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PART TWO

METHODS

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CONCEPTUAL PROBLEMS IN MEASURING THE ROLE OF PRICES IN INTERNATIONAL COMPETITIVENESS

WHILE ECONOMIC THEORY stresses the role of prices in determining the directions and commodity composition of trade, the concepts involved in these relationships become elusive when we turn to the task of measurement. The theory is based on pretrade or pre-equilibrium comparisons, while the prices available for our measurement are posttrade prices drawn toward uniformity by international competition. It is thus difficult to formulate an empirical measure which will enable us to catch the causal influence of relative prices on relative quantities, or even the association between them. Hence, in this chapter, we review both the conceptual formulation of our index of price competitiveness and the reasons why we may expect to find systematic differences in export price levels and changes.

The Index of Price Competitiveness as an Analytical Measure

In examining the index of price competitiveness as an analytical tool we begin with its relation to market shares, the most readily observed and frequently used measure of changes in competitiveness or in ability to export.[1]

[1] See, for example, *1964 Annual Report*, International Monetary Fund, pp. 123–130; and Anne Romanis, "Relative Growth of Exports of Manufactures of United States and Other Industrial Countries," *IMF Staff Papers*, May 1961. See also "Fast- and Slow-Growing Products in World Trade," *National Institute Economic Review*, August 1963, and the other studies mentioned there.

Both the concept of competitiveness and the share measure can be applied to total exports or to specific products or markets.

Relation of Price Competitiveness to Market Shares

Changes in shares are, of course, the product of changes in relative prices and in relative quantities. Competitiveness, in the sense of market shares, may rise or fall as a result of an increase in a country's relative prices, depending upon whether the elasticity of substitution between its exports and those of other countries is less or more than 1.

The changes in relative prices and relative quantities are influenced by both demand and supply factors. On the demand side, a country's export share might grow because importers' tastes shift toward its products, because its exports benefit from high income elasticities of demand in importing countries, or because its traditional markets enjoy a period of particularly rapid economic growth. On the supply side are changes in productivity and in monetary and fiscal policies which affect the level of prices and economic activity, government subsidies for exports, and many other developments, both internal and external to the firm and industry.[2]

The relative prices and relative quantities, and hence the market shares, that we observe for any period of time are, of course, the result of the interaction of all these demand and supply factors in the several countries. We therefore ask whether the changes in relative prices, which we measure through our index of price competitiveness, have any analytical significance beyond reflecting the changing points of intersection of supply and demand curves. If the answer to this question is negative, we cannot construct a measure of relative prices that will, in combination with other relevant variables account for changes in relative quantities.

Fortunately, there is a basis for thinking that our measure of the change in relative prices, our index of price competitiveness, reflects mainly influences that come from the supply side. The reason is that our index measures changes in the relative prices of a bundle of goods that is the same for all countries. An increase in world demand for a particular kind of good, such as ball bearings, for example, should raise the price of that good relative to others in all competing countries. Our index would remain unchanged if supply elasticities of exporting coun-

[2] In all these cases, it is the change in one exporting country relative to its competitors that is important.

tries were alike. In a comparison between conventional export price indexes, however, a country specializing in the favored good would appear to have lost in competitiveness, because the product rising in price is heavily weighted in that country's index. Our use of a single set of weights for all countries removes much of the influence of relative demand shifts from our index.

However, demand influences have not been completely eliminated. For example, the demand shift may favor a particular variant of a good produced in only one country. It is possible to imagine, for example, a rise in demand for one country's type of computer relative to another country's which could lead to an apparent decline in price competitiveness if the supply price increased. The more narrowly commodities and commodity groups are defined, the less important this phenomenon will be, but we cannot hope to eliminate it altogether. One remaining loophole is the effect of differences in proximity to a market in which demand is increasing. For example, an increase in Canadian demand may affect U.S. prices more than those of other sellers.

It is also true that a shift in world demand in favor of a particular good produced by a given country may have indirect effects on our index of price competitiveness, since the rise in demand for one commodity may tighten supply conditions and thus reduce the country's price competitiveness in other goods. Finally, an increase in world demand for a particular good, while it may have little impact on the relative prices of two exporting countries, may bring about a substantial change in their relative export quantities if their supply elasticities are markedly different.

Thus, we do not regard our index as a wholly adequate empirical counterpart of the notion of relative prices that plays such a prominent role in the explanation of trade flows found in trade theory. The most we can claim for it is that it comes closer than previous measures of relative price change.

