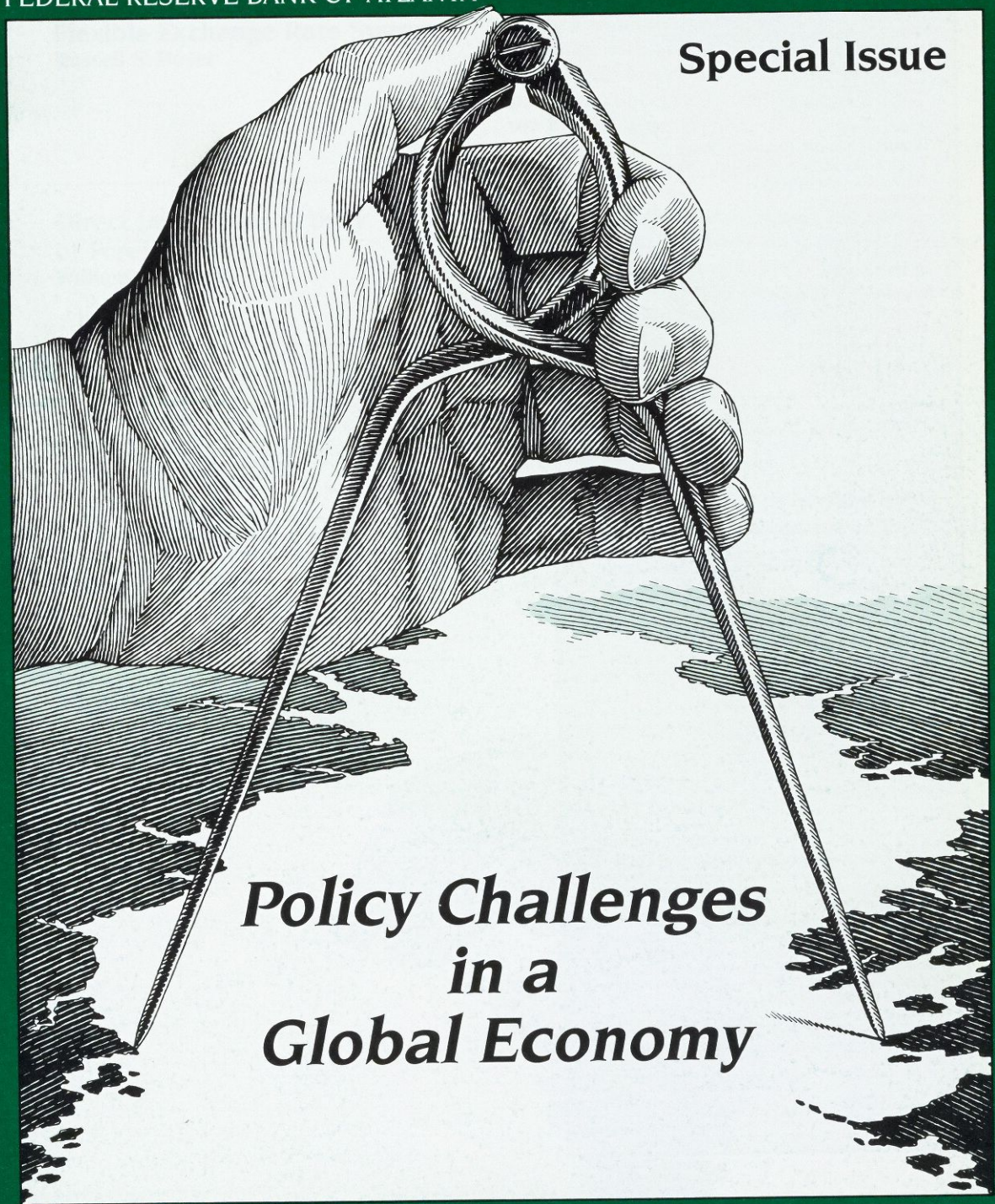
Economic Review

FEDERAL RESERVE BANK OF ATLANTA

SUMMER 1987



Special Issue

Policy Challenges in a Global Economy

The **Economic Review** seeks to inform the public about Federal Reserve policies and the economic environment and, in particular, to narrow the gap between specialists and concerned laypersons.

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ISSN 0732-1813

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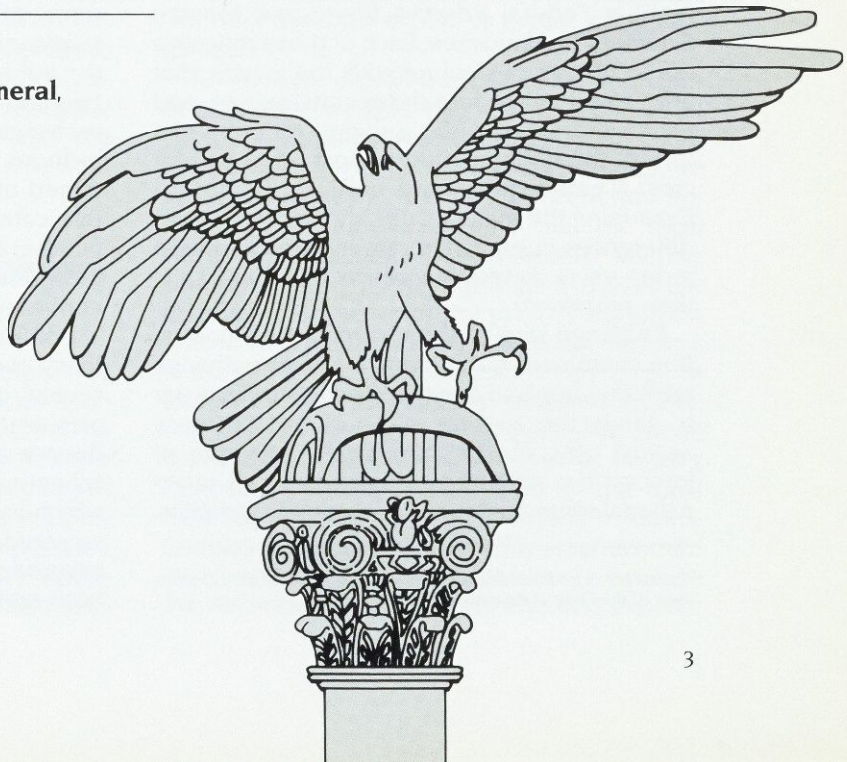

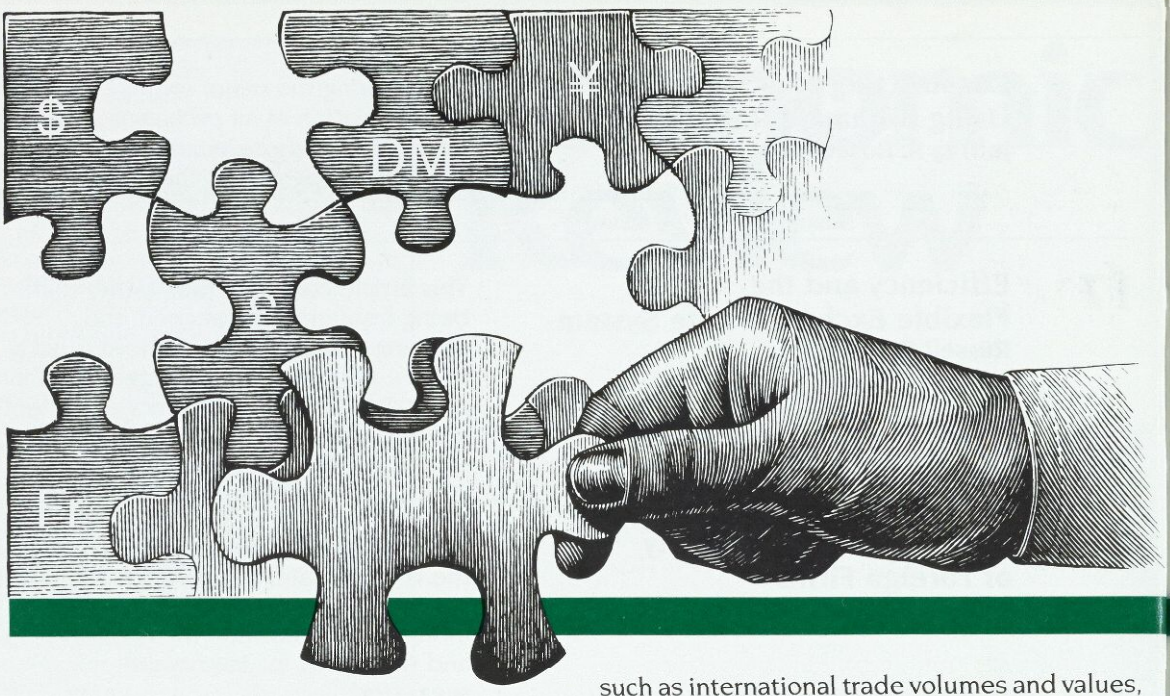

Exchange rate indexes have been crucial indicators of currency values since the advent of floating exchange rates in the early seventies. The slow response of the U.S. trade balance to recent declines in the dollar's value has stimulated still more interest in how exchange rate indexes are constructed and what they tell us. In the past year alone, a number of new dollar indexes, including the three constructed at the Federal Reserve Banks of Atlanta, Dallas, and Chicago, have emerged alongside the more familiar Federal Reserve Board and Morgan Guaranty Trust indexes. Each of these reflects a different way of dealing with the issues that arise in exchange rate index construction, and each therefore provides a slightly different picture of the dollar's value against other currencies. (Their features are outlined in Box 1.) Examining the major issues should help clarify differences in exchange rate indexes and help index users determine which one best suits their purposes.

Exchange rate indexes summarize information contained in the many bilateral exchange rates that apply to a particular currency in order to gauge the average value of that currency against others.[1] They are used to analyze or forecast the influence of that currency's international value on important economic variables, such as international trade volumes and values, asset demands, and prices.[2]

We need exchange rate indexes because the value of a currency cannot be counted upon to move by the same amount or even in the same direction against all other currencies. If, for instance, the value of the dollar during the last decade is measured by its movement against the British pound, the Japanese yen, or the Korean won, a variety of views emerges on the dollar's changing fortunes (Chart 1).

An exchange rate index is a summary statistic that indicates a currency's average value in terms of other currencies. Designing such a summary may be a complex process. Indeed, the value of any single currency can be expressed in terms of more than 200 rates of exchange against other currencies. This number includes the multiple exchange rates maintained by some countries to account for separate categories of economic transactions. The number and variety of exchange rates defy comprehension, not to mention inclusion in economic models.

Compressing the disparate movements of many currencies into a single index involves several important decisions. Since all currencies are not of equal importance in their influence on trade or capital flows, a weighting scheme and a representative time period from which weights are to be measured must be selected. Deciding upon the currencies to be covered requires balancing breadth of coverage both against distortions caused by inflation and

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Constructing and Using Exchange Rate Indexes

Jeffrey A. Rosensweig

Exchange rate indexes are essential tools for determining the average value of a currency as compared with other currencies. Because none of the available indexes is free of drawbacks, index users must choose the constellation of features most closely matched to their particular needs.

against timeliness. The index builder must also choose between an index computed in market exchange rates and one in which exchange rate movements are adjusted for international differences in inflation rates. Recently, the question of building subindexes that point out regionally distinct movements in the exchange rates included in an overall index has been broached.[3]

Index designers typically decide these issues on the basis of the expected use or uses of their index. Their decisions have important implications for what their indexes measure.[4] Users should be aware of the major types of decisions that go into an exchange rate index. In order to provide a guide to these issues and implications, the remainder of this article discusses the issues which were outlined above and the implications of various solutions to each.

Choosing a Weighting Scheme

The Basic Transactions. The weights or emphases assigned to various currencies in an exchange rate index should depend on its intended application. Currency indexes are used predominantly to summarize the effects of various exchange rate changes on a nation's trade balance, trade flows, or export and import price levels. Indexes designed to answer trade-related questions (the focus of the discussion that follows) are normally "trade-weighted." A recent alternative approach to weighting exchange rates recognizes the importance of capital flows in the overall balance of payments. See Box 2 and Ott (1987).

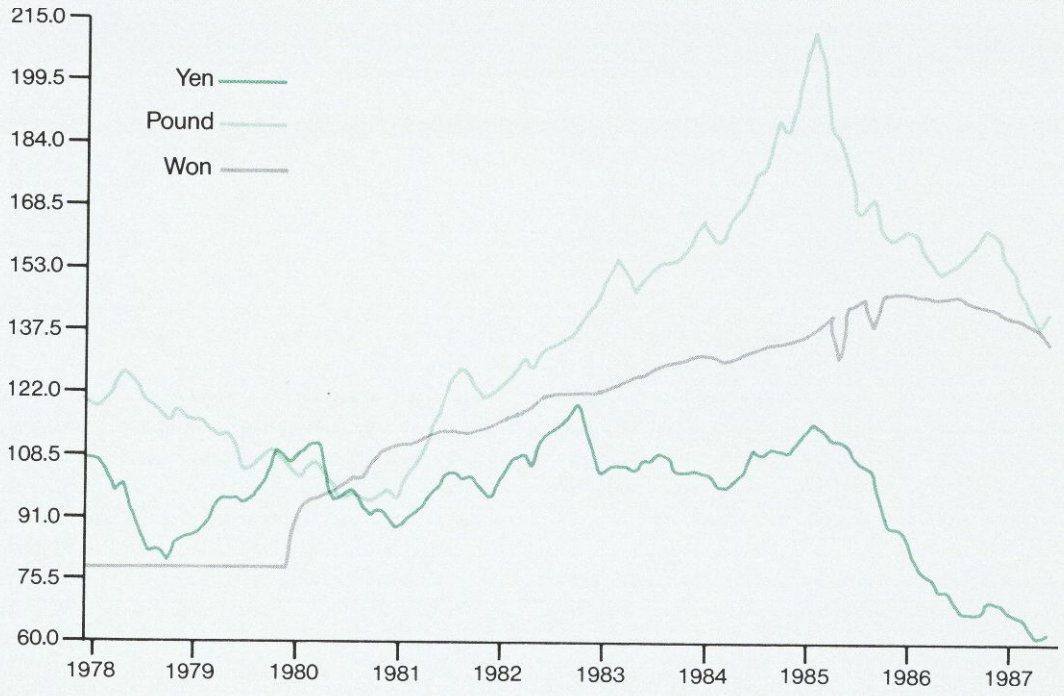
In constructing an index to answer questions about trade flows and prices, one key decision is whether to use weights based only on exports, only on imports, or on exports plus imports. Here again, construction should follow purpose. To predict import volumes or prices only, weights derived solely from import shares are most useful. Likewise, export shares alone are the best basis for export or export price projections.

To evaluate overall trade balance and competitiveness, weights derived from shares of total exports plus imports are generally more appropriate, especially when the weights are based on a recent year or are frequently updated. For example, assume that the local currency depreciates sharply against another country's currency. After some time, if flows are relatively responsive to the price changes that follow this depreciation, the local nation's imports will plunge and exports will surge in trade with the other country. Updated import-only weights would place only a small weight on the significant movement of the other nation's currency, because depreciation of the local currency would have caused imports to shrink. Conversely, updated export-only weights would overweight the exchange rate change because the depreciation would have boosted exports.

Box 1.
Features of Various Dollar Indexes

Index Originator	Number of Countries	Trade-Weight Period	Multilateral, Bilateral, or Other Weighting Scheme	Relative Price Adjustment (nominal or real)	Inclusion of High-Inflation Nations
Federal Reserve Board	10	1972-1976	Multilateral	Nominal	No
Federal Reserve Board	10	1972-1976	Multilateral	Real, CPI-based	No
Morgan Guaranty	15	1980	Bilateral (trade in manufactures)	Nominal	No
Morgan Guaranty	15	1980	Bilateral (trade in manufactures)	Real wholesale prices of manufactured goods	No
Morgan Guaranty	40	1980	Bilateral: modified	Real wholesale prices of manufactured goods	Yes
International Monetary Fund	17	1972 (years through 1974); 1977 (years 1975 on)	Multilateral: structural economic model	Nominal	No
Atlanta Fed	18	1984	Bilateral	Nominal	No
Dallas Fed	131	Moving average, three-year	Bilateral	Nominal	Yes
Dallas Fed	101	Moving average, three-year	Bilateral	Real, CPI-based	Yes
Chicago Fed	16	Moving average, 12 quarters	Bilateral	Nominal	No
Chicago Fed	16	Moving average, 12 quarters	Bilateral	Real, CPI-based	No

Chart 1.
Movement of the Dollar Against Three Different Currencies
(1978-June 1987, 1980 = 100)



During the last decade, the dollar's value has taken divergent turns against different currencies, as this comparison of its movement in relation to the Japanese yen, the British pound, and the Korean won demonstrates.

Source: Calculated by the Federal Reserve Bank of Atlanta with data from the Federal Reserve Bank of New York.

Fortunately, as long as there is significant two-way trade between the nations, the effects of sharp changes in the exchange rate on weights will be minimized if weights are based on exports plus imports. In this case, even if one country's currency moves out of line, total trade with that country should not change dramatically. Therefore, using weights based on exports plus imports should mitigate the systematic bias that can arise with updated weights.[5]

More specialized uses may dictate using special weights. For example, an index designed to capture the dollar's effect on U.S. textile trade should employ weights derived from exports plus imports of textile products.

Alternative Forms of Trade Weights. Despite their narrowed focus, trade-weighted indexes still require crucial choices about the most apt weighting scheme. The primary issue is whether to use multilateral, bilateral, or even more complex trade weights.

