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PART ONE

INTRODUCTION AND SUMMARY

1

THE NATURE OF THE STUDY

THIS BOOK DESCRIBES new methods of measuring price competitiveness in the international trade of a developed industrial country and provides annual indexes of price changes and levels, calculated by these methods, for machinery, transport equipment, and metals and metal products. The indexes cover the United States, the United Kingdom, countries of the European Economic Community (EEC or Common Market), and Japan, for 1953, 1957, and 1961–64.

These are the main features of the methods: (1) Actual prices or price offers were used rather than unit values derived from trade statistics; (2) world trade weights were employed rather than the trade weights of the United States or some other single country; (3) country-to-country price relations for different points in time were used to help establish intertemporal movements in price competitiveness; (4) rather than prices gathered in terms of detailed, preselected specifications, pairs of prices were collected for specifications of the respondents' own choosing, each pair providing either a time-to-time or country-to-country price relative; and (5) regression techniques were employed to make international price comparisons for some commodity groups.

The price measures constructed for covered commodities and years are used in an exploratory way to analyze trade flows. The role of non-price factors in trade flows is also considered, although the chief focus of the work is on prices.

The Need for New Measures

This study was partly inspired by recent U.S. balance-of-payments difficulties. One explanation of these problems has been that the competi-

tiveness of the United States economy has declined; that there has been a tendency for the United States to "price itself out of world markets."

While there has been disagreement over the causes of U.S. balance-of-payments deficits, few would deny that relative price movements should be examined in any analysis of balance-of-payment problems. Two measures of price change are usually used in assessing price competitiveness—foreign trade unit value indexes from customs data,[1] and wholesale and consumer price indexes for the domestic economy.[2]

Unit values are values per unit of quantity within detailed export or import classifications. However, since the classifications must in total cover every item of trade, they cannot be narrowly specified unless their number is increased far beyond any practical limit. As a result of the lack of close specification, there is never any certainty that a change in unit value represents a change in price; the unit value of a trade classification can change, even though all prices are constant, if there is a shift from one quality or type of item to another.

A few years ago, for example, foreign pressures to increase local production of components led to the reporting in export declarations of motor vehicles which contained smaller and smaller fractions of a complete car—some as little as 15 to 20 per cent by value.[3] The unit value series thus was biased downward as a measure of price movements. This problem may not be too serious for many crude or agricultural commodities, but exact specification is extremely important for finished manufactures, which have accounted for more than half of the value of U.S. exports for several decades and, recently, for half of its imports. The composition of manufactures at even a relatively early stage of fabrication may shift so as to produce spurious price movements, as the chapters on iron and steel and nonferrous metals indicate. In the former group, for example, the U.S. unit value series for tubular goods increased by 19 per cent between 1957 and 1961 because narrower and more specialized types of pipe were being exported, while

[1] Export and import *price* indexes (as distinct from unit value indexes) are available for Germany and Japan but not for the United States or most other countries.

[2] See, for example, Helen B. Junz and Rudolf R. Rhomberg, "Prices and Export Performance of Industrial Countries, 1953–63," *International Monetary Fund Staff Papers*, July 1965, pp. 230–239. Unit labor cost and productivity trends are also examined in that study.

[3] See Stigler Committee Report, pp. 82–83 (Price Statistics Review Committee, *The Price Statistics of the Federal Government*, New York, National Bureau of Economic Research, 1961). The committee which compiled this report was established by the National Bureau at the request of the U.S. Bureau of the Budget.

export prices, holding quality constant, actually declined by 2 per cent. (See Chapter 8 for further analysis of U.S. unit value data.)

The existing export and import unit value indexes are defective not only because of the ambiguity of many of these unit value series but also because quantities are not reported at all for many manufactured products, and their unit values are therefore simply unavailable.[4] These faults, moreover, bias the corresponding quantity indexes in a direction opposite to that of the unit value series.[5]

Even if the unit value indexes accurately reflected the price movements of actual exports and imports, they would still be deficient indicators of price competitiveness in international trade. One disadvantage, which they share with export and import price indexes, is that the weights by which the different commodities are combined differ from one country to another, owing to the differing composition of export trade; therefore it is not possible to say whether an apparent change in price relations results from differences in price movements or from differences in the weighting of identical price movements. Second, each country's weights are themselves a function of its competitiveness in different products; commodities which encounter severe foreign competition tend to disappear from among a country's exports. In an index with changing weights, the weights of these commodities decline. Even if constant weights are used in the indexes, the worse the competitive position of a country in a commodity, the lower the weight of that commodity in that country's index.

