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A SURVEY OF INTERNATIONAL TRADE THEORY

GOTTFRIED HABERLER

Revised and Enlarged Edition

INTERNATIONAL FINANCE SECTION
DEPARTMENT OF ECONOMICS
PRINCETON UNIVERSITY · 1961

This is a revised and enlarged edition of the first number in the series of SPECIAL PAPERS IN INTERNATIONAL ECONOMICS. *The first edition was published in September 1955.*

The author, Gottfried Haberler, is Galen L. Stone Professor of International Trade at Harvard University. Among his publications are: THE THEORY OF INTERNATIONAL TRADE, PROSPERITY AND DEPRESSION, *and* QUANTITATIVE TRADE CONTROLS: THEIR CAUSES AND NATURE.

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FRITZ MACHLUP, *Director*
International Finance Section

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PREFACE TO THE 1961 EDITION

The first edition of this Survey appeared in 1955. It was an enlarged and improved version of an article written in 1952 in German which had appeared in 1954 in Volume I of the *Handwörterbuch der Sozialwissenschaften* (Gustav Fischer, Stuttgart; J.C.B. Mohr [Paul Siebeck], Tübingen; Vandenhock & Ruprecht, Göttingen). I was very grateful to the International Finance Section of the Department of Economics and Sociology of Princeton for suggesting that this article be translated and then published by them. Thanks are also due to the German publishers of the *Handwörterbuch* for generously granting permission to publish the paper in English. The new edition has been thoroughly revised and substantially enlarged.

This paper is an attempt to present in a short space an up-to-date survey of international trade theory, including a short sketch of the monetary theory of the balance-of-payments mechanism. The Survey is confined to a presentation of the theoretical skeleton, with a bare minimum of institutional details and no facts or figures. It is, furthermore, a summary in words, without the aid of mathematics.

The source citations in the body of this Survey have been kept to a minimum, but a selected bibliography has been appended. This is not intended to be exhaustive. Rather, it is designed to include only those items which seem to be of the greatest importance in the development of the particular aspects of the theory discussed here.

The bibliography is divided into sections comparable to sections of the Survey. However, many publications have dealt with several aspects of the matters considered in this Survey and so do not fit neatly into any one section. In such cases, they have been included in Section 1 of the bibliography.

In the new edition, the bibliography has been revised and brought up to date with the help of John Brandl. Section VI has been added containing literature on the Theory of International Trade Policy. Unavoidably, there is considerable overlapping between Section III and Section VI.

G. H.

Cambridge, Massachusetts
April 1961

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I. Introduction

International economic transactions are defined as economic transactions, including financial transactions and capital movements, among independent countries or states. *Foreign* or *international trade,* on the other hand, is defined to mean the exchange among such states of goods and services only. Although the definitions—when framed in this manner—are not stated in purely economic terms and are encumbered by the vagueness of the concept "country" or "state," this need not concern the economist unduly; for we do have a fairly clear notion, at least with respect to recent times, of what is meant by independent "states."

There has been and continues to be much discussion in the economic literature regarding the manner in which foreign trade differs from domestic trade and whether a separate theory of international trade is possible or necessary. Why can we not simply make use of the general theory of production, prices, money, employment, etc., when dealing with foreign trade problems?

Strictly speaking, it is neither possible nor essential to draw a sharp distinction between the problems of foreign and domestic trade.[1] If we examine the alleged peculiarities of foreign trade, we find that we are dealing with differences in degree rather than with such basic differences of a qualitative nature as would warrant sharp theoretical divisions.

The classical economists regarded the international immobility of the factors of production as the most important distinguishing characteristic of international trade. Obviously, this fact alone does not really present us with any sharp distinctions. In the first place, complete mobility of the factors of production frequently does not exist in the domestic sphere either. Secondly, considerable movements of capital and labor often occur across national boundaries. As a matter of fact, both of these situations were recognized by the classical writers, especially by John

[1] In terms of the labor theory of value, however, it is necessary to make such a distinction inasmuch as the prerequisites of this theory, occupational and geographical mobility, clearly do not exist at the international level.

In the course of development of the theory, the artificial separation of international trade theory and the general theory of value and price, of the "theory of international values" and of "domestic values," has gradually disappeared and the theory of international trade has become a part of general theory as applied to international problems. Historically, in that process of assimilation of international trade theory in the body of general theory, the theory of international trade has often been the pioneer and inventor of new analytical tools which later were used for general theoretical purposes. This was especially true in the earlier phases when progress in general theory was still hampered by adherence to tenets of the labor theory of value. In the international sphere the labor theory could not be applied. This explains why the theory of comparative cost has stood up much better than other parts of the old classical theory.

Stuart Mill and Bastable. From this it was then inferred, on the one hand, that where immobility of the factors of production existed *within* a country (Cairnes' "non-competing groups") the theory of international trade would be applicable, and, on the other, where there was capital and labor mobility at the international level, a separate theory of international trade would be superfluous.

It must be recognized, however, that particularly since 1914 national immobility of capital and labor has increased markedly as compared with the second half of the 19th century. This development carries with it considerable economic significance. It is therefore not surprising that even modern writers who are not steeped in the classical tradition repeatedly emphasize this immobility and cite it, for example, as one explanation for the fact that the adjustment process in the balance of payments often functions less smoothly at the international than at the interregional level.

The second most frequently cited distinguishing characteristic of foreign trade is the existence of independent monetary systems. Differences in currency systems usually do coincide with political boundaries, but here too we are often merely dealing with differences in degree. The existence of such independent currency systems may in itself be of varying significance. Under the gold standard, for example, the existence of different currency units is no more than an unimportant technical detail. But variations in currencies which result in independent and different monetary and credit policies and so influence the international movement of capital are of great significance.

A third characteristic often mentioned is the fact that the existence of political boundaries carries with it controls and regulations of international trade and payments, in the form of customs duties, quotas, exchange control, foreign trade monopolies, the more subtle measures of control referred to as "administrative protectionism," and so forth, which do not generally exist in the domestic trade area.

The importance of this factor is obvious, but it is clear that this too does not contribute more than a difference in degree, because on the one hand international trade is sometimes free, and on the other hand there often exist restrictions, though usually milder ones, on trade between regions of the same country.

Fourthly, many authors see the existence of greater geographical distances and the resulting increases in transport costs as the distinguishing characteristic of international trade. Quite clearly, this too is at best only a difference in degree. The implications of geographic distance and transportation cost have not been entirely neglected by international trade theory, but they have been more systematically explored by location theory. The logical relation between trade theory and location theory will be briefly discussed below. (See p. 4.)

The theory of international trade deals with the consequences of all of these alleged differentiating factors. It is therefore not necessary to concern ourselves, especially in a short account such as this, with the question as to which of the enumerated factors is the "essential" distinguishing characteristic of foreign trade.

International trade theory has never been satisfied merely with explaining, but has always aimed at *evaluation* and policy recommendation. Quite frequently concern with problems of economic policy has given rise to innovation and improvement in the theory itself.

Pre-classical writers, particularly the mercantilists, were strongly policy oriented. Classical theory not only served to explain the trade taking place but at the same time also provided the economic justification for free trade ideas. The newer "neo-classical" theory also generally leaned toward the free trade side, but as time went on more and more exceptions to the free trade rules were recognized so that by now, for many theorists, the position of "rules" and "exceptions" seems to be reversed.

A clear separation of explanation and evaluation, of theory and policy recommendation, frequently has been demanded and attempted. Typical of this trend is Ohlin's criticism of the classical theory on the ground that it intermingles in an unacceptable manner "normative considerations" and "objective analysis." That his demand for not just a clear distinction between political evaluation and theoretical explanation, but for actual separation of these two areas by putting them into separate books or chapters, is easier postulated than accomplished is demonstrated by Ohlin himself. Thus, in an early passage of his celebrated treatise,[2] in the midst of "objective theory," he proves in typical classical manner that interregional trade and division of labor results in an increased social product without making it clear that this statement implies a value judgment on his part and is not merely "objective analysis."[3]

The right attitude, I submit, is that one need not shy away from the application of theory to problems of economic policy as long as one recognizes the nature of the value judgments implied. This is the point of view which emerges with increasing clarity in modern welfare economics. In this respect also, the theory of international trade has done valuable pioneering work for modern theory generally. (For further comments on the issue of analysis versus policy, see Chapter VI below.)

A distinction is commonly made between the "monetary" and "pure" (or "equilibrium") theory of international trade. The former deals with

[2] B. Ohlin, *Interregional and International Trade*, 1935, p. 40.

[3] The possible retort that his argument does not in effect imply such a value judgment (an argument which I could not accept) can be answered by pointing out that if this were true the classicists also would not be guilty of such mixing of value judgment and explanation.

the methods of adjustment in the balance of payments and with the determination of exchange rates. The latter abstracts from the monetary mechanism and attempts to describe the conditions of equilibrium in "real" magnitudes. How the two types of theories are interlocked has by no means been fully explained. Similarly, in economic theory in general the logical integration of monetary theory, macroeconomic employment theory, and the theory of business fluctuations on the one hand, and of price and value theory on the other, continues to present us with many unsolved problems. The monetary theory of foreign trade is in part a dynamic theory and is closely related to business cycle theory and to the modern theory of the determination of income and employment levels associated for many with the name of Keynes. The pure theory of international trade, however, is a part of general value and price theory. Furthermore, the classical theory of "comparative costs," and the more modern version which succeeded and elaborated it, are static general equilibrium theories. Partial equilibrium analysis also may be applied to the problems of international economic transactions. The attempt to assess the effect of a customs duty on one commodity on the particular industry concerned (not on the economy as a whole) would be an example of this. There exist only rudiments of truly dynamic analysis in the field of non-monetary trade theory.

The non-monetary theory of international trade occasionally has been identified as a type of *location theory,* for example, by Ohlin. This is correct in a formal sense, since it is one of the major goals of the theory of foreign trade to explain the international division of labor, or, in other words, the geographical location of the various lines of producton. It must be recognized, however, that a different type of location theory, independent of trade theory, has grown up and has reached a high level of refinement. The logical relationship of these two related theories, trade theory and location theory, can be characterized in the following manner: The traditional theory of international trade is at a higher level of abstraction; it treats the separate countries or regions as spaceless points (markets) and abstracts (with occasional exceptions) from the spatial characteristics of the domestic markets and from intraregional transportation costs. Location theory, on the other hand, emphasizes the space factor and operates "closer to reality." For the very reason that it is less abstract, however, this theory has as yet been unable to develop a comprehensive general equilibrium system. It is still largely partial equilibrium analysis. Lösch and Isard have gone further than anyone else in the direction of setting up a general equilibrium system of location. Only when this theory succeeds in developing a system of general equilibrium will the theory of international trade become merely a special case within such a general framework. It would seem advisable to approach this goal from both directions, by giving more

consideration to the space factor and transportation cost in trade theory and by generalizing location theory into a fully interdependent system.[4]

[4] Walter Isard, the most prominent living location theorist, has done more than anyone else to combine trade and location theory in a comprehensive general equilibrium model comprising more than two countries and commodities as well as the space factor ("distant input"). Isard's model is, however, still drastically simplified, highly abstract and formalistic and as yet hardly fit for useful application. Isard admits that traditional location theory is partial equilibrium theory. "For the most part, demand has been taken as given" and emphasis has been on the cost side. Isard is, however, mistaken when he goes on to say that trade theory "has placed greater emphasis on the [demand] blade of the scissors." He overlooks the fact that "reciprocal demand," to which he obviously refers, is just as much a matter of cost as of demand. See Isard and Peck, "Location Theory and International and Interregional Trade Theory." *Quarterly Journal of Economics*, February 1954, p. 105 and *passim*.

II. The Classical Theory of Comparative Costs and International Values–from Hume to Marshall

No attempt will be made here to give an account of the *pre-classical theories*, commonly characterized as mercantilistic. The reason for this is not that the pre-classical literature is without interest to us, nor, as has been claimed so frequently, that one cannot speak of a theory of mercantilism as distinguished from mercantilistic policies. Pre-classical theories offer a great deal that is of interest, and the transition to the classical system is by no means as sudden as brief treatises on the history of doctrines often present it to be. The mercantilists did much indispensable pioneering work for the classical writers. But it is not surprising that most of the mercantilist literature is at a low scientific level compared with the classical writings, and deals to a great extent with economic policy matters rather than with problems of theory.[1]

The pre-classical literature of mercantilism must be divided into strongly divergent national groups and periods. For this reason no short summary of this material is feasible without doing grave injustice to it. We shall, therefore, begin our sketch of the history of doctrines with the classical writers; their work in the area of international trade theory, more than in other fields of economics, forms the basis of modern economic theorizing.

The brightest and best known stars on the firmament of the classical theory of international trade are David Hume, Adam Smith, Henry Thornton, David Ricardo, and John Stuart Mill. Grouped around them are numerous less influential, though in part highly original writers, such as Torrens, Malthus, Blake, Wheatly, Longfield, and Senior.

Hume's contribution to the theory of international trade *(Political Discourses*, 1752) is without question more significant and more original than the work of Smith *(The Wealth of Nations*, 1776), although the latter's influence on economic theory and practice proved much greater. Hume deals primarily with the international monetary mechanism. He not only refutes some mercantilistic errors but also develops the functional relationship, based on quantity theory of money considerations, between the circulation of money, prices, and the balance of payments. In this connection it is interesting to note that he does not overlook dynamic elements. Thus, he admits that during the period of

[1] On the pre-classical literature compare the standard works, by Heckscher, Viner and Wu, for which complete citations are given in Section I of the bibliography at the end of this paper.

transition from one equilibrium to another, following a disturbance in a previous equilibrium situation, an increase or decrease of the quantity of money may well have a temporary influence on the volume of production. This notion later assumed great importance in the work of Malthus and, more recently, in Keynesian theory.

Adam Smith's description of the balance of payments adjustment mechanism hardly goes beyond Hume's theory. However, Smith's refutation of the errors of the mercantilists, as well as his presentation of the advantages of free international movements and the division of labor, is much more detailed and better illustrated with historical examples than are the concise presentations of Hume. This probably explains, to a large extent, the greater subsequent influence of A. Smith.

Henry Thornton dealt primarily with the international monetary mechanism. Together with Hume, he was one of the originators of that version of the classical *transfer theory* which stresses the role of shifts in international price levels as against those transfer theorists who deny the necessity of price shifts and emphasize instead changes in incomes, purchasing power, and (more recently in Keynesian theory) levels of employment. Malthus, John Stuart Mill, and, subsequently, Taussig, and Keynes (in the debate over the German reparations problem), all belong to the school of Hume and Thornton. The other type of transfer theory, originating with Ricardo and Wheatly, which of late has frequently been called the "modern" theory (Iversen), emphasizes changes in "income" and "buying power" (of course, these words make their appearance only much later) and does not consider price shifts as always necessary for transfers. This version was stressed particularly by Wicksell and, more recently, by Ohlin, as well as in the theories based on Keynes' *General Theory of Employment, Interest and Money.*

The pure theory of international trade begins with Ricardo's Theory of Comparative Costs, set forth in Chapter VII of the first (1817) edition of his *Principles.* Parenthetically, it is to be noted that the theorem had already been formulated by Torrens in 1815, who, however, does not seem to have been fully aware of the implications of his idea.[2] According to this theory, under free trade each country will specialize in the production of those goods which it can produce relatively cheaply and import those goods for the production of which foreign countries possess a comparative advantage. Based on the labor theory of value, the theory assumed complete mobility of the factors of production internally and complete immobility internationally. In the strict sense, the labor theory of value assumes that the factor "labor" is the sole means of production. For it, the existence of several factors of production, used in different and varying proportions, results in insoluble complications. (See Section III, below.)