Multilateral trade weights are based on each country's share of the total worldwide trade conducted by all the countries in the index. Using a multilateral approach, the weight for each country "k" is calculated as:

$$W_k = \frac{\text{worldwide exports + imports of country k}}{\text{sum of the worldwide exports + imports of all the included countries.}}$$

Bilateral weights are derived from direct trade between the local nation and other countries. If an index is being constructed for the United States, for example, the weight of country k is determined by its trade with the United States as a share of total trade between the United States and the various countries included in the index:

$$W_k = \frac{\text{U. S. exports to + imports from country k}}{\text{sum of the U. S. exports to + imports from all the included countries.}}$$

Box 2

Exchange rate indexes can also be constructed to ascertain the relative international price of all the assets denominated in a particular currency. This "modern asset market approach" holds that the worldwide demand for dollar-denominated assets relative to assets denominated in other currencies, rather than trade flows, determines the dollar's exchange rate. The relative demand for the global supply of dollar-denominated assets arises from the desires of investors worldwide to hold particular shares of their portfolios in assets denominated in various currencies. Since from this perspective monetary policy changes induce portfolio shifts (capital flows) that alter floating exchange rates, asset-based indexes are useful in evaluating current monetary policy stances. Indexes can also measure the impact of changes in relative interest rates or other asset market variables on the average foreign exchange value of the home currency. In either of these cases, weighting exchange rates in proportion to capital flows between countries may be appropriate.[6]

Each alternative has a major advantage, and there is no *a priori* way to choose between them on conceptual grounds. Multilateral weights, by incorporating worldwide trade, attempt to capture competition between two nations in "third countries" as well as with the products of various third countries in both of their domestic markets. For example, a change in the U.S. dollar-Dutch guilder rate affects relative prices of American, Dutch, and other countries' goods in Belgium as well as in the United States and the Netherlands. Multilateral weights' inclusion of total rather than one-on-one trade would seem to take better account of these "third-country" effects. The disadvantage of multilateral weights is that they may give too much weight to nations that trade extensively with each other. Because the Netherlands and Belgium trade heavily with each other, the Benelux nations receive a greater weight in a multilateral U.S. dollar index than does Canada, the largest U.S. trade partner. Conversely, bilateral weights emphasize the direct trading patterns of the nation.[7]

The choice between multilateral and bilateral weights may hinge on how well shares of total worldwide trade happen to reflect a particular nation's competitors. If the reflection is adequate, multilateral weights may be preferable. In the case of the United States, however, multilateral weights may place too much emphasis on Europe, where nations engage in substantial trade among themselves, and not enough on Canada.[8]

As Charts 2 and 3 show, the selection of a formula can affect weights and index performance significantly. Chart 2 depicts the weights that multilateral and bilateral versions of the Atlanta Fed index assign to various world regions. Chart 3 portrays the recent patterns traced by the multilateral and bilateral versions of the Atlanta Fed index. The main practical difference for the dollar is that the large weight on Canada in the bilateral dollar index significantly reduces the magnitude of most changes, because in general the U.S. dollar fluctuates by more against the European currencies and the yen than it does against the Canadian dollar. Particularly, the dollar's decline since February 1985 is much less pronounced in the bilateral index owing to the dollar's relatively minor depreciation against the Canadian dollar.

In the case of many countries, constructing a multilateral as well as a bilateral index, and monitoring both, ultimately could prove informative. Multilateral weights are useful when third-country effects seem crucial, as in analyses of the likely competition when developing potential new export markets. Conversely, bilateral weights may be more useful in analyzing the short-run impact of exchange rate changes on a nation's import prices.

Finally, there are also more complex approaches for deriving trade weights, including "modified" bilateral weights or use of a structural economic model to generate weights. These approaches, however, often rely on ad hoc assumptions—regarding the elasticities of various trade flows employed in structural models, for instance. They also usually require substantial resources to implement them. Therefore, despite their theoretical appeal, more complex approaches are only mentioned here, and interested readers are referred to primary sources.[9]

Selecting a Base Period. Another major weighting issue in constructing an exchange rate index is choice of a base period for the trade flows on which weights are based. Should an index employ fixed weights or ones that are continually updated to reflect current trade patterns? If fixed weights, should they be from one recent year or an average over a few years? If one year, which one?

Indexes recently presented by the Federal Reserve Banks of Chicago and Dallas use continually updated weights in an attempt to portray current trade patterns. This procedure has a major disadvantage. The practical effect of employing changing weights is to confound changes due to exchange rate shifts with changes

due to shifting weights in the index. If the weights assigned to various currencies are revised because of shifts in trade shares, for example, then the value of an aggregate index can change even if no exchange rates change. When the value of one of these indexes changes, a question always exists whether the movement reflects alterations in exchange rates or merely shifting trade weights.

Weights such as those used in the Federal Reserve Board, Morgan Guaranty, and Atlanta Fed indexes are derived from a fixed base period and avoid these problems of interpretation. However, if trade patterns shift, fixed weights may become misleading over longer periods of time. To offset this possibility, the base period for the fixed weights can be updated periodically, and the index, including historical data, can be revised using the new weights. This should make interpretation problems more tractable by eliminating occasions when weights, as well as exchange rates, change.

When using fixed weights from one period, which period should be selected? If trade shares have changed significantly, a fairly current period is best, but it should not be too current since very recent data are likely to be substantially revised. Further, a single recent year should be used only if it appears representative of trade structure over longer periods; otherwise, use of a simple average of perhaps three recent years is preferable.[10]

How Exchange Rates Are Averaged. The final weighting issue concerns the technique used to aggregate or average the various weighted exchange rates. Of the two options available, analytical arguments strongly favor the geometric over the arithmetic averaging technique. All the recently developed indexes use the geometric approach.

An arithmetic average merely multiplies each currency's weight in the index by its percentage change from an arbitrary starting point and sums up these weighted changes. The major drawback of this approach is that it does not treat increases and decreases symmetrically and, further, it could result in an upward bias.[11] For example, if an exchange rate moves from 2 to 4, then back to 2, an arithmetic approach reports a 100 percent increase followed by a 50 percent decrease—even though the actual decrease fully reversed the earlier increase.

A desirable method of averaging weighted exchange rates emphasizes proportional, not absolute, changes. Geometric averaging techniques satisfy this requirement. The geometric technique, unlike the arithmetic, yields the same percentage change in an index even if the base period for the index is changed, and even if the exchange rates in the index are defined in reciprocal terms.

For all these reasons, geometric averaging is favored. This technique uses either of these two equivalent formulas for the index at time t:

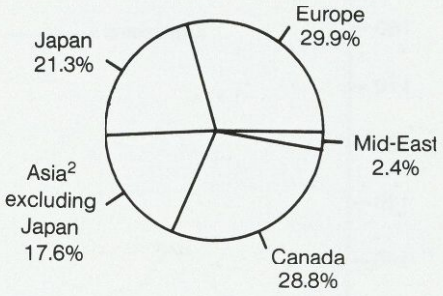
$$\text{Index}_t = 100 \prod_i R_{it}^{w_i}$$

or equivalently,

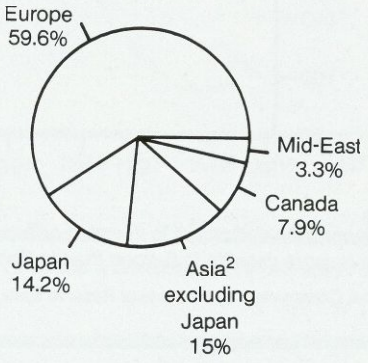
$$= 100 \exp \sum_i w_i \log_e R_{it},$$

Chart 2.
Comparative Weighting in Multilateral and Bilateral Indexes

Bilateral Atlanta Fed Index[1]



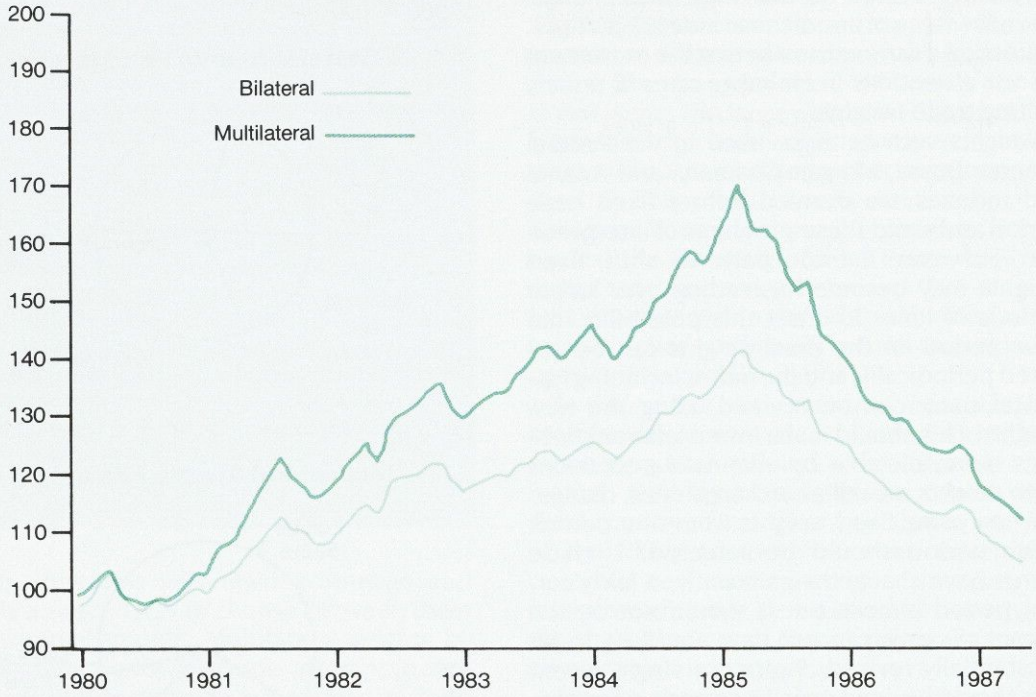
Multilateral Atlanta Fed Index[1]



Compared with the bilateral index, the multilateral Atlanta Fed dollar index emphasizes Europe and places relatively less weight on Canada and Asia.

[1] Weights derived from International Monetary Fund and Central Bank of China (Taiwan) data.
[2] Includes Australia.

Chart 3.
Comparing Two Versions of the Atlanta Fed Dollar Index
(1980-May 1987, 1980 = 100)



The emphasis on Canada in the bilateral index tends to reduce the magnitude of changes in the dollar's value, because the dollar is more variable in Europe than in Canada.

Source: Constructed by the Federal Reserve Bank of Atlanta with data from the Board of Governors and the International Monetary Fund.

where w_i is the weight assigned the currency of country i, R_{it} is the value at time t of the home currency in terms of currency i divided by its value in the base period, $\prod_i$ is the product over all i, $\sum_i$ the sum over all i, $\log_e$ the natural log, and exp means "take the anti-$\log_e$."

Country Coverage

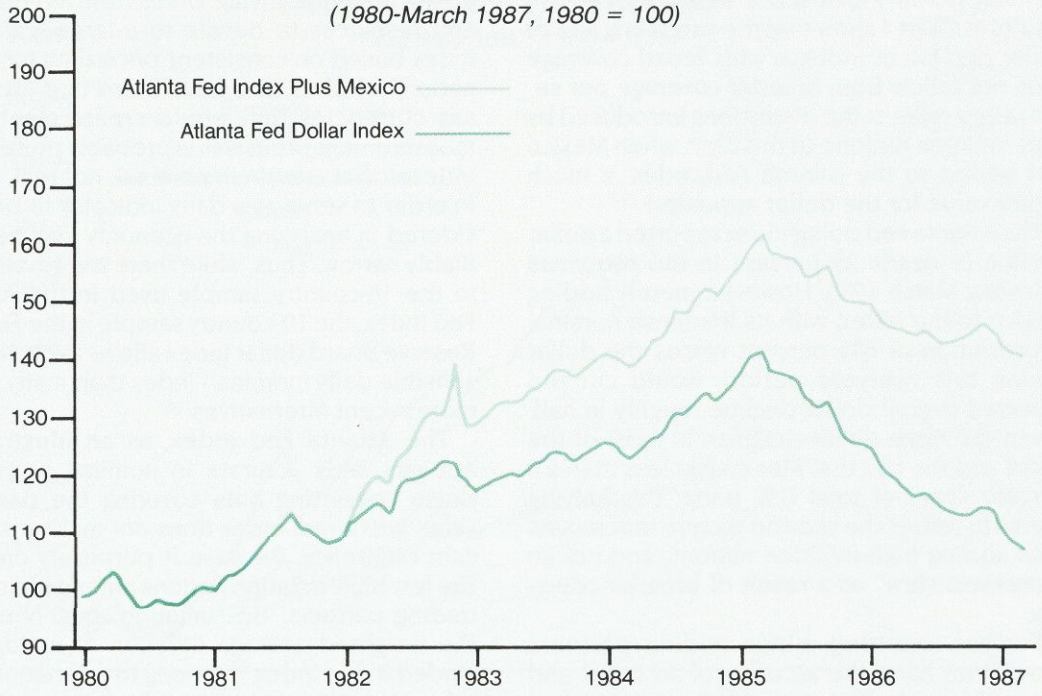
Choosing which countries to cover in an exchange rate index requires one to confront inflation and its impact on exchange rates and trade. Exchange rate movements reflecting only inflation would be likely to have little impact on trade flows because relative prices of trading nations' goods would not change. Movements that do induce changes in relative prices, on the other hand, would be expected to change trade flows. Clearly, an index that purports to aid the analysis of trade flows should attempt to capture changes in relative prices and not merely track different inflation rates.

There are essentially two ways of handling differing rates of inflation. One is to deflate exchange rate changes by relative movements in price levels, producing a real exchange rate index. This is the subject of the next section. The other way is to confine an index of market rates to a set of countries with a weighted average inflation rate similar to the home country's.

The selection of a proper sample of countries to include is probably the most critical issue in nominal index design. As with weighting schemes, the purpose of the index should guide the choice of the countries that are included. Certainly, a multilateral index should cover major worldwide trading nations, and a bilateral index, a country's major trading partners.

Beyond this consideration are several important issues that arise in deciding which countries to include in an index. A sufficient number of countries must be represented to mirror

Chart 4.
A Comparison of the Atlanta Fed Dollar Index and the Atlanta Fed Index Plus Mexico
(1980-March 1987, 1980 = 100)



Adding even one hyperinflationary currency to a dollar index can create a misleading portrayal of the dollar's movement.

Source: Constructed by the Federal Reserve Bank of Atlanta with data from the Board of Governors and the International Monetary Fund.

trade accurately. Using a very large number, however, introduces an impractical degree of complexity. While it is important to choose countries that reflect the local nation's trade patterns, distortions produced by high inflation or multiple exchange rates must also be heeded in deciding which countries to include. Treatment of these aspects of country coverage can have a marked influence on how a particular currency's value and movement appear in the index.

Most dollar indexes contain between 10 and 20 nations typically accounting for between 50 and 80 percent of both U.S. and world trade, though some new ones (Cox, 1986) try for virtually complete coverage. Including only 10 to 15 advanced nations, as some traditional indexes do, is perhaps too narrow for many purposes, especially considering the increasing trade role of industrializing Asian nations. While accounting for all major U.S. trading partners in a bilateral dollar index might seem optimal, such inclusiveness can lead to significant distortion of an index's portrayal of relative price changes in two ways: some nations have very high inflation relative to the United States and some developing nations resort to multiple exchange rate regimes. In this latter case it is extremely difficult to justify using only one of the rates or to weight a weighted average of the multiple rates properly.[12]

In constructing the Atlanta Fed index, for example, 18 nations were chosen. The goal was to broaden the index from some of the traditional models so that it would account for increasing U.S. trade with industrializing Asian nations, but to avoid including currencies that would produce distortions. Mexico, Brazil, and Venezuela were excluded from the Atlanta Fed index even though they are important trading partners, because they lead to one or both of the two forms of distortion.

Certain new indexes with very broad coverage, including high-inflation nations, seem to

have found that, if previously omitted trading partners are added, the dollar has barely declined since early 1985. Chart 4 illustrates how adding even one high-inflation nation to a nominal dollar index leads to distortion. The results in Chart 4 show that the surprising lack of dollar decline in indexes with broad coverage does not follow from broader coverage per se, but rather reflects the distortions introduced by high-inflation nations. In this case, when Mexico was added to the Atlanta Fed index, a much higher value for the dollar appeared.[13]

The Atlanta Fed dollar index reported a dollar decline of nearly 25 percent in the two years following March 1985. However, merely adding Mexico to the index, with its immense nominal depreciation of 432 percent versus the dollar during this two-year period, would cut the reported overall dollar decline roughly in half. Given the large dollar declines in most of the world and the fact that Mexico has less than a 6 percent share of total U.S. trade, this halving seems to reflect the skewed picture that results from adding high-inflation nations, and not an "improved view" as a result of broader coverage.

Further, omitting minor trading partners should not harm the accuracy of an index and may enhance it. For example, the Atlanta Fed index happens to exclude all nations that account for less than 1/120 of U.S. trade. Excluding any one of these nations could not affect a geometrically averaged index significantly (say by more than one percent) unless the value of that nation's currency moved by a margin of nearly 250 percent more or less than the weighted average rates of the nations included. True underlying relative price changes of this magnitude are exceedingly rare because they are offset by international geographic (spatial) arbitrage and inflationary attempts by labor to restore their real wages after huge nominal devaluations. Hence, if encompassing such a small partner really affects an index, it is probably by introducing "distortion," such as price level measurement error in a real index or the inclusion of a hyperinflating currency in a nominal index.

Nominal Versus Real Indexes

Another way of addressing the misrepresentation caused by high inflation is to compute a real rather than a nominal index. In hyperinflationary cases, however, the price levels used for adjustment frequently embody huge measurement errors. Real indexes also sacrifice timeliness by relying on price level data reported with a significant lag. Unless one has the time and resources to devote to a large-scale real index based on consistent price data for every nation included, a nominal index that excludes any currencies that would create significant measurement problems is probably preferable. Indexes that are run in nominal, not real, terms in order to serve as a daily indicator to be considered in analyzing the economy may be justifiably narrow. Thus, while there are advantages to the 18-country sample used in the Atlanta Fed index, the 10-country sample in the Federal Reserve Board dollar index allows a much more sensible daily (nominal) index than many of the more recent alternatives.[14]

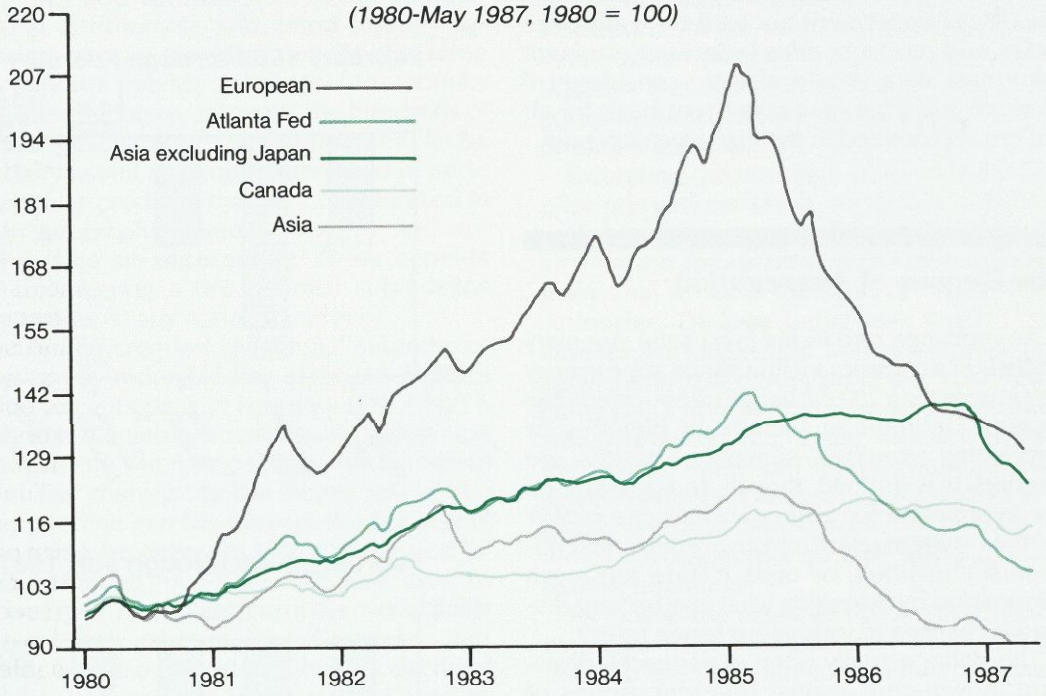
The Atlanta Fed index, as an illustration, appears fairly accurate in nominal terms because converting data covering the past few years into a real index does not make a significant difference. Because it purposely omitted the few high-inflation nations among major U.S. trading partners, U.S. inflation roughly equals the weighted average inflation of nations included in the index.[15] Among the 18 nations are a few with slightly higher inflation (e.g., Spain, Canada, Australia) than the United States, and a few with slightly less (e.g., Japan, Belgium, Singapore).

