Quantitative Estimates of Trade Liberalisation— Methods and Results

DERMOT McALEESE*

THE economic benefits of trade liberalisation are conventionally divided into two parts: static gains and dynamic gains. Static gains refer to the advantages of increased specialisation arising from easier access to international markets. They lie at the core of the classical theory of comparative advantage. It was static gains Ricardo had in mind in his famed and much-debated assertion that international trade increases "the mass of commodities and the sum of enjoyments". Other benefits, however, may accrue. First, freer trade may lead to more exploitation of economies of scale. Secondly, it may create more competitive conditions in national markets thereby increasing productive efficiency. Finally, faster economic growth may ensue on account of enhanced long-run investment opportunities. For example, it is argued that industries producing new technically-sophisticated products will develop only in the context of extremely large integrated markets. These last three types of gain constitute the dynamic gains from international trade.

It is one thing to assert that freer trade increases the gains from trade, but an entirely different problem to provide quantitative estimates of their magnitude. Clearly most of these extra gains are realised in the form of an increased volume of exports and imports following the removal or reduction in protection. Ceteris paribus, the greater the increase in the volume of trade, the greater the increase in the gains from trade. In evaluating the consequences of trade liberalisation, therefore, attention naturally focuses on its effect on trade flows. This problem has received the attention of many economists during the past decade—efforts, for example, have been made to review the trade effects of regional free trade groupings such as EFTA and the EEC, and to quantify the increase in trade which would accompany a dismantling of developed countries' tariff barriers against the exports of the less developed areas. Exercises of this type are becoming increasingly familiar and play a vital role in international tariff negotiations.

Our aim in this article is twofold. First, we describe and evaluate the methods

used by economists to calculate the effects of trade liberalisation on trade flows. We distinguish between *ex-post* and *ex-ante* methods of calculation and explain the special difficulties involved in estimating the effects of a regional free trade grouping such as a common market as opposed to the effects of unilateral tariff reductions. Secondly, the results of *ex-post* studies are examined and their implications for developed and less developed countries compared.

Ex-ante Methods of Estimation

The effects of trade liberalisation may be assessed *ex-ante* or *ex-post*. If trading conditions have already been partially or wholly liberalised, observed *ex-post* trade flows can be compared with those expected on the basis of a continuance of protection. If, on the other hand, one wishes to investigate *ex-ante* the effects of freer trade, two hypothetical trade flows must be estimated: trade flows assuming no change in commercial policy, and trade flows assuming a reduction in the degree of protection. Although the problems associated with *ex-post* and *ex-ante* studies are similar, the method of analysis corresponding to each type of study in practice differs quite markedly.

From a practical point of view, *ex-ante* studies of trade liberalisation are more relevant than any other type. They are explicitly designed to aid and instruct the policy maker. Two procedures employed in *ex-ante* studies may be distinguished. The first—the "elasticity" approach—involves a direct application of price elasticities to the fall in tariffs occasioned by the freeing of trade. The second approach could be termed "institutional" and consists of an industry-by-industry survey in which the free trade prospects of each industry are evaluated in terms of export potentialities, loss of domestic market share etc. The elasticity approach differs from *ex-post* methods in that the difference between two hypothetical flows (trade flows with protection and without protection) is estimated rather than the difference between the observed flow after the change in commercial policy and the hypothetical *cum*-protection trade flow.

The immediate impact of trade liberalisation is to reduce the price of imports relative to the price of domestic goods. Assuming that the amount of this reduction is measured by the level of nominal tariffs and abstracting from the ambiguities inherent in the concept of a "level" of tariffs, the change in imports (Δm) arising from the elimination of tariffs may be expressed as:

$$\Delta m = m \cdot \frac{n}{m} \cdot \frac{t}{1+t} \tag{i}$$

where

m = the volume of imports

$\dfrac{n}{m}$ = price elasticity of import demand

t = the nominal tariff rate.

Since not all imports have the same elasticity of demand, they are usually divided into groups chosen in such a way that (a) cross-elasticities between these groups may be taken as negligible and (b) the price elasticity of the commodities comprising each group is approximately the same. Obviously the two criteria often conflict. The more we disaggregate, the greater the likelihood of our equal-elasticities assumption being satisfied, but the probability of the cross-elasticity assumption being violated simultaneously increases also.