The theory is best illustrated with the aid of Ricardo's famous ex-

[2] See J. Viner, *Studies in the Theory of International Trade,* 1937, pp. 442-443.

ample: In England a gallon of wine costs 120 and a yard of cloth 100 hours of work, while in Portugal the real cost (labor cost) of wine and cloth amounts to 80 and 90 hours of work respectively. Portugal thus has an absolute advantage over England in the production of either commodity, but a comparatively greater one in the production of wine, since $\frac{80}{120} < \frac{90}{100}$. Without trade the internal ratio of the prices of wine and cloth (as expressed in labor, in terms of some "numéraire," or in terms of money) would be proportional to their costs of production, that is, 120:100 in England and 80:90 (or 88.8:100) in Portugal. Thus, cloth is comparatively cheap in England and wine is comparatively cheap in Portugal. After trade is opened between the two countries, England will export cloth and import wine. Ignoring transport costs, an equilibrium price ("real exchange ratio" or "terms of trade") will result which will lie between the limits of 120:100 and 88.8:100. Let us assume, for example, that the equilibrium ratio of exchange is 100:100. If England now specializes in the production of cloth and transfers labor from agriculture into industry, it can produce 1.2 units of cloth for each unit of wine which it no longer produces. These units of cloth could now be exchanged for 1.2 units of imported wine from Portugal—with a resulting net gain of .2 unit of wine for each unit of cloth exported; alternatively, the same quantity of goods produced before trade occurred could now be procured at lower total real costs.

Ricardo's presentation of this theory is extremely compact. He eliminates only few of the numerous simplifying assumptions, most of which are implied in his analysis and are not stated explicitly. A good part of the later theory of international trade has been devoted to the task of stating explicitly and then dropping one by one these simplifying assumptions so as to render the theory of comparative costs more precise and more generally applicable.

Ricardo himself demonstrated how labor costs could be translated into money costs and money prices. To do so, it is necessary to make assumptions about money wages in the two countries and the rate of exchange, and to introduce a condition concerning equilibrium in the balance of payments. In the event of disequilibrium in the balance of payments, money will flow from the deficit to the surplus country, resulting in a change in prices and money incomes in both countries until equilibrium is reestablished.

Thus an integration of the "monetary" and the "real" theory, is, in fact, accomplished although under the much simplified static assumption of "neutral money," in other words, under the assumption that money either does not affect the real magnitudes in the economy at all or does so only temporarily and superficially. It must not be overlooked, however, that the classical writers did not, in effect, make such assumptions in their writings on problems of domestic money and credit policy.

The assumption of constant costs can easily be replaced by a more realistic one of increasing marginal costs. On the other hand, the existence of decreasing costs involves complications of which the classical writers were not fully aware. The difficulties inherent in this situation were overcome only gradually in the course of the development of neo-classical theory.

In the two-commodity case constant comparative costs merely set the limits between which the ratio of international interchange ("barter terms of trade") will fall. Their exact location will be determined by the interplay of the forces of demand and supply. This extremely important addition to the comparative cost doctrine, known as the *theory of international values,* was introduced by John Stuart Mill, although hints of this can also be found in the earlier literature. Mill developed the theory of the demand of a country for the products of other countries expressed in terms of the units of its own exports. In this context, he employed the concept of demand elasticity which has become so important in modern times without, however, actually using the words themselves. Moreover, he also mentioned certain analytical complications (multiple equilibria), as well as economic policy consequences, which could result under conditions of inelastic demand and supply schedules.

The theory of international values was further systematically developed by Marshall with the aid of graphic and analytical methods. Marshall introduced the so-called *reciprocal demand and supply curves.* "Reciprocal" means here that the demand curve of country A for the products of country B is simultaneously A's supply curve of its own exports. These types of demand and supply curves should not be confused with: (a) ordinary demand and supply curves which relate functionally the quantity of *one* commodity supplied and demanded to its *money* price; (b) the so-called export-supply or import-demand curves which present the quantity of exports or imports of *one* commodity as a function of the market price (the b-curves are derived from the a-curves, by subtracting at each price the abscissa of one curve from that of the other, since supply of exports = total supply minus domestic demand, and demand for imports = total demand minus domestic supply); (c) supply curves for total exports or demand curves for total imports, which show the volume of imports and exports as a function of (average) export and import money prices, respectively. The curves mentioned in (c) have recently been employed frequently in connection with the theory of currency devaluation and its influence on the balance of payments (see Section V below). They can be regarded as an average or summation of the curves mentioned in (b).

While (a), (b), and (c) are tools for *partial* equilibrium analysis, Marshall's more complex curves attempt to represent a *general* equilibrium in international trade. Each point along such a curve is in effect a

possible point of equilibrium and each movement along the curve presupposes that the economy of the country concerned has adapted itself to the new equilibrium situation. Edgeworth very aptly compared Marshall's curves with the hands of a watch which are moved by a mechanism lying below the watch face. "A movement along a supply-and-demand curve of international trade should be considered as attended with rearrangements of internal trade; as the movement of the hand of a clock corresponds to considerable unseen movements of the machinery."[3]

Following the tradition of the classical writers, Marshall's model deals with *two countries* and *two commodities*. However, exports and imports are assumed to be composed of a large number of different commodities. The units he deals with are "representative commodity bales," chosen in such a way that each bale contains a constant quantity of labor or means of production in general. The commodity composition of the bales changes not only when the curves shift "autonomously," that is, as the result of technological innovations, but also in consequence of equilibrating adjustments, individual commodities shifting from the import to the export side and *vice versa*. These constructions still betray the influence of the labor theory of value and of the "real costs theory"; they are far from precise and obscure highly complex index number and aggregation problems.

A number of writers have attempted to extend the classical theory of comparative costs to the situation in which there are *several countries* and *several commodities*. The most important of these were Mangoldt (whose theory has been made familiar in the English literature through the summary given by Edgeworth and Viner), and more recently, F. D. Graham and August Lösch. The latter's position, however, is primarily a critical one with respect to the classical theory. Graham too, of course, has been critical of what he calls the "classical theory," but he is better characterized as "ultra-classical" than "anti-classical."

Under the assumption of constant cost, it is not difficult to imagine that all goods that could enter into the international trade between two countries are listed in the order of their comparative advantage to one of the countries. It can then be shown that in equilibrium exports and imports must be divided in such a way that each country will possess a comparative advantage with respect to all its exports and a comparative disadvantage with respect to all its imports. It is true that in this case, in contrast to the two-commodity model, the composition of exports and imports can no longer be determined purely on the basis of the cost data alone.[4] If we assume, for example, that foreign demand

[3] F. Y. Edgeworth, *Papers Relating to Political Economy*, Vol. II, 1925, p. 32.

[4] It is interesting to observe that the modern theory of "linear programming" or "activity analysis" has taken up the constant cost model of Ricardo. The starting point was Graham's extension of the Ricardian theory into many-country and many-commodity models. Graham's laborious arithmetic examples have been gen-

for a country's exports increases, we would find that this leads generally not merely to an improvement in the international terms of trade but also to a change in the composition of imports and exports as well. Certain commodities which were previously exported will now be imported or, if we take account of transport costs, goods which previously did not enter foreign trade but whose price was close to the import point, will now be imported. By import point we mean here that price above which it becomes profitable to import the commodity involved, analogous to the gold import point in the theory of foreign exchange rates. The export point, on the other hand, is that price below which the commodity involved will be exported. The spread between export and import points is determined by transport costs in the broadest sense of the term.

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eralized with the superior tools of linear programming. (See the papers by Whitin and McKenzie, Section III of the attached bibliography.) This strikingly illustrates the basic continuity of theoretical development.

III. Modern Developments of the Pure Theory

One of the major objections to the classical theory has always been that it assumes labor to be the sole and universal factor of production and endows it with complete mobility. This is a fatal defect for it is after all perfectly clear that there are not one but many factors of production and that many of these are quite immobile in space or amenable only to *specific* uses, that is, can be utilized in only a limited number of ways. Even the factor "labor" is neither homogeneous nor mobile as between occupations or localities, particularly in the short run. One method frequently used to overcome this difficulty has been to speak not of labor but of "productive resources" in general. This may be acceptable as a shorthand form of expression, if based on a satisfactory theory, but not as a solution of the problem.

Among modern theorists, Taussig and Viner are the only ones who couch their arguments in terms of a *"real cost theory"* of value, but not a simple labor time theory. By real costs the classical writers meant, in Viner's words (*Studies,* p. 492), "all subjective costs directly associated with production. The irksomeness of labor, whether in comparison with leisure or with some other kind of labor, and the 'abstinence' associated with voluntary postponement of consumption ["capital cost"] were for them the important real costs." Defined in this manner, Viner feels that he is able to show that, as a rule, money costs and prices tend to be proportional to real costs. He concedes, however, that there are certain kinds of costs—he speaks of land costs as an example—which do not involve subjective cost. In order to vindicate the real cost theory it must be assumed either that all inputs involve subjective cost (disutility) and that their prices (remuneration of different kinds of labor) are proportional to the disutility involved, or that the proportion in which different types of labor and other inputs are used are at least approximately the same in different industries. Neither one of these alternatives can be regarded as representative of the real world and it is therefore not surprising that the real cost interpretation of the classical trade theory has found so little support in modern literature.

Instead of the artificial assumptions underlying a "real cost theory," it is now the general practice to apply either the concept of opportunity costs or the modern theory of general equilibrium to the problem of international trade. Basically there is no contradiction between these two methods. The doctrine of opportunity costs, when carried sufficiently far beyond the initial simplifying assumptions and elaborated more fully merges into the theory of general equilibrium. The former theory

can thus be looked upon as a somewhat simplified version of the latter, designed for easy presentation and practical use.[1]

The Ricardian example of trade between England and Portugal can be interpreted in terms of the theory of opportunity cost without wrecking Ricardo's reasoning and objectives. The explanatory function of the labor theory of value is to determine the price ratio, or, put in reciprocal terms, the exchange ratio between the two commodities. It also has the purpose of showing that the two commodities can be substituted for each other in proportion to their costs by means of a shift in production; that is, by a transfer of the means of production (labor). If it were possible to show, without making the unacceptable assumptions of the labor theory of value, that the exchange ratio (price ratio) in the market and the rate of substitution coincide, the conclusions of the classical writers regarding the advantages of international trade would remain intact. And it can indeed be proved that, under certain "ideal" conditions, even if we assume the existence of a large number of more or less immobile and specific factors of production, the exchange ratio between any two commodities will be equal to the marginal rate of substitution between them. These required conditions are identical with those which usually underlie general equilibrium theory: free competition in all commodity and product markets as well as the absence of so-called "external economies." Under such conditions, com-

[1] Viner distinguishes (*Studies*, p. 520) between the opportunity cost approach and an "outright income approach" and says that the former has no obvious advantage over the latter. To my mind there is no such difference. The opportunity cost theory *is* an outright income approach. True, income in the first approximation is defined in terms of only two commodities. But this simplification is obviously dictated by the difficulties of handling many dimensions. It is a drastic simplification, but no more so than those of Ricardo's famous example or of any representation of such complicated relationships by means of two-dimensional graphs such as Marshall's curves.

The dispute between these various "approaches"—"real cost," "opportunity cost," "income approach"—is no longer a live, substantive issue—if it ever was one—but is in a sense a semantic snare. However, for a good recent discussion of these issues, see J. Vanek, *Review of Economic Studies*, 1959.

Most writers agree more or less on what factors are, in principle, important. But since a truly general equilibrium system, involving as it must many variables, is not easy to handle, for most economists it becomes necessary to make drastic simplifications. Differences may then well arise as to which factors should be introduced explicitly and which ones be thrown, provisionally at least, on the *ceteris paribus* dump. For example, in opportunity cost theorizing it is usually assumed that the supply of factors of production is constant and inelastic with respect to price. For labor this is clearly not true. But this assumption is obviously made for the purpose of facilitating the presentation and it can be easily dropped, though at the price of a much more cumbersome presentation. (For example, the elegant box diagram with the help of which Stolper and Samuelson derive the transformation curve from production functions presupposes constant factor supply.)

Another example is provided by the fact that the opportunity cost theory abstracts from differences in disutility ("irksomeness") of different kinds of labor—a circumstance that is treated explicitly and with emphasis by the real cost theorists. Clearly, it may be an important factor, which must not be neglected, especially

modity prices equal "private" marginal costs expressed in monetary terms; the price of each factor of production is equal to the money value of its marginal product; and the ratio of "private" marginal costs of any two commodities is equal to their "social" rate of substitution or transformation.

These conditions will of course only be approximated and will at best be satisfied only in the long run. They are not satisfied, for example, if commodity and factor prices (wages for example) are determined monopolistically, are fixed by the government, or are otherwise inflexible. Parenthetically, it is to be noted that rigid prices should not be identified with monopoly prices, for only in certain cases—kinked demand curve—is the monopoly price a rigid price.

Assuming "ideal" conditions as defined, a general equilibrium will result under free trade, ignoring transport costs, in which the international terms of trade are equal to the social rate of substitution between the two commodities in each of the two countries. These conditions correspond to the optimum requirements of modern welfare economics. "Optimum" is not used in an absolute sense but in the same ("Paretian") sense in which free competition is said to result in an optimum allocation of the factors of production as compared with monopoly. (Modern theorists like to speak in this case of "efficient" production, meaning thereby that if those conditions are not fulfilled it is always possible to produce more of some commodities without reducing the output of any other, or to produce the same output with a smaller input.)

It can further be shown that deviations from the competitive ideal, or the existence of external economies, result in a deviation of the free trade position from the obtainable optimum in the sense explained. This provides us with a theoretically valid argument justifying certain departures from a free trade policy. To mention merely one example, let us assume that a certain industry is exposed to foreign competition. If wages are rigid and workers become unemployed instead of accepting a wage cut or of being transferred to other industries, the prerequisites for free trade no longer exist. In such a case, a certain amount of protection *may* be economically justified.

For the standard case involving two countries and two commodities all of this can easily be demonstrated with the aid of graphic methods. Our major analytical tool is the so-called substitution, production possibility, or transformation curve. This curve shows the largest possible

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when evaluating the welfare implications of international trade. Economic welfare and national income cannot be defined solely in terms of utility of output; disutility of input must not be forgotten. (But it should also be remembered that a positive value or utility may attach to labor input; the utility of leisure is not only diminishing but may be even negative from a certain point on.)

But it is only fair to add that the opportunity cost theorist regards his definition of income in terms of commodities only as a first approximation. He relegates other dimensions of welfare to verbal qualifications and *ceteris paribus* clauses.

alternative combinations of the two commodities which can be produced with the available factors of production, or more precisely, the maximum amount of one commodity for each preassigned amount of the other. Assuming that there are only two inputs, the transformation curve can be derived from the production functions for the two commodities (see Samuelson and Stolper). Such a derivation makes the theory of international trade an integral part of the general theory of production.

Another frequently used concept is that of a community *indifference curve,* first introduced into the theory of international trade by Edgeworth. More recently Kaldor, Leontief, Lerner, and Scitovsky have employed this tool of analysis. Through it the theory of international trade is closely linked to utility and consumption theory. It is important to note, however, that strictly speaking it is not acceptable—although it is often done even by first-rate theorists—to apply simple indifference curve analysis as a tool for purposes of explanation or of evaluation with respect to individualistically organized economies as if it were nothing but a somewhat more complicated replica of a single firm or household.

