MEASURING THE DEGREE OR PROGRESS OF ECONOMIC INTEGRATION

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4 Measuring the Degree or Progress of Economic Integration (Main Paper, Working Group A)

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This paper presents leading ideas in post-war research on integration. In the spirit of Tinbergen (1952), the goal is understood to be the clarification of the connection between the instruments and objectives of economic policy. In the present context, the instruments are the tariff and nontariff barriers that hamper integration. Trade and capital flows are, in Tinbergen's terminology, 'irrelevant variables', interesting only because of their impact on the objectives of policy makers. The latter are variables that affect welfare and its distribution to consumers.

I. INSTRUMENTS OF INTEGRATION POLICY: ELIMINATION OF IMPEDIMENTS TO TRADE

TARIFFS

As has long been known, the level of tariffs is more difficult to measure than it would seem at first sight. Tariff schedules are public, but their interpretation is often made difficult by peculiar institutional clauses. Furthermore, it is difficult to obtain a good measure of the restrictive impact of tariffs. Average tariff rates will not do, for, if the rate is zero on one good and prohibitive on another, the average tariff is zero. It is necessary to use *a priori* weights, which inevitably are arbitrary.

Balassa (1965), Basevi (1966), Corden (1966) and Johnson (1965) have raised a more subtle issue by proposing to use input-output analysis to measure the effective *rates of protection* achieved by tariffs on value added. This approach raises a host of problems. The assumptions of fixed technical coefficients and of perfectly competitive price adjustment are both debatable. It is clear that the concept of effective protection, like many tools of analysis, relies on oversimplified assumptions. Applications of this tool have drawn attention, however, to two important policy problems. The first is that, because tariff rates in developed countries rise with the degree of manufacture, effective protection rates are substantially higher than are nominal tariff rates. The other is that the system of protection erected by developing countries is so haphazard that it may well be a major cause of inefficiency.

NONTARIFF BARRIERS

The effect of nontariff barriers on trade is difficult to measure. A key concept is the tariff equivalent of a quota, equal to the difference between the world price of a product and its price in the protected market. Interesting applications of this idea have been made by Baldwin (1960) and Holzman (1969). As noted by Bhagwati (1966), the concept is valid only if there is pure and perfect competition in domestic markets.

II. IMPACT OF INTEGRATION ON IRRELEVANT VARIABLES: TRADE AND FACTOR MOVEMENTS

TRADE EFFECTS

The novelist P. Doninos proposed the fiction that in addition to our own world there are several 'anti-mondes': alternative worlds in which all events except one are identical to those in our own history. Measuring the effect of integration necessitates the construction of such a fictitious anti-monde, which represents what the world economy would be like if obstacles to trade had not been removed.

Measures of the effect of integration on trade may be distinguished according to method or according to time. The first method is to use a fully specified structural model of domestic and international trade. Such calculations may be made *ex ante* — the appropriate position for decision making — or *ex post*. Regarding calculations *ex post*, a number of observers have resorted to what Verdoorn and von Bochove (1972) called 'residual imputation'. Here the anti-monde is constructed by projecting pre-integration flows, and the impact of integration is taken to be the residual obtained by subtracting projected flows from actual flows.

EX ANTE CALCULATIONS: STRUCTURAL MODELS

The accuracy of *ex ante* forecasts of trade effects depends on the reliability of the price elasticities that are used. In addition to this general problem, a key issue is whether the effect of a tariff is the same as that of an equivalent price change. The thorough investigations by Kreinin (1961) and Krause (1962) have established the fact that tariff elasticities substantially exceed the usual import-demand elasticities. The elimination of a tariff is perceived by business as irreversible; there may be nonlinearities due to threshold effects that cause the import response to a large price cut to be proportionately larger than the response to a small cut.

Another way to predict the effect of integration is to use linear programming. This is valid if economic agents behave like pure competitors. As pointed out by Negishi (1972, p. 35) in his criticism of Kemp, the use of programming to simulate general-equilibrium behaviour implies that, unless international prices are fixed, the programming model is solved jointly with a complex fixed point problem.