The widespread use of formula (i) must be attributed to its simplicity and ease of application.[1] However, it is liable to two major criticisms. In the first place, continuity of the demand function is assumed—that is, we presuppose a constant elasticity regardless of the size of the price change. This assumption is quite reasonable when marginal price changes are at issue. If, however, tariffs are high, their removal may cause exceptionally large domestic demand and/or supply responses which will not be adequately reflected in our estimates. Secondly, trade liberalisation involves a change in the price structure of an economy and not merely a fall in the price of one single import group. An implicit assumption of formula (i) is that the demand for each type of import depends on its own price alone, and is therefore not influenced by changes in the prices of other imports.

With regard to the first criticism, it may be pointed out that the assumption of continuity applies to all empirical work involving the use of elasticities and is not peculiar to the trade liberalisation problem. While doubtless the assumption will be violated in the case of certain commodities, it probably serves as a useful approximation to the average experience. Efforts, however, have been made to alter the formula so as to allow for changes in the price structure. With the aid of some simple algebra, formula (i) can be converted to the following form:

$$\Delta m = C \cdot n \cdot \frac{t}{1+t} + P \cdot e \cdot \frac{z}{1+z} \qquad \text{(ii)}$$

where

n = price elasticity of demand for importables (imports plus domestic substitutes).

C = domestic consumption or use of the commodity

e = price elasticity of supply of value added

P = domestic production

z = the effective tariff rate

1. It may be added that this formula was applied by the present author to estimate the effects of free trade on Irish imports [13].

Imports being, by definition, the difference between domestic consumption (C) and domestic production (P), formula (ii) expresses the change in import demand as the sum of a production effect and a consumption effect. The magnitude of the consumption effect depends on the level of nominal tariffs $(t/1 + t)$ and the demand elasticity (n); whereas the production effect is determined by the level of effective tariffs and the supply elasticity of value added. By introducing the concept of effective tariffs formula (ii) permits a more sophisticated evaluation of the effects of free trade.

To see this, consider the definition of an effective tariff, namely, the excess of domestic value added over free trade value added as a percentage of free trade value added. The use of value added as a yardstick means that tariffs on material inputs are taken into account. Thus a reduction in an input tariff will, *ceteris paribus*, raise domestic value added and thus increase the amount of protection afforded to an industry. A reduction in the nominal tariff on output will, on the other hand, have precisely the oppositive effect. If the tariffs on output and inputs are all the same height, then the effective tariff rate is zero, thus according with the commonsense observation that a high level of nominal protection on a finished good (footwear, for example) can easily be dissipated by protection on that commodity's inputs (such as leather). With the advent of free trade, tariffs on both inputs and outputs are simultaneously reduced, a phenomenon ignored by formula (i) but obviously allowed for in estimates based on formula (ii). For this reason, the first formula has been employed on a number of occasions in preference to the second, as for example in Balassa's study [1] of the effect of trade liberalisation on exports of the third world to the developed economies.

Although formally attractive, the application of formula (ii) to a concrete situation often, in practice, proves an unsatisfactory exercise. In the first place, estimates of domestic demand and supply elasticities $(n$ and $e)$ are seldom available. One is then obliged to choose arbitrary values of the elasticities, as Balassa [1] and before him Stern [16] and Floyd [9] were forced to do.[2]

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2. The following elasticities were assumed by Balassa:

	n	e
Consumer goods	—1·00	0·80
Intermediate goods	—0·25	0·15
Capital Goods	—0·30	0·20

Given the arbitrary method of choosing elasticities, Leith and Reuber's [11] criticism of Balassa for equating elasticity of value added with elasticity of supply appears academic in the extreme. These authors rightly point out that the former elasticity will always be less than the latter. However, in view of the extremely low supply elasticities assumed by Balassa the upward bias in his estimates of trade liberalisation caused by using supply rather than value added elasticities can safely be considered negligible.

Secondly, formula (ii) cannot be applied in its present form to intermediate goods. A third component must in fact be added to allow for changes in input demand arising from the expansion or contraction of industries employing these intermediate goods as an input. This introduces more parameters whose value must be chosen arbitrarily and further complicates the computations. Any improvement in the estimates due to the formal superiority of the amended formula would most likely be counterbalanced by the wide margin of error inherent in our choice of parameter values.

