Statistics of their volume.* The present chapter is, of course, not concerned with a discussion of all the various aspects of international capital and labour movements, but chiefly with their relation to international trade. The figures in this section therefore stop far short of presenting the historical development of all important movements of this kind. The statistics below serve rather as exemplification and illustration; they are intended to show that international capital and labour movements have been important in many cases, and are subject to considerable variations even during comparatively short periods. As will be demonstrated later in this chapter, such variations have a great deal to do with variations in international trade, and must be studied in connection with them.[2] It will also be shown that important labour and capital movements, by changing the conditions of production which are the basis of international trade, exercise a fundamental influence upon it.

The fact that the distribution of the world's population is so different from what it was a hundred years ago is of course largely due to migration movements. The table below shows the change that has taken place.

DISTRIBUTION OF POPULATION

(In millions of inhabitants)

	1800	1925
Europe	188	467
North America	6	126
South and Central America	29	103
Asia, Africa, and Australia	?	1210

[1] Parts of this chapter and of Chapter IX have appeared in "Das Verhältnis zwischen dem internationalen Handel und den internationalen Bewegungen von Kapital und Arbeit." *Zeitschrift für Nationalökonomie*. 1930.

[2] This has been stressed by Professor Williams both in his teaching at Harvard, from which I have profited, and in his paper, "The Theory of International Trade Reconsidered," *The Economic Journal* (1929).

Let us look a little more closely at some important migration movements, beginning with immigration. From 1821 to 1920 the number of immigrants into the United States reached the colossal figure of about 34 millions. Its variations from one decade to another are shown on the following table.

IMMIGRATION INTO THE UNITED STATES, 1841–1920

1841–50	1,713,000	1881–90	5,247,000
1851–60	2,598,000	1891–00	3,844,000
1861–70	2,315,000	1901–10	8,795,000
1871–80	2,812,000	1911–20	5,749,000

In the middle of the nineteenth century immigration was almost exclusively from northern and western Europe. Towards the end of the century people from southern and eastern Europe began to flow in. As late as the year 1882 they made only 13 per cent of the total, but by 1907 this percentage had risen to 81.

Immigration to South America has been lower in actual figures, but much greater in relation to population in some countries on this continent. The Argentine, for instance, received no less than 4,700,000 immigrants, of which almost half were Italians and one third Spaniards, during the period 1860–1920. Here too the variations from decade to decade were considerable.

IMMIGRATION INTO THE ARGENTINE, 1861–1920

1861–70	185,000	1891–00	397,000
1871–80	276,000	1901–10	1,177,000
1881–90	855,000	1911–20	509,000

Still more important was the immigration into Canada in the beginning of this century. From 1903 to 1914 2,513,000 persons entered Canada, or more than 200,000 a year — almost three times the increase of births over deaths. Immigration into the United States at its highest point reached only about the same figure as the domestic increase of population.

The most important sources of *emigration* have been Great Britain and Ireland. During the century beginning 1815 about 13 millions left this country, two thirds going to the United States, and the rest almost exclusively to Canada and Australia.

Irish emigration holds a place by itself. From 1845 to 1855 —

the time of the potato famine — 2,357,000 Irish emigrated to the United States; from 1841 to 1900 the population decreased from 8,175,000 to 4,459,000, this reduction being of about the same size as the emigration. The surplus of births over deaths which would otherwise have existed disappeared owing to the low birth rate, due to the fact that the emigrants were largely young men and women.

Migrations after the War have taken somewhat different channels, but have also been considerable. During the period 1920–24 the net yearly total of emigrants per million inhabitants to transoceanic countries were as follows: Italy, 2,740; Great Britain, 3,270; and the Irish Free State, 4,250. The corresponding figures for net immigration have been for New Zealand, 9,790; for the Argentine, 8,970; for Australia, 5,270, and for the United States, 2,320. The influence of restrictions on immigration to the latter country is apparent. In Europe France has developed into a country of immigration which rivals the transoceanic ones. From 1921 to 1926 the number of foreigners increased from 1,550,000 to 2,500,000. This makes the yearly immigration figure per million of inhabitants close to 5,000.[1] The immigration of Chinese into Manchuria in recent years has been of still greater proportions, approaching a million annually.

These few figures must suffice as an indication of the volume and development of international migrations, which, however, during the present depression have changed their course. Something should be added about international capital movements.

Great Britain has been the greatest exporter not only of men but also of capital. In 1913 its foreign investments reached the enormous amount of 4,000 million pounds sterling. This was more than all other foreign investments taken together. It has been computed that France had placed about £1,800,000,000, and Germany £1,000,000,000 to £1,250,000,000 in other countries. The foreign investments of other nations were smaller, although considerable in the case of Belgium, Switzerland, and Holland, if the small size of these countries is taken into account. The Bel-

[1] Most of the figures are taken from *Migration Movements* and *Monthly Record of Migration* published by the International Labour Bureau, Geneva.

gian figure exceeded £100,000,000, while that of Switzerland approached £180,000,000; the Dutch investments are supposed to have been still larger.

Great Britain has placed nearly half its exported capital in the British Empire, 20 percent in the United States, and nearly 20 percent in Central and South America. Less than 5 percent was invested in Europe, chiefly in Russia, Spain, and Turkey. France, on the other hand, preferred to lend to Europe while investing large sums in Egypt and in the French African colonies. Germany invested heavily in Europe, but spread its capital fairly evenly over many parts of the world.

This export of capital did not proceed at an even rate. Although precise figures are lacking, it is certain that there were considerable variations from one year to another, largely under the influence of changes in the business situation and thereby in savings and in the need for capital at home.

The War brought decisive changes in the situation of foreign investments. Germany lost all hers and now has a net indebtedness, while France has very little left of her foreign assets. Great Britain, on the other hand, has maintained her investments at almost the same nominal figure — £3,000,000,000 to £4,000,000,000 — which means, of course, a considerable reduction of their real value. The War debts are not included in this figure, as they do not bring in from the Continent more than they make Britain pay to the United States.

Perhaps the most spectacular change since pre-War days has been the passing of the United States from a debtor to a creditor position. In 1914 the United States had borrowed about $4,500,000,000, *i. e.* about £1,000,000,000. Its net indebtedness was somewhat smaller, as $1,000,000,000 to $1,500,000,000 had been invested abroad, chiefly in Canada, Mexico, and Cuba. By 1925 American investors had bought back almost all American securities formerly held in Europe, and had invested $9,522,000,000 abroad, not including the inter-Allied debts. More than 25 percent of the total was invested in Canada and Newfoundland, almost 45 percent in Latin America, 8 percent in Asia and Oceania, and less than 25 percent in Europe. While about 40 percent of the

total investments were in government bonds, three fourths of the investments in Europe were of this kind. In other parts of the world American capital was chiefly invested in a more active way.

It is important to note that most countries, like the United States, both import and export capital, if they have any capital transactions at all with other countries. Even a typical borrowing country such as Canada (in 1928 foreign capitalists held about 40 percent of all Canadian securities) has invested substantial sums abroad. In that year foreign capital in Canada was estimated at $5,740,000,000, of which two fifths were British and almost three fifths American, while Canada had exported $1,580,000,000.

Particularly after the War, securities of the international sort went back and forth between countries. In 1927, for instance, the United States imported capital to the amount of $1,730,000,000 and exported $2,360,000,000. The larger part of the former sum did not consist in real foreign investments in the United States, but came from the resale abroad of foreign securities floated in New York.[1]

§ 2. *Character and governing elements of international labour and capital movements.* After these brief illustrations of international labour and capital movements, something should be said of the circumstances which cause or obstruct such movements. Let us begin with the international mobility of labour.

This mobility is reduced by all the ties which unite a citizen with his native land and its culture. The inevitable uncertainty as to his fortunes in a new country also tends to keep him from emigrating, especially if he is temperamentally disinclined to undertake risks. Adam Smith has said that "Man is of all sorts of luggage the most difficult to be transported."

On the other hand, the lust for adventure may lead enterprising youths to break their way in countries where conditions are less settled than in their own. A failure of some sort may lead them to try again in a new country rather than carry at home the

[1] Most of the figures concerning international capital movements are taken from Hobson, "Export of Capital," *Encyclopedia Britannica*, 13th ed. New vols., I, p. 519 ff.

handicap which knowledge of failure often imposes. Inferior or restrictive political or religious institutions have in some cases made people move to countries where greater liberty obtains.

On the whole, however, people migrate because they expect an improvement in their economic position. The flows of emigration have gone from low-wage countries to high-wage countries. This does not mean, of course, that the poorest countries have supplied the greatest number of emigrants. Great poverty is often an obstacle to migration, as it prevents the accumulation of funds to defray the necessary expenses. Besides, migration on a large scale is difficult without some sort of organisation — advertising by steamship companies, propaganda, or other ways of spreading knowledge of the immigration countries.

The obstacles to emigration thus differ greatly between countries as does the ease with which immigration may be accomplished. Racial kinship exercises a great influence; there are, for instance, few Italians and Greeks in the British Empire and few British in South America. Similarity of political and cultural institutions tends to affect the streams of migration in an analogous manner.

Discriminatory immigration legislation also tends to retard the influx of people of different race and with very different institutions. Since the War almost all countries have been regulating immigration in some such way, generally exercising a restrictive influence.

The obstacles to migration movements vary also from one time to another: waves of migration rise and fall for a variety of reasons. When emigration has once started, its organisation is improved; the knowledge of conditions in the receiving country is increased, through letters to relatives in the old country, etc. The stimulus to migration may thus grow stronger, while deterrent psychological factors may diminish in importance: the wave of migration rises. After some years, however, the receiving regions may begin to fill up, e. g. no free land may be available, and migration becomes less alluring. To some extent it goes out of fashion, and the wave recedes.

Cyclical variations in business conditions cause corresponding variations in international labour movements. Excessive unem-

ployment in the receiving countries is a powerful deterrent. The falling off of immigration into France during 1927 and 1928 is a good example. An analysis of the variations in immigration into the United States brings out clearly that good business conditions there lead to high immigration figures. The experience of the Argentine is also pertinent. During the nineties the policy of monetary deflation brought poor business conditions. At the same time the net immigration fell to 397,000 from 855,000 in the preceding decade, to rise again to 1,177,000 in the first decade of this century, when good business conditions prevailed.

In Brazil, the inflation and good business conditions of 1887–98 brought immigration to an annual figure of 83,000, as against 24,000 in the six preceding years; during the following period of deflation, 1899–1905, it fell again to 55,000.

The state of trade in the emigrant countries seems to exercise much less influence on migration. Only in times of exceptional economic crisis is any increase of emigration noticeable. The "pull" is stronger than the "push." [1] The fact that labour movements react so readily to changing conditions is of importance to a study of variations in international trade.[2]

It should be pointed out that seasonal economic variations lead to seasonal migrations back and forth. Each year Belgians and Spaniards work for a few months in French vineyards. Before the War Germany used to receive almost a million farm labourers each summer, chiefly from Poland.

In general it is true that labour movements are from low-wage to high-wage countries. The various obstacles may prevent labour from moving at all, either between certain countries or at certain times, despite the stimulus in international wage differences. But when it does move it is chiefly because of such differences.

One important qualification must, however, be made. Labourers are interested in real wages or real incomes rather than nomi-

[1] See Jerome, *Migration and Business Cycles* (New York, 1926).

[2] A little will be said about it in the next chapter. On the whole, however, the aspects of international trade which are concerned with the business cycle are left out of account in this book. This complicated subject I hope to deal with later in a special treatise on "The Business Cycle in International Economic Relations."

nal wages or incomes. The standard of living, not the sum of money obtained, is of consequence. As the costs of living differ considerably from one country to another, the money incomes may well be higher in one of them than in others without the standard of living's being higher. It is even conceivable that this standard should be higher in a country where the money wages are lower. Consequently labour may migrate from the latter to the former.

The standard of living concept is, however, open to serious criticism owing to its elasticity, particularly in international comparisons, as pointed out in Chapter XI. Simple statements concerning real incomes do not give a much more adequate account of migration movements than those in terms of money incomes.

Fortunately such difficulties are negligible in this investigation. As a matter of fact, the important labour movements have always been from countries with low money incomes to countries with higher ones.[1] This fact may perhaps be accounted for by saying that where nominal wages and incomes are high, real wages and incomes are also as a rule higher than in countries with lower nominal figures. But then qualifications concerning the meaning of real wages and incomes are evidently needed. Since the present chapter does not attempt a general treatment of international labour and capital movements, we may lay aside the difficulties involved in a precise terminology, and reason from the fact that labour moves from countries where its monetary reward is low to places where it is higher.

Let us turn now to the circumstances which govern international capital movements. The most important stimulus to export and import of capital is certainly differences in the rate of interest. Countries where the rate of interest is low find it profitable to export capital to countries where the rate is high. Such differences are a natural reason for sending capital from one country to another. Often, however, capital movements are not to be explained wholly in this way: other elements enter in. Take, for

[1] The value of food produced on the farm by immigrant farmers must then, of course, be estimated in money and the income from increased value of the farm also be taken into account.

instance, the importation of capital into Russia. The chief explanation of the ease with which Russian state bonds could be sold abroad before the War, largely in France, lies in higher rates of interest in Russia. Had it, however, not been for the political relations between France and Russia, it is doubtful whether these capital movements would have been so extensive. Certainly the propaganda conducted by French banks in favour of Russian bonds, with the consent and approval of the French Government, was a necessary supplement to the difference in the rate of interest, if the canny French peasants were to be induced to buy these bonds. The importance of such political considerations should not be ignored; by organising the market to the advantage of the borrowers, state institutions may decisively influence the flow of capital. The result is that important movements may take place between two countries, although the difference in the rate of interest is not greater than that between the lending country and a third to which there is no such movement. Great Britain, for instance, favours investments in other parts of the British Empire. The Colonial Stock Acts make the national debts of the Dominions trustee investments in the United Kingdom on certain conditions.[1]

Many states lay special obstacles in the way of an export of capital. Heavy stamp duties on foreign issues in France since the War have checked the French export of capital in recent years. The temporary British embargo on foreign loans reduced foreign investments from £153,000,000 in 1923 to £63,000,000 in 1924, and £28,000,000 in 1925. Other states, e. g. Italy, restrict the import of capital by political means.

Among circumstances other than political regulations which affect international capital transactions, one should note the natural preference of capitalists for a diversity of investments; this may lead to important capital movements, even between countries that have the same interest level. Investment trusts in particular attempt to spread their capital over securities in such a way as to reduce the risks, and, partly for this reason, buy foreign

[1] Hawtrey, *The Economic Problem*, p. 281. See also Viner, "Political Aspects of International Finance," *Journal of Business Economics* (Chicago, 1928).

securities as well as domestic. Such trusts have been important instruments for the exportation of British capital.

Another important element is the policy of establishing branch offices and factories abroad, resorted to increasingly by manufacturing firms. Capital comes in most cases from the home country of the firm concerned. The tariff policy of recent decades, by placing obstacles in the way of international trade, has in many cases induced firms which were exporting a given commodity to establish production in the protected country. English tire factories have established branches in the United States, as has the Rolls-Royce automobile company. On the other hand, the superiority of American industry in the production of cheap automobiles and a desire to escape the high costs of transport across the Atlantic have led to the establishment of branch factories in Europe by the Ford Motor Company and other automobile firms. There have consequently been both import and export of capital across the Atlantic.

The establishment of great international enterprises does not, however, invariably cause such cross movements of capital. Development through recent decades has been partly in a different direction. Such firms as the Dutch Shell Company and the Swedish Match Company, with branches in a dozen countries, find it easy to borrow capital in different markets, wherever the rate of interest is low. This simply means that capital is exported from countries with a low rate of interest, a circumstance that has already been considered.

As with the establishment of branch factories a desire to guarantee the supply of foreign raw materials through a controlling interest in the industries which produce them has led to considerable foreign investment, e. g. in the production of iron ore, copper ore, and oil. The manufacturers of electrical machinery have similarly found it profitable to secure control of electrical power companies all over the world in order to assure the obtaining of orders.

Foreign investments may also be largely independent of differences in interest levels when there is a chance of profit; many foreign shares are bought and new companies created for this

reason. During some periods the opportunity to make substantial profits by placing capital in new countries has served as an even more powerful inducement to foreign investment than interest differences. The placing of capital in Russian industries by a great number of European countries is not to be explained solely by the higher rate of interest in Russia; the important factor was the possibility of a rapid economic development in that country, with consequent high profits. The same is true of a considerable part of English and American investment in South America; the chief incentives being building of railways, the creation of new industries, etc. Such export of capital is usually irregular, assuming enormous proportions during boom periods, then ceasing abruptly.

There is a great element of speculation in these capital transactions, and a corresponding ignorance of their real nature. Many English capitalists to whom the Argentine was only a name have placed considerable investments in Argentine railway companies, in most cases on the recommendation of some English banking or investment company. Nowadays investors are perhaps more eager for information about the international securities they are holding. Such data is supplied by stock brokers for a limited number of securities, and capital tends to be invested in them.

A good illustration of the difference between export of capital of the latter type and that caused by interest differences is the flow of capital from Great Britain to the United States while the latter country was exporting hundreds of millions of dollars to Canada. The flow of capital between Great Britain and the United States in the decades before the War was almost wholly caused by the difference in the rate of interest. Investments in American railway bonds were more remunerative than corresponding investments in Great Britain. The interest rate was on the other hand not much higher in Canada than in the United States, but the former offered distinct possibilities for American enterprise and technique. Large profits were to be reaped by placing capital in Canadian industries and giving them the advantage of experienced American leadership.

A special sort of profit from foreign investments is obtained

when high domestic taxation is thus evaded. Since the War much capital has been exported for this reason from Germany and probably also from France and Great Britain; Switzerland and Holland have received large portions of it.

So far we have touched chiefly upon circumstances which tend to cause international capital movements. It goes without saying, that there are other circumstances which retard such movements, otherwise considerable international interest differences could not exist.

The ordinary investor prefers to put his money in things he knows something about, e. g. in bonds or shares of companies the development of which he is, or thinks he is, able to follow. As he knows much more about his own country than about others, he is inclined to export his capital only if stimulated by a higher yield. To him foreign investments seem more risky than domestic ones. His valuation of this extra risk governs his investment policy in the face of existing interest differences. It is quite possible that under certain conditions the risk may be estimated lower for foreign than for domestic investments; such was the case in France during the years before the monetary stabilisation, where the "flight from the franc" meant an important export of capital. As a rule, however, the citizens of a country, from their knowledge and experience, estimate the risk to be greater when capital is invested abroad. Such considerations therefore tend to restrict the export of capital. They are similar to those which retard emigration.

It would carry us too far to inquire in greater detail into the effects of the element of risk upon international capital movements.[1] Observe, however, that capital available for perilous investments may well be imported from a country at the same time that capital available only for investments judged fairly safe is exported to it.

Special types of capital movement are those due to absentee ownership, e. g. remittances from Great Britain to British people

[1] Note that many "international" securities are bought by capitalists in countries with widely different interest levels; this fact is, partly at least, due to differences in the estimates of the risks involved.

living in Southern France, and remittances by immigrants to their old countries.

We turn now from what may be called "long time capital movement" to "short time capital transactions." On the border line between the two are commercial credits given by exporting firms to their customers, chiefly in manufacturing industries. Goods are often sold against six months' credit. All countries which export manufactured goods have large amounts of such credits outstanding. They are only slightly affected by changes in interest levels.

Short time transactions are usually speculative. Their object is to profit from expected variations in foreign exchange, or from arbitrage in international securities between the leading stock exchanges. Of course capital also moves back and forth between different money markets in accordance with strictly temporary differences in short term money rates. Such short time capital movements play a decisive part in the maintenance of equilibrium in the balance of payments; they are consequently discussed in Part V. At present we are concerned not with the mechanism of trade variations but with the mutual relationships of such movements and of international trade from a long time point of view.

Lastly, observe that capital movements, like migrations, vary decidedly from one phase of the business cycle to another, i. e. are affected by the state of trade in general. The largest capital movements have occurred during boom periods.

§ 3. *The meaning of international labour and capital movements.* Before passing to a more detailed analysis let us characterise the essential nature of international labour and capital movements, regarded as adaptations to economic conditions. In so doing we shall concentrate attention upon movements due chiefly to international wage and interest differences.

Why are wages and interest rates so different that productive factors move from one country to another? Because the basic elements of the price system, as explained above, vary in different countries. Productive factor equipment and other conditions of production, as well as demand conditions, differ internationally.

Transfer relations — transfer resources, facilities, etc. — are also unequal.

Labour and capital movements mean an adaptation of the supply of these factors so as to correspond, as it were, to the differences in the supply of other factors, in other conditions of production, and in demand and transfer conditions. Above all, they imply an adaptation to international differences in natural resources, regarded both as a factor of production and as a transportation resource. We have discussed, in previous chapters, why certain sorts of natural resources are more active than others in attracting labour and capital. This is, as a matter of fact, part of the explanation of adaptation through movements of labour and capital. Regions where nature is benevolent as a means of production and transportation become thickly populated. In arid districts, for instance, population is much lower than in more humid regions. Railway maps show a surprising degree of correlation with rainfall. Similarly, districts with irregular coast lines and navigable rivers and lakes are the homes of a much larger number of people than districts with inferior transport resources. Discovery of new natural resources and methods of utilising old ones affect the world distribution of population. New oil wells in Venezuela, for example, have recently attracted American capital and technical labour.

It goes without saying that the supply of capital and labour adjusts itself to basic elements other than those having to do with nature. Tariffs and other obstacles to international trade, differences in the social conditions of production, in the supply of technical labour, and the like, exercise their influence.

The obstacles to international labour and capital movements tend to restrict redistribution. Were it not for them the distribution of productive factors would be quite different. No doubt parts of the world now densely populated would be deserted, while some would lose and others gain inhabitants and capital.

The rest of this chapter deals with the influence of international labour and capital movements[1] on their prices, and on the volume

[1] One side of international capital movements is left entirely out of account. As capital moves in the form of goods and services, such movements affect the mechan-

and character of trade. We shall also analyse the reactions to such movements when any of the basic elements change, particularly those which lead directly to variations in international trade.

§ 4. *The relation between international factor movements and international trade.* Obviously, any change in the economic system which affects the prices of the mobile productive factors may lead to international factor movements, provided the international difference in the factor prices is made great enough. Besides, a change in the mobility of the factors may also change their international movement.

Some changes in the economic system offer special interest in a treatise on international trade: those having to do with changes in the international mobility of commodities. Thus, changes in the mobility of goods and productive factors and the reactions of trade and factor movements to each should be specially analysed. This subject has been discussed in general terms in Chapter IX, and we shall first review theory there expounded. This reasoning should, however, be regarded in the light of the qualifications in the previous analysis (Chapter VI) of the effects of international trade on the prices of productive factors.

Since factors move from countries where their prices are low to those where they are dear, their scarcity and reward in the former are increased,[1] while their prices in the latter fall, unless there is some counteracting tendency. International mobility

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ism of international trade while they are going on. A study of this phenomenon is put off until Part V. At present we are interested only in the fact that a transfer of capital, like migration, changes the supply of the productive factors and thus the basis of the international distribution of production and trade. Another aspect of international capital movements, to which no special attention is given in the following, is that when an increase in the quantity of capital in a country, whether brought about through borrowings abroad or domestic savings, tends to raise the prices of the other factors, then, the increase in the quantity of capital goods is relatively much less than the increase in the money value of these goods. Part of the new capital "evaporates," as it is used to advance increased wages and rents. See Wicksell, *Vorlesungen über Nationalökonomie* (Jena, 1914), Heft I.

[1] Export of capital tends to raise the rate of interest, and thus to depress wages. If the wage level is temporarily fixed through wage agreements between employers and trade unions, unemployment will be increased. This fact, important for a discussion of post-War economic problems, cannot be further analysed here.

tends to make prices more uniform in the countries concerned, just as do the international movements of commodities. These two tendencies cannot but affect one another. Through the exchange of commodities not only *their* prices but also those of the productive factors are to some extent equalised, i. e. international discrepancies in factor prices are reduced; thereby international factor movements are to some extent rendered superfluous. The movements of goods replace the movements of factors. In other words, if no trade took place, price discrepancies, and consequently movements of productive factors, would be more considerable than now. Trade retards and in some cases prohibits the international movement of capital and labour.

On the other hand, the exchange of goods is unable to bring about a complete equalisation of factor prices. International differences remain, and call forth factor movements whenever great enough to overcome the obstacles. Factor prices are in this way brought into closer harmony between countries, and the need for and volume of international trade are reduced. Factor movements thus act as substitutes for the movements of commodities.

International price equalisation appears to be furthered either by both types of movement or by the one that meets with the least resistance.

If the mobility of factors increases, a new transfer of them will take place, and the consequent greater harmony between their prices in different countries will render needless part of the former exchange of commodities. On the other hand, a reduction in the costs of transport through improvements in the technique of transportation will increase trade, and the resultant lessening of the factor price discrepancy may diminish the international factor movements.[1] Everything depends upon the intensity of the reaction of factor prices and thereby factor movements when trade varies, and the intensity of the reaction of commodity prices and thereby trade when factor movements vary.

This reasoning rests on the assumption that the quantity of productive factors in each country is about the same as before the factor movements. It is needless to point out that in progressive

[1] For qualifications to this statement see below.

countries increases in the domestic supply of labour and capital will lead to an expansion of economic life and increase international trade. This fact should be kept in mind, as it will not be mentioned below.

A more important qualification is that factor movements in only one direction increase the quantity of productive factors and the national income in the importer relative to the exporter. In such cases the influence of factor movements on the *character* of international trade is as stated above, but its influence on the *volume* of such trade is uncertain. The tendency toward a reduction of trade may be counteracted by a tendency to increased trade if the national income is increased in a small country.[1] Trade between Great Britain and Australia would grow if a few millions of British people and much capital moved to the latter. On the other hand, trade would be reduced if the national income were lowered in a small country. Emigration and export of capital from Scandinavia to the United States would probably diminish trade between them.

Whether the relation between quantity of factors and national income in the two countries is changed or not, factor movements tend to reduce the percentage of the national income used in each country to buy goods from the other. In that sense the need for international trade is reduced by international factor movements.

In a third type of case these conclusions do not hold true. The quantity of certain productive factors in a country may be so small that an increased supply of them will not reduce, but increase their prices. For instance, wages may rise owing to external economies as labour flows into a scantily populated country. In such cases relative scarcity, e. g. of labour and land, need not be affected by the *factor movement* in the opposite direction between the emigrant and immigrant countries; wages may rise relatively to rent in both. The character of trade is not affected in the same way that it will be by a tendency towards international equalisation of factor prices; nor will the volume of trade be reduced. The

[1] The fact that economies of large-scale production become available in this country may reduce the growth of trade, not prevent it altogether.

new country may continue to send out agricultural products in growing quantities in exchange for manufactured goods. Costs of production are not so affected by the immigration of labour and capital that a part of the latter are produced at home instead of being imported.

When a certain point has been reached, the relative factor prices in the two countries are made more nearly equal, although the price of the moving factor may continue to rise in both. Trade will then tend to decline in volume.

Any change in the relation between the quantities of productive factors in the two countries will of course affect the volume of trade as indicated above. Thus, an influx of labour and capital into new countries may increase international trade for two reasons. Even after a point has been reached at which the percentage of the income used to buy foreign goods falls off, the total volume of trade may continue to rise owing to the growth of economic life due to the influx of labour and capital. This, as a matter of fact, is what has happened in the transoceanic countries during the last hundred years.

Summing up, it is evidently necessary to distinguish between the cases where increased mobility of labour and capital reduces the differences in their prices internationally, and those where in the beginning no such equalisation takes place. In all cases, however, factor movements mean an economic adaptation of the sort indicated at the end of the last section: the world income is increased.[1]

§ 5. *International capital movements.* A few representative cases will now be discussed at greater length. Let us begin with international capital movements not accompanied by labour movements. In such cases the wage level in the country import-

[1] For qualifications of this statement see Chapter XIV. So far as the number of people in the world or their taste is affected, a statement concerning world income has little meaning. This is one reason why it serves no useful purpose to speak of the "advantages" or "disadvantages" of international factor movements in the long run. Think of the effects had Japanese and Chinese emigrated to North America and Australia in masses a hundred years ago. The reasoning in section 4 above should be compared with the corresponding reasoning about commodity movements in Chapter IV and should be qualified in an analogous manner.

ing capital (*B*) is usually lower than in the country exporting it (*A*). In other words, the borrowing nation has a relatively abundant supply of labour; on the other hand, the supply of natural resources may be small.

The increase of capital supply in *B* and its reduction in *A* will tend to reduce and to raise the rate of interest, respectively.[1] Industry in both countries will be affected. *B* will acquire greater competitive power in the production of goods requiring much capital, while the costs of production of the same goods in *A* will tend to rise. On the other hand, the increased prices of other productive factors in *B* and their reduction in *A* will raise the costs of the corresponding goods in the former and reduce them in the latter. Part of the mutual export will for this reason tend to disappear; it is impossible to say in general whether the terms of exchange will move to the advantage of either.

One must take into account, however, that there are many other factors than capital, and other countries. *A*'s and *B*'s export goods taken together are only a part of those entering into international trade. Is it likely that the borrowed capital in *B* will lead to increased output of the same sort of goods which *A* is used to exporting? Are the expanding industries in *B* from this point of view *competing* or *coöperative*?

If the two countries are on the same level of industrial development the first alternative does not seem improbable. Important capital movements have, however, never taken place between such countries, except in the special case of Germany after the War.

On the other hand, if *A* and *B* are at a quite different stage of industrial development — *B* being, for example, an agricultural country — the chances are that *B* will increase its output of goods *other* than those which *A* is exporting. Such cases have not, however, been important in the last hundred years, since undeveloped countries almost always import technical labour, in many cases also ordinary labour, at the same time as capital. This alternative is dealt with in § 7.

Considerable capital, unaccompanied by other factors, has

[1] Countries which import capital and not labour can be assumed to have passed the point of diminishing return for capital.

usually moved from fully developed manufacturing countries to countries in the early stages of an industrial career. The question then to be answered is: will the stimulus afforded by foreign capital in the latter countries lead to an expansion of industries competing with export industries in the creditor states?

If natural resources, transfer relations, and the actual or potential quality of technical labour are similar in these states, the chances are that such will be the outcome. Even if the natural resources differ considerably, similarity in the other two respects may lead to the same result in countries at more advanced stages of manufacturing. There can be little doubt that foreign capital in Italy has stimulated the expansion of manufacturing industries in general. Thus, the penetration of the Italian textile industry into many foreign markets formerly held by the British industry has been accelerated by British loans to Italy. Such developments tend to make the terms of exchange in international trade less favourable to Great Britain.

On the other hand, investments in countries with different natural resources and transfer relations from those of the capital-exporting country are likely to lead to an expansion of industries producing goods which the latter is wont to import. French and British lending to Sweden, Norway, and Finland made possible the building of numerous important railways in the last third of the nineteenth century — a condition of the rapid economic growth in these countries without which the export of wood, pulp, and paper would certainly have developed much less rapidly. These import goods have thus been cheapened for Western Europe. The foreign borrowing of Denmark was to some extent used to reorganise agriculture and transform it to a butter and bacon industry — which must have reduced the supply prices of these goods in Great Britain.

Sound conclusions in concrete cases are of course difficult to reach, as the number of counteracting circumstances is usually great. It is above all impossible to say what the supply of capital would have been without the capital movement.

Leaving aside the matter of terms of exchange, we now turn to the development of national income in the countries concerned.

It is obvious that the transfer of capital means an increase in the combined national incomes. Capital is moved from places where its marginal productivity is low to places where it is high. The owners of other factors in *B* gain more than the capitalists lose, while the capitalists in *A* gain more than the owners of the other factors lose. In so far as the terms of exchange vary to the advantage of one country, while the capital is transferred, this conclusion must of course be qualified.

To judge the influence of factor movements on the national income in each country one must consider a third element. All countries profit from economic growth anywhere in the world. In the long run prosperous neighbours are likely to be the best customers. Thus the capital exporting countries, which in most cases have intimate trade relations with borrowing nations, will profit in many indirect ways from the prosperity caused or stimulated in the latter by the capital of the former. The manufacturing industries of Great Britain owe their development to some extent to trade with countries where economic expansion has been furthered by the influx of British capital.

It goes without saying that other countries than those immediately concerned with the borrowing will be affected in this and other ways. Countries with the same export industries as the borrowing nations stand to lose, while those which import such goods are likely to gain substantially.

Apart from these effects of changes in the supply of productive factors upon industry and trade, capital movements affect trade directly in several ways. See § 7 below, where capital movements affected by other circumstances than interest differences are also dealt with.

§ 6. *International migrations.* We now turn to the effects of migration between two countries. It is natural to assume that the receiving country has a relatively abundant supply of many natural resources, as well as of capital and technical labour, as this makes for high wages of ordinary labour, skilled or unskilled. While capital when moving alone goes from countries with fully developed manufacturing industries to those with industries in the early stages of growth, labour goes in the opposite direction.

The general effect on factor prices is analogous to that found in the last section: a tendency to lower wages in the receiving country and higher wages in the emigrant country. Similarly, the combined income of the two countries is increased. It is improbable, however, that the emigrant country, like the lending one, will see its national income grow, for the earnings of expatriated labour do not accrue to the mother country. If they did, the case would be entirely parallel to that of capital. The simplest possible statement seems to be that the decline in total income of the emigrant country will be less than the immigrants earn in the new country, while the increase in the total income of the latter will be greater.

As to the possible effects on international trade and the terms of exchange, statements analogous to those of the last section hold true.[1] There is, however, this difference: the transfer of labour without the transfer of capital means that the income accruing to the moved factor is used to buy goods in the receiving country. Immigrants' wages are spent where they live, but interest on borrowed capital is usually spent in the lending country. Hence, chiefly goods produced in the former are bought by the wage incomes, while interest incomes are earned in the borrowing but spent in the lending country. This tends to increase the prices of productive factors in the capital exporting country compared to the factors in the borrowing country, i. e. it tends to affect the terms of exchange in a direction favourable to the former, although the opposite tendency due to the transfer of capital may be stronger.[2] No such effects appear as a result of migrations.

So far we have analysed the influence of an increase in the labour supply in one country and its reduction in another, without considering that the immigrants are in some respects different from the native citizens of the immigrant country; this affects trade directly in several ways. Emigrants often maintain for long periods a preference for their former habits and for some of

[1] The travelling of tradesmen is often a condition of international trade coming into existence. Emigration of tradesmen renders a similar service. In this sense, there is a special connection between international movements of men and goods.

[2] Cf. the analysis of the mechanism of international capital movements in Part V.

the goods of their mother country. The demand for the latter is thus greater than if population in the new country had grown in another way. It also occurs that the immigrants affect the tastes and habits of their new country, and thereby, turn its demand in a channel favourable to the old country. Only 15,000,000 to 20,000,000 people of the governing nations live in the colonies and dominions, but they have coloured the habits of life, ideals, and tastes there and have thus potently influenced consumption.

Emigrated engineers and tradesmen in particular often create a demand for goods from firms in their mother country. Personal connections mean much in international trade, as elsewhere. Dutch merchants were already scattered widely in foreign countries in the seventeenth century, a circumstance which is thought to have deeply influenced the foreign trade of Holland. Without being formal representatives of exporting industries in their mother country, British trading and engineering firms all over the world have greatly contributed to the growth of British exports.[1] The growing German population before the War both in German and British colonies seems to have had some influence upon German trade.

These observations lead to another conclusion of some importance. There are many different grades of labour, and the effects of migrations differ accordingly. When technical and highly skilled workers immigrate, the economic life in the new country may be revolutionised. The classic example of this is the emigration of the French Huguenots in the seventeenth century to Germany and Holland, with its resultant stimulus to the textile and other industries in these countries. It is obvious that in such cases the emigrant country may lose heavily from increased competition in its export trades. In modern times, technical labour rarely moves because of religious or political discontent. An outstanding exception is Russia. The growth of the rubber shoe industry in Germany has been helped by expatriated Russian technicians, while the Russian export industry, which formerly

[1] "I say that for provisions, clothes and household goods, seamen and all others employed about materials for building, fitting, and victualling of ships, every Englishman in Barbados or Jamaica creates employment for four men at home." — Sir Josiah Child, 1692.

dominated the export market, has declined. The migrations of engineers [1] between nations in response to higher wage offerings are no doubt less in volume and effect than might be expected. Experience proves it surprisingly difficult to transplant a "technical *milieu*." Many efforts to create competing industries by moving a few technical leaders from old industries have unaccountably failed.

Even when such attempts are successful, it is by no means certain that international trade will thereby be ultimately reduced. All countries profit from economic progress [2] elsewhere, and the spread of technical knowledge is a powerful stimulus in that direction. The best clients of leading manufacturing countries are the other manufacturing countries. As technique is improved and the standard of living raised in a country, its need of specialised goods and high qualities — both in technical appliances and consumers' goods — tends to increase, and the scope of domestic and international trade is accordingly enlarged.

Similar in effect to a transfer of technical labour is the distribution of technical knowledge through books, periodicals, and travel. In principle, however, this is a change in domestic factor supply, and is therefore to be dealt with in connection with other changes of the sort.

As to ordinary skilled and unskilled workers, it goes without saying that the effects in the countries concerned differ if emigrants belong to the one or the other category. The majority have always been unskilled,[3] and usually less educated and well-nourished than the home-born unskilled labourers in the immigration countries. Immigrants used to form a lower social stratum, e. g. in the United States and France, in spite of the fact that the real pauper is as a rule unable to emigrate for want of money, and has difficulties in getting into the new country if he succeeds in emigrating.

The fact that immigrants are largely unskilled, little educated,

[1] Movements of technical labour *and* capital are discussed in the next section.

[2] Such evolutionary or dynamic viewpoints were left out of account in § 4.

[3] Before the War 10 percent of the immigrants into the United States belonged to the professional and skilled artisan class. Among the emigrants from western and northern Europe skilled labour is put at no less than 40 percent.

unfamiliar with conditions in the new country, and used to living on a low standard, makes them undertake much of the disagreeable and lowest paid work. This has been the case with South-Europeans in the United States. They thus compete much less with native labour than one would suppose; the influence on the wages of the latter is comparatively slight. Foreign and native-born labour are to a large extent and for a considerable time not competitive but coöperative factors. This is certainly the case with Chinese immigration into Australia and the western part of the United States, where their work is in practice confined to a small number of trades like laundering. It is also probable that the immigration of Italian farm workers to Australia, for instance, (they are admitted only if they go to work on the farms) for many years tends to raise rather than depress real wages for factory labour. Trade union policy makes their securing manufacturing jobs very difficult, even when they have become naturalised citizens. In the long run, however, a number of immigrants, and certainly their children, acquire qualities which enable them to compete effectively for the better paid jobs of the native born.

Countries which receive an incessant flow of immigrants obtain a supply of low priced labour which they would not otherwise have. Industries requiring such labour in large quantities are thus enabled to continue, and to produce goods which would otherwise be imported. It is not necessary to repeat here the reasoning and conclusions in Part II concerning such effects of different labour factors—whether or not the result of immigration—on the character of industry and trade. A good example is to be found in the American beet growing industry.

§ 7. *Movements of capital and labour.* The cases where labour or capital alone moves to a country have been much less important than those where the transfer of capital is accompanied by a flow of some sort of labour. We shall begin with the study of a joint movement of capital and technical labour.

What class of country is likely to export and import these productive factors? Capital can only be exported from countries with large savings, and the latter have in most cases resulted from the

use of machine technique in production. Great Britain, for example, owed its position as the capitalist of the world in the middle of the last century to its early adoption of machine technique. It is only natural, therefore, that the leading manufacturing nations, which are for the most part the leading exporters of capital as well, should send out some of their technical labour with investments. Investments of the active sort, when new firms are created, call particularly for emigration of experienced organisers and technicians.

These labour movements evidently are due less to higher pay abroad than to the fact that active foreign investments make them necessary. Such investments have in most cases gone to countries with higher interest rates than the capital-exporting country; but above all they are due to the chances of reaping high profits, and have, therefore, been in some cases independent of international interest differences.

Concerning the effects of capital movements accompanied by a transfer of technical labour Professor Edie has made this significant statement:

> What the export of capital has fundamentally meant has been the export of the industrial revolution from the industrialised countries to the "undeveloped countries." . . . The automatic machines dispensed in large part with the necessity for skilled labour, and thus made possible the operation of machinery by the untrained labour masses of such countries as India, China and Japan.[1]

The effects on export industries in the lending country of such a tendency to industrialisation abroad are uncertain. Much depends upon whether capital is invested in industries competing directly with export industries in the lending country. In the present case, where technical labour moves also, the great probability is that industries which compete in this way will grow up in the capital importing country. For the technical labour in many cases comes from fields of industry in which the prosperous country excels, and these industries are often the basis of production for export. Yet it is by no means certain that such will be the case.

Assuming that the borrowing country has relatively low wages

[1] Edie, *Economics: Principles and Problems*, p. 660.

for ordinary labour and low rents for certain natural resources, capital and technical labour from the latter will be used to establish industries requiring such resources. Part of them are likely to be of the same sort as those also well supplied in the old country. Examples are numerous. American technicians, for instance, have used American capital to develop the oil industry in Mexico and South America. Some resources are, however, different from those of the old country, and the new industries will not compete with those of the latter but will rather supply them with raw materials or food for workers at relatively low prices. Most tropical products are grown on plantations under European leadership with the aid of European capital. Cotton growing in Egypt on land of special quality has directly, and still more indirectly, been stimulated by European technique and capital. The influence of the building of the Assuan Dam, for instance, has been great. The cases of tea, rice, and cotton growing in India are similar.

Improvements in communications due to imported technique and capital have in particular often greatly increased the output of goods which the lending countries could only with great difficulty produce for themselves. Iron mines in the interior of Chile and in North Africa, for instance, have come within reach, and the supply of high grade ores has thereby been increased.

It is not necessary to dwell further upon the obvious fact that a growth of industries coöperative rather than competitive, from the point of view of the leading industries in the capital-exporting country, tends to turn the terms of exchange in the international trade of the latter in a favourable direction.

For industries in the later stages of production which are largely independent of natural resources, the character of transfer relations plays a rôle similar to that of such resources in the cases above. If these relations and other conditions of production are good in the borrowing country from the point of view of the same industries as those which are strong in the lending country, then competition will grow and the terms of exchange will move in a direction disadvantageous to the latter. The growth of cotton spinning and weaving in India has narrowed the market there for British goods of the coarser grades.

In another type of case the borrowing country has only cheap labour, but a slight amount of cheap natural resources. Here again the character of the transfer relations is vital. They are or can be rendered satisfactory from the point of view of some industries. This fact, together with the cheap supply of labour, accounts for the influx of capital and technical labour. Will the industries be chiefly coöperative or chiefly competitive? In the case of countries on the same level of technical development and similar interest rates, capital, accompanied by technical labour, moves to make profit even if wages are higher instead of lower. Advantages in transfer relations — often due to import duties — can be sufficient. Here the establishment of competing firms is almost certain to follow. It is conceivable, however, that when very strong firms establish branch factories abroad, the influence of such firms on the leading markets is so much increased that exports from the parent factory are not reduced but increased. This has been the experience of the Swedish Ball Bearing Company, and many others.

Let us turn now to the cases where the borrowing nation has an abundant supply of natural resources but not of ordinary labour. Not only technical labour and capital but also ordinary labour flows in. Are the natural resources of a sort relatively abundant or scarce in the lending countries?

British capital and European labour have made possible an enormous expansion of wheat growing and many other sorts of food production in the transatlantic countries. Somebody has said that "the Italian farmer with American machinery and British capital grows wheat in the Argentine." Europe has had its food cheapened and has found new markets for its manufactured goods. The scarcity of farm land in the old world has been reduced, with land in the new world available. The same is of course true of other natural resources, such as mines.

As transoceanic natural resources cannot come to Europe, labour and capital have moved from that part of the world to the natural resources. This movement, and the trading of food for manufactures, have replaced the transfer of natural resources.

In the nineteenth century this reasoning applied to the United

States as well as to the other transoceanic countries. Later on, the former country, aided by excellent natural resources and transfer relations, has developed industries which compete with the European ones in most of the export markets of the world. It should not be forgotten that in many cases this development has been possible only because technical methods as well as ordinary labour and capital have come from Europe. The dried fruit industry, for example, grew up in recent decades in southern California when a number of South-Europeans had settled there.

In general, it may be said that when the supply of labour and capital in new countries has reached a definite level and the relative scarcity of land has begun to rise, manufacturing industries will expand. This is in harmony with the theory developed in Parts I and II. An excellent illustration is the case of Canada, where the quantity of labour, and still more of capital, was greatly increased in the first decade of this century. Statistics show that certain products requiring much land were at the beginning of the period of borrowing exported to a considerable extent, while importation was slight. Towards the end of the period, however, imports and exports of these products almost balanced. The following figures are in millions of dollars:

	Imports	Exports
1900–1903	2,6	35,0
1911–1913	9,8	12,3

There was a general shift in imports from fully manufactured products to machinery, raw materials, and partly manufactured goods; in other words, importation was concentrated upon products requiring highly technical labour and upon certain natural resources, as contrasted with products requiring capital and labour of ordinary grades. No doubt the increased supply of capital and labour was here the fundamental cause, although tariff policy worked in the same direction.

We must now consider another aspect of the influence of international factor movements upon trade. In the section on migration it was pointed out that immigration countries are often good markets for exports from emigration countries. Trade between

capital-importing and capital-exporting countries is affected in a similar way, particularly when technical labour moves as well as capital. This is perhaps most obvious when capital and labour are used to build up a sales organisation for large exporting firms, and when orders from abroad are received in competition with foreign firms chiefly because long credit is given.

Another side of the matter is the fact that "trade follows the investment." This is not only true when it is expressly stipulated that a majority of loans, e. g. for railway building, shall be used to buy goods in the lending country. The American Federal Trade Commission, after prolonged and detailed studies, expresses its opinion in the following words:

> In general, the demand for foreign goods follows the nationality of the investment. It is the almost invariable rule that where such public utilities as railroads, light and power plants, street railways and the like, are financed by foreign capital, the equipment and supplies must come from the country financing the investment. And in industries not of the public utility type, this rule largely holds true.[1]

The combined effects of British emigration to the dominions and of investments there are seen in the extent of dominion trade with the mother country.[2] In 1927 New Zealand, as already observed, purchased British goods up to £14 per head, while a country such as France purchased only 10s. per head.

§ 8. *Effects on "outside" countries.* From a general world economic point of view, it is fairly obvious that the redistribution of productive factors through the world, whereby a different utilisation of various natural resources is made possible, means an increase in the volume of production.[3] Besides, the spread of machine technique, which has gone hand in hand with the movements of capital and labour, has been a dynamic force contributing markedly to the hastening of economic progress. From this all countries stand to gain. As to the share in this benefit which accrues to capital-exporting countries, which

[1] Federal Trade Commission, *Coöperation in our Export Trade*, Vol. I, p. 173.

[2] Of course, other circumstances also tend to turn demand towards British goods.

[3] As to the arbitrary element in such calculations see the discussion of national income in Chapter XVI, § 3 and elsewhere.

often supply technical labour also, the character of the competition from new industries has been found of importance. Exporting industries in other manufacturing countries will of course also feel this competition, just as they will receive the benefit of widening markets for manufactured products. On the other hand, old food-exporting countries such as Roumania, Hungary, and Russia see the prices of their exports reduced, owing to the increased supply of transoceanic food.

To get a bird's-eye view of these and similar effects one may ask: How is the world scarcity of productive factors affected? If European manufacturing workers become farmers in Australia and the Argentine, the scarcity of manufacturing labour relative to that of agricultural labour will be intensified both there, in Europe and on other continents: the world will not consume relatively less manufactures and more food, wool, etc. A shift in relative prices will retard food production in Europe and encourage that of manufactured goods, partly for export to the transoceanic countries. The total production of both sorts of commodities will rise.

If the farming population in Australia is drawn to factories erected by European capital and technical labour, the tendency as to relative wages outside of Australia, at least, is the reverse. In spite of the fact that world production will grow, the standard of living of the factory workers in the world at large will fall; food will be made more expensive.

In the long run, farming and manufacturing labour cannot be regarded as non-competing groups, of which the incomes may vary in opposite directions. Changes in the position of industrial workers in Europe will tend to cause corresponding changes in the standard of European farmers; but this result may come about quite slowly, as experience during the last decades has shown.

The British export of capital and emigration has been of a sort to raise the standard of living both in Great Britain and in other manufacturing countries. It has gone to regions with abundant natural resources, which have been made available for raw material and food production by means of railways; 60 percent of the

British pre-war foreign investments were used in this way. Rents in Europe have been reduced and the goods the workers buy cheapened. Great Britain has of course profited more than other countries from this development; it is more dependent than they upon export of manufactures and import of food and raw materials. Furthermore, it has especially intimate trade connections with countries which have received its capital and emigrants.

The effects of French investments abroad have for obvious reasons been different and less far-reaching — unless the World War has some relation to French loans to Russia. It is apparent that international factor movements have affected economic development in many parts of the world so profoundly that a schematic analysis tells only a small part of the story. The long run effects cannot be ascertained.

Even in cases where it seems most certain that coöperative and not competitive industries will be developed by means of exported capital and labour, the long run effects may be the reverse. This has already happened in the case of the United States, — from a European point of view, — and history may repeat itself. Under the stimulus of imported technique, capital, and labour, new countries are able to pass quickly through the various stages of industrial progress. At first they concentrate on certain raw materials and crude food stuffs. After a time the simpler qualities of textile goods are produced. Other manufacturing industries follow, and lastly, a machine-producing industry comes into existence. A rapid development of this sort is, of course, only possible in countries where the whole economic and social organisation can adapt itself accordingly. The character of the people in a country, its traditions and institutions, are decisive factors in the effect of importation of labour and capital.

§ 9. *The connection between different types of international factor movements.* It is then obvious that capital and labour movements are intimately related. If one factor moves, the economic situation, particular as to factor prices, may be so affected that another factor moves also. Migration to new countries has increased the demand for capital there, while capital investments — e. g. in the form of railways opening up vast new districts — have

stimulated immigration. An increased supply of either capital or labour must enhance the relative scarcity of the other, and encourage its influx. It is not surprising, therefore, that almost everywhere under such conditions [1] capital and labour movements have gone hand in hand.

Immigration into Canada before the War would have been unthinkable without enormous borrowings abroad. In other words, British investments in Canada led to a greater emigration to that country.

It is often impossible to say that capital movement is the cause of labour movement more than the reverse. In Canada capital investments in the railways may be regarded as a cause rather than an effect; in South America, on the other hand, the inflow of labour from southern Europe has led to increased investments of British and American capital.

The direct relation between labour and capital movements which lies in the fact that immigrants bring some capital with them needs no special discussion. In 1892 the amount per immigrant to New York was $20. Nowadays it is probably much larger. On the other hand, immigrants' remittances constitute an export of capital of surprising dimensions. In 1923 they were estimated at $350,000,000 in the American balance of payments.

In all such cases of interrelated factor movements it is obvious that a check on one tends to check the others. If immigration into Australia is restricted, the inflow of capital will be reduced. A falling off in European investments in South America would retard economic progress and diminish immigration. Similarly, restrictions on the English export of capital to the dominions would narrow the field for English emigrants in the dominions.

Obstacles to capital or labour movement need not of course prevent them, but may only divert them in other directions. Immigration restrictions in the United States have increased the flow of European labour to South America, a fact which has probably stimulated investments there both of European and American capital.

[1] The relative supply of nature on the one hand, and capital and labour on the other, being very different in the countries concerned.

That capital flows out when labour is not allowed to flow in, is particularly interesting. Such phenomena occur when capital and labour move in opposite directions [1] and when such movements to a large extent complement each other. Consider two countries only, of which A has a rich supply of capital and B of labour. Either A may lend to B, or B may send labour to A, or each may send a little to the other. The situation will of course be very different if many of the mobile factors are gathered in A from what it is if they move to B. But in any case wages and interest rates may be so nearly equalised that no further movements occur.

The character of the supply of natural resources and technical labour and the social conditions of production will affect the outcome, as will, of course, the transfer relations [2] of commodities. All these circumstances influence factor prices, and through them the differences in interest and wage rates which, given a certain degree of mobility, govern the extent of the labour movement in one way and the capital movement in the other. If these circumstances alter, the margin between interest rates may rise and that between wage rates fall so much that capital flows to B instead of labour to A, or the margin may vary in the opposite way and more labour and capital be concentrated in A.

Furthermore, if the international mobility of any factor changes, the movements may of course also vary. Greater willingness of A's capitalists to invest in B may lead to considerable investments there, and to a reduction in emigration from B to A. On the other hand, restrictions on the export of capital from A may cause an immigration of labour.

As regards the movements of differing labour factors note that, when the inflow of manufacturing labour is in many ways kept back in Australia but the immigration of people willing to do farm work encouraged, the market for protected Australian manufactured goods is extended. The scope for a high-wage trade union policy for factory labour is widened, while the standard of living among farm labourers tends rather to fall. The high price

[1] In these cases the relative supply of capital and labour is very different in the countries concerned and this difference is more important than the differences in natural resources.

[2] Tariff changes constitute an example, which is discussed in the next section.

of factory labour keeps back the expansion of manufacturing industries, and probably reduces the inflow of foreign capital.

It goes without saying that changes in factor supply — and indirectly in transfer relations — following from variations in the obstacles to international factor movements affect international trade. The character of this influence upon trade varies, of course, from case to case; to discover it one must use the theory expounded above concerning the relation between "basic" elements and international trade.

§ 10. *Reactions of international factor movements and trade to changed mobility of commodities.* Obstacles to international trade affect the whole price system, as explained in previous chapters.[1] Factor prices are of course also affected. It is only natural, therefore, that international movements of capital and labour should be influenced. They may be checked or changed, or new movements may be elicited.

In many cases an increase in the obstacles to international trade by reducing it raises the international differences in factor prices; this tends to stimulate factor movements. Commodity and factor movements in such cases are alternative possibilities.

In other cases increased obstacles, by making trade with certain countries more difficult, render them less suitable for economic life. The inflow of labour and capital is then reduced. Lower obstacles (improved communications in certain countries) may make them more suitable for all sorts of industry and increase the inflow of labour and capital. Observe that it is only the scales of *relative* factor prices which are made more nearly equal through increased trade when obstacles are reduced. This does not necessarily mean that the difference between the price of each factor in different countries is reduced; for some factors it may be increased. Higher productivity may tend to raise all incomes in terms of goods much more in one country than in another country. Assume labour in the former to be relatively scarce and wages higher than in the latter. A reduction of the scarcity of labour relative to that of land in the former country does not prevent wages from rising in terms of goods *more* than in the latter

[1] Particularly Chapters XIII and XVI.

country. The increased relative scarcity of labour and the tendency to higher income levels in the latter may not suffice to raise wages there in absolute terms as much as does the strong tendency to higher income levels in the other country, in spite of the counteracting tendency of reduced relative scarcity of labour. The wage difference may thus be increased and a labour flow be called forth.

Such cases are exceptional, albeit of decided importance. They can come about only when economic life as a whole is decisively affected in some countries but not in others by reduction in the obstacles to international trade.

In the following paragraphs, cases of the former type will first be discussed in an attempt to analyse the effects of increased obstacles to international trade. Most important of these results are restrictions on imports.

Import duties in country *A* raise the relative prices of the productive factors used in great quantities for protected goods. These factors are likely to be the ones relatively expensive in *A*, for most of the industries using cheap factors extensively do not need protection;[1] such industries are rather to be found among the export industries.

Factor prices abroad tend to move in the opposite direction. Unless *A* forms a large part of the world or of the countries particularly affected, this influence is likely to be small.

How does this affect factor movements? Naturally, the factors of which the scarcity is enhanced in *A* tend to flow in, while the others tend to flow out. As the national income is in most cases reduced more in *A* than elsewhere, the outflow tendency will be the stronger one. Starting with labour, let us recall that it is interested in real wages. The difference in the standard of living, not in nominal wages, is what induces people to move. Will that difference be changed?

If labour[2] is favoured by protection in *A*, its relative scarcity there will be enhanced. But as production is made less effective

[1] Unless their transfer relations are very unfavourable.

[2] The analysis below should, of course, be in terms of various labour factors to be entirely satisfactory. Limitations of space forbid it.

it is unlikely that its income in terms of commodities will rise. Abroad, the relative scarcity of labour will fall and production will become less effective. For both reasons real wages tend to fall. In most cases this decline will be slight, and real wages will not be considerably raised in *A* relative to their level in other countries. But in exceptional cases this may happen, and if the change is decided enough, outflow of labour from *A* will be retarded or inflow stimulated.