We are dealing here with the old problem of social or collective utility. Although attempts have been made to grapple with the problem of drawing indifference curves for a community or society rather than an individual (Scitovsky and Stolper), we are still far from a satisfactory solution. The literature of modern welfare economics is, however, beginning to show the first signs of a successful clarification of the problems involved here.[2]

Pareto attempted to apply the methods of the Lausanne school to international trade problems, but he did not get beyond a more or less formal equation system which can hardly be used for purposes of analysis. Yntema in 1932, on the other hand, produced an excellent mathematical reformulation of the classical theory, particularly of the balance of payments mechanism. Twelve years later Mosak, using more modern methods of analysis, based on the Hicksian theory of general equilibrium, further generalized and refined Yntema's work. More recently attempts at synthesizing, summarizing, and simplifying certain areas of trade theory have been made by Meade (*A Geometry of International Trade*), Harry Johnson (*International Trade and Economic Growth* and *Economic Journal,* March 1960) and R. A. Mundell (*American Economic Review,* March 1960 and *Quarterly Journal of Economics,* May 1960).

[2] In a paper in the *Quarterly Journal of Economics,* February 1956, Professor Samuelson presents what may well be a definitive clarification of the problem of "community indifference curves." He proves conclusively that it is *impossible* (except in a singular case) to derive from individual indifference maps a group indifference map which permits the derivation of offer or demand curves of the group in the same manner as an individual's offer or demand curve can be derived from his indifference map.

Ohlin, in the tradition of the Swedish school (Wicksell, Cassel, Heckscher), also attempted to apply general equilibrium methods in international trade. His work, however, differs from that of Yntema and Mosak and the other authors just mentioned because he regards his theory not as a generalization and amplification of the classical theory, but as a radically different approach. However, his disagreement with classical theory is, in reality, mainly with the labor theory of value and with the alleged intermingling of normative with explanatory considerations, as noted earlier.

Ohlin begins by setting up a model of two "regions" which, however, do not differ from the "countries" in the classical theory for he defines regions as areas within which factors move freely while they cannot cross regional boundaries.[3] From the start he assumes the existence of many commodities and many factors of production. He also posits a certain rate of exchange, since without such a rate prices in the various countries could not be compared. Each region will now specialize in the production of those commodities which it can produce more cheaply in terms of money, but not necessarily in terms of labor or other real units. Ohlin then discusses the circumstances which determine the comparative costs of production in money terms, that is, relative price structures. He considers the most important determinant to be the differential endowment of various regions (countries) with factors of production, taking into account not only different amounts of such factors of production as land, climate, natural resources, but also differences in the quantities and qualities of capital and labor, the influence of social institutions, and so forth.

Even assuming that two countries are equally endowed—both absolutely and relatively—with all kinds of factors of production, their price systems could still differ and thus render an exchange of goods between these two countries both possible and profitable. This would be the case if the structure of demand in the two countries were not identical and this might result either from a different distribution of income or from a different pattern of tastes. Moreover, even if all prices were equal before trade, trade could still take place if the increase of the area of trade resulted in economies of scale through large-scale operations.

Ohlin discusses all of these and many additional circumstances not only in an abstract static sense but also from a historical and dynamic point of view. For example, he demonstrates how the supply of the factors of production and the structure of demand, as well as the underlying taste pattern, might be changed through the influence of international competition and trade and that it would therefore be incorrect simply to assume these data as given. Many examples from economic history and commercial geography lend a good deal of realism to his

[3] He does, it must be noted, discuss in later chapters international factor movements and the interaction between factor and commodity movements.

theory; but there is also a certain amount of vagueness, obscurity or even apparent (uneliminated although possibly eliminable) inconsistencies and contradictions. His imagination, intuition and vision outrun his capacity for systematic, precise, theoretical presentation—which is true of every empirical scholar worth his salt.

An interesting problem which Ohlin studies, building on Heckscher, concerns the tendency toward the international equalization of the prices of factors of production under free trade—the so-called *Heckscher-Ohlin law of factor price equalization.* An example of this is the well known theorem that the exchange of goods between agricultural and industrial countries will tend to result in an increase in the previously relatively low level of land rents and a drop of the high level of industrial wages (relative to rents though not necessarily also in absolute terms) in the agricultural country. In the industrial country, on the other hand, the opposite change in factor prices occurs. Ohlin claims that actually only a *partial* equalization of factor prices will take place; excepting special cases, complete equalization of factor prices could occur only if the factors of production themselves were freely mobile internationally.

This problem has been assiduously discussed during the last ten years. Independently of each other, both Lerner and Samuelson came to the conclusion, to their own surprise, that under certain assumptions free trade in commodities will result in *complete* equalization of the prices, both absolute and relative, of all factors of production as between the trading countries. This proposition was further developed by Tinbergen, Meade, and Laursen. It would thus seem that free trade may be a complete and not merely a partial substitute for free international mobility of labor and other factors of production.

This conclusion is at variance with the old classical theory of international trade. It is implicit in the Ricardian theory of comparative cost that free trade equilibrium is perfectly compatible with large and lasting differences in real wage or per capita real income levels; in other words, factor prices are not equalized by free commodity movements except perhaps in special cases. It is necessary to stress this fact because some writers (especially G. Myrdal) have criticized classical trade theory on the ground that it predicts equalization (or at least a tendency towards equalization) of real income levels resulting from international trade, while in reality the statistical record shows, it is said, an increase rather than a decrease of inequality of per capita real income as between poor and rich, developed and underdeveloped, primary producing and industrial countries.

This is not the place to discuss whether and in what sense international income inequality has in fact increased. Suffice it to say that classical trade theory does not teach that international trade must neces-

sarily operate so as to benefit the poor countries more than the rich.

Myrdal's strictures apply to the special theory associated with the names of Samuelson and Lerner to the effect that free commodity trade is a perfect substitute for free international factor movements, and not to classical or neo-classical trade theory in general.

But even if directed against this special theory, the criticism misses the point because it ignores the fact that according to that theory factor prices are equalized by free commodity trade only under very special assumptions. These assumptions go far beyond what we called above "ideal conditions" (free competition and absence of external economies); in fact, they are so restrictive and so unrepresentative of actual reality that the theory can be said to prove the opposite of what it seems to purport to say—namely, that there is no chance whatsoever that factor prices will ever be equalized by free commodity trade.[4]

Briefly stated, the assumptions under which free commodity trade equalizes factor prices are as follows: (1) free competition in all markets; (2) absence of transportation cost, hence equality of all commodity prices as between different countries or regions; (3) all commodities continue to be produced in both countries after free trade has begun, in other words, that specialization is incomplete[5]; (4) the production functions in both countries are identical and homogeneous in the first degree, that is, a given uniform percentage change in the quantity of all inputs results in an equal percentage variation in the resulting output; (5) in addition, the production function must be such that one commodity is always labor intensive and the other always capital intensive whatever the relative supply of factors and the ratio of factor prices; (6) the factors of production are qualitatively the same in all countries, although they are available in different quantities; and (7) the number of factors is not greater than the number of commodities. In a two-commodity model, for example, there could be no equalization of factor prices (except by chance), if there were three or more factors.

Making these assumptions, the Lerner-Samuelson theory can be proved somewhat like this: If under free commodity trade all prices of the factors of production in the two countries were *not* equal, then all costs and commodity prices could not be equal. This follows from the assumption that all commodities are actually produced in both countries and that costs only depend on the *relative* quantity of the inputs and not on the scale of output—the assumption of homogeneity of the

[4] What one can perhaps hold against the first proponents of the theory is that they were not fully aware of the restrictiveness and unreality of the assumptions they had to make in order to demonstrate the equalization of factor prices under free trade.

[5] In a two-commodity model that condition may not seem overly restrictive. But in a multi-commodity model, it means that each commodity is produced in all countries. In this context, the condition becomes very unrealistic indeed.

production functions. Under free trade, however, and ignoring transport costs, commodity prices in the two countries would have to be equal.

As Samuelson and, before him, Viner have emphasized, the fourth prerequisite, identical production functions, is anything but self-evident, for it implies not only identical technical knowledge, skills, and so forth, but also identical climates, physical and social conditions, and so on.[6]

We must thus conclude that the Lerner-Samuelson theory, though formally correct, rests on such restrictive and unrealistic assumptions that it can hardly be regarded as a valuable contribution to economic theory. Its elegance and pedagogic value, as well as its importance as a precise presentation of all the implied assumptions, are however in no way affected by this fact. Ohlin's more modest and somewhat unprecise contention, of which he himself admitted the possibility of exceptions, to the effect that trade will tend to bring about a partial equalization of factor prices would, however, seem to be valid as an empirical proposition.

We are confronted here with an example of a frequent dilemma in theoretical research.[7] If, on the one hand, we base our analysis on more or less realistic assumptions, we have to be content with rather uncertain and at best approximate results. If, on the other hand, we are looking for unambiguous results, we are forced to make highly specific, and, usually, not generally applicable assumptions, or, at any rate, assumptions that are difficult to prove.

The same general comment applies to a proposition developed by Stolper and Samuelson, later qualified by Metzler, dealing with the *influence of international trade on functional income distribution.*

Numerous classical and neo-classical writers, including Bastable,

[6] Ohlin thought it self-evident that the production function is everywhere the same; this, he said, followed from the fact that the same causes everywhere (and at any time) produce the same effects.

However, if the concept of the production function is to be a useful tool of analysis, it cannot be identified with, or derived from, such unverifiable metaphysical propositions as "the constancy of the laws of nature." As Samuelson has suggested, the concept of the production function should be conceived in terms of well defined, variable (although not necessarily infinitesimally divisible) inputs, leaving milieu and climate (both social and physical), factors *extra commercium,* outside the function. By hypostasizing every conceivable circumstance which may affect output as a separate factor, the production function can, no doubt, be endowed with constancy, invariance, homogeneity, and what not, but at the price of emptying the theory of all empirical content and reducing it to a useless tautological system.

[7] Strictly speaking, the dilemma is always there. Einstein's famous dictum about mathematics applies to all theory: "Inasmuch as mathematical propositions refer to reality they are not certain, and inasmuch as they are certain they do not apply to reality." However, the degree of uncertainty may be so slight in some cases that for practical purposes we can speak of certainty.

Wicksell, Taussig, and Viner, have dealt with the effect of international trade, and the results of a reduction in tariffs, on the income distribution in general and on the level of real wages in particular. For economic policy this problem is of great interest, for one of the most powerful protectionist arguments has always been that under free trade the wage levels in wealthy countries will be depressed by competition from poor countries with low wages. That this argument in its crude form is untenable and is disproved by the theory of comparative cost has been generally recognized. However, doubts arise as soon as one turns away from the simplified model of the classical world and assumes instead the existence of numerous, in part immobile, or highly specific or specialized factors of production. The results of older theorizing can be summarized as follows: The incomes of the owners of specific factors of production in the export industries are affected favorably by international trade; in the import industries they are affected unfavorably. Thus, in agricultural countries rents will increase under free trade while the opposite will occur in industrial countries. The same applies in the short run to "quasi-rents" (incomes from durable capital goods) and to the wages of specialized labor groups. The situation is more complicated for mobile factors of production, such as, for example, labor and capital in the long run.

Wicksell, Pigou, and Viner have pointed out that free trade may shift the distribution of incomes against wage earners if the export industries are less labor intensive than the import industries. It is even conceivable that labor's share in the social product falls more than the social product itself increases, with the result that labor income would fall in absolute terms.This, however, is regarded by them as improbable and, in any case, would only be a possible and not a necessary result.

Samuelson and Stolper on the other hand believe they can unambiguously demonstrate that the relatively scarce factor of production will suffer absolutely under free trade—not only relatively in the sense that its share in the larger product will decline. This would apply, for example, to the labor factor in a thinly populated country, such as the United States during the nineteenth century. Conversely, the classical writers found a strong supporting argument for free trade in the fact that in the densely populated older countries the distribution of income would, under free trade, be altered in favor of the workers at the expense of the landowners. Stolper and Samuelson affirm that their result contradicts the "traditional" theory.

This contention is, however, misleading. As stated by the two writers themselves, their unambiguous conclusion strictly holds only under the unrealistic and highly restrictive assumptions of two factors of production and the production of all commodities taking place in each of the two countries after trade has been opened—that is, incomplete specialization. The theory thus would not apply to what would seem to me a

more realistic model with three or more factors of production, for example, a model with one factor specific for export industries, another specific for the import industries, plus two or more transferable ones.[8] What we called above the results of traditional theory would seem to be reasonable for this model.

Some of the issues here involved have recently been pushed beyond the area of theoretical speculation into the field of statistical measurement. In an econometric article that immediately acquired fame and caused a great deal of puzzlement, Leontief has put his input-output machinery to work and reached the conclusion, apparently to his own surprise, that United States exports are labor intensive and imports capital intensive. ". . . an average million dollars' worth of our exports embodies considerably less capital and somewhat more labor than would be required to replace from domestic production an equivalent amount of our competitive imports. America's participation in the international division of labor is based on its specialization on labor, rather than capital intensive lines of production. In other words this country resorts to foreign trade in order to economize its capital and dispose of its surplus labor, rather than *vice versa.*"[9]

These findings are *prima facie* astonishing because nobody doubts that compared with the rest of the world the United States is a capital-rich country in the sense that per worker more capital is used in the American economy than in almost all foreign countries. This holds for the economy as a whole as well as for most individual industries compared with similar industries abroad. One would therefore expect that America has a comparative advantage in, and exports the products of, those industries which use much of the abundant factor—capital—and imports the products of those industries that use much of the scarce factor—labor, except if by chance tastes are different compared with abroad so as to offset the influence of differences in factor endowment.

The factual findings themselves will not be called in question here, although some doubts have been raised in the literature on that score. A few observations will be offered on how Leontief's results can be reconciled with traditional theory, an issue hotly debated by Ellsworth, Valavanis-Vail, and others.

I suggest that the circumstance which some critics, especially Ellsworth, have overlooked, or whose far-reaching implications they have not sufficiently realized, is that Leontief operates not from a two-factor model (as a large part of the theoretical literature does) but from a many-factor model. Capital for him is not a catchall for everything that

[8] This implies, of course, that the production function in terms of the transferable factors alone is not homogeneous. Decreasing returns to scale in both industries would seem to be a reasonable assumption.

[9] W. Leontief, "Domestic Production and Foreign Trade: The American Capital Position Re-examined," *Proceedings of the American Philosophical Society*, September 1953, p. 343.

is not labor, but is defined as produced means of production, plant and equipment, buildings, goods in process and inventories. In addition to labor and capital there exists a variety of other factors, including "natural resources," "management," and "entrepreneurship." These other factors are so heterogeneous in quality and so difficult to identify and measure—the line between quantifiable inputs and "milieu" or "atmosphere" is not easy to draw—that Leontief has found it impossible as yet to include them in his statistical measurements.

The existence of factors other than those explicitly treated implies that the production functions, *in terms of labor and capital,* are not necessarily homogeneous and that the production functions are not the same in different countries. (Leontief's statistics refer exclusively to the United States.)

Leontief himself tries to reconcile his findings with the postulates of traditional theory, which he fully accepts, by assuming that American labor is so much more "productive" than foreign labor that, if labor supply is measured in "efficiency units" rather than man-years, the United States may well be rich in labor and poor in capital compared with the rest of the world.

It is important to be quite clear what is meant by high labor productivity in this context. It is not simply the fact that output per man-hour is high; this might be entirely due to the large capital stock and hence could not explain why the United States exports are labor intensive commodities. On the other hand, if the higher productivity of labor in the United States was simply the reflection of superior skill, better education, better discipline, reliability, and so on of the American worker, it would be capable of providing a logically acceptable answer to the problem. But as compared with other industrial countries this kind of superiority of United States labor is hardly sufficiently large—if it exists at all—to bear the whole burden of the explanation. The factor stressed most by Leontief is another one. American labor is superior because of the superiority of cooperating factors *other than capital,* namely: management, entrepreneurship, and natural resources. This surely helps to provide a theoretically acceptable reconciliation between the statistical findings and the postulates of traditional theory.