There remain a number of other influences on relative quantities and market shares such as distance (transport costs),[3] trade restrictions,

[3] Linneman, in his study of trade flows, used distance itself as the variable to measure "the natural obstacles to trade," incorporating some, but not all, of the effect of transport cost, but also covering obstacles other than transport cost (Hans Linneman, *An Econometric Study of Trade Flows*, Amsterdam, 1966, pp. 25–30, 90–92, and 180–188). Differences among commodities in the importance of transport costs were ignored by Linneman, who was concerned solely with the aggregate trade of each country, but such differences would have to be taken into account in any effort to explain the commodity composition of a country's trade.

traditional commercial, industrial, and financial ties, credit terms, shipment delays, ease of order, and various types of service. Trade theory in its search for the main tendencies at work generally ignores the multifaceted aspects of each transaction, some of which represent "price" and others, "nonprice" factors, and subsumes under "price" all the net proceeds of the seller and net expenditures of the buyer per unit of the transaction. Some of these factors could, indeed, conceivably be translated into monetary terms and incorporated into the price of the product, but we have not undertaken the formidable task of making such calculations. In our empirical work we treat some of these nonprice factors separately, mainly in descriptive, nonquantitative terms.

Prices and Costs as Alternative Approaches to Competitiveness

Before returning to the index of price competitiveness to examine its interpretation more closely, we should, perhaps, recognize that prices are not the only possible focus for a study of international competitiveness. One could go farther back in the chain of causation toward costs, or beyond that to the factors affecting costs. Indeed, it has been suggested that the identification problems, in the interplay of demand and supply factors, discussed in the previous section, might be smaller when costs rather than prices are compared. The reason given is that export prices adjust to changed conditions more quickly than costs, and thus price comparisons may not reflect as clearly as cost comparisons the causes for shifts in the flows of trade.[4]

In general, the higher the elasticity of substitution between one country's products and another's, that is, the more completely buyers shift from one to the other in response to small relative price changes, the more likely will changes in competitiveness be observable only in quantity shifts and not in price movements. For example, if prices of all countries for certain standard raw materials move together, a loss of competitiveness by a given country will appear as a decline in the margin of price over costs. The result, sooner or later, is likely to be a fall in the country's export share without any unfavorable development appearing in relative prices. High supply elasticities contribute to this result.

This type of identical price change is much less likely to occur in

[4] See, for example, Robert M. Stern, "British and American Productivity and Comparative Costs in International Trade," *Oxford Economic Papers*, October 1962. See also Robert M. Stern and Elliot Zupnick, "The Theory and Measurement of Elasticity of Substitution in International Trade," *Kyklos*, 1962, Fasc. 3.

manufactures, however, since substitutability is less perfect. Indeed, evidence already summarized indicates that in some sectors substantial price differences can exist between competing products. In manufactures, therefore, actual prices rather than costs may more adequately elucidate historical shifts in trade patterns.

Furthermore, prices have some decisive advantages over costs in an empirical study: (1) The concept of price, although not without its prickly aspects, is generally more objective and less likely to vary from one reporter to another. (2) Moreover, cost data can be built up only for whole plants, companies, or groups of commodities rather than for precisely specified individual commodities; international cost comparisons for individual products would be distorted by the diversity of methods of allocation of costs in different firms and countries. (3) Finally, it is easier to obtain information about prices than about costs, not only because many sellers are more willing to provide price than cost information, but also because price information can be supplied by buyers.

The Interpretation of the Index of Price Competitiveness

The implications of our index of price competitiveness may be better understood if it is contrasted with one that might be constructed from traditional indexes of export and import prices (or from unit value indexes, which are usually employed in lieu of export and import price indexes). Such an index of price competitiveness, P_T, would be

$$P_T = \frac{\Phi_{Mi}(P_{M2}, P_{M4}, P_{M6}, \ldots, P_{Mr}) \quad i = 2, 4, 6, \ldots, r}{\Pi_{Xj}(P_{X1}, P_{X3}, P_{X5}, \ldots, P_{Xs}) \quad j = 1, 3, 5, \ldots, s}$$

where M stands for import prices, X export prices, and each numerical subscript refers to a particular good: i includes even numbers from 2 to r and j, odd numbers from 1 to s.

As indicated by the choice of the subscripts, any one commodity is likely to appear among imports, but not exports, or among exports, but not imports, if the products are narrowly defined. P_T is more akin to a terms-of-trade index than to an index for measuring changes in price competitiveness. It may show changes in relative prices and in price competitiveness where none have taken place. A rise of 10 per cent in the import price of sugar accompanied by a 10 per cent rise in the domestic price does not imply a change in price competitiveness.

But it will appear as a change in price competitiveness because sugar has a weight in the import price index and little or no weight in the export price index. The same possibility exists for a manufactured product, such as home sewing machines.

Our index of price competitiveness, $P_{F/S}$, is

$$P_{F/S} = \Phi\left(\frac{P_{f1}}{P_{h1}}, \frac{P_{f2}}{P_{h2}}, \ldots, \frac{P_{fn}}{P_{hn}}\right) \quad n = 1, 2, 3, \ldots$$

where F represents any foreign country, S represents the United States, the f are foreign prices, h are U.S. prices, and each numerical subscript refers to a narrowly defined category of goods. (Both foreign and U.S. prices are export prices if the commodity is exported and home prices if it is not.)