EX POST CALCULATIONS: RESIDUAL IMPUTATION

Under the residual-imputation approach, the effect of integration is computed by comparing actual trade to an anti-monde that is constructed by projecting trade flows on the assumption that no integration would take place. All studies use the familiar assumption that market shares tend to be rather stable in the absence of integration. They also use the common sense idea that the validity of this assumption can be increased by disaggregating markets by products and by commodities. Similarly, and here many studies are deficient, the analysis should cover domestic as well as foreign trade. Perhaps the chief goal of studies of integration is to discover whether there has been trade creation. This can be verified only by observing trade matrices that cover both domestic and foreign sales.

The next idea is less orthodox. Authors of residual-imputation studies often take it for granted that a country's growth has a roughly symmetrical effect on its exports and imports. Except in Linder's book (1961), this 'gravity model' has received little recognition in economic theory, even though it is much more firmly established empirically than are most of the conclusions of orthodox trade theory.

A generally overlooked point is that projections that do not take into account changes in competitive strength lead to misleading results. In theoretical work, trade diversion is defined by comparing situations where balances of payments are in equilibrium. There is an obvious danger of confusing trade diversions so defined with the loss of markets that third countries may suffer as a result of an overvalued exchange rate.

Finally, it remains necessary to find ways of accounting for what Lipsey called 'growth effects': the impact of changes in taste and technology. The method used is to look for a 'control group' that is subject to the same growth effects but is not influenced by integration. The control group can be the pre-integration period; or it can be represented by trade flows outside the integrating area that are little affected by integration effects.

EX POST ESTIMATES: STRUCTURAL MODELS

In principle, the estimation of a fully specified model of production and trade can give a firmer grip on the data than the residual-imputation method does. In early studies, integration effects are represented by dummies representing changes in trends or in income elasticities. The specification of these models is too crude to exploit the inherent power of the structural method. The recent work by Verdoorn and Schwarz (1972) and by Resnick and Truman (1974) goes further by attempting to take account of all the forces that influence trade and production.

RESULTS

These studies confirm that the formation of EFTA and the EEC has been a considerable event in the history of international trade. The impact of elimina-

ting tariffs has been considerable, implying trade responses consistent with tariff elasticities of -4 or more. There seems to have been only a minor amount of trade diversion, even for agriculture (Thorbecke, 1974). Perhaps a third, or a half, of intra-EEC trade is the result of net trade creation; for EFTA, trade creation is approximately one-third smaller.

EFFECT OF INTEGRATION ON FACTOR MOVEMENTS

Both the theoretical work by Mundell (1957) and the survey of the views of businessmen as reported by Kreinin (1965) suggest that tariffs influence direct investment. Most of the work on this subject is, unfortunately, superficial: it is difficult to do better, because of the unsatisfactory level of accuracy of the data and the constant changes of restrictions on capital exports.

In his paper at this congress, Mihailović reviewed the effect of integration on movement of labour. This effect has been very small in both the EEC and EFTA.

III. THE OBJECTIVES OF INTEGRATED POLICY: EFFECTS ON WELFARE

The most interesting effect of integration is on the objectives of economic policy; unfortunately it is in this area that the empirical results are the most disappointing. We survey, in succession, the effect on welfare and on income distribution.

EFFECT ON WELFARE ACCORDING TO CLASSICAL TRADE THEORY

There has sprung up an enormous amount of literature based on a classical trade model that assumes given techniques, nonincreasing returns in production, convex social-welfare functions for countries, and perfect competition. This literature bypasses the study of the effect of trade on income distribution, assuming it to be cancelled by lump-sum transfers, which are costless and have no effect on incentives. (See, for example, Samuelson 1962.) Although this assumption is highly unrealistic, I shall find it convenient to retain it in this section.