If capital is favoured by protection the rate of interest may rise in *A* while declining abroad. Capital may flow in; possibly the difference in the interest levels is not increased, but only the stream of capital widened. In capital-exporting countries the outflow may be reduced or stopped.

But what of the factors which have their relative scarcity reduced? When labour is favoured, capital and various sorts of land are thus affected. Real interest and rent incomes fall in *A* for a double reason: lower relative scarcity and reduced general level of incomes. Abroad, the tendency to increased scarcity is met by a tendency to lower total income. If the percentage reduction of total incomes is greater in *A* than abroad, the interest level there may be considerably reduced compared with the level elsewhere and capital movements caused or affected in a direction adverse to *A*. Evidently, whether labour moves in or capital out of *A* — or existing movements are affected in a corresponding way — depends upon the special circumstances in each case.

When capital is favoured, the result is the reverse. There will be a tendency toward labour movements from *A* and perhaps capital movements to that country. In general the former tendency will be the stronger, but it is quite possible that the mobility conditions and factor prices will be such that a slight stimulus makes capital flow in, whereas a stronger stimulus will have no influence upon labour.

Evidently, if the supply of productive factors in a country is to be increased by means of a tariff, the latter should be so constructed as to raise the relative scarcity of the mobile factors, and place the burden of reduced scarcity upon the immobile factors, *e. g.* natural resources.

Let us say a few words about various types of tariffs from this point of view. Duties on agricultural goods in manufacturing countries are likely to raise the rent of land and lower the level of real wages, for two reasons: the relative scarcity of labour is reduced, and the prices of goods which play an important part in the workers' budget are raised, compared with other prices. In Switzerland the import duties, it is estimated, raised the cost of food a few years ago by 12 percent.[1] If labour could move freely between European countries, the food duties in certain of them would drive a part of their population to others which carry on a policy of comparatively free trade, e. g. England, Holland, and Scandinavia. As a matter of fact the standard of living in the latter countries is substantially higher than in the others, and in the absence of immigration restrictions the inflow, for instance, of Germans into Scandinavia would no doubt be considerable.

As indicated above,[2] manufacturing duties have on the whole tended to depress rents, yet have not raised the relative scarcity of labour to any considerable extent; but duties levied specially on products from industries which use little capital and much manual labour might do so. In particular, duties which depress rents and favour only a certain kind of labour, e. g. manufacturing labour, may raise its income to a marked degree and attract labour from abroad.

We now turn to some cases of the second type, in which reduced obstacles and increased trade might increase factor price differences and where obstacles to trade thus might reduce them. New countries sometimes possess improved communications, and extended trade would make them suitable for many industries which have not existed there before and would if established tend to create an influx of mobile factors. Tariffs and other obstacles to trade work in the opposite direction.

To this reasoning it may be objected that import duties check only the *inward* movements of goods, and therefore do not make the protected countries less suitable for production as would in-

[1] Reichlin, "Die Zollbelastung der Schweitzerischen Lebenshaltungskosten," *Zeitschrift für Schweitzerische Statistik und Volkswirtschaft* (1925).

[2] Chapter XVI, § 4.

ferior communications. As a matter of fact, such duties indirectly serve also as obstacles to export trade. The analogy to inferior communications, while far from complete, is therefore in most cases close enough to warrant expectation of similar effects. If that be so, the differences in the price of the mobile factors (labour and capital) in Europe and the New World are reduced by the duties. This may be the case in spite of the fact that import duties on manufactured goods in new countries raise the scarcity of labour and capital relative to that of land, while affecting the relative scarcity in old countries in the opposite direction. So far as this tendency goes, it will bring about higher wages in the transoceanic countries and lower wages in Europe. However, the obstacles to trade may substantially reduce the advantages of locating industries in certain parts of the new world. In other words, the income level may be considerably reduced, often more than in the European manufacturing nations. Consequently wages need not rise, but may well fall in the transoceanic countries, much more so than in Europe. The tendency towards immigration from Europe to the former countries is weakened, and a tendency in the opposite direction may be evoked.

The ideas implied above may be expressed in a slightly different way. Factories intended to supply a great number of countries naturally tend to be placed where cost levels are low. Protection tends to raise nominal factor prices, and therefore to repel such factories. The demand for the factors in protected countries is thus reduced and their prices in terms of goods lowered. This is the same as a reduction in the attracting power of such countries or of their natural resources.

The general indication of this analysis is that except in special cases protection in a country does not increase the quantity of productive factors there. But a tariff policy which consistently aimed at increasing the income of the most mobile factor might succeed to some extent. One might call this a policy of "attracting import duties."

If the price of an easily mobile factor is already relatively high, a slight tendency to raise its scarcity may suffice to cause an inflow. An import duty on goods which use much of this factor may

bring about such a result. Other mobile factors will be cheapened, but their prices may have such a relation to prices abroad that an outflow is improbable.

A country with a fairly high rate of interest may raise it further by stimulating the expansion of industries using much capital. Real wages and rents would fall for a double reason, lower relative scarcity and decreased effectiveness of production, but this need not lead to emigration.

The chances of creating an inflow of capital by means of duties are, however, increased by a circumstance of a different sort, namely the tendency of risk-taking capital to flow into investments which give promise of high profit. Such investments may attract foreign capital even if the general interest level is not higher here than abroad.

Import duties are a means of developing chances of profit and making them known and attractive to such foreign capitalists as have great chances of successfully availing themselves thereof. New or higher duties in country *A* threaten to close its markets to foreign manufacturers who have hitherto exported there. Rather than lose this market and the resultant profit, these producers in many cases establish branch factories in *A*, using capital and technical labour of their own for building and operation.

Recent economic history abounds in examples. In 1922 Canada had more than 700 American companies, of which, no doubt, a large part owed their existence to the Canadian tariff; American motor-car factories in Canada are important. The British preferential tariff policy and the wage level in Canada, lower than that in the United States, have also stimulated this development. Swedish ball-bearing factories are to be found in many countries only because of their tariffs. Swiss and British textile plants have been erected in Australia for similar reasons. Other obstacles to international trade than duties, e. g. the "buy-British-goods" movement, may bring about the same result in important free-trade markets like Great Britain's; but there can be no doubt that import duties strengthen the tendency.

It must not be assumed, however, that this inflow of foreign capital and technical labour means a net increase. We must recall

the previous conclusions as to the effects of duties. The outcome is the combined result of all the various tendencies. In the case of Canada, for instance, the utilisation of many natural resources and productive possibilities has been made less remunerative owing to increased nominal wages and other cost items. The progress of the Canadian West has almost certainly been hampered; how much foreign capital and technical labour would have flowed into investments made unattractive by the tariff it is impossible to say — it may be either more or less than what has been attracted by the tariff. Real wages of ordinary labour have no doubt been reduced and possibly immigration has been retarded thereby. If that is so, the demand for capital has been reduced and the influx of it from abroad probably lessened. This tendency is to be weighed against the others. The possibility is, however, not to be denied *a priori* that the supply of foreign capital and technique in Canada has been increased by protection. This may have happened in other countries also. It seems most unlikely, however, that any of the European nations, where conditions are so different from those in Canada, have brought about such a result by their tariff policy.

It goes without saying that export duties and other export restrictions may serve a purpose similar to that of import duties. As a matter of fact, they have, much more than import duties, been imposed with this aim in mind. Legislation in some Canadian provinces in the last years of the nineteenth century prohibited the export of pulp wood from Crown lands. Some people think that this had an influence in bringing pulp and paper mills to Canada. Export duties on hydro-electric power have been imposed to make the localisation of factories on the Canadian side of the border more favourable than on the American side.

Another case of export restrictions is offered by the Brazilian state Minas Geraes, which prohibited the export of high-grade iron ore. In spite of the fact that there is no coal and that the mines are situated two hundred miles from the shore, Americans have invested some $200,000,000 in the iron industry in this state, which uses technique and coal from the United States and produces annually 150,000 tons of rolled iron. Part of this iron is

exported to pay for the import of 600,000 tons of American coal. Freight rates are fairly cheap, as carriers sail southward with coal and northward with ore. It seems probable that this development has been decisively influenced by the export prohibition.

In the previous reasoning as to the practical possibilities of "attracting" duties, nothing has been said about the "educating" effect of protection. Successful education of new industries — through the creation of a domestic supply of certain grades of labour — may raise the general level of incomes and the incomes of certain factors in the protected country relative to their rewards in other countries. This may lead to an inflow of capital or labour or both. In Canada both the natural resources and the transfer relations [1] are good from the point of view of many industries, and the chances of successful education have therefore been greater than in most other countries.

In this connection it should be pointed out that educating duties may be successful even if the methods of production are not improved. New and scantily populated countries suffer so from long distances to supplies and markets that many industries are economically impossible to maintain. If, however, a sufficient quantity of people and capital could be gathered there, — a certain combination of productive enterprises established, — economic life might be effective and real wages high. These industries are sources of supplies and markets for one another. A development of this kind, temporarily uneconomical, might be brought about by speculative railway building. Another way of stimulating it would be to further some industries by means of protection. One or two isolated industries cannot be made profitable without protection. The latter may cause a combination of them, able to stand on its own legs once it has been firmly established. Such chances are increased if the tariff raises interest rates and real wages at the expense of rents, and thereby causes an inflow of capital and labour.

So far we have assumed the effects of import duties in one country, on conditions and prices abroad, to be slight. In exceptional

[1] There is plenty of water power, forests, and iron ore. Cheap coal may be obtained from Pennsylvania and Nova Scotia.

cases the effects may be very considerable in countries having intimate trade relations with the one imposing the tariff. From 1876 sugar has been admitted free of duty into the United States from the Hawaiian Islands. Production has expanded from 11,000 tons to about 800,000 tons (in 1925). Immigration increased rapidly, both of unskilled labour and white skilled labour. Much capital has also been imported and invested in irrigation arrangements. The development has been similar in Cuba, which country exports chiefly sugar to the United States. This export increased greatly since the creation of the partly reciprocal tariff with the United States, which permits the import of Cuban sugar at a much lower duty than that on sugar from other countries. There can be little doubt that the expansion in the Cuban sugar industry is partly due to this preferential position; it has become possible through a considerable inflow of American capital and technical labour, which is thus partly the result of the tariff. Immigration of ordinary labour also seems to have been stimulated. The number of immigrants was 38,000 in the years 1909–13, and 84,000 in the years 1920–24. A substantial increase in the American duty on Cuban sugar [1] would give economic life in Cuba a setback, and would reduce the immigration of capital and labour. This is a case of the second type, where reduced mobility of commodities tends to reduce the movements of capital and labour.

A similar case is to be found in the position of Ireland in the middle of the last century. The reciprocal tariff with Great Britain, with its high protection of food, stimulated the expansion of agriculture in Ireland and led to an enormous increase of population in the first half of the century. When the Corn Law was repealed in 1846 food prices fell, and the scarcity of land and agricultural labour was thereby reduced. For Ireland this was disastrous. The reduction in incomes fell chiefly upon the small tenant-farmers, who had to pay their rents to the landlords according to old contracts. The inevitable result was poverty and misery, further increased when the potato crop failed. Thus the sudden

[1] Such an increase has been decided upon by the House of Representatives in 1929, but not accepted by the Senate.

surge of emigration, which in six years reduced the Irish population by 20 percent, was partly the result of the British free-trade policy.

§ 11. *Labour movements change the quality of labour.*[1] A not unimportant aspect of the effects of international labour movements is the fact that the status of the immigrant often turns out after a time to be different from that of the emigrant, even though the same individual is concerned. The immigrant's efforts to adapt himself to new conditions exercise an educating influence. Besides, the energetic spirit and dash, especially a characteristic of the United States, seize him. For these and other reasons the immigrant after a year or two often proves to be a more efficient worker than he was at home.

This is one reason why international labour movements increase the volume of world production, and why they fail to bring wage levels in immigrant and emigrant countries closer together. They also tend to keep international trade at a higher level of volume than it would be if the character of labour did not change after migration.

From a long time point of view it is still more evident that international migrations in many cases lead to changes in the grades of labour. Man is affected by his environment, particularly by climate, which to some extent makes him what he is. This is true not only of individuals who emigrate to countries with a climate to which they are not at all adapted — as, for instance, when white men settle in the tropics. It is true also of the various races and their attitude toward labour. Comparing the north and south of Europe, it is hard to believe that the climate in Greece and Spain does not contribute to the poor man's pleasure in doing nothing, which a poor man in the cold north would not share in the slightest. Such things may have much to do with the Nordic peoples' greater willingness to face hard work; in short, climatic conditions may affect the efficiency of labour considerably.

[1] The remainder of this chapter deals with some sides of the effects of international factor movements on factor supply and prices without pursuing the analysis to the reactions of trade thereto. The reader can easily do that for himself. Besides, the effects of such movements on economic conditions in general deserve attention for their own sake in a treatise on trade as the movements may be the consequence of trade variations as explained in § 10.

Another fact which makes labour change its quality when it moves is the influence of the higher standard of living in the immigrant countries. A high standard reacts favourably upon the intensity with which a man is able to work. Most nations in Europe are still so poor that a rise in their standard of living would mean an important increase in their productive capacity. Modern research indicates that the influence of food and housing accommodations on health and strength is still greater than has been thought. A characteristic example which permits no uncertainty as to its implications is the substantial decrease in efficiency of manual labourers in Germany in 1923, when inflation and the consequent low real wage forced them to subsist on the minimum necessary to existence; it was followed by a significant improvement when a rise in real wages had taken place. Certainly poorly paid Europeans who emigrate to high real wage countries cannot fail to increase their efficiency.

The individuals who stay at home are also affected by migration. So far as their standard of living is raised, the quality of their labour may also improve. The possible reduction in the standard, compared with what it would be without migration, in the receiving countries will, on the other hand, not affect efficiency so much, since the workers there are in most cases on a standard of living so high that minor changes do not alter their usefulness.

§ 12. *Reactions of domestic factor supply.* Not only the quality but also the quantity of domestic factors is affected by international movements of capital and labour. Let us look first at labour.

In the emigrant countries the way is made clear for an increase in births. Besides, the death rate may fall if the standard of living is raised. On the other hand, it is quite possible that a higher standard of living reduces the birth rate; besides, emigrants as a rule are of reproductive ages, so emigration tends to reduce the birth rate. Such effects were apparent in Ireland in the last half of the nineteenth century, as already mentioned, where the excess of births over deaths disappeared for a long peroid.

Emigration of technical labour leads in many cases to education and training of a greater number, and reduction of the supply is thus avoided.

In immigrant countries the inflow of technical labour — as a rule accompanied by capital — hastens industrial development and is therefore likely to increase rather than to decrease the domestic education and training of such labour. How far the domestic increase in population through excess of births over deaths is affected by immigration is, of course, impossible to say. Some people in the United States seem to think that population in that country has not been increased by immigration, the idea being that the domestic increase has fallen off by the full number of the immigrants. This opinion can hardly be tenable. In 1920 one third of the population were descendants of people living in the United States a hundred years earlier, one third had American-born parents but were descendants of people immigrating after 1820, the rest were foreign born or had one or two foreign-born parents. These facts support the impression that the population would now be much smaller but for the inflow from other countries. But it is not improbable that if immigration had been stopped, say at the middle of the last century, the increase of births over deaths would have been greater than it has proved to be.

Similar considerations apply to the influence of international capital movements upon savings. The British export of capital has tended to keep up the rate of interest. In view of the fact that a large part of the savings come from interest incomes, it seems almost certain that savings have been increased thereby. On the other hand, the reduction in rents of farm land may have reduced the savings of landlords. However, the development of manufacturing industries partly due to the export of capital, which opened up markets in transoceanic countries, has raised urban rents, and savings from them. All in all, the supply of capital must have been increased.

If the exported capital is of the more active type, the increased saving of passive capital may fail to offer an adequate substitute. One might describe this also by saying that the supply of "initiative" is reduced. This may have been the case in France before the War.

In borrowing countries the rate of interest is moved downwards,

a fact which probably tends to reduce savings. On the other hand, the economic development may be so much stimulated that the ability to save is increased.

The outcome is evidently uncertain, as the strength of counteracting tendencies is unknown even when only the most direct effects are considered. When the indirect consequences, which may in the long run be decisive, are taken into account, it becomes still more hopeless to attempt a description of how factor supply reacts. Emigration and capital export from Great Britain have played a vital part in the economic development of countries which are now supplying Great Britain and other countries with food and are buying its manufactures. Without this, the growth of British industry, indeed the growth of its population to its present figure, would have been impossible.

It is only when speaking of fairly small movements of labour and capital and of effects during a comparatively brief period that one can say anything with certainty about the reactions of the domestic factor supply and the effects thereof upon international trade.

§ 13. *Some special aspects.* In speaking here of the effects of international factor movements, e. g. on factor prices, we have been careful to describe them as *tendencies* to price changes in one direction or another. It goes without saying that other tendencies may operate, and the development be correspondingly different. International migration, for instance, from A to B may fail to reduce the wage difference if the tendency of wages to rise for domestic reasons is stronger in B than in A. Although such comparisons of standards of living are, for the reasons mentioned above, unsatisfactory, there is some truth in the statement that the difference between the American and British level of real wages is greater now than fifty years ago. Yet there can be no doubt that emigration from Great Britain has raised wages there, while immigration into the United States has tended to reduce American wages.[1]

[1] In the first half of the last century external economies of all sorts may have counted for so much that immigration raised the wage level. But it does not seem likely that this has continued up to and since the War.

Another qualification to the reasoning on the influence on wages and interest rates is that the immediate effects within a certain limited field may be much more considerable than later on, when spread over a wider area. Incessant immigration has kept the wages of unskilled manufacturing labour in the eastern cities of the United States on a relatively low level for long periods. Similarly, an influx of capital may substantially increase the amount of fluid capital, particularly that available for definite purposes. For the time being the rate of interest charged for such capital may drop considerably. The influence of such phenomena on industry and international trade is, however, in most cases fairly slight. Among important examples are the dependence of the American iron and steel industry and beet growing industry — both requiring much unskilled labour — upon newly arrived immigrants, who during their first years here work for lower wages than they will later when able to compete effectively for better-paid jobs.

To a large extent the analysis above has a static character: various situations at different dates after a change has occurred are compared. Such an investigation can only serve as an introduction to a more dynamic study of the process of change, the order of events, the speed of the different reactions. But a study of this sort requires consideration of the factual circumstances in concrete cases and is, therefore, monographic rather than general.

PART V

THE MECHANISM OF INTERNATIONAL TRADE VARIATIONS AND CAPITAL MOVEMENTS

CHAPTER XVIII

EQUILIBRIUM IN INTERNATIONAL TRADE

§ 1. *The governing elements.* The price system under simple assumptions has been illustrated above by means of a group of equations. Later, certain aspects of the character of the price relations have been specially dwelt upon. In this price system the foreign exchange rates are prices like all others. To each position of other prices corresponds — in a state of equilibrium — a definite position of these rates, i.e. of the prices of each currency in terms of other currencies.

It has been stressed several times above that any change in the basic elements of pricing may cause variation in any price; consequently the foreign exchange rates may vary because of such changes. There seems no need of a special foreign exchange theory to explain how these rates are governed. An investigation into the changes of the price system, when the basic circumstances vary, will throw light upon this as upon other price reactions. In other words, the foreign exchange rates are determined by the conditions of demand, supply, and transfer relations of goods and places (it was found convenient to group together the basic elements under these three headings), just as other prices are. The foreign exchange theory is as much a part of the general price theory as, for example, the theory of wages. It means simply that in an analysis of variations in the whole price system attention is concentrated on demand and supply in the foreign exchange market.

One of the principles underlying this price system is that during a period of time there must always be a balance of buying power, due to income or to credit transactions, and expenditure for each individual and for arbitrary groups of individuals. Hence, it would seem that in the absence of lending or borrowing for any region or country imports of goods and services should exactly balance exports.

Individuals may acquire buying power in terms of money in two other ways than by earning or borrowing it. In the course of the process of production a part of the capital, which has been invested, is made "free," i. e. liquid. This is a normal and important source of buying power. (The term "invested" is here used in a wide sense. Every sale of a commodity means that the monetary capital, invested in that commodity, is made liquid.) Secondly, one may create or destroy means of payments accepted as such by other individuals, and may thus create new buying power or extinguish that already existing. If the former happens, prices tend to rise, while in the latter case they tend to fall.[1] In the absence of any assumption as to monetary conditions, the price system as outlined above evidently determines only relative prices of commodities, services, and productive factors. To each position of the sum total of buying power in terms of money corresponds, *ceteris paribus*, a definite position of all prices.

Let us assume that the sum total of all incomes — the amounts paid for all the factors of production, including profits, during a period of time — is kept constant, and that no new buying power is created by the banks, or existing buying power extinguished. So long as the quantity of all productive factors does not change, it is in a way natural that such a monetary policy should be pursued. If prices vary under these conditions it can be said to be due to changes in the basic elements, — technique, demand, etc., — and not to monetary policy.[2] If, however, the quantity of labour and capital changes, a corresponding change in the volume of income seems to be called for, if one is to say that the price development is unaffected by variations in monetary policy. The aggregate of money incomes in a period of time is not to be kept constant. If the quantity of factors has increased, this aggregate should be increased by as much as the income of the new factors, and vice versa when the factor supply

[1] Unless the habits of payment vary and more or less means of payment are needed for that reason.

[2] It would carry me too far to expound the monetary theory underlying such and other statements. In brief, it is a *neo-Wicksell* theory influenced by Lindahl (*Penningpolitikens medel*, Stockholm, 1930) and Keynes.

has been reduced.[1] So long as such a policy is pursued, all price variations are due to changes in the basic elements, grouped together under the three headings above. So far as the monetary policy deviates from the principle just touched upon, corresponding price changes may be regarded as due to the monetary policy.[2]

Now consider the fact that individuals may acquire buying power by borrowing, and reduce it by lending. A borrowing individual or group of individuals may buy for more than their incomes and the flow of liquid capital, while they buy for less if they are lending; hence, for a country, international capital transactions disturb the balance between imports and exports.[3] Between them arises a difference equal to the amount of capital transferred during the period.

The transfer of credit and buying power from one individual to another and from one place to another cannot but affect the price system. Other goods will be demanded, and at different places. The relative scarcity of productive factors and goods will be changed, both because of the new character or direction of demand and because of its localisation; the latter has an influence because of the fact that goods and services cannot without expense be transferred locally; hence to each condition of capital transactions between individuals and places corresponds a definite position of the price system.

To sum up: the price system is changed when any of the basic elements vary, as well as when monetary policy or the transfer of capital is changed.[4] The problem of pricing from the long time

[1] This may also be expressed by saying that the general price level of productive factors should be kept constant, if we are to speak of "neutral" money. The commodity price level, on the other hand, may well vary. Technical progress, for instance, will reduce it. It goes without saying that this definition is conventional; it is chosen because it seems practical.

[2] As this distinction serves only as a convenient grouping, there are, of course, no real differences of causation.

[3] It should be kept in mind that the so-called "invisible" exports are included. Interest payments are due to the rendering abroad of the service of "waiting," and are classed with the payment of commissions for sundry services, freight charges for transportation services, etc.

[4] Keynes (*A Treatise on Money*, chapter xxi) seems to think that there are only two reasons for changes in the system, namely in capital movements and in the relation between the price levels of various countries; the latter amounts to the

point of view is to discover how the new equilibrium of the price system differs from the previous one when one or several of such changes have occurred.

For the sake of clarity we shall here define certain terms to be used below. The meaning of "aggregate of money incomes" [1] in a country has already been partly explained; it is the sum total paid to the owners of the productive factors during a given period, to which is added the sum of profits; patent rights, monopoly rights, etc., are for the purpose of this analysis, wherein they play no special part, dealt with as ownership of physical factors. The term "buying power," and the synonym "purchasing power," when used with reference to a country, means the aggregate of money incomes and the flow of liquid capital during a certain period of time,[2] increased by (1) the income drawn from the ownership in productive factors abroad, (2) new borrowings abroad, and (3) credit inflation; and reduced by (1) the incomes which people living abroad draw from productive factors in this country, (2) new lendings to other countries, and (3) credit deflation. It goes without saying that changes in international capital transactions and in credit policy affect the aggregate of money incomes at some later date, and affect one another mutually. This does not impair the distinction made.

Buying power is partly that of consumers, partly that of traders — both merchants and producers. The latter is used for investment, not consumption, and corresponds to savings plus the other "free" capital, if elements (2) and (3) are non-existent

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same as inflation or deflation, which is not parallel in all countries and thus covers a part of the phenomena which I discuss as changes in monetary policy. Why should one ignore the fact that such changes may affect the quantities of imported or exported goods as quickly as or quicker than their prices, and not these quantities only *via* the prices? And why leave out of account changes in the basic elements or study their effects in terms of price level variations?

[1] Cf. Bastable, "Some Applications of the Theory of International Trade," *Quarterly Journal of Economics* (1889). It is a pity that Bastable did not pursue this line of analysis further. I am convinced — and hope that this volume demonstrates — that the concept "aggregate of money incomes" is more useful than those used in its place: "The height of money wages" (Taussig), "The rate of efficiency earnings" (Keynes), etc.

[2] The part of the flow of incomes which is saved and thus becomes liquid capital must not, of course, be counted twice.

and if consumers who buy durable capital goods, e. g. new houses, are regarded as traders. "The volume of industrial transactions" is the sum of all dealings in commodities and services during a stated period. Unless the volume of credit changes it is, of course, equal to "buying power." A reduction of the aggregate of money incomes leads directly to an equivalent reduction of the total of industrial transactions, but indirectly to a much greater reduction of this total; for the people who sell less are able in their turn to buy for a smaller amount of money. If a new equilibrium has been reached after a certain deflation of incomes the total of industrial transactions will have been reduced in the same proportions. As to changes in buying power and industrial transactions in the case of changes in international capital movements, see the following chapters.

"Volume of credit" is taken to mean the quantity of means of payment at a given date. Changes in credit volume signify and cause indirectly changes in buying power and industrial transactions, and also cause variations in the aggregate of money income.

The volume of credit multiplied by its velocity during a definite period is equal to "total circulation." Each individual has had *command* over a certain sum of money and has used it to buy commodities, services, real estate, bonds and stocks, etc. The total circulation thus embraces all transactions in commodities, titles of wealth, and productive factors in any country.[1] Inflation increases buying power directly as well as indirectly. Foreign loans increase buying power but need not increase the credit volume, for example, if the loans are used to buy foreign goods.

§ 2. *The foreign exchange problem from a long-time and short-time point of view under a gold standard régime.* The price sys-

[1] Keynes distinguishes between "industrial" and "financial" circulation. See his *A Treatise on Money* (chapter xv). My concepts "buying power" and "industrial transactions" refer to the same field of economic activity as his "industrial circulation." The uncertainty, under given circumstances, as to how much of the effects of changes in the volume and use of credit will concern this activity and how much the financial transactions, is a source of many theoretical difficulties. Cf. the end of § 4 below.

tem does not vary without friction. The equilibrium position toward which it tends is never completely realised, and new changes in demand, supply, transfer conditions, monetary policy, and transfer of purchasing power require time before the full effects are worked out. Soon after a change in demand, for instance, the price situation is different from what it would become a year later if no new changes occurred in the meantime, and quite different from what it tends to become in the long run. Changes in basic circumstances and in monetary policy and transfer of capital give rise to a number of counteracting tendencies. To disentangle the net result at various stages is a difficult process, and one impossible to complete.

Some of these tendencies most directly affect foreign exchange rates. This is true above all of the international transfers of buying power which directly involve changes in supply and demand in the foreign exchange market. That market therefore lies at the heart of an analysis of their effects. Now, such international transfers of capital, more or less temporary in nature, generally occur — thanks to the slowness of other reactions — in the case of substantial variations in the basic circumstances. For this reason a study of the process [1] by which the price system varies must give special attention to the foreign exchange market. It is all the more necessary to do so in an analysis particularly concerned with changes in the price system which involve substantial alterations in international trade and therefore directly affect the demand for and supply of foreign exchange.

The outcome of variations in basic circumstances and in capital transfers is necessarily dependent upon the reactions of monetary policy. If such variations are associated with a policy of inflation, not only the ultimate result but the process of development as well will be quite different from what they prove to be when the same variations are accompanied by deflating monetary measures. The organisation of monetary systems and the traditional rules of policy are therefore fundamental in variations of the price system.

[1] A more "dynamic" analysis than the introductory remarks in § 1, which are more "static." Throughout I have tried to maintain as much as possible of "equilibrium analysis" as a basis for or rather introduction to the "process analysis."

The most important case under present-day conditions is that where the monetary systems are built upon a gold standard or gold exchange standard. One result is that foreign exchange rates vary only slightly. The long-time problem thus becomes: How does the price system change under varying conditions when the foreign exchange rate is kept almost fixed? The chapters which follow are chiefly a discussion of this problem.

From a short-time point of view the problem becomes: How is the equilibrium on the foreign exchange market maintained by means of almost constant foreign exchange rates in a world full of variations? We now proceed to a consideration of this question.

§ 3. *The interrelations of various elements in the balance of payments.* The balance of payments embraces all the international transactions that must be settled during a definite period, usually one year.[1] There is a multitude of them, of different kinds, as a glance at the United States' balance of payments on the following page suffices to show. It is worth noting that long-term capital movements are considerable in both directions, which proves that other circumstances than interest differences exercise a considerable influence on these movements. While in 1928 the United States made new investments abroad on a large scale, $2,070,000,000, other countries invested $1,704,000,000 in the United States.

The various entries may be grouped as follows: [2]

A. Balance of trade and services
   1. Visible items (Commodity trade)
   2. Invisible items (Services, speculative gains and losses, interest payments)

B. Balance of capital transactions
   1. Long-term loans, regular business credits, immigrants' remittances, etc.
   2. Short-term transactions (largely by professional dealers)

C. Gold movements

[1] It is to be sharply distinguished from the balance of international indebtedness *at a certain date.*

[2] Instead of grouping the items with regard to their *form* one might choose to consider the *aim* of the transactions.

For reasons analysed below it is best to separate gold movements from other commodity transactions. *B2*, and to some extent *C*, are chiefly balancing elements which change as soon as changes in the other items occur. The way in which this balanc-

UNITED STATES BALANCE OF PAYMENTS, 1928

(Millions of dollars)[1]

Commodity Trade

	1928		1928
Merchandise imports	4,091	Merchandise exports	5,129
Purchases of coal and oil bunkers abroad	25	Sales of coal and oil bunkers	50
Imports of silver	68	Exports of silver	87
Miscellaneous items and adjustments for smuggled goods, bad debts, etc.	313	Miscellaneous items and adjustments for bad debts, etc.	68
	4,497		5,334

Other Current Items

Freights paid to foreigners on imports	227	Freights received on exports	143
Insurance payments abroad	70	Insurance receipts	80
Expenditures abroad of travellers from United States	782	Expenditures of foreign visitors in United States	168
Immigrants' remittances abroad	217	Amounts brought in by immigrants	28
Payments on foreign long-term investments in United States	252	Receipts from long-term investments abroad	817
Payments on foreign short-term investments in United States	107	Receipts from short-term investments abroad	65
Government payments abroad, etc.	110	Government receipts on account of war debts	210
Charitable and missionary contributions abroad	52	Other Government receipts	53
Royalty payments on foreign cinema films	6	Cinema film royalty receipts	70
Other items	53	Other items	135
	1,876		1,769

Gold Movements

Imports	169	Exports	561
Releases from earmarked accounts	188	Earmarkings on foreign account	68
	357		629

[1] The Department of Commerce Report, 1929.

Capital Movements

New United States investments abroad	2,070	New foreign investments in United States	1,704
Purchases of United States securities held abroad	1,153	Sales of foreign securities, etc., held in United States	492
Redemption and sinking fund payments	70	Redemption and sinking fund receipts	361
Decrease in foreign-owned bank balances, etc.	226		
	3,519		2,557
Balance due to errors and omissions	40		
	10,289		10,289

ing influence of changes in the liquid resources and gold reserves is exercised will be discussed below. Considerable variations in commodity, service, and long-term capital transactions,[1] however, ultimately call for other balancing adjustments than those under *B*2 and *C*. Floating balances and gold reserves can be used only temporarily, and must as a rule be restored to the size found suitable for temporary equalising transactions.

As to the more permanent readjustments there is a fundamental difference between *A*1 and *A*2 on the one hand and *B*1 on the other. Whether the original change falls under *A* or *B*1, the readjustment with few exceptions involves a balancing change in the commodity and service transactions, principally the former.[2] In other words, commodity trade adjusts itself to variations in the long-time capital movements, but the latter do not as a rule adjust themselves to trade variations. International capital move-

[1] The short-time capital movements and gold movements may also provide the original disturbance instead of exercising a stabilising effect, and call for readjustments in the other items. Post-war history offers interesting examples, like the "flight from the franc," which meant the piling up of enormous floating balances chiefly in London and New York. The gold imports by the Banque de France in 1928 and 1929 form another example. Short-term lending by London and the removal of French balances brought the sterling exchange to below par in the first eight months of 1929, when all other items were better than in 1928, at which time sterling was high. It was cheaper to borrow in London than in other financial centres, but more remunerative to invest elsewhere.

[2] In this respect *A*2 holds a position similar to that of *B*1. Of course certain elements in the balance of trade (*A*1) are more elastic than others. Not only is the elasticity of consumers' demand relevant, but the size of stocks and other factors also.

ments of this sort are due to differences in long-term interest rates and other comparatively permanent circumstances, and these circumstances are not often much affected by changes in the volume of imports and exports of goods and services.

In discussing the relation between capital movements and trade it is well to bear in mind that the latter involve variations in imports and exports for the reason that capital can only move in the form of goods or services. It should also be observed that changes in the basic elements of pricing may well at the same time affect both trade and capital movements. This may be true, for instance, of the discovery of new natural resources, which give rise to new industries and enhance the scarcity of capital in the country concerned. In other cases the capital movements are entirely unaffected by the basic alterations which create tendencies to changed trade. The point is that basic changes which primarily affect imports and exports seldom call forth secondary readjustments with regard to long-term lending, while the reverse always happens.[1]

Basic changes which in the first place tend to increase imports into a country relative to exports from it are as likely in the long run to reduce as to increase the long-term lending from this country. The change in this sort of capital movement, when it occurs, is not in the nature of a readjustment which restores the equilibrium temporarily disturbed, but may on the contrary make still greater readjustments in the field of trade necessary.

In brief, primary changes in trade or long-term capital movements, or in both, cause secondary readjustments, chiefly in trade and in the short-term capital transactions. The part played of gold movements will be touched upon below.

§ 4. *Short-term international capital movements.* It is now time to consider more attentively the question, how equilibrium on the

[1] It has, of course, happened in exceptional cases that long-term borrowings have had the express object of repaying short-term indebtedness incurred because of trade variations. But this is certainly an exception to the rule. I fundamentally disagree with the following statement by Mr. Keynes: "Historically, the volume of foreign investment has tended, I think, to adjust itself — at least to a certain extent — to the balance of trade, rather than the other way round." — *The Economic Journal* (1929), p. 6. In my opinion this is true only of temporary, i.e. short-term capital transactions; unless "a certain extent" means "a very small extent."

foreign exchange market is maintained when the foreign exchange rates, which like all other prices have the task of balancing supply and demand, are only allowed to vary slightly under a gold or gold exchange standard régime.

First of all, what is the object of dealings in this market? The obvious answer is that credit and purchasing power in terms of one currency are exchanged for purchasing power in terms of another. In other words, one sum of money is exchanged for a sum of a different sort of money. The bearers or representatives of this purchasing power can be of several different kinds. If one buys 1,000 pounds sterling, it is usually either a cable transfer, a cheque, or a 60 or 90 day draft or remittance. In the first case the purchasing power is available at once; in the second, after as many days as it takes a letter to reach London; in the last, after 60 or 90 days. Naturally, the rates quoted for these different types of "foreign exchange" differ, account being taken of the interest lost until the cheque or bill can be cashed at its face value. The bills are usually drawn on banks or acceptance houses or on traders, and accepted by them. The value of such bills varies, of course, in accordance with the credit standing of the firm responsible for it. It is equally natural that the dealers in exchange, in order to cover their expenses, should have a buyer's and a seller's quotation, in other words that they should charge a fee for the transformation of purchasing power in one currency into purchasing power in terms of another.

Such fee used to be charged by the banks also when purchasing power or credit in one place was exchanged for credit in another within the same country.[1] Nowadays the banks in most countries render this service to their customers gratuitously. Nevertheless, this service is essentially the same as that rendered by the dealers in foreign exchange. There must be a clearing of transfers in different directions by the various banks, i.e. transfers to and from a place are set off against one another, and it is only the difference (if any) that means a real transfer of purchasing power or capital and that has to be taken care of in some other way.

[1] See Arnauné, *La Monnaie* . . . (1922), p. 117, and Marshall, *Money, Credit and Commerce* (1923), p. 142.

The essential function of the exchanges is not to relate debts payable in different *currencies*, but to relate debts due in different *places*. And exchanges are quoted between different places in the same country which use the same currency unit.[1]

Let us return now to the market for foreign exchanges.

It is not possible here to describe its organisation in detail. We must be content with the barest outline of certain fundamental relations, and will deal only with the cable rate for buyers as the most typical rate on the market. It is the price which must be paid by anyone who wants instant command over credit in a foreign currency.

Assume some sort of disturbance to occur, by which the demand for foreign exchange tends to exceed the supply. In which way is the equilibrium between demand and supply maintained? What kind of reactions are called forth to guarantee it?

Naturally, the profound reactions of the price system vary in accordance with the character of the original disturbance. The case of a reduced foreign demand for our export goods differs from the case where the granting of loans to foreigners has suddenly increased. Certain immediate reactions are, however, always similar, and may be described in general terms. Such a surface analysis is given in a very brief form below. More searching investigation into the special conditions in typical cases is reserved for later chapters.

First of all, a tendency of demand for foreign exchange to exceed supply will raise the rates. They cannot rise much, for the countries concerned have gold or gold exchange standard. Let us deal below only with the former.[2] This fixes par at the relation between the contents of pure gold in the currency units, and the "gold points" set the limits for possible deviations from par. The upper gold point is the quotation of the foreign exchanges at which it becomes arbitrary if one buys exchange or exports gold, while the lower gold point expresses the rate which makes gold import just as advantageous as selling foreign exchange.

[1] Hawtrey, *Currency and Credit* (1923), p. 105.

[2] With some slight alterations the analysis in this chapter holds for the case of a gold exchange standard also.

With this organisation of the monetary system, people as a rule do not expect the foreign exchange rate to deviate much from par or from some slightly different position which experience shows to be a typical average. This expectation makes them willing to offer foreign credit for sale when its price is a little higher than usual, in order to reap profit from a coming drop in price. On the other hand, there is a temptation to buy foreign credit when its price is relatively low, so as to profit from its expected rise. Those who undertake such deals are almost exclusively the banks and the bankers, i.e. the professional dealers in exchange. The most important of these transactions are as follows.

Central and private banks hold demand deposits in financial centres, chiefly London and New York. They draw on these accounts, and thus increase the supply of foreign exchange when the rates are high and a drop is expected, and vice versa. The practice of having such floating balances has extended widely since the War, particularly among central banks, which find that it enables them to reduce the part of their gold reserves in excess of legal requirements. In 1930 the floating international balances in New York were estimated at $3,000,000,000, while the American balances of the same type in London and elsewhere were estimated at half this figure. Another important form of short-term international capital movements is the variations in the holdings of foreign bills. The banks also resort to borrowing and lending abroad to profit from fluctuations in the exchange rates.

The greater the certainty with which future fluctuations can be foreseen, the smaller, naturally, the variations necessary to call forth such speculative adaptations in supply, and the more stable the rates. For this reason seasonal changes in international trade cause extremely slight exchange fluctuations. "Industrial countries tend to owe money to agricultural countries in the second half of the year, and to repay it in the first half. . . . The seasonal transference of short-term credits from one centre to another was carried out for a moderate commission." [1]

[1] Keynes, *A Tract on Monetary Reform* (1923), p. 108. This book contains a clarifying analysis of the forward market in foreign exchange.

In the case of less regular variations in trade an extra stimulus to short-term credit movements usually arises from changes in the relation between the interest rates quoted in the money markets here and abroad. Tendencies towards a negative balance of payments almost always go hand in hand with stringent conditions on the money market. This is partly due to the fact that the selling of foreign exchange from the sources just mentioned draws some money into the banks; thus part of the existing credit is extinguished, and the banks are unwilling to grant it again under these conditions. While supply of credit is in this way reduced, demand is often increased. Consider for instance the case of a crop failure. The farmers are unable to save as usual and instead have to ask for temporary loans to cover their expenses. Inevitably the interest rates on the money market rise, which puts an extra premium on the transfer of liquid balances to this country, whereby demand and supply on the exchange market are equalized.

A rise in interest rates leads to capital transfers in yet another way. International securities, particularly those quoted on the leading stock exchanges, tend to become cheaper here for two reasons: the higher money rates exercise a direct influence, and it becomes more difficult and expensive to hold securities by means of borrowed money. Consequently, professional dealers in such securities send a part of them abroad, where their quotations have not suffered a corresponding depreciation. These security movements are sensitive even to extremely small differences in prices. One may well speak of a regular arbitrage at least in the most fungible of them.

These transactions are undertaken almost exclusively by professional dealers. It is above all their willingness to respond to the stimulus of small variations in exchange and interest rates which governs the extent of the exchange variations. However, merchants also react in a way which exercises a stabilising influence on the foreign exchange market. Bills on 90 days are a common way of financing international trade. Exporters draw on the foreign importers or on the banks which take their place. When the foreign exchange rates rise and monetary conditions in

a certain country are tight, then exporters tend to have these bills discounted at once in the country on which they are drawn. Importers, on the other hand, try to arrange for prolonged credits abroad, as it is difficult to find money at home.

Such are the principal reactions in short-term international capital movements which are, as it were, "automatically" elicited.[1] When the original disturbance is considerable, and lasts more than a very brief period, these reactions may prove insufficient to maintain the foreign exchange rates within the gold points; or rather they threaten to become insufficient. In such cases the central banking authorities find it necessary to resort to special measures, above all an increase in the official discount rate.[2] The unfavourable movement of the exchanges, the reduction in liquid foreign assets held by the banks, and most of all the tightening of the money market, make the need for such a measure self-evident, if there are no signs that the situation will normalize itself.

The raising of the discount rate tends to tighten the money market still further. If necessary to guarantee correspondence between market rates and the discount rate, the central bank may sell part of its securities, for example, national state bonds, and thereby withdraw funds from the money market. In many cases, however, the selling of foreign securities and foreign exchange from the reserves of the central bank and the private banks are sufficient to tighten the money market.

The higher discount rate and the generally more restrictive policy of the central bank towards the private banks make the latter also pursue a more cautious credit policy. Besides, the higher rate is felt as a warning by the business world, and a certain reticence colours its activities for the time being, so that the

[1] The difference between "barter" and "trade under a money régime," which has been so much discussed, seems to be the difference between trade with and without credit. I fail to see the use of analysing this difference and of demonstrating that it is on the whole insignificant. An example of unfruitful "Fragestellung."

[2] Some central banks make frequent changes in their discount rates. Others, like the Banque de France, do it more or less reluctantly and only after stronger indications. In the same way reactions towards an inflow of gold differ. The monetary system of the United States has been relatively insensitive to gold flows since the War.

demand for credit is kept back. Thus in general credit is restricted and its volume and velocity declines.[1] The demand for foreign exchange is reduced, while supply increases. The tendency to a rise in the foreign exchange rate is counteracted.

§ 5. *International gold movements.* The development of foreign exchanges depends, of course, upon the strength of the disturbances on the one hand and upon the extent of the short-term capital movements, the change in credit policy, and the reactions of trade (which will be dealt with below) on the other. It depends, in other words, upon the elasticity of supply and demand. *In general, the more easily floating capital moves to and from a* financial centre the less need there is of changes in the discount rate, and the smaller the variations in the exchange rates caused by a disturbance of a given intensity. Note, however, that this does not mean that the quotations of, for example, the pound sterling or the dollar (the currencies in the leading financial centres) vary less than the quotations of other currencies. The disturbances in these centres are often more severe than elsewhere, partly because they serve as bankers and reserves for other countries, which shift over the effects of their own disturbances to London and New York.

When the balancing reactions are weak, relative to the original disturbance, the foreign exchange rates rise to the upper gold point and gold begins to flow out.[2] This is an added reason for the central bank to restrict its credit policy, for other banks to follow suit, and for the business community to take a cautious attitude. Thus the efflux of gold both directly increases the credit side in the balance of payments and leads to a restriction of credit and a rise in the money rates, which in turn stimulates short-term

[1] The effect of this change in the credit situation upon the general economic situation cannot be described here, as it must rest on a theory of money and discount policy, which it would carry us too far even to indicate briefly.

[2] Thus, the development depends much upon the willingness of bankers and others to speculate through short-term capital transfers. In this way "psychological" reactions affect the course of events. But such reactions can have no influence unless they lead to changes in capital movements, or affect some other elements in the balance of payments. There are "psychological" reactions behind *all* changes in international relations. But this does not mean that there is a need of some "psychological theory of foreign exchanges."

capital movements. Evidently a reduction of the gold reserve affects the situation very much in the same way as a decline in the liquid foreign assets of the central bank. These assets can at any time be transformed into gold, and really serve the same purpose as gold reserves, i.e. the maintenance of the currency in a certain value relation with other currencies.

How slight is the difference, from the point of view of operation of the monetary system, between gold reserves and demand deposits in foreign financial centres under gold standard, becomes evident after a consideration of the so-called "earmarked" gold reserves. They consist of gold which a central bank keeps on deposit in a financial centre, usually in the Bank of England or the Federal Reserve Bank of New York. The monetary laws in many countries now permit this earmarked gold to be included in the gold reserves legally required as note cover. Thus for all practical purposes this gold is the same as gold kept in the cellars of the central banks themselves. On the other hand, there is little real difference between such gold deposits and ordinary demand deposits in London or New York, which can be exchanged for gold without delay. The gold deposits are sometimes sold to another central bank, while still remaining in New York. In other words there is a real gold clearing, and gold moves in and out of the gold reserves in different monetary systems without being physically moved at all.

In brief, international gold movements are part of the mechanism of equilibrium in the foreign exchange market. They play a rôle similar to that of movements in floating balances, but usually come into play at a later stage, as foreign exchange variations *within* the gold points call forth movements of the latter sort but no gold movements.[1]

§ 6. *The reactions of credit volume and buying power.* As already indicated, all these measures have a double effect on demand and supply in the foreign exchange market. The short-term capital transactions directly affect this supply and demand. Indirectly

[1] Unless central banks buy gold when its price is so high that they suffer a loss, or sell gold when it is quoted below the upper gold point, also at a loss! Both things happen now and then.

these transactions, and the changes in credit policy which go with them, affect other items in the balance of payments through their influence on the volume and velocity of credit and on buying power. When the banks sell part of their foreign assets which they have in reserve, and are paid either in cash or by domestic credit, the volume of cash and credit tends of course to decline. For the sake of simplicity we may speak of credit only, as there has been practically no gold coin in circulation since the War, and the distinction here between notes and demand deposits is not important.

The volume of credit declines also as a result of a more restrictive credit policy, which is often pursued when the foreign exchange rates rise even though the upper gold point is not reached. Thirdly, the credit restriction and decline in the demand for credit which result from an efflux of gold further reduce the volume of credit and buying power.

The inevitable outcome is a fall in demand for goods and services in general. Imports are reduced, while exporting industries which find it difficult to dispose of as much of their goods as before try to force their sales abroad at the expense of slightly lower prices or increased selling costs. Besides, the rise in the foreign exchanges also tends to discourage imports by making them more expensive, whereas it serves as an extra stimulus to exports. It is improbable, however, that the small variations within the gold points will be able to exercise any considerable influence in this respect.

When dealing with the reductions of commodity imports through lowered buying power, one should keep in mind the distinction between consumers' and traders' purchases. Consumers use their income, while traders use their capital or credit. Now, a negative tendency in the balance of payments, due for instance to a crop failure or a strike, directly reduces the income which consumers are able to spend, and their demand is accordingly reduced. If the whole of this reduction in demand concerned import goods, no negative tendency in the balance of payments would arise. There can be little doubt, however, that the commonest case is that where the reduced buying power at home

and the increased buying power in other countries, which results from the increased demand for wheat, etc., from these countries, does not directly affect the trade enough to avoid a negative tendency in the balance of payments. At any rate, it is such cases which are analysed here.

As a result, credit reductions come into play, as explained above. Traders find their credit supply reduced,[1] and are forced to cut down their purchases accordingly. They may even reduce them more, and the "velocity" of the bank deposits at their disposal may decline, thereby reducing the buying power of other traders. This happens if they find it wise to reduce stocks because of difficulty in selling, and thus fail to use their money and credit as quickly as usual. On the whole, traders' purchases are very sensitive to changes in the credit situation.[2] As practically all dealings in international trade are carried on by traders, the volume of imports may be speedily reduced much more than the decline in consumers' purchases warrants *per se*. This extraordinary reduction in traders' purchases may mean only a postponement to a few months later, when the business situation has again become normal and stocks must be replenished. In the case of a more prolonged disturbance, on the other hand, the restrictions in traders' purchases have time to lower consumers' incomes, and thus to make the purchases of the latter fall off in a double way, which again reacts on traders' dealings.

All these shifts in demand cannot but tend to bring about changes in production and prices, which differ in accordance with the character of the original disturbance. They will be described, as well as their reaction on the balance of trade, in the following chapters, which deal in some detail with representative cases. It is only the most immediate reactions, whereby the equilibrium on the foreign exchange market is maintained during a fairly brief period, say half a year or so, which are so similar in almost all cases that they can be described in the general terms of this chap-

[1] It is of course impossible to say how much industrial transactions, i. e. purchasing or buying power, will feel the credit distinction or to what extent it will only restrict the financial transaction.

[2] Except in the case of an easing of the credit situation during times of poor business.

ter. If the disturbance is only temporary, no other and more profound readjustments may be required. But if it is a severe and prolonged disturbance, for example, a substantial increase in long-term lending during several years, there will be a need of thorough readjustments in production and trade, and time enough for many secondary effects in this respect to work themselves out.

To sum up, the rise in foreign exchanges tends, although probably with little effect, to retard imports and stimulate exports. Much more important are the international short-term capital transactions of various sorts which are brought into play because of the chances to gain from a future drop in the foreign exchange rates and from international interest differences. When these transactions prove insufficient, the upper gold point is reached, and gold movements lead to greater interest differences. At the same time the risk in exchange speculation is reduced, since the rates cannot rise further, and capital movements therefore tend to increase. All these reactions involve changes in the volume of credit and of buying power, whereby imports are restricted and exports to some extent increased. Part of such variations in trade result quickly, others slowly.

§ 7. *Criticism of the "orthodox" view of the rôle of gold movements.* The mechanism outlined above differs in certain respects from what has been considered the orthodox view. Above all the international gold movements hold a less central position. Nowadays debits and credits are settled by changes in the volume of liquid balances in financial centres, and in many cases there is no need of foreign exchange variations so pronounced that gold movements are possible. It is usually only in the case of marked disturbances, when the volume of credit has to be reduced for a long period of time, that gold exports occur as a result of the disturbance. This holds true at least for most continental central banks in Europe, whereas the gold movements to and from the Bank of England are frequent and considerable.[1] The rôle played in England by changes in floating balances, etc., and gold movements together, is in other countries played chiefly by the former alone.

[1] This has much to do with the special position of London as the leading financial centre and the chief market for newly produced gold.

The chief differences between the theory above and the orthodox view may be summarised thus:

(1) In most cases international gold movements are not part of the mechanism of equilibrium.

(2) The change in the volume of credit and purchasing power, which in the orthodox view is due to gold movements, is brought about, at least to a certain extent, much more quickly in other ways — through changes in floating balances and foreign exchange reserves, etc. There is always a tendency towards an original change in purchasing power prior to any gold movement.

(3) It is uncertain whether and how much gold movements affect the credit policy of central banks and are thus responsible for secondary changes in purchasing power. The outstanding example of a case where extensive gold movements have not led to a proportionate increase in the credit structure, and on certain occasions have not led to any increase in the industrial transactions at all, is the policy of the Federal Reserve System.

(4) Lastly, when gold moves it is often less as a *causa efficiens* with regard to later changes in the credit policy of central banks, than to restore their gold reserves to a percentage which is considered desirable or normal although in excess of the legal minimum — this percentage having already been changed through changes in the credit volume, which are directly and indirectly due to declines or increases of foreign exchange reserves in one form or another. It is variation in the total of liquid debits and credits which governs credit policy, and it is a matter of little consequence whether a part of the other assets — say demand deposits in New York — are exchanged for gold, or vice versa.[1]

A study of the gold movements between the Continental central banks before the War suggests that they had little significance for changes in credit volumes. Since the War it has become still more apparent that they are largely for special purposes, for example, the distribution of the new gold from the gold producing countries, which proceeds in rather irregular currents. In brief, there is relatively little difference between the gold standard and the

[1] Cf. Viner, *Canada's Balance of International Indebtedness* (Cambridge, 1924).

gold exchange standard, so far as the mechanism of equilibrium is concerned.

It goes without saying that the truth of the foregoing description [1] does not rest on the correctness of any form of the quantity theory of money. To avoid misunderstanding it may also be added that when several disturbances occur at the same time and affect the balance of payment primarily in opposite ways, the mechanism of equilibrium is coloured thereby. For instance, the commencement of extensive lendings to foreign countries will not cause the above-mentioned reactions, if credit has already been severely contracted; the sequence of events is affected. To modify the description of the mechanism accordingly, however, offers little difficulty in a discussion of such cases.

[1] Similar descriptions have been published by Angell, Feis, Graham, Hawtrey Keynes, Viner and others.

CHAPTER XIX

THE MECHANISM OF DOMESTIC CAPITAL MOVEMENTS

§ 1. *Introduction.* In Chapter XVI the movements of productive factors in general have been discussed. There, however, only one side of international capital movements was touched upon. Another aspect must be given attention because of the fact that capital moves in the form of goods and services—its movements therefore assuming changes in international trade. There is nothing analogous in the case of labour movements. The manner in which this adjustment in international trade is brought about is the subject of the following three chapters, which deal with the mechanism of the international transfer of capital, not with the effects of changed factor supply *after* the transfer.

Capital movements, as previously stated, involve (1) the monetary transfer of purchasing power, (2) the real transfer of commodities and services, and (3) a change in the supply of the productive factor called capital which ensues after the transfer in the countries concerned; in the importing country such a change appears only if the capital is not consumed as it flows in. The effects of this change in supply have been analysed in Chapter XVII, and we shall discuss here only the way in which the monetary and the real transfer is carried out.

Before undertaking an analysis of international capital movements we shall say a few words about domestic capital movements.[1] Such movements within a country and those across a national frontier are really of the same character. Undue attention has often been given to differences in the monetary mechanism. To bring out the real nature and essential similarity of all interlocal capital movements, whether domestic or international,

[1] Unfortunately, very little is known about the size and importance of capital transactions between various parts of the same country. It is not on statistical evidence but on other grounds —for example, the rapid economic growth of certain districts — that one can conclude that they must be important. The following analysis cannot, therefore, be supplemented with statistical material.

it is advantageous to examine first the former as a basis of comparison with the latter. A second reason for studying domestic movements is that they affect economic conditions in general and therefore international trade. Thirdly, this book deals with interregional trade, not alone international trade.

§ 2. *A simple case.* If *A* and *B* are two groups of individuals in a small isolated region, and *A* borrows from *B*, the transaction is likely to involve a change in demand for commodities and services. How would *B* have used this buying power, and how is it used by *A*? Under certain conditions the new direction of demand may be so different from the earlier one that prices of commodities and productive factors are considerably altered. These effects will be similar to those which ensue if no borrowings take place, but one group or both of them simply alter their demand.

Now, suppose that *A* and *B* live in two different regions but that there are no costs of transport between them; assume further that labour is unable to move from one region to another. Under these conditions a loan transaction between *A* and *B* will have the same effects as in the case above. The transfer of purchasing power, which may, for instance, take place by means of notes and cheques, automatically calls forth a corresponding transfer of goods. If the quantity of purchasing power to be used in each place is regarded as a magnet attracting commodities and services, the capital movement means simply that the system of magnets has been readjusted, some being stronger and others weaker than before, and that the movements of commodities and services are changed accordingly.