The key difference between our index and the terms-of-trade index is our reliance upon *relative* (foreign to U.S.) prices. We consider that the impact of a foreign price cannot be defined except with reference to the movement of the *corresponding* U.S. price; similarly the impact of a change in a U.S. export price cannot be defined unless the movement of the *corresponding* foreign price is taken into account.

It is important to point out, however, that we do not try, in time-to-time price measurement, to match f_1 with h_1 in terms of detailed commodity specifications. What we do instead is to try to find for each country a sample of goods within each four- or five-digit SITC subgroup, or even within a narrower category if the subgroup is heterogeneous. For typewriters (SITC 714.1), for example, we prepared separate price indexes for electric, standard, and portable typewriters for each country, but the indexes were based on different brands and models in each country. Had we tried to match goods interspatially for time-to-time comparisons we would have embarked on an impossible task.

The $P_{F/S}$ index compares price movements of different countries within the four- or five-digit categories we use but not between them. The conventional export and import price indexes, on the other hand, compare price movements of largely different bundles of goods between which intercommodity substitutions are apt to be weak. Thus we compare price movements of U.S. and Italian portable typewriters and of U.S. and Italian electric typewriters; the comparison of export and import price indexes would, in effect, compare the price movements of

U.S. electric typewriters which we export with price movements of, say, transistor radios which we import.

The use of the $P_{F/S}$ index to explain changes in trade rests on the implicit assumption that international price competition takes place within the four- or five-digit groups but not between them. Of course, we are well aware that competition exists between commodities in different SITC items, subgroups, groups, and even major commodity divisions. Aluminum cable (SITC 693.13) competes with copper cable (SITC 693.12); electric locomotives (SITC 731.2), with diesel locomotives (SITC 731.3); aircraft (SITC 734), with ships (SITC 735); and electric motors (SITC 722.1) may soon compete with internal combustion engines (SITC 711.5).

Ideally one might wish to determine empirically which are actually the foreign goods that compete with each domestically produced good in the world and the home markets. A complete set of international price indexes would provide the information that would permit the insertion of the price of one commodity category in an equation explaining the exports of another.

It is evident from what has been said that the relations between price competitiveness and changes in a country's market share or in its trade balance cannot be expected to be simple and unvarying. For some categories, as we shall point out later, the nonprice factors play a large role, and if they move in an offsetting direction they may obscure the impact of relative prices upon the trade position. Even with nonprice factors constant, one can imagine a case in which a change in a country's price competitiveness index might not immediately be reflected in its trade balance. For example, suppose there were a rise in the U.S. price of a good produced but not exported by the United States, but which is exported by others. Since our index is weighted by the importance of each commodity in world trade, the U.S. index of price competitiveness would decline, although there might be no change in the U.S. balance of payments.

In fact, the index of price competitiveness would provide an important item of information. The rise in the price of the good would place it farther away from the export threshold and encourage more imports, or, if there were no imports before the change, move the good closer to the import threshold than it was before. It is possible that the margins of safety provided by differences in costs, transportation charges, and

market imperfections might momentarily keep the price rise from affecting the trade balance, but sooner or later, the movements in the index of price competitiveness would be reflected in the trade statistics. For this not to happen would require that there be no import substitutes for the domestic good. Imperfect substitution doubtless is more common than perfect substitution, but commodities for which there is no foreign substitute are hard to find; in the marginal domestic use of the good, one would expect an imported good to replace a domestic good which has risen in price.

Furthermore, since our indexes are actually constructed from samples of items for four- or five-digit categories, it is even more unlikely that they will reflect price changes that are irrelevant to the trade balance of a major industrial country. Each of the countries for which we present indexes in this study, for example, is involved in every one of our four-digit categories as either an exporter or an importer.

With respect to policy implications, neither a rise nor a fall in the index of price competitiveness necessarily calls for remedial action. There is no unique share of world markets that represents the ideal share for a given country. Some declines in export shares for particular commodities are always occurring in every country as, in the course of economic development, comparative advantage moves from one type of production to another. For a nation as a whole, a decline in its export shares may be desirable or even necessary if it has had a long and persistent balance-of-payments surplus. In the longer run, if the underdeveloped countries are to gain relative to the developed ones in per capita and national income, they can be expected to gain in exports as well.[5]

As another example, a country which formerly concentrated on a single product might see its share of world exports decline if it reduced both import and export needs by diversifying its economy. A country which is beginning to reduce its rate of foreign investment and to repatriate income from past investments may well find that its export share is declining and its import share rising. The country may not, in a sense, be worse off; it is enjoying the fruits of its past frugality. Nevertheless, its competitiveness in the world economy has declined; the country's entrepreneurs find it more difficult to meet foreign competition. In this

[5] However, if grant aid and other capital flows to underdeveloped countries grow more rapidly than world exports, the share of these countries in world exports will fall.

case, the changes would represent the normal consequence of the shift in the country's overall relations with the rest of the world rather than an alarming development calling for corrective measures. A decline in price competitiveness is thus a warning signal only under circumstances which require a country to maintain or improve its trade balance.