Finally, one could argue that the production effect of trade liberalisation is, at most reasonable levels of aggregation and for most industries, extremely low. In practice effective tariff estimates are seldom available for more than thirty separate industries. Thus each industry typically produces a wide range of products. It is now becoming increasingly evident—and we shall refer to the evidence later—that free trade leads to greater specialisation within industries than between industries. Thus, multi-product firms tend, in free trade conditions, to concentrate on an increasingly narrow range of products and discard those lines where it feels its comparative advantage is weakest. However, intraindustry specialisation may not occur in all instances; many industries in underdeveloped areas would obviously be unable to compete with imports if tariffs were removed. Thus, by assuming that trade liberalisation leads to only marginal changes in the distribution of economic activity between industries, we assume away an important issue which no comprehensive analysis of trade liberalisation ought to ignore— namely, the effect of increased foreign competition on the structure of production and employment. Thus estimates based on an elasticity approach must be supplemented by a solid body of institutional research. A blind application of econometric formulae provides no better results in the context of free trade than it does in any other branch of economics.

Two conclusions therefore appear to emerge. First, if the elasticity approach is being used, a strong case may be made for the first formula which involves only the use of nominal tariffs and direct import demand elasticities. The formal advantages of the second version are very likely outweighted by the practical difficulties of applying it. Secondly, the elasticity approach cannot be applied mechanically. A second ex-ante approach, the "institutional" approach referred to earlier, is an essential complement.

The "institutional" approach consists of an industry-by-industry survey of the economy, in which price and productivity comparisons are made between home producers and foreign competitors in each industry with a view to ascertaining the impact of trade liberalisation on domestic production and employment. For example, industry studies of this type, prompted by the prospects of free trade with Europe and the USA respectively, have been undertaken in Ireland and Canada. Between 1962 and 1965, twenty-six Irish industries, absorbing 58 per cent of total manufacturing employment were surveyed by a number of research teams (usually consisting of an economist, a government representative and representatives of the industry concerned). This ambitious undertaking was initiated and financed by the

Government.[3] The survey teams concluded that, provided appropriate readaptation measures were taken, most sections of Irish industry would be able to compete on the international market. Special difficulties, however, were predicted for the textiles, leather footwear, furniture, pottery, motor vehicle assembly and iron and steel industries. The Canadian industry surveys, carried out under the auspices of the Private Planning Association of Canada, were conducted on similar lines to the Irish reports, but their coverage was less extensive (only the primary textiles, furniture and paper industries were examined separately). Like their Irish counter-parts, these reports stressed the need for drastic readaptation while remaining optimistic as to the long-term competitiveness of these industries under free trade. A further study on institutional lines of the implications for Canadian industry of free trade was undertaken by the Wonnacotts [20].

· The chief advantage of these industry enquiries is that they come to grips directly with the question of what industries will survive and whether drastic changes will be necessitated in the structure of industry. Considerations of this type are, as we have seen, assumed away in the elasticity approach. On the other hand, the "institutional" approach cannot on its own provide a comprehensive answer to the effects of freer trade. The effects of free trade on imports are quantified in a rather haphazard fashion (e.g., by means of questionnaires to individual firms in which their opinion as to the loss of domestic sales following free trade is solicited) or, alternatively, are not quantified at all but are described in qualitative terms. While it must be freely granted that our quantitative estimates are subject to wide margins of error and rest on rather drastic assumptions, it is surely desirable for policy purposes to indicate the order of magnitude of the effects of trade liberalisation. Ideally, therefore, ex-ante estimates of the effects of free trade require: (a) institutional industry-by-industry studies, (b) effective tariff estimates for the major industries in the economy, which should provide a concise picture of the resource-allocation effect of protection and whose results can then be compared and reconciled with the industry surveys and, finally, (c) quantitative estimates derived from elasticities. These estimates will indicate the consequences, in terms of exports and imports, of free trade and should provide a useful basis for deciding, say, whether or not devaluation may be necessary or whether an amendment to the time schedule of tariff reductions ought to be requested.

Ex-post Estimation

_ As already noted, *ex-post* studies calculate the free trade effect as the residual between observed trade flows after free trade is established and "expected" or hypothetical trade flows on the assumption of protection being maintained. Where customs unions or free trade areas are under discussion (as is usually the case), separate estimates must be made for intra-area and extra-area flows in order

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3. The findings of the research teams are conveniently summarised by Miss Catherine Brock in a report commissioned by the Committee of Industrial Organisation [7].

to distinguish between trade creation and trade diversion. Thus any reduction in extra-area trade due to discrimination against third-country imports represents trade diversion, whereas the expansion of intra-area trade represents a mixture of desirable trade creation effects (i.e., transfer of production from inefficient to efficient intra-area sources) and undesirable trade diversion effects (i.e., transfer of demand from low-cost extra-area producers to high-cost intra-area producers). The task of sorting out these two effects is important but also extremely difficult. Statistics on the increase of extra-area trade following the formation of a regional free trade area, although commonly used to illustrate the advantages of union, are in fact *per se* devoid of any welfare significance whatsoever.