Commodities produced domestically but not exported are omitted from export price indexes. Yet, as is pointed out below, these may have an important bearing on competitive strength. If the domestic price of a commodity falls, it may then be exported or may replace a foreign product previously imported. An index of export prices describes only one side of the story of a country's international price competitiveness; the competitiveness of its domestic products in comparison with imports, which is equally important, escapes notice.

These deficiencies have often led balance-of-payments analysts to

[4] In recent years from 23 to 35 per cent of finished manufactured imports and from 15 to 25 per cent of finished manufactured exports were covered in unit value index calculations (*Description of U.S. Foreign Trade Indexes,* International Trade Analysis Division, U.S. Dept. of Commerce, June 14, 1967).

[5] For a fuller discussion of unit value indexes, see Robert E. Lipsey, *Price and Quantity Trends in the Foreign Trade of the United States,* Princeton University Press for NBER, 1963, Chap. 4.

compare the movements of domestic wholesale and consumer prices. Other things equal, the consumer price indexes are less relevant to international competition than the wholesale price indexes, since the former include service items,[6] few of which can be traded, and refer to the retail level of distribution.

In contrast to unit value indexes, both types of domestic indexes are usually constructed from prices of carefully specified commodities. However, they too, for different reasons, are deficient measures of international price competitiveness. The indexes of the different countries vary widely in coverage, method of construction, and weighting, and reported prices include many list or other published figures which may not reflect transactions prices.[7] Most important of all, export prices may diverge from domestic prices for considerable periods. Differences between domestic and export price measures are discussed in Chapters 7 and 8, and several examples of variance are given in the chapters below dealing with individual commodities,[8] and even published examples can be found.[9] Nor can the direction of the differential movements of export and domestic prices be inferred simply from domestic economic conditions. In a booming domestic economy an industry may in some circumstances raise its home prices at times when keen international competition constrains it from increasing export prices. In other circumstances, especially where export trade is marginal, export prices may rise as home prices are kept constant or limited to smaller increases. Transportation costs; government interventions, such as tariffs and rebates on exports; and general market imperfections also make it possible for home prices to move differently from export prices.

If export unit value indexes were consistently in agreement with wholesale price indexes, most investigators might set aside these objections as valid in principle but of little quantitative significance. How-

[6] For example, services account for over one-third of the expenditure weights in the Bureau of Labor Statistics Consumer Price Index (see *Statistical Abstract of the United States, 1964,* U.S. Bureau of the Census, 1964, p. 358). Indexes of consumer commodity prices (excluding services) are available for the United States and for some, but not all, other countries.

[7] Stigler Committee Report, pp. 69–71, 373–458. See also George J. Stigler and James K. Kindahl, *The Behavior of Industrial Prices,* New York, NBER, 1970.

[8] See, for example, the chapters on iron and steel, nonferrous metals, agricultural machinery, automobiles, and equipment for distributing electricity.

[9] For example, see *Wholesale Price Index Annual,* Bank of Japan, for the differences between "wire rod of ordinary steel" and "wire rod of ordinary steel (for export)," between "sheets" and "sheets (for export)," and similar differences for "medium steel plates," "heavy thick steel plates," and "tin plates" in Japanese wholesale price data. See also *National Institute Economic Review* (London), February 1964, p. 48.

ever, the two sets of data have sometimes diverged substantially just at the times when there was the most concern over relative prices. For example, between 1959 and 1961, the U.S. wholesale price index, reweighted to reflect the composition of exports, fell slightly, while the total export unit value index rose by 3 per cent. For manufactures the reweighted wholesale price index fell by 0.2 per cent, while the export unit value index for finished manufactures increased by 5 per cent and that for finished manufactures and semimanufactures rose by 4 per cent.[10]

New Measures of International Prices

The deficiencies of the indexes we have described suggest a number of specifications for a more appropriate price index for internationally traded goods: (1) It should be based on actual prices or price offers, not unit values. (2) For goods which the country actually exports, the prices should refer to export rather than domestic transactions. (3) The indexes for different countries should refer to the same set of goods. (This requires that domestic prices should be taken for goods which a particular country does not export.) Our new price indexes for internationally traded goods, which we shall refer to as *international price indexes,* are designed to meet these requirements.