Scope for International Differences in Prices

The tendency for international competition to equalize prices is subject to many frictions and interferences some of which tend to fragment markets or to isolate particular ones. Transport costs, including freight and insurance and sometimes extra packing costs, would create differences in f.a.s.[6] export prices even if competition worked perfectly to equalize prices of products from different national sources of supply at each destination.

In addition, tariffs and other restrictions on entry would create differences between f.a.s. export prices from foreign sources and f.o.b. prices from domestic suppliers, and in many cases also have a differential impact on alternative foreign sources.

Even without these transfer costs, observed f.a.s. export prices would differ for many manufactured prices because of product differenentiation. Such differentiation has both physical and service aspects, the former referring to real or reputed differences inherent in the appearance or performance of the product and the latter to nonprice factors such as presale advice, after-sale service, credit terms, and speed of delivery.

Other price differences represent disequilibrium situations in which some purchasers, particularly of complex products such as machinery, might take a considerable time to respond to price discrepancies. Even if a continuation of the price difference would eventually find the higher-priced seller with no customers, there may be a long interval in which sales are being made at both high and low prices. Lack of knowledge or the cost of obtaining it, uncertainty regarding the reliability of a supplier or the length of time he will remain in the market, reluctance to give up a satisfactory relationship with a supplier, commitment to one type of machine because of previous purchases or stocks of spare

[6] F.a.s. = free alongside ship, including export packing and inland freight; f.o.b. = free on board.

parts, and official or private buy-domestic policies may all prolong the adjustment.

Another reason for price differences in our data is that we include information on certain offer prices—i.e., the lowest price offered by each country other than the one actually making the sale. Thus some of the prices do not represent transactions but explain instead why transactions have not taken place. This is true of those data which consist of comparisons made by companies and governments before they decide where to purchase. All offers other than the one accepted are potential, but not actual, prices.

Many of the factors mentioned above also make possible divergent price movements among different national sources of supply. If transportation costs are important, for example, a rise in one country's f.a.s. price relative to that of other suppliers may cause the country to lose its more distant markets for a product while it retains the closer ones, reducing the geographical range of its sales but not eliminating them completely. Thus the investigator will be able to observe the relative rise in the f.a.s. price or in the domestic price if the export trade vanishes completely.

Differentiation in products such as machinery plays a role similar to that of transport costs in making differences in price movements visible to the investigator. When there is such differentiation, an increase in the f.a.s. price of a machine may reduce its sales in a particular area and narrow the machine's range of uses but will not drive it completely from the market.

Transfer Costs

Some notion of the possible magnitude of transport costs may be obtained from the data in Table 3.1 which show the estimated charges for U.S. imports in 1965. Average transport charges for the products covered in our study were around 9 or 10 per cent of the f.a.s. or foreign wholesale value; the range went from 1 per cent for products high in value relative to their bulk such as nickel and watches to 20, 30, or even 40 per cent for bulkier products such as containers and pleasure boats. The figures reflect not only the relative importance of the individual commodities within each category but also the distances from which they were shipped in the particular year.

The average rates shown in the table may not be typical for other

Table 3.1
Transport Costs for U.S. Imports of Metals, Metal Products, and Machinery, 1965
(dollars in millions)

Schedules, Parts, and Subparts of TSUS[a] (Abridged)	Value of U.S. Imports as Reported in Official Statistics	Estimated Freight and Insurance Charges as Per Cent of Reported Value
Schedule 6: Metals and metal products	$6,614	9
Part		
2. Metals, their alloys, and their basic shapes and forms:		
A. Precious metals	73	1
B. Iron or steel	1,236	13
C. Copper	377	4
D. Aluminum	266	4
E. Nickel	179	1
F. Tin	168	2
G. Lead	62	7
H. Zinc	44	9
J–K. Other base metals	58	3

(continued)

Table 3.1 (continued)

Schedules, Parts, and Subparts of TSUS[a] (Abridged)		Value of U.S. Imports as Reported in Official Statistics	Estimated Freight and Insurance Charges as Per Cent of Reported Value
Part			
3.	Metal products		
A.	Metallic containers	6	21
B.	Wire cordage; wire screen, netting and fencing, bale ties	49	13
C.	Metal leaf and foil; metallics	19	6
D.	Nails, screws, bolts, and other fasteners; locks, builders' hardware; furniture, luggage, and saddlery hardware	117	11
E.	Tools, cutlery, forks, and spoons	80	2
F.	Miscellaneous metal products	106	12
G.	Metal products not specially provided for	33	9
Part			
4.	Machinery and mechanical equipment		
A.	Boilers, nonelectric motors and engines, and other general-purpose machinery	284	5
B.	Elevators, winches, cranes, and related machinery; earthmoving and mining machinery	35	7
C.	Agricultural and horticultural machinery; machinery for preparing food and drink	172	3
D.	Pulp and paper machinery; bookbinding machinery; printing machinery	60	6
E.	Textile machines, laundry and dry-cleaning machines; sewing machines	152	10
F.	Machines for working metal, stone, and other materials	98	7