The advantages of constructing a nominal index, if it adequately proxies an underlying real one, are numerous. First, the index is timely, since it can be reported with almost no lag instead of the delay of several months needed for the price data used in real indexes. Timely availability is critical if the index is to be useful as an indicator for monetary policy, for example. Forecasting and planning are also enhanced by eliminating the several-months lag. Another major benefit is the increased frequency of data available in a nominal index. A nominal index can be reported daily, or almost instantly, as market exchange rates are reported, whereas a real index is limited by the frequency of price level data. Real index data are available monthly at best, and perhaps only quarterly, or annually, depending on the frequency of reliable price reports for each nation covered. A nominal index thus yields more observations. This is a useful feature for econometric applications such as forecasting and for measuring changes from specific dates.

Nominal indexes also minimize resource costs. A real index with broad coverage de-

Chart 5.
Atlanta Fed Dollar Index and Subindexes for Major European and Asian Economies and Canada*

(1980-May 1987, 1980 = 100)



The dollar's value moves divergently against currencies in different world regions.

*Based on bilateral weights derived from U.S. trade in 1984.

Source: Constructed by the Federal Reserve Bank of Atlanta with data from the Board of Governors and the International Monetary Fund.

mands that a significant amount of time be spent gathering price data and analyzing its consistency across countries. This points to the final benefit of a sample of nations that excludes those with high inflation, such as a proper sample for a nominal index—the likely absence of significant measurement error in the price series used to construct real indexes. Measurement errors occur from using price series that are not strictly comparable and using series that contain large errors. The last problem is potentially most serious in high-inflation developing countries, especially those with few resources to devote to the collection of economic statistics.

Real Indexes: Which Price Level to Use? There is no consensus about which price level measure should be used in real exchange rate indexes, because no available price index is ideal. Almost all the recently developed real dollar indexes use the Consumer Price index (CPI), often without giving a justification, perhaps because CPI data are readily available on a roughly consistent basis across countries. However, if the goal of a real index is to measure the relative price of a nation's tradable goods against those of other nations, the CPI may be a flawed measure. It encompasses many nontraded goods and services, and prices of traded and nontraded goods may not follow the same path.

Wholesale (producer) price indexes are not as heavily influenced by the prices of nontraded products, and thus may be more representative. The various Morgan Guaranty real indexes use wholesale prices of manufactured products. These could be preferable to the CPI, but omission of nonmanufactured tradable products (various commodities and tradable services, for example) and the varying composition of these price indexes across countries are potential pitfalls.

Although a nominal index is often preferable, it is not ideal in every situation. If a nominal index cannot proxy well for a real index because of significant inflation differences, then a relative price level adjustment is necessary. Again, the CPI is a convenient but hard-to-justify price index, and producer price indexes or even unit labor cost data should also be considered if they are available on a consistent basis for all nations represented in the exchange rate index.

The Degree of Aggregation

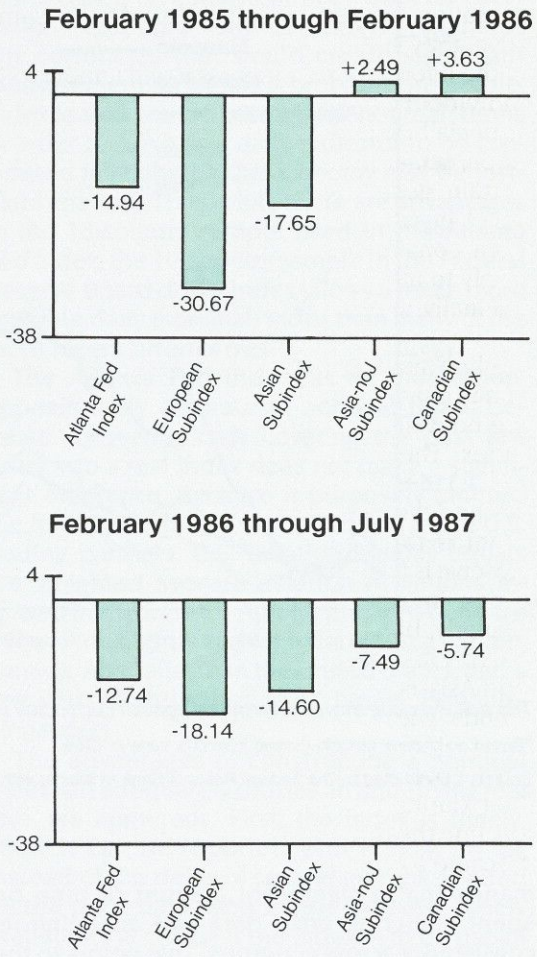
An exchange rate index is a useful summary statistic of a currency's value. Since any currency faces more than 200 exchange rates—clearly too many to monitor or include in planning or forecasting exercises—summary statistics are needed. Is it optimal, though, to aggregate all the information for a currency into one index? Further, is aggregation into an overall index conceptually justified, or does it hide too much information by averaging what can be very disparate changes in various exchange rates?

The dollar actually often experiences divergent movements against different groups of currencies. Therefore, reporting only one index may involve an overly large degree of aggregation for some users. Fortunately, currencies often seem to move somewhat in "regional blocs." There are U.S. dollar-linked blocs in the Caribbean and Central America, the Middle East Gulf region, and Far East Asia. The European Monetary System forms the core of a larger European bloc.

Regional blocs occur in part because some countries within regions undertake foreign exchange intervention or otherwise attempt to align their currencies with those of certain other nations, which, because of geographic proximity, are often major trading partners. Perhaps because they also share similar structure, comparative advantage, and hence terms of trade, various world regions exhibit fairly rigid relative currency prices within regions, and thus aggregation seems appropriate within regions.[16]

The advantages of monitoring a few regional subindexes as well as an overall index are illustrated in Chart 5, which plots the Atlanta Fed dollar index and its regional subindexes. The dollar clearly moved divergently in the varying world regions, as captured by the Asian, European, and Canadian subindexes. A separate "Asia excluding Japan (Asia-noJ)" subindex, comprising Australia and five industrializing Pacific basin nations, shows that their exchange rates often move together but change relative to Japan's. The chart also indicates that the overall Atlanta Fed index varied somewhat less than the European subindex but more than the

Chart 6.
The Dollar's Decline by Region
(in percent)*



In 1985, the dollar declined sharply according to European and Asian subindexes but appreciated in relation to the Asia-without-Japan and Canadian subindexes. In 1986 and through July 1987, the dollar's decline became a more global event.

*Percentage changes are measured as first differences of the natural logarithm. Logarithmic changes are used because they treat percentage increases and decreases symmetrically. The data used are averages for the months indicated.

Canadian and Asia-noJ subindexes, because the overall index is a weighted average of its component subindexes.

The rationale for subindexes is clear from the chart. They add considerable, useful information that is otherwise subsumed through aggregation into an overall index. At the same time, they still provide a manageable summary of the information contained in the hundreds of individual exchange rates. Subindexes can be especially useful to people interested in trade in particular products that are concentrated in certain geographic regions. Textiles and apparel in Asia are an example. These benefits from constructing a few regional subindexes apply to almost any national currency.

Finally, the creation of regional subindexes improves our understanding of the U.S. dollar's decline since its peak in February 1985. Chart 6 shows that the subindexes display trends that are not visible when inspecting only an overall index. The chart splits the recent era of the dollar's decline into two periods: the first year of decline through February 1986 and the next 17 months through July 1987. The first item to observe is the marked decline of the overall dollar index in both periods. The European, particularly, but also the Asian subindex declined sharply in both periods. However, the Canadian and Asia-noJ subindexes point to very different trends. The dollar actually rose slightly in these two major regions during its first year of decline on the overall indexes, but the subindexes show that during the second year of overall dollar decline the depreciation of the dollar belatedly became a more global event.

Summary

No single method of constructing an exchange rate index is ideal for every application. This outline of the various choices involved in index design portrays the viable options, but suggests that each has pros and cons. Certain generalizations about index construction are possible, however.

Extending the coverage of an index to complex proportions tends to reduce timeliness and clouds interpretation. Adding nations can also create measurement problems such as those that arise in the case of hyperinflating currencies. Despite being less timely, "real" indexes are preferable unless nominal alternatives exist that closely proxy the "real" values. Fortunately, this is the case for a number of widely-reported U.S. dollar indexes. Because the dollar's value can follow disparate paths against currencies in the different regions of the globe, regional subindexes can be valuable indicators, especially as they apply to trade-related questions.

As long as the major currencies have flexible exchange rates, debates over which currency index to use are likely to continue because no index is perfect. In most cases, the particular application planned for the index will finally determine which constellation of features is critical.

Maria McGinnis and Shannon Mudd provided expert research assistance. I also thank Craig Hakkio, Frank King, Dianne Pauls, Joseph Whitt, Harriette Grissom, David Deephouse, and Christopher Beshouri.

Notes

[1]Previously, researchers attempted to do this with only one summary aggregate index, but this paper will explore the new concept of subindexes for various world regions.

[2]See for instance Whitt, Koch, and Rosensweig (1986) or Hooper and Lowrey (1979).

[3]See Rosensweig (1986a and 1986b) for a discussion of this issue and an example of subindexes.

[4]See Rosensweig (1986a, b) or Hervey and Strauss (1987) for detailed comparisons of various dollar indexes, including the Atlanta Fed index.

[5]For example, the Atlanta Fed dollar indexes employ updated weights compared with those used in traditional indexes, and the focus of these Atlanta Fed indexes is the U.S. trade balance; thus they use export plus import weights exclusively.

[6]See Mack Ott (1987) for an excellent and original analysis of capital flow-based weights and other approaches, as well as of traditional trade-weighted index formulations. Indexes can be tailored to other uses as well. For instance, Rosensweig (1985) used U.S. bilateral foreign tourism revenue-based weights to measure the dollar's impact on the U.S. travel balance.

[7]For a more detailed discussion of multilateral and bilateral weights, see Rosensweig (1986a).

[8]Constructed to reflect direct U.S. trade patterns, the main Atlanta Fed index and subindexes employ bilateral weights. However, because strong arguments exist in support of a multilateral scheme as well, the Atlanta Fed also maintains a dollar index identical to the main one in all ways except that it employs multilateral-based trade weights.

[9]See J.R. Artus and A.K. McGuirk (1981), Morgan Guaranty (1986), and B. Dianne Pauls (1987).

[10]Atlanta Fed researchers (see Rosensweig, Lium, and Welch, 1986) found 1984 data to be reliable and representative of recent years; therefore, the Atlanta Fed indexes employ U.S. trade data from the single year 1984. The fixed weights will be updated if and when trade patterns are found to change significantly.

[11]Therefore an arithmetic index will yield different results, unfortunately, if exchange rates are defined in reciprocal terms; for instance, in dollars per yen rather than yen per dollar.

[12]A few of the very broad coverage indexes issued recently attempt to adjust for the inflation problem by constructing CPI-adjusted

indexes, but their designers seem essentially unaware of the price level measurement error and the multiple exchange rate problems. No mention is made of which exchange rate they use. By default they may use the official reported rate, which in many developing nations like Venezuela, Nicaragua, Egypt, Guatemala, and Paraguay differs from the free market rate by orders of magnitude. It is argued here that the only options are to exclude these nations, as was done, or construct a weighted average rate for each of these nations if data are available on the magnitude of the flows sensitive to each exchange rate.

[13]Mexico's recent inflation rates certainly have been "high." For instance, the annual rate has exceeded 100 percent during 1986-87.

[14]For an excellent discussion of issues in exchange rate index construction, with particular application to the prominent Federal Reserve Board Index among others, see B. Dianne Pauls (1987).

[15]Indeed, calculations show that for the first 20 months following the dollar's peak in February 1985, the change in the U.S. producer price index was virtually identical (differing by only .01 of a percentage point) to that of the weighted average of the 18 nations included in the Atlanta Fed index.

[16]Therefore, research at the Atlanta Fed into dollar indexes initiated the concept of *subindexes* that show a currency's value in various world regions. This concept could prove useful for a wide variety of countries. The Indian rupee, for instance, could be found to be moving one way in Europe, and the other way in the dollar-linked blocs in East Asia or in North America.

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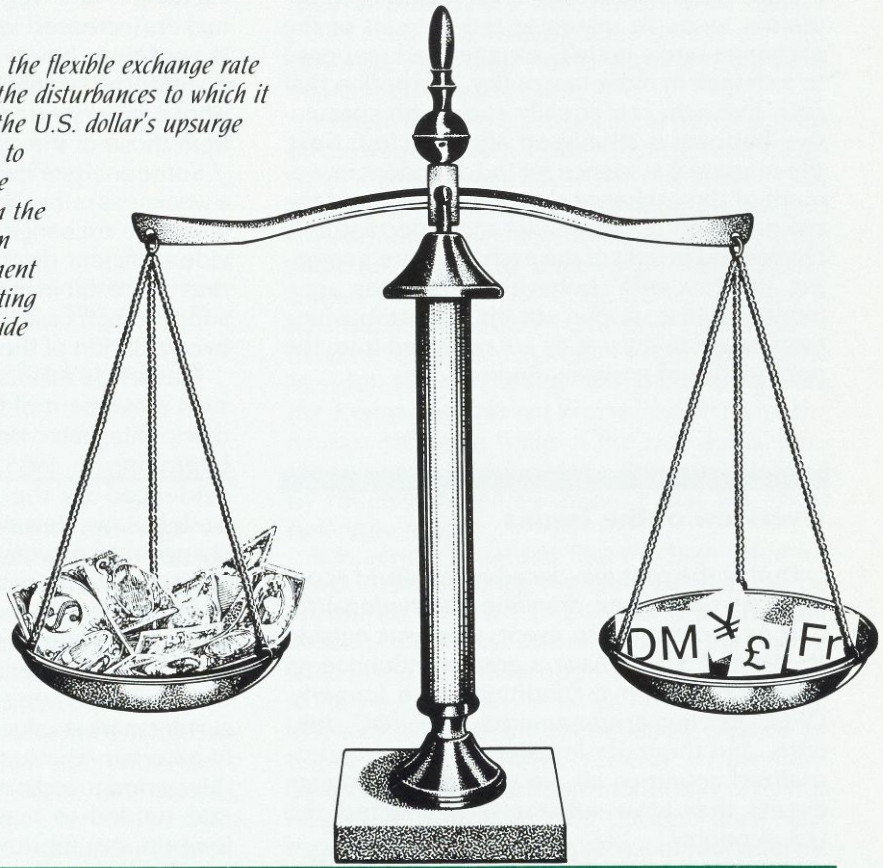
Efficiency and the Flexible Exchange Rate System

Russell S. Boyer

Since its introduction in 1973, the flexible exchange rate system has managed to offset the disturbances to which it has been subjected. However, the U.S. dollar's upsurge in the period 1982-85 has led to charges that the flexible regime fosters a misalignment between the dollar's market and equilibrium values and that this misalignment should be addressed by instituting exchange rate target zones. Aside from the difficulty of choosing an appropriate target zone arrangement, this study maintains that such a plan might divert attention from pressing issues of policy mix, which ultimately disciplines the macroeconomy.



The high value for the U.S. dollar during the period 1982-85 has been cited as an example of the misalignment that can occur under a flexible exchange rate system. This article contends that if the dollar's high value reflected temporary divergence from its long-run sustainable value, then the evidence would point to the tendency for predictable movement toward that equilibrium value. The fact that it seldom does suggests that limited divergences exist between market and equilibrium values of exchange rates. This in turn raises questions about the validity of the methods used to calculate target zone parity values, including those whose criterion is either purchasing power parity or balance in the current account. The lack of predictability also suggests that only minor differences separate flexible exchange rate advocates from proponents of target zones, for the two groups acknowledge that exchange rate values both derive from and provide discipline for the underlying financial policies.

This analysis begins with a review of the performance of the flexible exchange rate system since its introduction in 1973. The question is raised whether the exchange rate has a life of its

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own, independent of policy settings. Before offering an answer, we look at the roles of participants in the forward and spot foreign exchange markets, explore the "overshooting" model, and consider the relation of the forward rate to the expected future spot rate for a currency. Examination of these markets demonstrates that the foresight exercised by speculators tends to minimize the amount of the exchange rate's initially exaggerated response to a change in monetary policy. The notion that such foresight can equally encourage speculative bubbles is discussed and rejected. Next, the empirical evidence for independent movement of the exchange rate is weighed, and the risk neutrality of foreign exchange speculators is challenged in light of the exchange rate's seeming "random walk" behavior. Finally, the arguments against various criteria for establishing target zone parity values are reviewed from the perspective of previous findings.

Overview of the Issues

During the past two decades the world economy has undergone dramatic internationalization. As a consequence, events that occur outside the United States have a greater influence on domestic economic conditions than formerly. OPEC pricing arrangements, the LDC debt crisis, and the trade imbalances among industrialized countries all are examples of foreign events that have substantially affected the U.S. economy.

One force essential to this internationalization has been the striking progress in computer and communication technologies. While these advances have been felt throughout the global trading system, their most consequential impact shows in the hastened integration of securities markets worldwide. Close to perfect capital mobility exists among those industrialized economies that have chosen to tie their domestic financial markets into the global network.

The exchange rate regime has always played an important role in the international transmission of economic disturbances. Many therefore argue that it is no accident that the move to greater exchange rate flexibility occurred in the midst of the development toward increasing global interdependence. But with some disappointment, these same observers lament that the enhanced maneuverability such flexibility promised has not materialized.[1]

To a great extent, their chagrin merely echoes an earlier, more realistic view: the exchange rate is not a panacea for all problems of a particular open economy, and certainly not for those of the world economy as a whole. The present article argues that during much of the period since the advent of generalized floating in 1973, the exchange rate regime has afforded policymakers increased leeway. This greater freedom is qualified, however, by the fact that in the eighties the system has had to cope with shocks whose nature and complexity are quite different from those of the seventies.

Some analysts view this enhanced freedom as a weakness rather than a virtue. They argue that a flexible exchange rate system does not provide sufficient discipline for policymakers and thus can result in misaligned exchange rates. To support their case, they point to the purported overvaluation of the U.S. dollar in the 1980s.[2]

This article maintains that, to the contrary, the swift movement of the dollar provided a clear disciplining force both on U.S. monetary policy, beginning in 1985, and on fiscal policy, as evidenced by the Gramm-Rudman-Hollings budget law. However, the speed of that exchange rate movement was such as to make it appear that the exchange rate almost had a life of its own, *independent* of the behavior of the underlying fundamentals. If this were indeed the case, a divergence would open up between the exchange rate's equilibrium value and its current market value. One way to test this view is to ascertain whether there is any evidence from this period to indicate that the market exchange rate tended to move predictably towards its long-run equilibrium value. Since little if any predictable movement is apparent, it would seem that the criteria for evaluating equilibrium rates are faulty.