The basic point of departure for these indexes is that the universe of prices relevant to an evaluation of a country's price competitiveness is not limited to export and import prices. For an industrial country that produces the whole gamut of manufactures, such as the United States, the United Kingdom, Germany, or Japan, the relevant universe consists of prices of all those manufactured goods that enter world trade. For example, changes in the U.S. prices of *all* of these goods—whether they are imported, exported, or even produced but not imported or exported—affect the U.S. competitive position. If the U.S. price of a good neither imported nor exported rises sufficiently relative to foreign prices, the United States will begin to import the good; if the relative price falls enough, the product will be exported.

The selection of this universe of prices also leads to the choice of

[10] Hal B. Lary, *Problems of the United States as World Trader and Banker,* New York, NBER, 1963, pp. 62–63.

a weighting system based on the relative importance of commodities in world trade. As pointed out in Chapter 4, we may regard such weights as reflecting the importance of each commodity in consumption, adjusted for the different extent to which different commodities tend to be traded internationally.

We have taken as an approximation to world trade weights the aggregate 1963 exports of the countries belonging to the Organization for Economic Cooperation and Development (OECD), including trade among OECD countries. They are a close estimate of the total export trade of developed countries and, for most of the products in our study, of world trade as well.[11]

The new measures, prepared with the aid of these weights, are made up of three interrelated sets of index numbers.

1. *International price indexes.* These indexes, which we have already mentioned, are time-to-time indexes for each country. They were derived by applying 1963 world trade weights to each country's export price changes (or to its domestic price changes where exports of a particular category were nil or negligible). They measure the change in each country's prices of the bundle of goods that was exported by the industrial countries as a whole. The international price index for any one country such as the United States (S) is then:

$$P_S = \frac{\sum \left(\frac{P_1}{P_0}\right)_S w_{63}}{\Sigma w_{63}}$$

where P_1 and P_0 represent U.S. prices in two different years and w_{63} represents the 1963 weights.

2. *The index of price competitiveness.* Our main interest in a country's international price index is in its movements relative to those of other countries. Did the U.K. price index rise by more or less than that of the United States in a given period, and by how much more or less? The comparisons of price movements can be presented systematically simply by dividing the international price index for one country by the corresponding index for another country. We call the result an index of price competitiveness. In calculating it, we place the foreign country's index in the numerator and the U.S. index in the denominator.

[11] The OECD includes eighteen European countries, and the United States, Canada, and Japan.

A rise in the index of U.S. price competitiveness, therefore, indicates that foreign prices of internationally traded goods have risen relative to U.S. prices and that U.S. price competitiveness has thus improved while that of the foreign country has declined. The index of price competitiveness for the United States vis-à-vis the United Kingdom, for example, is

$$P_{K/S} = P_K/P_S$$

where P_S is as defined above, and P_K is the corresponding index for the United Kingdom.

3. *Comparisons of price levels.* The index of price competitiveness can also be derived from country-to-country comparisons of price levels of internationally traded goods at a given moment in time.[12] Changes over time in these place-to-place indexes measure changes in price competitiveness in the same manner as comparisons of time series indexes. If we are comparing two countries, S and K, in two years, 0 and 1, the place-to-place comparisons for a single commodity can be described as

$$\frac{P_{K_0}}{P_{S_0}} \quad \text{and} \quad \frac{P_{K_1}}{P_{S_1}}$$

and the place-to-place index for year 0 as

$$\frac{\sum \frac{P_{K_0}}{P_{S_0}} w_{63}}{\sum w_{63}}$$

To compute the index of price competitiveness from the place-to-place price relatives, the ratio of foreign to U.S. prices for each year is taken as a percentage of the ratio for the base year. The index of price competitiveness derived in this way would be identical with that derived from the time-to-time data if, for each individual commodity specification for which we had place-to-place comparisons, we also had a set of time-to-time comparisons covering the same countries and years. In practice, of course, the data do not match perfectly. However, as we approach adequate coverage in both types of comparison, the two indexes of price competitiveness should converge. Both approaches

[12] Such country-to-country relatives measure the level of a country's price competitiveness and should explain, to some degree, the current pattern of trade in individual categories of products.

are used in this study since their feasibility and reliability vary from one type of commodity group to another.