(continued)

Table 3.1 (continued)

Schedules, Parts, and Subparts of TSUS[a] (Abridged)		Value of U.S. Imports as Reported in Official Statistics	Estimated Freight and Insurance Charges as Per Cent of Reported Value
Part			
G.	Office machines	133	4
H.	Other machines	70	8
J.	Parts of machines	65	2
Part			
5.	Electrical machinery and equipment	686	6
Part			
6.	Transportation equipment:		
B.	Motor vehicles	1,045	11
C.	Aircraft and spacecraft	139	40
D.	Pleasure boats; floating structures	14	30
Schedule 7: Specified products; miscellaneous and nonenumerated products		1,462	10
Part			
2.	Optical goods; scientific and professional instruments, watches, clocks, and timing devices; photographic goods; motion pictures; recordings and recording media		
A.	Optical elements, spectacles, microscopes, and telescopes; optical goods not elsewhere provided for	63	6
B.	Medical and surgical instruments and apparatus; X-ray apparatus	23	5

(continued)

Table 3.1 (concluded)

Schedules, Parts, and Subparts of TSUS[a] (Abridged)	Value of U.S. Imports as Reported in Official Statistics	Estimated Freight and Insurance Charges as Per Cent of Reported Value
Schedule 7 (continued)		
Part 2 (continued)		
C. Surveying, navigational, metereological, drawing, and mathematical calculating instruments; measuring and checking instruments not specially provided for	25	5
D. Measuring, testing, and controlling instruments	41	5
E. Watches, clocks, and timing apparatus	101	1
F. Photographic equipment and supplies	102	3
Part		
3. Musical instruments, part, and accessories		
A. Musical instruments	40	13
B. Musical instrument parts and accessories	10	9

Source: "C.I.F. Value of U.S. Imports," February 7, 1967 (mimeo).

[a]*Tariff Schedule of the United States,* U.S. Tariff Commission.

countries. Indeed, there is substantial evidence that U.S. outbound ocean freight rates in 1963 and 1964 exceeded inbound rates by 25 to 30 per cent on the average "with peaks in the Japanese trades reaching up to 50 per cent and beyond." [7] Whether the reason is that U.S. outbound rates are especially high or inbound rates especially low, such differences in freight rates may be expected to produce differences in f.a.s. export prices. However, even a difference of 30 per cent in transport charges amounting to 10 per cent of f.a.s. value would involve only a 3 per cent c.i.f.[8] price differential. For this reason much of the controversy over discriminatory freight rates has centered on comparatively low-valued products such as steel, for which the average ratio of freight to value in U.S. imports is shown in Table 3.1 to be 13 per cent. Several of the major steel products in international trade are characterized by still higher freight ratios.

Tariffs also make price level differences possible. Average 1962 tariffs on machinery and transport equipment (excluding automobiles) were 10.3 per cent in the United States, 11.7 per cent in the EEC, 17.0 per cent in the United Kingdom, and 17.1 per cent in Japan.[9] Data for some commodity groups included in our study are shown in Table 3.2. Even between these advanced countries the combination of transport costs and tariff can create substantial price differences.

The most important changes in tariffs affecting metal and machinery trade during the period of our study were those associated with the formation of the European Economic Community (EEC) and the European Free Trade Association (EFTA). Beginning in January 1959, the six EEC countries (France, Germany, Italy, and the Benelux countries) reduced internal tariffs in 10 per cent tranches; in the last year and a half of our period their internal tariffs were down to 40 per cent of the initial levels. The members also adjusted their tariffs to outside countries toward a common external tariff, 30 per cent of the way in January 1961 and another 30 per cent in July 1963. EFTA, formed in response to the EEC by the United Kingdom and six other European countries, reduced internal tariffs by 20 per cent in July 1960 and by a series of

[7] *Discriminatory Ocean Freight Rates and the Balance of Payments: A Report of the Subcommittee on Federal Procurement and Regulation,* Joint Economic Committee, 89th Cong., 2nd sess., August 1966, p. 8.

[8] C.i.f. = cost, insurance, and freight.

[9] Bela Balassa, *Trade Liberalization Among Industrial Countries,* New York, 1967, p. 56. The averages, which actually refer to investment goods, were computed by weighting individual duties by the combined imports of the above areas plus those of Sweden.