In cases where exchange rates do not move on their own, the arguments put forward for implementing target zones resemble those espoused by advocates of flexible exchange rates. In both sets of arguments, the costs and benefits of the prevailing valuation of the exchange rate are attributed to and, therefore, provide discipline for the underlying financial policies undertaken by the authorities.

Exchange Rates and Misalignment

In assessing how the flexible exchange rate system functions, we should keep in mind that

Chart 1.
Value of the U.S. Dollar*
January 1973 to September 1987
(1980 = 100)

*Based on nominal values of 18 major U.S. trading partners, weighted bilaterally.

Source: Atlanta Fed Dollar Index.

vociferous complaints about its operation are rather recent.[3] During much of the 1970s, the system worked quite effectively in the face of substantial shocks. Critics could readily be silenced by inquiring of them how they ventured the Bretton Woods System would have fared under similar circumstances (Chart 1).

Economic events of the seventies, while undoubtedly tumultuous, were clearly favorable to a flexible exchange rate system. Real shocks, such as the first oil price shock, tended to affect all industrialized countries in a similar fashion. Consequently, the adjustment process did not entail large changes in nominal exchange rates. In contrast, monetary policy, which was the paramount financial policy tool during this period, operated in much the way that economists predicted it would. Exchange rates adjusted to reflect differing rates of inflation, and so cushioned the resulting effects on output, employment, and current account imbalances.[4]

By the beginning of the 1980s, the economies of the industrialized West were not so fortuitously poised to absorb shocks. Capital mobility had increased apace, and expectations were stronger factors than ever in the process of exchange rate determination. Now the financial policy shocks were country-specific and came in the form of fiscal policy actions. The most notable of these occurred in the United States in the form of the Kemp-Roth 1981 tax cut, the centerpiece of the Reagan economic program.

As evidence of the shortcomings of the flexible exchange rate system, many analysts have noted that the dollar exchange rate has failed to maintain balance in the trade account and the current account. But few economists promised that it would. Indeed, the theme of the macromodels of the 1960s is that a flexible exchange regime provides a mechanism that causes policy actions to have swifter and more obvious consequences than would occur if rates were maintained at a set value.

In analyzing the effects of fiscal policy actions on the trade account, Robert Mundell and J. Marcus Fleming specifically made this point.[5] They emphasized that the limited impact of tax and expenditure policies on economic activity in the short run is due to their exaggerated consequences vis-a-vis the trade account, which is affected far more under a flexible than under a fixed exchange rate system. The events that the Mundell-Fleming model foresaw flowing from the Kemp-Roth tax cut have come to pass: the foreign exchange value of the U.S. dollar temporarily rose, and the trade account worsened by roughly the same amount that the fiscal deficit increased.

It is generally agreed that the high value for the U.S. dollar during the early eighties can be attributed, at least in part, to U.S. financial policies.[6] Both fiscal and monetary actions had a hand in the U.S. dollar appreciation. The expansionary fiscal policy, in which tax cuts were not followed by expenditure reduction, created an unprecedentedly large federal government budget deficit. In addition, monetary policy was restrictive from late 1980 through mid-1982, especially if measured in terms of real interest rate levels. Therefore, a substantial portion of the dollar's value resulted from a lack of complementarity in the underlying economic policies.

Calculations done in 1984 showed that the U.S. dollar had increased in value from 1980 by between 40 and 80 percent.[7] Now the size and the swiftness of this upsurge were such as to lend support to the popular notion that by 1984 the value of the exchange rate was unrealistic, that it had taken on a life of its own and was no longer related to the policies that were its usual determinants.[8] This perspective was quite an extraordinary one to many economists and market participants, who see the asset markets in industrialized economies as some of the most efficient markets in existence. Typical of market participants' reaction is the following:

> One potential source of volatile prices . . . might be a thin, undercapitalized market. Lack of

depth and breadth can lead to sharp price movements on very small speculative or fundamental flows. . . . This is obviously not a description of the foreign exchange market.[9]

In order to appreciate their point of view, one needs to understand the roles that participants play.

Arbitrageurs and the Forward Market

The market for foreign exchange is the largest asset market in the world. Daily transactions amount to over $200 billion, and most of these transactions are in the forward market (or more recently in the swap market). The forward market for foreign exchange is less familiar than the spot market, in which all international travelers buy foreign currencies. The spot market is so called because receipt of the foreign exchange occurs "on the spot," simultaneously with the tendering of the remittance of payment. A similar undertaking by a major institution would also be called a spot market transaction, but the financial instruments exchanged would typically be transmitted electronically, and consummation would take place the next business day. Quotations of prices for spot exchange are familiar portions of the financial pages of newspapers. *The New York Times*, for example, currently quotes spot prices on 48 different currencies.

In addition to the spot market, organized foreign exchange trading includes a market for delivery of foreign exchange at some specified future date. This forward or future market is more sophisticated than its spot counterpart, but the basic mechanics are the same. Prices quoted in the forward market are those agreed upon at the time the transaction is initiated. A contract specifies that on a particular future date the participants will exchange currencies with each other in an indicated ratio (exchange rate). Since the contractual exchange rate, or forward rate, is binding on the participants, the value of the spot exchange rate that holds at that future date is not relevant to their exchange.

A rich array of maturities exists for the five major currencies—West German mark, Japanese yen, U.K. pound sterling, Swiss franc, Canadian dollar—whose forward market quotations are printed daily in major newspapers. In the customized interbank market these maturities typically include one month, two months, three months, six months, and twelve months from the current business day. In the organized auction markets, where trading is similar to that for precious metals, the delivery dates are specific days, which usually fall in the middle of a particular month.

The discussion below will examine the forward rate as a guide to the future value of the spot exchange rate. This perspective on the forward rate contrasts with that of arbitrageurs, market participants who attempt to nail down profits as they undertake riskless transactions. By exploring arbitrage activity, we can show the efficient behavior of the forward market.

Arbitrageurs obtain profits by looking for situations in which there is a typically small discrepancy between the buying price and the selling price for equivalent items. If they simultaneously buy low and sell high, they avoid risk, make profits, and carry out the socially useful function of moving assets from locations at which they have low productivity (low price) to ones at which they have a higher productivity. The role of arbitrageurs is most apparent in the spot market, in which their actions maintain uniformity of exchange rates internationally. In addition, their actions provide orderly cross-rates such that any currency can in effect be traded for any other currency, so long as there are no controls on such transactions. Our interest here, however, is in the forward market, where the role of the arbitrageur is not so obvious.

The profit-generating rule in the forward market is that the arbitrageur should borrow in those currencies where after-cost interest rates are low and lend in currencies where such rates are high. Since the arbitrageur wishes to avoid risk, he or she hedges the transactions, thus generating the costs noted above. That is, the arbitrageur essentially promises delivery of a portion of the future receipts from the high-cost funds that he lends in exchange for a prespecified quantity of the currency needed to repay his borrowings in the lower-cost currency. Notice that no risk is involved here because all prices (interest rates and both spot and forward exchange rates) are known at the time the complex transaction is undertaken.

In order to understand how arbitrageurs generate profits in the forward market, we need to introduce the following notation:

- i — interest rate at home (in currency 1, typically U.S. dollars);
- i^* — interest rate in a foreign country (in currency 2);

Table 1.
Spot and Forward Rates for the West German Mark and the U.K. Pound Sterling

Rate	October 1, 1982 U.S. $/DM	October 1, 1982 U.S. $ in Foreign Currency	October 1, 1987 U.S. $/ DM	October 1, 1987 U.S. $ in Foreign Currency
Spot	0.39670	2.5208	0.54264	1.8429
Forward				
3-Month	0.40045	2.4972	0.54765	1.8260
6-Month	0.40462	2.4714	0.55252	1.8099
12-Month	0.41330	2.4196	0.56368	1.7741
	U.S. $/U.K. £	U.S. $ in Foreign Currency	U.S. $/U.K. £	U.S. $ in Foreign Currency
Spot	1.69976	0.5883	1.62351	0.6160
Forward				
3-Month	1.70454	0.5867	1.61559	0.6190
6-Month	1.71274	0.5839	1.60886	0.6216
12-Month	1.73076	0.5778	1.60069	0.6247

Source: All rates provided by Wharton Econometrics.

s — spot exchange rate between currencies (units measured as currency 1 per unit of currency 2; e.g., U.S. $/DM);

f — forward exchange rate between currencies (units as for s).

In defining exchange rates in this manner, so that they are prices of various foreign currencies in terms of U.S. dollars (home currency), we are employing a convention that facilitates the comparison of different foreign currencies with each other. This convention does have a major drawback, however, and we should be aware of it. The drawback is that with this definition the exchange rate moves inversely with the value of the home currency. Thus, during the period 1982-85, U.S. dollar exchange rates were low because values of foreign currencies were depressed. Table 1 provides values for the West German mark and the U.K. pound sterling exchange rates in both the spot and various forward markets. The values of the exchange rates were much lower in October 1982 than they have been recently. In order to assess how the U.S. dollar's value fared during this period, we need to invert these exchange rates (divide their values into 1). (Table 1 also provides values for the U.S. dollar in terms of the West German mark and the pound sterling.) Their depressed values at that time obviously are consistent with a high value for the U.S. dollar, as is shown in Chart 1.

To be specific, picture the arbitrageur as starting off with one unit of currency 1 and wishing to invest these funds for a while, perhaps for a year. If he invests the money at home, the principal will revert to him at the end of the year and he will have earned interest. Thus, the arbitrageur's total funds at year's end are $1 + i$. If, instead, he invests these funds abroad, he starts by converting his home currency, obtaining units $\frac{1}{s}$ of foreign currency. At the end of the year these foreign funds will have earned interest and so will amount to $\frac{1}{s}(1 + i^*)$. The arbitrageur covers his foreign exchange exposure, so at year's end these funds will be converted back to the home currency at the guaranteed forward rate, f.

Clearly, the investor is just indifferent toward the two investments if the amounts generated from the two possible transactions (when valued in one of the two currencies) are equal. That is, the no-profit condition, often called the (closed) Fisher equation, is

$$(1 + i) = \frac{1}{s}(1 + i^*) f. \qquad (1)$$

Thus, there is no incentive to borrow in one country in order to lend in another.

The incentives described for any particular investor apply to all such agents. Therefore, for the market to be in equilibrium this closed

Fisher equation must hold, such that there exists what is called "interest rate parity" among countries. A simple interpretation of this parity condition takes the spot rate and interest rates as given; then this equation can be viewed as determining the forward rate. Its equilibrium value has a particularly simple interpretation when an approximation, based on the assumption that interest rates are much smaller than one (100 percent per year), is made. Namely, the forward rate differs from the spot rate by a percentage equal to the difference between the two interest rates. Or, in terms of the notation above, the Fisher equation can be written

$$\frac{(f - s)}{s} = |i - (\frac{f}{s} \bullet i^*)| \approx (i - i^*), \qquad (2)$$

which says that to a very close approximation the difference between the forward and spot exchange rates expressed in percentage terms is equal to the difference between domestic and foreign interest rates. That difference, $\frac{(f-s)}{s}$, is called the forward premium, and it measures the percentage by which foreign exchange for future delivery is more expensive than spot exchange.

Testing of the interest rate parity condition has been carried out mainly in the context of Western industrialized countries, where near perfection of capital markets exists.[10] In that context the parity condition holds so long as one is careful to align data. That is, interest rates and exchange rates must be for comparable periods (3-month Treasury bills and 90-day forward exchange rates) and, just as importantly, quotations must be taken simultaneously. For example, mid-market quotations in Europe are not comparable with mid-market rates in North America since there is a five- or six-hour time differential between these markets.[11]

Because they failed to take account of the time differential, some researchers thought they had found evidence of unexploited profits in the forward market. Their use of data that embodied this misalignment was inappropriate, for, by modern standards, there is an enormous length of time between the readings. For instance, evidence from the options markets in equities listed on the New York Stock Exchange indicates that tremendous profits can be obtained if quotations are misaligned to the extent of 30 seconds or less. In a notable example, enterprising stockbrokers made profits on IBM options by transmitting price data from the trading floor to the Chicago Board of Options Exchange just seconds before the transaction appeared on the ticker tape.

Efficiency and Overshooting

Evidence of the sort cited in the previous section convinces most observers that, at least in the arbitrage portion of the financial markets, near perfect efficiency reigns. Specifically, they find ridiculous the notion that disequilibrium may exist in highly-organized financial markets because of a failure of those markets to clear.[12] We have yet to consider the important speculative portion of the foreign exchange market, but the arbitrage portion seems immune from the inefficiency charges.

Now some individuals have combined the notion of asset market efficiency with the view that the goods markets, being less highly organized, can be in disequilibrium for substantial lengths of time. In such a framework, the behavior of asset prices is determined not only by the need to clear the asset markets but also by persistent disequilibrium in the goods markets. As a result, asset prices at any time reflect the influence of both their fundamental determinants and effects spilling over from other markets. Specifically, asset prices will deviate from their long-run equilibrium values so long as disequilibrium persists in those other markets.

"[S]ome individuals have combined the notion of asset market efficiency with the view that the goods markets . . . can be in disequilibrium for substantial lengths of time. In such a framework, the behavior of asset prices is determined not only by the need to clear the asset markets but also by persistent disequilibrium in the goods markets."

These ideas are incorporated in the overshooting model, first developed by Rudiger Dornbusch, which shows that in certain cases the asset prices must move beyond their long-run equilibrium values before settling back to them.[13] The framework is as follows.

Consider a small, open economy which produces a commodity that is not a perfect substitute for goods available from the rest of the world. Assume that perfect capital mobility exists in the sense that domestic interest rates, i, are always equal to their foreign counterparts,

i*. Finally, assume the demand for money in this economy is of the standard form, such that it can be captured by the equation

$$M = [\alpha P_d + (1 - \alpha) \cdot s \cdot P^*] \cdot L(Y,i). \quad (3)$$

In this equation, M is the quantity of money supplied by the central bank; P_d is the price of the domestically-produced good; and s is the spot exchange rate, which converts the price of imports expressed in foreign currency, P*, into the domestic-currency price. The weights α (where $0 < \alpha < 1$) and $(1 - \alpha)$ are included to indicate that the price index is the weighted sum of the price of domestic goods and the price of imports. The function L(Y,i) represents the effects of output and interest rates on the demand for money. We proceed with the assumptions that both of these arguments are given in the short run: Y is given because production cannot be altered quickly, and i is equal to the interest rate prevailing in the rest of the world.

"[S]luggish movement of goods prices forces the need for greater adjustment upon . . . the exchange rate. Were goods prices able to move instantaneously, such exaggerated movement would not be needed, for the short-run equilibrium would be identical with that in the long run."

Now in this economy there are two identifiably different assets: money and bonds. Although domestic and foreign bonds are distinguishable, the fact that they have the same yield implies that individuals are indifferent or neutral in their choice between these two assets. Furthermore, in the short run wealth acts as a constraint on individuals' portfolios. As a result, individuals can hold more of one of these assets only by holding less of the other. Or, more to our purpose, if individuals are satisfied in the short run with their holdings of the one asset, they must be satisfied with those of the other as well. In other words, the money market equilibrium equation above is the only (independent) asset-market clearing equation.

To analyze this economy fully, we would introduce a goods-markets-clearing condition as well. We can dispense with such an equation, however, since we follow the standard assumptions about speed of price movement: that asset prices move quickly to clear asset markets, but that goods prices move sluggishly, causing those markets to remain in disequilibrium for extended periods of time. Nonetheless, we do want to be specific about the goods-markets condition to the extent that it should be homogeneous of degree zero in money and all prices. Specifically, this means that, starting from an equilibrium situation, an increase in the quantity of domestic currency and an equal percentage increase of all domestic-currency prices restores equilibrium to those markets.

Within this framework it is easy to show that an increase in the money supply of 10 percent causes the exchange rate to overshoot by increasing more than 10 percent. This is clear from equation (3), because with M up by that percent the price-index expression

$$\alpha \cdot P_d + (1 - \alpha) \cdot s \cdot P^*$$

must increase equiproportionately. An important reason for this equality is that the function L(Y,i) is unchanging, because the magnitudes on which it depends do not move. Now P_d is constant in the short run because of the sluggish behavior of goods prices. P*, too, is constant because the foreign-currency price of imports is determined by conditions in the rest of the world. Therefore, the only way that the price index can increase by 10 percent is for s itself to increase by more than 10 percent.

According to this logic, sluggish movement of goods prices forces the need for greater adjustment upon asset prices, and in this example, the exchange rate. Were goods prices able to move instantaneously, such exaggerated movement would not be needed, for the short-run equilibrium would be identical with that in the long run. That is, the 10 percent increase in M causes s and P_d to increase in the long run by the same percentage; it restores equilibrium with relative prices unchanged. Thus the exchange rate in the short run moves beyond the value that it attains eventually.[14]

This argument shows that the mechanisms at work in the arbitrage portion of the foreign exchange market, even though fully consistent with efficiency, do not rule out the possibility that asset price movement is influenced by spillovers from other markets, rather than being determined solely by the fundamental driving forces in the system. Whether speculators in the forward foreign exchange market make this

movement more closely aligned to the behavior of the fundamentals is our next concern.

Speculators in the Forward Market

The forward foreign exchange market is peopled not only by arbitrageurs but also by individuals who are willing to take positions that entail risk. Of course, these speculators, too, are interested in obtaining profits, but because of uncertainty they must base their actions on the yields they expect to receive. A speculator is said to be risk-averse if he demands a higher expected yield from an investment that has greater risks. In contrast, a risk-neutral speculator is willing to invest in any project that has a positive expected yield.

In the case of the forward foreign exchange market, profit is made by following a very simple operational rule. Namely, the speculator should buy forward foreign exchange if its price is less than the value he expects it to have at the time of delivery—less, that is, than the expected future spot rate. Conversely, he should sell such currency if its price is greater than the expected future spot value.

If risk-neutral speculators are an important influence in the forward market, then forward foreign exchange rates can naturally be interpreted as expected future values. The West German mark and the U.K. pound sterling serve this interpretation well, as the numbers in Table 1 exemplify. Being a strong currency, the mark is expected to increase in value over time, as is evidenced by forward prices being greater than the current spot price. Thus, the West German mark has a substantial positive forward premium. In contrast, the pound sterling has often been a weak currency, and so its expected price downturn is reflected in forward prices that are lower than the current spot price. This is shown in the data for October 1, 1987. Consequently, in that case U.K. currency has a negative forward premium, or, more euphoniously, it sells at a forward discount.

Overshooting and Bubbles

The preceding discussion demonstrated that overshooting of the exchange rate can occur even when market participants do not take the future movement of the economy into account. This section will show that when foresight anticipates the long-run equilibrium, it causes the exchange rate to overshoot less than otherwise, resulting in a rate more closely keyed to its fundamental determinants. But foresight also can induce the exchange rate to follow a speculative bubble, so that its value is unrelated to the underlying fundamentals.