Let us now assume that *A* and *B* are two regions, and consider the effects upon capital movements of transportation costs between *A* and *B*. How is demand affected by a transfer of purchasing power from *B* to *A*? Of course if *A* uses its new purchasing power to buy the same goods and services as *B* would otherwise have bought, total demand remains as before. In this case, as in the preceding one, the adjustment is smooth; the balance of payments between *A* and *B* is not disturbed. Assuming that the balance of trade has previously been in equilibrium, a deficit now arises in *A*'s balance which is equal to the borrowings. The notes

or deposit received from *B* are therefore used to pay for this deficit. Only under one condition will the situation be temporarily disturbed, namely if the banks in *A* fail to supply the somewhat increased quantity of credit required to handle the larger volume of goods, and if the banks in *B* do not restrict their credit supply for an analogous reason.

The assumption made above as to the direction of demand is, however, unreal. It is necessary to examine in detail a case nearer to reality. Assume, for instance, that English capitalists lend money to Scottish industrial enterprises for the building of new factories. The former's balances in English banks are immediately reduced, while the balances of the Scottish concerns in Scottish banks increase. Apart from what happens later, obviously the purchasing power has diminished in England, but increased in Scotland. This may seem self-evident, but is often overlooked.[1]

The demand for goods thus rises in the latter country and falls off in the former. In a measure this new Scottish demand is for English import commodities and Scottish export commodities; imports increase and exports decline. Thus the Scottish trade balance becomes in a corresponding degree negative, assuming that it had previously been in equilibrium. The money borrowed from England is partly used to pay for this import surplus.

Some of the borrowed money is, however, used for the purchase of home market goods, i. e. goods in which there is no trade between England and Scotland, as, for instance, bricks, or for the payment of wages to workmen employed in building the factories. If we include in the term "home market goods" this latter form of services, which have to be carried out on the spot, we may clearly say that part of the loans create a demand for Scottish "home market goods," whereas it would otherwise have been employed in purchasing English home market goods. The demand for the former rises, while that for the latter declines; there will be a tendency for prices to rise in the one case and fall in the other.

The result of this is twofold: Productive factor prices as well

[1] Keynes explicitly refuses to admit it. See *The Economic Journal* (June, 1929).

as profits rise in Scotland, i. e. incomes and buying power grow and the trade balance is moved further in a negative direction. Secondly, labour, capital, and natural resources are to some extent withdrawn from other operations and applied to production of non-competing home market goods in Scotland; the volume of manufactured export goods and articles that compete with English import goods thus becomes smaller than it would otherwise have beeen; the contrary process takes place in England. In this way exports fall off and imports rise in Scotland, and that country's trade balance becomes still more negative. As before, the import surplus is paid for with the borrowed money.

Such an adjustment of production, however, takes time, and until it is fully effected the deposits in Scottish banks will continue to increase, while the English deposits in English banks will decrease, provided of course that England goes on lending to Scotland. At the same time English banks naturally become more and more indebted to Scottish banks. In other words, a short-term capital movement from Scotland to England offsets to a certain extent the disturbing influence which the long-time capital transactions in the other direction would otherwise have had on the balance of payments. These short-term movements, as explained in a previous chapter, go still more smoothly within one monetary system than between different systems. The reason is the more intimate contact between banks, but above all the fact that credit available in any one place within the country is bought and sold at its nominal value, no fee being charged — assuming that the credit standing of the responsible bank is good. In principle, however, the short-term capital movements exercise the same equalizing effect on the balance of payment between different regions in the same country as they do on international balances.

The increased deposits in Scotland and reduced deposits in England — from customers, not from banks — naturally tend to affect the volume of credits granted by the banks. The Scottish banks will find that they have plenty of money, and will be more ready than before to grant credit, whereas the English banks will restrict their credit accommodation. This process will cause a

secondary inflation [1] of credit and buying power in Scotland, and a deflation of credit in England. Such a shifting of the buying power naturally tends to influence demand, production, and trade in the same way as the primary and direct shifting was shown to do above. There gradually arises a situation in which Scotland's import surplus is about as large as the sums borrowed from England, and the position of the banks in the two countries again becomes normal. When this occurs, the transfer of capital can proceed at an even rate without any further adjustment of production. The adjustment that has taken place merely implies that, when all the commodities and services the Scots desire to purchase with the borrowed funds cannot conveniently be imported from England, the production of home market goods is increased in Scotland, while to counterbalance this the Scots produce less goods for exportation to England and less articles that compete with English import goods.

§ 3. *Relative price variations.* An adjustment of this sort in Scotland will probably mean that the prices of home market goods rise somewhat as compared with the prices of the others, which for the sake of simplicity may be called interregional goods. On the other hand, it is probable that the former goods in England will fall somewhat in price as compared with the latter. But it does not follow that English export goods will fall in price in comparison with Scottish ones.[2] An export surplus from England can in any case be brought about in the manner indicated above.

It is, however, conceivable that the increase in buying power in Scotland should also raise the prices of export goods produced there, while the reduced buying power in England to some extent forces the latter's export prices down. In proportion as this takes place, the tendencies making for an English export surplus will naturally become stronger. But if it is assumed that the transfer

[1] The primary inflation of credit accompanied the sale of English bills to Scottish banks and the increase in prices of certain commodities and productive factors.

[2] Pigou, Keynes, and others reach the opposite conclusion because they fail to consider the changes in buying power and pay little or no attention to the difference between home market and export prices. As to the terms of trade see further the end of this section.

of capital is on a reasonable scale, and that the adjustment may take place gradually, then such an alteration — to England's disadvantage — in the terms of exchange in her trade with Scotland is by no means certain and will in some cases be negligible.

The outcome for sectional price levels depends partly upon how the costs of production are affected, partly upon the relation between prices and costs. It is probable, at least in the beginning of a period of borrowing, that some producers in England will have to sell with reduced profits, while some producers in Scotland will be able to raise their prices relative to their costs. They will, however, no doubt chiefly be the producers of home market goods, who feel most directly the reduced, or increased demand for their products. Anyhow, it is a short-time phenomenon. After a period of readjustment prices may be expected to bear about the same relation to costs as before. Thus the result as to relative commodity prices will depend above all upon how the costs, i. e. the prices of productive factors, react.

There is, of course, a tendency for the factors used in relatively large quantities in Scottish home market industries to become more scarce than before, whereas the corresponding factors in English home market industries tend to become relatively cheaper. This alteration in relative scarcity will be kept within narrow limits, although spread over a wider field of industry, if factors of these types are easily drawn from other industries in Scotland, respectively gain employment in other industries in England. If the mobility of the productive factors between the various industries were complete, the sort of factors used in especially large quantities in the Scottish home market industry would remain scarcer than before all through Scotland so long as the capital movement continues, unless the total supply of them were sufficiently increased. The reverse would happen in England. In the case of incomplete mobility certain units of factors employed in Scottish home market industries may receive higher pay than other units of the *same* sort of factors in export industries. This increases the chances of a considerable increase in the scarcity of home market goods compared with export goods in Scotland. At the same time it cannot but weaken the tendency

to a rise in the price of Scottish export goods relative to English export goods.

When discussing relative prices it should be borne in mind that capital movements in certain cases lead to changes in the cost of transport. Increase in the traffic from England to Scotland and reduction of traffic in the opposite direction may raise freight or shipping rates to Scotland and lower the rates for transport to England. Such a development would tend to raise the prices received by the Scottish producers relative to the prices received by producers of English export goods. This question of changed transport relations will be further discussed below.

It should also be observed, as mentioned in the beginning of this chapter, that the changed conditions of production which follow gradually from capital movements alter one of the basic elements of the whole price system (in a way described in Chapter XVII), and that the relation between various sectional price levels may thereby be affected.

The changes in buying power involve in many cases not only increased demand for home market goods in region A and reduced demand for the same goods in region B, but also a shift of demand in favour of the export goods of one of these regions. Primarily, there is no more reason for assuming that A's export goods will be favoured than B's. Consequently, so far as this shift in demand is concerned, the terms of exchange in trade may move to the advantage of B just as well as to the advantage of A. On the other hand, the readjustments in the use of the productive factors, just described, tend to reduce the supply of A's export goods and to increase the supply of B's, which tends to move the terms of exchange in favour of A. The outcome naturally depends upon the play of these two tendencies, which may go in the same direction in favour of A or may more or less balance one another. Naturally the elasticity of demand will determine how much tendencies of a certain strength will be able to change relative prices.

§ 4. *The mobility of labour and capital instruments.* One difficulty in the way of an adaptation towards interregional capital movements is due to the obstacles to the movements of goods

and services from one place to another. To a certain extent a readjustment of production is profitable and is called forth, as described above. Such an adjustment, however, involves changes in factor prices which may lead to factor movements; this is a different sort of interdependence of factor movements than that described in Parts III–IV. Labour can be temporarily moved from *B* to *A* to produce the goods or render the services which *A* desires. If *A*, for instance, wants a new railway, and it is built by labour from *B*, no reduction of other industries in *A* is necessary to set free *A* labour for this construction work. It is true that the immigrated workers spend their wages in *A* and thus increase the demand for certain home market goods in that region; a certain transfer of *A*'s productive factors from other industries to home market industries will be necessary.

To recapitulate, there are three ways in which the real transfer of capital to *A* comes about. *B* may: (1) send the goods and services produced in *B*, or refrain from buying so much of goods and services, produced in *A*, which *A* now wants in greater quantities than before; (2) refrain from buying other *A* goods or send other goods which used to be produced in *A*, and thereby set free productive factors in *A* to produce the goods and services it wants in greater quantities than before; (3) send productive factors or capital instruments or both for a certain period of time to produce these goods and services in *A*. In many cases internal migration of labour is a concomitant to capital movements and a part of the process of adjustment. It is rare, however, that capital instruments wander about; there is only one important case where this happens. Ships from *B* may help to transport, i. e. to produce what is wanted in *A*. When capital instruments are in this way temporarily "lent" to the borrowing region, the readjustment of its productive activity is made easier in the same way as when labour is sent. In such cases the movements of commodities — capital instruments are commodities — evidently works in two different ways to make the real transfer of capital possible.

§ 5. *Illustrations.* It was said above that the prices of productive factors used in large quantities in *A*'s home market industries rise relative to other factor prices in *A*, whereas the

corresponding factors in *B* tend to become relatively less scarce than before. This is true not only of the original factors of production but also of all sorts of capital goods of long duration. Conspicuous examples are not difficult to find. When a Welsh baron decides to live in London the year round and not, as before, eight months in his home castle, a stream of money begins to flow from his tenants to London; this means a decline in Welsh buying power. He no longer uses this money in Wales to buy both "imported" and local goods and services. Consequently, the level of incomes on his estate drops, buying power is further reduced, and the demand for all sorts of home market goods and services in the district falls also. The supply of houses, for instance, is not easily reduced, and thence rents drop considerably as a result of the general impoverishment of the villages on his estate.

The creation of a new industry in an out-of-the-way agricultural region will have an opposite effect. An export surplus of milk may be turned into an import surplus, and the price of this product thus much increased. Land rents rise, and so do the costs of living and nominal wages. If the mobility of labour to this region is not complete, there will also be an increase in real wages, and the price level of the whole region will be moved further upwards.

Other examples of domestic capital movements which lack of space make it impossible to analyse here may be found in cases where taxation draws money from country districts to certain towns. The purchasing power is transferred across the country as it were by a net of invisible wires. Goods and services have to follow either directly or indirectly through changes in production, which are sometimes made easier through movements of labour and capital instruments.

CHAPTER XX

THE MECHANISM OF INTERNATIONAL CAPITAL MOVEMENTS

§ 1. *No costs of transport.* In principle the chief difference between domestic and international capital movements is that the monetary mechanism is somewhat different. Purchasing power and credit cannot be transferred without being, so to speak, transformed from one monetary system to another; this gives rise to certain complications. But it cannot be said too often that the chief difficulty in the way of interlocal capital movements, whether they pass across a national frontier or not, arises because capital moves only in the form of goods or services, and neither of them is freely mobile geographically; hence a cumbersome readjustment of production becomes necessary. Naturally, the difficulties in the way of such a readjustment depend upon special circumstances in each case, for instance the character of trade relations between the regions, the sort of goods that are wanted in the borrowing region, the elasticity of demand, and the size of the capital transaction compared with other sides of economic life.

Let us confine our attention in the beginning to two countries only, and, disregarding the difficulties of transition, in §§ 1–2 concentrate on the situation *after* the process of adaptation to a continued movement of capital has been carried out in some way or other. The process of adjustment will be analysed later. The buying power in *A* has then been increased, while that in *B* has been reduced. For simplicity's sake we disregard other countries and reason as though these two countries alone existed. Whereas the buying power of both countries was formerly as high as the net value of their production, i. e., the aggregate of money incomes, plus the volume of liquid capital, *A* now has greater and

B less buying power than what corresponds to this.[1] *There is thus a market in* A *for more of* B's *goods than formerly.* On the other hand, the market in *B* for *A*'s goods is not as big as it was before. The local *distribution* of the total demand has changed. *A* has become a better and *B* a worse market for goods of all kinds.

This will perhaps be most clearly seen if we imagine what the situation would be were there no transport charges or other obstacles in the way of the exchange of goods. All kinds of goods would then be exchanged between *A* and *B*, each country specialising in the goods that can be produced at least cost. Prior to the beginning of the movements of capital each of the two countries buys so much of all goods together, that their value equals that of the goods produced at home. On the other hand, after the capital movement started, *A* buys more and *B* less of their combined production than before.

That there should be under such circumstances a market in *A*

[1] Buying power may exceed the flow of liquid capital plus the aggregate of money incomes without tending to raise this aggregate, if foreign money, borrowings or gifts, is used to buy foreign goods or home-produced export goods for which the foreign demand has declined because of the lending. Such buying power does not create a demand for productive factors in the borrowing country, and therefore fails to raise the sum total of their prices, i. e. the sum of incomes. Of course it comes to very much the same thing if money which has been held in foreign countries, for instance as deposits in some financial centre, is used to buy foreign goods. In that case also the total buying power which the country in question makes use of is greater than its income plus its liquid capital. Besides — but this is a different story altogether — new buying power can be created through an inflation of credit, whether on the basis of an increased supply of foreign exchange or not; this buying power can purchase commodities and services *before* it has had any effect on the aggregate of money incomes. The increased demand for goods and services, produced by productive factors in this country, necessarily causes increased money incomes, but certainly this comes later and is a secondary circumstance which leads to a further increase in the demand for various sorts of goods; primarily buying power has sprung not only from ownership of productive factors but also from the note printing press and from the creation of new bank credits. The increased incomes are the consequence of the increased buying power and of the greater demand for goods and services. Whether the aggregate of incomes rises or not, buying power during the period of borrowings is *greater* than this aggregate plus the flow of liquid capital. It would be doubly misleading in a description of *the sequence of events* to say that the higher incomes are the cause of the increased demand.

This note is added to clear up certain fundamental and common misunderstandings which Keynes, e. g., seems to suffer from. See *The Economic Journal* (1929), and *A Treatise on Money*, chapter xxi.

for greater and in *B* for less quantities of goods than before is obvious. Likewise the monetary transfer of purchasing power from *B*'s to *A*'s currency cannot entail any difficulty, as *A* automatically acquired an import surplus corresponding to the size of the loans.

To the extent that the borrowers in *A* buy goods from *B*, they pay for them with *B*'s currency; similarly, to the extent that they buy goods produced in *A*, the export of these goods falls off, the exporters have correspondingly less *B* currency to offer and the importers have to obtain *B* currency from the borrowers, paying them in *A* currency, which is just what the borrowers need in order to buy *A* goods.

If the borrowing individuals in *A* demand other goods than those demanded by the lenders in *B*, the *direction* of the total demand will obviously have undergone a change. This results in a change also in the relative scarcity of the factors of production and in the relative prices of goods. The goods for which there is a greater demand than before become somewhat dearer and the others somewhat cheaper. It may just as well be *A*'s as *B*'s goods that have become cheaper than before, and if the direction of the demand does not materially change, the relative prices of goods will also remain the same as before.

It is therefore not at all necessary under the assumptions made that the capital exporting country *B* should offer its goods at lower prices than before in order to find a market for a greater quantity and obtain an export surplus corresponding to the sum of money lent abroad.

§ 2. *The nature of international capital movements.* This simple instance clearly illustrates an important part of the mechanism. In reality the connection is more complicated, mainly on account of the costs of transport, customs, and other obstacles in the way of free commodity movements. Owing, in fact, to these obstacles the transfer of purchasing power cannot produce the automatic redistribution of the goods between *A* and *B* that characterises the simplified case. The necessity arises for a more complicated adaptation in both countries to enable *A* to acquire a greater share of the total production of the two countries. The character

of this adaptation has already been briefly described in the domestic case above, and the reasoning need not be repeated here. As an illustration, however, let us take a numerical example.

Assume that *A* has borrowed $100,000,000 in *B* and uses $30,000,000 to make further purchases of import goods (cotton and wheat [1]) and a like amount to purchase more of *A*'s own export goods (machinery and textiles). Its trade balance is thereby made $60,000,000 more passive, and 60 percent of the borrowed capital goes to make up the deficit, i. e. to pay for the import surplus. The borrowers in *A*, however, use $40,000,000 for the purchase of non-competing home market goods (bricks). The output of these must be increased and productive factors must be directed thither from other spheres of activity. In a progressive country this means that industrial agents that would otherwise have passed to the export industries (the machinery and textile industry) and to the production of home market goods which compete with imports (wheat of the lower quality) now go to the non-competing home market industry (the brick industry). The production of export goods and competing home market goods (textiles, machinery, and low grade wheat) in *A* will thus expand less than they otherwise would. Exports will decrease and imports increase, and the trade balance will become a further $40,000,000 or so — though not necessarily exactly this amount [2] — more passive. Practically all the borrowed money consequently goes towards paying for the import surplus. When this process of adaptation has once been carried out, the monetary transformation of the loans clearly proceeds automatically, just as in the simple case where transport costs were disregarded.

A corresponding adjustment naturally takes place in *B*. The demand is reduced by $100,000,000. This loss devolves on some of *B*'s home market goods (bricks). Industries that produce these

[1] As an example of *B*'s export goods I take *wheat and cotton*; as an example of *A*'s export goods *machinery* and *textiles*. The home-market goods are exemplified by bricks in both countries, also wheat of a low grade quality in *A* and certain textile goods in *B*. Bricks are a *non-competing home market* commodity; the others compete with imports.

[2] *A* may increase more or less permanently the foreign exchange reserves which it keeps in financial centres abroad.

goods expand less than they otherwise would, and the factors of production are instead directed towards a further expansion of the export industries (cotton and wheat growing) and the production of competing home market goods (textiles). This reacts favourably on exports, which rise, and unfavourably on imports, which fall off — just the reverse of the process of development in *A*.

The reorganisation of production now described — an increase in the manufacture of non-competing home market goods (bricks) in *A*, and of international goods (wheat and cotton) and competing home market goods[1] (textiles) in *B* — is quite natural, seeing that the movement of capital involves *B*'s ceding a certain amount of goods to *A*. As the home market and semi-international goods cannot economically be transferred to *A*, the entire transference of goods must be effected through the international goods (cotton, wheat, textiles, and machinery), *B* exporting more and importing less of them. *A*, on the other hand, imports more and exports less, thereby being enabled to expand its production of home market goods (bricks) and in that way obtain an increased supply of all goods, — or of substitutes for them (foreign wheat instead of home grown of a different quality), — whereas *B* reduces its output of home market goods and gets a diminished supply of all the goods, for which its demand has declined.

§ 3. *The monetary mechanism.* After this account of the nature of international capital movements we proceed to a more detailed analysis, especially of the process of adaptation which they necessitate.[2]

[1] Competing home market goods might also be called "semi-international" goods; their sales are rather sensitive to changes in international trade though they are not subject to it themselves to any considerable extent. Non-competing home market goods will below be called only "home market goods."

[2] The following reasoning is in several ways similar to the theory of international capital movements which has been worked out by the Harvard School of economists — on the basis of the Thornton-Mill theory — under the leadership of Professor Taussig. The theory below is best regarded as a modification of the Harvard theory. In certain important respects it differs from Taussig's theory. I am not certain whether there is any important difference in principle between the analysis below and that presented by Professor Viner, to whom I am much indebted for an interesting discussion of the problem in private correspondence. Taussig's and Viner's theories are different, a fact I hope to demonstrate elsewhere.

Let us consider first *the monetary mechanism*. It goes without saying that it varies with the organisation of the monetary system and the habits and traditions of the central banks. For instance, the size of the gold and the foreign exchange reserves above legal minimum or normal figures and the traditions of discount policy (compare the different practices of the French and English central banks) cannot fail to affect the monetary mechanism. A surface analysis of this mechanism in various cases of a disturbed balance of payments has been presented in Chapter XVIII, where special attention was given to the short-term capital movements as balancing elements. The changes in credit volume and buying power, which are an important part of the mechanism in all cases, were scarcely touched upon. They will be more closely analysed in this chapter, which is a continuation of Chapter XVIII, with reference to a special kind of disturbance. The matter to be examined here is the effect of an original disturbance in the form of a changed or new capital movement, which exercises pressure during at least a few years in a certain direction and consequently has time to exercise profound effects on the price system. More short-lived capital transactions elicit only reactions which have already been described.

First of all it should be observed that there is an original and prior change in buying power, a monetary transfer *before* the real transfer of goods and services, just as in the domestic case. This *monetary* transfer is the direct and indirect cause of the readjustment involved in the *real* transfer.

Let us glance for a moment at the actual monetary mechanism in the borrowing country.[1] Through a loan *A* obtains $100,000,000 in *B* currency, of which in the first place $60,000,000 is used for the purchase of international goods. As *A*'s trade balance is thereby moved in a negative direction, $60,000,000 of the borrowed funds is required to keep the balance of payment in equilibrium. The remaining $40,000,000 in *B* exchange are sold by the borrowers to *A*'s central bank, which pays with the same amount in *A*'s own currency. It is as a rule in this simple way that the

[1] This expression is used in the same sense as "capital importing" country, in spite of the fact that capital may serve as reparations, gifts, etc.

borrowers obtain buying power in their own country's currency.[1] The central bank increases its foreign exchange reserves, and in payment releases more notes or increases the deposits placed at the disposal of its customers. There is no reason to expect it to restrict the credit to other customers, thus offsetting the effect of the purchasers of foreign exchange.

Such an increase in credit and buying power must tend to affect the prices of various sorts of commodities and industrial agents. Directly and indirectly it also tends to increase imports, while keeping back exports. It is sometimes objected that the effects of this increased purchasing power on the balance of trade are necessarily insignificant. No doubt, this opinion overlooks a very important thing. Buying power is increased not only by the amount of the borrowings, but later on also through an increase of the flow of liquid capital and of money incomes. The new means of payment pass from one individual to another. If $10,000,000 is borrowed each month, and $4,000,000 of foreign bills is sold to the banks in *A*, the volume of credit is immediately increased by this $4,000,000. The effect of this greater volume of credit is to raise buying power by a much larger amount as soon as the secondary effects have begun to appear.

The $4,000,000 is used to purchase home market goods. Either greater quantities of them are produced by means of formerly unemployed workers and unused capacity in machinery, or the prices of these goods must rise. In both cases the manufacturers of such goods have their incomes increased. This income is used to buy international, semi-international, or home market goods. To the extent that the two former kinds are bought, a deficit in the balance of trade and a demand for foreign exchange is created; the rest of the money goes to buy home market goods. Hence the producers of these goods see their incomes rise still further, and use part of them to buy international goods, whereby the deficit in the trade balance is increased. The total increase in the buying power during a year, for instance, far exceeds the expansion of credit. If the borrowed amount is called a "primary"

[1] Whether this transaction takes place through the intermediary of a private bank or not is immaterial.

increase in buying power — it is equal to (1) the foreign money used to keep the balance of payments in equilibrium, and (2) the inflation of credit — then the further increase may be called "secondary," as it is due to the effects of the credit expansion.

This adjustment of credit and trade probably takes place slowly. The import surplus is increased, but even after some time is not large enough to require all the foreign exchange placed at *A*'s disposal through progressive borrowing. The foreign currency reserves of the central bank in *A* continue to grow, and a still greater volume of credit is made available.

There is, however, a further, "third" increase in buying power of a slightly different sort. The increase in the foreign currency reserves in *A* is likely to lead to a change in credit policy,[1] and thus to bring about an auxiliary change in purchasing power. *A*'s central bank begins to find its currency reserves unnecessarily large, and adopts an attitude of reserve when the question arises of making further purchases of *B* currency, the exchange rate of which consequently tends to fall. When this has happened, a more liberal credit policy in *A* is adopted, probably by lowering the discount rate. *B*'s central bank, on the other hand, views with anxiety the growing short-term indebtedness and the tendency of the *B* currency to fall below par; it finds itself constrained to tighten up its credit accommodation, usually by raising the discount rate. In that way, the volume of credit in *B* is further reduced.

The slower adjustment of the balance of trade proceeds, and the more the foreign exchange reserves continue to grow, the greater is, of course, the probability that a secondary increase in *A*'s buying power will be brought about. The part of the borrowings which is used to buy international goods does not increase the reserves. Thus, to each increase in these reserves corresponds an increase in the sum total of primary buying power which is directed to the demand for home market goods and services. Consequently the incomes of home market producers rise more

[1] The expansion of credit dealt with above will come about if the discount rate and the willingness to give credit are unchanged.

quickly the less the deficit in the balance of trade is increased. Rising prices make home market industries pay exceeding well, and a strong tendency to an expansion of productive activity is inevitable. Now, production cannot be expanded without larger credit. Evidently, even if the credit policy of the central and private banks were not changed, the increased demand from home market producers would probably lead to an extension of credit. As a matter of fact, credit policy is made more liberal, and the volume of credit grows for that reason also. If the gold reserves are not sufficient to allow such an extension of credit, the foreign exchanges will be allowed to drop below the gold point, part of the foreign bills will be exchanged for gold, and the necessary cover will thereby be provided. Both theoretical reasoning and the evidence of experience [1] indicate that this influx of gold is due to the increase in credit, rather than that the gold flow is the cause of the credit expansion, which usually comes about in the way described above. Even under conditions when the gold flow plays a more active rôle, no true picture of the change in purchasing power is presented by simply referring to the credit policy likely to result from changed gold reserves. Under poor business conditions central banks are extremely limited in their ability to increase the volume of credit; even a reduced discount rate is not always effective. Thus, if there were no reason for increased credit demand in certain industries, it is doubtful whether the total volume of credit could be speedily expanded. What makes the mechanism work in a surprisingly smooth manner is among other things the influence of greater credit requirements from home market industries.

How much new credit will be created when a given sum is borrowed each year is of course impossible to say in general terms, as it depends upon the special circumstances. Here it should be remarked only that the velocity of credit is a governing element, and that the increased volume of goods and transactions in *A* calls for a larger volume of credit for its handling. Thus, a part of the new credit is absorbed by the dealings in larger quantities of home market goods at higher prices than before, and can have no

[1] See, for example, Canada's experience as described by Viner.

effect on the demands for international goods. But, each time a part of the new buying power is used to buy home market goods, there arises a new chance that the person who now gets command over it will use part of it for the purchase of international goods. It is, obviously, impossible to say how much the aggregate of money incomes and the volume of buying power is increased. But it is clear that the increases are an essential part of the mechanism of adjustment.

§ 4. *Various sorts of monetary policy.* Evidently the mechanism of international capital movements is different under different conditions. A description in general terms can do no more than indicate the character of the forces at work. In particular, the credit policy pursued in one of the countries concerned has an important bearing on the manner in which the discount rate and other means of monetary policy are handled in the other country. Assume, for instance, that the central bank in the borrowing country refuses to let credit expand. No increase of buying power follows except to the extent that the borrowed money is used directly to buy international goods. The tendency towards increased imports and reduced exports is much weaker than has been indicated in the foregoing description. In the lending country, on the other hand, the situation becomes serious, and a more severe contraction of credit is inevitable. After some time, no doubt the increase in the foreign exchange reserves in *A* and the gold movements which follow will cause a more liberal credit policy to be pursued, but in the meantime the shift in buying power has been one-sided, and the readjustment has been made more difficult.

Naturally the difficulties are less the more and the quicker central banks adapt themselves to the circumstances. If the bank in *B* declines to let the demand for foreign exchange, which comes from the lending capitalists, lead to an extinction of credit and to a reduction in the available buying power, and instead puts new credit in the place of the purchasing power surrendered by the capitalists, the necessary readjustment is delayed. The inevitable outcome is a greater reduction in the foreign exchange reserves and a larger gold movement than would otherwise have been

necessary, and consequently a more severe credit restriction later on. Some writers take for granted that central banks in capital exporting countries will always act in this unwise manner; I have been unable to find any arguments in support of this severe indictment.[1]

The foregoing reasoning leads to an important conclusion, namely that the mechanism of changes in buying power with all its consequences is likely to be at work more in one country than in the other. It is impossible to say in which country this influence will be the stronger, since it depends upon a number of circumstances touching upon such elements as credit policy, connection between various financial centres, and ability and willingness to part with gold.[2] It is probable, however, that if the loan is contracted in the currency of A, the money market will be more directly and more effectively tightened in B than it will be stimulated in A. The indebtedness of A's banks to foreigners will be reduced, but this fact may be less powerful in making the money market in A easy than if foreign exchange, be it in the currency of B or of some other country, continued to pile up.[3]

The readjustment is easier and the sequence of events somewhat different if credit is inflated beforehand in the borrowing country in anticipation of the loans to be taken up. In that case there need be no growth whatever in the foreign exchange reserves. Such growth comes about as a cause of the slowness with which credit and buying power increases in A and declines in B, and is made superfluous according as the readjustment of buying power is made at an earlier time than in the more usual course of events.

One further observation upon the possible effects of financial circumstances should be made. The credit expansion in the borrowing country may influence commodity markets more or less readily. Credit is used not only to buy and trade in goods but also

[1] See Palyi, *Die Zahlungsbilanz der Vereinigten Staaten. Schriften des Vereins für Sozialpolitik*, 1928.

[2] See Keynes, *A Treatise on Money*, p. 341.

[3] Angell ("Reparations and the Cash Transfer Problem," *Political Science Quarterly* [1926], pp. 349–351), in my opinion attaches far too much weight to the fact in which currency the loans are contracted.

to purchase stocks and shares and real estate.[1] It is conceivable that a credit expansion in the borrowing country does not increase the demand for commodities at all, the new credit flowing entirely into speculative channels, forcing up stock exchange quotations but not commodity prices. If that is so, the balance of payments will not be affected. The reserves of foreign exchange and gold will grow, and will be used as a basis for credit expansion for speculative purposes only. It is not suggested that this may continue forever. But so far as it happens the readjustment of the trade balance is delayed. In support of this theory the experience of the United States in 1928 and 1929 is advanced. In the latter year the net export of capital fell from a high to relatively low figure, but no expansion of credit for commercial purposes took place. It is probable that the approaching shift in the business cycle was largely responsible for this development. The character of the business situation, when the capital movement changes, influences the mechanism more or less in all cases. A complete description of the process of adjustment must consider also the movement of the business cycle. During periods of improving business conditions the transfer of productive factors from one industry to another will be relatively easy, whereas a readjustment during times of declining business will create greater difficulties. Further analysis of this question falls outside of the scope of this book.

§ 5. *Preliminary analysis of the terms of exchange.* Changes in credit and demand have been found to go hand in hand with changes in the relative scarcity of all industrial agents in A taken together, compared with all factors in B. The increased demand for home market goods in A and the reduced demand for such goods in B implies a shift in demand from B factors to A factors. There is no balancing reduction in the demand for other A factors or increase in demand for other B factors. Hence, if all factors in each country are grouped together, demand has turned in a way which must raise the relative scarcity of the A factors at the ex-

[1] Cf., for example, Palyi, *Die Zahlungsbilanz der Vereinigten Staaten*, p. 281. As already observed above it is uncertain to what extent a certain increase in total circulation will mean an increase in industrial transactions and buying power.

pense of *B* factors. These variations in relative factor prices are naturally accompanied by corresponding changes in commodity prices.

Let us assume that all goods produced in a country require for their manufacturing identical "units of productive power" consisting of a fixed combination of productive factors. The shift in demand raises the scarcity of the *A* unit, which means that every commodity produced in *A* becomes dearer than before compared with every commodity produced in *B*. The terms of exchange between *A*'s export goods and *B*'s change in favour of *A*. Income levels rise in the latter country and fall in *B*.

Now consider first the conditions of supply and then the conditions of demand for international goods. When certain industrial agents are drawn to home market industries in *A*, the output in export industries declines in relation to what it would otherwise have been. In *B*, on the other hand, the supply of export articles tends to grow when productive factors flow over from home market industries. These changes in supply cannot fail to move prices in the direction indicated above, on the assumption, which has been tacitly made above, that the combined demand of *A* and *B* for the export goods from either is in the first place unchanged by the borrowings. How much a certain shift of the supply curve will change prices depends, of course, upon the elasticity of demand in both countries. The latter is affected by (1) the elasticity of wants, (2) the possibility of having the commodities supplied from other sources, and (3) the reaction of buying power, which, to the extent that it depends upon increased scarcity for *A* factors compared with *B* factors, is a concomitant to the change in the supply curve.[1] As to the elasticity of wants, there is no reason for assuming that it is either great or small. In one case it will be greater than unity, in another less. But the competition from other sources of supply (further considered in the next chapter) makes it probable that demand is in most cases highly elastic.

It is only in the short run that demand is likely to be inelastic under certain conditions. If prices fall, and further price reduc-

[1] It should not be left out of account that there is a further change in buying power.

tions are anticipated, buyers may hold back and the volume of sales be reduced. When this happens in the case of a commodity very important to a country's trade, such as coffee in Brazil, the effects on the balance of payments will be considerable. The drop in export prices instead of raising the total value of exports will reduce it. There can be no doubt, however, that after some time a reduction in the costs and price levels in a certain country, will in almost all cases enable it to export considerably increased volumes of its usual export goods and some quantities of goods that have not been exported at all. This increase in volume will, in practically all cases, more than balance the effects of lower prices and thereby increase the value of exports.

It must be stressed that a relative change in cost levels — *B*'s falling in comparison with *A*'s — enables *B* to export certain goods which before belonged to the home market or semi-international group, whereas some of *A*'s goods disappear from its export trade. Such a change tends to keep within narrow limits the relative change in cost levels necessary to bring about a certain excess of exports from *B*. If we consider the whole of a country's export goods it is safe to say that the foreign demand is highly elastic, and therefore the tendency to changed terms of international exchange will be strong only in quite exceptional cases. For this reason detailed studies of the influence of different degrees of elasticity of demand upon the terms of exchange in international trade appear to be of little practical importance. Such studies have served as a diversion for some of the acutest intellects among nineteenth-century economists, but, in my opinion, have added little to our real knowledge of international trade.[1] They have, however, proved of value in other fields of economics than that for which they were originally intended.

So far we have considered chiefly the effects of changed supply curves, given certain demand curves. Turn now to the demand conditions. Most writers assume that the demand curves are fixed, except that the transfer of buying power makes *A* buy a part of the international goods *B* used to buy, a fact which cannot

[1] See Edgeworth's admirable paper, "The Pure Theory of International Trade," in *Papers Relating to Political Economy*.

affect the terms of exchange between *A*'s and *B*'s export goods. This is, however, a serious mistake which in my opinion is largely responsible for the exaggerated judgments as to the extent of the changes in trade terms which have been advanced by Taussig and almost every other well-known writer dealing with import duties, except Marshall (cf. § 7 below and Chapter XXIII).

The fact that the level of factor prices and incomes and the flow of liquid capital in terms of money is increased in *A* and reduced in *B* means that demand conditions have changed for all sorts of commodities, international and others. This makes it all the more certain that in most cases only a slight change in the terms of exchange will come about, even if a large shift in the trade balance must be created. But it cannot prevent the terms of exchange from moving a little in favour of *A*, for there will be no such demand changes under the above assumptions except to the extent that the relative price position of *A* factors and *B* factors has changed, and this *means* changed terms of exchange.

The problem becomes somewhat different and more complicated when the variations of *relative* factor prices and of sectional commodity price levels in *A* and *B* are taken into account. Let us consider first the factor prices.

§ 6. *The relative prices of the factors of production.* The increased demand for home market goods in *A* tends to draw industrial agents from export industries to home market industries; semi-international industries keep an intermediate position and may expand or decline a little, but will certainly expand less than the demand for their goods, more import goods being used than before. In a progressive country, where most industries expand more or less each year, industrial agents need not be actually drawn from the declining industries. The readjustment of the use of productive forces simply means that *new* capital, labour, and natural resources, which would normally have gone to them, are directed instead to home market industries. Thereby the output of the latter is increased. Even a fairly slight rise in home market prices may induce a marked tendency in this direction. Production at full capacity is often extremely profitable, even though prices have not been raised substantially above the average level.

Such a readjustment naturally involves a change in the prices of the factors of production. Those used in the making of home market and semi-international goods are probably not of exactly the same kind as those used in the production of export goods; in many cases semi-international goods resemble import goods, and hence use factors in different proportions compared with export industries (compare Part I).

Labour may be of a different quality and so may the natural resources. If the preparation and export of some agricultural export products has relatively diminished, then the land and labour set free will not be of the grades needed in home market industries. And even if the qualities were the same, the proportions in which the different factors combine will probably be different in the old occupations and in the new ones. Some industries use a great quantity of capital in comparison with others which use more labour, whereas a third industry may use more natural resources. Thus, some factors of production will be less in demand than before, others more. The result of the change in the direction of production will be a changed relative scarcity of the corresponding factors.

Assume for instance that wheat is an export article of which the output has declined as a result of labour and capital's flowing into other industries instead of into agriculture. The total demand for wheat land will be much diminished if the borrowed money is used for the building of a railway which runs across land of another quality. Without entering into a further discussion of the changes in the relative prices of the productive factors, it seems safe to say that factors used in comparatively great quantities in the production of export and semi-international goods will be less in demand and will fall in price in relation to factors much used in home market industries. This movement corresponds to a similar movement of commodity prices, those of export and semi-international goods compared with home market goods. One angle of this change of the economic mechanism in the borrowing country is the variation in comparative prices of the factors of production; another is the variation in comparative commodity prices.

This reasoning applies to changes in the relative scarcity of different qualities of land, labour, and capital. Each of these qualities or, as we have called them, factors of production, has been assumed to have one fairly uniform price over the whole country. Such an assumption is, however, only justified if the economic life of the country has not recently been subject to any considerable disturbance. This condition is not fulfilled in the present case, for the borrowings necessitate a considerable readjustment of the kind we have analysed above. Some industries have to increase, others to decrease, at least in a relative sense. The demand for factors of production increases in home market industries, and decreases in export and semi-international industries. In such a situation the prices of some factors of production in the developing industries may rise and stay for a considerable time above the prices of the same kind of factors in declining industries. Wages of unskilled labor, for example, may in domestic industries keep for a long while on a higher level than wages of unskilled labour in declining industries. Thus, not only is there a tendency for the kinds of factors used in great quantities in home market industries to rise in price in relation to other factors, but there will also be a tendency for the reward given to the units of any factor employed in home market industries to rise in relation to the reward given to the units of the same factor employed in other industries.

These two tendencies arise from, or at least are made possible so far as labour is concerned because of, a lack of mobility between industries and trades. It is obvious that if labour of a certain quality could flow without friction from one industry to another and from one place to another, there could at any given time be only one price of that grade of labour in the country. It is the absence of such mobility that makes it possible for wages to be higher in some industries than in others.

Furthermore, if labour of the special skill needed in one industry could be readily supplied by workers with a different training in other industries, a greater demand for the former could not lead to a rise in its price in relation to the price of the latter. But as a matter of fact such a transition, even under the influence of considerable differences in wages, is as a rule rather slow. Therefore

an increased demand for labour in one industry may for a long time raise the wage level over the wages of labour of the same general standard but of a different quality in other industries.

In a similar way, the lack of mobility of land and of capital influences the reward given to these factors in different industries. Capital goods such as buildings and machinery can only with great difficulty, and slowly if at all, be made free and available for use in another industry than the one in which it was first invested. For some time it may be given a very low reward and yet be kept in the latter industry. Land, too, may for some time be used in one line of production even though another use of it would be more profitable, although it is in many cases much more easily shifted from one use to another than is fixed capital.

As time goes on, however, the lack of mobility is to a great extent overcome. This is especially true of trade and place mobility; the price of any one factor tends more or less rapidly to be the same in all occupations. There will also be a tendency of the supply of the different factors to adjust itself to the new conditions of demand. Thus the relative prices of the factors of production, and hence relative commodity prices also, will tend to recede towards their position before the borrowings started. The flow of new labour will be towards occupations that have become relatively well paid and thus tend to cause a fall towards their former level of wages. If some capital goods get a higher reward than others, then more of the former will be produced and an equalisation of the reward thereby brought about. If the rent of a certain quality of land rises, it will be profitable to apply capital on other qualities of land in order to give it the qualities of the first, i. e. such land will be "produced" and its rent will fall.

But these are only tendencies which meet with considerable friction; they can to some extent counteract, but not prevent, the tendency to a change in the relative prices of various factors of production. In the beginning of a period of an even influx of foreign capital, say after a year or two, the change of the prices of factors will probably be greater than later on, when the adjustment of the supply of factors is well on its way. As time goes on one must in most cases expect that, for example, the wage

discrepancies between different labour groups of the same general standard which have been caused by the import of capital will more and more disappear.

§ 7. *Sectional price levels and terms of exchange.* We may next turn to commodity prices in the borrowing country. Commodity prices and factor prices of course move to a great extent hand in hand. However, commodity prices do not bear the same relation to costs of production in all industries, and costs of production as commonly calculated depend not only upon factor prices but also upon the extent to which the productive capacity of plant is utilised.

The real transfer of capital has been found to involve an expansion of home market industries, and possibly semi-international industries as well. Such an expansion may take place to a certain extent without any restriction of output in export industries, if unemployed workers and surplus capacity of plant are available.[1] When expansion goes further, productive factors which would otherwise have been used elsewhere must be drawn to the expanding industries. As stated in the last section, the productive factors used in large proportions in expanding industries become more scarce and the others less scarce than before. Unfortunately, it is impossible to say whether those used largely in home market industries are chiefly those which are relatively abundant and cheap, and therefore play a large part in export industries, or those which are relatively dear and are used much in semi-international industries. If the costs of transport and other obstacles to international trade played the same rôle for all goods, one would expect home market goods to be those for which conditions of production are not so favourable as for export goods but more favourable than for import and semi-international goods. As costs of transfer, however, weigh much more heavily on some goods than on others, one cannot say with certainty which factors will become more scarce and which less. It is most improbable, however, that home market industries will use so much of the

[1] The mechanism and effects of international capital movements may differ substantially during times of good business conditions and during periods of unemployment on a large scale. Of course, it also makes a great difference if the unemployment and surplus capacity is to be found in home market or in export industries.

kind of factors used in large proportions in the declining export industries that these kinds will not become less in demand compared with other factors. Furthermore, as expanding industries probably have to pay higher prices for their factors than do others for the same kinds, it follows that for two reasons costs of production in other industries, so far as they depend upon the prices of industrial agents, rise compared with those in export industries. It is entirely conceivable that there will be no rise in their average prices at all in the latter industries during the period of borrowing; costs of production and prices need not rise. In other words, *A* may not raise the supply curve of export goods at all.[1] Home market prices and, to a lesser extent, also semi-international prices rise, however, in comparison with export prices not only for these two reasons, but also because prices in expanding industries have a tendency to run ahead of costs, with consequent rising profits.

Evidently the buying power in *A* may rise considerably in connection with a change in sectional commodity price levels and in the aggregate of money incomes without any tendency, or only a weak one, for its export prices to rise. And buying power may decline in *B* without its export prices tending to fall. It is not impossible for *A*'s export prices to fall relative to *B*'s. It all depends upon the direction of the new demand in *A* compared with the disappearing demand in *B*, a question which will be analysed in § 9 below. There is at any rate no justification for assuming

[1] Thus the conclusion in § 5 is substantially modified. The orthodox methods of expressing costs in terms of "units of productive power" and similar concepts is responsible for the fact that men like Bastable, Keynes, Pigou, and Taussig have stopped at the preliminary conclusion in § 5 and have found a variation in the terms of trade certain in all cases, at least where the direction of demand is not of a very special sort. Besides, the fact that they have ignored more or less completely the changes in buying power is another reason why they seem to me to *exaggerate* the changes in trade terms. It is surprising that Keynes should ignore these changes in relative costs and prices, as he stresses their importance in the case of an inflationary credit policy of "domestic" origin. Why should the case differ when the expansion of credit and buying power is connected with an import of capital? A typical illustration of how the artificial assumption of units of productive power can make an otherwise acute analysis inconclusive is to be found in Pigou, "Disturbances of Equilibrium in International Trade," *The Economic Journal* (1929); see e. g., p. 355. Another example of the same mistake is to be found in a paper by Lösch, "Eine Auseinandersetzung über das Transferproblem," *Schmollers Jahrbuch* (1930), Heft 6. I refer the reader also to my paper on "The Reparations Problem," *Index* (1928), and to the discussion with Keynes in *The Economic Journal* (1929). Similar views to mine on the changes in sectional price levels are presented in Wilson, *Capital Imports and the Terms of Trade*, 1931, e. g. p. 81.

that a noticeable change of the terms of exchange in favour of *A* is the normal or probable outcome, either in the beginning of the borrowing period or later.[1] The readjustment of production and trade may proceed under the stimulus of changes in demand and changes in sectional price levels such as will leave the terms of exchange undisturbed.

In brief, the shift in demand from *B* factors, regarded as a whole, to *A* factors, which the borrowing implies, need not enhance the scarcity of the various productive factors used in *A*'s export industries compared with those used in *B*'s. *How much* the terms of exchange vary, when they do vary under the influence of a movement of capital, evidently depends upon the circumstances touched upon above, like the mobility of labour between different trades and places and other reactions of factor supply, the elasticity of demand, etc.

It goes without saying that the price situation will not be unchanged all through the period of borrowings, assuming that they continue at an even rate. The supply reactions require time. To the extent that they are carried out, prices tend towards the old relationship. It is to be expected, therefore, that considerable price changes will have come about a year or two after the borrowings started, but that as time goes on prices will return more or less to their old position; there is no reason for assuming that they will return exactly to it. The case is analogous with that of an ordinary change of demand, and the circumstances which determine how close prices would come in the long run to the old position, if no new changes intervene, are the same in both cases, namely the character of the supply reactions. A complete analysis of the effect of international capital movements upon the price system must be an account of a time-using process.

Lastly, the size of the capital movements in comparison with other aspects of economic life in the countries concerned has an important bearing on the dimensions of the changes in the price system. Other things being equal, the larger the transfer of capital and the greater the readjustment of industry required, the

[1] It goes without saying that individual prices in the international as well as in the home market group of commodities may vary considerably.

more considerable will be the price dislocations. It is much easier to bring about a relative increase of imports and reduction of exports by 5 percent than by 50 percent. The general indication of the analysis above is that changes of the former dimension will in most cases not require any noticeable change in the terms of exchange in international trade.

§ 8. *The situation in the capital exporting country.* As to the capital exporting country *B*, assume that it hands over the borrowed amount to *A* in the form of cheques or bills on a third country. Its reserves of foreign exchange decline, the outstanding volume of credit is directly reduced, and the secondary reduction of buying power is brought about in a way analogous to that in which the buying power is increased in *A*. This reduction in buying power must, of course, affect commodity and factor prices, as already indicated. Production expands in export industries, whereas it is reduced in home market industries. Semi-international goods hold an intermediate position. The output of such goods is increased in comparison with the consumption of them, a part replacing imports from *A*.

All in all, the process of readjustment is almost exactly the opposite of that in *A*. It is important to observe, however, that the difficulties in the way of the necessary readjustment are usually much greater in the lending than in the borrowing country. In many cases a tendency to wage reductions will arise, at least temporarily, in certain industries in the former country, while wages in the borrowing country tend rather to increase. If, however, trade unions are strong in *B*, workers belonging to home market industries, where employment is falling off, may prefer a period of unemployment to work in export industries or semi-international industries at lower wages. The readjustment of production may thus cause a certain economic disorganisation, and part of the reactions of the balance of payments described may fail for some time to come about. Instead, the decrease in buying power owing to reduced production [1] will tend to reduce commodity imports.

[1] The owners of fixed capital get lower quasi-rents, while unemployment makes the incomes of the working class decline; the first circumstance is as important as the second one and should not, as often happens, be ignored. To describe the changes in the aggregate of money incomes in terms of wage levels is impossible.

It is uncertain, however, whether this tendency is anything like so strong as the otherwise existing tendencies to a shift in the balance of trade. If not, the reduction in the foreign exchange reserves continues and restriction of credit and buying power reaches greater proportions. In that way the trade balance is ultimately adjusted in spite of friction. The adjustments entail losses for *B* not only because of relatively fixed wage rates but also because capital goods cannot easily be transferred from use in one industry to another.

Through friction of this sort readjustment of the balance of trade is impeded; in some cases this is only partly made up for by the decrease in buying power which follows from unemployment in *B*, whereby imports are reduced. So far as this reaction is insufficient, the tendency towards an unfavourable balance of payments persists; interest rates rise and foreign short term capital flows in. The situation may thus continue while adjustment proceeds in *A* and other countries (see next chapter). In this way the burden of readjustment may to some extent be transferred to *A*. It is also conceivable that a financial crisis in *B* might break down either the gold standard or the resistance of the trade unions to wage reductions. In any case — and this fact is important — *B* may well lose much more from unemployment and other disturbances than from less favourable terms of exchange in international trade.

The readjustment is naturally much easier in a progressive country where population expands every year than in one where it is stationary or decreasing. In the former there is no need of an absolute reduction of the number of workers in home market industries. A relative decline is brought about if these industries fail to attract new capital and new workers, factors which find employment in other industries. The difficulties will also be lessened if prices in the world at large are rising during the years when the reorganisation of economic life in the capital-exporting country takes place. A relative lowering of some of its nominal price and income levels may mean simply that they rise less than corresponding levels abroad.

In general, it may be said that secondary effects of different

kinds are certain to arise, and that their nature depends upon the special characteristics of economic life in the borrowing and lending countries. For instance, if the economies of large scale production are not already entirely available, the expansion of output in certain industries as a result of the borrowings may tend to depress costs. It is unlikely, however, that the shift in production caused by the mechanism of international capital transfer will mean considerable change in this respect.

Lastly, it cannot be too often emphasised that a description of the mechanism is an account of a *process*, and that the situation changes all the time, even if the borrowings continue at an even rate. The difficulty is that goods have to be moved and production adjusted. Like all other adjustments, this one requires time, and as time passes it will be more completely effected.

§ 9. *The direction of the demand for international goods.* The reasoning above assumes that the part of borrowed money which *A* uses to buy international goods is distributed over *A*'s and *B*'s export goods in the same way as would have been the case with *B*. The further increases in purchasing power in *A* and reduction in *B* have also been assumed to leave the combined demand for either country's export goods unchanged. Then variations in the terms of exchange can arise only through changes in supply conditions as explained above. In cases where this condition as to demand is not fulfilled, the terms of exchange will also be affected by another tendency than the one described above. The price development depends upon where demand is increased and where it is reduced, and which commodities and services are affected. We turn, therefore, to some cases where the shift in demand involves greater or less demand than before for international goods in *A* and *B*, considering at the same time the influence of the shift in demand from *B*'s home market goods to *A*'s, which has already been analysed.

If *A* uses the borrowed money to buy much of *B*'s export goods [1]

[1] Professor Viner has pointed out to me that borrowings may even increase *A*'s demand for import goods *more* than by the whole borrowed amount. The Argentine may borrow $50,000,000 and build a railway for $100,000,000, of which $80,000,000 may go to pay for foreign goods, whereas in the case of no borrowings the domestic capital would have bought chiefly Argentine goods.

and little of its own, whereas *B* would have bought much of *A*'s and little of its own export goods, the shift in demand so far as international goods are concerned affects the terms of exchange in favour of *B*. This tendency may well be stronger than the opposing one discussed in § 7, and the outcome of both may be to the advantage of the lending country. In other words, the terms may be more favourable to *B* than before the lending began. There is nothing peculiar in this. Demand has been shifted, not only from home market goods and factors in *B* to such goods and factors in *A*, but at the same time from export goods and factors in *A* to those in *B*. This may well mean that the *B* factors taken as a whole have become more in demand than before, and the *A* factors less.

On the other hand, if *A* buys less import goods from *B* than *B* would have done itself, the demand has evidently been shifted from *B*'s export goods to *A*'s. As there is also a transfer of demands from home market goods in *B* to such goods in *A*, the tendency for demand to turn away from productive factors in *B* to those in *A* is a double one. The terms of exchange will move more in favour of *A* than in the case discussed in some detail in previous sections.

The cases so far dealt with have one thing in common: the total demand for all home market goods on the one hand and for all international goods on the other hand has been assumed not to vary because of the capital transactions. It goes without saying, however, that the shift in demand may well be a greater or smaller increase in the demand for *A*'s home market goods than the reduction of demand in the case of *B*. Similarly the demand for international goods from one country may rise more or less than the reduction in demand for such goods in the other country. Thus the purchasing power which is transferred from *B* to *A* may turn from all sorts of goods in *B*, as well as from *A*'s export goods, to all goods in *A* and export goods in *B*. The shift in demand from one group to another is great or small according to circumstances, and follows no general rules. It is almost certain, however, that important international capital movements imply a reduction in the demand for home market goods in the lending countries and

an increase in the corresponding demand in borrowing countries. For this reason the analysis in previous sections, on the assumption that the demand for international goods is primarily undisturbed, tells part of the story in most cases. The analysis below, unless otherwise stated, is concerned with cases where the shift in demand from *B*'s to *A*'s home market goods is more important than the shift in demand from *B*'s export goods to *A*'s, or vice versa.

§ 10. *Some controversial points.* The forces which operate to adjust the balance of trade to new international capital movements are as follows: (1) The increase in buying power in *A*, directly and indirectly due to borrowing, is used to buy more international goods, whereas *B* buys less of them than before. (2) Higher prices of home market and semi-international goods in *A*, and lower ones in *B*, compared with prices of international goods, cause a shift in demand to international goods in *A*, and from them in *B*. (3) The supply price curves for export goods may be raised in *A* and lowered in *B*.[1]

If after a time the combined effects of these three tendencies upon the balance of trade are insufficient to create a need for the whole foreign exchange obtained by *A*'s borrowings, the foreign exchange reserves continue to grow. As already indicated, this will strengthen the tendency towards a negative trade balance. A situation finally arises in which there is a demand for something like the whole of the foreign exchange brought in by the borrowing. Should the deficit be greater than the amount of the borrowings, the reserves decline and the above-mentioned tendencies are weakened, whereby the deficit is again reduced. Thus, although there need never be in a single year an import surplus in the borrowing country created by the borrowings exactly equal to the borrowed amount, — short term capital movements may go in either direction, — yet the mechanism of international capital movements evidently works with great precision.

There is nothing mystical about the creation of sufficient mar-

[1] There is a fourth tendency, which has not so far been dealt with; it will be further described in Chapter XXIII, § 4, in the discussion of import duties, where its influence is most clearly seen.

kets for *B* goods in *A*, as has sometimes been suggested. Many writers express the opinion that the readjustment has come about surprisingly quickly in some well-known cases of international capital movements. Such surprise is justified in the light of the classical description of the mechanism, where everything centres around the assertion that the lending country must offer its goods on cheaper terms of exchange in order to induce the borrowing country to buy a greater quantity of them and thus create an export surplus corresponding to the capital exports.[1] The mechanism outlined above makes it much more understandable how the adjustment is brought about so smoothly.

In Sweden an import of capital which had been going on for about a decade, at a rate of about 10 percent of the annual commodity imports, was changed a few years before the War into an export surplus of capital of about 5 percent of commodity exports. The necessary readjustment of economic life, which implied among other things an increase of exports by about 30 percent in the course of three years, while imports remained almost constant, attracted practically no attention at the time, and there is no evidence that it met with friction or caused noticeable changes in relative price and income levels. Similar cases have been observed in other countries. While this proves nothing — foreign demand for Swedish goods may have risen for reasons which have nothing to do with the change in capital movements — it increases the probability that a theory of a smooth-working mechanism fits reality.