For some commodities, only time-to-time data can be obtained; for example, two countries may produce machines which compete with each other but differ greatly in design or other characteristics. For other commodity groups—notably those sold on a "turnkey" basis (i.e., installed and ready to operate), such as large electrical generating equipment and communications systems—it is easier to obtain place-to-place than time-to-time price comparisons. Time-to-time price comparisons for such intricate, large, custom-made equipment are difficult because the specifications vary from one job to another.

In other indexes, this problem is often met by pricing major components of the equipment rather than the finished product itself. However, we were able to compute indexes directly, because this kind of equipment—heavy electrical installations and communications systems—is often purchased by public authorities under a system of bidding in which both domestic and foreign bids are made public at the time the award is announced. These bids, and similar bids received by private entities, when they can be obtained, provide a good basis for direct price comparisons between firms in different countries.

Each approach to the index of price competitiveness provides some information not given by the other. The country-to-country price relatives do not tell to what degree observed changes over time are attributable to price movements in one country or the other. The differential movements in the time-to-time indexes, on the other hand, tell us nothing about the absolute spread of prices between the two countries. This knowledge might help clarify nonprice aspects of competition, such as financing, servicing, and the like.

We have been able in a few product areas to compare results obtained from the two approaches. Such a comparison provides a significant test, of course, only in groups where the two types of data were derived from different sources.

Our place-to-place comparisons and indexes of price competitiveness in a way parallel the absolute and relative versions of the purchasing power parity concept. However, we have not sought to develop a measure suitable for the calculation of equilibrium exchange rates, and our system of weighting (world trade weights) does not correspond

with those systems usually discussed in connection with purchasing power parities.[13]

The Substantive Scope of the Study

Since there is no centrally collected and publicly available body of price data for internationally traded goods, it was necessary to start with a program of data collection. Ways had to be found to fit this potentially formidable task into the resources available for the study. One means of reducing the volume of field work was to limit the commodity coverage. Since the study was largely methodological in objective, the proposed approach was put to the most rigorous test by applying it first to machinery and transport equipment, products that were likely to offer the greatest difficulty for the purpose at hand. In order to cover relatively homogeneous products as well as custom-designed ones, we included the whole range of manufactured metal products, beginning with pig iron and its nonferrous equivalents.

The precise commodity coverage of the study may be set out in terms of the Standard International Trade Classification,[14] which has been used as a framework for organizing the data collection and constructing the index numbers:

SITC Division		*Weight*
67	Iron and steel	13
68	Nonferrous metals	6
69	Manufactures of metals, n.e.s.	6
71	Machinery, other than electrical	32
72	Electrical machinery	13
73	Transport equipment	24
Selected items from section 8—		
	Miscellaneous manufactured articles	7
	Total	100

[13] For a recent discussion of purchasing power parity theory, see Bela Balassa, "The Purchasing Power Parity Doctrine," *Journal of Political Economy*, December 1964, pp. 584–596.

[14] *Standard International Trade Classification, Revised*, United Nations, Statistical Papers, Series M, No. 34, 1961.

These products accounted for 46 per cent of total exports by the OECD countries [15] in 1963, 45 per cent of total United States exports, and 64 and 69 per cent of the exports of products other than food and raw materials of the OECD countries and of the United States, respectively. We present indexes for all the two-digit SITC divisions included above, most of the three-digit groups contained in them, and many of the more important four-digit subgroups.

The dates of reference for price quotations are midyears 1953, 1957, and 1961 through 1964. It would have been preferable to construct the indexes for a longer period of time and for each year within the period. However, even these six years of data proved to be too much for many of our sources of price information, and it was felt that keeping the length of the period down and omitting some of the intervening years would improve the chances for getting the necessary cooperation.

Indexes for the covered commodity groups as a whole have been prepared for the United States, the United Kingdom, Germany, and the European Economic Community (which includes Germany, France, Italy, Belgium, the Netherlands, and Luxembourg). We chose these areas partly because of their importance in world metal and machinery trade and partly because we had access to price information there. We regret our inability to provide comprehensive indexes for Japan; for many of our respondents Japan emerged as an important competitor or alternative source of supply only near the end of our reference period. We are able to publish indexes for Japan for only three of the six SITC commodity divisions covered, and for a fair number of smaller commodity groups. Other countries such as France and the Netherlands also occasionally figure individually in the indexes presented for particular product classes.

