I: THE STUDY OF
COMPARATIVE PRICES

The study of comparative prices and price trends, of which this paper
is a progress report, is an attempt to develop methods of measuring
price competitiveness in the international trade of a developed in-
dustrial economy, such as that of the United States, the United King-
dom, countries of the European Economic Community (EEC or
Common Market), or Japan. The years covered in the study are
1953, 1957, and each year from 1961 through 1964, and the scope of
the final report will include machinery, transport equipment, metals,
and metal products. The following discussion of concepts and methods
is a brief summary of Section I of the earlier paper in the study.[1]

There is a need for better measures of price competitiveness, first,
because of the lack of any measures of relative price levels and, second,
because existing measures of price changes—such as foreign trade unit
value indexes and domestic wholesale or consumer price indexes—are
not really appropriate for analyzing the effects of price changes on
trade flows or balance-of-payments changes. As explained more fully
in the earlier report, unit value indexes [2] are not reliable measures
of price change because they may be affected by changes in the quality
or type of exports, and domestic price indexes are not relevant because
domestic prices sometimes move differently from export prices. A
disadvantage common to both these types of index and to the few
existing export price indexes as well [3] is that the weights differ be-

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[1] See Introduction.

[2] Unit values are derived from customs data by dividing the value by the quantity
of exports or imports for specific products. The commodity definitions, except for
some crude or semimanufactured products, are rarely narrow enough to insure that
the commodities are homogeneous and therefore that changes in unit value are not
the result of changes in the composition of the commodity class. Export price
indexes, in contrast, are like domestic price indexes in that they are constructed
from prices of very narrowly defined commodities.

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

tween one country and another, owing to country-to-country differences in the composition of exports and production. This means that it is not possible to say whether an apparent change in price relations between countries results from differences in price movements or from differences in the weighting of identical price movements. Furthermore, commodities that encounter severe foreign competition tend to disappear from a country's exports or, in the case of an index with changing weights, to have their weights lowered. Even if constant weights are used in the index of export unit values (or export prices), the worse the competitive position of a country in a commodity, the lower the weight of that commodity in the country's index.

The deficiencies of the existing indexes suggest three specifications to make a price index appropriate to the study of international competition: (1) it should be based on actual prices or price offers, not on unit values; (2) for goods which the country actually exports, the prices should refer to export rather than domestic transactions; (3) the universe of prices relevant to an evaluation of price competitiveness for each country should not be limited to that country's export and import prices but should include prices of all goods, in the classes under study, that enter world trade. The indexes for different countries would, therefore, refer to the same set of goods, and domestic prices would be taken for products 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 selection of this universe of prices also leads to the choice of a weighting system based on the relative importance of commodities in international trade. We have taken exports of the countries belonging to the Organization for Economic Cooperation and Development (OECD) as the relevant universe of trade. They are an approximation to the total export trade of developed countries and, for most of the products in our study, to world trade as well.[4] The weights are based on 1963 data, including trade among OECD countries.

The new measures are made up of three interrelated sets of index numbers.

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[4] The OECD countries, which include eighteen European countries, the United States, Canada, and Japan, accounted for well over 80 per cent of world exports of metals, metal products, transport equipment, and machinery.

1. *International price indexes.* These are time-to-time indexes for each country. They are derived by applying 1963 "world" trade weights to each country's export prices (or to its domestic prices where exports of a particular category are 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.

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 U.S. 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 resulting index an index of price competitiveness. In combining two international price indexes to produce an index of price competitiveness, we place the foreign country's index in the numerator and the U.S. index in the denominator. 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.

3. *Comparisons of price levels.* The index of price competitiveness can also be derived from a different set of data—country-to-country comparisons of price levels of internationally traded goods at a given moment in time.[5] Changes over time in these place-to-place indexes measure changes in price competitiveness in the same manner as the comparisons of time series indexes do.

In order 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.

[5] 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.

However, as we approach adequate coverage in both types of comparison, the two indexes of price competitiveness should converge. Both approaches are used in this study since their feasibility and reliability vary from one type of commodity group to another.[6]

The prices used in computing all these time-to-time and country-to-country indexes were gathered from private firms and public agencies, both U.S. and foreign. Both sellers' and buyers' prices were obtained from firms while the public agencies could report only on their purchasing experience. Many of the foreign data were collected for the study through special arrangements made in Germany, Israel, Thailand, and the United Kingdom.

In order to focus on competitiveness as a feature of a country's own economy and to disregard shifts in markets and differences in transport costs, we collected prices f.a.s. port of export wherever possible.[7] Some data could be secured only on an f.o.b. factory basis, which we have considered acceptable, and other information was available only c.i.f. destination.[8] In the last case—fortunately infrequent—we estimated tariff and international freight costs in order to adjust the prices to an f.a.s. basis.

Where the same f.a.s. price was charged by an exporter for every market, that price was the one we collected. Where different f.a.s. prices were charged for shipments to different markets, our problems of measurement became more complicated. If it were possible, it might have been best to treat each product at each destination as an individual commodity and to have compared prices separately. In fact, we attempted in such cases to make the comparisons for a few of the chief markets and omitted the less important ones.

[6] For some commodities, only time-to-time data can be obtained. One such case is that in which two countries produce machines which compete with each other but differ greatly in design or other characteristics. For other commodity groups —notably those sold on a "turn-key" 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.

[7] The alternative would have been to measure price competitiveness in each different market of the world.

[8] f.a.s. = free alongside ship, including export packing and inland freight; f.o.b. = free on board; c.i.f. = cost, insurance, and freight.