The difference between observed and hypothetical trade flows have been estimated in a variety of ways. Three of the most important will be examined here: (*a*) extrapolation of the trade matrix (*b*) the income-elasticity approach and (*c*) the share-change method.

Given the world trade matrix prior to trade liberalisation, the expected trade matrix for any subsequent year can be constructed by distributing the value of total trade among the individual cells on the assumption of unchanged composition of world trade. More sophisticated versions of the expected trade matrix may also be derived. For example, past trends in trade flows could be incorporated into the projected trade flows. This method has been employed by Waelbroeck [18] and others in *ex-post* studies of the EEC.

Extrapolation of trade flows in the above manner provides an answer as to whether or not the formation of a particular trading bloc exercised a noticeable impact on foreign trade. Thus, using this method, we are able to say that intra-area trade increased by more than would be expected on the basis of past trends. It is not, however, possible to separate trade creation from trade diversion directly. Hence we are unable to distinguish between the portion of increased intra-area trade which was due to a deflection of imports from extra-area to intra-area sources, and the portion which reflects greater intra-area specialisation of production. In order to separate the two effects, trade flows must be linked explicitly to intra-area consumption. The presence of trade diversion is then readily discerned wherever an increase in the proportion of intra-area imports to intra-area consumption is accomplished by a corresponding proportionate decrease in extra-area imports. Trade creation can be calculated as a residual, the difference between the total intra-area trade increase attributable to trade liberalisation less trade diversion.

These considerations led Balassa [3] to devise an alternative method of estimating the effects of freer trade in the EEC. Total EEC imports of seven commodity groups were divided into intra-area and extra-area imports and their growth rates over two periods 1953–59 and 1959–65 calculated. These growth rates were then expressed as a fraction of the corresponding GNP growth rates to yield what Balassa termed *ex-post* income elasticities. A decline in the extra-area income elasticity of a commodity-group between the two periods was considered indicative of trade diversion, a rise in this elasticity represented external trade creation.

Balassa's method constituted an important advance in so far as he showed how the effects of economic growth (assumed to be independent of the trade effect) could be incorporated in the estimates.

The income-elasticity approach, however, rests on a rather strict assumption regarding the growth of GNP. The relationship between each percentage point growth in GNP and its individual components is assumed to be constant over time. If this assumption is violated, Balassa's method would involve distorted estimates of trade creation and trade diversion. Truman [17] attempts to avoid this difficulty by expressing imports of each commodity group as a proportion of intra-area ("domestic") consumption of that commodity group. Trade creation and trade diversion in manufactured goods are calculated for each individual member of the EEC and eight to eleven manufacturing sectors are examined. Most of Truman's calculations, however, are based on a pure share-change approach. One year, 1958, is taken as base and changes in shares between 1958 and 1964 are converted into quantitative dollar terms in order to yield estimates of the effect of the EEC on trade flows. The representativeness of the base-year shares must naturally be called into question, as the author himself emphasises.[4] It would also have been desirable to allow for trends in shares prior to 1958. This has been done in a recent EFTA study [8] of the implications of the free trade area for the members' economies—a study based on Truman's approach. The EFTA effect (E) on imports, i.e. the extent to which members' 1965 imports from EFTA suppliers were higher as a result of the formation of EFTA in 1959, is given by the equation

$$E = F_{65} - f_{59}C_{65} - (f_{59} - f_{54})\ 6/5\ C_{65} \ldots (1)$$

where F = observed imports from EFTA countries

C = apparent consumption = domestic production less export

$f = F/C$, subscripts refer to years 1954, 1959 and 1965.

Expected imports are expressed as the sum of the two terms, the second of which, $(f_{59} - f_{54})\ 6/5\ C_{65}$, is an adjustment factor designed to allow for the continuation of past trends in changes in the EFTA import/consumption ratio.

While the share change approach improves on Balassa's income elasticity method by taking domestic consumption of each product group into account, data on consumption are not always readily accessible. Apart from this consideration, there are unsatisfactory aspects common to all three *ex-post* approaches. First, the trade effect is calculated as a residual and may, therefore, reflect influences other than those of lower tariffs. Intra-area rates of inflation may, for example, exceed those of extra-area countries, thus partially offsetting the impact of tariff

4. A second base year, 1960, is used with quite marked consequences for the quantitative, but not the qualitative, results based on 1958 shares.

reductions and creating a downward bias in the estimates of trade effects.[5] Changes
in the pattern of demand within commodity groups might also distort the results.
Furthermore, increases in import demand arising out of domestic capacity
limitations will be incorrectly ascribed to freer trade. Secondly, the effects of trade
liberalization on GNP growth rates are ignored. As already noted, the literature
abounds with references to the "dynamic" effects of free trade and the stimulus
thereby given to economic growth by increasing the scale of enterprise, encouraging
research, promoting competition etc.[6] Freer trade, in other words, enlarges the
extent of the market, thereby increasing the efficiency of existing production units
and raising the rate of return to new investment. The precise implications of
these "dynamic" factors for economic growth have so far defied quantitative
measurement. Clearly their importance will vary according to the size of the
individual country and the group of countries whose trade is being liberalized.