The importance of the main countries and commodity divisions in the total trade covered by this study, and the main trends over time are displayed in Table 1.1, which shows the origin of the $45 billion of exports included and the main destinations for the exports of each country of origin.

[15] These countries accounted for 82 per cent of 1963 world exports in SITC section 7, divisions 67 and 68 (less group 681), and groups 691–695, 698, and 812 (*Monthly Bulletin of Statistics*, United Nations, March 1967, pp. xviii ff.).

Table 1.1
OECD Exports of Machinery, Transport Equipment, Metals, and Metal Products, by Origin, Destination, and Commodity Division, 1963, and by Origin, 1953, 1957, 1961–64
(millions of dollars)

	Origin					
				EEC		
	Total OECD	U.S.	U.K.	Total	Germany	Japan
Total, all destinations (1963)	44,560	10,224	6,637	18,679	9,464	2,824
Destination						
U.S.	3,948		489	1,370	801	799
OECD Europe	20,257	2,378	2,431	11,992	6,222	329
U.K.	1,674	390		674	313	59
EEC total	11,724	1,385	1,300	7,460	3,395	141
Germany	2,957	384	300	1,576		44
Canada	2,726	2,177	277	157	98	54
Japan	698	373	67	183	123	
Latin America	3,563	1,669	280	1,009	462	229
Other	11,843	2,191	3,088	3,913	1,753	1,395
Unaccounted for	89		5	56	5	17
Special categories	1,436	1,436				

(continued)

Table 1.1 (concluded)

	Origin					
				EEC		
	Total OECD	U.S.	U.K.	Total	Germany	Japan
SITC commodity division (1963)						
Iron and steel (67)	5,693	514	573	3,166	1,146	702
Nonferrous metals (68)	2,725	449	348	837	256	43
Metal manufactures, n.e.s. (69)	2,519	500	371	1,146	570	200
Nonelectrical machinery (71)	14,164	4,046	2,404	5,492	3,299	351
Electrical machinery (72)	6,005	1,492	891	2,474	1,173	519
Transport equipment (73)	10,496	2,704	1,764	4,472	2,345	626
Selected items from SITC 8, miscellaneous manufactured articles	2,959	519	286	1,092	674	383
Year[a]						
1964	47,236	11,017	6,513	20,032	9,705	3,161
1963	41,557	9,661	6,351	17,587	8,789	2,441
1962	38,617	9,385	5,965	16,212	8,169	1,995
1961	36,088	8,500	5,855	15,379	7,820	1,695
1957	27,606	8,695	4,981	10,030	5,089	953
1953	17,353	6,092	3,513	5,548	2,363	381

Source: Appendix B and sources mentioned therein.

[a]These data do not include subgroups of SITC 8.

Conclusions Regarding Method

Since the development of methods of measurement was a main object of our study we list the conclusions we reached about method and about the direction that future work in this field should take.

Data gathering (Chapter 4). A major conclusion of our work is that it is feasible to collect many types of data relevant to the measurement of international price competitiveness that had never been collected before. Working with comparatively small price collection resources, we accumulated a large quantity of data. A well-financed official data gathering project should meet with even greater success.

An experiment we consider successful and more broadly applicable was the abandonment of the traditional method of using preselected specifications, in its stead placing on the respondent the burden of finding comparable products for two times or two places so that price comparisons could legitimately be made. For more complex products it would have been impossible to pick specifications applicable to any large number of respondents, and even for simpler products the efficiency of the price collection effort was greatly enhanced. The use of bidding data in a sense followed the same method, since each bid comparison was for a very particular product or set of products, and rarely were any two items identical in the degree required by prevailing price collection methods. No set of preselected specifications could have turned up more than a small fraction of the items appearing in these bids.

In examining the great number of bidding and selling arrangements, we were frequently reminded of the enormous variety of conditions attached to a sale, other than those usually subsumed under the heading of price. List prices were, of course, subject to many types of discounting, for cash payment, for size of order, or simply to meet expected competition. Often this discounting was ignored in sellers' reports and only revealed in buyers' reports and in bidding documents, and the prevalence of this discrepancy points strongly to the need for collecting data from buyers as well as from sellers.