To understand the true character of the mechanism of international capital movements it is important to keep in mind that in most cases the monetary transfer precedes both the real trans-

[1] Cf. Taussig, *International Trade* (1927), pp. 239, 261; and Keynes, Rueff and the present writer in the *Economic Journal* (Sept. 1929). In *A Treatise on Money* (Chapter xxi) Keynes makes a reference to this discussion but confines himself to the question that credit changes may take place chiefly in *A* or chiefly in *B* (see § 4 above). He does not seem to have grasped the idea that, independently of the changes in the volume of credit, there is a transfer of buying power to the extent that the borrowers use their money for purchases abroad. He makes the statement that "the foreign balance depends on relative price levels at home and abroad," which not even Taussig, the principal defender of the classical doctrine, would be willing to uphold.

fer and the price changes.[1] The term "monetary transfer" is taken to cover those changes in buying power which are the direct outcome of borrowing operations; it includes the "primary" change in the credit volume. These changes in buying power are the ever-present *causa efficiens*, while the character of the price variations varies from case to case. Changes in buying power affect the balance of payments directly in several ways, even in the quite conceivable case where owing to great mobility and fluidity there are no relative price changes at all. It is true that in most cases price changes occur, although they need not be considerable, and need not involve changed terms of international exchange; then, of course, they exercise a further stimulating influence towards adjustment of production and demand, — partly by calling forth further changes in buying power, — but they hold a secondary position relative to the primary changes in buying power.

It should also be observed that the relation between sectional price levels is in some cases not so important as the relation between price and wage levels. In a new country where practically all goods are either import goods or export goods, home market goods may consist exclusively of services; their prices are largely "wages." But this naturally does not invalidate the description above. For the term "home market prices" the expression: "wages of home market workers," per unit of service, may be inserted.

[1] Cf. the discussion in the *Economic Journal* (1929).

CHAPTER XXI

THE MECHANISM OF INTERNATIONAL CAPITAL MOVEMENTS (*Continued*)

§ 1. *The existence of "outside" countries.* In the previous chapter it has been assumed for the sake of simplicity that only one lending and one borrowing country are concerned. As a matter of fact, the world consists of a great number of countries, and the transfer of purchasing power from *B* to *A* is likely to lead to changes in the international trade of other countries, perhaps all.

In one respect the existence of more than two countries makes no difference whatsoever. Demand for home market goods is increased in the borrowing and reduced in the lending country, although not necessarily by the same amount. It is when we come to international goods that the difference appears. *A* uses borrowed money to buy greater quantities of goods not only of its own production and of *B*'s; it also imports more goods from another country, *C*. *B* may, however, reduce its demand for *C*'s goods in the same proportion. In that case, the effects as to production and prices are as above; the only difference is that *C* sends to *A* certain goods which it used to send to *B*.

Let *C* and *D* represent all other countries than those directly concerned with the capital transaction. The case is the same as if *C* alone were concerned. The combined demand from *A* and *B* for goods from *C* and *D* is unchanged, and the latter countries are not, at least directly, affected by the capital movement. It makes little difference to *A* and *B* if their demand for goods from *C* has increased while their demand for goods from *D* has been reduced, so long as the total demand for international goods from the latter *C* and *D* remains constant. Beside the changes in *A* and *B*, there is in this case a shift in demand at the expense of *D* in favour of *C*, but this does not directly concern *A* or *B*; it affects them indirectly

only if they have more intimate trade connections with one of the two outside countries than with the other. The important thing for *A* and *B* is that demand has shifted from home market goods and semi-international goods in *B* to those in *A*. As this sets up reactions also in the demand for international goods, as described in the last chapter, we would have to assume that these secondary changes in demand do not alter the combined demand of *A* and *B* for goods from other countries, if we were to maintain that the presence of these countries makes no difference in the mechanism.

As a matter of fact it is highly improbable that both the transfer of buying power involved in the borrowing transaction itself and the consequent secondary changes of buying power in the borrowing and lending countries will affect the various groups of goods in exactly this manner. A common case is that where *A* uses much more of its increased purchasing power to buy goods from outside countries than *B* would have done with the money it has lent to *A*. Evidently the demand has here shifted not only from *B* goods to *A* goods (as to the ways in which this shift may be distributed between groups of goods, see the preceding chapter), but also from *B* goods to goods from certain outside countries, which will below be called *C*. Such a shift may take place not only with regard to the use of the borrowed sums but also with regard to the secondary changes in buying power. Furthermore, the increase of buying power [1] in *C*, caused by increased demand for its goods, may in its turn lead to a more or less significant rise in the demand for *B* goods. Besides, the secondary reduction in *B*'s buying power will to some extent lead to reduction in its demand for its own or for foreign goods. If demand is directed in a manner unfavourable to *B*, its productive factors and commodities in general will naturally become less scarce than before. On the other hand, productive factors and goods not only in *A* but also in *C* become more valuable. The character of the reactions in the trade balance in this case is similar to that in the case of two countries only. But they are much more complicated, and a further description is neces-

[1] The aggregate of money incomes as well as the flow of liquid capital rise.

sary as a basis of judgment regarding the proportions of price variations in concrete cases.

Let us first recall that the process of adaptation involves among other things in the two-country case where demand for international goods is primarily unchanged (1) reduced buying power in B and increased buying power in A, and (2) lower supply prices of certain commodities in B and higher ones in A. In the present case the increased world demand for commodities from C naturally enhances the relative scarcity of its productive factors and its level of incomes in much the same way as incomes rise in A. Thus there is in both these countries an increase in buying power which, although often completely overlooked, plays an important part in the process of adjustment.

Evidently the reduction, if any, in B's export prices compared with export prices in A and C will be smaller (1) the greater is the increase in buying power in these countries and the reduction in B, which goes hand in hand with a shift in the terms of exchange of a certain dimension (for the greater the change in buying power, the greater the change in the trade balance); (2) the more the increased buying power in A and C turns to goods from B; (3) the more the reduced buying power in B causes a diminution in B's demand for goods from A and C and other countries called D; (4) the more elastic is demand in A, C, and D for B's export goods; (5) the more elastic is B's demand for export goods from A, C, and D.

§ 2. *The elasticity of demand.* Conditions in these five respects need to be further examined. The elasticity of demand in the rest of the world for B goods, taken as a whole, in the first place, depends upon the following three circumstances: (1) What kind of goods belongs to the export group in B and what is the elasticity of demand for such goods in other countries? (2) How much of the demand for such goods is satisfied by B and how much by other sources of supply? The fact that most goods are supplied by producers in many countries serves to make the foreign demand for such goods from a given country comparatively elastic. Even small increases in export prices may substantially reduce sales abroad, and after some time make this country disappear from the

export list altogether. Not only does the purchased quantity decline, but other countries increase their output and exports under the stimulus of the slightly higher prices. On the other hand, articles which in one year were not exported at all may a few years later have important markets abroad as a result of comparatively slight price reductions.[1] In this way, commodities move between the export and semi-international groups. In all studies of profound economic variations the fact that these groups do not embrace precisely the same goods at different times must be borne in mind.

It is only in exceptional cases that a single country provides a considerable part of the world's supply of an important commodity. The best-known examples are those raw materials in the production of which the United States holds the commanding position. In such cases the elasticity of demand may be rather small. In the commoner cases where several countries supply significant parts of the total, the elasticity of demand for goods from one which has reduced its price depends upon how much competing producers in other countries reduce their output, and upon the intimacy of trade connections between the exporting countries on the one hand and the importing countries on the other. If B has less close trade connections with A and C than a competing country E, a small reduction in B's export prices is likely to have a comparatively slight influence on B's sales.

(3) In a discussion of elasticity of demand, one should not, however, leave out of account a circumstance of a somewhat different sort which has not been dealt with above. An element of some importance, under certain conditions, is that B may use capital and labour to build up marketing organisations for certain goods in countries which have not heretofore been purchasers of such goods from B. In this way foreign demand for such goods is also stimulated. It would be wrong to assume that export sales of a given commodity in a foreign market depend exclusively upon the total demand for goods of this type in the market, and on the

[1] Such goods may be manufactured from imported raw materials or semi-manufactured goods, of which importation grows when exports of the finished articles are increased.

price at which they are offered by *B* and its competitors. Sales depend also upon the energy of traders, and their willingness to incur expenses for advertising, salesmen, risky credits, etc. The less energy and capital is used to satisfy the needs of the home market in *B*, the more they become available for sales abroad.

All in all, the existence of many countries serves to make the foreign demand for goods from one of them relatively elastic, i. e. sensitive to a fall in *B*'s commodity price and cost levels. Naturally some of these circumstances tend to make *B*'s demand for goods from *A* sensitive to higher prices for them. How much it will be reduced depends, if we take these circumstances in the reverse order, upon the reduction in the energy with which other countries pursue their marketing in *B*; the number and sort of commodities which are on the border-line of exportability, and which therefore disappear from *A*'s export group even after a slight price increase; the character of trade connections; the relative decline in prices of semi-international goods in *B*; the increased supply of goods from competing countries; and, lastly, the elasticity of wants in *B* as regards export goods from *A* and *C*.

§ 3. *The direction of demand.* We now turn to another aspect of the process of adaptation: the changes in buying power, both original and secondary, and the direction of the demand to which they give rise. If *A* and *C* use this buying power to buy goods largely from *B*, the readjustment will be much easier from the point of view of the latter than if they bought chiefly goods from other countries.[1] In other words, if *A* belongs to a group of nations with which *B* trades little, the influence on its trade balance of the secondary increase in buying power will be comparatively unimportant. Similarly the reduction of *B*'s own demand for goods from this group of countries will be small, and home producers as well as other countries, called *E*, will feel this reduced demand more keenly. As these other countries are more important customers in *B* than *A* and *C*, *B* must feel more directly the influence of a smaller buying power in *E* than that

[1] To avoid misunderstanding it is mentioned again that this demand may turn so much to *B* goods, that its balance of payments tends to be positive, but this case is not discussed here.

of increased buying power in the other countries. In brief, the less intimate the trade relations between *B* on the one hand and *A* and *C* on the other, the further the terms of exchange will move to the disadvantage of *B*.

Trade relations depend much upon the character of industry in each country, the transport relations between countries, and the tariff walls around them. Thus, the further away the borrowing country and the sellers of commodities which *A* wants to buy after borrowing are situated from the lending country, and the more tariffs restrict trade between them, the greater will be the difficulties of readjustment and the variations in relative prices and terms of exchange. Of course if *B* cannot easily increase its sales to *A* and *C*, much the same effect will follow from greater sales by *B* in another country, *E*, which serves as an intermediary and after an adjustment of its industry increases its sales in *A* and *C*. The readjustment may thus take place step by step. It goes without saying, however, that the adaptation in *E*, as in other countries, encounters friction, and the difficulties to be overcome are consequently great, even though they are less than if *B* had had to overcome the obstacles of high transportation costs and high tariffs alone. Such difficulties may be much reduced if *A* and *C* increase their purchases from *E* of goods difficult to transport from the distant *B*, the latter sending easily transportable goods to *E* instead.

Just as the use of increased buying power in *A* and *C* has much to do with the dimensions of price variations, so the percentage of reduced buying power in *B* reflected in reduced demand for foreign goods affects the outcome in this respect. The more directly the trade balance is affected, the less the terms of exchange need vary to bring about equilibrium in the balance of payments when international capital transactions are going on.

The case where demand is turned from *B* factors to factors in *A* and *C* is only one of many possible, but it is representative of the greatest number of international capital movements which have taken place in the last century. When Sweden and other European countries in the latter half of the nineteenth century borrowed huge sums of money in France to build railways,

very little railway material was bought in France; instead, the demand for goods from Germany and Great Britain was increased. The German reparations which flow from the Allies to the United States will not to any great extent increase the American demand for goods from Germany. In general, international capital movements involve a shift in demand both from home market goods and factors in the lending country to those in the borrowing country, and from export goods in the former to export goods in the latter and in certain outside countries.

§ 4. *The size of purchasing power variations.* It has been stressed above that changes in the supply prices of commodities and in buying power, the latter partly due directly to the borrowings and partly due to the changes in the prices of productive factors, i. e. in the aggregate of money incomes and the flow of liquid capital,[1] are different aspects of the process of adjustment. One may well inquire which circumstances govern the relative proportions of these two reactions, changes in buying power and in export prices (cf. the last sentence of § 1).

If commodity prices were at all times governed by costs of production, and if every productive factor always commanded the same price in all industries in the same country, the relation between the prices of export goods and of home market and semi-international goods would vary only with changes in the relative prices of the various productive factors, owing to the fact that the latter are used in varying proportions in different industries. If the productive factors used in export industries in the borrowing country are to a large extent different from those used in other industries, export prices will rise only slightly, if at all, whereas the prices of many other goods will rise considerably. To such a development corresponds a considerable increase in the prices of certain productive factors and hence also a marked expansion of the national income in terms of money. This increased aggregate of money incomes would affect the trade balance quite independently of any changes in the supply prices of export goods.

[1] In the following I sometimes speak of "the aggregate of money incomes" when the words "and the flow of liquid capital" should be added to make the statement complete. I trust that this will not cause any misunderstanding for the reader who has studied the preceding sections.

Owing to the fact that certain productive factors may temporarily receive a much higher reward in home market industries than in export industries, and because prices may differ from costs of production, the chance of important increases in the relative prices of goods from the former industries in the borrowing countries is increased. In other words, the opportunities for considerable variation in the total buying power in terms of money are great, even though the relation between import and export prices be little changed. In general we may say that when the prices of other goods rise much compared to export prices in the borrowing country or the outside country, *C*, while falling much compared with export prices in the lending country, the changes in buying power which go hand in hand with a shift in the terms of exchange are correspondingly great. In that case the trade balance is sensitive even to slight changes in the terms of exchange, or rather to the variations in buying power which accompany them.

The development of commodity prices and the total volume of buying power depends a great deal upon the credit policy pursued. Whatever policy *A* and *C* adopt to begin with, it is certain that they will be forced to liberalise unless they can force other outside countries to carry out a definite deflation. If this is done, the lending country will have to restrict credit and deflate still further. If, however, there is no reason for outside countries (*D* and *E*) to deflate, the increasing reserves of foreign exchange and gold will cause a credit expansion in *A* and *C*, in the manner indicated in previous chapters. The mechanism of adjustment will be at work both in the borrowing country *B* and in *A* and *C*. In the case of German reparations it is evidently a matter of great importance that the transactions of the international banks shall be handled in such a way as to give the countries which in the last resort receive the reparation payments, namely France and the United States, a feeling of easy monetary conditions and to cause them to follow a liberal credit policy during the years when the principal readjustment is to take place and a surplus of German commodity exports is to be provided.

§ 5. *The terms of exchange.* In many different ways the transfer of buying power tends to turn the trade balances in *A* and *B* in

such a direction that real transfer of capital is possible. Alteration in the relation between import and export prices offers special interest from a national point of view. When variations in the price system favour the borrowing country, the lending one dispenses with a greater volume of goods than the transferred sum of money would have bought before the capital transaction began, whereas the borrowing country and outside countries receive more. This outcome is, however, by no means certain. It follows from the analysis in this and the previous chapter that demand conditions may be so affected that the terms of exchange move in favour of B, not of A. Even if they change to the disadvantage of B, the corresponding gain may fall to other countries (C), not to A.

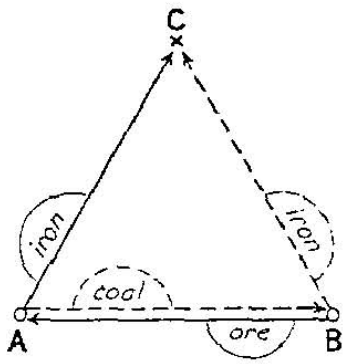
As to the proportions of such variations in the terms of exchange, the reasoning above indicates distinctly that even considerable capital movements [1] which primarily reduce demand for goods and productive factors from the lending country will not cause substantial changes in the export prices of the countries concerned, if they have a many-sided production and trade with a large part of the world. Such is certainly the position of Germany since the War, so there is every reason for assuming that reparation payments will not change the terms of trade greatly to its disadvantage. As to the scanty verification of theoretical analysis offered by a few well-known pre-War cases, see the next chapter.

The situation is different with regard to countries which, like Brazil, for example, export chiefly goods with a comparatively inelastic foreign demand such as coffee, and which, being industrially one-sided, possess few potential export goods and experience great difficulty in substituting domestic semi-international goods for import goods. An export of capital from Brazil — or the sudden disappearance of its borrowings abroad while the payments of interest and dividends continue — may cause a substantial drop in the Brazilian export price index.

§ 6. *Changes in transportation costs.* That capital movements while in process affect the demand for transportation services and

[1] I have in mind borrowings and reparation payments of 10 to 15 percent of the export trade of the countries concerned.

thence the costs of transportation has been pointed out in previous chapters. It is conceivable that in certain cases outward freight rates should be substantially increased for *B* compared with inward freight rates. When that is so, the price level for commodities and factors of production moves downwards (see Chapter VIII). On the other hand, this tends to increase the demand for *B* factors, more or less offsetting the former tendency. Let us assume, for example, that *A* has rich coal mines and *B* iron ore deposits, and that it is cheaper to transport the ore to the coal and produce iron in *A* for export to an important market *C*, as illustrated in the figure below.



Borrowing in *B* by *A*, however, increases *B*'s bulky exports to *A*, — but not, we may assume, to *C*, — and raises the freight rates in the direction from *B* to *A*, while reducing them in the opposite direction. It therefore becomes more profitable to send the coal to *B* and export the iron from there to *C*. The iron industry in *B* tends to expand at the expense of its competitors in *A*.

§ 7. *The influence of tariffs.* To supplement this description of the reactions of the price system to a disturbance in the form of a transfer of buying power between nations — reactions by means of which the balance of payments in the various countries is kept in equilibrium — it may be worth while to say a few words about the influence of high tariff walls.

Like other obstacles to commodity movements, tariffs, as already pointed out, impede the international transfer of capital. Trade in international goods is restricted and hence also the

means by which capital is transferred. The direct effect of variations in the total buying power upon the trade balance is reduced. It takes a stronger stimulus to make goods move over the tariff wall than during freer trade conditions; a more pronounced shift in prices is essential. In other words, there is opportunity for greater changes in the relation between home market, semi-international, and export prices, with slighter effects upon trade balances. In brief, the connection between national price systems is weakened by tariffs, and the transfer of buying power and goods between them is rendered more difficult. There can be no doubt that the post-War protectionist policy throughout the world, and the "buy-British-goods" and similar movements, have made the carrying out of the German reparations a much more serious affair than it would otherwise have been.

If a country which for non-economic reasons has a large net inflow of capital (reparation payments, for instance) places exceedingly high duties upon all imports, the volume of the latter will decline. The surplus of foreign exchange will cause a credit expansion in one way or another, and the prices of the productive factors and thence the costs of production in all industries will rise. There is nothing to prevent them from rising to a level many times as high as formerly. They may continue to do so even after all exports have ceased, if imports are so reduced by the tariff that they fall short of the amount due from other countries on capital account. An equilibrium will be reached only when the rising price level has so increased imports in spite of the duties that enough goods flow in to discharge the reparation payments.[1]

Such would be the development if the balance of payments consisted solely of the trade balance and capital transactions. There is no reason to assume that the rate of interest in this country would fall because of the high tariff,[2] that lendings abroad would begin and the balance of payments be restored in that way. As a matter of fact, other items in the balance, above all tourists' ex-

[1] If this country is an important part of the world, other countries may be forced to reduce their price levels, for example, after a redistribution of the world's gold supply.

[2] It may just as well rise as fall. Compare Chapter XVII.

penses, would probably vary counteractingly. Travel abroad would be extremely cheap for inhabitants of this country, and the sum of tourists' expenses would therefore almost certainly grow considerably.

There is a widespread opinion, expressed in many financial papers and periodicals, that high American import duties are the cause of the American export of capital in the last decade. The United States, it is said, refuses to receive goods as interest and amortisation payments, and hence has no choice but to invest the money abroad. Behind this view lurks the quasi-mercantilist idea that if a country has a deficit in the balance of trade, and at the same time borrows abroad, the deficit is due to other circumstances than the borrowings and that the latter are necessary in order to equal the balance of payments. A reduction of commodity imports will, it is thought, make part of the borrowings superfluous in a debtor state and increase the capital export of a creditor state. As indicated in Chapter XVIII, this may be true of temporary variations, but from a long time point of view capital movement is the cause, and the position of the trade balances the effect.

To prove that the American tariff wall increases American lending abroad it is necessary to demonstrate that the interest level in the United States is reduced relative to interest rates abroad, or that the willingness of American capitalists to invest abroad is for other reasons increased or that of other capitalists to invest in the United States reduced. There seems no reason for assuming that any of these conditions is fulfilled. It is hence impossible to say whether the United States would export more or less capital if its tariff wall were lower. Restriction of immigration is much more likely to increase capital exports than is that of commodity imports.[1]

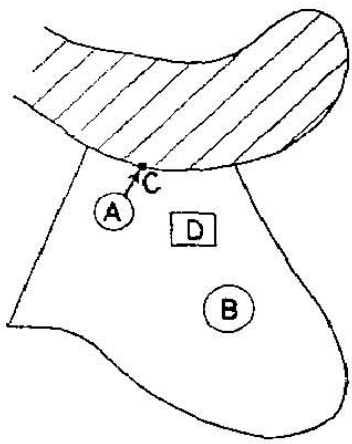
§ 8. *Interior costs of transport.* It has been said repeatedly that obstacles to international capital movement consist largely in the difficulties of moving commodities. Naturally import duties and costs of transport between countries are only part of such diffi-

[1] The influence of immigration restrictions upon capital movements has been discussed in Chapter XVII.

culties; the costs of transport *within* countries play their part as well.

In the localisation theory presented in Part III, a transfer of buying power and demand from one place to another was shown to bring changes in local supply; goods are moved locally, and the productive factors in each place are put to different uses in producing commodities and services. Besides, not only capital but also labour is able to move, so that conditions of production are changed.

This holds true for places in the same country as well as those in different ones. The difficulties of moving the goods from the interior to the frontiers exercise the same sort of influence as do the



costs of moving them across frontiers and from one frontier to another. If increased capital export from Germany, for instance, necessitates the exporting of goods produced in a region far from the national border, the influence on price conditions in this region compared with prices in other German regions will be the same as that on German prices in general relative to prices abroad when goods must be sent to distant markets at high transportation costs.

The figure above may serve as an illustration. Assume that potatoes are exported from region A via the harbour C, whereas the region B produces potatoes for the domestic demand in the southern part of the country. Their price is *higher* than the price in C, reduced by the costs of transport from B to C. A transfer of buying power from the region B to other countries, which in-

creases their demand for potatoes in *C*, will depress the price in *B* until it reaches that in *C*, reduced by the costs of transport.

Potatoes in this case stand for goods in general, some of which will be sent greater distances or at higher expense than before. Price levels for commodities and productive factors will consequently tend more or less downwards in regions situated like *B*. Similarly the regions in capital importing countries which must have recourse to goods from more distant places of production will experience increased price levels.

There is a tendency to avoid sending goods with the highest transportation charges.[1] Production shifts, and other goods are sent. Besides, region *B* may send goods to a region better situated for export production (*D*), and the latter may send other goods to the export harbours. This is likely to happen if *B* concentrates on the production of goods which are home market goods from the point of view of the whole country. In this way, the readjustment of commodity movements takes place gradually.[2] In general, the localisation of industry is changed, as well as the price relations within the country. Other things being equal, the industries which produce export goods tend to concentrate in regions favourable for export, as a smaller part of their output is now sold at home. Labour and capital and general economic activity tend to move to such regions. Such factor movements, so far as they occur, counteract the tendency of prices of mobile productive factors in unfavourably situated regions to fall, but further reduce the value of natural resources and other immobile factors. It is uncertain, therefore, whether they counteract the tendency of commodity prices to fall in such regions compared with others. At any rate, a tendency towards lower prices in the lending and higher prices in the borrowing country will be inevitable in regions with this situation. This is true not only of prices which are home market prices from the point of view of these regions but of export prices as well.

[1] And goods which can be sold abroad in greater quantities only if prices are heavily reduced.

[2] Export of capital from a certain country, i. e. from various parts of it, means a domestic transfer of buying power from one part to another and from the latter to foreign countries.

The preceding analysis, wherein interior costs of transport are disregarded, holds good for regions which from an economic point of view are close to the frontiers. Evidently, when price conditions in all regions are measured by general price indices the drop in the lending and the rise in the borrowing country[1] will be greater than the analysis indicates. But the terms of exchange in international trade — the relation between the f. o. b. prices of export goods from various countries — are not affected thereby.[2]

Evidently, export of capital from districts situated like *B* to other countries tends to depress the price level in the lending country more than if the capital were lent by a region like *A*. This is a parallel to the fact that export of capital from a distant country with little trade with a borrowing protectionist nation tends to depress prices in the former more than they fall in lending countries situated close to borrowing free trade nations.

In brief, interior transport relations play their part in the adjustment. To the extent that an influx of capital leads to a change in transport conditions, for example, through railway building and the construction of roads, the price system is evidently affected in a way not touched upon in this chapter.[3]

§ 9. *The national income.* The analysis above makes it clear that the influence of international capital movements upon the size of national incomes is a complicated question. It is necessary to distinguish between different periods; during periods of transition, when the movement starts and whenever the difference between loans in one direction and interest payments in the other are subject to considerable variation, there will be disturbances and losses therefrom, particularly in the countries of which the trade balance is negatively affected by the variation.

Secondly, the terms of exchange — the relation between the export prices c. i. f. in export harbours — may move more or less favourably to the borrowing country, so long as new borrowings exceed interest payments, particularly during the period of transi-

[1] Under the assumptions made regarding the direction of demand.

[2] Nevertheless the lending country suffers an extra "loss" from the greater transportation costs it has to carry. Variation in the terms of exchange are unsatisfactory indices of changes in the national income in each country.

[3] See Chapter XVII and, for an illustration, Chapter XXII.

tion when borrowing operations have started on a considerable scale. Later on, when new borrowings fall short of the interest and amortisation payments, the effects are the other way around. Account must be taken, however, of the fact that the costs of transport between countries may change, owing to the capital movement, and that the terms of exchange, calculated as the relation between import and export prices in the harbours of the same country, change less than the terms of exchange in the other sense. The lending country may obtain as much import goods for its export goods as before, even though the foreign goods in the foreign harbour have become more expensive, whereas its own export goods in its own export harbour have become a little cheaper. For inward freights may have fallen in relation to outward freights. On the other hand, the relation between import and export prices may give too favourable a picture of the change, as the interior costs of transport may have been increased through longer journeys.

Thirdly, export of capital assumes that the rate of interest or other earnings realised abroad are expected to be greater than the earnings the capital could bring its owner at home. The pure rate of interest, after deduction of risk premiums, may be, for instance, 7 percent on foreign investments and 5 percent on home investments. If the rate of interest were equal to the marginal productivity of capital, the export of $1,000,000 would reduce home output by $50,000 per annum, and bring in $70,000 in annual interest payments. The percentage reduction in home output will, however, be much less than the proportion between $50,000 and the aggregate of previous money incomes. And, the increase in output in the borrowing nations will be less than the proportion between $70,000 and the previous aggregate of money earnings. From the point of view of total national output, the marginal productivity of capital, measured by changes in the volume of production, is less than the rate of interest. Increased supply of capital tends to raise wages and rents, and thus only partially takes the form of a greater supply of capital goods. Instead, each capital good represents more wages and rents. Reduced supply of capital depresses wages and rents and, there-

fore, leads to a smaller reduction in the quantity of capital goods than in proportion to the reduction of the capital supply.[1]

Fourthly, the redistribution of capital changes the conditions of production and hence indirectly the future supply of commodities. This may be important for the future terms of trade in the lending countries, if the goods of which they are great importers are much cheapened, as exemplified in Chapter XVII for the case of Great Britain. Furthermore, the prices at which their own export goods can be sold are also affected.

Evidently the national income is affected by so many counteracting tendencies of unknown strength that it is quite impossible to discount to present values all future gains and losses for either the lending or the borrowing countries. One cannot say whether the international capital movements bring net benefits or net losses to either. But unless the losses from disturbances are enormous, the world income is increased.

§ 10. *Changes in the volume of capital movements.* It has so far been assumed that borrowings continue at an even rate over a long period. This is seldom if ever the case, although it is possible that payments for non-economic reasons, such as reparations, should create a fairly constant net import and export of capital. Among the most outstanding examples of important international loan operations are the cases of the United States, the Argentine, and Canada. In all three we find an easily distinguishable period of borrowings separated from the preceding and following years by comparatively abrupt breaks. The period of considerable borrowings lasted in the case of the United States ten years, in the case of the Argentine eight years, though with a marked concentration of the operations in the last four years, and in the case of Canada ten years, here also with a concentration in the last years. It will be observed that only in the United States did the borrowings continue at a fairly uniform rate for some years. In the Argentine and Canada there was a continuous growth up to the end

[1] See Wicksell, *Vorlesungen über Nationalökonomie*, Heft I (Jena, 1926), for a full discussion of this peculiarity of capital. In his discussion of the effects of an export of capital on national income Keynes omits this circumstance, a fact which makes the conclusions on which he bases practical recommendations untenable (*A Treatise on Money*, chapters xxi and xxxvii).

of the period, when the import of capital suddenly ceased. In such cases the transition effects are likely to dominate.

Another simplification in the previous reasoning is that no account has been taken of the interest payments to which most capital movements give rise. The interest payments necessitate a transfer of buying power from the debtor to the creditor country, which sets in operation a mechanism of the same sort as the original transfer in the opposite direction. Should the sums due on interest account at any time balance the new borrowings, no transfer of buying power is required. Evidently what sets the transfer mechanism outlined above in motion is a movement of the difference between the new borrowings and interest payments. From the point of view of the mechanism of international trade, it is this net movement which deserves special attention.

It is most improbable that the net movement will be of the same size each year during a long period. Creditor states get increasing incomes on interest account, which in the long run exceed new loans; this happened in Great Britain in the middle of the last century. As the borrowings go on in debtor states, the annual interest payments grow rapidly. After a five to ten year period of considerable net inflow of buying power, a diminution of borrowings is likely to bring the amount down to or below the interest payments. There is, of course, no *a priori* reason why the borrowings should not continue to increase for a long period, during which, in spite of the interest payments, a net inflow of buying power should consequently take place. But an observation of actual cases of important borrowing operations gives no example of such a development.

The course of events in the American, Argentine, and Canadian cases is seen in the table below.

The figures confirm what one might say on *a priori* grounds, namely that the borrowings in most cases are subject to great variations, and that a considerable net inflow of capital in excess of interest payments is bound to disappear.

As the foregoing analysis has been based on the assumption of a constant net influx a few words should be said about other possibilities. If the influx is constant, the price reactions may be ex-

pected to reach their maximum a year or two after the borrowings started and then to move slowly back towards their old position.[1] In the case of rapidly growing borrowings the outcome will probably be an increasing change in the relative prices, whereas when borrowings grow with less rapidity the alteration in prices brought about in the beginning may remain constant or even disappear.

INTERNATIONAL BORROWING OPERATIONS IN UNITED STATES, THE ARGENTINE AND CANADA

(The Net Import of Capital in Million Gold Dollars after Deduction for the Interest Payments)

United States															
1860–78[1]	−3	−8	−40	−37	65	51	40	38	34	70	69	33	40	67	−9 −43 −110 −155 −195
Argentina															
1881–95[2]	2	10	28	12	16	41	116	198	94						−15 −23 −16 −20 −31 −21
Canada															
1900–13[3]	1	11	3	18	49	64	56	77	152	147	187	260	269	362	

[1] Graham, "International Trade under Depreciated Paper in the United States, 1862–79," *Quarterly Journal of Economics* (1922).
[2] Williams, *Argentine International Trade under Inconvertible Paper Money, 1880–1900* (Cambridge, 1920).
[3] Viner, *Canada's Balance of International Indebtedness, 1900–13* (Cambridge, 1924).

It goes without saying that if the net influx is falling the tendency towards the old position will be stronger. Naturally, a reduction in the net influx will elicit tendencies essentially like those which arise when capital export is begun. So far as mechanism is concerned, the analysis of the situation when capital exports begin applies also when an import of capital is reduced. Consequently a sudden disappearance of borrowings, an occurrence well known in financial history, whereby a net inflow is changed to a net outflow because of interest payments on previous loans, will cause strong tendencies of the sort described in the account of the situation in the capital exporting country *B* above.

These remarks apply, *mutatis mutandis*, equally well to cases of capital exports and a net outflow at even and at changed rates. For instance, a substantial reduction in the export of capital from the United States in 1923, compared with the preceding year and

[1] So far as the *mechanism* of capital movements is concerned there will be such a tendency. But to the extent that any basic circumstances have changed — and capital movements almost certainly involve a change in this respect — the position governing these tendencies is a new one.

followed by a rise in 1924 (it seems likely that there was a small net *import* of capital in 1923) might be expected to cause a rise in American home market prices. The general price index figures for the United States, Great Britain, and Sweden, computed by the Federal Reserve Board and Svenska Dagbladet, Stockholm, by means of commodities and weights as far as possible identical, seems to corroborate this view.[1]

	United States	Great Britain	Sweden
1922	158	156	159
1923	165	150	157
1924	159	159	157

While prices in 1923 were lower in Europe than in the preceding and following years, they were considerably higher in the United States. An average of ordinary price indices gives the following results for these three years: in the United States 140, 149.5, 145; in Great Britain, Sweden, Holland, and Canada 154.5, 150, 157.[2]

In view of the frequent and important variations in the net inflow and outflow of buying power, it is worth while to observe that business leaders are not aware of any grave disturbances of economic life caused by them. This substantiates the view that readjustment proceeds very smoothly, and as a rule without considerable dislocations of prices. Short term capital transactions exercise a balancing influence, as explained in Chapter XVIII — and reduce the need of radical readjustments. Furthermore, capital movements often vary with other changes in the balance of payments. In Great Britain, for instance, there is a tendency for foreign lending to increase at the same time that intensified foreign demand for British goods raises commodity exports compared with imports. Good business conditions increase British savings as well as the foreign demand for loans,[3] while British export goods

[1] See a note by the author, "Equilibrium in International Trade," *Quarterly Journal of Economics* (November, 1928), p. 184.

[2] It is, however, possible, indeed probable, that this development was at least partly due to the fact that 1923 marked the crest of a business wave in the United States, while in Europe depression prevailed.

[3] The stimulus to active British investments abroad is also greater when the immediate prospects are good. See Marshall, *Money, Credit, and Commerce* (1923), p. 138. Besides, Great Britain finances a considerable part of the world's foreign trade; during periods of expanding trade the capital required on this account is increased.

are in greater demand during times of large capital investments abroad. During times of poor business, savings decline as well as the demand for British goods. Only partly is the change in demand for commodities a direct result of the change in lending. There is a tendency towards a covariation which to a certain extent keeps a balance between commodity and capital movements.

The close parallelism between capital movements and changes in trade balances cannot, however, be due to this fact alone. Some smoothly operating mechanism working through changes in buying power rather than changes in terms of exchange is a contributory factor. The fact that so easy a readjustment is not to be expected by means of the classical changes in relative price levels and trade terms is stressed even by Taussig, the chief protagonist of the classical theory in a revised form.

> The fluctuations [he says] are closely associated with the alternations and repressions of industrial activity. During the recurrent upward stage of buoyancy and speculation, large loans are made; after each crisis there is a sharp reduction, perhaps complete cessation. Each of the successive cycles in British economic history during the last hundred years has been characterized by a great wave of foreign investment, followed by recession and quiescence.[1]
>
> The point that is less familiar, in connection with the theory of the subject, or at all events is not commonly considered, is the closeness and rapidity with which the varying balance of payments has found its expression in the varying balance of trade. The actual merchandise movements seem to have been adjusted to the shifting balance of payments with surprising exactness and speed. The process which our theory contemplates — the initial flow of specie when there is a burst of loans; the fall of prices in the lending country, rise in the borrowing country; the eventual increased movement of merchandise out of the one and into the other — all this can hardly be expected to take place smoothly and quickly. Yet no signs of disturbance are to be observed such as the theoretic analysis previses; and some recurring phenomena are of a kind not contemplated by theory at all. Most noticeable of all is the circumstance that periods of active lending have been characterized by rising prices rather than by falling prices, and that the export of goods apparently has taken place, not in connection with a cheapening of goods in the lending country, but in spite of the fact that the goods have seemed to be dearer at times of great capital export.[2]

One thing, however, stands out in the British phenomena. This is the unmistakably close connection between international payments and the

[1] *International Trade*, p. 238.
[2] *Op. cit.*, p. 239.

movements of commodity imports and exports. And this closeness of connection, striking in the case of Great Britain, is found again and again in other countries also. International payments, tho they involve between the individuals directly concerned nothing more than remittances in terms of money, lead almost at once to transfers of goods. The movement of exports and imports — the substantive course of international trade — responds with surprising promptness to the balance of international payments as a whole. The promptness is surprising because each constituent transaction, to repeat, is purely in terms of money. When individuals in a country like Great Britain make loans to other individuals (or governments) abroad, they undertake to put at the disposal of the borrowers merely so much of purchasing power, so much "money." Yet the recorded transactions between countries show surprisingly little transfer of the only "money" that moves from one to the other, gold. It is the goods that move, and they seem to move at once; almost as if there were an automatic connection between these financial operations and the commodity exports or imports. That the flow of goods should ensue in time, perhaps even at an early date, is of course to be expected; it is a commonplace in the theoretical reasoning that this must be the ultimate outcome. What is puzzling is the rapidity, almost simultaneity, of the commodity movements. The presumable intermediate stage of gold flow and price changes is hard to discern, and certainly is extremely short.[1]

The fact that changes in international capital movements often appear at the same time as other changes in the economic situation influences the effects of the former. A full analysis, which would require a special volume, would have to consider a great number of different cases. It is particularly worth while to examine the cases where changes in capital movements and in other phases of economic life are elicited by a common cause. If the rate of savings increases in country *B* and the interest level consequently falls, although the fall is reduced through lending abroad, the development will be rather different from what it would be if the export of capital started simply because capitalists in *B* became more willing to invest abroad and the interest level in *B* consequently rose.

Let us turn now to another aspect of changes in the volume of international capital movements. Although adjustment of trade balances in the countries concerned proceeds smoothly, there is no reason why the fact that borrowers and lenders use the capital differently should not exercise a far-reaching influence on the prices of international goods, when the change in capital move-

[1] *Op. cit.*, p. 260.

ment is so decided that the direction of world demand is considerably affected. During times when the chief lending nations restrict their exports of capital, the world's demand for goods like rails, which are needed much more in new countries than in old ones, declines. A serious drop in the export prices of the lending countries may ensue. This is an instance of the case where *A* buys more of *B*'s export goods than *B* itself would, and where consequently reduced lending diminishes the demand for *B*'s export goods.

It is probable that British export industries have suffered a great deal since the War from the fact that the French and German export of capital has disappeared and that of Great Britain has declined; American lending has not been able to make up for this. The world demand for British rails, machinery, ships, etc., has been kept down. The consequent unemployment and loss in British exporting firms has still further reduced savings, and thus indirectly the British export of capital.

The restriction of British and American lending in 1929 compared with preceding years may also partly explain how countries which export primary products, such as wheat and coffee, have been unable to continue the policy of regulating supply through storing. Sudden increases in the quantity for sale has led to a violent drop in the prices of such goods. Such things disturb economic life in the countries concerned, and the effects may spread throughout the world. After all, it is self-evident that a sudden and far-reaching change in the economic system may create various sorts of disturbances.

CHAPTER XXII

STATISTICAL VERIFICATION

§ 1. *Canada. Equilibrium on the foreign exchange market.* Unfortunately, very little statistical material is available of such a sort that it can be used as a test of the validity of theory in this field. Only one case of large borrowings in a country on a gold standard has been made the subject of an intensive study, namely Canada.[1] Let us turn our attention, therefore, to the course of events in this country.

From 1900–13 Canada borrowed very considerable amounts of capital, chiefly from Great Britain and the United States. An average of two estimates which agree in essentials gives the following figures (in millions of dollars):

	Estimates[2]			Net interest payments[3]	Difference between 3 & 4	Canadian investments[4] abroad	Difference between 5 & 6
	Direct 1	Indirect 2	Average 3	4	5	6	7
1900	32	34	33	32	1	−3	4
1901	37	50	44	33	11	29	−18
1902	42	31	37	34	3	3	0
1903	55	52	54	36	18	−17	35
1904	62	112	87	38	49	21	28
1905	113	99	106	42	64	16	48
1906	105	99	102	46	56	−13	69
1907	95	161	128	51	77	−22	99
1908	222	224	223	71	152	92	60
1909	253	193	223	76	147	34	113
1910	313	225	269	82	187	−26	213
1911	348	358	353	93	260	3	257
1912	321	435	378	109	269	—	269
1913	547	433	490	128	362	19	343
Sum	2546	2500	2527	872	1655	137	1518

[1] See Viner, *Canada's Balance of International Indebtedness, 1900–13* (Cambridge, 1924), p. 139. The material for the following analysis of Canada and a part of the analysis itself is taken from this book.

[2] P. 139. [3] Pp. 102–103.

[4] P. 94. The investments were largely increases of bankers' balances and other short time capital movements of a balancing sort.

In portraying the influence of these loans I shall deal with three parts of the question in this order:

1. Foreign exchange and the gold movements.
2. The increase in buying power and its influence on the price conditions.
3. The reactions of these conditions on the balance of payments.

As to the first question, it should be observed that Canadian dealings in foreign exchange were conducted almost wholly by way of New York. The money borrowed in Great Britain was consequently used by the banks to buy New York exchange, and the borrowers obtained a dollar deposit in Canadian banks. According as the borrowers needed money for payments at home, a certain amount was transferred from this dollar account to their accounts in Canadian money. In other words, the foreign money was sold to the banks, which paid by increasing the borrowers' Canadian accounts. Thus the banks increased their liabilities at home by the same amount as their foreign assets grew. They did not, however, buy the dollar exchange at a fixed price, coinciding with gold par. During times of an especially large supply of foreign bills the New York exchange showed a tendency to fall a trifle below par, and gold was imported. When borrowings temporarily decreased, on the other hand, the foreign exchange showed a tendency to rise, and gold was sometimes exported, though not to any large extent. It should be observed that the relationship was not that assumed by the classical theory — the influx of gold leading to an increase in the volume of means of payment — but the reverse one; that the increase in deposits led the banks to increase their gold reserves in almost exactly the same proportion. There was no attempt by the banks to regulate the quantity of deposits by means of variations in the discount rate, which was kept practically constant all through the period. Hence the volume of deposits could not be regulated in accordance with the gold reserves, but the latter were adjusted to the volume of deposits so as to keep the reserve at a desired percentage. The gold movements were, therefore, of a wholly secondary nature,

and the mechanism would have been essentially the same had there been no such movements at all.

Using the common terminology, we might say that Canada had during this period a favourable balance of payments. The meaning of this term is, however, not quite clear. In this case the implication is that there was an excess of foreign funds, available on demand, over the quantity of mature obligations. What is necessary in such a situation is either that the quantity of mature obligations be increased or that someone be persuaded to postpone the use of a part of the foreign funds. Variations in the exchange rates are usually of some importance in such persuasion, but they are by no means indispensable. The Canadian banks might have been willing to buy and sell foreign exchange at a fixed price, and their foreign funds could consequently have served as a regulator even without variations in the exchange rates. If there actually were in this case some such variations, the chief cause is to be found in the desire of the banks to keep their gold reserve at a fixed percentage, and thus at certain times to import gold. This is, however, unquestionably of secondary importance. The essential thing was the unlimited willingness of the banks to buy foreign bills by means of new deposits at a practically fixed price, i. e. by creating fresh buying power in Canadian money. In this way the so-called favourable balance of payments was equalised much more smoothly than would have been possible had the mechanism described in the classical theory been at work.

The borrowers used a part of their new buying power for demanding domestic goods and services. In a way described later on, this resulted in due course in an excess of imports over exports, and thus in a need for foreign bills for payments abroad. This demand was met by the banks through drafts on their foreign funds, which were consequently diminished; in the same proportion the accounts in Canada were decreased, the importers drawing on such accounts to pay for the foreign bills. As, however, the borrowings were going on all the time, the supply of new bills usually kept pace with the demand for them and even grew as a result of the increasing rate of the borrowing. During intervals of small borrowings, on the other hand, the supply of new

bills fell short of the amount required to equalise the balance of payments, and the reserve abroad consequently diminished. Thus the holdings of the banks abroad served as a regulator of the balance of payment. Parallel to this variation in foreign funds went a variation in home deposits. Every increase in borrowings and in the holdings in New York was accompanied by an increase in these deposits; and every diminution in the former was accompanied by a falling off in the latter. On the whole, however, the borrowings were increasing all through the period, so apart from minor variations the process might be described as a continuous rise both in foreign funds and home deposits.

§ 2. *Buying power and price conditions.* The new buying power in the hands of the borrowers meant an increased home demand for all kinds of Canadian goods. In so far as this demand was directed towards export goods and semi-international goods, the immediate outcome was a drop in exports and a rise in imports. However, the new demand was directed also towards home market commodities, and in this case could not be readily met by an increased supply. The result was a rise in the prices of home market goods and services relative to export and import prices. The latter could not be appreciably influenced by Canadian conditions; nor could the prices of Canadian export goods be, as a rule, much increased without a great diminution in their sales abroad. There must also have been considerable difficulty in raising the prices of the semi-international goods, which were competing with import goods.

If what has been said above is correct, the Canadian price level must have risen relative to prices abroad. Taking an unweighted price index for the same kind of goods in Canada and England, one finds that with 1900 as a base, 1913 shows the figures 127 in Canada and 116 in England. Using a similar index for a comparison between Canada and the United States, we get the figure 128 in the former country against 120 in the latter. Still more convincing is the fact that home market prices rose to 162 in Canada, whereas an index number for the United States from practically the same goods stopped at 123 also in 1913. Weekly wages rose 49

percent in Canada but only 28 percent in the United States (up to 1912), while they remained practically constant in Great Britain. All in all, the tendency to an exceptional rise in the prices of home market goods and services in the borrowing country, which the theory assumes, seems to have been present in Canada. The fact that certain services like electric light and freight rates in Canada failed to rise is to be explained from special causes.

The figures above indicate the situation in 1913, but may serve as a description of the whole period. For it was characterised by a continuous development in this direction; the relative position of the different price levels was all the time the same as in 1913, though the absolute differences were less considerable. Had the borrowings been going on at a constant rate, the result would probably have been different. Then the difference between home market and international prices in the borrowing country, to the extent that it was caused by the borrowings, would have reached its maximum a few years after their beginning, and would thereafter have diminished as a result of readjustments of the economic organism.

§ 3. *The balance of trade.* It now remains to consider the third part of the question, i. e. the reactions of changes in purchasing power and sectional price levels upon the imports and exports of Canada. In other words, how was the Canadian balance of payments kept in equilibrium in spite of the enormous borrowings? This question has been touched upon very briefly above, but should now be considered a little more closely.

The changes in prices and buying power increased imports and kept back exports, particularly the former. A diminution of exports took place only in a relative sense. Economic development in Canada during the period considered was very rapid, so it is only natural that the volume and value of exports should have continued to grow in spite of the restricting influence of the borrowings. There can be no doubt, however, that there was such a restricting influence. The value of imports grew much more rapidly than the value of exports, as is shown by the following table:

CANADIAN FOREIGN TRADE AND BORROWINGS, 1898–1914

(million dollars per year)

Year	Import [1]	Export [1]	Excess of imports	Net borrowings reduced by net interest payments [2]
1900–02	198	202	−4	−5
1903–06	280	231	49	45
1907–09	356	276	80	91
1910–12	545	325	220	246

It is impossible to say how the export from Canada would have developed without foreign loans. But the restricting influence exercised by the latter is clearly illustrated in several ways. The relative importance of export industries declined from 22 percent of the total production in 1900 to little more than 15 percent during the period 1911–13. Among industries that were able to increase their export almost all were stimulated by some advantageous change, for example, the discovery of new natural resources. The manufacturing export industries, in spite of the rapid general economic growth, were unable even to maintain their export value at previous figures; this indicates the presence of some restricting element, which according to Viner was nothing else than the borrowings and the consequent changes in the sectional price levels.

The stimulus given to imports is revealed by the fact that commodities necessary for the production of fixed capital made up an increasing part of total imports during years when borrowings were rising.

In spite of these changes in imports and exports, the excess of the former fell short of the borrowings. This is seen in the table above, compared with the table in § 1. Roughly speaking, the excess of imports was only half of the borrowings. The explanation is that there were other items in the balance of payments than trade and capital transactions. Paramount among the rest were the heavy interest payments, which amounted to almost $1,000,000,000 during the period considered. However, even with interest payments, freights, tourist expenses, etc., considered, the deficit in the balance did not correspond *exactly* to the amount of the borrowings. The foreign funds held by the Canadian banks were

[1] *Canada's Balance*, p. 95.

[2] After adjustment for Canadian investments abroad. Figures are from the table in § 1.

larger in 1914 than in 1900. This means simply that a part of the foreign capital had not been taken into Canada, but had been left abroad. It is true that the borrowers themselves probably spent all the money they had obtained; but a part of their demand was directed towards Canadian goods and labour. Nothing in the mechanism that has been explained above indicates that through the indirect effects of the borrowings other people could increase, their purchases abroad by exactly the amount that the borrowers spent in Canada.

§ 4. *Further analysis of the price variations.* This brief account of the development in Canada is on the whole a summary of certain parts of Viner's analysis. The impression is that the development of prices — particularly the rise in Canadian home market prices — offers a partial corroboration of the theories which make such a change in sectional price levels a part of the mechanism of international capital movements.

One must ask, however, if this price development cannot have been wholly or partly due to causes other than the borrowings. Professor Viner is emphatic in his assertion that "no factor was operating during this period, other than the import of capital, which would adequately explain a substantially greater rise in prices in Canada than in the world at large."[1] While it is probably true that no single factor suffices to explain the course of events, it is quite possible that one or two other factors than the borrowings contributed to the relative rise in Canadian prices. The price figures lend some support to this view.

From 1900 to 1902, i. e. before borrowings began to increase, prices rose 4 percent compared with prices in Great Britain, while in 1903, the first year of increased net borrowings, this difference increased only 1 percent. Home market prices rose about 13 percent in Canada relative to prices of the same goods in the United States up to 1902, and this difference remained constant in 1903. Besides, the ratio of home market prices to import prices in Canada rose by 17 percent from 1900 to 1902,[2] whereas the ratio fell the following year to 113. This development is not in har-

[1] *Canada's Balance*, p. 215.

[2] Above all, potatoes and salt mackerel rose.

mony with the changes in net borrowings, which were insignificant in the years 1900–02. Other forces must have been at work to raise Canadian prices, especially home market prices, in the first two years, and probably later on also.

On the other hand, it seems likely that the changes in borrowings contributed to the relative rise in Canadian prices during the decade 1903–13. In particular it is difficult to attribute the fact that the margins between Canadian, British, and American price levels varied upward and downward to any other element than the variations in the rate of borrowings. The table in § 1, and above all the indirect estimate of the borrowings, show four clearly marked periods. The annual average [1] (in millions of dollars) was as follows:

I. 1900–03	8	III. 1907–10	141
II. 1904–06	56	IV. 1911–13	297

A substantial increase in the amount must be expected to cause a relative rise in Canadian prices after a certain lapse of time. Consequently the *second* year in each period should show a greater discrepancy between the price index figures for Canada and other countries than the last year of the preceding period, while this price discrepancy may well have been reduced towards the end of each period, when the adjustment to the then-existing inflow of capital had been carried out to a greater extent than in the middle of each period. The table below on the whole confirms this expectation. The figures show the changes of the *difference* between the Canadian wholesale prices and the corresponding index number in Great Britain and the United States.

Evidently the price discrepancy increased each time during the first part of a period of increased borrowings,[2] and fell at the end of

	Great Britain [3]		United States [4]	
	from	to	from	to
1903–05	6	16	0	3
1906–08	6	9	0	3
1910–12	12	15	0	5

[1] I. e. the average of two estimates after deduction of interest payments.
[2] The price discrepancy increased from the first to the second year in each period.
[3] *Op. cit.*, p. 223.
[4] *Op. cit.*, p. 227.

the period. The only exception is that the difference between British and Canadian price indices grew also during the latter half of the third period — from 1908 to 1910 — from 9 to 12 points. This is only one exception, while eleven changes of the difference in index numbers follow expectations — six rises and five drops. The cause of this exception may have been that there was during the whole or a part of the period, and in particular during the last half, a tendency to a relative rise in the Canadian price level for some other reason than the borrowings. It is also possible that the outburst of British lendings after the bad business year of 1908 tended to depress the British price level.

If we examine the difference between the index for home market prices in Canada and that for virtually identical goods in the United States,[1] we find that it rose from 13 to 18 in the years 1903–05, from 13 to 24 in the years 1906–08, and from 28 to 31 in the years 1910–12. Here again the effects of the variations in capital movement are evident, but the last part of the third period saw a rise from 24 to 28, not a fall in the difference. This gives further support to the opinion that — as in the period 1900–02 — some other circumstances have contributed to a price development of the same sort as an increase of the rate of borrowings would have created.[2]

§ 5. *Other causes of the relative rise in Canadian prices.* Among the possible choices of such circumstances four may be mentioned. If savings are subject to a sudden growth and capital goods belong to greater extent to the home market group than consumers' goods, home market prices will tend to rise. There is

[1] *Op. cit.*, p. 260.

[2] Such calculations have a limited value as verification. If the direct estimate of the borrowings is used, for the division of the whole period into smaller periods, the second period will embrace also 1906 and the third will start only in the following year. The difference mentioned above rose from 23 to 25 in the years 1907–09 against 13–18 and 28–31 in the corresponding parts of the preceding and following periods. Thus, the last part of the periods saw a rise from 18 to 23, from 25 to 28, and from 31 to 39. In other words, there is no evident correlation between the *variations* in the borrowings and changes in the relative position of Canadian home market prices. I do not think that this is very damaging to the analysis in the text, for the direct estimate is likely to show *too late* the increase in buying power in Canada in some cases. The borrowings need not be formally arranged until the goods have to be *paid* for, and they may be *bought* many months earlier in anticipation of the borrowings.

no reason for assuming, however, that Canadian savings increased much in the years under consideration. Besides, it is doubtful, in the Canadian case, whether capital goods belong to the home market group to a larger percentage than do consumers' goods.

Secondly, technical improvements, particularly in export industries, may have raised the level of prices for Canadian productive factors. In the absence of equally great improvements in home market industries, the relative prices of their goods rise. An elastic foreign demand for Canadian export goods may prevent their prices from falling noticeably compared with export goods from other countries. Thus, the Canadian general price level rises in comparison with price levels abroad.[1]

It seems likely that the changed transport conditions have also been potent in evoking a relative rise in home market prices. The borrowed capital directly and indirectly leads to better communications in the form of new railways, roads, etc. As explained in the last chapter, this may have directly raised the prices of export commodities in interior parts of the country. Furthermore, it has tended to raise the level of productive factor prices and hence indirectly the prices of home market commodities in these districts. Briefly, better communications have lifted prices in the middle and western parts of the country to a higher level than before. As such prices enter into the Canadian wholesale price index, the rise of the latter is more or less accounted for.

This change in transport conditions has another aspect. Virgin lands of the Canadian prairies were opened up to settlement, which led to an enormous expansion in the output and export of wheat and flax seed in spite of falling prices for these products. Besides, low-cost bodies of ores (copper, nickel, silver, etc.) were discovered and developed, and the exports of metals grew at a rapid rate, although the rise in their prices did not keep pace with the rise of the general price level in Canada. The exportation of wood and wood products also expanded. "American methods of large-scale production, and the building of railroads into the

[1] As an example of the influence of technical changes it may be mentioned that paper was produced in rapidly increasing quantities by means of American methods of large scale. See *op. cit.*, pp. 264–267.

extensive northern timber regions situated near rivers providing both cheap power and a cheap means of transporting the logs to the mills." [1]

This development tended to increase the demand for labour and capital in Canada to coöperate with the new natural resources. It is quite possible that the rise in money wages is partly due to this circumstance. If per capita output in home market industries failed to rise correspondingly, a relative rise of the prices of their goods was inevitable. Similarly the export industries with less favourable changes in conditions of production were retarded and their exportation declined.