Ex-post studies of the effect of removing or imposing trade barriers have been
undertaken which employ still different methodologies from the three just outlined.
Wemelsfelder [19], for instance, in his study of the German economy after the
1956 reduction in tariffs, regresses imports on GNP prior to 1956, inserts values
of 1957 and 1958 GNP in the equation to obtain "expected" imports for these
years which can then be compared with actual imports. A more sophisticated
variation of this method is employed by Johnston and Henderson [10] to analyse
the effectiveness of the 1964 import surcharge in reducing British imports.[7] In
each case, the effects of the change in protection are measured by the residual
representing the "unexplained" portion of total imports. To this extent, they are
similar to the three methods discussed above.

Our review of the methodology of ex-post studies suggests that assessing the
consequences of trade liberalisation is no easy task, even with the benefit of
hindsight. Substantial progress has, however, been made in evolving correct
procedures for estimating these effects. It could still be argued that we need
further disaggregation both by region and commodity group in order to indicate
the impact of integration on areas at different stages of development and on the
various types of industry ("traditional" or newly established, capital-intensive
etc.). This point will be reverted to later.

The Findings of Ex-post Studies

The results of ex-post studies are naturally of considerable interest both to those
countries which have taken the plunge into free trade and to those who are

5. Balassa notes that EEC manufactures' prices rose by 2·6 per cent a year between 1959 and
1965 as against an annual increase of 1·0 per cent in US and 1·6 per cent in the UK. [3, p. 15].
Where possible, allowances are made for these influences in the EFTA study.
6. For a full discussion, see, for example, Balassa [2, Ch. 5.].
7. In view of the temporary nature of the import surcharge Johnston and Henderson face a
rather different set of problems than those associated with tariff changes which are believed to be
permanent.

considering such a step. Interest centres around three mutually related issues. First, we would like to know the effect of free trade on the volume of trade since the correlation between the volume of trade and the gains from trade is likely to be high (ignoring, for the moment, the problem of trade diversion). Secondly, the effect of trade liberalisation on output of highly protected sectors of an economy must be examined, since fear of redundancy in these areas lies at the root of most opposition to freer trade. Thirdly, one would like to have an evaluation of the effects of freer trade on economic growth. Specifically, the effects on overall growth rates and regional growth rates must be assessed, with special regard to underdeveloped regions; furthermore, the experience of developed countries under conditions of freer trade must be distinguished from the experience of the less developed nations. In the past few years, a significant body of evidence has accumulated on these issues. We begin by reviewing a number of EEC studies at a national and regional level; a recent EFTA report will be considered next, and finally the experience of developing countries in their efforts towards economic integration will be considered.

-Truman's study, to which we have referred earlier, contains a thorough investigation of the trade effects of the EEC. Estimates of trade creation and trade diversion were made for the community taken as a whole, for each country separately, and for eleven individual industries. For the community as a whole, he estimates trade creation as $3 bil. and trade diversion as $0·6 bil.[8] These results are based on a pure share-change approach (i.e., with no allowances for import trends prior to the base year) and thus drastically exaggerate the magnitude of the "true" free trade effect.[9] However, even these estimates are small when compared with total EEC consumption of manufactures equal to $133 bil. Thus, Truman's aggregate results corroborate the conclusion of earlier writers that the static gains from trade are exceedingly small. His individual country estimates accord with this conclusion, but show that trade diversion was concentrated on the Benelux countries, whose tariffs were exceedingly low prior to 1958, whereas high-tariff countries like Italy and France experienced only trade creation effects. Thus it appears that France and Italy got a larger proportion of the static gains, such as they are, than the Benelux countries. At an individual industry level, trade diversion occurred in the metals and chemical industries, but trade creation occurred in the other ten. Truman finally concludes that the reallocation of supply between industries in various parts of the community has not been significant. Balassa [4] has also shown that even at a more disaggregated level the evidence continues to support the hypothesis of intra-industry rather than inter-industry specialisation. In a study of 91 manufacturing industries he indicates that the ratio of the difference between exports and imports and the sum of exports and imports has fallen between 1958 and 1961 in almost every case, thus indicating that freer