There is, however, still another explanation which overlaps and supplements Leontief's explanation. It could be that import competing industries in the United States are comparatively capital intensive because United States capital is a better substitute for foreign natural resources than United States labor. An extreme example cited by Leontief himself can serve as illustration. If the United States were to produce tea or coffee it would require great amounts of capital in the form of hothouses to make up for the lack of suitable soil, climate and other natural resources which favor the production of these things in foreign countries.

The existence of other factors in addition to labor and capital destroys the symmetry which exists in theoretical two-factor models: From the fact that the United States exports labor intensive commodities it no longer follows that other countries export capital intensive commodities. In view of their different endowment with natural resources and other non-labor and non-capital factors what is, or would be, a capital intensive industry here—coffee production for example—may well be a labor intensive industry aboard.

In general, we may say that with many factors of production, some of which are qualitatively incommensurable as between different countries, and with dissimilar production functions in different countries, no sweeping *a priori* generalizations concerning the composition of trade are possible.

IV. The Terms of Trade

Of great importance in the recent theory, as well as in economic policy discussions, is the concept of "the barter terms of trade" or "the real ratio of international interchange," the "commodity terms of trade" for short. It has become customary to distinguish between several types of such terms of trade. If, in the Ricardian example, the terms of trade work out as one gallon of wine exchanging for 0.89 yards of cloth, the outcome is very advantageous for England. If one gallon of wine exchanges for 1.20 yards of cloth, then Portugal is highly favored. In such simple cases, where we are dealing with only two commodities and with constant costs, the terms of trade are easy to define and to compute. Moreover, the measure has a double meaning in such a case: (a) It refers to the *commodity terms of trade*, that is, the terms under which two commodities are exchanged; and (b) it refers to the *factoral terms of trade*, that is, the ratio at which English and Portuguese labor, or the factors of production generally, are exchanged for each other.

Once we consider many commodities, the possibility of a changing composition of exports and imports, and historical changes in cost, the terms of trade concept loses its precision. Moreover, (a) and (b) then may differ from each other and we are confronted with complicated problems of measurement involving the use of index numbers. Only the commodity terms of trade are readily measurable and currently computed in most countries, although in recent years several attempts have been made to evaluate statistically changes in factoral terms of trade of a few countries during a few selected periods. In contrast to the ready availability of the commodity terms of trade and the extreme paucity of information about the factoral terms of trade, many economists prefer the latter for purposes of analysis and evaluation. Thus, the factoral terms of trade form the basis for Marshall's theory, since his REPRESENTATIVE BUNDLES OR BALES OF COMMODITIES are chosen in such a manner that each contains a constant quantity of "productive resources" and Robertson calls the double factoral terms the "true" terms of trade.

The commodity terms of trade can be calculated by dividing the index of export prices by the index of import prices. But in order to find the factoral terms of trade, the index of export prices has to be multiplied by a productivity index indicating by how much the input of factors per unit of exports has changed. Let us assume that the export price index is 1.10, or, in other words, that the average price of export goods has risen by 10 percent. Let us further assume that the productivity index is 1.05, or, in other words, that output per unit of input, per hour of labor for example, has increased by 5 percent. Each unit of exports thus contains less labor and the index of export prices of the factors of pro-

duction will be 1.10 x 1.05 = 1.15. In other words, the export price of the factors of production has increased by 15 percent over the base period, the price of a Marshallian bale expressed in money has gone up by 15 percent.

If we assume further that import prices remained unchanged, we would then have an improvement of 10 percent in the commodity terms of trade and of 15 percent in the *unilateral or single factoral terms of trade,* that is, one unit of labor exported buys 15 percent more import goods. If we multiply the import price index of 1.0 by the foreign productivity index of, say, 1.1 and divide the two corrected price indices by each other (1.15:1.10 = 1.05), we have the *bilateral or double factoral terms of trade.* That is to say, one hour of exported labor now buys 5 percent more foreign labor hours than in the base period.

The factoral terms of trade, either single or double, are extremely difficult to calculate in practice, because the concept of a "unit of productive factors," and thus that of a productivity index, is almost impossible to define operationally and to measure statistically. The mention above of units of labor hours was only for the purpose of elucidation, it was not meant to imply that we can ignore all the other factors of production or the existence of heterogeneous types rather than of a homogeneous quantity of labor factor.[1]

There is nonetheless a good reason why, in spite of all this, the concept of factoral terms of trade is still preferred by many economists. The interpretation of historical changes, especially those in the long run, depends to a large extent on the particular circumstances and causes which give rise to them. For example, it is customary for the so-called underdeveloped countries to complain that, apart from some temporary interruptions, the commodity terms of trade have shifted to their disadvantage since the 1870's. In other words, they assert that world prices of raw materials and agricultural products have fallen relative to those of finished products. Even assuming that the facts are correct, which we will not examine here, it does not follow at all that these countries are any worse off today or that they derive less advantage from international trade than previously, or that the changes which led to the alleged deterioration of their terms of trade have adversely affected them. This would depend on the nature of the causes of the deterioration in the trade terms.

Suppose that the commodity terms of trade have become less favorable for country A because, for some reason, B's demand for A's goods has decreased. This might happen because B's national income has

[1] However, recently ingenious and daring attempts have been made actually to measure, or at least to indicate the order of magnitude, of changes in the single factoral terms of trade, in terms of labor, by the method of dividing the merchandise terms of trade by an index of output per head in the production of exports. See, for example, Ely Devons, "Statistics of United Kingdom Terms of Trade" in *The Manchester School,* September 1954, pp. 258-275.

temporarily or permanently fallen, or because B's import industries have either matured or are receiving greater protection than before, or because third countries are competing with A in B's market. In these cases a deterioration in the terms of trade is without question unfavorable for A. Clearly, not only the commodity terms but also the single, and perhaps the double, factoral terms have shifted against A.

Another possibility would be that the productivity of A's export industries has increased and they are therefore able to supply their products more cheaply. In this case the change of the commodity terms of trade against A is evidently more favorable (or less unfavorable) than in the former case. If the unfavorable shift in the commodity terms of trade has not been greater than the increase in productivity (which, in turn, would depend on the elasticity of foreign demand) then A's situation is better than it was before the change occurred. This is precisely what is meant by saying that the (single) factoral terms of trade have not deteriorated. It would, of course, have been still better if a high elasticity of B's demand had prevented any deterioration of A's commodity terms of trade, entailing an improvement in the factoral terms of trade.

A fall in transport costs is a special case and this development has in fact played an important role in the historical example mentioned above. For example, lowering of freight costs between the La Plata harbors and Liverpool would make it possible for both the English and the Argentine terms of trade to improve simultaneously if each is calculated at the home port. This would evidently imply that terms of trade for both have worsened if calculated at the port of the other country.[2] It should be observed, that the contention concerning the deterioration of raw material prices so often mentioned today refers exclusively to the statistics of the British commodity terms of trade loco British ports of importation.

We see therefore that extreme care must be taken when evaluating a change in the terms of trade, and that a distinction must be made between a number of different cases. However, it does not seem necessary nor would it be sufficient, to handle all the various cases by simply substituting for the commodity terms of trade the concept of the *"factoral terms of trade"* with which it is so difficult to operate in actual practice.

It should also be noted that at least two other types of terms of trade (with some variations in detail) have been suggested in the literature which, in contrast to the factoral terms of trade, are more easily amenable to statistical measurement and have actually been calculated for England by Imlah. These are the *gross barter terms of trade* (Taussig)

[2] The result would be changed if the price of transport services were included as traded goods in the computation of the terms of trade. This would really be the correct procedure although it is rarely done, presumably because of the statistical difficulties.

and *income terms of trade* (Dorrance and Staehle), also called "Export Gain from Trade" (Imlah). Viner, who in Chapter IX of his *Studies* gives the most thorough and comprehensive theoretical discussion of the various concepts of terms of trade in their relation to the gains from trade, has labelled a variant of the income terms of trade an index of "total gain from trade." He makes it clear, however, that he himself does not believe that a measure of this type of terms of trade, or that of any other, can be regarded as an adequate and unequivocal indication of the gain which a country derives from trade or even of the amount or direction of change in such gains.

If we let $P_e(P_i)$ be the export-(import-) price index and $Q_e(Q_i)$ the export-(import-) quantity index, then the gross barter terms of trade is defined as $\frac{Q_e}{Q_i}$, the income terms of trade as $\frac{Q_eP_e}{P_i}$, while the commodity terms of trade is $\frac{P_e}{P_i}$.[3]

Neither an increase in the index of the gross barter terms of trade nor of that of the income terms of trade can be regarded as an indication that a country's position has improved or that its gains from trade have increased. In fact, both of these measures are inferior to, and a less reliable guide than, the simple commodity terms of trade, because each of them treats as equivalent cases that have to be judged differently, even if other things have remained unchanged. Let me first explain what is meant by the "other things" that are supposed to remain constant. For the present purpose we define them as (a) volume of employment (or volume of production),[4] and (b) the balance of payments. We shall then assume that full employment as well as equilibrium in the balance of payments is maintained.[5]

Thus the gross barter terms of trade indicate an improvement when the volume of exports rises (the volume of imports remaining the same) because the country pays reparations or because it exports capital. Obviously, these two cases have to be judged differently.

[3] Imlah computes all three of these measures. $\frac{Q_eP_e}{P_i}$ he calls the "Export Gain from Trade" index. In addition he computes what he calls "Total Gain from Trade" index which uses the quantity of total trade $(Q_e + Q_i)$ instead of the quantity of exports alone.

[4] It should be observed that real national income cannot be taken as unchanged in the present *context*, because it will change as a result of a change in the terms of trade even if the volume of production (and employment) remains unchanged. The necessity of distinguishing between "volume of production" and "real national income" in an open economy will be further discussed in Section V below.

[5] The reason for this assumption is that any change, however destructive it may be—a deterioration of the terms of trade, a tariff, or for that matter even an earthquake or wasteful government expenditure—conceivably *may* (but need not) be indirectly beneficial, if it reduces unemployment and improves the balance of payments.

Similarly, the "income terms of trade" can lead to a wrong conclusion in cases where the commodity terms of trade give the right answer. Consider, for example, the following two cases. For simplicity, assume that import prices, quantities and value are unchanged and the value of exports and imports remain equal (the balance of trade and payments is in equilibrium). Now suppose, first, that export prices have risen by 10 percent and export quantities have fallen by 10 percent. Obviously, the country is better off (real national income is larger) than before, because it buys the same imports with smaller exports. The direction in the welfare change is correctly indicated by an improvement in the commodity terms of trade, while the income terms of trade ($\frac{Q_e P_e}{P_e}$) indicate no change (the rise in P_e cancels out the fall in Q_e).

Suppose, secondly, that export prices have fallen by 10 percent and export quantities have grown by 10 percent. The country is now worse off than before because for the same imports it must export (give away) larger quantities of goods. The commodity terms of trade indicate, correctly, a deterioration while the income terms of trade register no change. Thus the commodity terms of trade would seem to be a better indicator of the welfare implications of international trade. But it must not be assumed that every improvement in the commodity terms of trade signifies that the country is better off, and every deterioration that the country is worse off—even if there has been no change in productivity (production function) or in overall employment and output.

We have to distinguish between (a) changes in the terms of trade of a country which result from changes in foreign demand (shift, for any reason, in the foreign reciprocal demand or offer curve) and (b) changes resulting from a shift in the country's own reciprocal demand or offer curve.

Any improvement in the terms of trade which results from a change in foreign demand is favorable, provided full employment and production can be maintained.[6]

Similarly, a deterioration of the terms of trade resulting from a contraction of foreign demand leaves the country worse off than before.

On the other hand, a change in the terms of trade of a country resulting from a shift of the country's own offer curve cannot be unambiguously judged as good or bad according to the direction of the change, even if full employment is maintained continuously. Consider, for example, the case in which a country "improves" its terms of trade de-

[6] If this condition is not fulfilled, it is, e.g., possible that an improvement of the terms of trade resulting from cheaper imports might lead to widespread unemployment in the import competing industries and thus in a deterioration of the overall position. It has been said that this was the case in Great Britain during the 1930's when her terms of trade improved sharply.

liberately by restricting its imports (or exports) by means of tariffs or other measures of trade restriction, assuming, of course, that foreign demand is not perfectly elastic (in which case a restriction of imports would not improve the terms of trade) and that the import restrictions on the part of the country in question are not countered by retaliatory restrictions on the part of other countries.

It is generally agreed that up to a point—"the optimum tariff level" —such a policy will improve the country's economic welfare, the precise position of the optimum depending on certain elasticities.[7] But it is equally well known that beyond the optimum tariff point any further restriction of trade, although it will further "improve" the terms of trade, will nevertheless reduce economic welfare. Just as the optimum price of a monopolist, i.e., the price which maximizes the monopolist's income, is not the highest price the monopolist is able to charge, the optimum terms of trade which maximize national income are not the highest price of exports in terms of imports. In other words, the terms of trade should be optimized not maximized. This can also be expressed by saying that beyond a certain point the favorable effect on welfare resulting from better terms of trade is compensated and overcompensated by a fall in volume of trade.[8]

We have here a clear case where an "improvement" in the terms of trade marks a deterioration in economic welfare; and a "deterioration" in the terms of trade signifies an improvement in economic welfare.

[7] For further remarks on the theory of "the optimum tariff" see Section VI below.

[8] It follows that it is correct to say that for a complete evaluation of the welfare implications of trade it is not enough to pay attention to the terms of trade; quantities must also be considered. But it does not follow that the task can be accomplished simply by putting Q_e in the formula; in other words, by substituting the income terms of trade for commodity terms of trade.

The term "income terms of trade" or "index of export gains from trade" is misleading. It is better to regard the same measure as an index of the "capacity to import" as the *Economic Commission for Latin America* does. (See their *Economic Survey of Latin America 1949*). This becomes clear if we reflect that the "income terms of trade" is the same thing as value of exports deflated by import prices; in other words, the quantity of imports bought by exports. It should not be forgotten, however, that the "capacity to import" also depends on net capital imports and interest payments.

V. The Balance of Payments Mechanism

1. *The Balance of Payments and National Income*

The theory of the adjustment mechanism of the balance of payments is as old as economic theory itself. Concerning the history of doctrines the reader is referred to the well known books by Angell, Iversen, Viner, and Wu.

Much like the monetary disturbances following the Napoleonic wars, the severe balance of payments crisis during the inflation period after World War I, and those caused by the "Great Depression" of 1929-1932 have all done much to stimulate theoretical thinking in this area. After World War II, prolonged balance of payments difficulties of most countries, excepting the United States, Switzerland and a few others—the so-called "structural Dollar shortage," which according to many writers had really started long before the war—have again given a strong impetus to further theoretical and empirical research in the mechanism of adjustment of the balance of payments. The "reverse Dollar problem," the Dollar "glut" or "surplus," which became clearly visible in 1958 has not yet given rise to further innovations and improvements in theoretical analysis. But it can probably be said, without exaggeration, that during the last thirty years the theory has advanced as much as during all of the 200 years which preceded them.

By the balance of payments of a country is meant the statistical record in balance-sheet form, of all its economic transactions during a certain period of time. Depending on the purpose, such a balance sheet may be drawn up in many different ways. In its usual form, the balance distinguishes between items on current and on capital account. The former lists all kinds of exports and imports of goods and services, interest and divided payments, private gifts, and so on. The capital balance, on the other hand, is subdivided into long- and short-term capital transfers—the import and export of all kinds of debt instruments as well as of corporate stocks—and imports and exports of monetary gold. Reparations and other unilateral transfers, such as Marshall aid, are best listed separately. This, however, is all purely a matter of convenience and no one particular arrangement of these accounts should be considered the "best" or the only "correct" one for every conceivable purpose.