A fourth element which may partly explain the relative rise in home market prices is the rapid increase in population, which increases demand for home market goods. Under certain conditions a greater volume of them can be produced only at increased costs. The group headed "all foodstuffs" rose to 145, while imported foodstuffs stayed at 112.

It is an often observed phenomenon that the wholesale price level in new countries during periods of industrial development rises in comparison with prices in other countries, as Coates has pointed out in a discussion of the development in Canada.[2] The explanation is probably to be sought, at least to some extent, in changed transfer relations, methods of production, and density of population. The statistical evidence as outlined above is in favour of the opinion that these three circumstances and the working of the mechanism of international capital movements have supported one another in bringing about the relative rise in Canadian prices.

§ 6. *The terms of international exchange.* It remains to consider above all the question whether the terms of exchange in international trade — the relation between import and export prices — was subject to changes and whether the borrowing operation may have had any influence in this direction.

Unfortunately, available price statistics are too unreliable to

[1] *Op. cit.*, p. 267.

[2] Cost of Living Report, 1915, Vols. I-II, Synopsis. United States Department of Labour.

permit definite conclusions even in the first respect. Viner's computations result in an index of 114 for import prices and 134 for export prices.[1] The former is crudely weighted, the latter not at all. If, however, weighting is done according to the importance of the various goods in 1913, the index of export prices is reduced to 120. The price material for this index is relatively good, but the import price index is so unreliable that it is far from certain that any changes in the terms of exchange took place.

It is self-evident that if terms of exchange are computed to see whether the borrowing country gets an extra profit, the quantities towards the end of the period should be used as weights. A seller profits from high prices on his goods only to the extent that he can sell them; an increase in the prices they fetch is of little consequence, if the sales are substantially reduced, as happened in the Canadian case with several commodities.

It is not surprising that the terms of exchange did not vary much, if at all, to the advantage of Canada. Its import prices could not be greatly depressed, as the larger share of imports came from the United States,[2] not from Great Britain. Neither could its export prices rise much relative to the prices in other producing countries without reducing the foreign demand.

Canada was the predominant source of world supply for only two or three mineral products. The elasticity of the foreign demand for Canadian products was operative, therefore, as an important check on the possibility of Canada's exchanging her exports for foreign commodities on more favourable terms because of her borrowings abroad.[3]

For this reason the Canadian experience throws no light on the question whether considerable variations in the terms of exchange can be expected in most cases, as the orthodox Mill-Taussig theory assumes, or whether the readjustment of economic life to international capital movements is as a rule brought about without such variations, large enough materially to affect the national incomes.

[1] *Op. cit.*, pp. 233 and 237.

[2] Of the money borrowed in Great Britain about $1,250,000 was used to pay for an import surplus of goods from the United States. With this direction of demand Canadian borrowings must have tended rather to raise American export prices than to depress them.

[3] *Op. cit.*, p. 298.

One qualification to this reasoning should be made. If technical improvements played a greater part in Canadian export industries than in foreign industries which export to Canada, then the maintenance of constant terms of exchange means that less of Canadian productive factors are exchanged for a certain quantity of foreign factors. The elasticity of demand may be so great as to bring about this result, but it is natural to assume that in many cases the terms of exchange of goods will move more or less in favour of other countries, leaving the terms between units of productive factors little if at all more favourable to Canada than before. If during such a period borrowings or other circumstances [1] mentioned in the last section intervene, the final result may be a constant ratio of exchange in terms of goods — and a much improved ratio in terms of productive factors. Thus the absence of actual increase of export prices in relation to import prices does not prove that there has been no influence from borrowings or other circumstances in a favourable direction. However, in view of the fact that Canada's export of most goods was a small percentage of the world's supply of these goods, the foreign demand for such goods when the Canadian supply grew has been rather elastic. In this particular case, therefore, there is no need of any counteracting tendency — for example, the tendency of capital imports to improve the terms of exchange — in order to explain why these terms did not move to Canada's disadvantage.

All in all, one thing stands out as fairly certain in the light of the facts and figures in Canada: to account for the decline of exports relative to imports, i. e. the *real* transfer of capital into Canada, there is no need of changes in the terms of exchange in international trade.

The expansion of manufacturing not only absorbed an increased proportion of the Canadian production of raw materials, but it withdrew labor, from the production of raw materials which otherwise would have been exported, to the construction of plant and equipment and the fabrication,

[1] Above all changed transport conditions, which raise the prices of export goods in the interior. The export price index includes several quotations of grain, hay, potatoes, cattle, etc., in the western part of the country. On the other hand, improved communications, like technical improvements, increase the supply of Canadian export goods on the world's markets and tend to depress their prices there.

from imported raw materials, of manufactured commodities for domestic consumption. The development of roads, towns, and railroads, made possible by the borrowings abroad, absorbed a large part of this immigration of labor, and these consumed considerable quantities of Canadian commodities which would otherwise have been available for export. Changes in relative price levels[1] resulting from the capital borrowings were also an important factor in restricting exports, operating coordinately with the factors explained above.[2]

§ 7. *The British case.* Space does not permit a close examination of other cases than the Canadian one, for which some relevant material is available. A few words must be added, however, about the export of capital from Great Britain during the decades before the War.

This case has been discussed by Taussig[3]; according to his computations the quantity of export goods given in exchange for a given quantity of import goods fell by 12 percent from the period 1880–84 to the period 1895–99.[4] In other words, if the terms of exchange had not improved, Great Britain would have had to send abroad 14 percent more goods than she did during the latter period to pay for her imports. This 14 percent would have represented a value of £35,000,000 to £40,000,000, which was therefore the British gain from improved trade terms. Taussig regards this improvement as due to changes in capital movements and other "non-merchandise" transactions, and thus finds that the development corroborates the theory. As a matter of fact, British export of capital maintained almost exactly the same volume during these two periods, and a growth of the influx of interest payments by something like £30,000,000 cannot have caused an extra gain of more than this amount; demand and supply conditions have probably been such that the gain only reached a fraction of it.

The improbability, to say the least, of such violent changes in trade terms from such slight causes becomes still more evident when it is considered that an increase in the export of capital by about £50,000,000 in the last half of the 'eighties not only failed to

[1] International prices versus home market prices in my opinion.

[2] *Op. cit.*, p. 263.

[3] *International Trade*, Chapters XX and XXI. Dr. Silverman is going to publish a thesis, "The International Trade of Great Britain, 1880–1913."

[4] The index fell from 126 to 111.

move the terms of trade to the disadvantage of Great Britain but was unable to prevent an improvement *greater* than the improvement in the following five-year period,[1] which saw a decline in the export of capital of about the same dimensions as the previous increase.[2] It seems impossible to doubt that other circumstances than changes in capital movements and interest payments caused the variations in terms of exchange. Probably the improvement in the British trade terms in the 'eighties had much to do with the expansion of agriculture in the transoceanic countries, partly as a result of the *export* of British capital, whereby the British food supply was cheapened.

From the last years in the 'nineties to 1913, figures show a small variation to the disadvantage of Great Britain. At first sight the explanation may appear to lie in the enormous expansion of British lending abroad. Closer examination reveals, however, that in the years 1900–04, when the export of capital was rather insignificant, and in the years 1911–13, when it reached £150,000,000 to $200,000,000,[3] the terms of exchange were virtually the same.[4]

All in all, the British figures provide no verification of the suggestion that considerable changes in the terms of exchange result from variations in capital movements and interest payments. This does not prove that such changes never occur, but the fact

[1] When the manuscript was about to be sent to the press Silverman published a paper on "Monthly Index Numbers of British Export and Import Prices, 1880–1913," *Review of Economic Statistics*, Vol. XII, No. 3 (1930). His figures differ somewhat from Taussig's and show practically constant trade terms in this period, 1890–95.

[2] See Taussig, *op. cit.*, the charts on pp. 246 and 253.

[3] Interest incomes also grew, but much less, so the excess of incomes from abroad over export of capital, which reached 70 or 80 million pounds in the first period, had disappeared in the last one.

[4] The index numbers stood at 104 and 106 respectively. The periods are not quite comparable as much better business conditions prevailed in the latter. Silverman's figures (see chart on p. 148) entirely corroborate my conclusions in the text, drawn from Taussig's figures. The trade terms improved in the 'eighties, above all through the cheapening of food, and then retained about the same position, in spite of striking variations from one year to another. British export prices rose during good business conditions relative to import prices, which is natural, as the exports contained large quantities of such "sensitive" commodities as iron and steel, coal and non-ferrous metals. Taussig's mistakes are partly to be explained by the fact that he has chosen the abnormal year 1900 as a base.

that they were not clearly noticeable in the Canadian case, nor, contrary to orthodox expectations, in the British one,[1] militates against the Mill-Taussig explanation of the mechanism of international capital movements, and tells in favour of a theory such as that presented above, where such changes play a subordinate rôle.[2]

[1] A possible line of defence for the orthodox theory would be to say that capital exports vary in a similar fashion as foreign demand and that the effects of these variations on the terms of trade offset one another.

[2] I have abstained altogether from discussing the case of the United States. Professor Taussig himself admits that it offers no corroboration of his theory. On the contrary, the period 1892–1901, when exports grew rapidly, relative to imports owing to increasing immigrants' remittances and interest payments, was the very time when the terms of exchange improved. Clearly, other circumstances must have been at work to bring about this result. Taussig, *op. cit.*, pp. 303–305.

CHAPTER XXIII

IMPORT DUTIES AND PRICE ADJUSTMENTS

§ 1. *Financial duties and the terms of exchange.* The mechanism of other variations in international trade than those of capital movements will now be briefly analysed. We begin with changes in import duties; disregarding their possible influence on the quantity or quality of productive factors and other elements touched upon in Chapter XVI, we shall confine ourselves to the question of how prices are affected and the balance of payments is kept in equilibrium.

Assume that in country A a duty is imposed on a commodity not produced in this country, for example, coffee. The demand for coffee falls off, while demand for other goods, domestic or foreign but presumably a little of both, increases.[1] Demand is thus turned in a direction which tends to enhance the scarcity of A's goods and productive factors in comparison with all foreign goods and factors, taken as a whole.[2] The aggregate of money incomes in A consequently rises in comparison with this aggregate in B. Assuming that the inhabitants in each country own the factors in their country, A's buying power rises relative to that of B. If we assume that the combined national income of both countries in terms of money is kept constant by a monetary policy, the imposition of the duty leads to an absolute increase of A's income and buying power and a reduction of B's. This may mean that A buys a larger share of the output of the two countries than before. But the change in its monetary income is no measure of the increase of the volume of goods it can consume, i.e., it is no evidence of a *corresponding* gain. For

[1] The amount collected as duty serves to reduce other taxes and increases the purchasing power of the tax payers. In the reasoning below coffee stands for a group of commodities which are of considerable importance in A. Otherwise the effects of the duty would be rather small.

[2] In § 1 let us speak of the rest of the world as if it were one country B. Later B means the countries which export goods on which A imposes duties.

the prices of home market goods in A rise relatively to prices of similar goods in B, as will be shown below; the increases of monetary incomes in the former country are partly, in some cases wholly, offset by this fact, and so far signify no increase in the volume of goods at the disposal of A. (See § 2.)

The change in favour of the productive factors in A at the expense of those in B is one aspect of a process which implies also that the level of commodity prices falls in the latter country and rises in A. Coffee commands a lower price in B than formerly, but that is not all. As coffee growing becomes unremunerative, productive factors flow to other occupations and costs of production and prices fall there also. The average price level of commodity prices in B declines, while it rises in A. This must be further explained and analysed.

It is often practical to study the reactions of commodity prices towards changes of any sort under three headings: First, how much would demand for various commodities be changed, when their prices vary, if the buying power of the consumers were unchanged? This is sometimes spoken of as "elasticity of wants." Second, how is the buying power of various individuals — and *thereby* their demand for various commodities — affected? Third, how do the schedules of supply prices for commodities change? These three reactions will be dealt with below in an attempt to throw light upon the nature and extent of price variations caused by an import duty, notably the variation in the "terms of exchange," i. e., the relation between import and export prices.

As to the elasticity of wants, one must ask how much demand in A will react (1) towards the higher price the consumers have to pay for coffee, when the price is raised because of the duty, and (2) towards the lower prices of B's other export goods. Importation of coffee will fall off, while the purchases of other goods will increase; the question is *how much*, assuming a certain change in their prices to have taken place. Furthermore, we must inquire how B's demand for A's export goods reacts when they become more expensive.

The more A's demand for coffee is reduced and the less its demand for other goods is increased, given a certain fall in all B

prices, the greater must the fall be to bring about equilibrium in the balance between imports and exports, which has been disturbed by the duty. Similarly, the less *B*'s own demand for *A*'s export goods falls off when their prices rise, the greater will be the change in prices required to bring about equilibrium — in brief, the more will the terms of exchange in international trade move in favour of *A*.

On the other hand, the less *A* reduces its coffee consumption, the more a slight price reduction for other *B* goods leads to increased imports to *A*, and the more the higher *A* prices reduce *B*'s imports, the slighter is the price variation required to establish equilibrium.

The more urgent the foreign demand for the products from a country are at a certain time ("urgent" being taken in the sense that purchases are much increased when prices fall and slightly reduced when prices rise), and the less urgent its own demand for foreign products, the less chance is there of a considerable change in the terms of exchange to the country's disadvantage, and the greater chance is there of a change to its advantage.

Note that this has nothing to do with such a country's securing a marked "total gain" from international trade. Conclusions from the advantage or disadvantage of minor variations as regards "total" gain are unwarranted.[1]

We turn now to the second class of reaction, changes in buying power in the two countries. They tend to affect imports and exports in the same way as do changes in commodity prices. The reduction of the prices of *B*'s goods increases *A*'s demand for them, and the increased buying power in *A* has the same influence. Similarly, the higher prices of *A*'s goods work towards a diminution of *B*'s purchases, and this tendency is strengthened by the reduction of buying power in *B*.

Clearly, variations in commodity prices meet with opposing tendencies not only in the manner indicated through the elasticity of wants, but also through the reaction of buying power. Changes in commodity prices, on the one hand, variations in the prices of

[1] I hope soon to publish a detailed analysis of the orthodox theory of gain from international trade.

corresponding productive factors and hence of buying power on the other, are two aspects of the same process. The price variation necessary to establish equilibrium in the balance of payments when the import from *A* to *B* has been diminished by a duty works in two ways: by affecting buying power no less than through elasticity of wants. The elasticity of international demand is a combination of these two tendencies.[1]

The outcome depends also upon the third reaction, that of supply. The schedules of supply prices are moved upwards in *B* and downwards in *A*. The extent of their variations for different commodities is the result of several tendencies, of which the changes in factor prices is one. The more factor prices fall in *B* and rise in *A*, the more supply prices are changed in a corresponding manner and the more the *quantity* of imports to *A* tends to be increased and that of imports to *B* to fall.[2] Not only will greater quantities of the old import goods be sent from *B* to *A* and smaller ones in the opposite direction, but new goods will pass from *B* to *A*, while some of *A*'s old export goods can no longer be marketed in *A* with a profit, so that trade in them ceases.

Equilibrium between imports and exports in spite of the new duty is maintained by a price variation which evokes reactions of demand and supply just sufficient to offset the reduction of *B*'s importation of coffee. How far these price variations need go in each particular case evidently depends upon the conditions of demand and supply. The more sensitive are the latter, the less prices will vary.

If coffee continues to be produced in the same quantities as before the imposition of the duty, its price will decline sharply; employment in the coffee growing industry will be unremunerative. For this reason industrial agents will move to other occupations. New labour and capital may be shifted completely to other industries, the output of coffee falling below what it used

[1] When the effects of taxes on imports are studied on the supposition of "barter" by means of the well-known Marshallian curves (cf. Auspitz und Lieben, Edgeworth) both these reactions are handled under one head. Discussions in monetary terms have in almost all cases neglected half the process, the changes in buying power.

[2] As to the total *value* of imports, see below.

to be or at least what it would have been without the duty. At the same time the supply of other goods in *B* increases. Some of these other goods meet a comparatively inelastic demand in *A*. Greatly increased quantities can be marketed only at considerably reduced prices. Others are more favourably placed, even slight price cuts leading to marked extension of sales. Production of such goods will be increased most if the productive factors can be used equally well everywhere and can be easily moved. Under these conditions there will be a tendency for production to expand where it meets least resistance, i.e., where increasing quantities can be marketed with the smallest price reductions. A similar shift of production, in accordance with the elasticity of the foreign and domestic demand, takes place in *A*.

Such adaptations of production to the conditions of demand tend to equalise the price developments of various goods in the same country, at the same time reducing the change in the relative price levels of *A* and *B* that is necessary to establish equilibrium in the case of a certain import duty. These adaptations of supply also influence the different factor prices and hence the changes in buying power and demand in each country.[1]

It goes without saying that the situation in these respects changes as time goes on after the levying of the duty. Factor movements from one industry to another do not take place at once; often many years are required to bring about large reduction of the activity in unremunerative industries. A full account of the price mechanism must include a description of how far and how quickly the various supply reactions come about. In the long run not only movements of industrial agents but variations in their total supply under the influence of price variations must be considered.

§ 2. *Relative price changes in each country.* So far little attention has been given to the relations between prices of different goods and factors in the same country. These relations change

[1] "The demand of each (country) is made effective by its own supply. . . . All trade, either between nations or individuals, is an interchange of things: those which either side is prepared to part with constitute its means of purchase." — Marshall, *Money, Credit and Commerce*, p. 160.

under the influence of the original change in supply conditions, i.e., the new duty, and the three sorts of reactions governed by (1) elasticity of wants, (2) variations of buying power, and (3) the forms of the supply schedules.

Consider first the situation in *B*. Foreign demand has been turned away from coffee, and its price falls relative to other commodity prices. But the reaction of supply tends to spread the effects over a number of commodities using the same or similar productive factors. For these factors become less in demand and cheap, and consequently the corresponding goods also command lower prices On the other hand, commodities which require different sorts of factors do not receive lower supply prices in that way. The pressure of the reduced demand for coffee is felt in other industries in *B* more closely the more easily productive factors can be turned from coffee growing to production of other goods.

However, not even commodities in industries of quite different types escape the influence of the coffee duty. The lower total price of productive factors in *B* means a lower aggregate of money incomes. Thus demand for all sorts of goods in *B* falls off more or less. Let us assume that this reduction in demand is fairly evenly spread over different goods. So far as export goods are concerned, the increased demand from *A* for all of them except coffee is a balancing element, but the prices of home market goods are reduced. This means that the corresponding factors also command lower prices. In summary, if *B*'s export goods are sold somewhat cheaper than before, the prices of coffee and home market commodities are reduced still more. On the other hand, imports from *A* are priced a little higher than formerly.

In the latter country home market goods and the corresponding factors tend to rise as a result of the increased buying power. Besides, less money is spent on coffee, — not by the consumers but by the country *A*, — since the government in *A* receives what is paid in duty. Thus the net expense on coffee is smaller than before and more money is available for other things, which will increase the demand also for home market goods. Export prices rise less, for they feel the influence of weakened demand

from *B*. Import prices c. i. f. may fall somewhat, but prices of protected goods rise above the c. i. f. level by the amount of the duty.

The new demand in *A* may be divided more or less evenly between different sorts of commodities; so may the reduced demand in *B*. Supply reactions of various sorts also influence the relation between various commodity prices. General statements are difficult to make.

In both countries the prices of home market goods tend to vary the most, with the possible exception of protected goods. International goods feel two opposing influences, increased demand from one country and decreased demand from the other.

How far supply reactions go in the direction of equalisation depends much upon the mobility of labour from one occupation to another. If trade unions form non-competing groups, the reduction of wages in one industry may fail entirely to reduce wages of similar labour in other industries and prices of the goods produced by them. Note, however, that commodities at different stages of the same productive process, for example, raw materials and finished goods, or those otherwise intimately related, are directly influenced by changes in each other's economic position.

In some cases, evidently, the tendency of supply prices of export goods to fall in *B* and to rise in *A* is very weak. Besides, the direction of the demand for international goods may be affected in such a manner that the trade terms move in favour of *B* or remain constant.

Lastly, it is important to observe that relative prices are likely to change more at the start than later on, when supply reactions have had time to work out their effects. The existence of fixed capital is an important element in the delaying of the readjustment. Even the total supply of the productive factors is gradually affected, and, as Chapter XVI attempted to show, will almost certainly counteract the tendencies toward changed factor and commodity prices. It is even possible that the price of coffee may reach the same, or a higher, level [1] as before the imposition of the

[1] Reduced economies of large-scale production can contribute to this result.

duty. Some natural resources, however, have few competitive uses; their reduced employment in an industry will lead to a reduction of their price, which means that the corresponding goods are also obtained more cheaply; on the other hand, a reduction of total output may lead to the loss of large-scale economies, internal or external; thus, in the long run, prices of goods on which duties are levied may be raised in the exporting countries.

In general, when changes in demand, caused by the duty, have brought about a new economic situation, forces on the supply side exert resistance, and tend more or less slowly to return prices to their earlier status. Such supply reactions naturally influence not only the ratios of various prices within each country but also the ratio between import and export prices and the relation between the general price levels of *A* and *B* — a fact already pointed out. The greater the adaptability of productive resources the less effect on prices the new impediment can have. In the long run the forces at work behind the supply of various factors may exercise the deciding influence.

§ 3. *Protective duties.* If duties are levied on goods which are or can be produced at home in such a way that their output increases, the effects will not be confined to those briefly outlined above in the case of a duty on coffee. Protective duties may naturally cause a shift in production in *A* directly and thus bring about somewhat different results.

Assume that substantial import duties are imposed on textile goods in country *A*; the result is that textile industries expand in this country. Demand for *foreign* textiles is thus reduced in two ways; through smaller total demand under the influence of higher prices upon textiles in *A*, and through a relative cheapening of the home supply. Demand is shifted somewhat from foreign to domestic factors of production; consequently prices of *A* factors tend to rise compared with factors in countries producing taxed commodities. To draw labour from other industries to the textile factories in *A* higher wages are essential. Temporarily the increase of factor prices may be considerable; even under settled conditions, with the adaptation completed, there is nothing to prevent factors in *A* from having higher prices than before. And

in countries producing the taxed goods — let us call them *B* — factor prices will be lower than before.

The sort of factors used in the protected textile industries in *A* will in particular gain a more advantageous position. If textile workers successfully pursue a closed-shop policy, their wages may remain on a much higher level than formerly. Female labour, at any rate, being used much more extensively in the textile industry than in others, will be scarcer and command higher wages than before protection. Home market prices, as shown in the case of revenue duties, will naturally be lifted to a higher level, and the corresponding factor prices will follow them. Thus factors used particularly in home market industries, like those in the protected industries, may have their relative scarcity and their reward increased compared with those of other factors in *A*. In *B* a development of prices in the opposite direction takes place, as explained in the last section. The outcome depends also upon the reactions of factor supply, both the mobility of labour from one group to another and of land and capital from one use to another, and the creation of a new supply of factors by means of savings, education, and the like.

Despite the tendency towards a relative increase of the price level in protectionist countries, some factor prices and goods produced in these countries may fall. The relative scarcity of the productive factors is altered; the prices of some rise more than the prices of others. Certain ones may even become cheaper than before. This might happen, for instance, to some of the factors used little or not at all in the protected industries and in home market industries and extensively in the production of export commodities. As export industries use some of the factors which have become more expensive than before, inability to raise prices on the foreign markets appreciably may well signify that the factors used largely in the relatively declining export industries will command lower prices than formerly. The price of forest land in countries such as Finland and Sweden is a possible example.

It is also conceivable that certain home market commodities may use relatively as much of these cheapened factors as do export goods, or even more. The prices of such commodities may

consequently not only fail to rise but may even decline. Suppose, for example, that wheat is an export article, while rye is produced only for the home market. A reduction in wheat growing lowers the rent of agricultural land, and hence the costs of producing rye may not rise at all, in spite of the fact that other factors of production have become more expensive. Other domestic industries — the building trade, for example — may use factors of production in the same proportion as do the protected manufacturing industries, and may as a result experience a proportionate increase. Between these extremes fall the majority of cases. Most home market prices rise, but less than the prices of protected import goods. The general price level becomes on the whole higher.

It is evident that such reductions of commodity prices in the protectionist country can only be exceptions, and that so far as they occur prices of other goods will rise all the more. For there can be no doubt that the changed direction of demand, the most direct effect of the duties, raises the money prices of productive factors in general, and thus also the average price level for all commodities produced by these factors. As import goods are not likely to be much cheapened, both commodity and factor price levels will be raised.[1]

Cassel is of the opinion that protection, like other economic changes, cannot raise the commodity price level relative to the levels in other countries if the foreign exchange rate is kept constant,[2] and refers to the lessons of experience, though without giving figures. He draws the following conclusion:

> The effect of any alterations in the tariff of a country is therefore essentially only an effect on the relative prices of commodities. The consequence is that an increase of the custom duties must have an effect not only in a rise of the prices of some commodities, but also in a corresponding fall of some other prices. These movements must counterbalance one another in order that the general level of prices may remain intact.[3]

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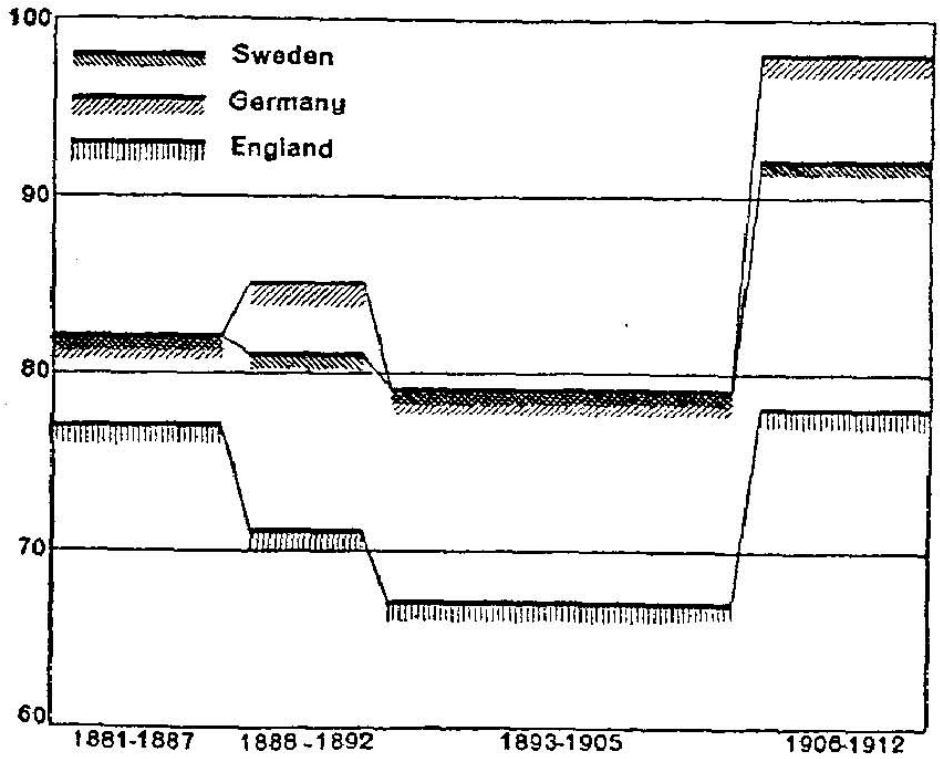
[1] Changes in the relation between transports to and from a country may alter this conclusion. If the importation of bulky goods is restricted, inward freights may fall and outward freights rise, a development which would depress prices in this country. Economies of large-scale production, on the other hand, do not seem to necessitate any substantial modifications.

[2] "The Treatment of Price Problems," *The Economic Journal* (1928).

[3] *Ibid.*, p. 580.

In the author's opinion, the evidence of price statistics is not sufficiently clear to justify any such assertions. So far as it goes, such evidence shows rather that important changes in the relative price levels are possible — as is brought out by the chart below. Neither experience nor analytical reasoning, therefore, supports the opinion that price reductions will be of the same order of magnitude as price increases.

Price Development in Sweden, Germany, and England 1881–1912 [1]



In this diagram the thirty-two years have been divided into four periods, the division lines being drawn at the years in which the German tariff policy was changed. The first and third of these periods were characterised by moderate protection, the second and fourth by more extreme protection. Comparison between the Swedish and German price levels shows the effects of these changes with surprising clearness, despite the fact that the Swedish tariff policy was also subject to changes.

[1] From my Swedish treatise *Handelns Teori* (Stockholm, 1924), p. 142.

England, a free trade country, saw its price level fall almost continuously compared with that of the two protectionist countries. The margin was widened especially in the 'eighties and the beginning of the 'nineties. It seems probable that this was largely due to the Swedish and German corn duties. The index numbers include too few manufactured products to tell much concerning the duties upon them.

Comparison between the development of relative price levels after 1890 in the United States on the one hand and in England, France, and Germany on the other, according to Mitchell's index numbers [1] for a small number of goods so far as possible identical, permits of no safe conclusions. As so many other elements besides the tariff policy were altered, above all in the United States, it is not to be expected that a modification of the already high American tariff in 1897 should dominate price relations. It is not improbable, however, that the relative rise in American prices from that year to 1910 was partly due to the American tariff policy.

§ 4. *The terms of exchange.* While it seems certain that home market prices and, inclusive of duties, import prices in a protectionist country can be considerably raised in comparison with export prices, it is much less sure that export prices can be appreciably raised relative to import prices, exclusive of duty, and the terms of exchange thus be improved. This question requires closer examination.

It is often asserted that import duties restrict imports and tend to depress import prices, exclusive of duty, while a corresponding reduction of the volume of exports can come only from a rise in export prices. It is implied that this shift in the terms of exchange may substantially affect the size of the national incomes of various states, not only in hypothetical cases but in the actual world of to-day.[2] As a matter of fact there are several reasons for assuming that in most cases only a slight change in the terms will be caused even by a fairly high general tariff wall.

[1] *International Price Comparisons*, Department of Commerce (Washington, 1916), p. 13.

[2] Cf. Taussig, *International Trade*, pp. 142–144. Curiously enough most writers on this question make no attempt at estimating the relative importance of changes in the terms of exchange.

Some reactions to import duties tend to reduce exports from *A*, even if export prices fail to rise. Productive factors are shifted to the protected industries more than would otherwise be the case. For export industries less factors are available, some of them only at increased prices. Some raw material or semi-finished goods are also rendered more expensive. Hence such industries do not pay well, and less effort and capital are spent to expand sales of their products abroad. Commodities do not sell themselves; foreign demand is not a question solely of prices, but depends also upon the effectiveness of marketing. Less money is spent on organising sales abroad, on selling agencies, advertising, etc. In a word, less energy is devoted to the export trade and more to domestic trade. Foreign countries are able to supply a greater quantity of such goods at unchanged prices when competition from this country has become less severe. By analogy, exports of goods from *B* may expand even without a price reduction. The fact that many countries constitute more or less separate markets is important here. Few export industries have done everything they can to cultivate *all* these markets.

The inevitable outcome of all this would be *a falling off in A's volume of exports, even if both foreign demand and export prices were unchanged*. In discussions of the opposite case (the effects upon exports of a return to free trade or low duties), it is sometimes asserted that a small reduction of costs and of export prices would have no appreciable influence upon the quantity exports. Such reasoning neglects to consider that productive factors would be turned from home market to world market production, and that much energy and enterprise now used in domestic trade would be devoted to foreign trade. Given a period of transition, the volume of exports might increase substantially, yet their prices would not necesarily be lowered.[1]

The volume of export is not a function solely of foreign demand and supply prices. Productive effort may be shifted to and

[1] The markets for most goods are not perfect. Hence, the share of foreign demand which is satisfied through supply from a certain country depends on sales organisation. Unless such selling expenditure is offset through savings from economies of large-scale production when output is increased, the terms of trade, calculated in terms of productive factors, move in an unfavourable direction.

from the production and marketing of international goods, and international trade may as a result vary, even if the relation between import and export prices maintains in the long run a fairly constant position.

Whereas exports decline, imports tend to grow.[1] The increased cost levels in *A* retard the development of industries manufacturing goods which compete with imports and which fail of support in this competition through import duties; hence demand for imports from abroad tends to grow.[2] In *B*, on the other hand, the corresponding industries profit from reduced cost levels and there is less need of imports.

Secondly, the home market prices and buying power, higher in *A* and lower in *B*, incline demand towards international goods in the former country and away from such goods in the latter country, entirely regardless of any reduction of *B*'s export prices compared with *A*'s.

How much the terms of exchange will vary depends upon the conditions of supply and demand, as explained in §§ 1–2 of this chapter. It may be well to stress once more that foreign demand is in most cases elastic. The goods a country exports are usually supplied also by several other countries — let us call them *C* — in the same markets, or can be supplied in those markets at slightly higher prices. When that is the case with *A*, a small rise of its export prices will be sufficient to turn demand abroad decidedly away from them to similar products from other countries,[3] particularly when supply there reacts easily. *A*'s competitors will increase their exports at *A*'s expense. Besides, both *B* and other countries — called *D*[4] — will increase their own output of such goods and reduce the sum total of imports. On the other hand, a slight reduction of the prices at which *B* exports non-protected goods will increase its exports at the expense of other producers

[1] Importation of protected goods is, of course, restricted.

[2] If many goods are protected, imports of those which have relatively low duties may grow.

[3] Besides, if the prices at which these other countries export such goods rise also, the total consumption of them will decline.

[4] These countries do not export protected goods to *A*, as *B* does, and do not compete with *A* as *C* does.

of these goods or competing goods in other countries — *D*. In other words, from the point of view of both *A* and *B* the total foreign demand for their products is likely to be very elastic. A slight price variation will lead to radical adjustments of exports and imports, especially the former. The closer the competition between *A* and other countries (*C*), the less probable it is that an import duty will be able to affect the terms of exchange noticeably in favour of *A*. The consumers in this country will have to pay practically the whole duty, and *B* will suffer little or not at all from less favourable terms of exchange.

Some of *A*'s export goods may drop out of international trade altogether as a result of slight price increases, which means pronounced elasticity in the foreign demand. *B*, on the other hand, will be able to export goods which before were produced only for the home market. A reduction of the costs of production by, for example, 10 percent would permit many new goods, so far little or not at all marketed abroad, to sell in large quantities; and existing export industries would be enabled to expand at the expense of foreign competitors. For this reason, and because of the other reactions, such a country would be able to increase its volume of exports much more than 10 percent, even if the sort of goods exported were only *consumed* in 5 percent greater quantities as a result of such price reduction.

A will be able to achieve a considerably better ratio between export and import prices only when the following conditions obtain: (1) foreign countries have an insistent demand for the sort of goods *A* exports and thus restrict their consumption very slightly when *A*'s export prices are raised and buying power is reduced in *B*;[1] (2) the supply of such goods from production in other countries is small, or cannot be easily increased without marked heightening of costs; (3) foreign countries reduce their

[1] The influence of reduced buying power in the countries which export the goods on which *A* levies import duties must be stressed. The chances of turning the trade terms in favour of *A* are greater when countries selling the protected goods purchase very little from *A* than when they are important customers of *A*. The British Labour Party's preference for duties or import prohibitions against countries with low wages would probably fall off, if it were remembered that these countries happen to be good customers in Great Britain.

export prices for the goods upon which *A* has imposed a duty, because *A* is an important market with elastic demand and the productive factors in these industries cannot readily be shifted to other industries;[1] (4) *A*'s demand for non-protected foreign goods is not much increased when they can be obtained more cheaply and *A*'s buying power has grown.[2]

It is conceivable that *some* of *A*'s goods might fulfil the first two conditions. But it is practically impossible that the majority of a country's exports would do so. And only when this happened, and the third and fourth conditions were also fulfilled, could the terms of exchange be much improved from *A*'s point of view. This can, therefore, only happen in quite unusual cases.

We must, however, except the situation soon after the imposition of the duty. Industries producing for certain markets do not easily swing to others, even though prices be unremunerative because of import duties. Foreign countries may continue to supply *A* with taxed goods at considerably lower prices than before. Besides, *A* may continue for some time to export its goods to their former markets, even though their prices are higher than those of competitors. But this situation will not last: *A* will gradually be driven from some of its markets, or be forced to sell at competitive prices; and foreign producers will turn away from the unprofitable sales in *A* unless the latter is willing to pay a price approximately as high as that paid by other customers. Except for such temporary quasi-monopolistic phenomena it is safe to say that no country has much chance of turning the terms of exchange greatly in its favour by means of import duties.

Marshall[3] supports this view in the following terms:

> There has indeed never been a country, the whole of whose exports were in such urgent demand abroad, that she could compel foreigners to pay any

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[1] The productive factors may have few competitive uses, like certain natural resources, and the reduction of *A*'s demand may therefore reduce the supply price of certain foreign goods considerably. This circumstance is ignored by Pigou, *A Study in Public Finance* (London, 1928), Chapters XIX–XX.

[2] Marshall's statement in *Money, Credit and Commerce* (p. 198) is incomplete, as he omits this fourth element. He apparently has in mind a case where *all* imports have been subjeect to considerable duties in *A*.

[3] *Money, Credit, and Commerce*, p. 192.

large part of any taxes which she imposed on her imports. But England's exports approached to it twice. Once they consisted chiefly of wool, which was indispensable to Flemish weavers. And, again, in the first half of the nineteenth century, they consisted chiefly of manufactures made by steam machinery, which was not in general use anywhere else; together with tropical products, which she had special facilities for obtaining. It is possible that the rest of the world would have given twice as much of their own goods as it did give for many of them, rather than go wholly without them.

So far we have dealt only with the case where *one* country uses a high tariff. Will the conclusion that no country has much chance to move the ratio of exchange in its favour [1] by means of a protective tariff hold also when *many* countries pursue a similar policy? The effects of different tariffs may to some extent offset each other, but will not free trade countries under the cumulative influence of many hostile tariff barriers see their terms of exchange substantially affected?

Imagine international trade between a large protected country and a smaller free trade country, these two being the only ones in existence. It is quite conceivable that the latter's demand for the former's products may be so urgent, and that the demand and supply reactions may be of such a character in other respects, that its export prices will have to be seriously lowered to overcome the high tariff in sufficient quantities to pay for its imports.

The situation will be essentially the same if there exist not one but a few free trade countries, which taken together are small compared to the protected nation. As a matter of fact, however, we find not one large protectionist country, but many countries with tariff walls not only against free trade nations but also against each other. Does this improve the position of the free trade countries?

The answer is in the affirmative. If there were one large group of protectionist countries only, surrounded by a common tariff, demand would be shifted from the productive factors in outside countries towards interior productive factors. The countries behind the tariff wall would have a favourable position when exporting to one another, compared to the countries outside, which

[1] It should be kept in mind that a "favourable" change in the terms of exchange does not mean that the duty brings a gain to the protectionist country.

would have to send their goods across the barrier. The fact that there is no such tariff union, but a number of independent tariff districts, deprives the protectionist countries of this favourable position in their competition with free trade countries. In the export trade they are obliged to compete on an equal footing.

When exporting to the European continent British industry is much hampered by the high tariffs prevalent almost everywhere. But its difficulties would be still greater if there were a continental tariff union giving a preferential position to the continental competitors of British firms. In a word, if the protectionist countries directed their weapons exclusively against a small number of free trade or low tariff countries, they would have some chance of success in the form of favourably altered terms of exchange. But fighting as they do against one another as well, the effects are likely to be slight.[1]

So far only the elasticity in the demand for commodities has been dealt with. However, the elasticity of the demand for services which appear in the balance of payments but not in the trade balance is also relevant. A creditor nation with large incomes on interest account from abroad, for example, may count on the foreign demand for its currency as being relatively inelastic. For foreign nations have to supply a fixed sum of the creditor country's currency as a supplement to the variable sum they need to pay for their commodity imports. Thus the interest payments increase the creditor nation's chances of altering the terms of trade in its favour through import duties.[2]

[1] These conclusions suggest one thing concerning the methods to be pursued in attempts to bring about conditions of freer trade in the world. If a number of nations, which are much interested in the success of such an attempt, formed a large tariff union, the other countries, whatever tariff policy they pursued, would find themselves unfavourably situated when competing in this important market. They would have every inducement to join the tariff union, which would have a chance of growing to embrace the majority of nations. Those which obstinately remained outside would be in a more and more difficult position. Would not the chances of some sort of universal free trade agreement under such conditions be as great as they can ever be as long as the inherent mercantilist tendencies of man, exploited by powerful vested interests, remain one of the principal governing factors in the tariff policy of all nations?

[2] Cf. the conclusion in Chapter XXI that tariff walls strengthen the tendencies to changes in trade terms in the case of international capital movements. See Pigou, *A Study in Public Finance*, Chapter XX.

§ 5. *The monetary mechanism.* Let us turn now to the way in which the balance of payments is kept in equilibrium when new or increased import duties are imposed. As in the case of other disturbances short-term capital movements are called into play until the trade balance has been adjusted.

Immediately after the change in tariff policy the situation of the balance of payments is uncertain. If the tariff variation has come unexpectedly, an excess of exports will probably ensue in the beginning, and a temporary increase in the reserves of foreign exchange will take place. This leads directly and indirectly to an increase in buying power, as explained above in Chapters XVIII and XX. If, on the other hand, imports increase materially in anticipation of the imposition of duties, an excess of imports may arise and a temporary reduction in the exchange reserves may follow. In that case the increase in buying power comes about in a different manner from that described in the discussion of capital imports. A description of the various possibilities would carry us too far, but the fact to be stressed here is that unless the volume of credit is increased in the protecting country the trade balance will not be sufficiently altered in a negative direction to offset the restricting influence on imports which protection is bound in the long run to have. Thus foreign exchange reserves will grow, and a credit expansion will ultimately develop.

After some years when the readjustment has been completed the difference between imports and exports will in many cases be what it would have been under a different tariff policy. In other cases, however, the economic development may be so much affected by protection that interest levels and other circumstances which affect international capital movements [1] are changed sufficiently to change the latter (see Chapter XVII). To the extent that this happens exports will rise or fall relative to imports.

§ 6. *Duties as means of better utilisation of productive capacity.* So far it has been assumed that all the productive factors are fully, or let us call it "normally," utilised. In other words, the fact that unemployment is sometimes very great and the surplus capacity of machinery and fixed capital in general often consider-

[1] Or other items in the balance of payments.

able, has been left out of account. The relation of variations in tariff policy to the utilisation of capacity, be it that of human beings or of implements, has been ignored.

In studies of the long run effects such a procedure seems not only justified but necessary. However, the short run transitory effects also merit attention. They naturally depend to a great extent on the economic situation when the duties are imposed. The effects of a higher tariff in a period of depression will differ much from those in one of intense business activity. It follows that the immediate consequences of tariff changes lend themselves less to generalisation than do the long run but not too distant effects when most transitory processes have played their part.

The immediate effects of new duties imposed under normal business conditions follow the lines already indicated. A distinct practical interest attaches to duties imposed during periods of depression. As a concrete example, assume that the boot and shoe industry in a country uses only 60 percent of its capacity, while 90 percent is the ordinary rate. A corresponding part of the workers are unemployed. Imports of foreign shoes in greater quantities than formerly have been going on for some time, being considered by many as cheaper, with due regard to quality, than the domestic product. In this situation most domestic firms find it difficult to meet their expenses, and earn no interest on the share capital. Through pressure upon politicians an increased or revised import duty is secured.

To simplify the reasoning assume that the estimated price difference between domestic and foreign shoes of equal quality is 25 percent. The former cost 15*s.* wholesale, while the latter sell for only 12*s.*[1] When the duty has been imposed imports decline, and the domestic industry, while maintaining its price at 15*s.*, succeeds in increasing its sales by one-half, thus bringing the utilisation of its productive capacity up to the normal 90 percent.

What extra expenses are involved in this increase of output, let us say from two to three million pairs? No new buildings or machines are needed, no new directors or officers, and very little

[1] The fact that domestic shoes nevertheless sell may be explained by old trade connections with retail stores and the preference for home-made goods.

addition to the office staff. On the other hand, the number of workers must be increased and the purchases of leather and other raw materials must grow in proportion with the increase in output.

Assume that the variable expenses amount to 8*s*. per pair. The producers consequently earn no less than 7*s*. on each pair of shoes by which their sales are increased. On the other hand, the consumers pay 3*s*. more than before. From the point of view of the whole nation there is a gain of 4*s*. per pair, or 4,000,000*s*. in all. But this is not all. A considerable part of the so-called variable expenses are so only from the point of view of the individual firm, not from that of society as a whole; this is the case with wages, at least in part. The workers have to live whether they are employed or not. Let us assume that they received a dole of about 1,000,000*s*. per year before the duty was imposed. This sum is no longer paid — a clear gain to the tax payers. Furthermore, the workers earn twice as much when at work as they received when unemployed. They too, therefore, get their economic position improved with a similar amount. The total gain to society is 6,000,000*s*. Look at this in another way. Instead of being imported at a price of 12*s*., shoes are being produced at home at an extra cost to the nation of only 6*s*. The difference is net gain.[1]

What would have happened if no duties had been imposed? Assuming that several other industries are in a position similar to that of the boot and shoe industry, it is natural to suppose that the balance of payments has a tendency to become negative.[2] Let us consider first cases of this type. The usual mechanism will come into play, short time capital movements will set in, credit

[1] The possible effects on the terms of exchange in international trade are left out of account in § 6.

[2] Of course nothing prevents the domestic industry from reducing its price to twelve shillings and thereby increasing its sales without the aid of an import duty. This would lead to the same immediate gain as the one resulting from the duty. However, the shoe manufacturers may prefer not to do so, as they would then receive only four shillings instead of seven shillings above their variable expenses; an increase in sales by 50 percent would not compensate them for this reduction in the amount per pair which goes to cover overhead costs.

policy will be restricted, and wages and prices will fall.[1] In this way competitive power will be increased all round, some industries expanding and either enlarging their export or reducing the import of competing foreign products. Equilibrium in the balance of payments will be obtained without further loan transactions, and the conditions of employment and utilisation of productive capacity will be much the same as before the crisis began. Some industries of the least effective class, e. g. the boot and shoe industry, will probably be much reduced, their labourers having found employment in other more productive fields. The process of readjustment completed, the volume of available goods will, as already explained, be greater than under a system of permanent duties.

Such readjustments, however, are slow and troublesome. Trade unions, for instance, may prevent the wage reductions which are an essential part; in the retail trade, prices fall but slowly; and there are other difficulties. In the meantime the losses from unemployment and a general lack of balance in economic life are likely to be great. During this period of transition import duties of a temporary character may bring advantages of the sort indicated in the example from the boot and shoe industry. Theoretically they may be so constructed (e. g. if they are gradually falling) as not seriously to obstruct or retard the natural redistribution of economic forces among various lines of production. They would keep employed part of the otherwise idle machines and labourers without reducing the stimulus for the rest to shift to more effective industries.

In cases where the balance of payments does not tend in a negative direction, before the duties are imposed, and in cases where the tendency of the duties to turn the balance in the other direction is stronger, the reduction in imports must in some way or other be balanced wholly or partly either by a corresponding reduction in exports or by an export of capital.

All such cases differ from that of a protectionist duty under normal conditions in at least one important respect. The factors

[1] In other words, the case under discussion is one where there is a need of a certain deflation.

of production used to increase output in the protected industries do not reduce the factors available for employment in other industries. They come from the ranks of the unemployed. There is, therefore, no diminution of production in these other industries, no unoccupied commodity space to be filled through greater imports or smaller exports; this element in the mechanism of readjustment of the balance of payments is absent.

On the other hand, the better utilisation of productive factors tends to increase the aggregate of money incomes and hence also the demand for foreign goods. Furthermore, the prices of productive factors are maintained on a higher level than would otherwise in the long run have been possible in cases of the latter type. This implies two things: the buying power is kept so high that an import surplus would have been created had it not been for the duties; and the schedules of supply prices of export commodities and of goods competing with import goods are higher than they would be later on if there had been no duties. The exports fail to grow, and demand is turned from competing home market goods to import goods, so that imports are increased.

In brief, so long as protection is maintained, the otherwise inevitable deflation may be unnecessary or may be effected more slowly. If the duties are only temporary, deflation must, it is true, come, but the temporary stimulus afforded by them may be directed towards the industries which respond by increasing their productive activity, and the readjustment may be accomplished with less disturbance to economic activity.

This reasoning applies above all to cases where the unemployment or incomplete utilisation of productive capacity is due chiefly to monetary causes, e. g. deflation in other gold standard countries unbalanced by a corresponding general deflation of prices and wages at home. In other words, the disorganisation is due to the fact that they are kept on too high a level.

The conclusions may, however, hold true also when there is no need for or tendency towards deflation, but simply severe unemployment owing to the occurrence of frequent and profound disturbances such as dumping, new tariff walls, and technical progress. In this case there will be only two factors which tend to

restore the trade balance after imports of protected goods (boots and shoes) have been reduced: the increased aggregate of money incomes will raise the demand for foreign goods and increase imports, whereas foreign exporting industries will have less buying power and will for other reasons buy less from the protecting nation. It is extremely probable that the trade balance will therefore maintain a positive tendency. The ordinary mechanism of credit expansion will come into play, prices and cost levels will rise, and exports will decline, so that unemployment and surplus capacity will be created in export industries, perhaps as much as had disappeared in the protected industries.

If savings and export of capital increase there will be no need of a decline in exports. Assume, for example, that the output of protected goods is increased by $100,000,000 and that they take the place of imports, and that the rise of incomes increases imports of other goods by $40,000,000. If so much capital is lent to other countries that the balance of payments is moved $60,000,000 in a negative direction, the two tendencies will offset one another and the balance of payments will not be disturbed.

Some such thing may happen. If, to begin with, the foreign exchange reserves grow, the money market in the protecting country will be easy, interest rates may fall, and floating balances will tend to move to other financial centres.[1] It is nevertheless difficult to see how this can be more than a passing episode. What circumstances make it natural to expect a continued increase of capital exports, which after some time must mean larger long-term lending, when there is little or no reason to expect a lowering of the long term rate of interest? It may even rise, for although savings will grow when incomes grow, the demand for capital for the greater production may more than offset the increase in supply.

[1] A very similar, perhaps identical, opinion was advocated in the *Nation* (London) in the course of 1928 and 1929 in a discussion of Great Britain's economic position. "We suggest that, for moderate changes in the import volume, the classical reactions . . . are intercepted by the cushions of international indebtedness and do not actually work through to exports." . . . "That certainly is the moral suggested by our post-war experience, with its undiminished imports and its largely diminished exports." *The Nation and the Athenæum* (September 1, 1928), p. 700.

Probably, after a year or two, therefore, the ordinary mechanism which contributes to a reduction of export, at least relatively, will begin to function. Even then unemployment may be less than it would otherwise have been, if export industries expand anyhow only a little less than they would have done. When that is so, no unemployment is created to offset its reduction in the protected industries.

The longer the period under discussion, the fewer are the chances of reducing unemployment. For without duties a readjustment would have taken place, labourers would have been transferred, etc., in such a way as to reduce it perhaps as much as the duties have, or more so. However, the chances of avoiding an increase of unemployment in export industries for some time after new duties have been imposed are considerable if a short-term movement of floating balances is elicited.

To sum up, in a situation characterised by a lack of balance in economic life, the introduction of a new element may perhaps bring about a better balance, even though this element by itself would cause an unfavourable change. If one disturbance has occurred, it may be better to introduce another in a different direction than to leave the first one to work out its effects. An obvious example is the prevention of sudden and short lived foreign dumping.

One consequence of this analysis is that in a disturbed economic state trade with other countries may continue undiminished, even though part of it is in reality not advantageous. The existence of overhead costs makes it probable that goods are being imported at a price of 12*s.* when they could have been produced at home at half this amount. This may seem peculiar; the ultimate explanation lies, of course, in the failure of prices to correspond to marginal expenses.

Indeed, the absence of any such correspondence in most industries even when in a normal state (marginal expenses will be as high as prices only when production is carried on at high pressure) makes disadvantageous trade of this sort a regular occurrence. Industries which compete closely on the home market with import articles would normally be able to increase their output at

an extra cost per unit less than the actual market price of their own or the foreign product. In brief, the import of goods produced with heavy overhead costs seems to bring a loss *at the margin*. Note, however, that the "marginal" units of export goods usually sell for more than the marginal expenses of producing them, and thus bring a corresponding gain. If a restriction of imports causes a reduction of exports, not only the loss from marginal imports but also the gain from marginal exports will disappear. It is impossible to say in general terms whether the gain or the loss is greater.

The cause of this peculiar trade phenomenon is the existence of fixed costs and the occurrence of unpredictable disturbances. These circumstances frequently prevent the full utilisation of productive capacity. In themselves they have nothing special to do with international trade; nevertheless a small part of the loss from such incomplete utilisation may under certain circumstances be transferred to foreign countries.

In the example above, the duty has been supposed to be on consumers' goods. The higher prices of import goods, and probably also of home-made protected goods, do not raise costs of production and restrict exports in that way. If producers' goods are protected the development will be somewhat different.

The foregoing has dealt only with the effects of import duties, the object being to demonstrate how the price mechanism works when such duties are introduced under ordinary conditions or in times of unemployment.

CHAPTER XXIV

SOME VARIATIONS IN INTERNATIONAL TRADE

§ 1. *The elasticity of demand and supply.* In this chapter some variations of international trade will be briefly analysed. Changes in capital movements and in import duties have already been dealt with and certain aspects of the mechanism are similar to or identical with those presented in these two types of changes.

All variations in basic circumstances cause a variation in the price system, and thus also in international trade, although it is theoretically possible that all prices remain constant and that only the quantities of goods and productive factors vary. Apart from capital movements, the basic elements have been grouped in the following way: (1) demand conditions, (2) supply conditions, and (3) transfer conditions. It is changes in these which will be analysed below; in the third case, transfer conditions other than import duties are also dealt with.

There is, however, yet another type of primary change in the price system, which has been discussed only in passing, namely monetary alterations. In many cases such a variation leads to the break-up of the gold or gold exchange standard, and to considerable variations in foreign exchange rates. These cases fall outside the scope of this book; but there are others in which the change in the monetary system is less violent, and in which foreign exchange rates are well maintained; they have been touched upon in Chapter XVIII. Cases where the monetary change, although considerable, touches all gold standard or gold exchange standard countries in such a way that only small foreign exchange fluctuations are caused, will be discussed in the next chapter.

Let us deal first with a variation in demand, §§ 1–5, considering two countries only and assuming that *B*'s demand for some of *A*'s export goods increases. This case was analysed in Chapter IV, where, however, the costs of transport were left out of

account. It was found that *A*'s factors taken as a whole become relatively more scarce and *B*'s relatively less so than before. This means a tendency for the terms of exchange in international trade to vary to the advantage of *A*, which is able to buy a greater share of the total produce of the two countries than before.[1]

The change in the scarcity of the factors implies that *A*'s buying power has been increased and *B*'s reduced in terms of money, provided the total buying power remains constant. These conclusions apply also when costs of transport between *A* and *B* and other obstacles to international trade are introduced; but the reasoning naturally becomes more complicated. There is an original change in demand from certain *B* goods (home market or export commodities), and from certain of *A*'s export goods [2] to those of *A*'s export goods which have come into greater demand in *B* than before. This creates a tendency towards a rise in the relative scarcity of the latter compared with home market goods in *A*, and still more so compared with *B*'s commodities in general and those of *A*'s export goods which, like *B* goods, feel the influence of reduced demand. In other words, home market goods in *B* and all international goods, the specially demanded export goods of *A* excepted, fall in price relative to home market goods in *A*; the specially demanded export goods of *A* rise in price compared with home market goods in *A*.

So much for the direct effects of the change in demand. The consequent increase in *A*'s and decrease in *B*'s buying power sets up secondary reactions. International goods feel the influence of both these changes in buying power. Let us assume that so far as international goods are concerned, *A* uses its new buying power in exactly the same way as *B* would have used it; on that basis the demand for and prices of such goods are not affected by the secondary reactions. Home market goods, on the other

[1] In the sense in which the orthodox theory uses the concept "gain" one cannot say that *B* gains *less* from international trade than before. *B needs* the foreign goods *more than formerly*, so like *A* it may gain *more* than before. This fact is often overlooked.