Overshooting. The simple monetary model used earlier finds that the exchange rate moves more than does the money supply in the short run. That discussion is based on the assumption that individuals do not anticipate any change in the exchange rate. We need to modify those results to take account of the fact that, following its short-run, exaggerated movement, the exchange rate begins immediately to move back slowly towards its long-run value. If that movement is foreseen in the context of risk-neutral behavior, then the ensuing path is easily described.

"[T]he important conclusion of the simple [monetary] model is that the exchange rate rises more than proportionately in response to an increase in the money supply. As a consequence, the exchange rate must subsequently fall in order to attain its long-run equilibrium value."

Let us remember that the important conclusion of the simple model is that the exchange rate rises more than proportionately in response to an increase in the money supply. As a consequence, the exchange rate must subsequently fall in order to attain its long-run equilibrium value. A risk-neutral speculator who foresees that fall offers a price equal to that expected future value. In particular, the price he pays for future delivery of foreign exchange is lower than the currently prevailing spot exchange rate. If all market participants behave in this fashion, then the forward rate f is lower than the spot rate s, reflecting the expected change in the exchange rate.

Now this negative forward premium has implications for domestic rates of interest, as equation (1) indicates. Arbitrageurs will force domestic rates of interest to be lower than foreign rates so as to equate the yields in the two economies in after-cost terms. In other

words, the domestic currency is anticipated to increase in value relative to foreign currencies, since its initial depreciation went too far, and this expectation permits lower domestic rates of interest. But these lower rates, in turn, have consequences for the extent of overshooting.

Notice that equation (3) indicates that the lower rates should increase demand for domestic money because they reduce the opportunity cost of holding it. That is, a lower value for i increases the value of the function L(Y,i). This higher value implies that the price index does not increase by the full 10 percent. As a result, the exchange rate does not need to increase as much as it would have otherwise.

One might think it possible that the exchange rate need not increase by more than 10 percent in this case. Yet further reflection shows that overshooting remains essential to this mechanism for the reason that the lower values for domestic interest rates vis-a-vis foreign rates are based on the exchange rate's moving lower in the future. Such a movement, if we are to arrive at the long-run equilibrium, in which the exchange rate is 10 percent higher than initially, requires that it exceed that value during the transition period.

"If the leisurely movement of the exchange rate from its short-run value towards its long-run equilibrium is at work, then this tendency should be reflected in the forward premium, which should potentially explain a reasonable portion of the actual movement in the exchange rate."

This discussion shows that incorporating expectations that foresee the movement to the long-run equilibrium does not eliminate the overshooting result. Instead, the extent of the overshoot is somewhat reduced, so that the exchange rate moves more closely in tandem with the fundamentals, that is, the money supply.

The forward rate is a crucial measure whose movement needs to be assessed in any empirical validation of the overshooting model. If the leisurely movement of the exchange rate from its short-run value towards its long-run equilibrium is at work, then this tendency should be reflected in the forward premium, which should potentially explain a reasonable portion of the actual movement in the exchange rate. As the economy moves closer to its long-run equilibrium, the movement in the exchange rate should diminish, as should the size of the forward premium.

Speculative Bubbles. When expectations are based upon the dynamics of a return to the long-run equilibrium, then the exchange rate deviates from its long-run value less than it would otherwise. But, by the same token, expectations that are based on extraneous factors can be self-fulfilling and can lead the economy away from its long-run equilibrium. Such paths are called bubbles because, by their very nature, they need to diverge ever further from the fundamental equilibrium in order to sustain themselves.

Now there are theoretical reasons why bubbles are unlikely to exert an important influence on exchange rate movements.[15] The most important is that market participants must anticipate that a true bubble will continue indefinitely. Were the bubble expected to stop in finite time, agents would incorporate that expectation into their decisions and the bubble would be burst before it started. But most models show that a bubble cannot be sustained indefinitely, for such continuity implies that money would become worthless in a finite period. This development is inconsistent with the manner in which fiat money is provided in modern economies. Typically, there is some reserve backing of the currency, usually legislated as a gold clause, as well as some probability that the authorities will compensate money holders if inflation erodes the currency's value too much. Only if such legislation were meaningless could money become completely worthless.

A more likely explanation for behavior that appears to resemble a speculative bubble is that market participants believe that economic conditions may change at some future date. While they hold these expectations, the market will respond with ever greater force to anticipated future conditions, and with somewhat less strength to present conditions. If the future situation is in fact no different from the present one, and if this information becomes known at a particular time, markets will then revert to their previous behavior. In retrospect, the markets' behavior during the interim period appears to be a speculative bubble that suddenly bursts, whereas it was in reality a rational response to uncertainties about the future. The theoretical argument against the existence of bubbles and

the observational equivalence of bubbles with behavior that appears unusual because of an omitted variable (missing information) have led most observers to dismiss the possibility of speculative bubbles.

Empirical Evidence

It seems clear that exchange rates can move independently of the underlying determinants, notably when speculative bubbles are present or when overshooting of the exchange rate occurs. As emphasized above, theoretical reasons suggest that bubbles do not appear in the foreign exchange market, and so our analysis of the empirical results for that model can be kept quite brief. The possibility of overshooting has firmer theoretical foundations, which fact demands a fuller discussion of empirical work relevant to that model.

Speculative Bubbles. These movements ever further away from the asset price established by the fundamentals in the marketplace are always in the same direction relative to that equilibrium. Because the rate at which a speculative bubble moves away is constant, as its distance from the equilibrium lengthens the bubble increasingly comes to dominate the movement of the exchange rate. This situation has two consequences that are amenable to empirical tests. First, over time the movement of the exchange rate should grow more predictable as the bubble becomes the ever more dominant force. Second, since the day-by-day change in the exchange rate is mushrooming, so is the size of that portion that is unpredictable. Neither of these facts has shown up in the data. The predictability of exchange rate change does not seem to alter over time, nor is there an explosion in the variance of forecast errors, even when a number of different measures of its magnitude are used.

Overshooting Model. The central result of the overshooting model is that it reveals greater short-run movement of the exchange rate than of its fundamental determinants. This excessive movement is attributable to the fact that asset prices move quickly in order to clear asset markets. But asset prices must respond also to the relatively slow equilibration of goods markets. Thus asset prices move in part to compensate for the lack of equilibrium in other markets.

Now the counterpart to the short-run overshooting of the exchange rate is its leisurely movement back towards its long run-equilibrium. Indeed, there is exact equality between the amount of the excessive jump in the exchange rate and the extent of its subsequent predictable movement. The importance of the predictable path in this theory has encouraged researchers to investigate the extent to which the future movement of the exchange rate can be predicted.[16]

If there were a contemporaneously observable magnitude that could be reliably identified as the expected future exchange rate, then a measure of that observable magnitude's predictive power would be a straightforward exercise. However, even after the events have transpired, there still is no reliable measure of prior expectations.

In the case of risk-neutral behavior, the forward rate, which is contemporaneously observable, could serve the role. It is likely, though, that speculators are risk-averse. As a result, the forward rate cannot be viewed as reflecting exclusively the expectation of the future spot rate. To fill the void, most researchers employ rational expectations theory, which argues that realized values of the spot exchange rate are unbiased estimates of previous expectations. While this method is supportable in theory, in practice economists are aware that any realization of the future exchange rate incorporates responses to a lot of news that transpired between the time at which expectations were formed and the point at which the realization occurred. As a result, it is generally agreed that realizations give very noisy readings of prior expectations.

"The central result of the overshooting model is that it reveals greater short-run movement of the exchange rate than of its fundamental determinants."

When the forward market measure of the expected future spot rate is employed, one finds that the forward premium explains a very small proportion—less than 10 percent—of the expected rate of change of the spot rate.[17]

Furthermore, that proportion tends to decline as the time to maturity is increased. For example, the one-year forward premium explains less of the exchange rate's movement over that time than does the 30-day premium during a comparable period.

Even more disconcerting is the fact that for short-maturity forward foreign exchange contracts, the empirical results point to a negative relationship between the forward premium and the expected (and realized) change in the exchange rate. Thus, currencies that have positive values for their forward premia tend to depreciate over time while currencies with negative values appreciate.

Clearly the forward premium is providing a measure of something more complicated than merely the expected change in a currency's value. What those further complications entail is our immediate concern.

"[P]erhaps the forward premium, being equal to the international interest rate differential, is measuring the extent to which yields must differ internationally to compensate for risk."

Risk Aversion and the Forward Premium

The Forward Rate. Given that the forward premium tends to be negatively related to the change in the spot exchange rate, the risk neutrality assumption may be inappropriate. That is, perhaps the forward premium, being equal to the international interest rate differential, is measuring the extent to which yields must differ internationally to compensate for risk. To see how the forward premium could play such a role we need to return to the Fisher equation (1).

As we noted above, the Fisher equation is a standard arbitrage condition in the foreign exchange market. It begins to yield further insight when the forward premium is split up into two components

$$\frac{(f - s)}{s} = \frac{(f - s_{+1})}{s} + \frac{(s_{+1} - s)}{s} \qquad (4)$$

Clearly, this expression is an identity, in that the magnitude s_{+1} has been added to and subtracted from the forward premium. The magnitude s_{+1} is defined as the exchange rate that, on the basis of today's information, is expected to prevail in the spot marketplace next period.

The first component, $\frac{(f - s_{+1})}{s}$, is often called the risk premium in the forward market. It is the difference between the price today for future delivery of the currency—a price known with certainty—and the price expected to hold in the marketplace at that future date. This risk premium is of negligible size if uncertainty is minimal and/or if market participants are risk-neutral.

Typically, however, agents are viewed as being risk-averse, and it is important to take note of how the risk premium depends on the level of uncertainty in such a case. Of course, low-risk currencies provide on average a rate of return smaller than that available on higher risk instruments. For currencies, as with bonds, the lower rate of return is associated with a higher current price. Specifically, for low-risk currencies the forward exchange rate exceeds the expected future spot rate. Curiously, then, such currencies have positive risk premia. This, therefore, demonstrates that the risk premium is inversely related to the level of risk: low-risk currencies have positive risk premia; high-risk currencies have negative risk premia.

For the second component in equation (4) a briefer discussion suffices. That component is equal to the expected rate of appreciation of the foreign currency, being the percentage difference between the value of the spot exchange rate expected to prevail in the future, s_{+1}, and the value of the spot rate today, s.

Notice that in the case of risk-neutral speculation, the risk premium is zero, meaning that the first component of equation (4) can be ignored. In that case, the forward premium is precisely equal to the expected rate of change of the value of the foreign currency, as the earlier discussion argues. But we know, too, that for short-maturity forward contracts there is a negative relationship between the forward premium and the rate of change of the foreign currency's value. Of necessity, this relationship implies a role for risk aversion. Let us consider how that role might appear.

The simplest case to examine is that in which the risk premium is taken as independent of the other components in equation (4). In that instance, Isard has pointed out that a simple explanation for the negative relationship between the short-maturity forward premium and

the expected rate of appreciation can be found in central bank behavior.[18] The monetary authorities' attempt to stabilize short-term interest rates and exchange rates by maintaining rough constancy of international interest rate differentials guarantees that movements in risk premia will create the negative relationship.

To see how this interaction occurs, consider equations (2) and (4) in the simple case in which all bracketed elements are equal to zero initially—that is, interest rates are equal internationally and the spot exchange rate is not expected to change in value. Now consider the consequences when outside factors prompt a sudden, temporary rise in the risk premium, $\frac{(f - s + 1)}{s}$, to some positive value, and this value is taken as given. This increase in the risk premium puts upward pressure on the forward premium and the interest rate differential, which both rise by an equal amount initially. If central bank action reduces the interest rate differential back towards zero, the forward premium must shrink as well. But that implies that the expected rate of appreciation of the foreign currency must become negative. In fact, the final equilibrium generated by the rise in the risk premium is as follows: a positive value for the forward premium, but one that is smaller than the risk premium's value; and a negative value for the expected rate of appreciation, again smaller, in absolute value, than the risk premium's value. This is the negative relationship sought.

Boyer and Adams have established that the same sort of mechanism is at work if the authorities do not move administered interest rates but rather let those rates adjust so that they have consequences for asset holdings.[19] When this occurs the same results are produced, and in a symmetric way, whether the adjustment takes place through central bank action on the supply of money or through interest rate effects on the demand for money.

The Spot Rate. The foregoing argument suggests that the forward premium's role may be to indicate the level of the risk premium rather than the expected rate of change of the exchange rate. If this is the case, then it is better to use the current value of the spot rate, as equation (4) suggests, instead of the forward rate when forming expectations about the future value of the exchange rate.

Independent empirical work shows this conjecture to be correct: the spot rate has been identified as close to the optimal predictor of its own future value. In this instance, of course, the expected rate of change of the spot exchange rate is zero, meaning that any change in the spot rate that does occur was unanticipated. Furthermore, any such change is expected to be permanent, in the sense that, starting from the new rate value, the expected change is once again zero. In the terminology of statisticians, the spot exchange rate appears to follow a martingale process, or, more commonly, a random walk.

Two sorts of data have been used to test the degree to which a random walk describes exchange rate behavior. For example, Michael Mussa has estimated that over 95 percent of annual changes in exchange rates of currencies of industrialized economies are unpredictable.[20] Looking at Canadian data two decades ago, William Poole noted a small predictable component in the movement of that nation's exchange rate against the U.S. dollar.[21]

More recently, Meese and Rogoff have looked at the predictive power of various models of exchange rate behavior.[22] In doing so, they address the argument that the exchange rate's movements seem so unpredictable because the factors causing those movements are themselves unpredictable. Meese and Rogoff eliminate this reasoning as a possible explanation by conducting a "horse race" between a random walk model and a number of other models of exchange rate behavior. In assessing the other models, they use the actual, rather than predicted, values for the arguments thought to determine exchange rates. Nonetheless, the random walk proves most successful at predicting future exchange rates. Note that using actual values is the same as the forecaster's having perfect knowledge of those values in terms of his ability to forecast. Once again, the conclusion is that the best predictor for the future value of the exchange rate is its current value.

"[T]he forward premium's role may be to indicate the level of the risk premium rather than the expected rate of change of the exchange rate. If this is the case, then it is better to use the current value of the spot rate . . . instead of the forward rate when forming expectations about the future value of the exchange rate."

A simple rule for making profits in the foreign exchange market suggests itself when the exchange rate moves randomly. In that case a risk-

neutral speculator would need no compensation to take a position in a currency. As a result he could make expected profits by borrowing in low-interest rate currencies and lending in high-interest rate ones. Furthermore, the risk-neutral speculator would have no need to hedge his transactions. With random walk behavior, there are no costs to such transactions, and there are substantial benefits equal to the interest rate differential.[23] Whereas it is generally acknowledged that this method of speculation does generate expected profits, there is also some feeling that these profits are obtained only by undertaking substantial risk.[24]

The reader will note that if the connection between the forward premium and the expected rate of appreciation is a negative one, as indicated in the work by Isard (1987) and that by Boyer and Adams (1987), then this method will yield profits even larger than the interest rate differential. The reason is that the high-interest rate currency, which the speculator favors, is expected to appreciate relative to the low-interest rate one. Thus, the anticipated rate of appreciation adds to the expected profits from using this rule.

"[E]xchange rate movements provide us with clues as to likely conditions in the distant future. In that sense, the exchange rate is a variable that is ahead of its time, a potentially fruitful source of information concerning future economic conditions."

The Bottom Line. The conclusion of these efficiency tests is that neither the forward rate nor the spot rate is a good predictor of the future spot rate. But if one has to choose between the two, the current spot rate dominates. Since the exchange rate follows a random walk, its movements are unpredictable. This unpredictability suggests that in the short run the exchange rate is not a factor that either inhibits or helps the economy's move toward eventual equilibrium. Instead, the exchange rate appears to move quickly to the value warranted by current expectations of future policies; it does not move from that value unless some factor changes, thereby causing a reassessment of that long-run value.

Using the criterion of predictability of exchange rate movement as an indicator of misalignment, we see that these results indicate the existence of few identifiable periods of misalignment. Real exchange rates clearly do have substantial movements, but it is inappropriate to attribute these to errant changes in nominal exchange rates. On the contrary, a more realistic view is that exchange rate movements provide us with clues as to likely conditions in the distant future. In that sense, the exchange rate is a variable that is ahead of its time, a potentially fruitful source of information concerning future economic conditions. This view suggests that both economists and policymakers may need to interpret the exchange rate's role in a new light.

The fact that the current value of the spot exchange rate is a better predictor of its future value than is the forward rate has a number of implications for policymaking. What we immediately infer from the spot rate's approximation of random walk behavior is that changes in the exchange rate are unpredictable.

The overshooting model is only one example of the way in which the market exchange rate can diverge from its equilibrium value so that misalignment is present. But the random walk result indicates that viewing the exchange rate as moving predictably from its current value towards an identifiable equilibrium value is futile. Consequently, either there is so much noise in the economic system that forecasting of asset prices is hopeless, or the market exchange rate is always aligned and at its equilibrium value so that no predictable movement occurs.

Taking the latter view raises the question as to how economists who have identified substantial misalignment have measured the equilibrium values of exchange rates. Perhaps their conclusions are based upon the use of dubious methods. We address these methods in the accompanying box.

Difficulties with Identifying Parities

Of the two criteria for establishing benchmark valuations from which to determine exchange rate misalignments—purchasing power parity and external balance—the latter has prime claim on our attention for reasons both of history and of theory.

Purchasing power parity calculations have been used as a basis for setting exchange rates

Box

Methods of Identifying Target Zone Parities

The speed and extent of the movement of the value of the U.S. dollar during the 1980-85 period were such as to make plausible the argument that the exchange rate had a life of its own during that time. Estimates of the increase in the dollar's value over those years are in the range of 40 to 80 percent. Although we can disagree about the last few percentage points of these estimates, their order of magnitude remains relatively uncontroversial.

What is a source of controversy, however, is that some studies have found that the dollar was overvalued by between 40 and 50 percent during much of 1984.[25] Since this magnitude is twice as great as that which occurred immediately before the breakdown of the Bretton Woods accord on fixed exchange rates, the situation appeared to pose a threat to the international trading system. These numbers contrast with the view expressed here, that misalignment was small during this period because the exchange rate's movement was unpredictable. Thus, measures of the extent of misalignment are controversial, as is witnessed by the fact that many different criteria have been employed to gauge it.

Two criteria have been prominently proposed as providing benchmark values for the exchange rate. On the argument that relative inflation rates are important determinants of currencies' values, one proposed benchmark is the purchasing power parity value of the exchange rate. In contrast, others have noted that roughly balanced trade is essential to a long-run equilibrium. They propose that such an external target provides an appropriate benchmark for the value of the currency.