By a *deficit* or *surplus* in the balance of payments is usually meant gold movements plus "accommodating" capital movements; that is, capital movements that are induced by balance of payments conditions and loans given or taken for the specific purpose of equalizing the payments balance. It is not always easy to distinguish between autonomous or

spontaneous as against accommodating or induced capital movements or loans. But while the precise formulation of these concepts is difficult, we can console ourselves with the knowledge that as a rule it is easy to diagnose in actual practice a disequilibrium in the balance of payments, that is, the existence of a deficit or a surplus.[1]

Before describing the mechanism of adjustment of the balance of payments we shall briefly indicate how the balance of payments fits into the national income accounts. In a closed or isolated economy, national income (Y) = consumption (C) + (net) investment (I). But if a country's economy is part of the network of world trade then I must be divided into domestic investment (I_d) and foreign investment (I_f). I_d, the volume of domestic investment, corresponds to the positive or negative addition to the real capital stock: plant and equipment, buildings of all description, consumer durables inventories, etc. I_f, the volume of foreign investment, is equal to the increase or decrease in the country's total foreign investment (change in its net debtor or creditor position) through lending, borrowing and repayments, excluding changes through default or capital gains and losses.

Now, let the value of all exports (including services such as shipping, insurance, tourist expenditure, traders' commission) be X, and the value of all imports similarly defined be M; let D be the amount of income from foreign investments (interest and dividend payments, etc.); and let R be the amount of reparations, gifts,[2] etc., received. Then, $I_f = X - M + D + R$. Of course, D, R, I, and I_d, can be either positive or negative. Changes in the stock of monetary gold (excluding those resulting from home production) would be counted under I_f, for if we include them under I_d, then X and M would have to be defined as including imports or exports of monetary gold, which for most purposes is not advisable.

Our definition of national income thus becomes $Y = C + I_d + X - M + D + R$. It must be emphasized, however, that in our equation

[1] Sometimes a distinction is made between the balance of payments in the *ex ante* and *ex post* sense. It is then said that in the *ex post* or "accounting" or "statistical" sense the balance must always balance. This only means that in a balance sheet, purely as a matter of double-entry bookkeeping convention, the two sides are always made equal by putting the difference, under a suitable heading, on the smaller side. It does not mean that *ex post* there can be no deficit or surplus.

Machlup in an article in the *Economic Journal*, March 1950 distinguishes three concepts, "the market balance of payments," "the programme balance of payments" and "the accounting balance of payments." For theoretical purposes the balance as defined in the text would seem to be sufficient.

[2] Investment income is often included among services, that is to say, it is construed as payment for capital services. For many purposes it is, however, convenient to have the somewhat more elaborate terminology which we here propose—distinguishing services proper from investment income and unilateral transfers such as reparations and gifts. But let it be emphasized once more that there is nothing sacrosanct about any classification. It is entirely a matter of convenience depending upon the theoretical or practical problem at hand.

consumption (C) and domestic investment (I_d) are defined so as to include *imported* consumption and investment goods. In the theoretical literature, on the other hand, C and I_d are frequently defined as home *produced* consumption and investment goods. It is difficult, however, to implement the latter distinction statistically.

In an isolated economy, *national income, volume of production* and *total expenditures* on goods and services (or to use a cumbersome though more descriptive phrase: Sum total or money value of goods available for consumption and investment) are identical. In an open economy, however, this is not the case. For example, if a country receives income from foreign investments or reparation payments,[3] then its volume of production (P) is smaller than its national income; $P = Y - (D + R) = C + I_d + X - M$.

It is of particular importance to distinguish between national income (Y), on the one hand, and total expenditures on consumption and investment goods (V), on the other.[4] If, for example, a country increases its imports by borrowing from abroad (capital imports), either for purposes of consumption or investment, or if the country accepts foreign aid (R), its real expenditure increases; that is, more can be consumed and/or invested than before, but its national income remains constant. These relations can be written: $V = C + I_d = Y - (X - M + D + R) = P - X + M$.

It should furthermore be noted that the concept of national income is in one respect less clearcut than that of either expenditure (absorption) or volume of production, for it depends on how R is defined and this is frequently quite arbitrary. American aid to Europe, for example, was in large measure legally a gift and only partly a loan. According to our formula, each portion would have to be treated differently; for a loan is part of the national income of the country extending it, while a gift would have to be deducted. It would, of course, be possible to define the concept in such a way that gifts would be added to the income of the country making them while excluding them from the income of

[3] Interest and dividends are always added to the receiving country's national income and deducted from the paying country's income. In the case of reparations or foreign aid there is no generally accepted practice. They can be looked on as a part of the paying or of the receiving country's national income. But it is clear that these items belong to the paying country's volume of production and constitute additions to the resources available for consumption and investment (total expenditure) in the receiving country.

[4] In the literature different terms have been used to designate what we call "total expenditure." Ohlin speaks of "buying power" and Viner (*Studies*) of "value of final purchases." Still another term has been introduced recently—"Absorption" (Alexander); the economy "absorbs" a certain amount of consumption and investment goods. There may be slight deviations in the precise definition of these terms by the different writers, but they clearly aim at the same thing: A sort of corrected national income, national income gross of foreign lending and foreign aid. This is, of course, a different kind of "grossness" from that of Gross National Product.

the recipient country. But it seems arbitrary to treat aid and reparation payments differently from interest and dividends. The latter are always treated as belonging to the income of the receiving party. Hence, if reparations are funded (as the German reparations were through the Dawes and Young loans) and reparations assume the form of interest payments, they would be treated differently in income accounting than before.

It would be easy to list further cases in which more or less arbitrary decisions and distinctions have to be made and where it is not easy to follow a clear line which does not lead to inconsistencies. But the instances mentioned should be sufficient. It cannot be emphasized strongly enough that there is nothing sacrosanct about any classification. Different classifications and definitions can be justified for different purposes.

2. *Price and Income Effects in the Mechanism*

We turn now to a discussion of the balance of payments mechanism. Broadly speaking three methods for reestablishing equilibrium in the balance of payments can be distinguished: (a) the gold standard method—the system of stable exchange rates; (b) fluctuating exchange rates, that is, the devaluation of the currency of a deficit country and the appreciation of the currency of the surplus country; (c) exchange control, that is, direct, quantitative regulations of trade and payments.[5]

Under the gold standard method the rate of exchange remains stable and a smooth functioning of the mechanism requires flexibility of prices and wages in the national currency. Under flexible exchange rates the national price *levels* can remain unchanged within a country while the exchange rate adjusts itself, thereby changing relative price levels as between countries. It should be noted, however, that *relative* prices in each country of different groups of commodities, such as import goods, export goods, domestic (non-traded) goods, will usually have to change in the process of adjustment, even if the general price *level*—in some meaning of the term—remains unchanged.

The advantages and disadvantages of stable versus flexible exchange rates will not be discussed in this paper. We shall deal exclusively with the pure theory of the mechanism under the assumption of flexible prices and wages and of variable rates of exchange. Moreover, we shall abstract from disturbing speculative capital movements, although the danger of such movements constitutes, rightly or wrongly, one of the main arguments against the system of flexible exchange rates. Under

[5] For practical purposes a great variety of subdivisions and mixed cases would have to be distinguished, and from the practical-political point of view the difference between subdivisions belonging to the same analytical category may in some cases be greater than the difference between subdivisions belonging to different categories.

these assumptions, the theory developed for the case of flexible exchange rates also applies to the case of stable exchange rates.[6]

Let us assume that a sum of $100 million is to be transferred from A to B. Perhaps A has to pay reparations, or A wants to invest these funds in B, or A has to get rid of a deficit which has previously been met by outflows of gold, *ad hoc* credits, or gifts.[7] In each case A has to increase its exports and/or decrease its imports; in other words, assuming unchanged employment, A's "real expenditure" or "absorption" has to be reduced.[8] The only condition under which it would be conceivable for A to import less, export more and simultaneously increase its consumption and investment ("have its cake and eat it too") would be, if the transfer led to an increase in the level of employment from a position of severe unemployment. Under full employment no such miracle is possible.[9]

Let us assume that a decrease of expenditure in A and an increase in B is effected by raising taxes and restricting credit in the first country and by lowering taxes and easing credit in the second. Such an income or expenditure effect would improve the balance of payments of A by an amount which would depend on the *marginal propensity to import.*

The concept of the marginal propensity to import, developed out of Keynesian theory,[10] is analogous to the marginal propensity to consume

[6] The distinction between (a) "the method of the adjustable peg," under which the exchange rate is rigidly pegged to a certain level which is occasionally adjusted, and (b) the system of freely floating or fluctuating exchange rates, under which the rate is allowed to fluctuate continuously in a free market, will not be discussed in the present paper although it is extremely important from a practical standpoint.

[7] From a more practical standpoint than the one here adopted, where we are interested only in the theoretical skeleton, there may be a world of difference between the examples mentioned.

[8] Here the previously mentioned distinction between real expenditure and real income is essential. If a country counteracts *ad hoc* borrowing or gold loss by increasing its exports, it would be incorrect to say that its income falls, although its expenditure ("absorption") $(C + I_d)$ does go down.

[9] While in monetary terms total expenditure ("absorption") has to be reduced by $100 million in order to bring about a transfer of $100 million, the change in "real" expenditure may be more or less (even if there is no employment effect), if the terms of trade are changed in the process of the transfer. If the terms of trade improve, the real burden is lightened; if they deteriorate, the real burden is increased. The change in the real burden through a change in the terms of trade, sometimes called the "secondary" burden, has received a great deal of attention in the literature.

[10] Although the phrase "propensity to import" is of post-Keynesian vintage—F. W. Paish seems to have been the first to use it—the substance is by no means missing from the pre-Keynesian literature. Ohlin introduced expenditure effects in the German Reparations debate, being then more Keynesian than his antagonist—Keynes himself. As noted above, the concept "buying power" which Ohlin uses in his *Interregional and International Trade* is equivalent to real expenditure. And Viner in his *Studies* uses the term "final purchases" which, too, is equivalent to total expenditure. His table on the effects of international transfers on p. 370 im-

and can be defined as $m = \frac{\Delta M}{\Delta Y}$ or $\frac{\Delta M}{\Delta V}$. Brief mention should be made of the distinction between marginal propensity, average propensity, and the income (as distinguished from the price) elasticity (δ) of demand for import goods. These three magnitudes are related in the following way:

$$\delta = \frac{\text{marginal propensity to import}}{\text{average propensity to import}} = \frac{\Delta M}{\Delta Y} \cdot \frac{Y}{M}$$

Let us return to the case where $100 million have to be transferred from A to B. Assume first that the marginal propensity to import of A, $m_A = \frac{1}{3}$ and that of B, $m_B = \frac{2}{3}$, their sum being exactly equal to unity. In this case, after A's total expenditure has been reduced by $100 million and that of B increased by $100 million, A will import $33⅓ million less, and B $66⅔ million more. The balance of payments will improve for A by just $100 million, and thus be in equilibrium. Income effects are just sufficient to restore equilibrium.

It is generally assumed that m is so small for most countries that it is likely that $m_A + m_B < 1$. It can easily be calculated that under such conditions the direct income effects are too weak to reestablish equilibrium in the balance of payments. However, if we assume the opposite, though unlikely, case where $m_A + m_B > 1$, the direct income effects would be so strong that the disequilibrium would be overcompensated; the balance of payments would turn in favor of the paying country and show a deficit for the receiving country.

Let us go back to the more likely case where $m_A + m_B < 1$. The income effect is not strong enough to eliminate the deficit completely and price effects have to be invoked in order to bring about a full adjustment. Under the gold standard, gold would flow from A to B and prices and wages would fall in A and rise in B, both movements operating in an equilibrating manner. If wages in A should be rigid, unemployment would result. In other words, in this event *employment effects* would strengthen the income effect.[11] Although undesirable, such employment effects tend to hasten the restoration of equilibrium in the balance of payments. It would be wrong, however, or at least imply a gross exaggeration, to attribute the smoothness with which the gold standard functioned before 1914 to the fact that it operated entirely or predominantly by means of undesirable employment effects. With flexible wages and prices the gold mechanism operates, if expenditure effects

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plies the assumption of a constant average propensity to import. Imports are assumed to be a constant fraction of total expenditure.

[11] Alternatively, we may distinguish between income changes (or better, expenditure changes) due to the transfer of reparations, foreign aid and the like, and such changes due to variations in the level of employment. A third category of income changes relevant for the balance of payments mechanism is those produced by changes in the terms of trade.

are insufficient, through price effects without changes in employment. It is true, however, that with price and wage rigidity it will be easier to bring about the necessary price adjustments through a devaluation of A's currency in terms of B's.

The problem of the influence of a currency devaluation on the balance of payments and the real terms of trade has been extensively discussed during the last twenty years; this is in sharp contrast to the previous literature, which was almost devoid of such discussion. It should be observed, however, that on the level of abstraction of the present essay (disregarding rigidities as well as disturbances caused by speculation and expectations) the price effects produced by the gold standard mechanism and by changes in the exchange rate are the same; similarly the elasticity conditions discussed below apply to both institutional arrangements.

The conditions under which a *currency devaluation* would lead to an improvement in the balance of payments in the devaluing country were derived and have been discussed by Lerner, Robinson, Metzler, Meade, Stackelberg, and others. The result to be expected from an alteration in the exchange rate depends on the elasticities of demand in each country for the export goods of the other country, as well as on the elasticities of the corresponding supplies. As mentioned previously (see Section II above), these curves which relate the unit money price of exports and imports to the quantities demanded and supplied must be distinguished from the Marshallian reciprocal demand and supply curves which relate the total quantities where the price is the real terms of trade and not the price in terms of money.[12]

[12] Some writers, notably Viner, have raised fundamental objections against the use of curves of this type and their elasticities on the ground that it involves the application of partial equilibrium analysis to a problem which is essentially of a general equilibrium nature. In other words it is illegitimate to assume that demand for imports is "independent of what happens to exports" and supply of exports is "independent of what happens to imports." (Viner)

This is a weighty issue and it cannot be settled here. Only a few remarks will be offered.

Let us start from the fact that a 20 percent depreciation of a country's currency is theoretically equivalent to a 20 percent uniform import duty plus a 20 percent uniform export subsidy.

Consider first the duty in isolation. Surely it is standard practice of economic analysis to say that the influence of the duty on the average price and the value of imports depends on the elasticity of demand and the elasticity of foreign supply—although individual import commodities may be related to one another as complements or substitutes so that the total elasticities are not simply averages of the elasticities of demand for each commodity under the assumption that nothing else (including the price of other import goods) has changed. These things are somehow supposed to have been taken care of by the method of aggregation.

The same considerations apply to the influence of an equal, uniform *ad valorem* export subsidy.

Can we simply add the result of both and say that it measures the result of the devaluation? Strictly speaking not, because there may be relationships between in-

It can be shown that a currency devaluation always improves the balance of payments of the devaluing country if the sum of the elasticities of the country's demand for its imports and of the foreign demand for its exports is greater than unity. If this sum is smaller than unity, then devaluation results in a worsening of the balance of payments and we are dealing with a case of unstable equilibrium in the foreign exchange market.[13]

Let us think for a moment of the exchange market as a market in which the foreign currency, say the pound, is demanded and supplied in terms of the home currency, say dollars. A demand curve for pounds in dollars confronts a supply curve for pounds in dollars. Parenthetically, it should be remembered that the demand curve for pounds in terms of dollars must be distinguished from the American demand curve for imports from Britain. The demand for foreign currency is, however, derived from the demand for foreign goods. And the elasticity of the

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dividual import and export goods so that their respective demands and supplies are not entirely independent. For example, imports may significantly enter exports as raw materials. Hence, when imported raw materials rise in price after a devaluation the export supply curve is shifted up.