[2] It is, of course, possible that only certain of these goods become less demanded, but in a general analysis it is natural to assume that they all feel the influence of the shift in demand to certain *A* goods.

hand, become more in demand than before in *A*, and less so in *B*. Thus, combining the primary and secondary changes, we see that *B*'s home market goods have been moved farthest down the scale of scarcity, next *B*'s export goods and the export goods of *A* not in special demand. Higher up in the scale come *A*'s home market goods and specially demanded export goods.[1]

Evidently not only the productive factors used in great quantities in the production of *A*'s special export goods but also those used in industries producing *A*'s home market goods become more scarce than formerly. Furthermore, the productive factors used much in *B*'s home market industries grow less scarce. For this reason also, the aggregate of money incomes rises in *A* and falls in *B*. But this does not mean that *A* gets a still larger share of the combined product of the two countries, since the higher incomes are balanced by higher home market prices.[2] Yet the fact that money incomes rise in *A* and fall in *B* for a double reason is important, as it partly explains why the mechanism of equilibrium in international trade works so smoothly.

The size of the price variations depends upon the particular circumstances. First of all, the elasticity of demand on both sides is important; the less elastic it is in both countries, the greater the price variations and the greater the shift in the terms of exchange.

The reaction of supply of the various commodities is of equal importance. Large-scale economies may counteract the tendency to higher prices for goods which have become more in demand than before.[3] Furthermore, the reaction of factor supply, and hence of factor prices, affects the costs and prices of commodities.[4] Increased demand abroad for American motor cars may

[1] These will be called below "*A*'s special export goods," and all other international goods will be called "ordinary international goods."

[2] It will, however, do so to the extent that unemployment or surplus capacity is reduced, which is likely to happen at least in the beginning.

[3] The situation as to surplus capacity is, of course, also relevant in this case, as in the case of all other variations. Prices will rise more, if production is before the increase in demand already running close to maximum output, than if there is much unused capacity.

[4] For a criticism of the classical way of dealing with these things as a question of increasing, constant, or decreasing return, see Appendix III.

raise their prices in the beginning, at least if the demand is considerable, but will almost certainly lead to lower prices later on. Large-scale economies tend to reduce costs, and the supply of the productive factors required in the automobile industry can be obtained at prices only very slightly, if at all, increased. For the workers in other manufacturing industries can be used in this industry, and the general wage level, like the general interest level, will not be much raised in the United States. The effects on factor prices of increased foreign demand *for any single commodity* must be small when spread over a wide field. On the other hand, goods produced without great economies of larger scale with factors of which the supply cannot easily be increased command higher prices if the demand grows. Most goods requiring special natural resources, e.g. wines grown on certain land and metals from certain mines, belong to this group.

In many cases the supply of factors can be increased only slowly. The outcome as to production and prices is therefore different in the beginning from what it is later on. Suppose that the demand for paper increases sharply throughout the world: in the paper exporting countries paper production expands and the labour qualities required come into greater demand than before. Probably wages in the paper industry rise compared with wages in other industries. A reaction of labour supply is elicited in three possible ways: (1) labourers of the same general quality but working in other industries may move to the paper industry; (2) labourers belonging to other but similar groups may move to the favoured group (this tends to spread the increase in wages over a larger area); (3) labourers, probably belonging to the same group, may move in from abroad. The wage level in the paper industry and the price of paper are affected by all these things. On the other hand, the supply of wood (the raw material of paper) can only be increased slowly, except so far as the cutting in available forests is temporarily increased or new means of communication make other forests available. It seems certain that a marked expansion in the paper industry would bring wood prices to a substantially higher level, at least for the first decades.

To give a more detailed picture of what happens it is necessary to describe the situation as it would be at different times after the original change has set in. In doing this, attention will be confined to a paper exporting country (*A*) which is fairly small compared with the world as a whole. Naturally wages, rents, and profits tend to rise in the paper industry. However, wages rise also in *A*'s home market industries. Unskilled labour employed there receives a higher reward than labour of the same grade in other industries; the same is true of other grades of labour. Such wage discrepancies cause a flow of labour from the latter to the former, which means a tendency to equalisation of wages for the *same* grades of labour as between different industries. On the other hand, the grades needed in great quantities in the favoured industries become scarcer compared with those used chiefly in other industries.

If the demand for special export goods continues to increase during a decade, we should expect to find the following situation one or two years after the change began: (1) the labourers employed in favoured industries have somewhat higher wages than labourers of the same grade in other industries; as a result a transfer of labour from the latter to the former is going on, whence the wage discrepancy is kept within limits. (2) The grades of labour required in relatively great quantities in the favoured industries receive a reward comparatively higher than before relative to other grades; as a result there is a tendency to a transfer of individuals from one group to another. This transfer, however, meets with such difficulties that a considerable change in the scale of remuneration may take place. (3) There may be a third type of readjustment: the flow of labour from other countries. Grades of labour much used in favoured industries have had their wages raised relative to wages of the same grades in other countries. As a result a transfer of such labour from the latter to the favoured country may take place, which means a tendency towards international equalisation of wages for these grades. This tendency is probably in most cases not very strong, for such transfer, like the transfer from one labour group to another, meets with considerable difficulties, especially in the beginning.

So much for readjustments in the field of labour. There are also difficulties in moving capital from other industries to favoured industries in *A*; they arise because the greater part of capital is used in a more or less fixed form — machines, buildings, etc. To set this capital free for other uses when once invested in an industry requires time. This case is parallel, though by no means completely so, to that of transferring individuals from one labour group to another.

The international movement of labour also has its corollary in an international movement of capital, which may result from a rise in the rate of interest in *A* compared with that in other countries. Suppose, for instance, that the favoured industries in *A* use large quantities of capital and certain types of highly skilled labour, but very little land and unskilled labour. In that case the rate of interest will rise in relation to the rate in other countries, and this may cause an inflow of capital from the latter.

On the whole, we find that the supply of factors tends to adjust itself to changed requirements of demand. These changes in supply, by means of transfers of different types, tend to keep the deviation in the scale of remuneration within limits; in other words, the deviation is slighter than it would have been had there been no transfer of factors.

A few years later it is to be expected that the mobility of the factors of production between industries, labour groups, and countries will become greater. This would especially be the case with that kind of mobility between labour groups which is affected by the flow of new labour to groups with a relatively favourable position. In brief, we should expect an increased variability of the supply of factors. As we have, however, assumed the change in demand to continue, it is uncertain which of the two tendencies will prove the stronger — the change in supply that follows from the change in the scale of remuneration, or the change in demand. At the beginning the latter tendency is almost sure to be the stronger, with the outcome an increasing deviation in the scale of remuneration. Later, however, the variability of supply has increased, so it is possible that the change in supply is greater than that required to keep the new scale of

remuneration unaffected by the continuing variations of demand; in other words, the prices of the factors may tend to resume their previous relative positions.[1] It is not unlikely, however, that the sensitiveness of supply to changes in the rewards to factors is still so slight that the scale of remuneration is moved further and further from its previous position under the influence of the variation in demand.

It is impossible to say whether the scale of remuneration at this second stage is deviating from or returning towards the scale in the beginning. Similarly, a few years later the relative prices of factors and commodities may be moving one way or the other; yet the probability is now greater than at the start that the adjustments of supply have got the better of the changes in demand. Accelerating variations in demand may, of course, continue to move the scale of remuneration from its previous position.

This brief analysis of the character of the supply reactions shows that the effects of a shift in demand as to prices and terms of exchange are extremely variable in various cases and from one time to another. About all that can be said is that increased demand for *A* goods tends to raise the scarcity of *A* factors in relation to the factors in other countries; hence the terms of exchange in international trade move to the advantage of *A*, if measured as the relation between the quantity of *A* factors given in exchange for goods containing a certain quantity of foreign factors. Whether the increased scarcity is spread more or less quickly over a wider or narrower field of *A* factors one cannot say. It is, however, certain, that unless their *total* supply reacts with exceptional ease, their relative scarcity will for a long period remain greater than before.

It goes without saying that supply reactions abroad also influence the development of prices and terms of exchange. The reduced demand for certain goods, which is the other side of in-

[1] The prices of natural resources which are much used in the favoured industries will not tend to do so, except in so far as new resources are made available through improved communications or the quality of old resources is changed through capital investments.

creased demand for certain *A* goods, elicits a series of similar reactions, but in the opposite direction.

§ 2. *The balance of payments and the monetary mechanism.* The way in which the balance of payments is kept in equilibrium need not be described in detail, as the analysis of changed import duties and capital movements is applicable. Certain short term capital transactions are almost sure to result, but unless either savings or the demand for capital in *A* are affected so much that long term capital movements are altered, the increase in *A*'s sales of special export goods will after some time be balanced by reduced sales of other goods abroad and by increased imports. This readjustment of the trade balance is brought about under the influence of the following changes in *A*: (1) the increased buying power in *A* leads to greater purchases of all sorts of goods, and hence to a growth in imports and a decline in exports; (2) the change in relative commodity prices tends to turn *A*'s demand from home market goods to import and ordinary export goods, as the latter two classes have been cheapened compared with the former. In that way imports are further increased and exports reduced; (3) industries producing special export goods and home market goods prosper and expand, leaving less productive resources for industries producing other export goods and goods competing with imports; less energy is used to market these sorts of goods. An opening is made for greater imports, while the expansion of ordinary exports is retarded.

It is unnecessary to repeat from the analysis of capital imports and duties a description of the way in which the banking system in *A* reacts towards a surplus of foreign exchange, and how the volume of credit and purchasing power is increased. What has been said about a possible secondary or tertiary inflation in *A* and deflation in *B* holds for the present case also.

It may be worth while, however, to emphasise once more that the immediate reactions, in particular the development of prices, towards such monetary changes differ considerably according to the general economic situation. If business is poor in *A*, and plenty of surplus capacity is available, the increased demand from abroad may lead to increased production but only

slight price increases.[1] Interest rates will fall, but this may lead less to increased domestic demand for capital than to investments on short term and perhaps also long term account abroad. Commodity imports are automatically expanded owing to increased buying power, but less so than commodity exports. The balance of payments is nevertheless kept in equilibrium through international capital transactions. There is no immediate need of the readjustment of production and demand described above.

Sooner or later, however, the business situation will improve, the surplus capacity will fall, and some readjustment will be required. Furthermore, *A* will not continue to pile up foreign investments to the extent necessary to keep the balance of payments in equilibrium without further readjustment in trade. Consequently credit and purchasing power in *A* will be further expanded, and the tendency to higher prices and shifts in industry will be strengthened.

Evidently the reactions towards a temporary but substantial increase in foreign demand will be quite different when the business situation in *A* is poor, from what it would be when conditions are good, with no surplus capacity available and the domestic demand for capital sensitive to interest reductions. In the one case commodity price changes will play a large part in the mechanism of adjustment; in the other that part will be insignificant.[2]

In Denmark the terms of international exchange before the War were more favourable during times of poor business than at others. Coal, machinery, and other producers' goods, which make up the major part of Danish imports, usually become more expensive when business conditions improve. On the other hand,

[1] Thus, increases in the foreign demand for a country's products may bring some relief from an international depression. Sweden's favourable situation in the year 1930 offers an interesting example. (The rather high Swedish unemployment figures during the winter months are not comparable with those of other countries.)

[2] It is, of course, just the same when the balance of payments becomes temporarily "favourable" through a substantial reduction in long term capital investments abroad. The readjustment may take place with or without price level variations, whether gold moves or not. See Palyi, *Die Zahlungsbilanz der Vereinigten Staaten von Amerika als Gläubigerland* (p. 275), where the situation in the United States in the latter half of 1927 and first half of 1928 is discussed.

animal food, the dominating Danish export commodity, has often been in great demand and has commanded relatively high prices during times of depression. An increase in the foreign demand for Danish exports, such as took place, for example, in 1910, makes the trade balance develop in a positive direction. At the same time it increases incomes and savings in the farm industry, and reduces the need for an influx of foreign capital. The short term indebtedness of Danish banks abroad is reduced. No change in relative price levels is necessary to keep the balance of payments in equilibrium, for within a year or two improving business conditions make Denmark import greater quantities of foreign goods at higher prices and the trade balance turns in a negative direction.

The readjustment of production, the monetary mechanism, and the maintenance of equilibrium in the balance of payments have been described only in country *A*, which exports goods that have come into greater demand than before. The processes of adjustment in *B* (the source of the increased demand for *A*'s goods) are of course the reverse, and need not be described (compare Chapter XX, § 8).

In the case of more than two countries, the demand for goods from outside countries is also affected when buying power is increased in *A* and reduced in *B*. The total demand for goods from *C* may rise, while that for goods from *D* declines. This sets up reactions both for *A* and *B* and for other countries which sell to *C* and *D*. Prosperity among customers is important to everyone. Countries which export to Brazil are interested in a pronounced world demand for coffee, just as exporters to Chile profit from an improvement in the nitrate market. Such indirect effects must be considered in studies of demand variations in concrete cases, though they do not easily lend themselves to general treatment.[1]

§ 3. *Illustrations.* It is difficult to illustrate the influence of demand variations upon international price relations by actual

[1] Cf. the discussion in Chapter XX concerning the effects on countries not directly concerned with international capital transactions. That reasoning is applicable here.

figures, partly because of the unsatisfactory state of price statistics in many countries, but chiefly because so many other things beside demand for a country's export goods change at the same time that it is impossible to isolate the influence of the demand variation.

It seems probable, however, that the peculiar development of the general price level in South Africa and Chile since 1914 has been chiefly due to a serious reduction in foreign demand for their export articles. Wholesale prices in these countries have consequently been subject to a relative decline, as seen from the following table.

THE WHOLESALE PRICE LEVEL IN 1929[1]

South Africa.....	116	Sweden	140
Chile	120	United States	138

South Africa's principal exports are gold and agricultural products. The latter have on the whole fetched low prices, and the price of gold is for obvious reasons the same as before the War, that is to say its value in comparison with that of other commodities (whose price index in most gold standard countries was around 140) has fallen considerably. The cost of working the mines has from necessity been kept low, and in particular the level of wages paid for native labour has been only slightly raised since 1913. As the gold mining industry plays an important part in the economic life of the country, the wages paid for native labour in other branches of industry have followed suit, and the costs of production in most of the home market industries have remained low. The result is that ever since 1922 the general price level has ranged between 120 and 130, and in January, 1930, it dropped to 107. During the last few years the cost of living index has been about 130.

Chile's chief article of export is nitrate, the price of which has been kept at about the pre-War level, and during the last few years even slightly below that level. Wages and commodity

[1] These official index numbers probably somewhat exaggerate the difference. On the other hand, Bowley's index numbers, estimated on a common basis for different countries for January, 1927, make the discrepancy seem smaller than it really was, as they comprise chiefly international goods. See *Special Memorandum, No. 24*, London and Cambridge Economic Series.

prices have therefore been low. In February, 1930, the latter dropped to 110, while the cost of living index was even lower — 102.

I have been unable to find examples of a dominating influence of *increased* foreign demand during the last decades. It is possible that the increase in the Australian price level (in 1929 it stood at 166) is to some extent due to the high price of wool, an important Australian export article, but other circumstances, probably above all the tariff policy, have operated in the same direction.

For brief periods the effects of sudden increases in foreign demand may be more definitely ascertained through price figures. The price of Egyptian wool was much higher in 1928 than during the preceding year. The quantity exported remained about the same, but the value of the cotton export rose from £39,000,000 to £45,000,000. This may explain why the wholesale price level rose from 114 in the first two months of 1928 to 127½ in the last two months of the same year. In other countries the tendency of the general price level was downwards.

§ 4. *International movements of productive factors called forth.* The theoretical possibility that changed demand conditions so affect the prices of productive factors as to cause international movements of labour and capital — not merely short term capital transactions — has been touched upon. Do such things really happen? A moment's reflection shows that the answer must be in the affirmative. It cannot be doubted that the enormous growth in the demand for rubber, for example, in the last twenty years has caused an inflow of capital and technical labour to the British and Dutch possessions with special facilities for growing it. The rise in wages of native labour there is probably due partly to this increased demand and to the inflow of coöperating factors.

The growth in coffee consumption during the last one hundred years has had similar effects in Brazil. During the coffee boom in the middle of the last century, slave labour was moved to the coffee states, chiefly Sao Paolo, and the immigration of Italians and Portuguese gathered speed. Considerable borrowings abroad

also resulted. In the years 1887–1900 no less than 900,000 people immigrated, largely with the support of the Brazilian government, and found employment chiefly in coffee cultivation. The population in Sao Paolo grew from 1,400,000 in 1890 to almost three times that figure in 1912. At the same time the railway lines were extended from 2,329 to 5,598 kilometers.

In general, countries which depend to a large extent on one or a few export products to pay for their imports are likely to be much affected by variations in foreign demand, particularly if their supply is so small as to affect world prices only slightly. Good examples are sugar from British West India, Mauritius, and Martinique, tea from Ceylon, cacao from St. Thomé, and sugar and tobacco from Cuba. Price variations for Greek dried raisins, Chilean nitrates, and Portuguese wines are also able to affect the respective countries so profoundly as to change the inflow or outflow of labour and capital. As a rule, capital movements are likely to be more affected than migrations; the agricultural population in the tropics and the other regions mentioned is usually slightly mobile. This explains why a reduced demand for their products may seriously depress their prices for long periods without greatly reducing the supply.

In the above-mentioned cases increased foreign demand has made an expansion of production profitable and has led to an inflow of foreign capital. There are other cases where the capital movement is oppositely affected. Higher export prices mean increased incomes, and may lead to substantially greater savings. It is conceivable, particularly in cases when there is no question of an inflow of labour from abroad, that the expansion of export industries may take place largely at the expense of the development of other industries, and that hence the demand for capital is little or not at all increased. The rate of interest may thus fall and the inflow of capital may be reduced or its outflow heightened. It seems probable that the insistent foreign demand for pulp, paper, and certain sorts of machinery since the War has had this effect upon the economic situation of Sweden.

Increased demand from abroad for a country's products ought *a priori* to cause an inflow rather than an outflow of productive

factors, as it tends to raise the national level of incomes. In the case above, a cheapening of one factor, capital, in relation to its price abroad nevertheless came about; this outcome was due to the increased supply. It is conceivable, however, that increased foreign demand may change the relative scarcity of productive factors so much that even in the absence of supply changes one factor becomes cheaper than before and tends to emigrate. Increased demand for Swedish forest products, for instance, might lead to a reduction in the relative scarcity of farm labour (which to some extent is already, and may become more completely, a non-competing group in relation to labour in manufacturing industries) and cause emigration from Sweden.[1] The value of much Swedish land used for forest growing might be brought above its value as farm land, which in many parts of the country is extremely low; forests would take the place of the farms. As only a small fraction of the farm labourers who used to live in a given area could be employed in the forest industry, and as affiliated industries might grow only slightly so long as foreign import duties tended to locate the production of pulp and particularly paper abroad, the surplus labour would depress the wage level in the farming industry. Evidently, therefore, the theoretical possibility of increased emigration must be admitted. Most probably, however, the result would be the reverse. The increased demand for labour in pulp and paper industries would be greater than the reduction in agriculture, and farm labourers would be able to shift to these industries.

§ 5. *Comparison between increased foreign demand and capital imports.* The true character of changes in international demand and of international capital movements may be illuminated through a comparison between these two sorts of variations. Attention is directed to the fact that they both imply a change in the localisation of demand, which affects commodity and factor prices. The effects of capital movement on the supply of capital are left aside in the present analysis.

[1] This case has been discussed by Wicksell and Heckscher in the *Ekonomisk Tidskrift* (1920).

The capital movement involves a transfer of buying power from *B* to *A*. Money which would have been used by *B* to buy either international goods — export goods from one of the two countries — or *B*'s home market goods, is handed over to *A* and used to buy either international goods or *A*'s home market goods. Buying power may be distributed in many different ways among these groups of commodities. In some cases demand is shifted somewhat from some international goods to others, while the demand for home market goods remains unchanged. In these cases the price situation would have been altered in exactly the same way if — in the absence of any capital movement — a change in *B*'s demand had taken place as it now is when the demand is exercised instead by *A*. The parallel is also complete in the cases where the borrowed money is used by *A* to buy certain international goods, while in the absence of any loan *B* would have used the money to buy its own home market goods. This comes to the same thing as if demand in *B* had turned from home market to international goods. Lastly, *A* may use the money to buy home market goods with which *B* would have bought international goods. Prices then vary exactly as if *A*'s demand has turned from international goods to its own home market goods.

In other cases, however, borrowings signify a reduction in the demand for *B*'s and an increase in the demand for *A*'s home market goods. This probably happens to some extent in most international capital transfers. There is no parallel case of ordinary demand alterations. The typical case where *B*'s demand for *A*'s export goods is increased involves a reduction in the demand for home market goods in *B*, but demand is diverted to *A*'s export goods, not its home market goods. In both cases demand is shifted from productive factors used in *B*'s home market industries to certain *A* factors. But when capital moves, the factors in home market industries primarily profit from increased scarcity, whereas changes in international demand directly raise the scarcity only of factors in *A*'s export industries.

In the case of borrowings it is primarily home market industries in *A* which must be expanded at the expense of export industries. When foreign demand has increased, it is certain export indus-

tries in *A* which develop at the expense of other export industries and home market industries. As already indicated, this means a change in the relative scarcity of the productive factors. In the case of capital imports the effect of increased scarcity for the export factors will be less, hence the terms of exchange will move less in favour of *A* than in the case of increased foreign demand of the same size for its export goods. It is particularly important for the development of the terms of exchange that the relation between wages in the two sorts of industries may change for considerable periods. Home market wages are likely to rise compared with export wages in the case of borrowings, but wages of the latter kind tend to rise in the case of increased demand.[1]

Let us not, however, lose sight of the fact that in the conceivable although probably rare cases which have been indicated above, the shift in demand owing to capital movements may be such that the effects on pricing are identical with those of an ordinary change in demand.

A parallel similar to that between the two types of cases above may be made out between an increase in *A*'s demand for its own goods, particularly semi-international goods, and a new or increased import duty, which also turns demand to such goods from those of foreign origin. However, the conversant reader will easily make it out for himself.

§ 6. *New natural resources.* We come now to a study of some of the effects of changed supply conditions in a few typical cases. Their effects on economic life, and particularly on the economic relations between different nations, will be briefly discussed.[2]

Assume first that new natural resources, for instance, large copper mines or oil wells, are discovered in a country which already has a supply of them and is exporting the corresponding products. Naturally the scarcity of these resources is reduced,

[1] No analysis which fails to consider this fact can be satisfactory.

[2] It would not be sufficient to analyse only the alterations in terms of exchange in international trade or even the changes in national income in the various countries. The national income can be judged and measured only on the basis of certain assumptions which are rather far from reality in these cases of changed supply. Furthermore, one may be interested in other things, for example, the distribution of income, the character of international trade, etc.

while that of other productive factors is increased. This holds true not only for *A*, where the new discoveries have been made, but also for the world at large. Chiefly, however, the scarcity of other factors is raised in *A*; above all is this true of the factors which coöperate with the new resources. The latter constitute a demand for coöperating factors, that is, certain grades of labour and capital.

These alterations in the relative scarcity of the factors of production go hand in hand with a change in the division of labour and trade between *A* and the rest of the world. Unless the elasticity of the world demand for copper is extremely great, the value of the copper export from a country where new copper resources have been discovered will be greater and that of certain other goods lower than before. Other countries will export more of other goods to *A*.

Competing copper exporting nations (let us call them *B*) see the value of their copper sales drop; income from the ownership of copper mines declines. Although the latter circumstance leads to a reduction of imports and goes some way towards restoring the balance in *B*'s international trade, a further, albeit slight, reduction in the prices of other factors compared with prices abroad is necessary to establish equilibrium. In *A*, on the other hand, the tendency towards a surplus in the balance of payments, in spite of the tendency of higher incomes to increase imports, makes the prices of other factors rise. In other words, the ratio of international exchange, so far as other commodities than copper is concerned, tends to move in favour of *A* and to the disadvantage of *B*.

The copper importing countries, called *C*, are differently situated. Assume that the cheapening of copper makes *C* increase the quantity of its copper imports more than in proportion to the drop in price. The value of its copper purchases is greater than before, and the further effects will be similar to those which ensue when *C* increases its demand for foreign goods. The ratio of exchange so far as goods other than copper is concerned moves against *C*. If, however, the elasticity of its demand for copper is smaller than unity and the value of its copper imports there-

fore falls off, the further effects will be like those of a reduced demand for foreign goods, for instance, a favourable movement in the ratio of exchange. The prices of the factors of production in C will tend to rise in the latter and fall in the former.

One must not conclude, however, that the smaller the elasticity of C's demand, the greater the gain it reaps from the discovery of new copper mines in A. The usefulness of new copper resources is small when there is little need of more copper. Thus, when the world demand for copper is elastic, the total gain to be shared — measured by the rise in a volume index of production in which the prices *before* the discovery are used as weights — is much greater than when demand is inelastic. The changes in the terms of exchange are not satisfactory indices of the rise and direction of variations in national incomes.

All countries are better off than before as consumers of copper, and the more so the greater quantities of copper they use. They are in a different position as to the alteration in the prices of their productive factors, that is, the development of their money incomes. A's rent from copper mines may or may not be greater than before, whereas B's is certain to be smaller. The prices of other factors of production are certain to rise in A and fall in B, — under the assumptions made, — while they will rise or fall in C if the elasticity of its copper demand is smaller or greater than unity. Of course a rise in the scarcity of a country's productive factors, including those used in export industries, compared with the factors which enter into the imports of that country, means improved terms of exchange.

It is possible, especially if A is the chief source of copper in the world, for the elasticity in the foreign demand for copper from A [1] to be less than unity. In that case the consequences as to the prices of factors other than copper mines, and as to

[1] In the first case, C's demand for copper might have an elasticity smaller than unity from the world's and from C's point of view but greater than unity from A's. If C imported x units from A and y units from B, and if a reduction of the copper price to half its former height made C purchase $x + z$ from A and $y + w$ from B, then z might well be greater than x and yet w smaller than y and $z + w$ smaller than $x + y$. Of course, w may be negative as production and exports from B may decline, some mines being worked less or not at all.

the ratio of exchange in other goods than copper, will be the same as when the foreign demand for *A*'s export goods has been reduced.

A good example of a change in supply is the discovery of gold mines in Australia in the middle of the last century. Wages and interest rates were raised, many industries became unremunerative, importation grew and was paid for by gold. A brilliant description of the development is to be found in Cairnes' *The Australian Episode.*

It goes without saying that countries producing not copper but goods which satisfy the same needs may suffer from the discovery of new copper mines abroad. Coal mining nations have through the years felt keenly the competition from cheap oil which is largely the result of the new oil wells opened in South America and elsewhere.

It is also evident that changed supply conditions, like all other circumstances which change factor prices, may cause reactions in factor supply. Important increases in wage and interest rates, for instance, may well lead to an inflow of foreign labour and capital. This happened in the Australian case, and is occurring at present in certain South-American oil states.

If the discovery of new resources does not lead to increased exportation of the corresponding goods, as in the case above, but to a substitution of home-made goods of this sort for imported ones, the volume of trade will be curtailed. This is only natural, for the productive factor equipment has become more nearly analogous with that of other countries, whereas in the former case the inequality in equipment increased.[1]

§ 7. *New technique.* Variations in technique constitute another, and perhaps more important, sort of change in supply conditions. In this book they are regarded as a change in the supply of technical labour, and are thus a parallel to those in the former case of new natural resources.

To describe their influence on international trade is necessarily very difficult. In the one-market theory the question of their

[1] Sudden and temporary changes in supply, for example, crop failures, will not be analysed in this chapter. The reader is referred to Chapter XVIII.

effects on wages, interest rates, and rents has been discussed at length by different authors without more than a few positive conclusions being reached.[1] How much more difficult must it be to state their effects upon factor prices, and the character of industry in a many-market world.

Let us disregard at first the fact that relative factor prices are changed, and assume that technical progress in certain important industries in country *A* means simply a change in the quality of technical labour, which makes it possible to produce the same quantities of commodities with 10 percent less of all productive factors. If *A* is the only exporter of these commodities, and if the foreign demand, as well as that within *A*, has an elasticity equal to unity, no shift in production or trade will take place. *A* will sell 10 percent more of these goods for the same sum it formerly obtained for a smaller quantity, but the export will represent the same quantity of productive factors as before, and their prices will remain unaltered. On the other hand, if the foreign demand is elastic, factor prices will rise in *A* and fall in *B* and vice versa if its elasticity is below unity.

Now, assume the technical improvement to take place in industries with many foreign competitors in world markets. Demand is then certain to be very elastic, at least in the long run, assuming of course that a corresponding improvement does not occur in competing countries. For this reason, *A* will profit not only as a consumer of cheapened commodities but also through higher factor prices, that is, a rise in its national income. To other countries the commodities in question will not be so much cheapened as in proportion to the technical progress in *A* and the national income of some of them will fall.

This conclusion holds true also in the case where the proportions of factors used in the respective industries are changed, and hence also the relative factor prices. We make the assump-

[1] In general, inventions which are labour saving tend to reduce the marginal productivity of labour and lower wages in relation to other factor prices, while technical changes which save land or capital reduce rents and interest. See Pigou, *Economics of Welfare* (2nd ed.), pp. 630 ff. and Wicksell, *Vorlesungen über Nationalökonomie*, I, Section III, 1. c.

tion simply that costs of production are reduced by 10 percent on the basis of a constant level of factor prices in *A*.[1] The factors used in the competing industries abroad will naturally become relatively less scarce than before. On the other hand, the price level for *A*'s factors tends to rise, and the prices of the cheapened goods fall less than 10 percent. If experiments in making pulp and paper from the rapidly growing trees in Southern Europe instead of from the slowly developing Scandinavian pines and firs are successful, the scarcity of Scandinavian land will be much lowered. German methods of producing synthetic fertilizers have reduced the value of Chilean nitrate mines. Note that the reduced scarcity is not confined to these natural resources but to the cooperating factors as well. As already observed, wages are kept down in Chile; and a reduction in the pulp and paper production in Scandinavia means less demand for labour and capital in those countries. Wages fall, and perhaps also interest rates.[2] On the other hand, the demand for capital and labour for pulp and paper production in Southern Europe increases; wages and interest rates tend to rise there. It is not necessary to describe here the further effects upon international trade of these changes in factor prices. Industries using much labour tend to decline in Southern and expand in Northern Europe.

A similar case with quite far-reaching consequences, already briefly touched upon, is that of the increased supply of technical labour in the transoceanic countries, which makes it possible for them to produce many manufactured goods which before the War were imported from Europe. The demand for ordinary manufacturing labour in these countries is thereby raised, while it is reduced in Europe. The terms of exchange in European trade with them tend to move to their advantage, as manufactures tend to become cheaper. Statistics show, however, that so far

[1] When making the computation of a factor price level in such a case, the change in the quality of the technical labour is disregarded in order to achieve comparability. It comes to the same thing as assuming that the price level for all other factors has remained constant, for a possible price change for technical labour has little influence, if the shares of each factor in the national income are used as weights.

[2] The losses from fixed capital useless for other purposes may be so great that the rate of interest will rise instead.

other tendencies have been stronger. The prices of crude food products and raw materials have risen less than the price of manufactures since 1914. Technical changes have heightened the effectiveness of the production of the former to a surprising degree, and the policy of trade unions and other circumstances have tended to keep factory wages high and to depress outside wages. This policy, carried out with even greater success perhaps in the transoceanic countries than in Europe, brings the European manufacturing nations a yearly gain of colossal magnitude. Nevertheless, the technical development — that is, the increasing supply of certain grades of technical labour — in countries at an earlier stage than the manufacturing nations tends to raise the level of wages for unskilled labour there, while it tends rather to depress it in the mature manufacturing countries.

Many industries, which show a relative decline in Great Britain, grow in countries such as Italy, Finland, Brazil, China, and Japan. This is true, for instance, of the textile industry.[1] One might express the same idea by saying in the classical terminology that the expansion of manufacturing industries is particularly rapid in countries where the effectiveness of labour in these lines is growing in relation to the existing wage level. Such countries are often those in the early stages of manufacturing. When they have once started on that road, a rapid advance in efficiency up to a certain point is comparatively easy.

An interesting example is the development of the Indian jute industry after 1875. Hessians — the weaves of quality — were before that date produced chiefly in Scotland. European capital and technique — improvements in machinery which reduced the demand for skill on the part of workers — have led to an enormous expansion of this industry in the Calcutta district. As it requires much capital, European capital has been as necessary as European technique.[2] Such developments mean an increase in

[1] In spite of high interest rates cotton spinning and weaving has on the whole been a highly remunerative business in these countries since the War, while in Great Britain and some other countries the cotton industry has been in a state of constant depression.

[2] See M. Schaub, *Internationale Verschiebungen in der Jute-industrie*. Unpublished dissertation in the library of the Institut für Weltwirtshaft. Kiel.

the world's output, and the widening of markets for raw materials and manufactured goods rather than for agricultural goods. For this reason the increased competition in certain trades, for instance the textile industry, may be offset from the point of view of the leading manufacturing nations through an expansion in the machinery trade and others. The wage level for factory workers may tend to rise in all or almost all countries.

A change in the localisation of production in the opposite direction, from the less developed to the old manufacturing nations, is, however, also taking place. Almost the whole of the world's rice crop has always come from Eastern Asia, where wages are low and conditions of soil and climate good. The conditions are good also in many other countries, but high wages have prevented the cultivation of this plant, with its great demand for labour. An exception was the United States, where in the middle of the last century rice growing began to expand in certain districts. Large scale farms largely equipped with slave labour used almost the same methods of cultivation as did China and Japan.

The situation was, however, completely changed when American wheat growing technique was adapted to rice growing. This led to an enormous expansion in Louisiana, Texas, and California.[1] How different these methods are from those in Asia is seen from the following facts. Two man-years cultivate 100 acres in the United States, while one man is fully employed on a farm of one-third acre in Japan. The output per man-year reaches 81,000 pounds in the former country and 1,400 pounds in the latter. Thus an American produced almost sixty times as much as a Japanese, but he used three hundred times as much land and one does not know how many times more capital. There is no tendency to introduce American technique in China and Japan, since wages there are too low.[2] Rice from these countries is selling in the world market in competition with American rice. It goes

[1] See A. H. Cole, "The American Rice Growing Industry: A Study of Comparative Advantages," *Quarterly Journal of Economics*, 1927.

[2] In 1923 farm labourers received a pay of 38 cents and 27½ cents per day for men and women respectively by yearly contract, and about twice as much per day by day to day contract. Machine binding does not pay if wages are below $2.

without saying that this American supply tends to reduce the scarcity of labour and land in Eastern Asia compared to that of other countries, particularly the United States.

§ 8. *Trade union policy.* It remains to consider a third sort of change in supply conditions: variations in the social conditions of production. Trade union policy is a social element of this type. Assume the trade unions to raise the wage level in certain industries considerably above the level it would have reached without their influence. The wage level in other industries is naturally depressed, owing to the increased supply of labour which is unable to find employment in the former industries. This case is just like any other where the supply of the different labour qualities or other factors has been changed. It may be discussed along the lines of preceding sections.

If textile workers in India succeed in raising their wages considerably through trade unions, the prices of Indian textiles will rise, except in so far as the higher standard of living makes for greater effectiveness. Wages in British textile industries may consequently rise. On the other hand, wages in other Indian industries may well tend to fall, and Indian export goods, e.g. tea, may become cheaper. The producers of tea elsewhere, as well as the consumers of tea, will be affected.

In general, factors chiefly competitive with the labourers that have raised their wages have their scarcity increased, while those mainly cooperative are relatively cheapened. Nevertheless, the belief among British trade union leaders that the forcing up of wages by trade unions in countries with exceptionally low wages would make a rise in British wages possible, is probably largely unfounded. For in these very countries the "economy of high wages" is likely to increase the effectiveness of production, and may prevent any important increase in the costs of production as a result of wage increases.

Another aspect of trade union policy deserving of much attention because of its practical importance is its influence on the length of the working day and the consequences of variations therein. This question is very complicated and will not be dealt with in this volume, as it would require too much space. For the

same reasons the influence of taxation on international trade is reserved for special treatment.

§ 9. *Influence of changed international transfer relations.* Having discussed some types of demand and supply variations, we now come to the question of changed transfer relations.[1] Assume that a general reduction in the costs of transport between a fairly small country *A* and the rest of the world takes place. *A* is situated far away from the great markets of the world, yet produces chiefly bulky and heavy goods for export. These goods must be sold in the world market at the same prices as similar goods produced in better situated countries. Their prices are determined in the world market. In *A* the prices of export goods will consequently be their world market price less the cost of transportation. If now an improvement in the means of transportation tales place and the carrying costs are lowered, the result must be a fall in import prices and a rise in export prices in *A*, chiefly the latter. The factors of production used in great quantities in export industries will receive a higher reward. So far as the same or similar factors are used in home market industries, their rewards will rise there also, and consequently home market prices will increase. The fact that import goods have become cheaper will, however, make a rise in the prices of semi-international goods very difficult. Thus the production of them and of import goods becomes unprofitable and declines, whereas export industries prosper and grow. It is only natural that exports and imports should increase when an obstacle to trade is reduced.

Not all factors are used in export industries, and some are used in different proportions in different industries. The rise in demand for factors of production in export industries will thus mean little or no rise in demand for certain factors, but a considerably increased one for others. Furthermore, the decline of industries producing semi-international goods means a reduction in the demand for factors especially scarce in *A*. Consequently the relative scarcity of the agents is changed.

[1] The reader is asked to recall the analysis in Chapter VIII, §§ 5 and 6; Chapter X, §§ 11 and 24; and Chapter XIV, §§ 7 and 8.

If the costs of transport are an equally important element in the price of import goods and in that of export goods, the reduction of the former will balance the increase in the latter. There is consequently, under these conditions, no change in the price level of international goods.[1] Whether home market goods will rise in price or not is uncertain, and depends upon whether the agents used are chiefly the same as those required in large quantities in export industries. In most cases this is so, unless unskilled labour makes up several labour factors even in the long run, and the general price level is therefore raised.

On the other hand, if imports are less bulky and cheaper to move than exports, the reduction in their price is less considerable than the increase in the value of the latter. In that situation the general price level is raised more than in the former case.

Should country *A* be of importance for the world's supply, conditions in the world market must be affected by the reduction in costs of transport. The factors of production in *A* become available to a much greater extent for the satisfaction of demand elsewhere. Its fertile land may, for instance, be used for wheat growing, which was perhaps impossible at an earlier date. The effects in other countries are similar to those of an increase in the total supply of land. The factors that are relatively abundant in *A* become scarcer in that country and relatively less scarce in others. Other factors become cheaper in *A* and scarcer outside of it.

A case of this type is to be found in the trade between Europe and America in the latter half of the last century. Through improvement in the means of communication[2] American land became available for the satisfaction of European want of wheat. The demand for land in America increased, and so did rent. We had here, however, also an important movement of capital and labour that exercised a considerable influence upon the relative

[1] For qualifications to such statements see Chapter VIII, § 5.

[2] In the first half of the 'nineties wheat freight rates from New York to Liverpool were about 30 percent of what they had been twenty years earlier. Sundberg, *Aperçus Statistiques Internationaux* (Stockholm, 1908).

scarcity of the factors, especially in America. The rise in rents in this country was consequently due to at least two different causes.[1] In Europe the situation was different; in spite of the export of capital and labour there was an increasing quantity of these factors. So far as the supply of factors is concerned, we should expect therefrom a rise in rents, that is, in the scarcity of land. The actual development took the opposite direction, as a result, no doubt, of improvements in the means of transport, which made vast areas in America and Australia available for the satisfaction of European demand for agricultural products.

INDEX NUMBERS OF LAND VALUES[2]

Year	Sweden	Denmark	Great Britain [3]
1876	103	102	106
1888–90	86	88	83
1900–02	99	81	73 [4]

This table illustrates the tendency of land values and rents in three European countries. The influence of better communication with the transoceanic countries in the last quarter of the nineteenth century is evident. In Sweden land values began already to rise again in the 'nineties, as a result of the protectionist policy inaugurated by that time.

The international trade of Japan offers another example of the influence of more intimate contact and greater trade. The political and social evolution of Japan since opening its doors to western civilisation meant the disappearance of many obstacles to trade between that country and others. The European demand for Japanese products, for instance rice, was felt more directly; the difference between prices in the world market and in the places of production in Japan was reduced. As world prices were not much affected by the development in Japan, the outcome was a rise in the interior price of Japanese export products.[5] This meant higher rewards to the factors of produc-

[1] Interior American savings and excess of births over deaths also played a part.

[2] Figures from *Åmark, Undersökning angående jordegendomsvärdenas utveckling i Sverige och vissa främmande länder* (Stockholm, 1923), p. 64.

[3] Rents paid by tenants. [4] 1897–99.

[5] The cheapening of import commodities exercised a much smaller influence on the general price level in the opposite direction.

tion, and hence also higher home market prices and a rise in the general price level. The development is illustrated in the following table:

WHOLESALE PRICES IN JAPAN AND ENGLAND [1]

Year	Japan Hanabusa	Great Britain Sauerbeck
1886	100	100
1890	107	104
1895	125	93
1900	157	109
1905	173	104
1909	154	107

In such cases, where the prices in the important markets are not much affected, the country in Japan's position benefits from both higher export and lower import prices. One may say that it has to pay the whole of the outward and inward freights itself, and reaps the whole advantage of their reduction through better communications. Usually, however, prices in the markets where the goods are sold and the import commodities bought are more or less affected. The prices of export goods will fall there, and the f. o. b. prices will not rise as much as the costs of transportation have been reduced. Part of the gain from more effective means of communications goes to other countries.[2] Note, however, that the total gain from improvements in communications is much greater than the saving in transportation costs. The problem of how commodity prices, ratios of exchange, and national incomes are affected by changes in costs of transport cannot, therefore, properly be formulated — as it has often been — as that of "the variable distribution of transportation costs."

The low shipping freight rates since 1921 have caused price variations of the sort indicated in the beginning of this section. A great many raw materials and food stuffs are transported long

[1] As to the sources of the figures see Appendix IV. It is probable that the rise in the Japanese price level was also due to the increased supply of technical labour, which raised the wages of unskilled labour. A different Japanese index number (Harada) rose from 1900 to 1913 by 32 percent.

[2] It is, of course, theoretically possible that better communications, such as lower duties, may change the terms of exchange so much against a certain country that its national income in terms of commodities is reduced, as already observed by Mill and Edgeworth.

distances to Europe, and the reduction in ocean freights has meant a considerable narrowing of the margin between their prices in the countries of origin and in the European markets. This circumstance has tended to raise the wholesale price level of the British dominions much more than the cheapening of imports (for which the costs of transport reach only a small percentage of their value) has tended to depress it.

THE WHOLESALE PRICE LEVEL IN 1929

Australia	166	British India	159
New Zealand	147	Canada	149

Several circumstances may have contributed to this development of prices, but there can be no doubt that the low ocean freights have been to some extent responsible. Towards the close of and immediately after the War, when freights were high, relatively low price levels prevailed in these countries, quite in harmony with the theory expounded above. Since 1920, the last year of high freight rates, export prices have risen considerably compared to import prices. If we compare that year with 1925 (the later years have been much affected by the world crisis in agriculture and raw material production) we see that in New Zealand, for instance, export prices rose by 3 percent, whereas import prices fell by 36 percent. In judging these figures we should of course bear in mind the world-wide deflation since 1920. It kept back the rise in export prices and accentuated the drop in import prices. Similar figures, although not quite so expressive, are obtained for Australia, British India, Dutch India, and Argentina.[1]

Although we know only little of the extent of European dumping to these countries, it seems safe to say that an increase in dumping compared with pre-War days can have had slight influence in keeping the import price figures down.

The exceptionally heavy rise in the price level in Australia may perhaps, as already mentioned, be partly ascribed to the fact that the foreign demand for wool, its most important article of export, has for many years been strong, and its price high,

[1] See Helander, *Die internationale Schiffahrtskrise* (Kiel, 1927), pp. 356 ff.

right up to 1930. The rise in the Australian price level is, however, probably chiefly due to the intensification of the protectionist tariff policy and to the conditions prevailing on the labour market, which have opened the way for the forcing up of wages in the home market industries. Besides, credit policy has not been restrictive enough, and the Australian pound has been quoted at a discount of about 7 percent in the summer of 1930, which indicates that the price level may have already been inflated the year before.

Let us recall the analysis in Part III, where it was stated that in a majority of cases a reduction in costs of transport favours a localisation of the secondary stages of manufacture in places in the neighbourhood of the dominating markets, or in places where the supply of productive factors is particularly suitable for these manufacturing industries. In other words, the attracting power of raw material sources is weakened. Thus, the low ocean freights are to the advantage of European industry, as they lessen the saving in costs of transport which manufacturing close to the sources of the raw materials in the transoceanic countries would bring. On the other hand, Europe, as owner of almost the whole merchant marine, does, of course, lose heavily.

Within Europe, the low freights work in favour of manufacturing industries in countries without coal and iron mines. The advantage which a country like England has reaped from having cheaper coal and iron than many other countries is reduced. This is one reason of many for the depression in English manufacturing industries. So far as iron and coal are sold at lower prices abroad than at home (and such practices play some part in the case, for instance, of Polish coal and British iron), the manufacturing industries in coal and iron importing countries have their position further improved.

If European manufacturing industries are favourably affected by cheap freights, the position of agriculture is naturally affected just the other way through easier contact between its markets and competitors across the seas. Prices of vegetable food in Europe are quoted as much lower index figures, compared with pre-War figures, than in the transoceanic countries. A reduc-

tion of output in European agriculture would have been a natural consequence, but for many reasons it has not come about, and the agricultural crisis has been aggravated. This hits especially the European exporters of vegetable foods, such as Roumania and Hungary, very severely. It operates like a falling off in the foreign demand for their exports, and tends to keep down their price levels. In transoceanic countries the cheapening of the costs of transport must, of course, raise the prices of the productive factors used especially in agriculture. This expectation is in accordance with the facts: from 1920 to 1925 rents rose by 48 percent in New Zealand, as compared with 7 percent for wages; in Australia rents rose by 23 percent, while the rise in wages, in spite of the circumstances indicated above, did not exceed 14 percent.

§ 10. *Fluctuations in freight rates.* In the previous section the effects of a major and long lasting change in shipping rates have been briefly discussed. Naturally temporary fluctuations in these rates also occur, and influence trade and prices. As a matter of fact, shipping rates of tramp steamers fluctuate more radically and quickly than most commodity prices. Statistics for the post-War period demonstrate clearly how sensitive are the rates for the carrying of such goods as coal, oil, and timber to changes in the volume to be transported. In the long run, the supply of shipping room does of course adapt itself to the altered conditions, even when special requirements are made of the ships, as in these cases, but for several years the dislocation of the rates for different goods or routes may considerably affect the relation between commodity prices in various countries and the trade between them. For instance, the development of rates for the transportation of leading Swedish import and export goods has been far from uniform, as shown by the following table:

INDEX NUMBERS FOR FREIGHT RATES TO AND FROM SWEDEN

(1913 = 100)

	Inward freights		Outward freights	
	Coal	Grain	Wood goods	Pulp
1927	98	143	151	162
1929	112	117	153	154

While coal freight rates rose, grain freight rates declined. Outward freights were much more stable, but remained on a substantially higher level. The low rates to Sweden are probably partly due to the fact that electrification and a considerable increase in wheat cultivation has reduced the Swedish demand for coal and wheat from abroad. On the other hand, the foreign demand for pulp has been very insistent, and has led to a great increase in the volume exported, which has helped to keep up the rates for wood freights in spite of a reduced volume.

Evidently, even if changes in a country's demand for import goods be so small compared with supply on the world markets as to be utterly unable to affect prices there, yet the import prices from this country's point of view may be substantially affected through variation in the freight rates. The reasons why these rates vary so easily are, briefly, the height of the fixed charges in shipping and the great number of competing tramp steamers on all important routes. Thus, whether or not an individual steamer is kept in use does not much affect the rates. There is no individual market for each tramp shipping company which it is afraid of spoiling. Thus, there is not much stimulus to lay up ships which can earn rates which cover a little more than the variable expenses. In this respect the situation is like that of agriculture and certain manufacturing industries which put out standardised goods for large markets. Supply reactions are not sensitive to rate reductions, until rates have reached the level of variable costs.

The high outward freights have, of course, tended to keep down the Swedish wholesale price level, but this influence must have been very slight. If these freights had been on the same relative level as the inward rates, and the prices of Swedish export goods abroad had not been changed thereby, the f. o. b. prices would only have been raised by something like 50,000,000 kroner, or 3 percent of the total export value and less than 1 percent of the national income. The quantity of such goods consumed in Sweden is so small that a corresponding rise in the prices quoted for the home market would not have raised the price index by another 1 percent.

More important cases of a one-sided development of shipping rates may be found when considerable changes in international capital movements take place. A rise in the inflow of foreign capital means a relatively much greater volume of commodity imports than before. Consequently rates for incoming cargoes will rise compared with rates for outgoing ones. Both export and import prices are lifted to a higher level, compared with prices abroad, than before. This is what happened during the War as a result of the enormous European borrowings in the United States. The relative rise in the English price level (Economist's index was regularly something like 20 percent higher than the Bureau of Labour's, both calculated on a gold basis) is to be explained not by the direct effects of the import of capital alone — the so-called pegging policy — but also by the influence which the capital movements and other factors exercised on the relation between inward and outward shipping rates.[1]

Of course the variations in freight rates affect [2] the balance of payments of various countries in an entirely different way, because incomes from shipping vary with them. This is a change in demand for a service rendered by the shipping countries, and keeps exactly the same place, in theory, as changes in the demand for commodities or other services.

§ 11. *Changes in interior transfer relations.* It goes without saying that changes in transportation resources and facilities within countries affect production and international trade just as well as variations in costs of transport between countries, which have been discussed in the last two sections. Costs of transport within countries are an important part of the production costs of many commodities, and changes in the former therefore affect the power of competition and international trade.[3]

This is, perhaps, most obvious when the costs of transporta-

[1] The trade and capital transactions between Europe and South America in the last half century before the War, as already indicated, offer another example of changes in transport relations of this type.

[2] Strictly speaking, it is not correct to say that changes in freight rates *affect* commodity prices. It would perhaps be better to say that they go hand in hand. All prices of services and goods hang together in a mutual interdependence price system.

[3] The reader is asked to recall the analysis in Chapter X, §§ 9–10, and Chapter XIII, § 5.

tion for the finished export commodity from the place of production to the frontier are altered. This naturally affects the prices at which the commodity can be sold abroad in exactly the same way as do changes in costs of transport from the frontier to the foreign markets. The heavy reductions in Polish railway freights for export coal have in late years led to a very considerable export to the Scandinavian countries, at the expense of the sales of British and German coal. The price of coal in these countries has been affected thereby in two ways: the Polish competition has served to depress the quotations for coal in Northern Europe; and the decline in purchases from England has tended to reduce shipping rates for coal cargoes.

Usually more important, however, than such cases are those where the whole economic life of a country is in a thousand and one ways altered by new transportation facilities, for instance, the building of railways or canals. The rapid development of countries such as the United States, Canada, and Argentina is intimately tied up with the growth of the system of railways, which have made vast areas of agricultural land and other natural resources available. If other things remained equal, the effects of new railways would in many cases be like those of the discovery of new natural resources.

A special sort of improvement in communications consists in providing direct connections between places which before could only exchange goods by means of several different kinds of transport. The building of a canal to connect two rivers may substitute one uninterrupted journey for one rail and two river journeys. Such reductions in the number of "breaks" often mean considerable savings.[1]

[1] The influence of changed transfer relations on productive factor movements has been discussed above in Chapter IX, § 3–4; Chapter XI, §§ 5–6; Chapter XIII, § 6; and Chapter XVII.

CHAPTER XXV

INTERNATIONAL PRICE VARIATIONS

§ 1. *Wholesale price levels.* In Chapter XIV the character of international price relations has been illustrated. Chapters XIX–XXIV contain an analysis of *changes* in international trade and prices on the basis of the theory developed in earlier chapters. The whole book may, as a matter of fact, be regarded as an investigation into interregional and international price relations.

The variations already dealt with are, however, such as occur where the development has been dominated by a change in *one* basic element, e. g. an import duty, a change in demand, or in capital movements. It may be worth while to illustrate further cases where many basic circumstances have changed at the same time, leaving aside the hopeless task of unravelling the influences exercised by each of them.

The diagram below shows the price development in some countries during the last half-century before the War. The differences are so considerable that no doubt can exist as to their reality, in spite of the fact that the index figures have been computed in several different ways and are hence not strictly comparable. If prices in the years 1867–77 are used as a base and put at 100, the situation in 1909 was the following: Austria-Hungary 94, Germany 90, Sweden 89, England 74, Australia 74 and New Zealand 64.[1]

Equally great discrepancies in the price development, although the period covered is only two decades, are shown by a table for Denmark, Russia, and Japan, for which figures are available only since 1890. Up to 1909 prices rose by 6 percent in Denmark, 22 percent in Russia, and 44 percent in Japan. From 1904 to 1908 the price level rose by leaps and bounds in India.[2]

[1] As to the sources of the figures, see Appendix IV. The chart is taken from the author's work, *Handelns Teori*.

[2] As to the sources of the figures see Appendix IV.

The figures for food prices in the British dominions, given in Chapter XIV, show a similar picture. From 1914 to 1929 the relation between the wholesale food prices in Canada and New Zealand remained virtually constant. In Australia, however, there was a relative rise of almost 10 percent, in comparison with New Zealand, whereas in South Africa the relative decline amounted to 22 percent.

One reason why so considerable differences in the price development are possible is, as observed in earlier chapters, the shifting of a certain commodity from the home market group, for example, to the international group, owing to exceptional improvements in its production in a certain country. Of course its price will then reach a relatively low level, as happened with the price of rice in the United States according to the table below.[1]

INDEX NUMBERS OF RICE PRICES (1901–10 = 100)

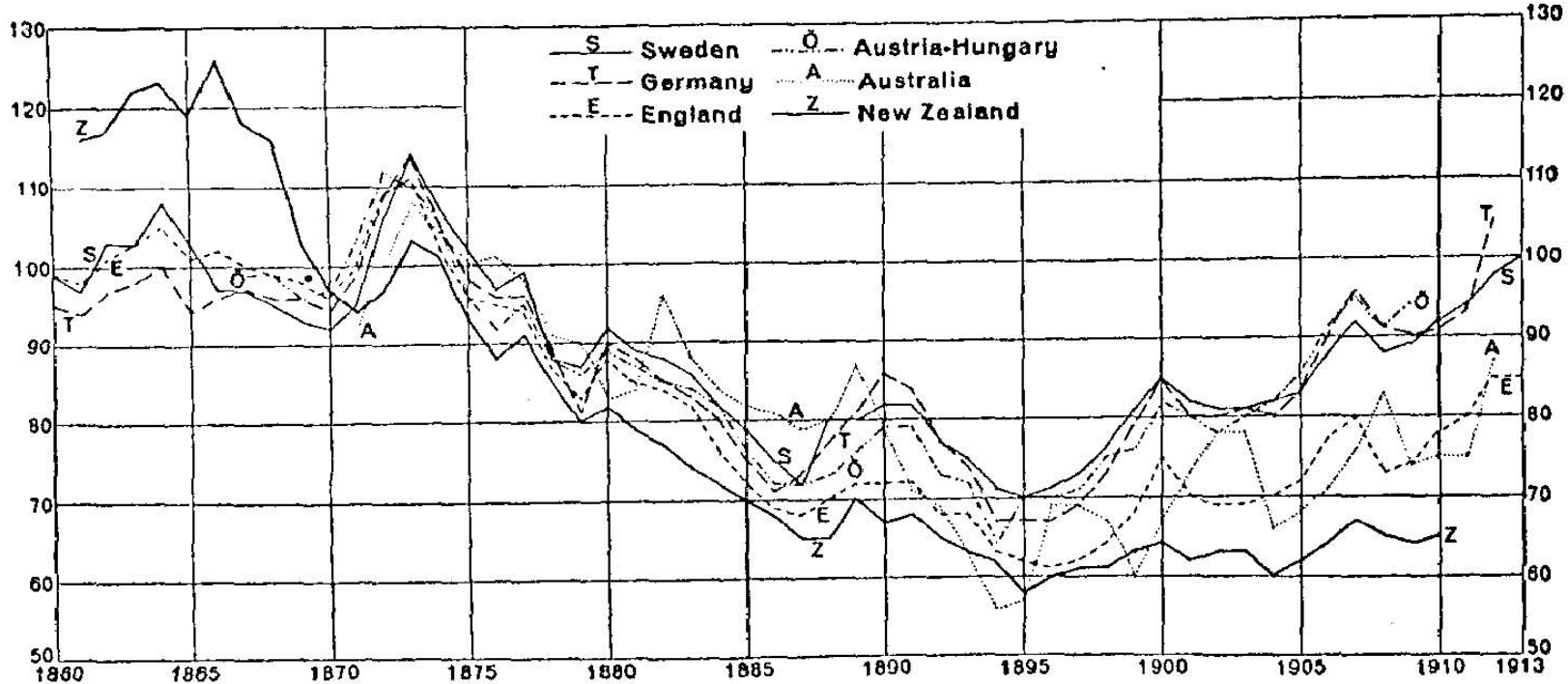
	1924	1926
England	235	228
Japan	273	272
United States	141	176

It is well known that the national wholesale price index numbers, which use 1914 as a base, show great differences a decade and a half later, even if the prices are calculated in terms of gold. These differences are certainly due not only to those changes in the basic circumstances which have been discussed above, but to special sorts of change in supply and demand conditions which have to do with the inflation and consequent devaluation of the currencies in many countries. For reasons which it falls outside the scope of this book to discuss, the stabilisation and devaluation points have been chosen in such a way that wages and home market prices have been relatively low in terms of gold, and this situation has to a large extent persisted. In other words, prices and wages have only by degrees slowly adapted themselves upwards. Although the prices of international goods follow prices

[1] A. H. Cole, "The American Rice Growing Industry," *Quarterly Journal of Economics* (1927).