During the year 1984 both of these criteria indicated that the dollar was substantially overvalued. The 40 to 50 percent overvaluation cited above was estimated using real effective exchange rate calculations.[26] That is, the exchange rate moved by an amount that caused U.S. goods to be that much more expensive relative to foreign goods. Or, in other words, it is the change in valuation that remains once international inflation rate differentials are removed. Looking to the second benchmark, calculations to determine how much lower the dollar's value would have to be in order to establish balanced trade arrived at the same estimates.[27] That the purchasing power parity and balanced trade criteria yield similar estimates of overvaluation was a coincidence, as more recent calculations demonstrate.

Among economists and policymakers alike, there is debate today over the appropriate foreign exchange value of the dollar. The reason is that under present circumstances the purchasing power parity and external balance criteria for exchange rates yield qualitatively different answers. Indeed, even the parity approach finds different measures of valuation, depending on the composition of the dollar index used. For example, McKinnon and Mundell, using purchasing power parity and focusing on European currencies and the Japanese yen, find that the U.S. dollar is now undervalued by 20 to 30 percent.[28] Calculations that use a wider currency basket, including newly-industrializing-countries' currencies and giving heavier weight to the Canadian dollar, suggest on the same basis that the dollar is close to its correct valuation. These conclusions contrast strongly with that of the Cambridge School of economists (Dornbusch, Feldstein, and Krugman), who use balance in the current account as their criterion. They find that the dollar continues to be overvalued by 30 percent. Obviously the purchasing power parity and external balance criteria can and do provide strikingly different assessments of a currency's misalignment.

since at least the turn of the century. This longevity is in stark contrast with the lifespan of the external balance criterion, which has been employed only during the last decade. The difference in the lengths of time the criteria have been employed is to be sought in the strength of their theoretical foundations. While purchasing power parity is a valid insight that holds for a special class of events, the external balance criterion is based on a misunderstanding of the role of capital movements in the modern open economy. Let us consider this misunderstanding.

Friedman's (1953) argument for flexible exchange rates focused its attention on the role of the trade account in the attainment of balance of payments equilibrium.[29] This focus was natural at the time for several reasons: the United States was a relatively closed economy, international capital markets were in their formative stages, and capital controls were prevalent in North Atlantic economies. With limited capital mobility, the role of the exchange rate can be summarized by its influence on the current account.

During the last four decades, though, the situation has changed dramatically. Capital controls have been weakened throughout the industrialized economies. International capital markets have developed very rapidly, so that there now exists a bewildering array of financial instruments available to investors. The U.S. economy is far more open today than it was in the late forties by any yardstick. (Interestingly, it was mainly the Canadian economists Johnson, McKinnon, and Mundell who did pioneering

work on the consequences these developments were to have on the United States. Canada is a good economy to study because of its openness, its freedom of capital movements, and its prior experience with flexible exchange rates.)

The Mundell-Fleming model assumes perfect capital mobility, and is therefore much more closely attuned to current circumstances than is the Friedman setup. Complaints that the capital account is the chief determinant of the exchange rate make it clear that the current account no longer holds its predominant role. Indeed, we noted earlier that, in the face of expansionary fiscal policy, the exchange rate must adjust so as to push the trade account into greater imbalance than obtains under fixed rates. Thus, it would be foolish to focus on the maintenance of balance in the trade account as a valid target for exchange rate policy.

The objections that are relevant to the naive external balance approach apply as well to the more sophisticated version, which sees the equilibrium exchange rate as given by sustainable levels for the current account. Obviously, the problem with this approach is that the degree of sustainability of any particular value for the current account is difficult to assess. Specifically, such an assessment must incorporate assumptions about future financial policies, economic growth, and inflation rates. Referring to this current account criterion, Herbert Stein has humorously noted that any phenomenon that cannot continue indefinitely is likely to end eventually.

In contrast, purchasing power parity theory has strong theoretical underpinnings, even at current levels of capital mobility.[30] The reason is that perfect capital mobility does not undermine the theory's validity in the special case in which it holds. Namely, if the main source of shocks to the economy is monetary (shifts in money supply and money demand) and if the method of manipulating the exchange rate is through monetary policy, then the use of the purchasing power parity exchange rate as a target of policy is optimal. This observation has a simple version when there is no inflation: a fixed exchange rate is appropriate in the face of shocks to the money market.

Although purchasing power parity has validity at times, it is not without flaws. Perhaps the most difficult problem in its implementation is that the conclusions one draws about the extent of misalignment depend crucially upon the choice of base year during which parity is seen as holding initially. The real exchange rate calculations indicating a substantial dollar overvaluation in 1984 proceeded on the assumption that 1980 was a year when purchasing power parity held. If, instead, one takes a longer perspective by using 1973 or even 1960 as the base year, quite a different picture emerges: the U.S. dollar appears to have had a much smaller overvaluation in 1984. The difference in these conclusions arises from the fact that from the longer-term perspective 1980 is seen as a year of substantial undervaluation. The choice of base year is thus extremely important for purchasing power parity calculations.

As was noted above, the parity theory is valid in the face of monetary shocks. If one restricts his attention to financial policy shocks, that is a valid characterization of the decade of the seventies. But during the 1980s fiscal actions have attained paramount importance. As a result, the applicability of purchasing power parity to the assessment of currency values has been substantially diminished.

Two aspects of fiscal policy actions suggest that measuring the extent of overvaluation using a real exchange rate index is inappropriate. First and foremost, the current stance of tax and expenditure policies is a significant determinant of the equilibrium value of the real exchange rate, insofar as that stance has an impact on the real nature of total expenditure flows in the economy. Recently, administration policies have continued to favor defense-related industries, which provide non-traded services at the expense of traditional traded goods such as agricultural products and manufactured items. Consequently, it is far from surprising that domestic prices have risen relative to those of internationally traded goods. Second, fiscal policies have an adjustment mechanism built into them, because the budget deficit determines the rate at which government debt grows. Furthermore, the link that has been suggested between the budget deficit and the trade deficit points to another mechanism at work, in that fiscal policy ultimately has an effect on our net asset position in relation to the foreign sector. To the extent that fiscal excesses have shifted our international position from creditor to debtor status, even if our situation were otherwise restored to its initial state, a different real exchange rate would prevail.

These arguments show that there are numerous specific difficulties with the prominent criteria for target zone parity values. But, more generally, each criterion individually captures only a small aspect of the fundamental factors at work. Rather than attributing any deviation from the parity value to a misalignment, we could

fruitfully attempt to discern what the market is telling us about the nature of those factors that have been left out of the calculations.

Conclusions

The flexible exchange rate system has performed well over the last fifteen years. It had greater success during the first half of this period, when the system was subjected to disturbances that it had the capability to offset. During the second half of this time span, real shocks predominated and they were country-specific. The flexible exchange rate system's more modest success of recent years has brought calls for a return to a system in which the sizes of exchange rate movements are more limited. Proposals for target zones for exchange rates provide frameworks for such a system.

A major problem for a target zone arrangement is the choice of parity exchange rates. This essay argues that neither the external trade balance target nor the purchasing power parity target provides a reliable guide for parity values. Consequently, both methods of calculation generate poor estimates of the extent of misalignment of exchange rates. The external target method is seriously flawed because there is no justification for the notion that each country individually should have balanced trade. In contrast, justification does exist for the use of purchasing power parity targets, but only if the main source of shocks is monetary in nature, and then only if monetary policy is used to cushion their effects. While such a system would have been useful for coping with the monetary disturbances of the seventies, the real shocks of the eighties have caused changes in real exchange rates that monetary policy should not attempt to reverse. The major hazard of such an attempt is that the regime would have a destabilizing effect on the economy.

An alternative definition of misalignment is the extent of predictable movement of the exchange rate. On this criterion, "overshooting" would be an example of misalignment between the current value and its long-run equilibrium value. The exchange rate then follows a path with a substantial predictable component in moving toward that long run.

Empirical work has been done to assess the degree to which the exchange rate moves predictably. A major conclusion of this work is that the predictable component makes up only a minor portion of the exchange rate's overall movement. This finding suggests that there are few periods when any substantial difference exists between the market value of the exchange rate and the value that is dictated by the underlying fundamentals, including the monetary and fiscal policies enacted by the authorities. As a result, the exchange rate, far from lagging behind other prices, appears to move quickly to its equilibrium value, and in that manner it provides timely information about the current and future state of the economy.

The attribution of the exchange rate's value and the costs attached thereto to the underlying policies provides a quite forceful way of disciplining macroeconomic policies pursued by governments, even under a flexible exchange rate regime. On this interpretation, there is very little difference between stabilization of exchange rates through appropriate policies and the coordination of economic policies that result in exchange rate stability. Thus, a target zone plan may be a useful tool for initiating macroeconomic policies that are more predictable and sustainable. But such a plan would be disastrous if it were used to distract our attention from these hard choices concerning underlying policy mix, choices that must now be made.

Notes

[1]For example, Makin, "Fixed or Flexible Exchange Rates" (1986), suggests that the differences between the capabilities of fixed and flexible exchange rate regimes have been exaggerated.

[2]Bergsten (in Makin, 1986) presents the views of the Institute for International Economics, which has been a prominent proponent of the argument that the dollar is overvalued. The Plaza Agreement of September 1985 has been widely interpreted as being designed to deal with this overvaluation.

[3]Perhaps a good indication of change of opinion on this matter is the seriousness that greeted the plank in the Republican party platform calling for a return to a gold standard arrangement. In 1980, few people gave this proposal any chance of success. By 1984, in contrast, the proposal was given a respectful hearing at the Republican national convention. Recent comments by Treasury Secretary Baker suggest a more prominent role for gold as a policy indicator in the future.

[4]The switch in focus between the 1970s and the 1980s can be seen in the specific titles of the conferences on international financial topics organized during those periods. A good example of the recent interest in fiscal policy is Frenkel (1987).

[5]The Mundell-Fleming model of the early 1960s was the workhorse of international macroeconomics. The model is laid out in Fleming (1962) or Mundell (1963).

[6]There is now a long literature on the influence of U.S. policy action on the value of the dollar. A good bibliography on this literature is found in Frankel (1985).

[7]The precise measurement of the amount by which the dollar's value changed depends upon the exchange rate index employed. There is now wide agreement that the G-10 index published by the Board of Governors of the Federal Reserve System does not have a large enough currency basket. See Rosensweig (1987) in this issue of the *Economic Review* to understand the problems involved with developing an improved index.

[8]Williamson (1985) is a widely cited source for this point of view.

[9]Taken from Johnson (1986) in the Makin (1986) volume.

[10]Some of the earliest research in these areas was done by Frenkel and Levich (1975). More recent research, for example that by Clinton (forthcoming), indicates that even the small transactions costs reported there are exaggerated.

[11]McCormick (1979) was the first to demonstrate the importance of aligning the data drawn from various geographical locations.

[12]Frankel (1985), for example, dismisses such a suggestion out of hand.

[13]See Dornbusch (1976). The argument is most succinct in the case in which domestic output is constant in the short run.

[14]Additionally, by implication, the spot rate would be expected to have a higher variance than the forward rate in this setting.

[15]The discussion here and in the next section concerning speculative bubbles draws heavily upon Obstfeld (1987).

[16]The *Journal of International Money and Finance* has published numerous articles treating this research. See Boothe and Longworth (1986).

[17]For a survey article on this topic see ibid.

[18]See Isard (forthcoming).

[19]Boyer and Adams (1987) use a simple monetary model in which the risk premium is assumed to be an exogenous temporary time process.

[20]See Mussa (1979).

[21]Interestingly, Poole (1967) feels that deviations from random walk behavior would be indicative of an inefficiency in this market. The theoretical justification for such a claim is unclear.

[22]See Meese and Rogoff (1983).

[23]This method of making profits in the foreign exchange market is usually associated with Bilson (1981).

[24]Hodrick and Srivastava (1984), for example, report such findings.

[25]See, in particular, the calculations in Williamson (1985).

[26]Ibid.

[27]Krugman (1985) provides such an estimate.

[28]These conclusions are reported by Sylvia Nasar in *Fortune Magazine* (May 11, 1987).

[29]Friedman (1953).

[30]Camen and Genberg (1987) come to a similar conclusion.

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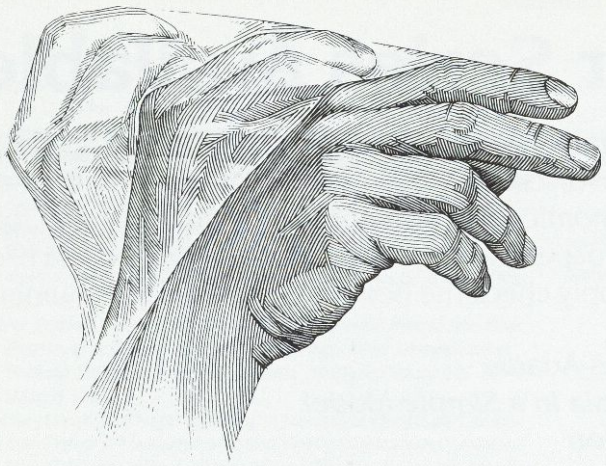

Direct Investment Activity of Foreign Firms

William J. Kahley

Dramatic reversal in our nation's international investment position has awakened economists and the American public alike to a new awareness of global capital flows. As recently as 1981, the United States was the world's largest creditor nation; just five years later it had taken on the opposite role, becoming the foremost debtor. Reasons for this extreme shift include the widening of our country's budget and trade deficits as well as foreigners' positive investment response to U.S. tax incentives and growth prospects.

The waxing magnitude and accelerating pace of such investment demand an understanding and identification of the factors that motivate a multinational corporation (MNC) to produce abroad. Unfortunately, attempts to find satisfactory survey or econometric tests of the factors' importance have been seriously impaired by the limited data available. Even so, the industrial organization theory that dominates the literature of recent decades does help inform continuing efforts to discern why foreign MNCs are drawn to particular U.S. industries.

Following an overview of the changing role of MNCs in the lives of Americans and of the upheaval in our nation's investment position, this article will review the economic literature on why an MNC invests abroad. Next, the discussion will turn to the issue of whether firm-specific attributes can be disentangled from industry characteristics as one attempts to ferret out the reasons for foreign MNCs' investment directions. Finally, current research on foreign direct investment in the United States will be considered. Throughout, the emphasis of this article is on what motivates foreigners to invest in this country. The broader question about the desirability of U.S. debt is beyond the article's scope.

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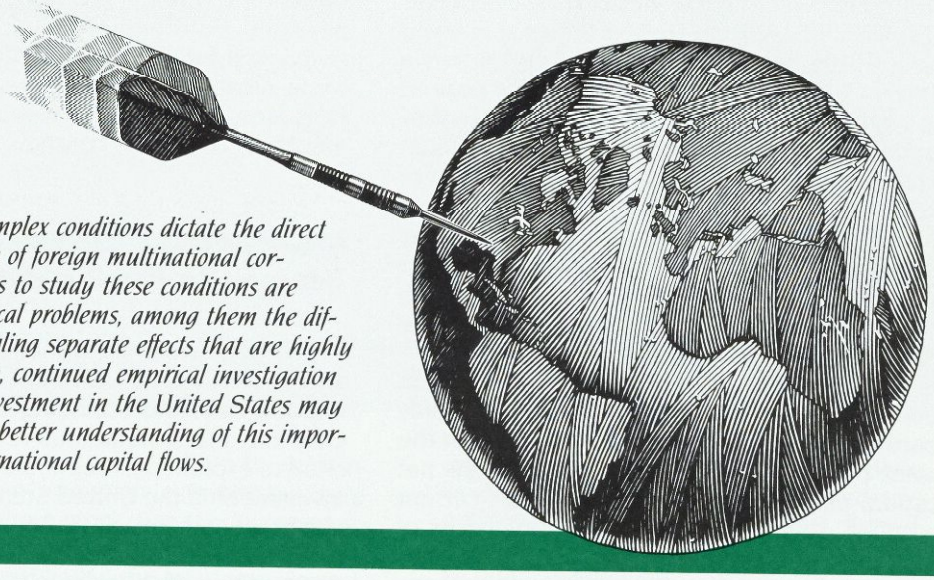
MNCs and International Investment

Multinational corporations—firms that control and manage production establishments in a



Numerous and complex conditions dictate the direct investment activity of foreign multinational corporations. Attempts to study these conditions are plagued by statistical problems, among them the difficulty of disentangling separate effects that are highly correlated. Even so, continued empirical investigation of foreign direct investment in the United States may eventually yield a better understanding of this important aspect of international capital flows.

minimum of two countries—have existed since at least the eighteenth century. The British East India Company is a famous early example. Today, many Americans have dealings with MNCs on a daily basis. For example, the supermarket, gasoline station, or department store we patronize might be a U.S. subsidiary of a foreign parent corporation, or our American auto manufacturer may also produce vehicles in plants it owns abroad. In some instances, our cars or consumer electronic devices are the products of joint ventures or partnerships between a domestic and a foreign company. Additionally, many millions of Americans are employed by U.S. companies that own subsidiaries abroad, and over three million Americans work in U.S. affiliates of foreign companies.

Traditionally, the MNC has not been of much interest or concern to American workers or consumers. In part, their attitude derived from U.S. firms' seeming dominance of international markets into the 1960s, when large American companies were synonymous with the term "multinational corporation." Moreover, few American workers' jobs were threatened by foreign competition then, and consumer purchases of goods from foreign-controlled firms amounted to only a small fraction of U.S. gross national product (GNP). In the 1960s, however, our merchandise trade balance with the rest of the world began slipping persistently and ever more deeply into the red until the mid-1970s. Though still in deficit, the trade balance then showed spurts of improvement before worsening again throughout the present decade.

Besides facing increasingly stiff competition from foreign imports over the past couple of decades—the ratio of U.S. merchandise imports to GNP has tripled since the mid-1960s—domestic manufacturers also have come under intensified pressure from foreign-owned affiliates in the United States. For example, six Japanese auto producers now own or are building assembly plants in this country. Developments such as these have sharpened Americans' awareness of foreign producers. The difference is that whereas imports were viewed as a threat to American workers' jobs in American plants, the more recent direct investment trend has been welcomed as a source of employment. In tandem with this expanding awareness, the public has shown heightened concern over

international trade and capital flows, as the scope and tone of the television news and popular print media make clear.

The growth of public interest in international trade and capital flows appears warranted. Available data show that the nation's net international investment position, which denotes the balance of U.S.-owned assets abroad minus foreign-owned assets in the United States, has shifted markedly over just the past few years as the merchandise trade deficit has deepened (Table 1). In 1980 the United States was owed about $106 billion and its trade deficit was a "mere" $25 billion. Our creditor status peaked at $141 billion in 1981, but subsequently slipped to a paltry $3.6 billion only three years later. Thereafter, the United States became a debtor nation, a position it had not held since the outbreak of World War I. By year's end 1986 the nation's debt reached $264 billion, making the United States the biggest debtor in the world. In the same year, the country's merchandise trade deficit swelled to $144 billion.

The negative net international investment position of the United States is attributable only partly to its mushrooming trade deficit over the same period. As the trade deficit grew, the net capital inflows helped to finance the "current account" deficit, that is, our net purchases of merchandise from abroad as well as services and transfer payments. In addition, the means and motivations for portfolio and direct investment abroad by Americans and foreigners alike also have been shifting. Consequently, our perspective on the significance of foreign direct investment has likewise changed.