Again such interrelations must be supposed to average out or else to be allowed for in the method of aggregation.

It is possible to adopt a skeptical and dim view of our ability to allow for such complications. Quite a few writers have taken this position and quite consistently have rejected what they call excessive aggregation—in theory at least, while in their actual practice of theoretical analysis they usually disregard their own methodological preaching and resort to aggregative reasoning. How much aggregation is permissible cannot be decided on *a priori* grounds. It would seem, however, that the degree of aggregation involved in our particular instance is not obviously greater than that which one often finds in economics, for example where we speak of demand by industry for agricultural products or of the supply of labor or saving and the like.

Apart from such connections between demand and supply of individual import and export commodities, there is the broader nexus through the monetary mechanism, through incomes and expenditures. Unless monetary expansion nullifies the effects of devaluation, real expenditure must fall (because the export volume rises and the import volume falls). These expenditure changes shift the demand and supply curves of exports and imports. But this aspect of the matter we have discussed under the heading of income or expenditure effects.

In conclusion it may be pointed out that the Marshallian reciprocal demand and supply curves are not suitable instruments for analyzing the problem of how a depreciation influences the balance of payments. Points on the Marshallian curves are possible equilibrium positions with exports equal to imports. It is true these curves can also be used to find the equilibrium position under the conditions of a *preassigned* trade gap in *real* terms. But this is not the problem in our present context.

[13] To be precise: The condition that the sum of the two demand elasticities is greater than unity is a *sufficient,* but not a *necessary* condition for the balance of payments to improve, that is to say, to react "normally" rather than "perversely" to a depreciation. Even if this sum were smaller than unity, the balance of payments could still improve provided the supply elasticities are sufficiently small.

currency curves can be computed from the elasticities of the demand and supply curves of imports and exports.[14]

If the demand curve and supply curve of pounds have their ordinary shape, the former sloping down from left to right, the latter sloping up from left to right, the market is in stable equilibrium. If, however, the supply curve, too, slopes down from left to right (if it "bends back") *and* is flatter than the demand curve (that is, cuts the latter "from below") the equilibrium is unstable. In that case, if demand exceeds supply (a deficit in the balance) and the price (the value of pound in dollars) rises, the excess demand (deficit) instead of becoming smaller as in the stable case will become even larger and the price will be driven up still higher.

Now, it can be shown that whenever the sum of the elasticities of the demand for exports and the demand for imports is greater than unity, there is stable equilibrium in the exchange market; that is to say, the supply curve of pounds cuts the demand curve of pounds from above—the supply curve is steeper than the demand curve. Instability would obtain if the sum of the elasticities of demand for exports and imports were sufficiently smaller than unity, how much smaller depending on the elasticities of supply of exports and imports.

In the older literature, until the 1930's and apart from a few hints in theoretical writings, stability in the exchange market was taken for granted. It was only in the period after World War II that a condition of unstable equilibrium was considered by many writers a common phenomenon. This "elasticity pessimism" was supported by numerous attempts at statistical measurement, which in most cases have arrived at very low estimated elasticities. However, Harberger, Machlup, and Orcutt have shown convincingly that the statistical methods (least square methods) used in these researches are biased and result in a strong and systematic underestimation of the actual elasticities. Indeed, as some of the errors have been gradually eliminated, the statistical estimates of elasticities have tended to increase steadily. Today most economists are convinced that the actual elasticities are in practice always sufficiently large to guarantee stable equilibrium in the balance of payments, except perhaps in the very short run and under very unusual circumstances, which may exist in highly specialized raw material-producing countries during depression periods. Alfred Marshall, who generally exercised great caution in such questions and never jumped to hasty conclusions, stated very emphatically: "It is practically certain that in the Ricardian example and under modern industrial conditions the total demand of each of the two countries for each other's goods is relatively elastic. And where a large and rich commercial country con-

[14] It goes without saying that the demand curve for pounds in terms of dollars can be translated into a supply curve of dollars in terms of pounds; and similarly the supply curve of pounds into a demand curve for dollars.

fronts the rest of the world, this assumption becomes absolutely certain."[15] The more diversified the economy of a country the larger will be the range of its actual and potential import and export commodities and the more rapid and smooth the adjustment. The stronger the competition of other countries, the greater the elasticities of demand for the exports of any one country and the less likely the existence of unstable equilibria.

It is, however, not difficult to understand how the appearance to the contrary may easily be created; in other words how one can get the impression that elasticities are often low and the equilibrium of the balance of payments unstable. The reason is that there is often great danger that the favorable effects of a devaluation on the balance of payments will be jeopardized by incautious wage and credit policies. Pressure in this direction is strong because under full employment an improvement in the balance of payments, as shown above, is necessarily accompanied by a painful reduction in consumption or investment ("absorption" or "total expenditure"). Under modern conditions, the temptation is strong to avoid this, as well as transitional unemployment which may be necessary, by means of government spending, liberal credit policies and wage increases. This sort of policy will, of course, immediately result in a renewed worsening in the balance of payments. This can be expressed by saying that an upward, or downward, shift in an *elastic* curve creates the erroneous impression that the curve is *inelastic.*

While it thus can be taken for granted that a currency devaluation will result in an improvement of the balance of payments provided total expenditure is not allowed to expand, it is by no means equally certain that the terms of trade will be shifted in any particular direction or that they will change at all. Hinshaw, following Graham, has shown this very clearly.

It is tempting to jump to the conclusion, and as a matter of fact it is frequently assumed as self-evident, that a currency devaluation must lead to a worsening in the real terms of trade for the devaluing country, implying of course an improvement of the terms of trade for the country whose currency has appreciated. If the French franc is devalued relative to the dollar, French brandy becomes cheaper for Americans and American cotton more expensive for Frenchmen and that seems to imply that France's terms of trade have deteriorated. Such an argument, however, is based on the fallacious method of comparing cotton prices

[15] Alfred Marshall, *Money, Credit and Commerce,* 1923, p. 171. On page 354 of the same book, he says: "Nothing approaching to this [unstable equilibrium] has ever occurred in the real world: it is not inconceivable, but it is absolutely impossible." It is true that in the quoted passages Marshall referred to his reciprocal demand and supply curves and the "real" equilibrium. But it would seem to be permissible to transpose his statement to the monetary sphere.

in francs with brandy prices in dollars. Obviously, export and import prices must be compared in terms of the same monetary units (it does not matter which one) in order to find the real terms of trade. In fact, both brandy and cotton prices will rise in terms of francs and both fall in terms of dollars. The real terms of trade worsen for France and improve for the United States if, in terms of francs, the cotton price rises more or, in terms of dollars, falls less than the price for brandy. Whether this will happen depends in turn on the elasticities of demand and supply. It is, *a priori*, no more probable that the real terms of trade will worsen than that they will improve for the devaluing country. It is not at all improbable that both the balance of payments and the real terms of trade would improve.

To visualize that as a consequence of a devaluation the terms of trade may improve, deteriorate or remain unchanged while the balance of payments improves, it may help if we once more reflect that a currency devaluation of, say, 30 percent is analytically equivalent to a uniform import duty of 30 percent on all imports (including services) plus a uniform export subsidy of 30 percent on all exports.[16] Now, it is clear that a tariff alone will improve the terms of trade. A subsidy alone will make them worse. The result of their combined effect depends on the relative strength of their separate effects about which it is impossible to establish any plausible *a priori* presumption.

As to the balance of payments, the situation is different: a general tariff obviously improves it; a general export subsidy too will improve it, except where the foreign demand for the devaluing country's exports is inelastic.[17] Hence, it is very probable that their combined effect will be an improvement of the balance of payments.

[16] From a practical, administrative standpoint there is of course no equivalence between the two schemes and from the point of view of economic policy the uniform tariff-cum-subsidy scheme is simply not feasible as a substitute for devaluation, although it was actually proposed by Keynes and later by Hicks. The tariff-cum-subsidy method leaves outstanding contracts unchanged, which was Keynes' motive for espousing it.

The reader will notice that there are further complications if exports are not equal to imports, because then the duties collected are not equal to the subsidies due. In that case the elasticity conditions, mentioned above, for the balance of payments to improve after a devaluation, must also be slightly modified.

[17] The balance of payments will improve, if demand elasticities are large enough ($\eta_x + \eta_m > 1$). This is almost certain to be the case. It should be remembered that this is a sufficient, not a necessary condition.

The terms of trade will deteriorate (improve) if the product of the supply elasticities ($\epsilon_x\epsilon_m$) is greater (smaller) than the product of the two demand elasticities ($\eta_x\eta_m$). Joan Robinson, to whom we owe that formula, has tried to show that elasticities are likely to be such that devaluation will result in a deterioration of the terms of trade. Her argument is, however, not at all convincing. It would seem that the outcome depends on the concrete structure of trade of the country concerned and that no sweeping generalizations are possible.

It can be shown that in the normal, stable case, in which the balance of pay-

The way in which a depreciation operates to improve the balance of payments can be briefly summarized as follows: In the devaluing country the prices both of export and of import goods will rise as compared with prices of domestic (not-traded) goods. This causes a shift in demand from internationally traded to domestic goods and a shift of production in the opposite direction. In the country whose currency has increased in value the prices of export and import goods will both fall relative to those for domestic goods. This will tend to bring about a substitution in consumption and production of domestic for traded commodities in the opposite direction from those in the devaluing country. The magnitude of such shifts depends on the elasticity of substitution between foreign-traded and domestic goods. As can readily be seen, these shifts will result in an increase of the stream of goods from the depreciating to the appreciating country and a decrease of this stream in the opposite direction, thus restoring the balance to equilibrium. For this mechanism to function it clearly is necessary that aggregate domestic expenditure in the depreciating country be kept constant or possibly reduced. If, *pari passu* with the depreciation and the rise in prices of export and import goods, aggregate expenditures are allowed to expand—if, in other words, depreciation is allowed to touch off an inflation of expenditure—depreciation will do no more than lead to an all-round rise in prices, leaving relative prices and the state of the balance of payments where they were before.

3. *The Foreign Trade Multiplier*

The above sketch deals with the pure and essentially static theory of the balance of payments mechanism.[18] Before it can be applied, the theory obviously has to be supplemented and expanded in various directions by dropping simplifying assumptions and introducing historical and institutional details, complications through rigidities, speculation and the like. Here, however, is not the place to undertake that job.

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ments improves after devaluation, the terms of trade may improve or deteriorate. However, in the abnormal, unstable case, when the balance of payments deteriorates, the terms of trade too will deteriorate for the depreciating country.

[18] This theory runs in terms of interacting price and income (or expenditure) effects; price elasticities as well as income (or expenditure) propensities play a role in the mechanism. The theory has been worked out most fully by Meade in *The Balance of Payments*.

Another approach, the so-called "income absorption approach" has been proposed by S. Alexander, in his "Effects of a Devaluation on the Trade Balance," in International Monetary Fund *Staff Papers*, Vol. II, April 1952. As pointed out earlier, "absorption" is another term for expenditure. The "income absorption" approach is therefore another version of an income-expenditure analysis. Criticizing Alexander, Machlup has shown convincingly that price effects and elasticities are just as indispensable as expenditure effects and propensities to spend and "absorb," in "Relative Prices and Aggregate Spending in the Analysis of Devaluation," *American Economic Review*, June 1955.

We shall add only a brief account of a modest attempt to dynamize the theory of the balance of payments mechanism by means of the *foreign trade multiplier*. This theory grew out of the Keynesian system but was not developed by Keynes himself.

The dynamic version of the foreign trade multiplier is primarily the work of Machlup and Metzler. On the other hand, Harrod, to whom we are indebted for one of the first treatments of this subject, as well as Meade, developed the static version. Static theory describes and compares equilibrium conditions at different times ("comparative statics"). Dynamic theory examines the transition or movement from one equilibrium to another.

The concept of the foreign trade multiplier represents an application of the theory of the general multiplier in a closed economy to the problems of an open one. We are not dealing here with a general equilibrium theory. Multiplier theory deals only with one part of the general system and does so under greatly simplified assumptions. Its area of applicability is thus greatly restricted.

Machlup's and Metzler's dynamic models make the following assumptions: (a) All prices, including the rates of exchange and interest rates, remain unchanged; in other words, constant marginal costs are assumed and this presupposes general unemployment. This is therefore strictly depression economics and its policy implications—if one has the courage to apply such a simplified and unfinished theory—have a strong mercantilistic flavor. (b) The possibility of unlimited financing of deficits exists; that is, each country is prepared to accumulate unlimited balances in each of the other countries. (c) The marginal propensity to import, as well as the marginal propensity to consume, is constant. It would of course be possible to relax some of these rather heroic simplifications. But the further one departs from them the more complicated becomes the theory and the more uncertain the results.

In these models, the propensity to consume is defined with a time lag: Imports during the period t depend on the income (or expenditure) of the preceding period:

$$m = \frac{M_t}{Y_{t-1}}$$

As is well known, the theory of the (investment) multiplier for a closed economy states that with a given marginal propensity to consume of smaller than unity, a stream of "primary" expenditures of 10 dollars per unit of time would finally increase national income by $\frac{10}{1-c}$. The multiplier is $\frac{1}{1-c}$ or $\frac{1}{s}$ ($s = 1 - c$, being the marginal propensity to save). The smaller is s, or the larger is c, the greater will be the multiplier.[19] This assumes that out of each additional income, a

[19] If $c > 1$, the equilibrium would be unstable; any additional expenditure would draw an ever increasing stream of induced expenditures in its wake.

fraction (c) will be spent and the remaining fraction (s) saved. The amounts saved are considered as "leakages."

In an open economy, expenditures on imports must be added as a third kind of expenditure out of income. Thus, income or money "leak" out of circulation not only through savings but also through imports. In other words, out of each additional income a fraction (c) is spent for domestic goods, a fraction (s) is saved, and a fraction (m) is imported ($c + m + s = 1$). The multiplier therefore becomes $\frac{1}{s+m} = \frac{1}{1-c}$ while the multiplicand now contains not only investment (including government deficits or all "autonomous" expenditure) but also exports: $Y = I + X\frac{1}{s+m}$.

The assumptions used can be varied in a number of ways and several refinements can be added.[20] Only one such complication, namely that concerning the indirect effects of an increase or decrease of exports, will be mentioned here as an example. Let us assume that country A launches an investment program of $10 million per month. If the marginal propensity to save is ⅓, in a closed economy the multiplier would be $\frac{1}{⅓} = 3$ and A's income would ultimately increase by $30 million per month. If we assume, on the other hand, that we are dealing with an open economy and m = ⅙, then the multiplier would be $\frac{1}{⅓ + ⅙} = 2$. Income will now increase by only $20 million since a greater part of the investment expenditures than before will "leak out." If A is a small country relative to the rest of the world, nothing further need be said as far as multiplier theory is concerned. If, however, A is important relative to the rest of the world, then it must not be forgotten that part of the amounts which have leaked abroad will flow back to A. As a rule, this will only be a fraction of the total leakage, their actual magnitude depending on the foreign c and m. The reason for such return flows is that B's economy will be stimulated by the increase of A's demand for B's products and will therefore, in turn, import more from A, thus benefiting A's export industries. Hence, what Metzler has called the *"true multiplier"* (*"complete multiplier"* might be a better term) will be greater than the foreign trade multiplier which ignores these indirect effects; but it will be smaller than the multiplier for a closed economy, because only a part of the import leakage will be restored through larger exports.

[20] See F. Machlup, *International Trade and the National Income Multiplier*, 1943. Metzler, in his review of Machlup's book (*Review of Economics and Statistics*, February 1945) gives a succinct summary of "the principal fruits of modern long-run income analysis" in this field.