8. See Truman [17, p. 231].

9. Allowing for trend, the figure for trade creation can be reduced to as low as $757 m.—Truman is, for various reasons, not satisfied with the validity of this estimate but suggests that it could be considered a lower bound estimate [17, p. 230].

trade has led to a balanced expansion of exports and imports.[10] References have also been made to the absence of an increase in the number of bankruptcies and to the small number of appeals for exemption from tariff reductions under article 226 of the Rome Treaty since 1958. This type of evidence is naturally not con- clusive, since on the one hand firms may be obliged to restrict production and suffer severe financial difficulties without going bankrupt and, on the other hand, recourse to article 226 involves lengthy negotiations and much bureaucratic red tape which effectively deters action under this heading. Neverthel ss the evidence is highly suggestive.

Studies of the EEC at a regional level suggest no dramatic evidence of un- favourable "backwash" effects on the less developed regions in the Community. Thus regional growth rates of output in the south and centre of West Germany and the north of Belgium (where income per capita was lowest in the 1950's) have exceeded the national average between 1955 and 1965.[11] The position in South Italy, however, is rather less satisfactory in that, while high growth rates were maintained in all regions, the North grew relatively faster than the low- income South. However, even in Italy, the gap between income per capita has lessened between regions. Thus South Italy's income per capita was 36 per cent below the national average in 1955 as against roughly 30 per cent in 1965. Greater equality in per capita incomes has occurred despite the lower growth rate in South Italy's regional output, chiefly by means of emigration to North Italy, Germany and Switzerland. Whether one views this exodus as a desirable movement of labour to areas where its productivity is highest or as an unfortunate social phenomenon created by inadequate regional development policy is a matter of personal judgement. Dissatisfaction with current regional policies has been expressed officially by the Commission; in a recent report, the EEC commission comments adversely on the practice of each Member State's endeavouring to outbid the others in offering aids to facilitate the establishment of firms in its own less developed regions.[12] While, therefore, free trade has not led to any drastic

10. The formula used is $\dfrac{Xi - Mi}{Xi + Mi}$, where X and M refer to exports and imports respectively

and subscripts refer to industry. The unweighted average of this statistic for 91 industries for three EEC countries in 1958 and 1963 was as follows

	1958	1963
Belgium	0·458	0·401
Netherlands	0·495	0·431
Italy	0·582	0·521

11. These and subsequent facts on regional trends have been obtained from the second annex to *Note sur la Politique Régionale dans la Communauté*. [6].

12. See Memorandum on Regional Policy in the Community [14, p. 17]. The Memorandum refers to "the tendency for activities to be concentrated in regions where expansion is already most vigorous" (ibid.) The facts presented in the annex to the Memorandum fail to substantiate this assertion however.

relative decline in production in the low-income areas as was feared by those who cited the experiences of South Italy after unification in the 1870's—it is clear that greater efforts are required if regional growth in the less developed areas is to exceed that of developed regions. Of course, this presupposes an attitude of disfavour on the part of the policy-makers towards emigration from the less developed regions. The issue is naturally of crucial importance to countries such as Ireland in the context of entry into the EEC.

Given the large degree of complementarity between the economies of EFTA members and the small proportion of intra-area as a percentage of total trade,[13] it is not surprising to find that for most members, with the exception of Britain and Norway, there appears to have been almost no trade creation and that consequently much of the increase in intra-area trade between 1959 and 1965 may be ascribed to trade diversion.[14] Such trade creation as occurred amounted to less than 1 per cent of total imports of EFTA members. Structural readjustment has not therefore been required on a large scale. The effect of trade liberalisation on countries such as Portugal and Finland, whose relatively underdeveloped industrial base might have been expected to be most vulnerable to foreign competition, has been wholly beneficial. To a large extent this is because special consideration has been given to these countries' industries by extending the transitional period on most of their imports of competing manufactures to 1980. Hence, the effect of EFTA has been to expand the potential export market for these countries without creating any dislocation among domestic industries. The Portuguese textile industry has gained considerably from this arrangement, for example. In Norway, where trade creation has been observed, the chief industries to be affected have been highly protected industries based on the home market such as textiles, clothing, footwear, and toilet and cleaning articles. These industries have experienced much lower than average growth rates (although none has suffered an absolute decline in output), and hence have diminished in importance relative to the rapidly expanding engineering industry. Structural changes, therefore, appear to have taken place in Norwegian industry, but these changes have been manifested by higher growth rates in certain export-oriented sectors rather than by an absolute fall in the production of the protected sectors. Within the protected sectors, furthermore, increases in both exports and imports between 1959 and 1965 have been observed thus reflecting the presence of intra-industry specialisation.