Wholesale Prices in Certain Countries, 1860–1913

(Base 1867–77)



in world markets,[1] the general price level has remained comparatively low. For 1929, an average of the price index numbers in Belgium, France, Italy, Bulgaria, Estonia, Latvia, Hungary, Poland, Austria, Yugoslavia, Czecho-Slovakia, Germany, and Finland works out at slightly over 120. This is far less than the average for Sweden, Norway, Denmark, Switzerland, Holland, England, Canada, Australia, New Zealand, British India, and the United States, — all countries which have pursued a policy of deflation and returned to the old gold par, — which comes to about 147.

A more reliable expression for such international differences in the price tendencies is obtained by Bowley's *Comparable British and Foreign Index Numbers*, where the figures for December, 1925, for certain countries are compared with the index for identical commodities in Great Britain. The figures are on a gold basis, and 1913 or 1914 is used as a base.[2]

	Foreign Index	Corresponding British Index	Foreign in percent of British Index[3]
Canada	163	151	108
United States	159	154	103
Sweden	148	151	98
Holland	145	150	97
Germany	144	151	95
Italy	136	147	92
Belgium	132	148	89
France	103	149	69

The difference, so far as it depends upon the after effects of a different monetary policy, is, however, bound to disappear; a proc-

[1] As observed in Chapter VIII it is nevertheless possible that the level of prices for a group of international goods develops differently in different countries. In relation to the price in Great Britain the price of wheat rose by 12 percent in the United States and by 4 percent in Germany, while it fell by 3 percent in France. Pig iron fell 9 percent and raw sugar 14 percent in the United States, while the corresponding figures for Germany were 25 percent and 11 percent. A home market commodity like potatoes showed still greater differences. Its price rose 86 percent in the United States, 57 percent in Germany, and 88 percent in France. — Keynes, *A Treatise on Money*, p. 71.

[2] *Special Memorandum* of the London and Cambridge Economic Service, No. 19, 1926.

[3] It may be noted that the relative rise in the Canadian price level speaks against the opinion that Canadian prices were in 1913–14 much increased by the influx of foreign capital. This influx has been relatively small since the War and the Canadian index number should then, *ceteris paribus*, have been relatively low.

ess of adjustment is at present going on. Between the years 1926 and 1929 wholesale prices fell fairly sharply in the latter group of countries, whereas they remained practically unaltered in the former group. As time goes on the influence of War and post-War deflation and inflation upon the conditions of supply and demand, and thus upon the dissimilarity of price trends, is gradually weakening.

Nothing could be more erroneous, however, than to expect the price index numbers to tend towards the same height everywhere, i. e. to expect relative price levels to revert to a "normal" pre-War position. The basic circumstances have changed much since then, and with them the equilibrium position of prices. There is nothing more normal in the price situation of 1914 than in that of 1900 or 1940, or any other time when conditions have become settled after violent disturbances. It is just as incorrect to expect prices in different countries to revert to the relative position of 1914 as to speak of a tendency towards equally high price levels everywhere.

§ 2. *The terms of international exchange.* Just as there is nothing to keep wholesale price levels in the same relative position in different countries, so there can be nothing to prevent the relation between import and export prices in any one country from varying substantially. In other words, the ratio of international exchange is subject to important variations. Particularly countries with a one-sided economic life which do not easily increase their exports or reduce their imports when the ratio turns in an unfavourable direction, or which do not quickly reduce their exports or increase their imports when the ratio is improved, may see this ratio vary to a very high degree. On the other hand, countries with a well developed and many-sided industrial system and international trade are likely to be subject only to less important variations. Yet in a country like the United States, in the last third of a century before the War, the ratio seems to have varied by 10 to 20 percent in most five-year periods.[1] Changes in demand, supply, and transfer conditions, as well as in international

[1] See Taussig, *International Trade*, p. 301.

capital movements, seem to have cooperated to bring about this result.

The variations in the British terms of international trade have already been mentioned in Chapter XXII. In this case also several different tendencies were at work. Technical improvements in Great Britain, new and cheap food supplies in the transoceanic countries, and other circumstances, exercised their influence.

Comparisons of import and export price index figures for recent years also show important changes in the terms of exchange since pre-War days. In Sweden import prices of such goods as coal, iron, wheat, and other raw materials have been so low compared with the prices of such export goods as timber, pulp, paper, and machinery that the ratio of exchange has been 10–15 percent more favourable than before the War.[1] Countries such as Chile, Cuba, and Brazil, on the other hand, have naturally seen their trade terms take the opposite trend, the prices of nitrate, sugar, and coffee having fallen below pre-War figures.

Europe as a whole, which exports chiefly manufactures and imports food and raw materials, is gaining from the low prices of the latter commodities. On the other hand, the European demand for such goods is probably rather inelastic to price increase, so that if conditions of production change in the non-European world, the ratio may turn decisively in favour of the latter. The colonial world, for example, which is selling many of its articles — like rubber, spices etc. — at low prices, could probably obtain 50 or 100 percent more without any serious decline in the European and North American demand. What prevents a violent turnover in the terms of exchange, through which the standard of living of uncivilised peoples might be raised, is the fact that the supply of these commodities would be increased. In the long run this is certain to happen unless the standard of living in other lines of industry in the colonial world are raised through greater effectiveness in production. But temporarily the creation of non-competing labour groups in the colonial *export* industries, with the exclusion of labourers in other industries, might raise the wages of the

[1] See *Index*, monthly periodical published by the Svenska Handelsbanken, Stockholm.

former and make the terms of exchange in international trade more favourable for these countries.

§ 3. *International differences in the development of productive factor prices.* There is no more reason for the level of factor prices to move in a parallel way in all countries than for commodity prices to do so. Nor, of course, is there any ground for expecting that the price of an individual factor or group of factors, e. g. manual labour, will vary in the same way everywhere. In 1890 skilled wages in the British machinery industry was 60 öre per hour, while the corresponding Swedish wage was 24 öre in Stockholm and 19 öre in other towns and small places. Twenty-four years later the figures were 64 öre in Great Britain and 67 and 49 öre respectively in Sweden;[1] the difference had disappeared. In spite of the changes in quality which both British and Swedish labour underwent in that period, one is justified in speaking of an unequal course of wages in the two countries.

The period after 1914 offers similar examples. The index numbers for hourly wages of manual male workers in 1928 were as follows: for Canada 188, Australia 192, United States 240, and Sweden 271.[2] For male and female workers the corresponding index figures were 175 in Germany and 255 in Denmark. Weekly wages, which moved a little less than hourly wages in countries where statistics for both are published, rose for male workers to 136 in South Africa (1926 figure) and 160 in New Zealand; for male and female workers to 195 in Great Britain.

Figures for the development of land rents and interest rates might be added. In 1930 the interest level for state bonds in some countries was about the same as before the War, while in other countries the rates were at least twice as high. Other rates of interest have followed a course similar to that of state bonds.

§ 4. *The development of retail prices.* As wholesale prices move differently in different countries, it goes without saying that retail

[1] See the final report of "Tull-och traktatkommittén." Stockholm, 1924, p. 73.

[2] See *International Labour Review*, II (1920), p. 113 and *Sociala Meddelanden* (1929), p. 845. The figure for the United States is a simple arithmetic average of the wages of skilled plus semi-skilled workers and of that of unskilled workers; that of Germany is a similar average of skilled and unskilled wages. All wage figures below in the text are from the same source. As to wages of special qualities of labour see the *Review*, p. 586.

prices do so also. The difference between retail and wholesale prices in the same country depends in general upon the costs of retailing, and the latter depend upon the height of certain wages and the prices of other productive factors, and upon the technique of retail distribution.[1] All these may vary differently in different countries. As a matter of fact, retail price changes in one country are less affected by conditions in other countries than variations in wholesale prices, chiefly because international trade is a trade in the wholesale markets. It is not surprising, therefore, to find considerable differences in the table below:

INDEX NUMBERS FOR FOOD RETAIL PRICES IN JULY 1929 (1914 = 100)

South Africa	116	Irish Free State	166
France	122	Australia	160
Austria	123	United States	155
Hungary	127	Great Britain	153
		Sweden	150

In this case, as in all others, the fact that the figures are not exactly comparable should, of course, be borne in mind. For example, the service of retailing is not the same in all countries. Shops are different, the goods may be ordered by telephone and sent home or fetched in the shops, customers may be served at once or have to wait, etc. Above all, the practice in these respects may have changed in some countries but not in others.

Tourists often think of the height of hotel accommodation and of restaurant prices when they say that a certain country or city is expensive or cheap, or has become more so than formerly. It is quite clear that these prices have no fixed relation to either the general wholesale or retail commodity price level. They are prevented from varying in an entirely arbitrary way compared with the prices of other commodities and services chiefly in two ways: (1) the productive factors used are largely similar or identical with those used in other industries, and their prices therefore vary more or less in the same way as such factors in other occupations; (2) certain commodities, such as food, are used as raw materials in the hotel and restaurant industry. These two circum-

[1] The latter might also be called the quality of the technical labour in retailing.

stances tend to keep costs in a certain relation to costs and prices in other industries, and prices in this industry, as in others, naturally tend to move more or less in harmony with costs. But even if these tendencies were much stronger than they really are, the relation between the prices of hotel and restaurant services in different countries — just like the relation between other typical home market prices — might well change considerably owing to variations in the organisation of this industry — changes in the quality of technical labour — which take place in certain countries and not in others.

§ 5. *Monetary variations.* It remains to consider briefly the price variations due wholly or partly to changes in the monetary system.[1] As before, the discussion is confined to the development in countries with a gold or a gold exchange standard. In this case, as opposed to those already touched upon in this and previous chapters, it is perhaps less the differences than the similarity of price variations in various countries which has to be explained.

Why do wholesale commodity price levels go up and down in very much the same way and at the same time in the European and American countries during different phases of the business cycle? What are the causes of this surprising parallelism in the price movements, which has been clearly demonstrated in the last years (1928–30) for countries with settled monetary conditions? The explanation is often given in about the following terms. If prices rise in certain countries and not in others, the trade balance in the latter will move in a positive direction, the foreign exchanges will drop, and gold will flow into the central banks, which will reduce their discount rates and expand credit, whereby prices will be raised in these countries as well. This explanation is to a certain extent correct, for if nothing else happened *before* all these reactions they would come into play.[2] As a matter of fact, however, there are other reactions which in most cases bring about the price adjustment in a quicker and smoother way.

[1] Such changes in buying power, and hence in demand, may be regarded as a special sort of demand variation, not touched upon in the last chapter. But it seems best to treat them separately.

[2] Cf. Keynes, *A Treatise on Money*, pp. 336 ff., and my own paper: "The Future of the World Price Level," *Index*, Stockholm (1927).

When credit expands and prices rise in *A*, both import and export prices naturally tend to rise in *B* also. Furthermore, home market prices in *B* tend to rise to the extent that they use raw materials belonging to the group of international commodities and because of the other relations mentioned in Chapter VIII, § 5. Besides, the increase in foreign orders exercises a stimulating influence on economic life in *B* in general. The credit volume expands automatically in response to the increased need, unless some restrictive action is taken to keep it at its former level. But this will only happen in rare cases. Previous depression has led to a reduction of credit, and expansion now is looked upon as natural and desirable. If the central bank in *A* has reduced its discount rate, and has in that way made the price level tend upwards, the central bank in *B* is inclined to follow suit, and in the absence of special circumstances will certainly not pursue the opposite credit policy. Should it for some time attempt to do so, short term capital transactions will lead to a surplus of foreign exchange in *B*, and will soon make the central bank reverse its policy. Such transactions will come about and affect the credit policy in *B* as soon as the latter fails to follow the same trend as credit policies in the important foreign countries. As a matter of fact, central banks do not wait for these transactions to come about, but to a large extent vary their discount rates in a parallel manner beforehand.

Evidently the parallelism of price movements depends upon the connection between certain commodity prices in different countries, above all the prices of international goods, upon the influence of changes in the volume of foreign orders, and upon the connection between discount rates, which is partly due to the international mobility of capital. This does not exclude the possibility that forces of a non-monetary character which lie behind the business cycle also have something to do with the parallel price movement. The mere belief that a business boom abroad will spread to one's own country leads to optimism in buying, and thus hastens the development.

As central banks, during times when an improvement in business begins, usually have greater gold reserves than legally called

for, they are able to expand credit without any increase in gold stocks; thus no gold flow need be caused. Still less is any gold flow mechanism of the sort mentioned in the beginning of this section necessary to bring about an internationally uniform price development. A business depression and drop in the wholesale price level may also spread without any gold flow, through the direct connection between certain prices, the influence of changed volume of orders, etc.

An international inflation due to increased supply of gold develops in essentially the same way. The rise in the price level during times of good business is simply a little stronger than it would otherwise have been. The only difference in the mechanism is that the new gold has to be distributed between the various countries. Assume that it goes in the first place to the United States and Great Britain, and leads to credit expansion there. Central banks in other countries will not be able to increase their credit volumes to the same extent until they have somewhat increased their gold reserves. For some time, therefore, their credit policy may remain relatively restrictive; the balance of payment turns in a positive direction (through capital transactions, and, if the situation lasts long enough, through an adjustment of the trade balance) the foreign exchanges fall, and gold flows in, leading to the delayed expansion of credit (compare Chapter XVIII). But it is by no means certain that such will be the development. If credit expansion has started under the influence of rising prices and order reserves, the central bank may be reluctant to retard it because of insufficient gold reserves. It may, therefore, proceed to increase the latter in a more deliberate, some would say more artificial, way than the one just indicated. By reducing its foreign exchange reserves it may temporarily depress the foreign exchange rates and make gold flow in. Or it may dispense with pressure on rates, and simply use a part of its foreign exchange reserves to buy gold, incurring in that way a small loss, but saving the business world from a short-lived exchange rate fluctuation. Such an exchange of foreign bills for gold is a transaction of no great interest in itself. And apart from it, the mechanism which brings about the spread of inflation is identical with the one described above.

In summary, whether the gold reserves are adjusted in one way or the other is relatively unimportant. The international character of the price movement is due in the first place to the direct connection between the various national commodity price systems and volumes of orders, and to the forces which affect discount and interest rates in a fairly uniform manner. Only in the background, of great potential but usually little actual influence,[1] is to be found the gold flow mechanism and readjustment of the trade balance of the classical type, which in the last resort prevents considerable international discrepancies in the price movements under the conditions here discussed.[2]

§ 6. *Price variations and foreign exchange rates.* The conditions governing foreign exchange rates have often been discussed in connection with the question of international price relations. It

[1] Great Britain is a notable exception to this rule. The gold movements between that country and the United States and France in recent years have influenced British credit policy in every phase of the business cycle after 1926.

[2] The analysis above differs in several respects from the one presented by Angell, *The Theory of International Prices*, Chapter XVI, especially pp. 416–418. The correlation between the short-time fluctuations of prices in different countries seems to me sufficiently explained by the reasoning in the text above and need not, as Angell suggests, be "due either to some peculiarity in the case selected, or to the interdependence of the price indices used." But it goes without saying that the correlation may be less close than certain price indices indicate. Neither can I agree that the explanation of the correlation in long-time price tendencies should run exclusively "in terms of the effects of differences in price movements upon the balance of payments." In this connection let me add that it seems unfortunate to speak on the one hand of "disturbances that originate in the balance of payments itself," and on the other hand of those originating in "discrepancies between the movements of general prices in different countries." Changes in credit policy may well affect the balance of payment much earlier than they affect the wholesale price level, and do not, therefore, lead to the second type of disturbance. (Keynes, perhaps also Cassel, takes an attitude similar to Angell's. The former speaks of changes which "originate in discrepancies of price levels"). But credit changes may affect prices first, and the balance of trade and the balance of payments only indirectly. Thus the distinction between the two types of cases seems unprofitable. (See also the end of § 7 below.) It is more natural to classify according to the changes in basic circumstances, capital movements and monetary policy. In other respects the views developed in Part V are in close accordance with Angell's, which have, however, so far been expressed only sketchily. He writes (p. 418): "The ultimate key to the maintenance of equilibrium in the balance of payments in the face of enduring disturbances, and the key to the problem of international equilibrium at large . . . lies in the effect that a persisting change in the relation between the demand and supply of bills of foreign exchange produces upon the volume of purchasing power in circulation, and through it upon the general level of prices." I should like only to add: "and upon imports and exports."

may be worth while, therefore, in this chapter to add some observations concerning foreign exchange rates and price conditions.

It has been stressed in Chapter XVIII that anything which affects the supply of or demand for foreign exchange can influence the price paid for it, and that consequently *all* elements in the price systems directly or indirectly affect the foreign exchange rates. These rates are prices, and a description of the character and variations of the price mechanism is, therefore, among other things, also a theory of the foreign exchanges. Given certain basic circumstances, a certain situation as to capital movements, and monetary equilibrium, there must be a fixed relation between foreign exchange rates and other prices. If the basic circumstances vary, that relation varies also. This fact has been abundantly illustrated in previous sections of this and the preceding chapter, for it has been demonstrated that under periods of practically constant foreign exchange rates the relation between commodity and productive factor prices in different countries has been subject to considerable variations, in a way which cannot possibly be due to capital movements or monetary disturbances.

In principle, foreign exchange rates have nothing to do with the wholesale commodity price *level* as such, but only with individual prices. Changes in the latter may be relevant even though the level of commodity prices should happen to remain constant. Only for the sake of simplicity and as convenient summarising abbreviations do variations in price *levels* have their place in a discussion of foreign exchange problems, for we are really interested in the individual prices, i. e. more or less in the whole price mechanism. Of course, the fact that international trade is a wholesale trade puts the foreign exchange rates in a specially intimate relation to the wholesale prices of certain commodities. But the prices of certain services which citizens of one country render to citizens of other countries — shipping, insurance, etc. — and the height of short term and long term interest rates, bear an equally intimate relation to foreign exchange rates, as they also directly affect supply and demand on the foreign exchange market. And the wholesale prices of other goods as well as the retail prices and the prices of productive factors in general,

exercise an indirect influence, so that it is impossible to regard their variations as of no consequence to pricing in the exchange market. As soon as one sees the foreign exchange rates as prices in the system of mutual interdependence, the whole idea of a fixed relation between them and some sort of average for a certain group of commodity prices becomes absurd.

It follows that the so-called "purchasing power parity" doctrine, at least in certain formulations, is untenable. After years of intensive discussion Cassel gives a condensed expression for his reconsidered opinion in the following words:[1]

> The main reason why we pay anything for a foreign currency is of course that this currency represents in the foreign country a purchasing power which can be used for acquiring the goods or for paying for the services of that country. Thus, it is clear that the amount we can pay for the unit of the foreign currency must, broadly speaking, be in direct proportion to the internal purchasing power of that currency, i.e. in the inverse proportion to the country's general level of prices. On the other hand, it is clear that we can afford to pay more in our own currency the more abundant this currency is, i. e., the lower its internal purchasing power, and the higher the general level of home prices. This is easily seen if we reflect on the fact that the price paid for a foreign currency is ultimately a price for foreign commodities, a price which must stand in a certain relation to the prices of commodities on the home market. Thus, we arrive at the conclusion that the rate of exchange between two currencies must depend essentially on the quotient of the internal purchasing powers of these currencies.

The idea that people demand foreign currency because this currency has a certain purchasing power towards commodities *in general* on the wholesale market is, however, not in accordance with facts. The importer wants foreign bills to buy and pay for certain foreign goods, and is not interested in the prices of other goods. The man who is to transport commodities is interested in the height of shipping rates charged by different shipping companies and not in commodity prices. It is not true that a rise in certain commodity prices in a country, i. e. a reduction in the purchasing power of this country's currency towards commodities, in all cases reduces the foreign demand for bills on that country. If the price of coal is raised and the foreign demand is

[1] "Foreign Exchanges," Encyclopedia Britannica, XIII ed., first supplementary volume, p. 1086. Cf. *Theoretische Sozialökonomie* (4th ed.), § 60, where the same opinion is expressed.

slightly elastic — as it proved to be when Great Britain maintained high prices immediately after the War — a greater sum of money will be needed to pay for a smaller purchase of coal. The pound sterling quotation will tend to rise, not to fall.[1]

The weakness of the idea that foreign exchanges are an expression for the relation between commodity price levels is perhaps most clearly seen if one considers two countries each of which produces only goods not manufactured at all in the other. Thus there are no common home market goods, and no possibility of comparing the height of the general price levels at a certain time in the two countries. Nevertheless there is, of course, a connection between the two price systems, via international goods, productive factor prices, etc. All prices in both countries form part of a system of mutual interdependence, and there is consequently a certain relation between the foreign exchange rate and the price conditions in each country. But this relation cannot be expressed in terms of price levels, e. g. by saying that they are of the same height. (Cf. Appendix I, § 4.)

So much for the simple form of the purchasing power parity doctrine. There is another and more qualified form, which excludes any statement as to the height of the price levels in a certain basic period, e. g. 1913, and is limited to the assertion that the foreign exchange rates will reflect the price level *changes*. Thus, the question whether or not prices before the War were higher in the United States than in England is irrelevant. A rise in the English price index to 400 and in the American one to 200 will go hand in hand with a drop in the sterling exchange in New York to half its previous rate. The real parity changes with the relation between the price index numbers. It follows that if the foreign exchange rates are kept constant, the relation between the price index figures will be fixed also.

Clearly this assumes that all basic circumstances, including capital movements, are unchanged. When that is so, all relative prices in each country are unchanged[2] too, and foreign ex-

[1] For a more detailed discussion see my paper, "Växelkursernas jämviktsläge." ("The Equilibrium of Foreign Exchanges.") The *Ekonomisk Tidskrift* (1921).

[2] When sufficient time for a readjustment after the monetary changes has passed.

change rates must reflect the price level changes. If Great Britain chooses to use a fourth of a pound as unit of reckoning, and the United States one half of a dollar, the New York quotation of the new British currency in terms of the new American currency will of course be half the previous sterling rate. In other words, if nothing has changed but the absolute height of the price levels, it is a truism that the exchange rates vary as indicated above.

However, other things never are quite equal at different times. Therefore relative commodity and factor prices, and hence the relation between the price index figures, change, even if the foreign exchange rates are kept stable through a gold standard. This has been abundantly illustrated above.

It should be stressed that relative commodity prices cannot remain constant unless relative factor prices remain so also. The assumption that productive factor prices change in the same way in all countries is fundamental to the purchasing power parity doctrine. This assumption is seldom justified in the actual world over significant periods; hence it cannot be true that home market prices maintain a definite relation to international prices in each country. Neither is it true that international prices are equally high or vary in the same way in all countries when the foreign exchange rate is stable; for, as explained in Chapter VIII, transfer conditions vary. In brief, changes in the basic circumstances of the price system alter the relation between the foreign exchange rates and other prices in the various countries. Even though these rates are kept constant, the relation between the price conditions in different countries may nevertheless vary.

To reasonings of this sort it is sometimes objected that as a matter of fact changes in basic circumstances are not able to cause considerable variations in relative price levels in countries with a many-sided and well developed international trade. Experience shows that this latter assertion is justified for short periods and "normal" times in countries such as the United States, Great Britain, Sweden, and Holland. But, it is not true for long periods, as demonstrated above by means of price index figures, and not for periods of "abnormal" transfer conditions, such as the years

1914–21.[1] Neither is it true for countries with a one-sided economic life, such as Egypt, Chile, and Brazil. Besides, the deviations of relative price levels in cases of the latter type, e. g. owing to demand changes, are not abnormal deviations from a true equilibrium (the purchasing power parity), but rather changes in the equilibrium itself.

In some cases of foreign exchange and price variation during and after the War, it has proved fruitful to disregard at first the variations in basic circumstances, and to concentrate attention upon the relative degrees of inflation. But in other cases changes in demand, transfer, and international credit conditions have been as potent elements as even the violent inflation in neutral countries during that period.[2] In any case, the most fruitful and most correct way of explaining foreign exchanges is to show their place in the general price system and the influence of variations in basic circumstances, including capital movements, and in monetary conditions. In concrete cases, sometimes one, sometimes another, element may be for all practical purposes disregarded. But to do so in the presentation of fundamental principles, or to present their influence as abnormal deviations from a normal position, is misleading.[3]

Another observation on the post-War discussion of the foreign

[1] Changes in the monetary systems are another "abnormal" element, which influences relative price levels in terms of gold. See the end of 1931.

[2] See Heckscher, *Sweden's Monetary History, 1914–25, in its Relations to Foreign Trade and Shipping*, in the Scandinavian volume of the *Economic and Social History of the World War* (New Haven, 1930). Heckscher shows that the sterling quotation in Stockholm at one date was exactly half the purchasing power parity. As this study has not been observed in the international discussion, let me add that in my opinion nobody interested in problems of international trade during a paper standard régime can afford to overlook it.

[3] In Part V of *Theoretische Sozialökonomie*, which was added in the 1926 edition, Professor Cassel discusses international trade on the basis of a mutual interdependence price system in a way with which I am in substantial agreement. There seems to be no harmony between this analysis (§ 88) and his old treatment of the foreign exchanges in Part III (§ 60) along the lines quoted above. Taken in a wide sense the theory of the foreign exchanges is the same thing as the theory of international trade. In a narrow sense it explains the details of the pricing on the foreign exchange market, in particular short term capital and gold movements, credit policy, etc. But this explanation must rest on the basis of a theory of international trade and capital movements, i. e. it requires as a background the whole price mechanism in trading countries.

exchanges may be made. As anything which affects the balance of payments *ipso facto* influences the foreign exchange rates, and as all changes in basic circumstances, in capital movements, and in monetary policy may exercise such an influence, it follows that there is no contradiction between the theories of foreign exchanges which seek the causes of their variations in the balance of payments, i. e. in demand, supply, and transfer conditions, and those which stress the influence of monetary policy and price level variations.[1] There is only a difference in emphasis, which has been largely justified by the differences in concrete circumstances at various times. The former theories have been prevalent during periods of settled monetary conditions, the latter during times of inflation and deflation.

Changes in monetary policy, like the other variations, alter the supply and demand schedules in the foreign exchange market, and thereby, and only thereby, the exchange rates. Commodity prices are of course altered also; but it is uncertain whether the trade balance, the international movement of capital, or the price level is affected first. Changes in the volume of credit often affect the volume of imports or the size of capital transfers much more quickly than the height of home market prices.[2] Experience does not justify making changes in the price level the first step, and changes in the balance of payments the consequences of price variations.

[1] The unfortunate terminology of both kinds of theories — see § 6 above — is partly responsible for the misunderstandings.

[2] *Cf.*, for example, the author's analysis in "Stabiliseringsproblemet i Mellaneuropa," *Valutakommissionens Betankning* (Copenhagen, 1925), where numerous examples are given.

APPENDICES

APPENDIX I

SIMPLE MATHEMATICAL ILLUSTRATION OF PRICING IN TRADING REGIONS

§1. *An isolated region.* There is much disagreement among economists concerning the value of mathematical formulae in expositions of the complicated relationships of pricing. The present writer believes that they can serve a useful purpose in giving, better than could words, a bird's-eye view of the mutual relationship of prices under somewhat simplified conditions. On the other hand, attempts to make the formulae more and more complicated in order to bring them in closer accordance with actual life and thus make them usable for the solution of economic problems have so far rarely been fruitful — a fact that does not of course preclude a better result in the future.

From this point of view it appears natural to try to illustrate the nature of pricing in trading regions under simplified conditions by means of some simple equations, without going further and introducing all complicating circumstances. The latter make no fundamental change in the nature of the relationship which is to be illuminated, and render the mathematical exposition difficult for most readers to understand.

The system of equations given below resembles closely the one first presented by Professor Cassel in his "Theoretische Sozialökonomie." It is simpler than those of the Walràs-Pareto school, and consequently can serve better for the present purpose.[1]

The following analysis is built on the assumption of full mobility and divisibility. Thus, among other things, the economies of large-scale production are ignored. Furthermore, the supply of the various factors of productions is assumed to be constant and known. With a preliminary illustration of the nature of pricing in trading regions in view it is unnecessary to introduce the fact that this supply is really a function of (1) the prices of the factors and (2) the psychology of effort and sacrifice of the various individuals, however important this fact may be from other points of view (compare Chapter VII).

[1] Unlike Professor Cassel I have introduced the individual incomes, the variability of the technical coefficients, and the value of money in the system. Like Cassel I do not consider the difficulties due to the fact that capital as a factor of production cannot be treated in the same way as other factors. In other words, the *time* element in pricing is insufficiently considered. Cf. Lindahl, "Prisbildningsproblemets uppläggning från kapitalteoretisk synpunkt" (The problem of pricing from the point of view of the theory of capital), *Ekonomisk Tidskrift* (1929).

First, let us look at the price system in an isolated region, which produces n commodities, has r different factors of production and s inhabitants.

The production of each of these commodities requires certain quantities of all or some productive factors. The quantities $a_{11}\ a_{12} \cdot \cdot \cdot a_{1r}$ of the different factors of production are needed for the production of one unit of the first commodity and the quantities $a_{21}\ a_{22} \cdot \cdot \cdot a_{2r}$ are needed for the production of one unit of the second commodity and the quantities $a_{n1}\ a_{n2} \cdot \cdot \cdot a_{nr}$ for the production of one unit of the nth commodity. These terms, of which some are equal to o, are called "*technical coefficients*"; they express the quantities of any factor of production that are needed for the production of any commodity and they are obviously dependent on the relative prices of the factors of production; for these prices determine the proportions in which the different factors are combined in a certain production. Further, the phrase "technical coefficient" implies a technical element, namely "*the physical conditions of production.*" If the prices of the factors of production are given, one commodity needs for its production certain proportions of certain factors of production, and another commodity other proportions. The "physical conditions of production" thus refer to the purely physical properties of nature (both commodities and factors of production) which are to be regarded as known in this economic examination. Thus the technical *coefficients* become functions of the relative prices of the factors of production; and the forms of the functions are known, because they are determined by the physical conditions:

$$(1) \quad \begin{aligned} a_{11} &= f_{11}(q_1\ q_2 \cdot \cdot \cdot q_r) \\ &\cdot \quad \cdot \quad \cdot \quad \cdot \\ &\cdot \quad \cdot \quad \cdot \quad \cdot \\ a_{nr} &= f_{nr}(q_1\ q_2 \cdot \cdot \cdot q_r) \end{aligned}$$

The prices of the factors of production are above indicated by $q_1\ q_2 \cdot \cdot \cdot q_r$. By the aid of these q and the technical coefficients the cost of production of the commodities may easily be obtained. Indicate them $p_1\ p_2 \cdot \cdot \cdot p_n$ and we get:

$$(2) \quad \begin{aligned} a_{11}q_1 + a_{12}q_2 + \cdot \cdot \cdot + a_{1r}q_r &= p_1 \\ a_{21}q_1 + a_{22}q_2 + \cdot \cdot \cdot + a_{2r}q_r &= p_2 \\ \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \\ a_{n1}q_1 + a_{n2}q_2 + \cdot \cdot \cdot + a_{nr}q_r &= p_n \end{aligned}$$

The first commodity needs the quantities $a_{11}\ a_{12} \cdot \cdot \cdot a_{1r}$ of the different factors of production, and their prices are respectively $q_1\ q_2 \cdot \cdot \cdot q_r$. The expressions concerning the other commodities are analogous. As

in any state of equilibrium and perfect mobility prices equal costs of production, $p_1 \cdot \cdot \cdot p_n$ evidently signify the various commodity prices.

The demand for the different commodities is determined by these prices $p_1 \cdot \cdot \cdot p_n$, by the income of each consumer, and by his "scale of requirements" or "scale of wants" (the psychic side of demand). If the prices of the commodities and his income were given, his "scale of wants" would determine how much he would buy of each commodity. Each individual's demand for a certain commodity may thus be expressed as a function of the prices of all commodities and services and of his income. The form of the function is determined by his "scale of wants."

Now, let us add together the demands of all individuals, and express the total demand for each commodity as a function of commodity prices and the various individual incomes, which are written $I_1 I_2 \cdot \cdot \cdot I_s$.[1]

$$(3) \quad \begin{aligned} D_1 &= F_1 (p_1 \cdot \cdot \cdot p_{n1}, I_1 \cdot \cdot \cdot I_s) \\ D_2 &= F_2 (p_1 \cdot \cdot \cdot p_{n1}, I_1 \cdot \cdot \cdot I_s) \\ &\cdot \quad \cdot \quad \cdot \quad \cdot \\ D_n &= F_n (p_1 \cdot \cdot \cdot p_{n1}, I_1 \cdot \cdot \cdot I_s) \end{aligned}$$

The individual incomes are determined by the quantity of factors of production, from which each individual derives his income, and by the price per unit of these factors. It is as a seller of a certain quantity of such factors, e.g. the use of his labour or land, or the goods or services produced with them, that he acquires his purchasing power. In this examination the conditions of ownership to the different factors are supposed to be known. The individual number m owns t_{m1} units of the first factor, t_{m2} of the second factor, etc. Thus, the incomes of the various individuals may be written:

$$(4) \quad \begin{aligned} I_1 &= t_{11} q_1 + t_{12} q_2 + \cdot \cdot \cdot + t_{1r} q_r \\ I_2 &= t_{21} q_1 + t_{22} q_2 + \cdot \cdot \cdot + t_{2r} q_r \\ &\cdot \quad \cdot \quad \cdot \quad \cdot \\ I_s &= t_{s1} q_1 + t_{s2} q_2 + \cdot \cdot \cdot + t_{sr} q_r \end{aligned}$$

If the price-mechanism is in equilibrium the production of commodities is just sufficient to satisfy the demand. Thus $D_1 \cdot \cdot \cdot D_n$ indicate the quantities of every commodity which are to be produced. It is now easy to go on to express the demand for the different factors of production as an equation. The quantity a_{11} of the first factor is needed for the production of one unit of the first commodity; for the production of D_1 units $a_{11} D_1$ units are therefore required. The pro-

[1] All incomes are assumed to be "used." ($\Sigma I = \Sigma Dp$. This equation is, however, implied in equations (2), (4) and (5).

duction of D_2 units of the second commodity requires $a_{21} D_2$ units of the same factor, etc., and the production of D_n units of the n-th commodity requires $a_{n1} D_n$ of this factor. By summing up these quantities the total demand for this factor of production may be computed as: $a_{11} D_1 + a_{21} D_2 + \cdots + a_{n1} D_n$. This quantity of the first factor of production, which is wanted for the production of the commodities that are demanded at the prices $p_1 \cdots p_n$, must be the whole available quantity of this factor, that is R_1, which is equal to $t_{11} + t_{21} + \cdots + t_{s1}$. Since the demand for the other factors of production may be computed in the same way, we obtain:

$$
\begin{aligned}
(5) \quad & a_{11} D_1 + a_{21} D_2 + \cdots + a_{n1} D_n = R_1 \\
& a_{12} D_1 + a_{22} D_2 + \cdots + a_{n2} D_n = R_2 \\
& \cdots \quad \cdots \quad \cdots \quad \cdots \quad \cdots \quad \cdots \\
& a_{1r} D_1 + a_{2r} D_2 + \cdots + a_{nr} D_n = R_r;
\end{aligned}
$$

Now the different D are, according to (3), functions of the different p and I. By means of the systems of equations (2) and (4) they can be expressed in terms of the different a and q. Further, by aid of the systems of equations (1) the different a may be expressed in terms of the different q. The number of "independent variables" is thus reduced to r, namely $q_1 q_2 \cdots q_r$, and the series of equations (5) which contains r equations, is sufficient for the solution of the problem. The price system under the assumed conditions thus seems to be determinate. The basic data which govern it are the supply of productive factors owned by each individual[1] and the two sets of circumstances which determine the forms of the functions, i.e., the physical conditions of production and the wants and desires of the consumers.

As a matter of fact, however, one of the equations is not independent of the others;[2] hence, a solution of these systems of equations gives the different prices multiplied by an arbitrary quantity. All prices may be twice as high in one situation as in another and yet all basic circumstances and the equations be unchanged. To determine the prices one must introduce an assumption about the monetary system, e.g. that a certain quantity of a certain commodity (gold) is used as unit of reckoning. If the price of this commodity is called p_g, one obtains the equation $p_g = 1$. Thus the number of equations is equal to the number of independent variables and the system is determinate.

[1] In Part I this has been called (1) the supply of productive factors and (2) the conditions of ownership.

[2] If we know the (n−1) first equations in (2) and the fact that total incomes of all individuals equal total expenditure ($\Sigma Dp = \Sigma I$) then the last equation in (2) follows. Cf. Walràs, *Elements d'Economie politique pure* (4th ed.), 1900, pp. 122 ff.

§2. *Trading regions.* A similar survey of the price formation under simplified conditions may now be given for two exchanging regions, which are called the region A and the region B. The symbols employed are as follows:

	A	B
Technical coefficients	$a = f(\ )$	$\alpha = f(\ )$
Prices of factors of production ...	q	γ
Prices of commodities	p	v
Incomes of the various individuals	$I = \sum_1^r t_h q_h$	$J = \sum_1^r d_h g_h$
Demand for commodities	$D = F(\ )$	$\delta = \psi(\ )$
Supply of factors of production ..	R	S

The number of commodities is supposed to be n and the number of factors of production r and the number of individuals s in *both* regions. This assumption is, of course, immaterial, and made only to reduce the number of symbols. The only things which are common in the two regions before the commencement of trade are "the physical conditions of production," that is, the forms of the functions $f(\ )$. These conditions are determined solely by the physical properties of nature (commodities and factors of production) which are wholly independent of the locality of these factors and commodities.

The price-mechanism in the isolated region A is just the same as that presented above. The mechanism of the region B will be obtained merely by changing all symbols according to the table above. Now the problem is, what change of these price-mechanisms will take place when the exchange of commodities between the two regions is opened?

Let us represent the "foreign exchange," that is, the relation between the money units of the two regions, by x. One unit of A's money will now correspond to x units of B's money, and the prices of commodities in the region B: $v_1\ v_2 \cdots v_n$ become $\frac{v_1}{x}\ \frac{v_2}{x} \cdots \frac{v_n}{x}$ in A's money. The inhabitants in A compare these prices with $p_1\ p_2 \cdots p_n$, which are the costs in home-production, and import the commodities which they can buy cheaper in B and export the commodities which they can produce cheaper than B. If we take a certain arbitrary value of x, then a certain number of commodity prices will be lower in A and the rest lower in B. Take another value of x. Then *another* number of commodities will be cheaper in A and the rest cheaper in B. To every possible value of x will correspond a certain definite number of com-

modities which are cheaper in A and thus produced there, while the rest are produced in B.

If we knew the foreign exchange x, which gives equilibrium, then we should also know which goods can be obtained at lowest cost in A and which in B. Let us give the former goods the numbers, $1, 2 \cdot \cdot \cdot m$ and the latter $m+1, m+2, \cdot \cdot \cdot n$. The equations showing that the costs of production are equal to the prices thus become [1] (compare (2))

$$\begin{aligned}
\text{(II)}\quad & a_{11}\, q_1 + \cdot \cdot \cdot + a_{1r}\, q_r = p_1 \\
& \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \\
& a_{m1}\, q_1 + \cdot \cdot \cdot + a_{mr}\, q_r = p_m \\
& a_{m+1,1}\, g_1 + \cdot \cdot \cdot + a_{m+1,r}\, g_r = v_{m+1} \\
& \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \\
& a_{n1}\, g_1 + \cdot \cdot \cdot + a_{nr}\, g_r = v_n
\end{aligned}$$

This series is almost the same as (2), the only difference being that $a_{m+1} \cdot \cdot \cdot a_n$ are changed into $a_{m+1} \cdot \cdot \cdot a_{n1}$, and the corresponding $q_1 \cdot \cdot \cdot q_r$ into $g_1 \cdot \cdot \cdot \cdot \cdot g_r$ and $p_{m+1} \cdot \cdot \cdot \cdot p_n$ into $v_{m+1} \cdot \cdot \cdot \cdot \cdot v_n$, owing to the fact that the commodities $(m+1) \cdot \cdot \cdot \cdot n$ are produced only in B.

The equations for the demand for commodities will also be a little changed. Since the demand for any commodity is a function of the prices of *all* commodities, and these prices are now not $p_1 \cdot \cdot \cdot \cdot p_n$ in A and $v_1 \cdot \cdot \cdot v_n$ in B; but $p_1 \cdot \cdot \cdot p_m; \frac{v_{m+1}}{x} \cdot \cdot \cdot \cdot \frac{v_n}{x}$ in A and $p_1 x \cdot \cdot \cdot \cdot p_m x$; $v_{m+1} \cdot \cdot \cdot v_n$ in B the demand for the different commodities may be expressed thus:

$$\begin{aligned}
\text{(III)}\quad & D_1 = F_1 (I_1 \cdot \cdot \cdot I_s; p_1 \cdot \cdot \cdot p_m; v_{m+1} \cdot \cdot \cdot v_n; x) \\
& \delta_1 = \psi_1 (J_1 \cdot \cdot \cdot J_s; p_1 \cdot \cdot \cdot p_m; v_{m+1} \cdot \cdot \cdot v_n; x) \\
& \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \\
& D_n = F_n (I_1 \cdot \cdot \cdot I_s; p_1 \cdot \cdot \cdot p_m; v_{m+1} \cdot \cdot \cdot v_n; x) \\
& \delta_n = \psi_n (J_1 \cdot \cdot \cdot J_s; p_1 \cdot \cdot \cdot p_m; v_{m+1} \cdot \cdot \cdot v_n; x)
\end{aligned}$$

The equations expressing the various individual incomes as functions of factor prices are the same as in the isolated state. It is superfluous therefore to write down the system (IV). For each of the two countries one equation in IV is dependent on the others. In their place we have the equations for the price of gold: $p_g = 1$ and $v_g = x$. The price in B of the quantity of gold, which costs 1 in A, is of course equal to the foreign exchange rate.

[1] Each commodity is supposed to be produced only in one region. See the introductory remarks to this appendix.

With regard to the demand for the factors of production it must be remembered that the region A now has to produce a quantity of the commodities $1, 2 \cdots m$ not only sufficient for its own consumption, but for the *total* consumption of these commodities in A and B, while B has to satisfy the total wants in both regions for the commodities $(m+1) \cdots n$. The quantities of the factors of production being in A: $R_1 \cdots R_r$ and in B: $S_1 \cdots S_r$, we get:

$$\text{(V)} \quad \begin{aligned} &a_{11}(D_1+\delta_1)+\cdots\cdots+a_{m1}(D_m+\delta_m)=R_1 \\ &\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\ &a_{1r}(D_1+\delta_1)+\cdots\cdots+a_{mr}(D_m+\delta_m)=R_r \\ &a_{m+1,1}(D_{m+1}+\delta_{m+1})+\cdots\cdots+a_{n1}(D_n+\delta_n)=S_1 \\ &\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\ &a_{m+1,r}(D_{m+1}+\delta_{m+1})+\cdots\cdots+a_{nr}(D_n+\delta_n)=S_r \end{aligned}$$

Finally, the equations expressing the technical coefficients as a function of the prices of the factors of production are of the same nature as in the series of equations (1) above.

$$\text{(I)} \quad \begin{aligned} &a_{11}=f_{11}(q_1\cdots q_r) \\ &\cdots\cdots\cdots\cdots \\ &a_{mr}=f_{mr}(q_1\cdots q_r) \\ &a_{m+1,1}=f_{m+1,1}(g_1\cdots g_r) \\ &\cdots\cdots\cdots\cdots \\ &a_{nr}=f_{nr}(g_1\cdots g_r) \end{aligned}$$

The different a and α are here expressed in terms of the corresponding q and g. By aid of the system of equations (II) and (IV) it is possible to express the different p and v, I and J, also in q and g. If in the system III these q and g are substituted, the different D and δ will be expressed in terms of q, g and x. By putting these expressions in the series of equations V, where $R_1 \cdots R_r$ and $S_1 \cdots S_r$ are constants, the independent variables will be reduced to $q_1 \cdots q_r$; $g_1 \cdots g_r$; and x. For the computation of these variables we have the series of equations in the system V, that is $2r$. But as the number of unknowns is $2r+1$, we still require one equation in order to complete the circle.

The required equation is supplied by the fact that the imports and the exports to the regions must balance. For, as no credit transactions, etc. are taken into consideration, exports are the only means of paying for the imports:

$$\text{(VI)} \quad \delta_1 p_1 x + \delta_2 p_2 x + \cdots + \delta_m p_m x = D_{m+1} v_{m+1} + \cdots + D_n v_n$$

This equation, which may be called "the equation of interregional exchange," signifies, in terms of B's money, that the imports balance the exports. Of the first commodity the region B imports the quantity δ_1 and, as the price is p_1 in A, B has to pay $\delta_1 p_1 x_1$ reckoned in B's money, etc. Of the nth commodity B exports, and consequently A imports, the quantity D_n at the price v_n, etc.

By these six series of equations the price system in two exchanging regions under simplified conditions is illustrated, that is to say, a general idea of the nature of the interdependence of the different elements is provided. Evidently, any change in any part of the system may cause a change in any other part.

§3. *Certain conditions of trade.* This system of equations can be used also to throw some light on the question under what conditions two regions will *not* trade with each other. We have seen that if relative commodity prices coincide in the isolated state, no trade can occur. Under what conditions will they coincide?

We start from the equations, expressing the costs and prices of the various commodities.

$$
\begin{array}{lll}
 & A & B \\
(1) & a_{11} q_1 + a_{12} q_2 + \cdots + a_{1r} q_r = p_1; & a_{11} g_1 + a_{12} g_2 + \cdots + a_{1r} g_r = v_1 \\
 & a_{21} q_1 + a_{22} q_2 + \cdots + a_{2r} q_r = p_2; & a_{21} g_1 + a_{22} g_2 + \cdots + a_{2r} g_r = v_2 \\
 & \cdots\cdots\cdots\cdots & \cdots\cdots\cdots\cdots \\
 & a_{n1} q_1 + a_{n2} q_2 + \cdots + a_{nr} q_r = p_n; & a_{n1} g_1 + a_{n2} g_2 + \cdots + a_{nr} g_r = v_n
\end{array}
$$

As soon as the two regions come into communication, exchange will arise if the relative commodity prices are different, that is, if the following condition is *not* fulfilled:

$$(2) \quad p_1 : p_2 : \cdots : p_n = v_1 : v_2 : \cdots : v_n$$

It will be seen below that this condition is satisfied and hence trade is impossible in two cases, which will now be analysed.

Assume that the relative prices of *the factors of production* are the same in both regions. This can be expressed:

(3) $q_1 = lg_1$; $q_2 = lg_2$; $\cdots$ $q_r = lg_r$ (where l is an arbitrary positive quantity).

When this is the case, the factors [1] will be used in the same propor-

[1] Only factors of identical quality in the two regions are treated as being the same factor. It is recalled that the economies of large-scale production are disregarded.

tions in the production of any commodity in both regions. The "technical coefficients" will coincide, that is

(4) $a_{ij} = a_{ij}$; (i = 1.2 · · · n; j = 1.2 · · · r)

By aid of the equations (3) and (4), the expression (1) will be converted into

(5) $p_1 = lv_1$; $p_2 = lv_2$; · · · · $p_n = lv_n$

which is exactly the same as (2). Consequently the condition (2) holds good, relative commodity prices coincide, and no trade will arise if the condition (3) is fulfilled. It may, therefore, be stated that *no exchange will arise, if the relative prices of the factors of production coincide in the two regions.*

The condition (2) can, however, be fulfilled in another way, namely if

(6)
$$\begin{aligned} & a_{11} : a_{12} : \cdot \cdot \cdot \cdot : a_{12} = \\ = \; & \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \\ = \; & a_{n1} : a_{n2} : \cdot \cdot \cdot \cdot : a_{nr} = \\ = \; & a_{11} : a_{12} : \cdot \cdot \cdot \cdot : a_{1r} = \\ = \; & \cdot \quad \cdot \quad \cdot \quad \cdot \quad \cdot \quad = \\ = \; & a_{n1} : a_{n2} : \cdot \cdot \cdot \cdot : a_{nr}; \end{aligned}$$

that is if the factors of production are combined in exactly the same proportions in *all* commodities in *both* regions.

However, this is unthinkable if the relative prices of the factors of production do not coincide. The condition (6) is therefore in fact the same as condition (3), which has already been discussed.

It may be pointed out that these conditions, (3) and (6), which are of course never satisfied in the real world, resemble somewhat two assumptions of which considerable use is made in the classical theory of international trade. When dealing with non-competing groups Professor Taussig bases his final conclusions concerning their small importance for international trade on the presumed fact that "in the occidental countries . . . as a rule the stratification of industrial groups proceeds on the same lines," i.e. that relative wages are fairly equal in different countries.[1] It is fortunate that he does not make this assumption for *all* the productive factors, in which case international trade would be impossible, except in so far as it would be called into existence by the economies of large-scale production.

In other cases Taussig and others assume that the various labour qualities and capital, but not land, enter in the same proportions in *all*

[1] Taussig, *International Trade*, p. 56.

commodities, and that therefore relative costs are known, when the relative quantities of unskilled labour used for their production are known or, which amounts to the same, it is assumed (Bastable) that a "unit of productive power" can be used as a basis in the cost calculations. It is fortunate that this assumption does not include land and that equal proportions in *both* countries are not assumed, for otherwise trade would be impossible, except when due to economies of large-scale production.

§4. *A generalisation.* Let us assume that the kind of productive factors existing in A and in B as well as the sort of commodities produced in these countries in the isolated state are entirely different. It offers no difficulty to change the system of equations so as to correspond to these circumstances. The forms of the functions of the technical coefficients will be different in the two countries; the supply in B of all the factors which exist in A will be zero, and vice versa. Nevertheless a system of equations is obtained which describes the equilibrium of international trade under the simple assumptions made.

The conditions which have to be fulfilled if trade is to arise cannot be described as different relative commodity and factor prices. Nor can one speak of a tendency towards an equalisation of factor prices when trade has started. Nevertheless, the reactions of the supply prices of commodities, when a foreign demand for some of them comes forth, will be described in essentially the same way as in the text (Chapters II, III, and VII). It depends upon the change in relative factor prices under the influence of the new demand conditions and the reactions of factor supply, as well as upon the economies of large-scale production.

For a treatment of practical problems it is, in my opinion, beyond doubt most practical to use the assumptions underlying Part I of the text and §§ 1–3 of this appendix as a first approximation, and to deal with the differences in the quality of commodities and factors as explained in Chapter V.

APPENDIX II

ON SOME EARLIER THEORIES OF INTERNATIONAL TRADE

§1. *Pareto.* The present treatise was begun in the years after the War as an attempt to explain the forces beneath the surface which govern the variations of the foreign exchanges. I soon became convinced that this could best be done if the mutual interdependence theory of pricing was extended to cover several trading regions. If the classical labour value theory had been discarded as an explanation of prices in the one case — for instance by Walràs, Menger, Jevons, Clark, Cassel and, in spite of conservative terminology, by Marshall, who had all put in its place a mutual interdependence system of pricing — why should it be retained in an analysis of pricing in several communicating markets? To do so seemed all the more absurd as a part of the classical theory of international trade — Mill's equation of reciprocal demand — represents a sort of mutual interdependence theory, although resting on the base of a labour cost theory within each country. Would it not be natural to use the one-market interdependence theory of pricing as the basis of the theory of international exchange? This could be done by depriving the classical theory of international trade of its labour cost elements and presenting it as a simple extension of the mutual equilibrium reasoning, as developed in the one-market theory. In that way, and only in that way, it seemed to me possible to arrive at a harmonious theory of pricing. I hoped that such a treatment of international trade problems would not only do away with a fundamental "Schönheitsfehler" but would also, if consistently pursued, lead to new and fruitful results concerning special problems, and thus prove to be something more than a restatement of the classical doctrine in a different form; just as the one-market interdependence theory of pricing, superseding the classical value theory, has brought many advantages in the analysis of profit, risk, and other important questions.

Not until this book was almost ready in the form in which it is published did I come to know that a part of the work had already been done in the 'nineties, a small part of it even earlier by Cournot.[1] Cournot's work on international trade had attracted little attention, which is no doubt partly to be explained by the fact that his conclusions are on the whole erroneous. Little is to be learned from him except about the method of attack. The Lausanne school before Pareto does not

[1] *Recherches sur les principes mathématiques de la théorie des richesses.* (Paris, 1838.)

seem to have understood its importance for an analysis of international trade. In 1896, however, Pareto published the first part of his *Cours d'Economie Politique*, followed next year by the second part.[1] They contained an extension of his system of equations, to be valid for a number of trading markets, and thus presented, if not a new theory of international trade fundamentally different from the orthodox one, then at least a starting point for an alternative theory.

These equations for trading markets have since been "commune bonum" to economists of the Pareto school. See for instance Barone, *Principi di Economia Politica*, 1908 (German edition, 1928); Pietri-Tonelli, *Traité d'Economie Rationelle*, 1927, Amoroso, *Lezioni di Economia Matematica*, 1921. It is not surprising that the equations worked out by Pareto and kept with comparatively small alterations by his pupils resemble those presented in Appendix I of this book.[2] Of course, following Cassel, the latter are free from marginal utility or "Ophelimité" concepts, but the way of combining the price systems for the various markets is and must be similar.

On the other hand, it is astonishing that the Anglo-Saxon literature on international trade has overlooked that Pareto did not bring some minor modifications of the classical doctrine, but attacked the problem in an entirely different way. It is true that he has not developed a body of doctrines comparable to the one presented by the classics and their followers, but he has drawn the obvious inference that the mutual interdependence theory must be valid for several markets as well as for one, and thus has provided at least a stepping stone for the construction of an alternative theory of international trade. In fact he has done a little of this construction himself through his discussion of the effects of protection.

That Pareto's new approach has been so little noticed and utilised is, perhaps, partly due to the circumstance that mathematical formulas and equations convey little meaning to people who are not familiar with this method of expression. Even to mathematically trained persons they illustrate rather than explain. This is true of the well-known equations of pricing in one market, which are no more than the beginning of a theory of commodity prices and distribution of income; it is equally true of the international trade equations. Pareto and his followers have not, so far as I know, attempted to build up a concrete theory of international trade, alternative to the classical one. In fact,

[1] Pareto had dealt with international trade along these lines in "Teoria Matematica dei Cambi Forestieri," *Giornale degli Economisti*, 1894.

[2] Some Italian economists have introduced all sorts of complications in their formulas; as I have used this mathematical treatment merely as an illustration of the character of the relationship, I have had no reason to do so.

they do not seem to have been clearly aware that their theory is quite inconsistent with the classical one. This fact goes a long way towards explaining why other economists, particularly when not interested in mathematics, have got the impression that Italian economists only wanted to change the classical terminology a little to get it to fit in with their characteristic methods of dealing with economic problems in general.