Table 3.2
Average Tariff Rates, 1962
(per cent)

	U.S.	U.K.	EEC	Japan
Pig iron and ferromanganese	1.8	3.3	4.0	10.0
Ingots and other primary steel	10.6	11.1	6.4	13.0
Rolling mill products	7.1	9.5	7.2	15.4
Other steel products	5.1	17.0	9.9	13.4
Nonferrous metals	5.0	6.6	2.4	9.3
Metal castings	6.6	16.0	12.4	20.0
Metal manufactures	14.4	19.0	14.0	18.1
Agricultural machinery	0.4	15.4	13.4	20.0
Nonelectrical machinery	11.0	16.1	10.3	16.8
Electrical machinery	12.2	19.7	14.5	18.1
Ships	5.5	2.9	0.4	13.1
Railway vehicles	7.0	21.1	11.1	15.0
Automobiles	6.8	23.1	19.5	35.9
Bicycles and motorcycles	14.4	22.4	20.9	25.0
Airplanes	9.2	15.6	10.5	15.0
Precision instruments	21.4	25.7	13.5	23.2
Sporting goods, toys, jewelry, etc.	25.0	22.3	17.9	21.6

Source: Bela Balassa, *Trade Liberalization Among Industrial Countries*, New York, 1967, pp. 180–181.

10 per cent cuts thereafter so that in the last year of our study, 1964, tariffs on intra-EFTA trade were down to 40 per cent of their original levels.[10] It is to be expected that the reductions in these intratrade tariffs not only decreased the extent of disparities in prices among the members of each group, but also lowered in each member country the delivered prices of imports from each fellow member relative to prices from the United States and other nonmember countries.

Preferential trade arrangements also extended beyond the membership of these two groups. The most extensive long-standing arrangements, those in the British Commonwealth, were of diminishing importance in the period, but the EEC was expanding its preferential associations with African and certain less developed European countries.[11]

[10] See Lawrence B. Krause, *European Economic Integration and the United States*, Washington, D.C., The Brookings Institution, 1968, p. 58.
[11] See *ibid.*, Chap. 6.

There was, on the other hand, some movement toward a single world market, as some of the restrictions of World War II continued to be dismantled. The most important was the reduction of import controls in the decade of the 1950s by western European countries under the Code of Liberalization adopted by the Organization for European Economic Cooperation.[12]

Quantitative restrictions, often imposed in addition to high tariffs, remained important in most developing countries. There were, as a result, instances of very large gaps between internal and world prices.[13] The existence of such varying restrictions made it possible for even the f.a.s. export prices of the same exporting firm in a developed country to vary from one destination to another.

It is difficult to make any broad generalization about alterations in the degree of market fragmentation in the world as a whole during 1953–64. International diplomacy was bent toward the reduction of barriers through negotiations under the General Agreement on Tariffs and Trade (GATT) and other means; but the Cold War, domestic pressures in the developed countries, and import substitution and related policies in developing countries worked in the other direction.[14] Although the average ad valorem tariff rate on dutiable imports has many defects as a general measure of protection, and although the United States is only one (albeit important) instance, it may not be without significance that for the United States this rate remained around 11 to 12 per cent despite GATT negotiations which reduced tariff levels on a large number of particular products.[15]

Restrictive Practices

Other factors which, like import quotas, fragment markets geographically include agreements among suppliers for each to avoid bidding in the others' markets or for each to take his turn offering low bids. Such

[12] See Irving B. Kravis, *Domestic Interests and International Obligations*, Philadelphia, 1963, Chap. 3.

[13] For example, in 1962 it was reported that prices of tin, lead, and zinc in India were about twice as high as prices being quoted in London (see Chapter 10).

[14] Despite the common view that trade barriers were diminishing, closer study of individual commodity sectors discloses some tendencies in the opposite direction. See, for example, the section on institutional influences in our discussion of nonferrous metals (Chapter 10).

[15] It actually fluctuated between 11.2 to 12.6 per cent from 1953 to 1964, according to a U.S. Tariff Commission tabulation (*Value of U.S. Imports for Consumption, Duties Collected, and Ratio of Duties to Values, Under the Tariff Act of 1930, 1930–69*, February 1970).

arrangements have been reported to prevail in the sale of pipe for use in oil fields, for example, but they are, of course, difficult to document. In some instances, it also appeared that firms would not bid against their licensees in a particular market, although there were also many cases in which they did compete.

Another factor which tends to weaken competitive forces in international markets are buy-domestic policies. Although the most widely publicized policy is that of the U.S. government, a similar practice appears to be just as widely applied by most foreign governments, through informal administrative means. Most governments were reported in the OECD study of government purchasing [16] to have few formal rules against purchasing foreign products. However, they do permit purchasing by selective tender, in which the invitation to bid is limited to selected suppliers, or by negotiation with suppliers, procedures which permit domestic suppliers to be favored without formal announcement of preferences.[17] Sometimes there are cumbersome administrative or excessive bonding requirements, or even regulations precluding foreign bidding on government contracts.[18] Buy-at-home policies of private firms, on both sides of the Atlantic, may have an even greater quantitative impact in fragmenting markets; in the case of electric power equipment, switchgear, and conductors it was U.S. government agencies that aggressively sought foreign bidding on major contracts, while private utilities, until recently, apparently maintained a firm policy against purchases from abroad.