Available evidence, therefore, on the basis of European experience, suggests that trade liberalisation can claim direct responsibility for only a minor expansion in trade, that consequently the static gains from trade are of an exceedingly small order of magnitude (considerably less than one per cent of GNP) and that fears

13. Intra-area EFTA trade was less than 25 per cent in 1964 as against a comparable figure of 43 per cent for EEC [8, p. 18].

14. According to the EFTA report, total effects on intra-area trade amounted to $830m. between 1959 and 1965 over half of which ($457m) was due to trade diversion, the remaining $375m. representing trade creation. Total EFTA imports in 1965 were roughly $34 bil.

of dislocation of industry following increased competition are, for most countries, unfounded. Those countries, such as Portugal and Finland, which appeared most vulnerable were, in fact, exempted from the obligation to remove protection. Hence their favourable experience in EFTA obviously cannot be cited as an example of the benefits of multilateral free trade. However, we have seen that the relatively underdeveloped areas in the EEC have suffered no adverse consequences from European integration.

Thus far we have considered only the experience of European countries. What has been the effect of freer trade among the less developed countries? Since 1958, the formation of free trade blocs in the third world has become increasingly common. These moves towards economic integration are partly prompted by fears of what Kwame Nkrumah of Ghana called the increased "balkanisation" of the underdeveloped countries. They can also in large part be attributed to the strong belief (whether warranted or not is irrelevant) prevalent both in the rich countries donating foreign aid and in the third world itself that freer trade among developing countries in the form of free trade areas or customs unions would inevitably lead to higher growth rates and increased economic prosperity. Subsequent experience has, however, tempered this optimism somewhat.

It is, of course, obvious that Vinerian static analysis, in which the gains or losses of integration are measured in terms of trade creation and trade diversion, has only marginal relevance to developing countries. In their case, the question of the efficient allocation of existing resources carries little weight compared with the all-important issue of increasing the quantity of resources. The benefits from freer trade therefore have to be considered primarily in terms of its contribution to the GNP growth rate. Key economic issues in the context of intra-area trade liberalisation for developing countries are the effects of this extension of the market on foreign investment and the promotion of industrial growth. Developing countries have also experienced, in particularly acute form, the problem of regional disparities in income. Thus, in East Africa, Tanganyika complained that all the advantages of freer trade were accruing to Kenya. Similar problems arose after the formation of the Central African Federation and the Central American Common Market, where the initially well-developed regions, Southern Rhodesia and El Salvador respectively, tended to attract most of the new industries established by both foreign and domestic investors.[15] It appears that the "backwash" effects referred to by Myrdal and others (i.e., the tendency towards greater concentration of economic activities in high income regions after free trade is established) relate more to the effects of free trade on developing countries than on countries which are already substantially industrialised. Developing countries' resources are too slender to enable them to offer sufficient incentives to industry to restore the balance between the relatively advanced and relatively poor members or regions of their trade groupings. Hence, Bird's conclusion [5, p. 240] that "regional

15. See Segal [15] for a valuable survey of these issues.

differences in economic welfare exist, persist and are likely to be accentuated by the formation of a common market", although shown to be unsubstantiated in so far as the EEC is concerned, may have considerable cogency in the context of an economic union between countries whose average income per capita is low but where the level of industrialisation differs significantly from country to country.

Conclusion

· The methods employed by economists to assess the effects of trade liberalisation and the results of their various empirical studies have been reviewed in this article. While, to some extent the lessons one draws from the analysis are inevitably coloured by one's prejudices for or against free trade, certain conclusions emerge on which a wide measure of agreement could be expected.

- First, the results of both *ex-ante* and *ex-post* studies of trade liberalisation indicate that the direct effects of the removal of tariffs on trade flows, and consequently on the static gains from trade, are extremely small in terms of total output. For the EEC, the increase in imports of manufactured goods as a percentage of total manufacturing output was less than 5 per cent. In the case of a small country like Ireland, with relatively high tariffs and relatively greater dependence on foreign trade, the increase in imports directly due to the dismantling of tariffs appears on the basis of the author's *ex-ante's* estimates to be a somewhat larger percentage of manufacturing output, but the figure certainly does not exceed 10 per cent.[16] As a percentage of the initial level of imports, the increase in trade will obviously be much higher, but this percentage is not the appropriate yardstick to measure the economic effects of trade liberalisation.