This theory leads to an elegant method of estimating the welfare effects of integration. The first step is to show that a small reduction of a tariff brings a gain that is proportional to the level of the tariff. The magnitude of this efficiency gain can be measured by a lump-sum transfer abroad that would exactly offset it, leaving the country on its initial level of utility; this turns out to be equal to the level of the tariff, multiplied by the change in imports. As the tariff drops, the gain gradually vanishes. It is natural to measure the welfare gain by the area of a 'welfare triangle' of base Δm and height t , where Δm is

the increase in imports brought about by the adoption of free trade and t is the initial level of the tariff.

Viner (1950) has drawn attention to the fact that this simple analysis does not apply to customs unions. The preference granted to customs-union partners may be a cause of waste by causing a switch from cheap imports from outside the union to more expensive suppliers within it. Because of such 'trade diversion' the customs-union avenue to integration involves costs that do not arise if integration is worldwide.

WELFARE GAINS UNDER MORE GENERAL ASSUMPTIONS

But all this discussion is counting angels on the point of a needle. Welfare triangles are minute. Pre-EEC tariffs averaged at some 12 per cent, and the more optimistic estimates of trade creation suggest orders of magnitude of some \$10 billion: the area of the welfare triangle is $\$12 \text{ billion} \times 0.12 \times 1/2 = 0.6$; a \$600 million gain, from which it is necessary to subtract the costs of trade diversion in industry and agriculture. The welfare significance of the EEC appears less than that of the Concorde aeroplane. The assumptions that underlie such calculations are, however, unrealistic. In fact, as Bhagwati (1965) and, more recently, Stern (1973b) have noted, attempts to verify empirically the predictions of the classical model have on the whole been unsuccessful.

A realistic analysis of international trade in manufactures has to start from the realisation that manufactures are sold in imperfect markets and produced under conditions of increasing returns; that comparative advantage in manufactures is due to the hazards of invention and to the heritage of externalities and scale economies; and that there is not a finite number of goods but a continuous range of more or less substitutable products, most of which are not actually produced. Important contributions to this more realistic view of international trade are Vernon's product-cycle hypothesis (1966), Linder's monography (1961), and the promising start made by Negishi (1972) in working out its implications rigorously; it seems appropriate, therefore, to christen it the VLN model. This model, unfortunately, does not lead to an elegant method comparable to the welfare-triangle formula. It is mainly useful in providing guideposts, which may prevent gross errors in estimating the welfare gains from integration. It is wrong to assume that the change of assumptions will drastically change the conclusions that are reached.

The VLN model assumes profit maximisation. This means that, unless demand is very inelastic, firms will find ways of exploiting scale economies. Unless externalities are very diffuse, they will find ways to internalise them – for example, by using discriminatory prices to capture a consumer surplus arising from production of a good. It is hard to believe that large-scale economies are left unexploited in developed countries today, with their large levels of demand and their openness to foreign trade.

Integration may, however, prevent the elimination of other, less visible

obstacles to trade. The first is the riskiness of exporting, which is such an obvious element to business decision making. Since, as Koopmans has noted (1967), scale economies are strongly linked to indivisibilities, producers may find that they must choose between the present output and a much higher one, the sale of which may require costly investment in developing foreign markets. If a risk of discrimination is perceived as the new market is suddenly invaded, the larger output will seem attractive only if the foreign price hoped for covers not only the tariff, but also a risk premium justified by the risks involved.

A second idea is that markets become more perfect as the number of participants increases. One of the significant effects hoped for from integration is an increase in the number of firms able to compete effectively in each market. If this increases the elasticity of demand, as perceived by firms, there will be a double gain: a narrowed gap between marginal cost and price and, if firms are in equilibrium at a point of decreasing average cost, a reduction in costs. It is easy to see that the resulting increase in production could be large, and the gain in efficiency substantial.