Professor Angell's relatively complete history of international trade theory contains the following illuminating passage:

> The majority of the Italian economists have taken over the classical theories bodily, premisses and conclusions alike. Only at certain rather isolated points have they attempted any important modifications, and then with somewhat indifferent success. Moreover, at each given time the reflections of English doctrine have usually been based not on *current* English ideas, but on the ideas of a generation before. In consequence, to students already familiar with its antecedent originals the Italian literature must necessarily seem lacking in vigor and freshness. Even the writers of the mathematical school, which has had a larger following in Italy than in any other country, have not explicitly tried to overthrow the classical theory itself. Rather they have sought only to modify it, and to restate its propositions in accordance with their own characteristic views on general economic theory and methodology.[1]

Pareto himself is not without responsibility for the impression that he has only "restated" the classical doctrines. He does not formally reject the Ricardian doctrine of comparative cost,[2] although he points out that it has been stated in inexact terms by non-mathematical writers like Mill and Cairnes. Furthermore, he uses simple illustrations in terms of labour quantities, particularly in his later work, *Manuel d'Economie Politique*. Although he is careful to state that this is misleading and that a correct statement can be given only by means of mathematical formulas of a rather complicated sort, non-mathematical readers naturally get the impression that his criticism of the classical doctrine is concerned with terminology more than with realities.

In fact, however, Pareto's doctrine is fundamentally different from Ricardo's and that of the later classical writers. Pareto rejected all attempts to measure costs in objective terms, i.e. he discarded the basis of the whole classical theory of value.

[1] *The Theory of International Prices*, 1926, p. 303.

[2] His statement of it, freed from its opportunity cost terminology, really runs in terms of relative prices and comes to the same thing as my price reasoning in Chapter I, at the beginning of § 3.

Les 'sacrifices' qu'ils font, en concourant à la production, sont des quantités hétérogènes, qu'on ne saurait sommer ensemble. Une chose n'a pas un coût objectif en ophélimité, elle a des coûts subjectifs, différents suivant les différents individus.[1] Cairnes parait croire que le coût (en ophelimité) des marchandises se compose de *travail* et d'*abstinence*. Sous cette forme, la theorie des coûts compares n'est pas seulement inexacte, elle est fausse.[2]

Instead, the costs of each individual, which cannot be compared with the costs of another or added together for society as a whole, are to be measured in "ophélimité." The real costs are

les coûts que l'on fait pour se procurer les marchandises (leur coûts en ophélimité).[3] . . . Parler des "sacrifices" de l'Angleterre n'a aucun sens. En réalité, il y a des Anglais qui font des "sacrifices" et ces sacrifices sont des quantités hétérogènes qu'on ne peut sommer ensemble. Lorsqu'il s'agit de décider s'il convient mieux d'employer un terrain pour y établir l'exploitation d'une mine de houille, ou pour y cultiver du blé, on ne considère ni les "sacrifices ni l'abstinence," qui n'ont, en ce cas, qu'une influence absolument insignifiante. On considère seulement les différentes quantités des biens économiques que l'on purra obtenir de ce terrain, selon l'usage que l'on en fera.[4]

Evidently Pareto has in mind a sort of *marginal* individual opportunity costs which, when measured in terms of his "ophélimité," are proportional to prices.[5]

Whatever one may think of the usefulness of this concept, which forms the basis of Pareto's whole economic system, it is clear that his comparative cost theory is in harmony with his general price theory, is quite different from the classical objective cost theory, and when stripped of its psychological parts is reduced to a statement in terms of relative prices similar to the one in Chapter I of this book.

It seems to the present writer too obvious to need further discussion, that Pareto's position is widely different from the classical one, and that his way of dealing with international trade represents the first attempt to construct a theory which is in harmony with the general price and value theory of the mutual interdependence type. Except for the use of "ophélimité" his treatment runs along lines very similar to those followed in part I of this book.

Unfortunately, neither Pareto himself nor his followers have as far as I know built further on the basis he laid and proceeded to an illustration of their doctrines by means of concrete cases or to an analysis of international trade problems. The only exception is their study of

[1] *Cours d'Economie politique*, p. 211.
[2] *Op. cit.*, p. 222. [3] *Op. cit.*, p. 211. [4] *Op. cit.*, p. 222.
[5] Compare Haberler's indication of a similar construction in "Die Theorie der Komparativen Kosten," *Weltwirtschaftliches Archiv*, 1930, H. 2.

the effect of protective duties, which centres around the changes in the gain from international trade, measured in quasi-psychological terms by means of the "ophélimité" concept, which I have preferred not to introduce in this book. It is perhaps only natural, therefore, that I have found no reason to make any alterations after reading some works by the Pareto school. But a study of their writings a few years earlier would have saved me some trouble and work.

§2. *Marshall.* Several Italian economists of the Walràs-Pareto school have made contributions to the analysis of demand and supply curves in international trade, which was elaborated in the late 'sixties by Mangoldt and Marshall. Marshall's theory was not made public until two decades later in a book by Pantaleoni. These three economists, together with Edgeworth, had managed as early as in the 'nineties almost to complete an apparatus which in deft hands has rendered important results. It has been used by writers of the classical Cambridge school as well as by economists belonging to the mathematical Pareto school. This fact has probably served to strengthen the impression that after all there was not much difference between the classical theory of international trade and the approach used by Pareto. Did not the English and the Italian economists handle international trade problems by means of supply and demand curves in the same way?

In reality, however, this proves nothing. As a matter of fact, the Marshallian curve analysis can be made a part of the classical cost theory as well as of the interdependence theory of pricing. Marshall's analysis does not go back to the things behind supply schedules, i. e. to the relation between costs and supply prices. Both supply and demand schedules in international trade are regarded as given, and variations in these schedules and the effects of duties are studied. In brief, there is no connection between this analysis and the general system of prices in each trading country. It is, therefore, in no way dependent upon the labour value theory or any other general price theory.

As mentioned above, Mill's study of the play of international supply and demand is in complete harmony with a mutual interdependence theory. Its fault is that it is put on the top of a classical labour value theory, assumed to explain domestic prices. When the analysis, as in Marshall's curves, is confined to the former part and runs in terms of "bales of goods" instead of "days of labour" or "units of productive power" there is clearly no reason for objecting to it from the point of view of the Pareto theory or any other interdependence theory.

Some reviewers of Marshall's belated work *Money, Credit, and Commerce* (1923) have observed that it contained little new on the

subject of international trade. This may be true. But certainly there is one appalling thing, namely that significant parts of the classical doctrine are left out entirely. Marshall makes hardly any use of the real cost analysis in terms of days of labour or units of productive power. Note the difference from Professor Taussig's *International Trade*. Only in Appendix H does Marshall use examples of the Portugal-England type, the mainstay of the whole classical analysis since Ricardo. He seems to have shrunk from tying his curve analysis of the play of international supply and demand down to a labour value theory of the Ricardian type.

Of course Marshall could have modified the classical theory of international trade radically by basing it on his own interdependence system, where certain cost ideas are an essential part. He could have extended his system for one market to cover several markets, gathering together, systematising, and developing the many remarks in this direction that his *Principles* contain. It would not have been easy to do so, for the construction of Marshall's system is complicated, but no doubt it could have been done. In fact, however, he did not do it. On the whole, he seems to have been content with dealing with international exchange in the most narrow sense without putting it in its organic connection with the general system of price and value.

This Marshallian curve analysis will, I think, always be regarded as a useful tool in the discussion of certain problems. To certain minds it is easier to handle than other forms of analysis. It does not, however, appeal to me. That I have made no use of it is also due to the fact that other sides of international trade — e.g. the changes in the interior price mechanisms — seemed in greater need of treatment than problems which have attracted the special attention of some of the greatest intellects economic science ever reckoned among its adepts. But I am well aware that certain chapters of this book would have gained if use had been made of the Marshallian curves and of some which have been fruitfully used by Barone.[1]

§3. *Angell.* The fact that the Marshallian curve analysis of the play of international supply and demand is only a part of a complete theory of international trade — which must have the form of a general price theory extended to cover several markets — throws some light on a recent attempt to break new ground in this field of economics, Professor Angell's interesting book *The Theory of International Prices*, which has already been quoted above.

If the term "theory of international prices" is to mean anything at all it must be that it explains the relations between the various price-systems of trading nations. No analysis which assumes demand and

[1] *Principi di Economia Politica*, Roma, 1908.

supply schedules to be known can do this. Yet Professor Angell confines himself to this analysis, — and that of the monetary mechanism, — and does not attempt to go behind the supply schedules to put anything in the place of the comparative cost doctrine which he rejects. Evidently his procedure resembles closely that of Marshall. A quotation will make his position clear.

> Our analysis . . . has been made to run solely in terms of the demand and supply schedules for the articles concerned in each country. Given such schedules, we have found it possible to establish the character and limits of the trade. The practice of dealing only with current ratios of exchange and the factors controlling them, however, is evidently at marked variance with that of the classical writers. The classical theorems here paid relatively little attention to the phenomena of ratios of exchange — prices — and sought instead to go back of them to factors exerting a more fundamental control over international trade. These factors were held to find their expression in comparative labor costs. Should we not now, therefore, similarly extend our analysis to include the presumably dominant though less conspicuous conditions with which the older doctrine was concerned? Unequivocally, no. . . . In attacking this last problem (the determination of ratios of *international* exchange) the only directly relevant factors are the demand and supply schedules, and the ratios of exchange, which actually or hypothetically prevail in the countries concerned. The problem itself therefore reduces to the relatively simple one of showing how these factors operate, and how they control the course of trade. *It is impossible to go back of them to a single more "fundamental" set of factors, and futile to try.*[1] They are themselves — to borrow from the vocabulary of algebra — the lowest common terms to which the situation can be reduced. Any further reduction leads, instead, to complexity and incompleteness. No one of the elements which go to make up the demand and supply schedules in each country is adequate, of itself alone, to explain these schedules.[2]

It is of course true that no single element can be dealt with alone, if one wants to go back of the supply schedules and show how the price systems of trading countries are connected. But, it is hard to understand why this should make such an attempt impossible. And it is still more difficult to understand that Angell's position can lead him to state later on (p. 473) that the comparative cost doctrine is untenable and that "an alternative analysis has therefore been worked out, which is based on actual money costs and money prices." It would seem that the very thing he has declared impossible is to work out an alternative doctrine.

What a pity that instead of taking this negative attitude Professor Angell has not followed up a suggestion of his own on the previous page:

[1] Curs. by B. O.

[2] *Op. cit.*, p. 460.

If we take international exchange in the aggregate and over periods of time, it is evidently quite true that the course and character of the exchange is determined by a certain kind of comparative cost. But these costs must themselves be interpreted with respect to entire countries, not with respect to specific products or even specific branches of production. If one country is relatively richer than another in natural resources, for example, while it is inadequately supplied with labour, the general character of the trade between the two is established. The trade between the United States and western Europe, especially in the nineteenth century, is a conspicuous example. The United States had natural resources, but relatively little labour and capital. Europe was in the opposite situation. We exported food stuffs and raw materials and took manufactures in payment.

This and one or two other passages in *The Theory of International Prices*, as well as writings by Viner [1] and others,[2] contain indications and ideas closely similar to some which have been developed in this work, already in the Swedish edition of 1924. As so often before, the same ideas have been born practically simultaneously in the minds of different persons.

Another fact which has made me feel that a treatise of international trade on non-classical lines would meet a real need, is that so many economists have lately offered serious criticism of the orthodox theory. Besides Angell, names like Graham, Mason, Nogaro, Viner, and Weigmann offer themselves at once. There seems to be widespread feeling that a more realistic theory than the one based on the classical comparative cost schedules is desirable, a theory in closer contact with the business man's way of looking at things.

[1] *Journal of Political Economy*, 1926.
[2] Cf. Chapter I.

APPENDIX III

CRITICISM OF THE CLASSICAL THEORY OF INTERNATIONAL TRADE[1]

§1. *Introduction.* I shall attempt in the following pages to present a criticism of the orthodox theory of international trade which seems to me sufficiently damaging to justify my attempt to construct a different theory. To avoid misunderstanding let me emphasise, however, that the orthodox theory has enabled a great number of practical problems to be dealt with satisfactorily and that, consequently, as far as these problems are concerned, a new theory will mean only a restatement of the essentials of the old one. A new theory can only justify itself if it can deal equally well with these problems and better with some others. It is, therefore, incumbent on me to demonstrate that there are in certain respects serious deficiencies inherent in the orthodox theory and that in these respects the theory expounded in the present volume is more satisfactory. Let me begin with a criticism of the classical labour value theory. As the orthodox theory of international trade is built on this value theory, it is inevitable that it should be open to the same objections as the latter.

§2. *Criticism of the labour value doctrine.* Ricardo measures the cost of production of goods in terms of days of unskilled labour, not in terms of money. He considers the real cost, expressed in labour (what Marshall calls "effort and sacrifice"), not the expenses of production. The relative value of goods is determined by the amount of labour which has gone to produce them. In order to arrive at comparable cost figures, he is obliged to introduce a number of simplifying assumptions which may be summarised as follows: (1) The cost at the production margin serves as a basis for calculations. Rent is thus eliminated. (2) Various categories of labour can be reduced to a common denominator on the assumption of a fixed relation between them. (The relative remuneration scale is assumed to be fixed.) If the wages of one worker are twice as high as those of another, one working day of the first equals two of the second. In this way, every kind of work can be converted into "unskilled labour." (3) Capital and labour are employed in the same proportions in the production of all commodities.

Ricardo was well aware that these assumptions do not correspond to the facts, but he was obliged to accept them. An acute logical mind

[1] This is a considerably revised and enlarged version of a paper published in the *Weltwirtschaftliches Archiv* (1927) under the title: "Ist eine Modernisierung der Aussenhandelstheorie erforderlich?"

like his could not fail to realize that, in order to argue at all about relative values, a common denominator for the production cost of all goods was necessary. If one does not take money costs for this purpose, one is naturally led to take labour, the most important factor in the process of production, and attempt to express all costs of production in terms of it.

These premises form the basis of the orthodox value theory. Far from being arbitrary, they are essential and have in fact a fundamental significance. It will, therefore, have to be seen whether they correspond to the facts sufficiently to be accepted as a convenient starting point in analysing the actual phenomena.

The assumption of an equal relation between capital and the cost of labour in all industries is, of course, in striking contradiction to reality. There are industries in which wage costs are twenty-five times as high as capital expenses, whereas, in others, capital expenses are considerably higher than wage costs. The amount of capital per worker in the manufacturing industries of the United States has recently been estimated as follows:[1] Chemical industry $10,000, iron and steel industry $4,000, textile industry $1,900, tobacco industry $1,700. In Swedish industry before the War the relation between wages paid and interest expenses was[2] for food industries 9/10:1, for pulp and paper factories 5/10:1, for wharfs 8:1, for stone quarries 26:1. A post-War investigation, made by Messrs. Alford and Hannum, showed that the output per 1,000 hours of labour ranged from $548 in the yarn and thread industry to $10870 in the die and punch-making industry in the United States.[3]

There is hardly more to be said in favour of the existence of a fixed relation between the wages of different categories of labour. The assumption of such a relation excludes the possibility of examining a fundamental problem such as that suggested by changes in the relative positions of social classes, e.g. the question why the real wages for office work have declined in the last thirty or forty years, while the wages for manual labour have risen considerably. It is evident that such changes — apart from the interest they present from the point of view of the distribution of income — affect the relative prices of goods.

It has been said that the pure labour value theory, which is based on the above artificial assumptions, yields only roughly approximate results and that it is possible by subsequent modification to take sufficient account of the facts that different commodities require very

[1] Wojtinski, *Die Welt in Zahlen*, Vol. III (Berlin, 1926).
[2] *Statens offentliga utredningar*, no. 37 (1923).
[3] *The Times Trade and Engineering Supplement* (December 29, 1928).

different proportions of capital and labour, and that the relative remuneration scale is subject to changes. Indeed, does not Ricardo himself point this out at the end of the first chapter of his *Principles*, and does not Mill endeavour to explain that variations in the rate of interest as well as in the general wage level must influence the relative prices of commodities?

As far as I can see, these and later attempts were unsuccessful and were, as a matter of fact, doomed to failure from the beginning. If one holds — with Ricardo and Mill — that relative prices are primarily determined by the quantities of labour employed, and if at the same time the quantity of capital employed is considered to be relevant, one has in fact abandoned the orthodox cost theory which was based on the assumption that all cost elements can be expressed in terms of one. It is only by means of that assumption that the costs of all commodities may be compared, if a money measure is ruled out. If the theory is "modified," and if the difference in the proportionate use of capital is taken into consideration, so that goods requiring much capital for their production are given a higher relative value, the question remains *by how much* their value increases. This question can only be answered by a calculation in terms of money. Only thus does it become possible to compare the costs of production of different commodities. Instead of finding the "cost," expressed in terms of days of labour or in units of energy, one arrives at the "expenses of production" expressed in money. Thus, the whole orthodox value theory is reduced to the statement that the prices of goods are determined by their relative costs of production measured in terms of money. As production costs depend on the prices of the factors of production, which, in their turn, are not *a priori* known but depend on the prices of commodities, Mill found himself in exactly the same dilemma that Ricardo tried to avoid by his labour value theory and which can in fact only be avoided by the mutual interdependence theory. According to this theory, the prices of goods and of the factors of production react upon one another, thus creating an interdependence which characterises the whole mechanism of price formation.

An attempt to "modify" the labour value theory and to transform it to some other form of real cost theory leads, necessarily, to the giving up of its main premises. The foundation of such doctrines, i.e. the elimination of money in the calculation of the cost of production, is destroyed. Ricardo and Mill, after having mentioned the modifications in question, still base their subsequent reasoning on the original and unmodified labour value theory. Would it not have been more natural to base the treatment of subsequent problems on the modified theory? The fact that the classical economists preferred to go back

on their steps and, in dealing with international trade, preferred to reason as though the simple labour value theory required no modification, certainly seems to confirm the opinion that no real modification was made. Another fact points in the same direction, namely the fact that later writers have never attempted to build up a theory of international trade on the *modified* classical value doctrine instead of on the original one.

Before showing the effects of the shortcomings of the orthodox value theory on the orthodox theory of international trade, I must point out another important defect connected with the orthodox value and distribution theory, namely, the inadequate treatment of the "laws" of increasing and diminishing return. The relation between capital and labour in production and the relative prices of different categories of labour are treated as fixed and "frozen." It is therefore impossible ever to make a satisfactory study of the interrelated changes in the relative combination and the relative prices of these factors of production. How far such changes in prices bring about changes in the relative combination of the various factors of production, and how far this affects the yield — these are problems which have been completely neglected by the classical economists. They limit themselves to a study of how the growth of population influences the combination of labour and capital with land. This accounts for the fact that the law of decreasing returns is regarded as principally applicable to the productivity of the soil.

The general law of varying returns which, strangely enough, has only been formulated in the present century, chiefly by American economists such as Bullock, Carver, and Clark, is based on the fact that all factors of production are in the same position with regard to the combination problem. Changes in their combination without considerable changes in the scale of production increase the yield per unit of some factors and lessen the yield of the others. Only in exceptional cases can the yield per unit of any one factor remain the same.

In the case of an increasing demand for a commodity, it follows from what has just been said that the price and the production cost of that commodity will probably undergo a change. The factors required in large quantities for the production of that commodity will become more expensive. That leads to a change in the combination of factors and for that reason also the relative prices of commodities are changed. It is a different story that certain economies of large-scale production exist and that, consequently, changes in the quantities produced affect expenses of production, irrespective of changes in factor prices. Besides, the supply of production factors is naturally influenced by changes in price, differently in different circumstances. In the case

of specially qualified labour, higher wages will cause the supply of labour to rise and this will again entail a lowering of wages. It may happen that after some time, thanks to the advantages of mass production, the commodity in question will become even cheaper than before. On the other hand, the supply of natural resources is hardly or not at all influenced by rising prices. A greater demand for such factors will, therefore, bring about an increase in the corresponding commodity prices. Thus, one is justified in assigning a special position to "land" as regards the reaction of supply towards price changes. In order to explain the ultimate effects of a change in demand, it will be necessary in each individual case to examine the capacity of every single factor to adjust its supply to variations in price. There is no doubt, however, that such changes in demand cause variations in the costs of production and prices of commodities.

In view of this, it is not possible to maintain that the supply of any commodity may be increased or diminished without any effect on the cost of production or on prices and subsequently to modify this statement merely in regard to the "decreasing return of land." Simplifications are undoubtedly useful in many cases, and very often necessary; they should not, however, affect the essentials of the phenomenon which is to be explained. It is one of the essential characteristics of price formation that a change in demand — like other primary changes — alters the relative prices of goods and production factors and that it leads to new combinations of factors and to variations in the cost of production.

Thus, a "constant cost" with varying quantities produced, as assumed by the exponents of the orthodox value theory, may be natural from the point of view of that theory; as a general premise for the study of price movements, however, it is unfortunate.

§3. *Defects of the classical value theory as a basis for a theory of international trade.* I have shown above that the assumption of the orthodox value theory, that capital and labour contribute in the same proportions to the production of all goods, is a very rough and by no means satisfactory simplification. It is at the same time of fundamental significance for the theory and it has not been replaced, later on, by other hypotheses more closely corresponding to the facts. Now, it seems obvious that, if the basis of the classical doctrine is inadequate for the study of price formation within a single market, an examination on that basis of pricing in several exchanging markets cannot be more satisfactory.

Experience has shown that certain commodities require for their production much more capital than others; further, that the interest rates differ in different countries. Consequently, the countries with a

low rate of interest can produce goods requiring relatively large amounts of capital comparatively cheaply, whereas the countries in which there is a shortage of capital, *ceteris paribus*, produce the commodities which require less capital at a relatively low cost. In other words, the latter countries produce goods which require a large amount of capital at a relatively high cost.

There is no doubt that the great differences in interest rates in the post-War years have affected production and trade in this way. In Germany, the high interest rates considerably increased the cost of all those branches of production which require much capital, whereas those branches in which wages are relatively more important have had comparatively lower expenses. This fact has, of course, been largely obscured by the disorganisation of German economic life, due to certain after-effects of the long period of inflation, such as the over-supply of fixed capital in form of buildings and machines. The same phenomenon may be observed even more clearly in the Baltic countries where rates of interest fluctuated between 15 and 30 percent during recent years. A number of industries requiring particularly large supplies of capital are still paralysed as a result of the War years, whereas other industries which require less capital have recovered fairly quickly.[1]

If the interest rates of such countries fall considerably, the competitive position of their industries vis-à-vis corresponding industries abroad, and consequently international trade, are bound to be affected. This is what we are likely to observe in Germany in the next decade. The high price of capital hampers her industrial development, but it affects different industries in extremely varying degrees, being most fatal to those which require most capital. The future drop in interest rates will, therefore, influence the cost of production of different industries and the competitive position of these industries very differently. Industries requiring a large amount of capital, which, up to now, could expand neither their production nor their export, will come into a much more favourable position. Those, on the other hand, which enjoyed an extra stimulus in low wages and were not particularly affected by the high interest rates, will be worse off and less able to compete on the international market when the interest rate declines and wages rise. Their exports will decrease, or the corresponding imports increase, while imports will be checked or exports stimulated in the industries requiring much capital.

It is obvious that all factors which affect the costs of production in a country must also influence its international trade. Changes in wages

[1] It goes without saying that other factors, such as the loss of the Russian market, have, of course, potently affected the situation in these countries.

and interest rates in opposite directions, caused by increased supplies of capital, must, therefore, have this effect. It should be observed that the classical doctrine is really unable to explain these phenomena.[1] If one assumes that capital and labour be embodied in all commodities in the same proportions, it is, of course, impossible that changes in wages and in the rate of interest should affect the *relative* prices of German goods except to the extent to which the "margin of cultivation" of land is changed. In all cases where no important change of this kind takes place, all commodities will be either cheaper or more expensive than before, but they will never be affected in different directions. There will be no change in relative prices and, consequently, none in international trade which, according to the classical doctrine, can only be affected by changes in relative prices.

This conclusion is so obviously at fault that the underlying premisses may be taken to be inadequate without further ado. It is true, however, that for some problems differences and changes in interest costs may be ignored, e.g. a reasoning in terms of output per head may be sufficient. But, this is certainly no justification for basing the central theory on such a violent simplification which, for the purpose of analysing other problems, is unsatisfactory.

The second assumption made by the classical economists is equally inadequate, namely, the assumption that different categories of labour are paid according to a fixed remuneration scale and that any day of skilled labour can be converted into so many days of unskilled labour. Suppose that in country A the workers in the last group receive as high wages as the skilled workers, whereas in country B they receive only half as much. In such a case the orthodox method would count one day of skilled labour as two days of unskilled labour in B, while, in A, skilled labour would not be given a special coefficient and all days of labour would merely be added up. The production cost of all goods would thus be expressed in terms of days of unskilled labour. The comparative costs calculated on this basis would determine international trade.

If, instead, one calculates in terms of money without giving up the classical premises, the following results are obtained: Let us suppose that country A pays each worker $5 per day, while B pays $3.50 to the unskilled and $7 to the skilled workers. In such conditions, commodities requiring mainly skilled workers for their production will be

[1] Taussig (*International Trade*, pp. 65–67) makes great effort to show that the differences in the rates of interest only call for (1) modifications of the orthodox theory, (2) and that these modifications are unimportant. As may be seen from the text, I disagree with both these conclusions. I hope to publish a detailed criticism of Taussig's doctrines elsewhere.

more expensive in B than in A, while goods which are produced mostly by unskilled workers will be more expensive in A than in B.

Let us now suppose that the supply of skilled workers in B increases gradually as a result of improved education, Government measures, etc. This will gradually reduce the difference between the wages for skilled and unskilled labour; eventually the difference will disappear entirely, as it previously did in A, so that both groups of workers will receive, say $5 per day. This change will, of course, affect certain industries fundamentally. Commodities which previously were imported into B from A, because their production demands skilled labour to a great extent, can now be produced just as cheaply in B. Goods which were previously exported from B, because their production requires mainly cheap unskilled labour, can no longer be sold at a price below their cost in A, because the wages for unskilled labour have risen.

However much simplified this example may be — all other factors which affect production having been left out of consideration — it certainly shows that changes in the relation between the wages of different groups of workers affect the production cost of different goods differently and consequently that they influence international trade. It is no use replying that these are long-period changes and consequently of little practical importance. In the first place, it would seem that a theory should be able to explain long- as well as short-period changes and, secondly, modern trade-union policy, which in some countries seems more and more to be approaching the closed-shop ideal, has created a great number of non-competing groups whose wages fluctuate very differently. Of course, these fluctuations affect both the cost of production and international trade.

Can the orthodox theory explain such a development? I cannot see that a description of these phenomena is at all possible in classical terms. One is obliged first to equate one day of skilled labour in B with two days of unskilled labour and then to regard both groups as equivalent. And what is the value of an attempt to express the cost of production in terms of a purely technical unit if it obliges one not only to make economic reservations in establishing that unit, but also to modify its very meaning in accordance with varying economic phenomena? All these modifications in fact involve a complete abandonment of the orthodox standpoint. The production cost is really if not formally calculated in terms of money and the attempt to express it in terms of technical units has actually been given up. Would it not be simpler and more natural to make the analysis in such a way that the effect of fluctuations in the relative wages of different categories of labour on production costs and international trade is taken into account from the outset?

Modern English economists, like Keynes and Pigou, do not seem to realise that the assumption of fixed relative wages is a violent simplification, and even appear to feel no need for later modification. Pigou makes extensive use of a very curious equilibrium conception, of which one condition is that after every disturbance wages return to their old relative position.[1] In fact, however, (*a*) there is no reason for assuming that precisely the same position will ever return and (*b*) the "temporary" relative wage situation may itself be of primary interest. In my opinion, one should either deal with a whole series of "equilibria" and describe the development from one to another, or not talk about equilibria at all.[2]

Taussig takes the line of defence for the orthodox attitude that changes in international demand do not materially affect the relation between different classes of wages.[3] The need for modification is, therefore, slight. The answer would appear to be that (*a*) variations in relative wages for other reasons than demand changes have to be taken into account as indicated above and (*b*) changes in international demand may be very potent in causing a new wage relation in *small* countries. Surely the theory of international trade should be applicable to the latter as well as to the United States and other large manufacturing nations!

The difficulty caused by the existence of non-competing groups might be avoided in still another way. One might assume, in analogy to the treatment of labour and capital, that the different categories of labour are embodied in all commodities in the same proportions.[4] A like method would, however, be equally unsatisfactory. One could make the same criticisms here as in the case of the analogous assumption for capital and labour, namely, that it is in too blatant contradiction with the facts and cannot be regarded as a means of even preliminary approximation which might be corrected by subsequent modifications, because it "locks up" certain elements of the mechanism of price fluctuation.

The assumption of fixed relative incomes of different categories of labour has led the classical doctrine, even in its modern form, to avoid

[1] See Pigou, "Disturbances of Equilibrium in International Trade," *The Economic Journal* (September, 1929).

[2] Cf. Parts II–V of this volume.

[3] *International Trade*, p. 56. He also asserts, which is a second line of escape, that "in occidental countries . . . as a rule the stratification of industrial groups proceeds on the same lines. And it is between these countries that the principle of comparative costs is presumably of greatest importance."

[4] The three methods out of the orthodox dilemma are: (1) fixed relative factor prices, (2) equal relative factor prices in all countries, and (3) the factors used in the same proportions in all commodities in each country.

the important problem of the connection between international trade and income distribution. Starting from the orthodox premisses, there can be no such connection at all; for if relative wages were fixed and if capital and labour were embodied in all goods in the same proportions, an adjustment of production caused by changes in international trade, e.g. owing to new import duties, could affect neither relative wages nor the relative scarcity of labour and capital. International trade could only alter the scarcity of land in relation to capital and labour. It is interesting to note that *this* question has been discussed by many orthodox writers. Imports of overseas wheat, in the case of lower duties or costs of transport, would cause a decline in European land values as the cultivation of wheat in Europe would be reduced.

Had the classical theory of international trade been easily adaptable to the actual phenomena, in other words, had its conclusions been mere approximations which could be modified subsequently, then the neo-classical theory would hardly have neglected such an important problem as the influence of international trade variations on the distribution of income in general.[1] After all, it is self-evident that in a given country a change in the trend of production, caused by international trade, will reduce the demand for those factors that were previously required in relatively large quantities for the production of goods which are now imported. On the other hand, there will be a rise in demand for factors specially required for the production of export goods when industries have to satisfy demand abroad in addition to the home demand. In other words, the demand for production factors is entirely different in the case of an international distribution of production from what it is when each individual country has to produce everything at home. The scarcity of production factors and the distribution of income must consequently be different too.

The fact that the influence of international trade on the distribution of income is overlooked, is closely connected with the unfortunate assumption that the cost of production, measured in terms of quantities of labour, does not vary with the amount of goods produced. Thus, the cost of production expressed in money would only vary with varying wages. An increased foreign demand would merely cause a rise of the wage level and would not otherwise affect prices. There would be no objection to this argument had it been used provisionally to eliminate the difficulties presented by the advantages of large-scale production;

[1] The only exception I know of is Taussig, who seems to feel that an analysis of this question fits in badly with the orthodox doctrine in general and, as already observed, gets out of the difficulty by assuming that this influence is small and need only be mentioned in passing. This attitude probably explains why the influence of "restricted competition labour groups" on the terms of trade and its bearing on the "gain" from protection has been neglected. See p. 302 above.

in other words, had it been assumed for reasons of simplification that small-scale production is just as profitable as large-scale production. It is, however, quite obvious that an increase in foreign demand must affect the relative scarcity of the production factors in a country in favour of those which are used more especially in the export industries. This entails changes in the economic combination of production factors in all industries. Consequently, not only the prices of export goods, but very probably also all other commodity prices, will undergo greater or less change, but in different degrees and in different directions and not, as the orthodox theory maintains, in the same degree and in the same direction. The classical economists make a single exception where land is involved to a considerable degree, since, as already mentioned, they do take account of changes in the relative scarcity of this factor as compared with labour.

It should be quite clearly understood that — as explained in §2 — changes in the quantities of goods produced in a country will normally affect the relative prices of production factors and commodities in such a way as to raise, at all events in the beginning, the prices of the goods for which demand has risen as compared with the prices of all other commodities. Undoubtedly other forces will soon work in the opposite direction, since the supply of production factors is also affected by changes in prices. If, for instance, the wages for certain groups of workers rise, the supply of this kind of labour will increase and a tendency towards a decline of wages and prices will thus be set in motion. The subsequent price movements are, consequently, uncertain and depend on the circumstances of each individual case. Not only the different relative scarcity of the production factors, but also the fact that large-scale production has certain advantages over small-scale production is of importance in this connection. As a result of the latter, prices will often tend to fall when the quantity produced increases. This is, however, not always the case. It holds good only in cases where the industry concerned has not already reached its optimum extent of production, or an improved utilisation of production capacity is still possible. The first condition cannot be regarded as being usually present; and one rarely finds the second over a long period. One must inquire, in each case, how relative factor prices are affected and which rôle the economies of large-scale and of fuller utilisation of capacity play, at different times, if one is to explain the price development.

Thus, the problem of the effects of international trade fluctuations and of changes in the quantities of goods produced on the expenses of production, expressed in money, has not been satisfactorily analysed by the classical doctrine.

§4. *Other defects in the classical theory of international trade.* In §3 I have dealt with those defects in the classical doctrine which seem to be inherent in the general orthodox value theory. These defects vitiate the study of price movements both in a single market and in international trade. I will now deal with other defects which more or less result from the orthodox method. It might be possible in certain cases to rectify these defects, while still maintaining the fundamental ideas of the classical method; nevertheless they are closely connected with those fundamental ideas.

If one tries by means of the orthodox theory to explain why a given country is able to export a certain commodity to other countries, one is led to adopt a very unreal line of reasoning. The simple, straightforward course is, naturally, to take a complete cost account in the different countries for the commodity in question and to examine to what extent the cheapness of production in one country is due to low wage expenses, low interest expenses, low transportation expenses, etc. Then the next step is to go behind these cost items and examine their relation to the quantity of labour employed, the wage level, the quantity of capital employed, the interest level, etc.; in other words, the relations of the cost items to the price system in each country. The orthodox theory does not permit such a simple procedure. First the data must be used to calculate output per manual worker and then the result must be compared with the wage figures in the various countries. In many cases it is then found that the comparative cost table obtained is misleading, as other cost items besides wages differ from one country to another. Then these differences are introduced as "modifications." In other words, one considers first the wage item alone in a somewhat artificial manner, namely by comparing the output of labour per day with the wage, leaving other cost items for later consideration.[1]

The question arises: if these other cost items play a significant part in the determination of the conditions of competition — as they certainly do in many cases — why ignore them in the first instance and make elaborate calculations in terms of output per days of labour[2] when one is obliged to modify the conclusions immediately afterwards by taking account of those items? Had the comparative cost figures been easily obtainable, they might have been used in the absence of more complete figures. In fact, however, the ordinary cost accounts are much easier to get, especially in all industries where several com-

[1] As a matter of fact they are often left out altogether. Even in Taussig's presentation they are unimportant guests invited to come later, with very little right to be present.

[2] Only *current* labour is considered, not past labour.

modities are produced and in different proportions. In an analysis of the coal industry, comparative cost reasoning may be useful, as little harm is done in neglecting other cost items than wages; but what about the dye-stuffs and machinery industries, for example?

Let me now turn to a different question: As is well known, the variations in international trade due to changes in demand, technique, etc. are treated as though the only subject for examination was their effect on the exchange relation between the prices of imported and exported goods. Which country derives the greater benefit from a change in that relation? This question can be regarded as the main problem of the classical theory of international trade.

This attitude is quite natural. Mill starts his discussion of international values by pointing out that only the relative value of commodities produced not far from one another can be determined by cost. It is to be gathered from the context that he is not thinking of geographical distance, but of districts between which factors of production do not move. He regards the different countries as such districts. The value of goods imported into England is not determined by the number of days of labour employed abroad, but (*a*) by the quantity of English goods which go to pay for them and (*b*) by the number of days of labour required to produce those English goods. The last point contains no difficulty. It is only necessary to analyse the first, i.e. the terms of exchange in international trade, as a supplement to the ordinary value theory.

It stands to reason that the mutual interdependence which, according to the modern theory, characterises the price system, does not permit such a procedure. The changes in international trade are not sufficiently explained by an examination of the changes in the terms of exchange only. As already mentioned, changes in foreign demand will change the relative scarcity of production factors at home and thus affect the production and prices even of such commodities as are not subject to international exchange. In analysing the rôle of international trade and tracing its various effects, one should, therefore, examine all aspects of pricing. Even the special question of the advantages of international trade is inadequately dealt with, if one limits the examination to the import and export goods only. The "advantage" of international trade must consist in this: that it changes the whole economic life and enables wants to be better satisfied than in a state of isolation.

Another weak point in the orthodox theory is that it usually reasons on the basis of two kinds of commodities only and for only two different countries. This is indeed a simplification; but it is a very dangerous simplification which leads to unwarranted conclusions. The most

important of them is that, when two countries, hitherto isolated, come into contact, the comparative costs, measured in terms of days of labour, determine which goods will be subject to export and import. This is the case treated by Ricardo in his well-known example of the trade between England and Portugal. As soon as three or more commodities are considered, one must, however, take account of the demand conditions also in order to determine not only the terms of exchange, but also which goods each country is to export.[1] I will explain this more fully by taking a very simple case along classical lines which, however, refers to three different commodities, A, B, and C. These commodities are produced in two countries, Germany and England, at a cost as shown in the table below. The production cost has been expressed in money by assuming — for reasons of simplification — equal wages of $5 per day in both countries.

	A	*B*	*C*
England (wage rate: $5)	8 days of labour = $40	7½ days of labour = $37½	5 days of labour = $25
Germany (wage rate: $5)	9 days of labour = $45	7 days of labour = $35	4 days of labour = $20

In this case the conditions of equilibrium demand that England should export A and import B and C from Germany.

Now, let us suppose that the demand for C increases considerably in both countries, while the demand for A and B decreases. According to the classical reasoning, the result would be an export surplus for Germany causing an import of English gold and thereby a fall in the English price level and a rise in that of Germany. The wage levels in both countries are also subject to changes. Let us suppose that the wages in England sink to $4.50, while in Germany they rise to $5.50. What is the result? The following table will answer the question.

	A	*B*	*C*
England (wage rate: $4.50)	8 days of labour = $36	7½ days of labour = $33.75	5 days of labour = $22.50
Germany (wage rate: $5.50)	9 days of labour = $49.50	7 days of labour = $37.50	4 days of labour = $22

Germany's cost of production for B now exceeds that of England and she will no longer be able to export this commodity. She will import both B and A and export only C. Since the demand for C has

[1] See F. Graham, "The Theory of International Values Re-examined." *The Quarterly Journal of Economics* (Cambridge, Mass.), Vol. XXXVIII (1923–24), pp. 54 ff. This fact has been stressed first by Mangoldt, later by Marshall and Edgeworth. See next page.

increased in England and Germany's demand for A has decreased, a trade equilibrium of this sort is possible.

This highly simplified example shows that, even if one starts from constant comparative costs measured in terms of days of labour, a change in demand can create such changes in international trade that commodities hitherto exported are now imported. International trade does in fact not only depend on comparative cost, i.e. on supply, but also on conditions of demand.[1] The conditions of equilibrium cannot be expressed in terms of technical units as they are purely economic. The condition of the existence of equilibrium is that the value of imports equals the value of exports. One must bear in mind that we have excluded all other international transactions except the exchange of goods. It is only in measuring the value of imports and exports in terms of money that one can take account of the circumstances that determine international trade.[2]

The following is a simple way of demonstrating in classical terms how the conditions of demand determine which commodities are exported and which imported: make out a table of the number of days of labour required in country B to produce the quantities of the different commodities (a, b, c, etc.) which can be produced in country A by 100 days of labour. The comparative cost table then becomes:

	A	*B*
a	100	k_1
b	100	k_2
c	100	k_3
d	100	k_4
e	100	k_5
..	...	..
..	...	..

If the commodities are arranged in such an order that the series $k_1\ k_2\ k_3 \cdots$ is rising, then country B has a comparative advantage in the production of the goods at the top of the table. In accordance with the conditions of demand the goods are divided by a horizontal line into two groups; B exports the goods in the upper group, A those in the lower one. B has a comparative advantage with regard to the former, A with regard to the latter. Note, however, that *any* horizontal line establishes two groups of which this last thing is true, even

[1] See Mangoldt, *Grundriss der Volkswirtschaftslehre* (1863), Marshall, *Money, Credit, and Commerce* (1923), Appendix H, and Edgeworth, *Papers Relating to Political Economy*, Vol. II (1925).

[2] "All demand is demand at a price, and, in theory as in practice, money is the best measure of price." Therefore, "the principle of reciprocal demand seems also to require, for adequate presentation, the conception of price." Nicholson, *Principles of Economics*, p. 299.

though B may import certain goods belonging to the "comparative-advantage-group" or may export goods belonging to the "comparative-disadvantage-group." The position of the line which separates import goods from export goods is determined by the condition that the value of imports must equal that of exports. Hence the comparative cost reasoning alone explains very little about international trade. It is indeed nothing more than an abbreviated account of the conditions of supply.[1] It is only when the conditions of demand and of equilibrium are also considered, that one is able to describe what happens.

It is all very well to say that it is easy to take these demand conditions into account and thus discover which goods will be exported. In fact, however, it is very difficult to do so when many commodities and many countries are considered.[2] For this reason, orthodox economists have usually confined their analysis to two countries and two or three commodities. They have, however, not hesitated to apply to concrete problems the conclusions arising from such an analysis — a thoroughly dangerous procedure. Be this as it may, one thing is obvious, the simplicity and clarity of the orthodox theory is reached at the expense of a close consideration of the demand conditions. When they have to be analysed under the assumptions of more than two commodities and countries this theory proves a clumsy tool.

In this connection, it should also be observed that a comparative cost table tells very little about supply conditions for the simple reason that it is impossible to study supply without introducing demand. The conditions of supply cannot be described in technical terms, irrespective of those of demand. This must be proved below in some detail. In the first place, the cost of producing a commodity depends upon the scale of production. This is not so serious, as a series of cost figures for each commodity — varying with the quantity to be produced — can be inserted in the comparative cost table. Greater difficulties arise in view of the fact that in many cases the process of producing a commodity is divided between several countries. The orthodox theory has, as far as I know, always assumed the contrary, and this, it would appear, for a very good reason — the impossibility of explaining such cases. This will be most clearly seen from an example.

[1] It is often suggested that Ricardo left the theory there and that Mill added the equilibrium analysis through his equation of reciprocal demand. As a matter of fact, however, Ricardo (*Principles*, §§ 51–52, ed. Gonner) presented a penetrating analysis of international price relations, where this equation is really tacitly assumed to exist. There is nothing in this analysis which cannot be easily fitted into a mutual interdependence theory.

[2] Cf. Graham, "Some Aspects of Protection Further Considered," *Quarterly Journal of Economics*, Vol. XXXVII, pp. 199 ff.

Assume that both Sweden and Estonia manufacture cotton cloth. A given quantity of this cloth is produced in Estonia by a given number of workers. The fact that the production takes time is left out of account. We therefore omit any consideration of the capital aspects; nor do we pay any attention to the differences in the wages of the various groups of workers. It would be possible to argue from these premisses — on classical lines — that the production of 1000 meters of cloth of a given quality requires such and such a number of days of labour. These days would, of course, include not only textile labour proper, but also transport and office work, the labour employed in producing the raw cotton, the machines, etc. The same calculation could be made for Sweden, and a comparison according to the classical method could be made.

It has so far been assumed that all the production factors required are available in the country. If, however, the machines are imported from England or Germany (as is usually the case), not only a certain number of Estonian or Swedish workers, as the case may be, but also a number of English or German workers are required for the production of those 1000 meters of cloth. In that case, is a comparison between the relative costs still possible? Artificial assumptions might make it so, if the technique of production is identical in Estonia and in Sweden. If, however, the considerably higher wages in Sweden lead to the use of more, and more expensive, machines per worker than in Estonia, I see no possibility of such a comparison being made. The same quantity of cloth, if produced in Estonia, would require a hundred Estonian and ten German days of labour (the latter in machine industries), and if produced in Sweden, fifty Swedish and twenty German days. Would a comparison on such grounds be of any value? Could one, in such a case, say that the comparative costs determine international trade? If the difference in the rate of interest is introduced, a further difficulty arises: The depreciation costs of capital goods in the two countries become different. In other words, one cannot say how much "embodied" German labour is used up each year in each country, unless the difference in the interest level is considered.

There remains for the orthodox doctrine only one way of escape,[1] namely, to consider the quantity of labour used for the production of the goods exported to pay for the imported machinery (this to represent the cost of this machinery to Sweden and Estonia) and to add it to the quantity of textile labour employed.[2] This procedure does not per-

[1] This way has been pointed out to me by Professor Taussig in private correspondence.

[2] The difficulty arising from depreciation remains. Strictly speaking, however, this belongs to the same group of difficulties as the differences in interest expenses, dealt with in the beginning of this Appendix.

mit the comparative cost conditions to be described until the terms of exchange in international trade are known, the thing which I had to prove. Further, as it is impossible to regard certain individual Swedish or Estonian export goods as exported to pay for the machinery, one has to consider the whole of the international trade of these countries in order to discover the terms of exchange. It is most improbable that either Sweden or Estonia export to Germany the same value of goods as they import from her. How, then, is one to know on what terms one day of Swedish labour is exchanged for German labour? How is one to know how many days of Swedish labour have been used to pay for a machine which embodies 100 days of German labour? The only possible method is to examine how much Swedish labour is used in producing export goods sold abroad for the same sum of money that has been paid for the German machines. The reasoning in terms of days of labour would appear to have failed and an analysis in monetary terms is necessary.

The unpractical reasoning of the orthodox method may also be demonstrated by introducing the costs of transport. The cost tables do not say whether the price difference between two countries for a certain commodity is sufficient to make it flow in spite of the cost of transport. If the transportation is done by a third country, the quantity of labour embodied in goods exported to pay for this transportation must be included in the cost table and different figures of transportation costs in terms of days of labour must be tabulated for each possible export market. In my opinion, the scanty attention given to the question of international — and domestic — transfer relations [1] indicates that it does not easily lend itself to treatment along orthodox lines.

As we begin to make more concrete assumptions than those commonly employed by the classical economists, it becomes evident that a mutual interdependence theory is necessary which can only with the greatest difficulty be expressed in terms of days of labour. As a matter of fact, one gets nowhere except with the assistance of a supplementary process of reasoning in money terms. Why not adopt as a basis the conception of mutual interdependence and conduct our reasoning in terms of money? This procedure does not in the least preclude a later consideration of effort and sacrifice and other factors which contribute to the formation of prices. Such considerations take the form of an analysis of the supply functions of the various productive factors.

I shall pass over the difficulties which one would encounter in analysing such questions as dumping in terms of days of labour instead of

[1] See Parts III–IV in the text.

money. Nor shall I touch upon the orthodox treatment of international price relations, as this question has been briefly discussed in the text.

I should like, however, finally to mention two defects in the orthodox doctrine which are of a different nature: first, the unsatisfactory analysis of the movements of the factors of production. As is well known, the orthodox theory is based upon the assumption that international mobility of capital and labour is practically non-existent. One is, therefore, not a little surprised to find a chapter in Bastable [1] dealing with the international movements of capital, without a single word being said to explain how far these movements affect the fundamental arguments of the foregoing chapters. Several Harvard economists, under the lead of Professor Taussig, have done excellent work in explaining the nature and the effects of international capital movements. They have, however, not analysed the question of whether and to what extent these capital movements necessitate a modification of the theory built on the assumption of the immobility of capital as between countries. In this volume I have made an attempt to do so, i.e. to throw some light on the relation between movements of commodities and production factors.

I must add, secondly, that the labour value reasoning had led to an over-emphasis of wage variations and to a neglect of other income changes, in discussing the *mechanism* of international trade variations and capital movements.[2]

While the importance of the existence of international factor mobility in connection with the theory of international trade does not seem to have been sufficiently appreciated, the assumption of free inland movements errs in the opposite direction. The mobility of capital and labour within individual countries is by no means as complete as assumed by orthodox economists. This part of their theory needs to be completed in view of the division of countries into more or less sharply divided regions and a lack of mobility in general. International trade should be regarded as a special case within the general concept of inter-regional, or perhaps rather inter-local trade. It is only thus that one can claim to have sufficiently elucidated the geographical or territorial element in price formation.

The theory of international trade is nothing but *internationale Standortslehre*. The fact that nobody has attempted to construct a theory of domestic localisation in comparative cost terms would seem

[1] C. F. Bastable, *The Theory of International Trade*. With some of its applications to economic policy. 4th ed. London, 1903.

[2] Viz. Keynes, *A Treatise on Money*, Bk. IV. 1930.

to suggest that a uniform treatment of the whole localisation problem along classical lines would be very difficult.

The classical theory of international trade has been able to clear up a great many problems. To a large extent the contents of this volume are only a re-statement, in a different form, of the orthodox analysis. Even a defective tool may yield great results when employed by a master hand. When applying the classical doctrine, every good economist tacitly makes all sorts of modifications, which enable him to arrive at a fairly correct impression of what is happening. In this, however, I cannot find sufficient reason for not attempting to build up a theory, in the framework of which the circumstances necessitating "modifications" are duly considered. When studying concrete cases, economists sometimes use such expressions as "comparative advantage in the production of these goods" in a loose way, including all sorts of natural advantages, cheap capital, etc., and not in the least thinking in terms of the "effectiveness of labour." This seems to show the need of a theory in terms of money costs. Certainly both to business men and to economic geographers such an approach is more natural than that of the labour value theory.

It is sometimes objected by the defendants of the classical theory that when we come to decide about economic policy it is necessary to consider such things as "real cost" and the circumstances which lie behind it. Hence, only an analysis in terms of real costs, not in terms of money costs, can be used as basis for action. To this it has to be answered that it suffices to consider "effort and sacrifice" and such matters when the theory has to be applied to problems of economic policy. To mix viewpoints which are tinged with normative considerations with the objective analysis cannot contribute to clarity. Further, there are many other things than those involved in the real cost reasoning which have to be considered, e.g. the distribution of income and social and political goals in general. It seems best to consider all these things, e.g. the "desirability" of free trade or protection, under a special heading and not in the objective theory. If a formal income concept is used as in this book, such a theory can, however, describe certain changes in the size and distribution of income which are of interest from the point of view of many different political standards. If, as some writers suggest, real costs are as a rule proportional to money costs, there is every reason for building up the theory in terms of the latter, thus avoiding many difficulties, and then "translating" the conclusions into real cost terms, when questions of economic policy are discussed. If, on the other hand, real costs are not proportional to money costs, it is difficult to believe that the former concept is a practical tool for the study of trade and price problems.

APPENDIX IV

PRICE STATISTICS

TABLE I

THE PRICE DEVELOPMENT IN U. S. A., ENGLAND, FRANCE, AND GERMANY 1890–1910 [1]

(Base period 1890–92)

Year	U. S. A.	England	U. S. A.	France	U. S. A.	Germany
1890	102	101	102	103	102	103
1891	103	102	102	101	104	102
1892	94	97	96	96	94	94
1893	94	95	93	97	93	91
1894	86	87	84	90	82	83
1895	84	87	83	87	82	83
1896	75	85	78	85	77	83
1897	77	86	79	87	79	85
1898	84	90	84	91	85	91
1899	92	97	94	99	85	97
1900	99	109	99	106	100	102
1901	99	100	98	99	98	98
1902	106	98	101	97	104	97
1903	101	98	101	100	104	97
1904	100	99	102	99	104	96
1905	102	103	105	102	108	103
1906	108	110	109	112	111	112
1907	114	115	116	118	120	117
1908	109	105	109	106	113	110
1909	115	106	115	109	117	100
1910	120	112	122	119	119	112

[1] Mitchell, *International Price Comparisons*, Department of Commerce (Washington, 1910), p. 13. Each couple of indices comprises the same commodities. On the other hand the three American indices comprise slightly different groups of commodities.

TABLE II

THE PRICE DEVELOPMENT IN SWEDEN, GERMANY, AND ENGLAND 1881–1912 [1]

(Base period 1861–70)

Year	Sweden	Germany	England
1881–87	82	82	77
1888–92	81	85	71
1893–1905	79	79	67
1906–12	92	98	78

[1] The figures used for the computations are to be found in *Kommersiella Meddelanden* (1921), p. 1266.

TABLE III

THE PRICE DEVELOPMENT IN CERTAIN COUNTRIES 1860–1913
(*Base period 1867–77*)

År	Sverige [1] (Åmark)	Tyskland [1] (Schmitz)	England [1] (Sauerbeck)	Österrike-Ungern [2] (Bela von Jancovitz)	Australien [3] (Knibbs [4])	Nya Zeeland [3] (McIlraith)	År	Sverige [1] (Åmark)	Tyskland [2] (Schmitz)	England [2] (Sauerbeck)	Österrike-Ungern (Bela von Jancovitz)	Australien [3] (Knibbs [4])	Nya Zeeland [3] (McIlraith)
1860	99	95	99	..	..	..	1890	82	86	72	79	79	67
1861	97	94	98	..	..	116	1891	82	84	72	79	71	68
1862	103	97	101	..	..	117	1892	77	77	68	73	69	65
1863	103	98	103	..	..	122	1893	75	74	68	72	63	63
1864	108	100	105	..	..	123	1894	71	67	63	64	56	62
1865	103	94	101	..	..	119	1895	70	67	62	70	57	58
1866	97	96	102	..	..	126	1896	71	67	61	70	69	60
1867	97	97	100	99	..	118	1897	73	69	62	71	69	61
1868	95	96	99	99	..	116	1898	69	73	64	75	67	61
1869	93	96	98	96	..	103	1899	81	79	68	76	60	63
1870	92	94	96	97	..	97	1900	85	85	75	82	67	64
1871	95	99	100	103	92	94	1901	82	80	70	80	73	62
1872	106	109	109	112	100	97	1902	81	80	69	78	78	63
1873	114	114	111	110	108	103	1903	81	81	69	80	78	63
1874	107	105	102	105	104	101	1904	82	80	70	82	66	60
1875	102	98	96	96	100	93	1905	83	83	72	85	68	62
1876	97	96	95	92	101	88	1906	88	90	77	91	71	64
1877	99	96	94	95	98	91	1907	92	96	80	95	76	67
1878	88	89	87	88	91	85	1908	88	91	73	91	83	65
1879	87	81	83	86	90	80	1909	89	90	74	94	74	64
1880	92	90	88	89	83	82	1910	92	91	78	..	75	65
1881	89	88	85	87	84	79	1911	94	95	80	..	75	..
1882	88	85	84	85	96	77	1812	98	105	85	..	87	..
1883	86	83	82	84	88	74	1913	100	..	85	..	..	..
1884	82	80	76	82	84	72							
1885	79	75	72	76	82	70							
1886	75	71	69	72	81	68							
1887	72	73	68	72	79	65							
1888	80	77	70	73	80	65							
1889	80	81	72	76	87	70							

[1] *Kommersiella Meddelanden* (1921), p. 1266.
[2] *Bulletin de l'Institut International de Statistique*. Vol. 19, Part III, p. 156. For the period 1867–96 the index numbers are calculated on a gold basis through a multiplication of the actual figures by the gold value of the paper money.
[3] *Index Numbers of Wholesale Prices in the United States and Foreign Countries*. Bulletin of the U. S. Bureau of Labor Statistics, No. 173, 1915, pp. 165. 300.
[4] Base period 1871–77.

TABLE IV

THE PRICE DEVELOPMENT IN CERTAIN COUNTRIES 1890–1910

(*Base period 1890*)

Year	Denmark [1] (Koefoed)	Japan [2] (Hanabusa)	Russia [3] (Handelsdep.)	India [4] (Atkinson)
1890	100	100	100	..
1891	103	91	99	..
1892	93	105	97	..
1893	93	114	100	..
1894	87	107	92	..
1895	85	117	88	..
1896	86	112	87	..
1897	88	122	90	..
1898	92	128	97	100
1899	96	157	101	96
1900	101	147	107	114
1901	98	131	110	111
1902	100	142	105	102
1903	96	153	102	98
1904	99	147	106	96
1905	101	162	110	107
1906	105	168	119	125
1907	108	183	126	133
1908	103	149	120	143
1909	106	144	122	..
1910	111	..	123	..

[1] *Bulletin de l'Institut International de Statistique*, Vol. 19, del. III, p. 219.

[2] *Ibid.*, pp. 242 ff.

[3] *Index Numbers of Wholesale Prices in the United States and Foreign Countries*. Bulletin of the U. S. Bureau of Labor Statistics. No. 173, 1915, p. 309. For the years 1890–95 the index numbers are calculated on a gold basis in the same manner as in Table IV.

[4] *Ibid.*, p. 282. The base is the year 1898. Before that year the external value of the rupee was rapidly falling.

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