Even the transaction price, however, should be regarded only as a reference base from which continual additions and subtractions are made through changes in such factors as credit terms, delivery time, and the provision of various services. All these features could conceivably be

York, NBER, 1963, pp. 62–63.

priced, but the information is difficult to obtain; lacking it we probably underestimate the real degree of price flexibility.

Use of regression methods (Chapter 5). For both producer and consumer durable goods we found that by using regression methods for international price comparisons we could cover many complex products that would defy comparison by conventional methods, which require identical specifications in two situations. For many such goods there are no cases of identical specifications from two countries or even, in some products, from two periods of time for the same country. We ran regressions on such products as locomotives, aircraft engines, automotive diesel engines, outboard motors, tractors, chemical reactors, automobiles, trucks, and ships, most of which would have been insurmountably difficult to compare if identical specifications had been required. The regression method essentially involves treating a commodity as a cluster of characteristics or quality elements and measuring the price of each characteristic through multiple regression of price against the amount of each element. The product samples and the regressions were in some cases limited to a single country in one year, but in others covered several countries, several years, or both. We applied it to numbers of models ranging from 20 to 1,000, using one to six physical characteristics of the product (but often experimenting with more), and we usually reached $\bar{R}^2$s of 0.9 or more in the best equations. Although we used regression methods mainly for international comparisons, our success in obtaining satisfactory results with such limited data augurs well for the use of these methods in domestic price index work as well.

Wholesale price and unit value indexes (Chapter 8). Neither wholesale price indexes nor indexes of export unit values can be relied upon to describe accurately changes in the international prices of the main industrial countries.

Wholesale price indexes do not adequately cover machinery classifications from the standpoint of international trade and are constructed by methods ill-suited to adjustment for quality changes. Also, to varying degrees from country to country and from time to time, the movements of domestic and of international prices of commodities diverge.

The discrepancies between the changes in wholesale prices and those in international prices were small during periods of little price change but became large, frequently five points or more, when there were larger changes in international prices.

In general, the use of wholesale price data for the 1953–64 period provides an unduly unfavorable view of the changes in the price competitiveness of the United States with respect to Germany. Between 1953 and 1957, for example, wholesale prices point to a 14 per cent decline in U.S. price competitiveness, but the international price indexes show only a 3 per cent decline. Although during the rest of the period the two indexes moved similarly at the aggregate level there were a number of major divergences, notably in iron and steel and in nonferrous metals.

The results for the two unit value indexes we could examine showed them to be even less reliable measures of international price competitiveness for metals and machinery than wholesale prices. An index of export unit values constructed from series used in the official U.S. index deviates from our U.S. international price index to a greater degree than did our reconstructed U.S. wholesale price series. It showed larger and more erratic time-to-time changes and tended to have a larger upward bias.

The other unit value series, a UN index for machinery as a whole (SITC 7) showed a 24 per cent increase between 1953 and 1964. The increase in the NBER international price series was 13 per cent.

Were we lacking international price indexes of the type presented here for 1953–64, we would choose wholesale price indexes rather than unit value indexes for analytical work on international trade. However, we would make them comparable for the various countries by recombining the components using a uniform set of weights.

Future directions of work. It seems clear that future efforts to collect international prices should be conducted in more than one country and preferably in many countries. Comparisons in any one market tend to be biased by trade barriers, consumer preferences, differences in the degree of competition and in the range of products purchased, and many other factors. The ideal arrangement would be for an international agency to act as a clearinghouse through which countries could exchange data derived from government purchasing activity and from firms operating in the individual countries, with each government and firm reporting on both its foreign and its domestic operations. It would be important to collect data from the less developed countries, since these are major markets for many products. However, even an exchange between

any two or three countries could add greatly to the information available to each one on its competitive position.

We hope that the outcome of this investigation will encourage government and international agencies to pursue the measurement of international price relations on a more comprehensive basis. Such measurements would add to our understanding of trade patterns and of changes in the balance of payments of industrial countries and should also be useful in analyzing shifts in trade for specific groups of commodities. Our experience has persuaded us that indexes like these can be constructed on a regular basis and would be a great improvement over existing measures.

In related fields, much more could be learned about the relative roles of price and nonprice factors in various commodity classifications through survey methods. Until this is done even the best price measures will explain only incompletely the factors determining the composition and directions of trade flows and the changes in them.