There exists no theoretically well-grounded formula for computing gains from integration under VLN assumptions. Enough is known, however, about returns to scale and the connection between productivity and learning to make informed guesses possible. Balassa (1974) estimates various effects of integration on the welfare of EEC countries, taking into account returns to scale, an effect of integration on investment, a secondary effect due to the reinvestment of the extra growth, and finally also welfare triangles. Estimates such as this suggest that the total gain may be three or four times greater than is implied by calculations of welfare triangles, but that it is still less than 1 per cent of GNP. Are such figures trustworthy? There has been such a lack of research on equilibrium under increasing returns that there are perhaps mechanisms under which larger gains could be predicted. However, until a credible example is constructed, there is no choice but to accept these pessimistic estimates.

We are left, therefore, to search for other reasons if we wish to believe that integration has as large a welfare effect as is usually supposed. One possibility is the vague concept that Leibenstein (1966) has christened *X*-efficiency. As Leibenstein has shown, there is much evidence that different producers do not operate at the same efficiency levels. As technology is, on the whole, freely available, this finding suggests that productivity may be strongly affected by psychological and sociological obstacles.

Integration may perhaps help to erode the psychological and sociological bars to greater productivity. But the spectacle of the British shipbuilding industry dying on its feet without eliminating the restrictive labour practices that hamper its modernisation does not encourage optimism. In Italy, industry has continued to find it worthwhile to offer high wages to migrants to the north, rather than to move capital to the south and take advantage of the lower wages that could be accepted by the migrants' brothers. The arguments for a large *X*-efficiency effect are therefore not strong either.

WELFARE EFFECT OF INTEGRATION IN DEVELOPING COUNTRIES

Something ought to be said about the possible effects of integration on the growth of developing countries. There has been little research on this subject, because integration experiments in these countries have been rather unsuccessful. Yet it may be that it is in developing countries that integration would have the greatest welfare effect.

Developing countries have been called fractured economies, in that the productivity of factors in alternative uses is not correctly reflected by market prices. Chenery has formalised, as the two-gaps hypothesis, the idea that shortage of foreign exchange limits the growth of many developing countries. Balassa's research on the growth of semi-industrialised countries has uncovered evidence that, as countries reach a certain stage of development, an outward-oriented pattern of development becomes far more effective than are the autarkic strategies that many developing countries have adopted. It will be worthwhile to develop a theory of integration adapted to such an economic context. While this is a controversial area of research, it appears that differences of several per cent in growth rates may hinge on the adoption of correct trade strategies by developing countries. This is much more than the welfare effects of integration for developed countries, and suggests that integration between developing, and between developing and developed, countries is one of the most important areas for policy experiment and research today.

IV. THE OBJECTIVE OF INTEGRATION POLICY: EFFECTS ON INCOME DISTRIBUTION

INTERNATIONAL DISTRIBUTION OF INCOME

The classical argument that a country gains from adopting free trade is based on the assumption that world prices are fixed. The empirical literature on international trade suggests overwhelmingly that this is not true, even for small countries. Demand for exports is not perfectly elastic. There is also some evidence (for example, Kreinin, 1961) that foreign supply is price-inelastic, so that cutting tariffs increases import prices. The adoption of free trade leads to a deterioration of the terms of trade, which in turn offsets the efficiency gains made possible by free trade. Basevi (1968) has shown that, for the United States, the loss from worse terms of trade is large relative to the welfare-triangle measure of the gain from greater efficiency.

Such results are not strange. A well-known theorem shows that a country that has monopoly power in trade can always gain from imposing a tariff, unless this brings about retaliation (Kemp, 1964). The implication is that trade negotiators are right when, in international negotiations, they try to minimise their own tariff concessions and maximise those of their partners.

Indeed, post-war progress in integration has crucially depended on the techniques of *quid pro quo* bargaining, which offer scope for offsetting the effect of trade liberalisation on the international income distribution. It is, of course,

the outstanding advantage of the customs-union formula that the offsetting tends to occur automatically. Thus, the criticism of customs unions by James Cooper and Massel (1965), who argue that, if world prices are given, a country gains more from reducing tariffs than from joining a customs union, has no practical relevance.