· Secondly, this implies that the lowering of protection, if it has exercised any significant influence on economic variables, has done so through its short and long-run effect on economic growth *via* economies of scale, increased competition and enhanced opportunities for investment. The first two factors are once-for-all advantages which would account for faster growth in the short-run, while the last factor—opportunities for investment—would extend well into the future. It must be emphasised, however, that the presumption of freer trade having a favourable effect on growth is not warranted in all cases—notably, for example, where trade liberalisation occurs among less developed countries with individual countries at markedly different stages of development. However, looking only at developed countries, *post* 1958 experience in Europe provides us with no evidence to disprove the hypothesis that freer trade induces faster growth.

· The danger of *post hoc ergo propter hoc* arguments becomes increasingly acute at this stage. A century ago, Germany's increasingly protectionist policy was

16. In [13], the increase in imports due to free trade was estimated to lie between £65m. and £105m. We pointed out that both these figures would most likely exaggerate the true magnitude. Our revised estimates, to be published in a forthcoming study, reduce this figure by half. Our results, incidentally, then come very close to Dr. Garret FitzGerald's independently derived estimates (*Irish Times*, January 1966).

accompanied by faster growth; at present the opposite commercial policy appears to produce exactly the same result. There is obviously a need for considerable background research before the existence or direction of causality can be deduced. As matters stand, no systematic effort has been made to quantify the effects of freer trade in terms of percentage growth rates. It would be interesting, for example, to have a study of the change in the total productivity of factors of production in the EEC prior to and after the formation of the customs union. If dynamic gains are important, the change should be significant.

As far as *ex-ante* studies of trade liberalisation are concerned, the uncertainty surrounding the dynamic gains is implicitly avoided by making a number of arbitrary assumptions about GNP growth rates and then applying marginal import propensities to obtain import projections. The future rate of growth will of course include the effects of many variables other than the dynamic effects of freeing trade (e.g. size of population, government spending, gross investment rates, etc.). Furthermore, from the point of view of assessing the potential disloca-tion of industry under free trade conditions, the comparative static approach of *ex-ante* studies is adequate since it indicates the upper limit of possible dislocation. Provided the effects of free trade on growth are expected to be positive, then domestic production and employment will to that extent have to increase. Comprehensive institutional studies are required, however, in order to assess whether the dynamic free trade effects are, in fact, likely to be positive. No mechanical application of econometric formulae can establish the answer to this question—the limitations of the *ex-ante* elasticity approach in this respect have already been stressed.

, The relative insignificance of the direct trade effect of trade liberalisation in Europe, as measured in empirical studies, has prompted at least one distinguished economist, Nils Lundgren [12], to conclude that the indirect dynamic effects are of a similarly small order of magnitude. Lundgren does not, of course, assert that the gains from trade are negligible, but what he does say is that the *increase* in these gains due to the elimination of tariffs is negligible. In his view, imperfect knowledge of foreign markets combined with fears of political instability rather than the level of tariff have obstructed the conduct of trade. Tariff barriers, he claims, were not sufficiently high in Europe to prevent exploitation of economies of scale or to insulate any national economy from the pressure of foreign competition.

Such a point of view seems to underestimate grossly the protective power of tariffs. It may also reflect a failure to appreciate the importance of the distinction between nominal and effective tariffs. Thus, in 1962, the average nominal tariff on consumer goods imports into the UK and the Common Market was 23·8 per cent and 17·8 per cent respectively.[17] The corresponding effective tariffs, however, amounted to 40·4 per cent and 30·9 per cent. A foreign producer would have to

17. See Balassa [2, p. 56].

display a considerable superiority in efficiency to make headway in such a highly protected market.

. Lundgren's assertion, however, draws attention to an important point namely, that tariff reductions *per se* cannot be expected to induce significant dynamic gains unless the permanence of this reduction is assured. An advantage of a customs union is the irreversibility of the process of trade liberalisation. This encourages businessmen to overcome the second barrier cited by Lundgren— imperfect knowledge. In contrast to his view, however, we would hold that the motivating force behind the acquisition of more information about markets and techniques is the improved profit opportunities provided by the removal of tariffs and quotas. Furthermore, an incentive to greater efficiency is given to the domestic producer by virtue of the increased vulnerability of the domestic market to foreign competition. At this stage of the argument, however, precise measurement becomes impossible. One can only conclude that many of the best things in a world of free trade have yet to be quantified.

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