Into the 1960s, economists generally shared the public's nonchalance about capital flows and the existence and impact of international corporations. For most economists, the form of international capital movement was not considered important and the motivation for all capital flows seemed clear. Before 1960, both direct and portfolio investment abroad were treated in the same way, even though an important economic distinction exists between the two types of international capital flows.

Foreign direct investment refers to an amount that residents of a country invest in a foreign establishment or enterprise over which they have effective ownership or management control. An American business establishment under such control is called a U.S. affiliate, and the foreigner's investment is said to be "direct." Other foreign investment in a U.S. business, such as the purchase of its stocks or bonds by investors seeking to diversify their assets rather than exercise an effective management role, is called portfolio investment.[1]

In 1980, U.S. private assets abroad in the form of direct investment totaled $215 billion, or $132 billion more than foreign direct investment in this country. By year's end 1986 this net surplus had narrowed to about $50 billion. Thus, more than one-fifth of the nearly $370 billion total change in the U.S. net international investment position over the period is attributable to direct investment flows. A net increase in foreigners' portfolio holdings of U.S. corporate stocks accounted for another one-fifth of the change, while most of the remainder was due to net increases in foreigners' holdings of U.S. government and corporate bonds.

Reasons for Foreign Investment

The large size of international capital flows and recent rapid shifts point to the critical importance of understanding what governs them. Over the years, numerous reasons have been cited to explain the accelerating pace of foreign investment in the United States. Both the popular press and official U.S. sources suggest that a relative rise in both the wealth of foreigners and the number of their large companies has increased foreigners' ability to invest in this country. In addition, some argue that foreigners, such as the Germans and Japanese, save more than Americans do, further enabling them to invest here.

The U.S. Department of Commerce maintains that the appeal of investing in the United States has been enhanced by a number of other developments: (1) greater recognition among foreign companies of the size and growth of the U.S. market and an advancing perception of this country as an economic and political safe haven; (2) growing numbers of large foreign MNCs whose experience contending with American firms abroad convinced them that they could compete successfully in the U.S. domestic market; (3) a narrowing spread between American and foreign production costs, which renders production here relatively more attractive to foreign firms than exporting to the United States; (4) concern about increasing U.S. protectionism and a feeling that investment in this country offers an effective way to hurdle trade barriers; and (5) the wooing of foreign investors by state development agencies, particularly in the South.[2]

Table 1.
U. S. International Investment Position
(billions of current dollars)

Type of Investment	1980	1986	Change
Net position	106.3	-263.6	369.8
U. S. assets abroad	607.1	1,067.9	460.8
U. S. official reserve assets	26.8	48.5	21.7
U. S. government non-official reserve assets	63.8	89.4	25.6
U. S. private assets	516.6	929.9	413.3
Direct investment abroad	215.4	259.9	44.5
Foreign securities	62.6	131.0	68.4
Other U. S. bank and nonbank claims	238.5	539.0	300.5
Foreign assets in the U. S.	500.8	1,331.4	830.6
Foreign official assets in the U. S.	176.1	240.8	64.7
Other foreign assets in the U. S.	324.8	1,090.6	765.8
Direct investment in the U. S.	83.0	209.3	126.3
U. S. securities	90.2	405.5	315.3
Other U. S. bank and nonbank liabilities	151.5	475.8	324.3

Source: Constructed by the author from data in R.B. Scholl, "The International Investment Position of the United States in 1986," *Survey of Current Business*, vol. 67, no. 6 (June 1987), p. 40.

These and other factors may help to explain the rapid growth of foreign investment, but they fail to tell the whole story. Foreign investment might naturally be expected to improve a firm's profits. Indeed, until 1960 the MNC was viewed by most economists simply as an arbitrageur of capital, sending money to countries where it could earn its highest risk-adjusted return. In its arbitrageur role, the MNC contributed to efficient allocation of world resources.

The classic welfare argument contends that international capital flows increase world income because capital is more equally productive at the margin as a consequence of the flow. The home country gains in that it earns a higher country-wide return on its capital abroad than it would have earned domestically; the host country gains because, with more abundant capital, higher returns accrue to its other domestic factors. At the firm level, of course, the advantage is represented by larger profits (measured as present discounted value) than would be earned without the investment or with alternative investments.

John Dunning and Alan Rugman, leading contributors to the development of the modern, post-1960s theory of foreign direct investment, described the earlier view:

> In 1960 the prevailing explanation of international capital movements relied exclusively upon a neoclassical financial theory of portfolio flows. In this frictionless world of perfect competition, with no transaction costs, capital moves in response to changes in interest rate (or profit) differentials.[3]

In his important dissertation, Stephen Hymer was first to observe that several features of the multinational corporation and foreign direct investment are inconsistent with the pre-1960 theory.[4] For individuals, the main determinants of "portfolio" investment decisions are the expected rate of return and the investment risk. Corporations, however, are likely to concentrate on the profitability or return on investment over the medium or long term. Within this time frame, many industry-specific factors may combine to influence returns.

Today economists agree that the pre-1960 explanation of direct investment was overly simplistic and that Hymer's redirection of thinking about the MNC was a great contribution. Indeed, at its annual meeting a few years ago the American Economic Association organized a session, "In Honor of Stephen H. Hymer: The First Quarter Century of the Theory of Foreign Direct Investment"; the "quarter century" dates from the publication of Hymer's dissertation. The modern, "industrial organization" theory of direct investment, while attributable primarily to Hymer, was further refined by Charles Kin-

dleberger, Harry G. Johnson, Richard E. Caves, and others.[5] In the scheme of the theory, "market imperfections" motivate MNC investment abroad.

As an illustration, consider a parent firm that decides to produce abroad by building a new plant or buying an existing one. To be successful, the firm must overcome inherent disadvantages vis-a-vis foreigners producing on their home turf. Among these disadvantages are the higher transportation and communications costs associated with managing from a distance and less knowledge of the prevailing language and customs, such as business and political practices and processes. In addition, the producer from abroad must deal with another currency and will be taxed differently. Presumably, a firm that penetrates such a market with production facilities must possess some production or marketing edge that will enable it to survive.[6] Hence, industrial organization analysis is warranted.

Following Kindleberger's taxonomy, countervailing advantages that outward-bound firms might possess stem from one or more of the following:

- lack of perfect competition in the goods markets owing to product differentiation, marketing skills, or administered prices;
- imperfections in factor markets because of proprietary technology, managerial skills, or discriminatory access to capital;
- economies of scale internal or external to the firm;
- government limitations on production or entry to the industry.

In the real world, the many kinds of market imperfections that exist for a great range of goods and resources provide ample opportunities for direct investment. For instance, numerous firms own patents on products or have established brand identifications that make their product special to its buyers. Furthermore, many companies possess a unique or unusual technical advantage in producing or marketing particular goods. An administrative ability to exploit potential cost advantages by producing on a large scale for a big market also might prompt a foreign company to produce in the United States. Similarly, onerous government-imposed restrictions on output, market entry, or product safety and production standards can encourage a firm to shift production from one country to another.

Note, too, that advantages generally develop and erode as the international economic structure changes and adjustments occur. As an example, improved and lower-cost communication via satellite transmissions can lower the communication barrier to production abroad, or "just-in-time" manufacturing and inventory policy can spur geographic moves by suppliers, enabling them to deliver materials promptly when needed.

Kindleberger illustrated the industrial organization theory and contrasted direct investment with portfolio investment in a straightforward and concise manner. He made use of the simple formula for capitalizing an income stream, $C = I/r$, where C is the present value of a capital asset, I is the stream of income produced by the asset, and r is the real, risk-adjusted rate of return on investment in the asset. Portfolio investment occurs when r differs among countries, while direct investment typically corresponds to the positive differential in I that can be earned abroad by an MNC compared with a local firm abroad.

"In the real world, the many kinds of market imperfections that exist for a great range of goods and resources provide ample opportunities for direct investment."

Generally, imperfections in the goods and factor markets as well as economies of scale are conditions that permit a foreigner to earn a higher I than local producers. However, if the MNC has an advantage in accessing cheap capital, perhaps because of its favorable position as a large, trustworthy borrower, differences in r also may contribute to direct investment. Finally, if MNCs have an advantage over local firms, government policies—other than those prohibiting direct investment—affect where the MNC will produce goods for sale in the foreign market. Government imposition of a tariff on imported goods, for example, might cause the MNC to shift from exporting its domestically-produced goods into a foreign market to producing goods there instead.

A useful means to judge whether an MNC investment is desirable is to consider the move in light of the type of imperfection generating the investment abroad. David Teece argues that vertical integration—that is, direct investment across industries that relate to different stages of production of a particular good—results from the MNC's development of internal production and distribution systems as a substitute for inefficient markets.[7] For instance, vertical integration might enable a firm to install specialized cost-saving equipment in two locations without the worry and risk that facilities may be idled by disagreements between enterprises of different nationality and facing different incentives. Horizontal direct investment, or investment that is cross-border but within an industry, also requires that the MNC possess an advantage such as "know-how" or technology and that contractual difficulties be anticipated.

"Investments need to be examined on a case-by-case basis to ascertain whether MNCs create market imperfections or simply respond to them by internalizing transactions, turning external economies into internal profits."

Examples of contractual difficulties are the MNC's ability to price know-how or to write, execute, and enforce use restrictions governing technology transfer arrangements. Thus, foreign direct investment occurs when a firm possesses a valuable asset and is better off directly controlling use of the asset abroad rather than selling or licensing it.

In both vertical and horizontal investments, market imperfections motivate activity; however, whether MNC investments are efficient from an overall perspective depends upon the type of imperfection. As Dunning and Rugman summarized this condition:

> If the market imperfections are natural transactions costs, then the MNC (multinational enterprise) is conceptually efficient. However, if the market imperfections are structural and endogenized, leading to asset power, then the MNC is best viewed as operating strategically, and such actions may or may not be efficient.[8]

In other words, MNC investment may improve or reduce the efficiency with which the world's resources are used, but it is impossible to draw a general conclusion about its desirability. Investments need to be examined on a case-by-case basis to ascertain whether MNCs create market imperfections or simply respond to them by internalizing transactions, turning external economies into internal profits.

Brief examination of some of the post-1960 refinements to the basic industrial organization theory of direct investment will help to clarify this conclusion.[9] In the goods market, oligopoly, or domination of an industry by a few firms, is an example of a "structural and endogenized" market imperfection. The firms' mutual recognition of their interdependence in the industry promotes conscious rivalry: each firm reacts to another's action. Raymond Vernon explicitly accounted for this interdependence in foreign direct investment by arguing that, as a product matures and its production technology becomes diffused, firms counter the threat of losing market share to imitators overseas in a kind of preemptive strike.[10] Further refinements to this defense were suggested by F.T. Knickerbocker's "follow-the-leader" investment strategy, whereby an investment by one firm triggers an investment response by rivals, and by E.M. Graham's "exchange of threat" strategy, whereby rivals invade each other's markets with subsidiaries to maintain overall shares.[11]

On the other hand, several refinements to the basic industrial organization theory have developed or elaborated on the beneficial role firms play in those settings where it is especially costly to coordinate economic activities via established markets. These "market failure" imperfections, known by terms such as "appropriability" or "internalization" theory, are variations on the theme that the market mechanism often is prevented from efficiently allocating the production and transfer of knowledge. For example, transactions costs for enforcement or monitoring may be very high for a record or video company seeking to license its product abroad, perhaps because the licensee could pirate copies to avoid full payment of royalties or owing to difficulties in establishing contractual terms for the lease. Under these conditions the firm is likely to maintain internal control to ensure that returns on its asset are appropriated rather than being gobbled up as transactions costs.

Motivations for Inter-Industry Investment in the United States

The foregoing theoretical explanations of MNC behavior have generated a growing amount of empirical research into the motivations for foreign direct investment. Research intensity has been heightened further by differences of opinion about the relative importance of the various influences; in some instances, hypotheses even conflict. Research also has been kindled by the expanding awareness of how important it is to understand MNC behavior in our increasingly integrated world economy. Unfortunately, numerous statistical and conceptual problems hamper attempts to distinguish among hypotheses about MNC activities. Even so, these difficulties have fostered yet more work on the topic as the available data base on foreign direct investment has grown richer over time.

Multinational firms differ from others in several distinct ways, some of which are firm-specific. Other differences, however, are better attributable to differences among industries. For example, Vernon concluded, and several other researchers subsequently confirmed, that large size effectively distinguishes MNCs from other firms in their industries.[12] Alternatively, some assert that such factors as high profitability and large expenditures on research and development (R&D) or advertising are industry characteristics that attract foreign investment.

In weighing all the attributes that may account for foreign direct investment, it is often conceptually difficult to separate those features that are firm-specific from those that pertain industry-wide. The following quotations testify to this challenge:

> Among the firm-specific advantages of the multinational emphasized by internalization theory are those relating to R&D, product differentiation, management, economies of scale in production, and avoidance of tariff and non-tariff barriers.[13]

> Advantages to be gained by investing abroad instead of exporting include: obtaining lower-cost factors of production; avoiding or reducing tariff and nontariff barriers; reducing transportation costs and delivery time; avoiding political instability or government interference at home; obtaining knowledge of foreign tastes, marketing techniques, etc.; and obtaining economies of scale by vertical integration—back to raw materials production, for example.[14]

> Since foreign operations provide an opportunity for the pooling of market risks, vertical integration, sharing of research and development technology, and advertising costs, as well as an additional tax advantage, the benefits from such positions can be used to strengthen domestic market operations.[15]

Clearly, attributes common to firms within an industry and those that distinguish a firm from its industry counterparts can be the same. As an illustration, the chemical industry invests heavily in expensive plant and equipment relative to many other industries; at the same time, investment levels of some chemical firms are above the industry average. Research on what motivates foreign investment has been hard pressed to disentangle industry and firm effects, largely because of data limitations.

Most of the empirical studies on MNCs have examined the performance of U.S. MNCs, primarily because such firms have traditionally been the world's largest foreign direct investors. Relatively few researchers have examined MNC investments in the United States; hardly any have done so in a rigorous empirical fashion.

According to David McClain's comprehensive survey of researchers' findings on foreign direct investment in this country, prior to World War I foreigners invested in U.S. land and railroads, cattle, mining, and finance chiefly on the basis of their rates of return.[16] In manufacturing, however, vertical integration and oligopolistic rivalry considerations shaped their investment decisions. For the post-World War II period, McClain's review revealed that the considerations influencing foreign producers to locate facilities in the United States included raw materials, specialized knowledge, servicing the market, jumping tariff or non-tariff barriers, transport costs, or new technologies.[17]

For the most part, these research findings on foreign direct investment in the United States have been based on surveys of foreign-controlled firms or on case studies, anecdotal observations, or reasoned theoretical analysis. The majority of econometric work on the topic has either explained variations in the flow at the aggregate level or has examined characteristics at the firm level.

Some empirical work has addressed foreign direct investment in the United States at the industry level. In distinguishing the characteristics of foreign-owned subsidiaries in this country from those of subsidiaries located elsewhere, McClain found that, among the factors that were positively correlated with foreign direct investment, those relevant for U.S. industry included

Box

Profile of Foreign Investment Activity

Comparable estimates covering operations of foreign firms' U.S. affiliates with some industrial detail are available for 1977-85. Investment as measured by the gross book value of property, plant, and equipment (PPE) in U.S. manufacturing and nonmanufacturing affiliates amounted to $293.6 billion in 1985 (Table 2). Employment at these affiliates amounted to 2.85 million, or 3.5 percent of all private, nonfarm jobs in the United States.

The overall growth rate of affiliate PPE in the 1977-85 period was 340 percent compared with a 100 percent rate of increase for U.S. gross national product over the same period, and a 92 percent rise in gross private domestic investment. The rapid growth of affiliate PPE attests to the growing importance and interest of foreign MNCs in the U.S. economy, as does the rising number of affiliate jobs in that period. Affiliate employment increased by 134 percent as opposed to the mere 21 percent rise in overall private, nonfarm U.S. employment.[1]

The industrial distributions of foreign affiliate investment and employment in 1985 were similar. Manufacturing accounted for the largest share of both; chemicals and allied products accounted for the largest portion within manufacturing. Moreover, many of the disparities shown for the relative shares of affiliate investment versus employment are by no means surprising. For example, industries such as mining, petroleum, chemicals, paper, and real estate are relatively capital-intensive compared with industries such as retail trade or services, which are labor-intensive. Similarly, the generally faster growth of overall foreign direct investment versus overall affiliate employment shown in this period simply reflects upward bias in dollar investment figures resulting from inflation. Yet, deflating by industry, while desirable, is difficult because component inflation is hard to measure. (Measuring asset values by book value rather than replacement cost also can distort comparisons of real asset levels among industries.) Because they are not directly affected by inflation, the employment data thus may have the advantage of corresponding more closely to changes in economic activity, even though they are plagued by relative productivity shifts that alter the linkages between output and employment change in industries.

Among industries, relatively slow growth of investment and employment in mining and petroleum is traceable to adverse business cycle effects. By contrast, slow growth in textiles and apparel, paper, and perhaps some other manufacturing industries probably resulted from long-term employment declines. In these industries the overall labor force contracted as a consequence of declining competitiveness in world markets and/or plant modernization programs that reduced labor requirements. Especially fast-growing industries in terms of foreign direct investment and affiliate employment tended to occur in the service sector, particularly among wholesalers of motor vehicles and other durable goods, food store retailers, operators of eating and drinking establishments, and various purveyors of business, finance, and real estate services. Even so, fabricated metals, electric and electronic equipment, and, especially, transportation equipment industries also experienced rapid foreign direct investment and affiliate employment growth. Overall, investment in manufacturing by foreigners actually outpaced growth in their total investment activity in the United States in the 1977-1985 period.[2]

Industrial Concentration of Affiliate Employment

The above- and below- average rates of growth for different industries mirror overall industrial changes that occurred nationally. At the same time, they represent changing concentrations in foreigners' interest in different U.S. industries. As measured by employment growth, the service sector generally outperformed the goods sector for both the entire country and foreign affiliates. This common experience reflects the continuing major shift in U.S. employment away from goods production and toward services. In the 1977-85 period, national employment grew fastest in wholesale and retail trade; finance, insurance, and real estate; and services among the industries shown in Table 3. Overall employment in manufacturing declined nationally, and only printing experienced the rapid growth shown by services. By contrast, employment for affiliates increased in virtually all manufacturing industries from 1977 to 1985.

Affiliates' shares of different U.S. industries vary markedly but in predictable ways. Because affiliate employment growth exceeded overall employment growth in almost all industries—the rubber industry is the exception—and by a wide margin, affiliates' industry shares increased substantially over the 1977-85 period. Moreover, shares tend to be highest in industries that produce for world markets ("traded goods") and lowest in industries producing goods and services primarily for the domestic U.S. market ("non-tradables"). The chemicals and allied products, paper, food, metals, and machinery industries are prominent examples of the former, while transportation, communications, and public utilities, as well as several other service industries, typify the latter.