In some cases, the domestic purchasing orientation of individual firms is abetted by reciprocity arrangements in which a firm buys from its own customers insofar as possible.

Reciprocity policies are not a monopoly of private firms. Similar agreements, sometimes formal, have been made between governments, or have been forced on private firms by their governments, and the

[16] *Government Purchasing in Europe, North America and Japan: Regulations and Procedures,* OECD, 1966.

[17] For examples of informal preferences in the United Kingdom, see the sections on electric power machinery and telecommunications equipment in Chapter 13. The OECD report nevertheless describes British purchasing procedures as follows: "No statutory requirements, nor any guidance of a formal or informal character issued to procuring officials stipulate that buying departments should give preference to United Kingdom supplies. . . . Foreign firms are not treated differently from domestic firms" (*ibid.*, p. 105).

[18] Robert E. Baldwin, "Nontariff Barriers: A Brief Study," *Compendium of Papers on Legislative Oversight Review of U.S. Trade Policies,* Senate Committee on Finance, 90th Cong., 2nd sess., February 7, 1968, Vol. 1, p. 339.

amounts involved may be larger than those involved in private arrangements. For example, a British agreement to purchase American military aircraft was accompanied by an American offer to facilitate the purchase of British defense equipment.[19] A Belgian decision to purchase French, rather than American, military aircraft, and German, rather than French, tanks was attributed to the inclusion in each of the products chosen of components made in Belgium and, in one case, to a commitment for the purchase of other unrelated products from Belgium. A Danish purchase of Swedish aircraft was attributed to similar offset contracts.[20]

For developing countries, import-substitution policies often result in a marked separation of domestic and world markets. The tying of aid also tends to shelter transactions from competitive forces and to result in higher prices for the purchaser from the source of aid than from other countries.[21]

Product Differentiation

Physical product differentiation ranges from almost incidental and accidental to purposeful and important differences in design. An example in the former category are price differences that arise from the use of 220-volt current in Europe and 110 volts in the United States. Although costs of production of bulbs adapted for either system would be about the same if they were produced in equal volume, bulbs for the 220 system are in fact mass produced in Europe and are relatively cheap there while 110 bulbs are relatively expensive, and the opposite is true in the United States. A similar situation applies, it was reported to us, to bolts with hexagonal heads (used more widely in Europe) vis-à-vis bolts with square heads. In the more deliberate category are differences in styling for consumer durables such as automobiles or in

[19] "America Expects Every Briton . . . ," *Economist* (London), January 13, 1968.
[20] "NATO Arms: Coordination Is a Mirage," *ibid.*, February 24, 1968.
[21] See Irving B. Kravis and Robert E. Lipsey, "Some Evidence on Price Differentials Connected with Aid Tying" (NBER, 1968 mimeo), in which data derived from the present study are used to compare the cost of buying various collections of goods entirely in the United States with the costs of buying entirely in each of several other countries or of buying each product from the cheapest source. A comprehensive analysis of the effects of aid tying is given in J. Bhagwati, "The Tying of Aid," UN Conference on Trade and Development, Second Session, New Delhi, Vol. IV, *Problems and Policies of Financing* (1968). Estimates of price differentials resulting from the tying of aid are given in that report as well as others in the same volume and in Mahbub ul Haq, "Tied Credits—A Qualitative Analysis," *Capital Movements and Economic Development*, Proceedings of a Conference held by the International Economic Association, London and New York, 1967.

specifications for electrical generating equipment which, it has been alleged, some countries have designed to exclude competing goods from foreign suppliers.

In some lines, notably in communications equipment, the initial installation locks the purchaser to the products of a particular supplier, and there may be substantial differences between prices offered for the original installation and those offered for expansion or replacement equipment.

Some differences in equipment design represent adaptations to different economic circumstances in the several producing countries. Detroit mass-produces automotive engines in the 150–400 horsepower range, built for heavy use over long distances, while in Europe, where distances are shorter and there are fewer miles of high-speed turnpikes, engines are built with 50 to 75 horsepower less than in the United States. Since food shopping in the United States involves large purchases with infrequent visits to the supermarket, larger refrigerators are in demand than in Europe where frequent small purchases are still more usual. European washing machines often contain water heaters, unnecessary in the United States where continuously available hot water from the tap is commonplace. High U.S. wages relative to those in Europe lead to the design of machinery that is directly laborsaving (such as heavy earth-moving machinery), through minimizing the need for maintenance (ball and roller bearings), or through providing for long continuous operation that avoids the setup costs of shifting to a different variety of product.