In applying multiplier theory to the reparations case ("periodic transfer of money incomes"), Metzler arrives at the following result: Money income in the transferring country will fall and it will rise in the receiving country; the balance of payments will shift in favor of the transferring country but by less than the amount transferred, regardless of the marginal propensity to import in the two countries.[21] It should also be noted here that under the assumptions of constant costs and prices underlying these models, real income and employment would parallel each other.

This result implies that the paying country indefinitely accumulates debit balances; in other words that income effects alone cannot bring about the transfer. In order to restore equilibrium in the balance of payments, price effects—a change in the exchange rate or inflation in the receiving and deflation in the paying country—must be invoked. This result seems to contradict our statement made earlier in connection with the static theory that if $m_1 + m_2 > 1$, the income effects will overadjust the balance of payments. The contradiction is, however, only apparent, not real. In the static theory we have quietly ruled out the possibility of money "leaks," or have assumed that in case of deflation (hoarding) all that happens is a fall in prices and wages leaving real income and employment unchanged. The Machlup-Metzler theory yields the same result as the static theory, if c is equal to unity in both countries; that is, if all of the income is spent and nothing is saved and hoarded.[22]

In summary we may say: Dynamic multiplier theory is superior to static and comparative static theory inasmuch as it describes the process leading to a new equilibrium while static theory confines itself to showing the end point of this process. However, on the level of refinement achieved so far in the dynamic theory the price, in the form of its sweeping simplifications, is extremely high. Not only are c and m assumed to be constant but the price effects as well as the changes in the rate of exchange are ignored. In addition, it is assumed that foreign lending adjusts itself passively to the balance of payments; this means that each country is prepared to grant and to accept loans, or to import and export gold, to an unlimited degree, and, moreover, that the volume of investment will be constant or that it is a linear function of income.

[21] This applies under the assumption which is always made in models of this kind that $c < 1$ and $m < 1$. If $c > 1$, in a closed economy we would have an unstable equilibrium, since the expenditure of one additional unit of money would result in an infinite increase of incomes. In an open economy the import leakage will restore stability even when $c > 1$ if $(1 - c + m) > 0$.

[22] This is not at all as improbable as it may seem at first glance if one considers that it actually does not depend on the marginal propensity to consume, but on the propensity to spend which is the propensity to consume plus the propensity to invest. The propensity to invest, which assumes all or a part of investment expenditures as a linear function of income, should not be confused with the *acceleration principle,* according to which investment expenditures depend on the magnitude of the *change* in income.

These simplifications must be considered thoroughly unrealistic. It would nevertheless be wrong to label the theory of the foreign trade multiplier as worthless. It is without question of some theoretical significance as a first step toward a general dynamic theory which would also include consideration of price effects.

Static theoretical models combining income *and* price effects, elasticities *and* propensities have been constructed by Meade, Laursen and Metzler, and Stolper. Moreover two ambitious attempts have been made by Neisser and Modigliani and by Polak to construct econometric models of this kind for an integrated world system—that is to say models based on actual statistical measures of the coefficients involved (price elasticities and income propensities) for many countries which describe in precise mathematical form the interaction of these various factors.

Nobody who has taken the trouble of familiarizing himself with this work can fail to admire the courage of these scholars, their ingenuity and the great intellectual effort involved. However, the difficulties of econometric model building for a single country (let alone for a multitude of countries or for the world as a whole) are so overwhelming and the pitfalls which beset this kind of work are so numerous and insidious[23] that, at the risk of giving the appearance of offering ungrateful and negative criticism, one cannot help having the gravest doubts concerning the concrete results of these two most impressive volumes.

4. *The Purchasing Power Parity Theory of Foreign Exchanges*

The theories to be discussed in the present section—different versions of the "Purchasing Power Parity" (P.P.P.) doctrine—are less elegant, hence less popular with most theorists but more down to earth, than those discussed in the preceding sections. They run in terms of necessarily somewhat vague aggregates—purchasing power, price levels, degrees of inflationary pressure and the like. As the expression "purchasing power parity" suggests, the theory states, to give a brief preliminary explanation, that the equilibrium exchange rate between any two currencies is determined by, or tends to be equal to, the ratio of the internal purchasing power of the two monies (the reciprocal of some price level) in the respective countries.

The term P.P.P. was invented by Gustav Cassel who used the theory as a rough and ready explanation of the depreciation of the German mark and other European currencies after World War I. Actually, however, essentially the same type of reasoning was employed more than a hundred years ago by members of the classical English school to explain the discount of sterling during the Bank Restriction period, 1797-1821

[23] Early hopes and enthusiasm have been dashed, partly by self-criticism of those involved in this kind of econometric work. For an earlier attempt at the construction of an international trade model the pitfalls have been pointed out by A. Harberger, "Pitfalls in Mathematical Model-Building," *American Economic Review*, December 1952, pp. 855-865.

—so called because the obligation of the Bank of England to pay cash (gold) was restricted. In fact, whenever a major currency was (or is) at a discount or under pressure (the country losing gold), we can find two types of explanation for this fact which we may call the balance of payments theory and the inflation theory respectively. The former explains the deficit in the balance or the depreciation of the currency, without (or with only minor and indirect) reference to inflation, price levels and money, by such factors as increased Government expenditures abroad for reparations or aid; loss of market of individual export industries; war losses of foreign investment, shipping; bad harvests, etc. The inflation theorist, on the other hand, speaks of general overvaluation of the currency due to inflationary pressure and of changes in the purchasing power of money; these magnitudes he defines in relative terms (compared with abroad) and he often supports his case by purchasing power parity calculations. On the policy level the balance of payments theorist usually recommends measures to influence individual items in the balance of payments while the inflation theorist urges monetary action—disinflation in the deficit country, expansion in the surplus country or a change in the exchange rate.

However, the correlation between diagnosis and explanation, on the one hand, and therapy, on the other, need by no means be perfect. Even if one stresses adverse non-monetary factors operating on individual items of the balance of payments, such as increased Government expenditure abroad, one is not precluded from recommending disinflationary policy or currency devaluation to produce the required export surplus. And those who believe that inflationary pressure is at the root of the trouble may propose restrictions on imports to correct the imbalance, at least if it is not large.

The reader will have no difficulty in recognizing these two schools of thought in contemporary discussions of the dollar shortage and dollar glut. But it may be in order to present a few samples from the writings of classical English economists during the Bank Restriction period and earlier.

Hume had already stated that international trade brings "money to a common level in all countries, just as 'all water, whenever it communicates, remains always at a level.'" He declared that "level of money" must be interpreted as "its proportional level to the commodities, labor, industry, and skill, which is in the several states. And I assert that where these advantages are double, triple, quadruple, to what they are in the neighboring states, the money infallibly will also be double, triple, quadruple."[24]

Ricardo's views are well known. He held that "the exchange accurately measures the depreciation of the currency," he attributed the discount of sterling vis-à-vis gold to the "relative redundancy of currency" and

[24] See *Essays*, 1875 ed. I, 335-36 note. Quoted in Viner, *Studies*, p. 312.

stated that "by relative redundance then I mean, relative cheapness" of money.[25]

The famous *Bullion Report* expressed the theory this way: " . . . in the event of the prices of commodities being raised in one country by an augmentation of its circulating medium, while no similar augmentation in the circulating medium of a neighbouring country has led to a similar rise of prices, the currencies of those two countries will no longer continue to bear the same relative value to each other as before. The intrinsic value of . . . the one currency being lessened, while that of the other remains unaltered, the Exchange will be . . . to the disadvantage of the former."[26]

From Henry Thornton comes this formulation: ". . . supposing an increase of paper to take place, and to augment the general price of commodities in exchange for that paper, it must also influence the state of the Exchanges, and raise the price of Bullion."[27]

All that looks to me—as it looked to others[28]—very much like modern purchasing power parity theory. To be sure, the vocabulary, style and precision of theorizing has greatly changed over a hundred years. There were no mathematical formulae in the old classical (or anti-classical) writings and no clear references to price indexes as mathematical averages of individual price changes.

The view that the modern P.P.P. theory is a reformulation or elaboration of the old classical "inflation" theory,[29] has been challenged by Viner. He says that the P.P.P. theory "differs substantially from any version of the classical theory known to me."[30] Viner's main reason is that the classical writers were either ignorant of, or rejected, the notion of a statistical average of prices or of price changes. It would be "anachronistic," he says, to impute such an idea to Hume or even to the "classical school as a whole," because Hume and many others wrote before serious attempts were made in England to measure price levels.

I cannot find this reasoning quite convincing because one can have a clear idea of a phenomenon before it has been measured and one can vaguely refer to something before anyone has given a precise defini-

[25] The quotations are from Ricardo's correspondence with Malthus who was a balance of payments theorist. See *The Works and Correspondence of David Ricardo,* edited by Piero Sraffa, Vol. VI, Letters, pp. 30, 36, 39 and passim.

[26] See E. Cannan, *The Paper Pound of 1797-1821, A Reprint of the Bullion Report (1810),* 2nd ed., London, 1925, p. 17.

[27] From a speech in the House of Commons, May 7, 1811, reprinted in Hayek's edition of H. Thornton's *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain,* London, 1939, p. 329.

[28] E.g. to J. W. Angell and C. Bresciani-Turroni.

[29] It is interesting that the word "inflation" was not used in the classical literature. But I don't believe that the designation of the old theory as inflation theory will be challenged on that ground.

[30] *Studies,* p. 380.

tion.[31] On the other hand, I find Viner's strictures against the P.P.P. theory very convincing. But its seems to me that, in principle, the classical writers were subject to the same objections. They were shielded from such criticism only by the vagueness of their formulations. Is it not quite natural that an attempt at making a theory more precise and testable (or falsifiable) should throw into high relief all its weaknesses and shortcomings?

Let us now briefly analyze the precise meaning of the P.P.P. theory and the criticism to which it has been subjected. The theory is almost always stated in its comparative (rather than in absolute) form. That is to say, the theory asserts that the equilibrium exchange rate roughly moves parallel with the ratio of the movements in the two countries of the price levels over time (not that it is equal to the ratio of the price levels at any moment of time). Suppose that compared with a base year when the exchange rate was in equilibrium prices have doubled in country A and trebled in country B; then according to P.P.P. reasoning the equilibrium exchange rate (units of currency A exchanged pro unit of currency B) will have changed in the proportion 2:3. If the actual exchange rate is smaller (greater) than 2/3 of its original level, currency A is overvalued (undervalued), and currency B undervalued (overvalued). The equilibrium exchange rate is that rate which keeps the balance of payments in equilibrium. The price level that is meant is usually a general price level, either at wholesale or at retail ("consumer prices").[32] General price levels in different countries are linked through the prices of internationally traded goods. Equilibrium requires that the price of each internationally traded commodity is the same in the export and import country if full allowance is made for transportation costs (comprehensively defined, including duties, taxes, special overhead costs of moving commodities, etc.).[33] It seems to follow that the level of prices of internationally traded goods will roughly move parallel in two trading countries provided we assume that changes in transportation costs of different commodities cancel each other out in their effect on the price level. This condition may not be strictly fulfilled; but let us waive this possibility.[34]

[31] It is, of course, logically possible to define a concept and use it while at the same time holding that for *practical* reasons it cannot be measured. What I find difficult to swallow is the position of those who use a concept but insist that "for theoretical reasons" it is incapable of ever being measured under any circumstances.

[32] Sometimes the theory is stated in terms of export prices (Bresciani-Turroni) or in terms of "cost levels" which practically become wage levels (Brisman, Hansen).

[33] There are minor exceptions to this rule, some apparent, others real, e.g. in the case of discriminating monopoly.

[34] Strictly speaking the P.P.P. in terms of international prices will not be preserved even in the ideal case of perfect competition and zero transportation cost. Although every single international price must then be the same in each country, the average change of these identical prices will not be the same in both countries,

Now equality of international prices (allowing for transportation costs) is a necessary but clearly not a sufficient condition for international equilibrium. Even if there exists a large and prolonged deficit in a country's balance of payments and hence its currency is seriously overvalued, prices of internationally traded goods will not, or at least need not, show any deviation from the purchasing power par.[35] It has therefore been frequently suggested that the wholesale price index, which is heavily weighted with prices of internationally traded goods, is a poor guide for judging the existence and magnitude of a fundamental disequilibrium. For illustration, let me quote one case where the use of the wholesale price level has led policy astray. According to Keynes,[36] when Britain returned to gold in 1924-1925, Churchill's experts "miscalculated the degree of the maladjustment of money values which would result from restoring sterling to its pre-war gold parity" by comparing the British and American *wholesale* price index. The result was that sterling was seriously overvalued and the British economy remained depressed throughout the 1920's.[37]

The moral may seem to be that we should use an index of domestic prices (cost of living) or of costs (wages) which do not adjust so quickly and would show a disparity if equilibrium has not been reached. But if we do that we run into other difficulties. True, at any moment of time, given the state of international demand, quantity of money, degree of employment, and so on in each country, there must exist a definite relationship between the price and cost levels (wage levels) of the two countries, which would assure equilibrium in the balance of payments.

But a brief reflection will show that the equilibrium price or cost relationship need not be the one which is postulated by the P.P.P. theory

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if a *weighted* average is used and the weights are not the same in the two countries.

I am, however, not inclined to regard this difficulty, which has been noted by several authors (e.g., by Viner, *loc.cit.*, p. 383), as one of the serious objections to the P.P.P. theory. It could be easily overcome by using equal weights in the price index.

[35] According to Viner (*Studies*, p. 384), "The only necessary relationship between prices in different countries which the classical theory postulated . . . are the international uniformity of particular prices of commodities actually moving in international trade . . . after allowance for transportation costs. . . ."

For reasons stated in the text, I would say that, if the classical writers did not want to say more than that individual prices of traded commodities tend to equality in different countries (if full allowance is made for transportation cost), their theory would be true enough, but not very useful for explaining the discount of sterling or determining equilibrium exchange rates. To me it seems clear that actually they said more; they spoke of "general prices," "intrinsic value of money" and the like—terms which I find impossible to interpret without reference to some price level.

[36] "The Economic Consequences of Mr. Churchill," in *Essays in Persuasion*, 1941, p. 249.

[37] Another case where exactly the same mistake was made was the devaluation of the Czechoslovakian crown in the early 1930's. (For details, see League of Nations, *Monetary Review*, Vol. I, 1935-36, p. 49 et seq., Geneva, 1936.)

—namely, parallel movement over time. Suppose country A exports industrial products to country B in exchange for food. Suppose further that in each country export prices are closely linked with the general price level because each country produces exports also for home consumption and factors of production can be easily shifted between the export industries and industries producing non-traded goods. Starting from an international equilibrium position, A's demand for B's exports rises for some reason which produces an improvement in B's terms of trade. In this case equilibrium clearly requires a deviation of the exchange rate from the purchasing power par: A's general price level and cost level must fall compared with B's general price and cost level because in each country the general price level is closely linked to the prices of the country's export goods and the prices of the two countries' exports have shifted one against the other (the terms of trade having changed). This change in P.P.P. can come about through an alteration in the exchange rate or with stable exchanges through a change in absolute prices in A and/or B.

Arguing along similar lines, several writers have concluded that the validity of the P.P.P. theory is confined to those cases in which the equilibrium terms of trade remain unchanged. But this need not always be the case. Suppose, for example, that in each country the general price level is closely linked with exports *and* import prices because each country has a substantial home production of the commodities which it imports. In that case, it seems that P.P.P. could be preserved even though the terms of trade have to change.[38]

It remains true, however, that there can be no assurance that the preservation of the purchasing power parity is compatible with equilibrium. Does it follow that the P.P.P. theory must be completely rejected? Many modern (and some not so modern) writers have drawn that conclusion. I am inclined, however, to agree with Metzler,[39] an author who is steeped in, or almost addicted to, the "modern" theory of foreign exchanges (to which he has contributed so much), that the criticism of the parity theory can easily go too far. It is not a precise tool of analysis, and it fits poorly into the framework of the usual simplified theoretical models which work with two or three commodities only. But, if cautiously used, along with other evidence, P.P.P. calculations have considerable diagnostic value, especially in periods of severe inflation.