The classical theoretical reasoning is not adequate for appraising the effect of integration on the welfare of developing countries. The main issue there is economies of scale, which are assumed away by classical theory. Integration between countries at different stages of industrialisation is apt to work to the advantage of the more advanced countries, whose industries benefit from economies of scale, and to stifle their less advanced competitors. It is because no way has yet been found to overcome this difficulty that developing countries have had so little success in integration experiments.

DISTRIBUTION OF INCOME WITHIN COUNTRIES

Here the relevant results of the classical theory of international trade are not useful for understanding empirical facts. The main results are the factor-price equalisation theorem, which asserts that, under appropriate assumptions, specialisation (though not complete specialisation) by countries in exports of goods that are produced with relatively large quantities of the countries' abundant resources will equalise the rewards of factors of production between countries; and the Stolper-Samuelson theorem, which asserts that protection of industries employing predominantly a relatively scarce factor will increase the reward of the factor. In a celebrated article, Leontief (1954) suggested that, contrary to the predictions of the first theorem, American trade involves a net import of capital services. Much has been written on the subject since then, but criticism has had greater success in casting doubt on Leontief's conclusion than in proving that the opposite conclusion is true. Concerning the second theorem, computations by Baldwin (1971) suggest that the American tariff has no strong bias against labour-intensive imports, so that the problem examined is not important in practice.

What is unrealistic in the classical theory is the assumption that capital and labour are homogeneous. For policy purposes, the income-distribution implications of integration must be considered in a world where capital cannot be shifted at will and where labour is tied to enterprises and industries by acquired skills, seniority, and even by sentiments of pride in the continuation of a tradition.

From this point of view, the dominant fact is that integration has a large effect on production and trade. Since factors of production are not very mobile, integration potentially involves a sweeping redistribution of income among individuals. It is not the rewards of 'labour' and 'capital' that are at stake, but workers who fear for their jobs and employers who fear bankruptcy.

Governments will engage in integration policies only if they feel that these will not inflict substantial losses on parts of the population. Obstacles to

trade in manufactures among developed countries have been reduced rapidly only because experience has shown that the result was largely what Balassa (1966) has called intra-industry (as opposed to inter-industry) specialisation. Enterprises have been able to replace, by products made and sold at a profit, products that could not be sold profitably in the absence of protection. The ability of farmers to adapt to sudden changes in market conditions is less than that of industrial firms; it was the desire to avoid harm to groups of farmers that led EEC governments to align protection rates on the highest prevailing levels when the common agricultural policy was formed.

The only real experiment in integration involving developing and developed countries has been the Commonwealth Preference Scheme. The evidence is strong that this led to inter-industry (rather than intra-industry) specialisation in the United Kingdom. The fear of similar effects on income distribution has led governments to hedge the generalised preference schemes that have been introduced in recent years with so many escape clauses that their impact is likely to be small. Major progress in integration among developed and developing countries will take place only when it appears that this will not have a marked effect on the inter-industry distribution of incomes in developed countries. Perhaps the substantial broadening of the range of exports of developing countries, which has occurred recently, will facilitate the removal of obstacles to trade in this area.

V. CONCLUSIONS

This discussion of studies on the measurement of the effects of integration reveals a broad consensus on three facts. The post-war integration among developed countries has brought about considerable changes in trade and has led to substantial progress in international specialisation. The resulting gain in efficiency seems to be a surprisingly small fraction of the GNP of these countries. Apart from the common agricultural policy of the EEC, this integration has not led to marked changes in the distribution of incomes among individuals or among countries. These conclusions apply to integration among developed countries. For developing countries, there is much less agreement, and the scant success of the experiments that have so far been undertaken has made it difficult to tell which of the conflicting views about integration effects was correct.

From the policy maker's point of view, perhaps the most important effect of integration is on the distribution of incomes within and among countries. In fact, success of future experiments in integration seems to depend on the ability of their proponents to devise ways of cancelling their effects on the distribution of incomes. It seems that this is an area of research that would merit more attention from empirical research than it has received in the past.

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