Knowledge and reputation for design capacity are often dominant elements in the award of contracts for industrial installations, such as petroleum refineries, chemical plants, paper and pulp mills, and steel mills. American engineering firms lead in some of these industries, notably in petroleum refining and certain branches of the chemical industry, but this does not necessarily mean that all procurement for the project will be in the United States. Indeed, some of these firms engage in systematic international price comparisons for standard items that enter into their work such as steel bars, electric motors, etc., so that they can make the most competitive bids on installations in any part of the world. In other equipment such as machinery for the generation of hydroelectricity and for the manufacture of paper and pulp, European firms have a strong position, and in still others, Japan has become a major factor in world

markets, notably shipbuilding, including particularly the design and construction of large tankers.

Nonprice Factors

In the comparisons we made in this volume we tried by various means to make quality adjustments for those physical differences that are manifested in differences in size or performance. Yet even if we had been able to adjust the prices perfectly to take account of the physical differences in the products, there would still be, in addition to transport costs, other conditions of sale, which we have referred to as the nonprice factors, and which affect the balance of economic advantage to a buyer confronted with two quality-adjusted price offers. Each price may thus be regarded as part of a package which includes such nonprice factors as before-sale advice, speed of delivery, credit terms, ease of order, and quality of after-sale service. The importance of these nonprice factors varies from one line of trade to another, but they undoubtedly have substantial influence upon international competition.

We repeatedly came across illustrations in which these factors were reported to have played a determining role in decisions governing the flow of trade. A large American company, for example, applied a rule-of-thumb measure for the differential cost of placing a foreign order during the study years, and purchased at home whenever the size of the order was likely to fall below a certain dollar figure. Another cost of purchasing abroad is the greater uncertainty of delivery and consequently the need to maintain larger inventories. During the period of our study, for example, one large aluminum consumer reported switching to domestic aluminum, despite his ability to obtain European aluminum at a saving of 5 to 10 per cent in the delivered price, owing to the costs of maintaining adequate margins of safety in his stocks.

In many cases price is secondary to delivery date and, as will be discussed more fully below, the ability of U.S. firms to offer faster delivery is an important nonprice advantage. Under boom conditions it may lead to foreign purchases from the United States at quite high prices; in 1957, for example, foreign ship orders were placed with U.S. yards even though their prices were 50 per cent higher than those abroad.

Another very important nonprice factor is financing. In the machinery and equipment area most exports, particularly those destined for the

developing countries, involve credit. Some firms have reported that the availability and terms of credit were sometimes more important to purchasers in developing countries than the nominal price; the amount that would have to be paid per annum was the critical factor in the decision. In some instances, a higher nominal price may simply conceal higher risk premiums on credit sales to a developing country; [22] in other cases the tying of credits from government sources may enable the seller to charge a higher price than he would get in world competition even though he may not bear any or much of the credit risk.

Important factors working to reduce the cost of credit to developing countries and also affecting the competitiveness of different countries are export credit insurance plans. Near the end of 1965, it was reported that the United States, Canada, Japan and sixteen western European governments were operating or supporting such systems.[23] The various arrangements, which evolved under competitive pressures, usually covered short- (up to 180 days) and medium-term (180 days to five years) credits extended by exporters to their customers or by banks to foreign importers and protected against both commercial risks (e.g., insolvency) and political risks (e.g., nonconvertibility, expropriation). The United States was the last major country to adopt a comprehensive insurance arrangement (in 1962) and was reported in 1965 to be insuring 5 per cent of its exports as compared to 25 per cent by the United Kingdom, 11 per cent by France, and 10 per cent by Germany.[24] The reason for the difference was the greater range and flexibility of coverage offered in the European countries, particularly for riskier and longer terms of credits. Comparisons of the costs of the insurance are difficult; according to one report in 1964, the U.K. plan had the lowest fees while U.S. fees were lower than those of France and Germany for the lowest risk markets.[25]

[22] The need to measure price and credit terms jointly has been discussed by Juster and Shay in connection with credit costs on U.S. automobile sales (see F. Thomas Juster and Robert Shay, *Consumer Sensitivity to Finance Rates: An Empirical and Analytical Investigation*, NBER Occasional Paper 88, 1964). In the nineteenth century U.S. purchases of rails from England were sometimes paid for with securities equivalent to 130 or 140 per cent of the nominal price (see Cleona Lewis, *America's Stake in International Investment*, Washington, D.C., The Brookings Institution, 1938, p. 38).

[23] Chase Manhattan Bank (New York), *Report on Western Europe*, No. 38, October–November 1965.

[24] *Ibid.*

[25] "Gains Scored in Financing of U.S. Exports," *Journal of Commerce* (New York), March 31, 1964.

More specific information on sources of international differences in prices beyond that which can be explained by transport costs may be found in the product chapters of Part Four. It will be seen there that even in categories such as nonferrous metals (Chapter 10) which consist of relatively simple standardized products, powerful forces tend to fragment markets and to prevent the operation of a single world market conforming to the competitive ideal.