Finally, let us reflect for a moment on what the P.P.P. theory implies

[38] For the problem on hand as well as for others (e.g. for the related questions how the terms of trade are influenced by unilateral transfers or by currency depreciation) it matters a great deal whether one operates with a model (a) where there are only export and import goods (two-commodity model) or (b) a model with export, import and non-traded goods (four-commodity model) and how in each country export goods, import goods and non-traded goods are related to each other in production and consumption.

[39] In *A Survey of Contemporary Economics* (H. S. Ellis, ed.), p. 223.

for the shape of the demand and supply curves of one currency in terms of the other. Suppose the P.P.P. relation holds. This implies, it would seem, that demand and supply in the exchange market are highly elastic; hence demand and supply of exports and imports, too, must be highly elastic at the P.P.P. ratio. This has an important corollary. It seems that as a matter of fact under normal circumstances (i.e. when trade is not drastically controlled and regimented, and when the comparison is confined to periods that are not separated by great structural upheavals, e.g. prewar with postwar periods) the P.P.P. theory holds in an approximate fashion in the sense that it would hardly be possible to find under such circumstances a case where an equilibrium rate is, say, 15-20 percent off purchasing power par. If this is so, we have a clear indication, it seems, that international elasticities of demand and supply are in fact rather high.

VI. The Theory of International Trade Policy

It is not possible here to discuss the historical, political, administrative, and strategic aspects of foreign economic policy or, for that matter, all of the economic problems involved. Nevertheless, by dealing with at least some of the purely economic aspects of foreign trade policy on an abstract theoretical level an opportunity will be afforded for further elucidation of the theories reviewed as well as of some of their limitations and weaknesses.

Every statement that this or that trade policy is "correct" or "desirable" implies a *value judgment*. The usual "economic" value or objective is maximization of the average national income per head. But shifts in the functional, personal, regional, and temporal—as between the present and the future—distribution of income are also factors that must be taken into account. We may perhaps formulate the "economic" value judgment which more or less consciously is presupposed in policy recommendations as follows: Any policy measure or economic change is deemed good or desirable if it leads to an increase in real national income per head, provided it does not involve a change in the distribution of income that is regarded as undesirable.[1] It is not claimed that this is the only possible or only correct criterion of valuation, but that it is the one which in most cases fits policy recommendations found in the serious literature on the subject.

Static theory tells us that under "ideal conditions"—free competition and the absence of "external economies"—free trade will maximize world income. It does not follow, however, that free trade would also necessarily be the best possible policy from the point of view of each individual country. On the contrary, it can be shown that even under these "ideal conditions" it would be in the interests of any country to restrict imports or exports to some extent (a) if the elasticity of foreign demand is not infinitely great, and (b) if no retaliatory measures need be feared. The actual level of optimum customs protection would then depend on the elasticity of foreign demand and the shape of the domes-

[1] Needless to say, a full statement would require much more detailed specifications. Thus the term real per capita income ought to be interpreted to include not only tangible goods but also leisure, conditions of work, differences in irksomeness of different kinds of labor, and other intangibles. The use of the word "economic welfare" as against national income or output is often consciously designed to draw attention to the "imponderables" mentioned above. We have seen earlier that the "real cost" theorists (especially Viner) have laid stress on the non-physical product dimensions of economic welfare. But the opportunity cost theorist is not debarred from recognizing those factors.

tic transformation curve. In brief, the formula for optimum customs duties is that the marginal terms of trade, that is, marginal revenue or marginal receipts from exports, should be equated to the marginal rate of transformation, i.e. marginal opportunity cost in domestic production. Under free trade (free competition), on the other hand, the terms of trade, that is, the *price* of exports in terms of imports (not marginal revenue), are equated to the marginal rate of transformation, i.e. marginal costs. This rule is an application to the field of trade policy of the familiar proposition of price theory that sellers in a competitive market can improve their position by forming a monopoly and equating marginal revenue and marginal cost instead of price and marginal cost.

This tariff argument, based on the fact that protection will improve the terms of trade and therefore also called the "terms of trade argument," is not new; it was familiar to John Stuart Mill, and hinted at by Torrens, and has been accepted in principle by most of such free trade economists, for example, as Edgeworth and Pigou. In the most recent period the argument has become very popular among theorists and has been much misused for protectionist purposes. Because of the great difficulties in its practical application by any single country even in the absence of retaliation, as well as because of the danger of general application, the implications for policy of this argument are by no means as sweeping and as damaging for the free trade position as they are often made to sound in theory.[2]

Another argument for protection which is applicable even under "ideal" conditions, that is, under perfect competition and in the absence of external economies or diseconomies, is based on the claim that a deviation from free trade would change the income distribution in some desirable fashion. For example, if it could be shown by using the Stolper-Samuelson theorem, outlined earlier, that free trade in a particular country tends to reduce the real income of labor, many would regard this as a sufficient justification for some measure of protection, although

[2] The attitude of 19th century free traders on this problem, reconciling their free trade convictions with their scientific conscience, has been well and typically expressed by Edgeworth. Discussing Mr. C. F. Bickerdike's "Theory of Incipient Taxes and Customs Duties," he concludes:

"Thus the direct use of the theory is likely to be small. But it is to be feared that its abuse will be considerable. It affords to unscrupulous advocates of vulgar Protection a peculiarly specious pretext for introducing the thin edge of the fiscal wedge. Mr. Bickerdike may be compared to a scientist who, by a new analysis, has discovered that strychnine may be administered in small doses with prospect of advantage in one or two more cases than was previously known; the result of this discovery may be to render the drug more easily procurable by those whose intention . . . is not medicinal. . . . Let us admire the skill of the analyst, but label the subject of his investigation POISON." *Papers Relating to Political Economy,* Vol. II, pp. 365-366.

For a typical example of middle 20th century attitude towards this essentially nationalistic, beggar-my-neighbor "optimum tariff policy," see R. Kahn, "Tariffs and the Terms of Trade."

total real income would suffer.[3] Under other circumstances (for example, those of Great Britain in the 19th century) free trade will bring about a desired redistribution of income, which provides an additional argument for its introduction.

Each departure of the actual situation from the ideal conditions[4] provides theoretical justification for some tampering with the free flow of goods and services. It depends on the concrete circumstances, however, whether such justifiable interference should be an import or export duty or an import or export bounty. The literature, however, generally mentions the former although there is *a priori* no presumption one way or the other.

A particularly important deviation from the "ideal conditions" results from price and wage rigidity, and, related to this, conditions of involuntary unemployment. General unemployment provides a theoretical justification, from the standpoint of national interest, for measures designed to improve the balance of payments via import restrictions, stimulation of exports, or some combination of these measures, such as, for example, a currency devaluation. The level of employment would improve through the multiplier; but it should be noted that this will usually result in damage abroad, except in the case when unemployment in one country is accompanied by inflationary pressures and over full employment in another. Unemployment in import competing industries could in theory justify import restrictions even if it did not result in an improvement in the balance of payments. On the other

[3] Actually, an argument for protection based on the Stolper-Samuelson theory would be unconvincing, because the underlying theoretical model rests on very unrealistic assumptions. It assumes two factors of production only—a homogeneous type of labor and all non-labor factors lumped together as capital. Now the factor "labor" is not homogeneous. Even excluding managerial and entrepreneurial services from the category "labor," there are tremendous differences between skilled and unskilled types of labor, white collar and blue collar labor, research and scientific personnel and manual workers, and so on and so forth. It is hard to see how a plausible ethical preference can be based on such broad aggregates composed of very heterogeneous subtotals.

[4] It is often said that the "ideal conditions" implied by the free trade argument include the assumption that factors of production are freely mobile within each country. While such an assumption is implicit in the labor theory of value, it is entirely unnecessary for the logic of the free trade argument. What is required is free price competition (price flexibility) but not free factor mobility. While free mobility is obviously impossible physically, freely flexible prices are feasible. It should be noted that absence of free competition (monopoly) usually *reinforces* the case for free trade, because trade tends to reduce monopoly power.

It is true, however, that if occupational and geographical mobility of factors of production is sharply restricted a country will derive less advantage from its trading opportunities than if factors were fully mobile. Moreover, trade will then often produce sharp changes in the distribution of income as between the different immobile factors—a condition which may be undesirable in itself and is likely to lead to undesirable social reactions, to price rigidity and unemployment, thus entailing deviations from the "ideal conditions."

hand, if unemployment is concentrated in the export industries, it provides theoretical justification for export bounties and/or import subsidies.

It is frequently overlooked that in static terms and from the standpoint of its effects on the terms of trade (that is, ignoring possible transitional difficulties, particularly unemployment and temporary disequilibria of the balance of payments), a general export bounty has the same effects as a general import bounty of the same *ad valorem* percentage. Similarly, as Lerner and others have shown, a general import duty would be equivalent to an equally high export duty provided the customs receipts are spent in the same way and that imports and exports are of equal magnitude. On the other hand, from the point of view of the effect on the balance of payments and the level of employment, that is, in the short run, an import duty is equivalent to an export bounty in the sense that both operate in an expansionary, stimulating fashion; and an export duty is equivalent to an import bounty in the sense that both operate in an anti-inflationist depressive manner.

For our theoretical purposes, the *infant industry argument* for customs duties, which is closely related to the possibility of realizing external economies and to the problem of falling (social) marginal costs, is probably the most interesting one. The concern here is with dynamic processes of the long run and not, as for example in the theory of the multiplier, with the short run.

The free trade argument, based on the theory of comparative costs, has often been criticized for its static nature and for its neglect of the problems of long-run historical development.[5] In pure theory, economic processes are assumed to be reversible. Preference systems, production functions (technical knowledge), the stock of primary factors of production, and the forms of economic organization are all treated as constant or autonomous variables; that is, their magnitude and changes are independent of the equilibrating process itself. All of this is, of course, only approximately true and is correct at best with considerable qualification. Even a demand curve is not always reversible. Assume, for example, that the supply of tobacco temporarily rises and the price falls. When supply returns to its previous level, consumers may have acquired a habit of smoking so that the demand curve will have shifted upwards. On the supply side, where durable capital equipment, the training of workers, and so on, are involved, irreversibilities are even more frequent and important. Most theoreticians, including Edgeworth, Marshall, Pareto, and the Austrian School, have always recognized this in principle. It was particularly emphasized, of course, by the historically inclined economists (including Friedrich List).

[5] However, the free trade argument too can be given a dynamic twist: Foreign competition may and often does shock inefficient producers out of their customary lethargy or something of that sort.

The infant industry argument in favor of customs protection has, and always has had, a particular appeal in "young" and undeveloped countries. In the United States it was employed by Alexander Hamilton, Washington's Secretary of the Treasury, and by H. C. Carey. In Germany, Friedrich List was its most important proponent. John Stuart Mill recognized the idea in principle, but the other classical writers ignored it. Marshall was particularly impressed by Carey's reasoning. Pigou, Taussig, Viner, as well as almost all modern theorists, emphasize that it is possible, in principle, to speed the development of individual industries or of industry as a whole through such protectionist measures as import restrictions or subsidies. This will under suitable conditions result in their faster development than would be the case if all forces were permitted their free play; as a consequence, at the end of the protective period these industries may enjoy a comparative advantage and be able to meet foreign competition without benefit of protection. The condition that protection can in the end be withdrawn without endangering the existence of the industry is generally taken as a necessary, though not always a sufficient, criterion for the success of a policy of infant industry protection. It is not a *sufficient* condition because against the advantage gained through successful nurturing of an industry must be set the temporary losses in national income sustained during the period of protection. It might have been more profitable if free trade had been permitted to nurture an export industry to maturity.

Neo-classical theory attempts to deal with these problems which at least partially transcend the framework of static marginal analysis, by means of Marshall's concept of *external* as distinguished from *internal economies*. By the latter are meant reductions in cost within a firm resulting from large-scale operations. It is well known that falling marginal costs due to internal economies, within the enterprise, are not reconcilable with free competition. External economies, cost reductions accruing to one or several industries from causes outside the individual enterprise, result in a downward shift of the marginal cost curve for each firm when the industry as a whole expands. Falling costs in that sense are compatible with perfect competition. Examples of such external economies are lower prices charged by such service industries as transports and communications, made possible by larger operation, improvement in the supply of labor, better technical and commercial education, cross fertilization resulting from the application of discoveries and innovations made in some industries to others, and so on.

It must not be overlooked, however, that external *diseconomies* exist too. These could be caused, for example, by traffic congestions, air pollution from smoke and pollution of rivers from industrial sewage, worsening of climatic conditions and water supply from deforestation, and so forth.

We are concerned here with very important and highly complicated

sets of interrelated factors which are difficult to recognize and hard to predict. The individual producer often has no way, and frequently no interest, to foresee such conditions. Under such circumstances one cannot very well assume that the free, unregulated forces of the market, whether under competition or with all sorts of monopolistic encumbrances, will always and without exception bring about the optimum allocation of resources and the best imaginable division of labor. On the other hand, it is at least equally unjustified to expect that government officials and parliaments will usually arrive at the correct diagnoses and proper measures. One thing is clear, it is not permissible, though often done, to derive out of such considerations a presumption in favor of general customs protection.

It should also be added that it is, *a priori*, probable that in many cases not a customs duty but an export bounty would be in order inasmuch as external economies may be realizable in the export rather than in import industries. Each country's and each industry's case must be examined carefully. The fact that the infant industry argument is almost exclusively employed to recommend import restrictions and practically never to justify the opposite—import bounties—(as mentioned above, import and export bounties are equivalent from the static viewpoint) shows clearly the bias of those who employ it.

Those economists who were not satisfied with the contention of the theoretical possibility of successful and advantageous infant industry protection, but who took the pains to examine the policy as it works out in practice—for example, Taussig and Marshall, the latter making a special trip to the United States to study the practical implementation of Carey's theories—were soon disillusioned and have come to rather skeptical conclusions.

The policy of speeding a country's development through customs protection or other measures is a task of great difficulty and complexity. Recommending and evaluating such a policy, to say nothing of carrying it through, requires a good deal more than keen theoretical analysis. What is also needed is a vast factual knowledge, good judgment, and, above all, a sense for historical, political, and social development concerning the practical-political feasibility of a rational policy of protection.

In summary, the contribution which traditional, static trade theory can make to the solution of such problems is rather limited; but it should not be forgotten that static theory comprises "comparative statics," enabling the theorist to go beyond a mere "cross section" analysis and to explain the consequences of changes in the data. What is needed for a fuller treatment of economic change is a long run dynamic theory in which consumer tastes, and especially the supply of factors of production as well as conditions of production, are no longer treated as ultimate data (as they are in static theory), but as variables. Many years ago

Friedrich List chided the classical school for closing their eyes to these problems. In our times, J. H. Williams has reiterated this criticism and emphasized the limitations of static cross-section analysis; and Ohlin has done more than any other theorist to show how international trade changes factor supply and moulds consumer preferences.

As far as abstract theory is concerned there exists, however, not much more than occasional hints and programmatic pronouncements concerning the necessity of dynamizing traditional theory plus a few fumbling steps in the direction of the actual construction of dynamic models. Economic history has more to offer than theoretical analysis for the solution of these problems. Those who believe that it is possible to set up model sequences of economic development should go ahead and do it, instead of merely criticizing others for not having done it. Traditional theory, contrary to the views of its critics, by no means precludes the construction of such a broader theoretical frame, although some incautious policy conclusions derived from static reasoning may have to be modified.

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