On the basis of "concentration ratios"—that is, industrial employment shares for affiliates divided by comparable shares for the nation—the chemicals industry was by far the most attractive to foreigners.[3] Chemicals affiliates accounted for over 15 percent of all affiliate employment compared with chemicals' much smaller 1.3 percent share of all employment nationally. Two-fifths of all U.S. chemicals industry jobs in 1985 were with foreign affiliates. Other industries in which foreign affiliates enjoyed above-average concentrations included manufacturing generally and such specific manufacturing industries as food, metals, machinery, paper, print-

Table 2.
Foreign Affiliate Activity by Industry

Industry	Property, Plant, and Equipment					Employment				
	1977		1985			1977		1985		
	Amount ($ billion)	Share	Amount ($ billion)	Share	Percent Change 1977-85	(000s)	Share	(000s)	Share	Percent Change 1977-85
Mining	3.1	4.7	10.3	3.5	231	15.5	1.3	29.0	1.1	87
Petroleum[1]	23.7	35.5	75.9	25.9	220	89.9	7.4	125.3	4.4	39
Manufacturing	24.2	36.2	110.7	37.7	358	685.6	56.3	1,438.9	50.4	110
Food and kindred products	1.9	2.9	7.0	2.4	261	72.0	5.9	151.3	5.3	110
Chemicals and allied products	10.8	16.2	51.5	17.5	375	197.5	16.2	429.7	15.1	118
Primary and fabricated metals	3.6	5.4	16.2	5.5	351	85.2	7.0	167.8	5.9	97
Machinery, except electrical	1.3	2.0	4.8	1.6	264	65.0	5.3	115.3	4.0	77
Electric and electronic equipment	1.4	2.0	7.7	2.6	463	95.1	7.8	193.0	6.8	103
Textile products and apparel	0.5	0.8	1.2	0.4	138	24.5	2.0	38.4	1.3	57
Paper and allied products	1.4	2.1	5.6	1.9	298	17.2	1.4	46.9	1.6	172
Printing and publishing	0.5	0.8	2.8	1.0	412	31.2	2.6	71.6	2.5	129
Rubber and plastics products	0.4	0.5	1.0	0.3	189	17.7	1.5	17.0	0.6	-4
Stone, clay, and glass products	1.4	2.1	7.2	2.5	422	32.3	2.6	80.8	2.8	150
Transportation equipment	0.2	0.3	3.3	1.1	1,446	3.4	0.3	62.1	2.2	1,739
Other[2]	0.7	1.1	2.3	0.8	228	44.3	3.6	64.7	2.3	46
Wholesale trade	3.9	5.8	17.3	5.9	346	153.0	12.5	296.1	10.4	93
Retail trade	1.9	2.8	10.6	3.6	462	142.0	11.6	479.9	16.8	238
Finance (except banking), Insurance, and Real Estate	6.5	9.7	51.2	17.4	686	51.0	4.2	147.2	5.2	189
Services	1.4	2.0	9.1	3.1	565	37.1	3.0	217.1	7.6	486
Other industries[3]	2.2	3.3	8.5	2.9	286	44.7	3.7	120.0	4.2	168
Total[4]	66.8	100.0	293.6	100.0	340	1,218.7	100.0	2,853.6	100.0	134

[1] Petroleum includes all three-digit SIC industries related to extraction, manufacturing, and marketing of petroleum products.
[2] Other manufacturing includes lumber and furniture, instruments, and related products.
[3] Other industries include agriculture, forestry, and fishing; construction; transportation, communication, and public utilities.
[4] Totals may not match sum of components due to rounding.

Source: Constructed by the author from data in U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies*, Preliminary 1985 Estimates (June 1987).

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ing, and stone, clay, and glass. Outside manufacturing, wholesale trade was the only industry that was especially attractive to foreigners in 1985.

Industry concentrations in that year were largely unchanged from 1977, although a few notable shifts occurred over the period. Manufacturing industries saw an even greater concentration in foreign affiliates, and affiliate employment in transportation equipment jumped sharply. On the other hand, wholesale trade and mining experienced a dilution of concentration. Wholesale trade's decline may have been associated with the increased direct presence of foreign companies with manufacturing affiliates and/or with retailing operations. Mining's decline probably was precipitated by the energy glut of the 1980s.

Notes

[1]The best measure of the importance of affiliates of foreign MNCs in the U.S. economy is their value added, or contribution to national output. In this sense, changes in industry investment and/or employment by affiliates only approximately measure changes in their importance or contribution to the U.S. economy.

[2]As noted in the previous footnote, employment and investment changes only approximately measure changes in an industry's importance in our economy. Similarly, although employment and investment are correlated (they tend to move together), their patterns of change can vary. Specifically, employment and investment do not move in lockstep because of differences and changes in the amount of capital used per worker among industries. Thus, employment is only an approximate measure of the relative importance of investment in different industries. Determinants of the distribution of employment by industry also can vary from that of investment, but data limitations prevent examination and analysis of these distinctions in this paper.

[3]Limited data availability precludes calculation of concentration ratios for other industries. Concentration ratios for omitted industries are likely to be less than one, however, because only a small amount of employment was generated in them by foreign affiliates.

Table 3.
Foreign Affiliate Employment Shares and Concentrations, by Industry

Industry	1977		1985	
	Affiliate Share of U.S. Employment (percent)	Affiliate Concentration Ratio	Affiliate Share of U.S. Employment (percent)	Affiliate Concentration Ratio
Mining	4.4	2.50	4.9	1.42
Manufacturing	3.8	2.12	7.9	2.25
Food and kindred products	4.2	2.40	9.2	2.65
Chemicals and allied products	18.4	10.25	41.2	11.62
Primary and fabricated metals	3.1	1.71	7.3	2.11
Machinery, except electrical	3.0	1.69	5.3	1.48
Electric and electronic equipment	5.1	2.82	8.7	2.52
Textile products and apparel	1.1	.64	2.0	.57
Paper and allied products	2.5	1.40	6.9	2.13
Printing and publishing	2.7	1.53	5.0	1.47
Rubber and plastics products	2.5	1.36	2.1	.60
Stone, clay, and glass products	4.8	2.60	13.5	4.00
Transportation equipment	.2	.07	3.1	.92
Other[1]	1.6	.88	2.4	.74
Wholesale trade	3.3	1.84	5.4	1.54
Retail trade	1.0	.57	2.8	.79
Finance (except banking), Insurance, and Real Estate	1.1	.64	2.5	.71
Services	.2	.14	1.0	.28
Other industries[2]	.4	.24	1.1	.33

[1]Other manufacturing includes lumber and wood products, furniture and fixtures, instruments, tobacco, leather, petroleum, and miscellaneous manufacturing.

[2]Other industries include construction, transportation, communication, and public utilities.

Source: Constructed by the author from data in U.S. Department of Commerce, Bureau of Economic Analysis, *Foreign Direct Investment in the United States: Operations of U.S. Affiliates of Foreign Companies,* Preliminary 1985 Estimates (June 1987).

the share of an industry's total output attributable to the largest firms and an industry's contribution to national output. He did not find that U.S. subsidiaries were likely to be in the "high-tech" industries or that product differentiation and capital intensity were useful explanatory variables. Moreover, McClain was unable to discover evidence of "follow-the-leader" behavior or tariff-jumping motivation.

By contrast, E.M. Graham and E.B. Flowers both found that European investment in the United States at an industry level was correlated with values of U.S. investment in Europe at an earlier time period. Their finding supports "exchange of threat" and "follow-the-leader" theories.[18] J.M. Volpe maintained that foreign subsidiaries in the United States were introducing new technology, embodied in both labor and capital.[19] Out of 19 U.S. industries at the three-digit SIC (Standard Industrial Classification) level, Volpe found that 14 possessed above-average values of non-wage value-added per production worker and wages per production worker man-hour, his respective measures of physical and human capital intensity.

McClain concluded that "the results of the empirical research on foreign direct investment in the United States broadly substantiate the industrial organization/market imperfections approach to the theory of direct investment."[20] In addition, he noted the persistence of this finding:

> More recent cases of direct investment in the United States continue to be consistent with the industrial organization paradigm, as firms enter to exploit—and sometimes to acquire—a technological or managerial advantage, or for reasons of vertical integration. Sometimes entry has been prompted by government policies at home.[21]

Against this evidence, which is mixed but generally supportive of the now orthodox industrial organization view, stands a study by Sanjaya Lall and N.S. Siddharthan.[22] They claim that industry variables found to have a significant impact on the pattern of U.S. MNCs' investments abroad are *not* important in explaining the industrial pattern of foreign investment in this country. Their argument is that U.S.-based MNCs and domestic industry leaders dominate international markets with more powerful and broadly-based advantages than do MNCs of other countries. Furthermore, while foreign MNCs may have a technological edge in certain narrow and specific instances, they are unlikely to possess strong intangible advantages when fairly broad industrial groups are considered. Consequently, these restricted specializations exploited by foreign MNCs in the United States probably cannot be captured by these same characteristics at the industry level.

Specifically, Lall and Siddharthan expect U.S. affiliates' industry shares *not* to be related to an industry's advanced degree of technology, marketing, or other types of skills. They also expect plant-level economies to have a negative impact on foreign shares and believe that foreign MNCs are likely to steer clear of industries with high seller concentration. Finally, the researchers anticipate that tariff barriers will spur MNC investment in the United States.

When Lall and Siddharthan conducted statistical analysis of the foreign share of U.S. industry sales in 1974 for a sample of 45 manufacturing industries, they found support for their views. As expected, none of the product differentiation and skills set of "intangible" advantages were

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significant in regression equations that the authors estimated. They measured their product differentiation variables by research/development and advertising expenditures; their skill and entrepreneurial variables were measured by average employee remuneration and by non-production workers as a proportion of all employees. Intangible advantages associated with plant-level economies of scale, measured by average value-added per plant, exerted a significant negative influence on foreign share, as Lall and Siddharthan expected. However, the effect of multiplant operations in the United States, measured by the percentage of industry shipments accounted for by multiplant firms, was not clear.

Lall and Siddharthan found "qualified support" for their prediction that foreign entrants to the United States would avoid industries that are highly concentrated here. In addition, they discovered that the effective rate of protection,

including tariff and non-tariff barriers, has positive and highly significant effects on the foreign share of a U.S. industry. The latter finding confirms the importance of trade barriers in stimulating foreign firms to set up manufacturing operations in the United States.

In summary, these two researchers concluded that "the nature of monopolistic advantages of foreign MNCs in the United States is so specialized and firm-specific that generalizations at the industry level cannot be drawn." Moreover, in the case of foreign MNCs, "the local strength of U.S. firms forces them to deploy a much narrower range of advantages and to stay away from highly oligopolistic industries."[23] Pointing the way to future research, Lall and Siddharthan speculated that, after early stages of foreign entry into the United States, further investment might be motivated by factors similar to those for U.S. MNC investment abroad. However, they felt that the immediate research need is for more disaggregated data that would help identify the elusive monopolistic advantages of foreign MNCs in the United States.

"The multitude of potentially relevant factors and the shifting importance of recognized factors strongly suggest the continuing need for empirical research into foreign direct investment. Hallmarks of that research should be experimentation and dynamic, versus static, analysis."

Together, the research findings summarized above would indicate that several firm, industry, and country influences simultaneously prompt a particular MNC to invest at a particular place. For example, Japanese business leaders interviewed by the author over the past few years have acknowledged a number of factors that lure them to invest in the United States: access to the large and dynamic American market; proximity to innovative stimuli, including our nation's high degree of innovation in new industries; and the ability to jump existing or potential tariff and non-tariff barriers. The desire to secure raw materials is a factor of decreasing significance.

The multitude of potentially relevant factors and the shifting importance of recognized factors strongly suggest the continuing need for empirical research into foreign direct investment. Hallmarks of that research should be experimentation and dynamic, versus static, analysis. As an example, foreign investment in an industry might be relatively high because investors are seeking a resource that is scarce domestically. Whether at a given time that resource is a special type of labor, capital, or raw material is an empirical matter and one that should be considered over a period of time. Unfortunately, the task of identifying relevant influences is made even more difficult because direct measures of theoretically "correct" variables, such as a particular production or marketing edge, are unavailable, and "proxy" measures may be difficult to interpret unambiguously. In addition to these conceptual and measurement problems, data limitations also hamper efforts to assess changes in the factors motivating direct investment.

Current Research on Foreign Direct Investment in the United States

In an effort to clarify the apparent conflicts among foreign direct investment studies, the author has been conducting a more dynamic analysis of direct investment in the United States using later data than most other studies.[24] This research has reexamined the hypothesis that such investment is influenced by the familiar industrial organization variables categorized by Kindleberger. Specifically, for a particular industry it has attempted to explain why foreign affiliate employment grew as it has relative to overall U.S. employment in the 1975-82 period. In addition to examining the industrial pattern of employment growth generated by foreign direct investment, this research has assessed the importance of potential sources of the countervailing advantage which motivated that investment and employment.

The author's research differs from previous studies on this subject in terms of its methodology and data. In this research, affiliate employment growth in the 1975-82 period is assumed to have adjusted towards a new equilibrium from a condition of disequilibrium that existed in 1975. Methodologically, the first step in the analysis was to measure how much affiliate employment growth was attributable to industrial "countervailing advantage" factors—that is, affiliate employment gain in an industry gauged

relative to that industry's overall employment change over the period.

As an example, affiliate employment in the chemicals and allied products industry grew at a much faster pace than employment throughout the industry. The difference between actual affiliate employment growth and that which would have occurred had employment in that segment expanded at the overall chemicals industry rate can be attributed to factors that made the chemicals industry relatively attractive to foreigners. Using this concept of *employment gain* as the relevant variable to explain is unique in the foreign investment literature, as is measuring such employment with data from the U.S. Census Bureau's company organization survey.[25] Other researchers, assuming that industry *employment levels* were in equilibrium at a point in time, attempted to explain differences in employment levels; some have tried to account for the number of subsidiaries in an industry or for whether a firm in an industry owns a foreign affiliate.

The equilibration scenario is reasonable given the high national unemployment rate during 1975 and the period just before, a rate that rose from 4.6 percent in late 1973 to 9 percent in mid-1975. Economists often argue that structural changes accelerate from economic recession to recovery, a situation that marked the beginning of this seven-year period. Moreover, tracing subsequent employment changes to differences in the levels of determining variables in 1975 seems justifiable in light of the dramatic jump in energy prices between 1973 and 1975. As they absorbed this blow, firms made major adjustments over the next several years.

How do findings from this research compare with conclusions drawn by other researchers? Generally, results accord with the industrial organization view of foreign investment. Thus, they support the notion that in the 1975-82 period foreign direct investment in U.S. manufacturing tended to occur mostly in oligopolistic industries. Moreover, according to our analysis of the Census Bureau's employment data, the desire to secure a source of raw materials or have better access to other resources, which may have motivated foreign investment in an earlier period, does not seem to have spurred investment in more recent years.

The conclusions from this research clash most with the findings of Lall and Siddharthan. Whereas those authors concluded that foreign MNCs shunned highly concentrated industries and that product differentiation variables do not help explain the clustering of foreign direct investment, this research concludes the opposite for the 1975-82 period. Specifically, in this study advertising and industry size and concentration were found to be significant factors that positively influenced foreign direct investment in the United States.

It is not possible to determine exactly why these two sets of conclusions differ so markedly. Perhaps, as Lall and Siddharthan speculated, the more recent data show that factors similar to those that have attracted U.S. MNCs abroad now also help explain later stages of foreign entry into the United States. Alternatively, comparable factors may have been operating to influence investment by U.S. MNCs and foreign direct investment in the United States all along, but they were masked by the lack of dynamic analysis of changes over a specific period.

The author's results also are consistent with conclusions about foreign direct investment based on more casual observation. The importance of industry and firm asset size in determining foreigners' direct investment activity in the 1975-82 period is in keeping with the image of large MNCs conveyed in the press. The chemicals and allied products industry, a good example of a U.S. industry that attracted foreign investment, is a large industry composed of relatively large firms. Similarly, the significance of high advertising budgets is perhaps consistent with the heavy affiliate employment gains in industries such as non-electrical machinery and electronic equipment manufacturing; within these industries, product image and brand identification help distinguish manufacturers' products.

"[F]indings from this research . . . support the notion that in the 1975-82 period foreign direct investment in U.S. manufacturing tended to occur mostly in oligopolistic industries. . . . [T]he desire to secure a source of raw materials or have better access to other resources . . . does not seem to have spurred investment in more recent years."

These size and advertising influences, together with the apparent lack of investor interest in acquiring either highly skilled labor or raw materials, add to the impression that foreign multinational activities in the United

States arise from characteristics of the U.S. market. The attractiveness of investing in this country has been enhanced by foreign companies' wider recognition of the size of the U.S. market, as measured by industry size. Moreover, the success of growing numbers of large foreign MNCs in contending with U.S. companies abroad has convinced them that they can compete equally well in the U.S. domestic market.

Do these same influences explain foreign direct investment in nonmanufacturing industries or at a more detailed industrial level? The tentative answer is yes, but data limitations have prevented estimation of the model except for very broadly defined manufacturing industries. Consequently, one cannot compare exactly the statistical results for different groupings such as manufacturing versus nonmanufacturing industries.

"[M]ultinational corporation activity can be motivated by numerous and complex conditions, suggesting that explaining MNC behavior via precise relationships is inherently difficult. From a technical and statistical perspective, the modest amount of information that is available gives rise to further ambiguity."

Multiple regression analysis of the limited data available for all industries and for three-digit manufacturing industries produced statistical results that were sensitive (in terms of signs and significance of regression coefficients) to the model specification used. These equations explained much less of the industrial variation in affiliate employment than did the equation for two-digit manufacturing industries. Among explanatory variables, the advertising and size variables tended to be the most robust.

There are, perhaps, at least a few good reasons why the model tested was able to explain employment change best at the two-digit manufacturing level. First, for the three-digit manufacturing industries there actually was less industry variation than for two-digit manufacturing industries. The reason is that the apparel, lumber, paper, printing, and leather industries were completely unrepresented at the three-digit level, both because of sampling procedures and data confidentiality requirements, while the components of the chemicals and machinery industries represented one-fourth of the three-digit manufacturing industries' sample. Furthermore, information on firm size, sales, advertising, and net income was available for fewer than half of the industries, and the R&D variable could not be constructed at this level of industrial detail.

Data constraints limited analysis of the nonmanufacturing industries even more seriously. Nonetheless, some other variables, such as changes in the foreign exchange value of the dollar and flight capital or safe haven considerations, may be better predictors of nonmanufacturing investment than those used here. Specifically, real estate, financial, and trade activities may be more "liquid" than manufacturing investments and also less readily identifiable with foreign ownership. Such a finding might also accord with the industrial organization view of foreign direct investment. It is possible that more liquid assets are likelier to be subject to the profitability criterion associated with portfolio investment than is longer-term foreign investment in manufacturing. Pursuit of this line of reasoning is an important direction for future research, since foreign direct investment activity in the U.S. service sector has been growing even faster than in manufacturing.

Concluding Comments

Empirical research on foreign direct investment in the United States appears to support the industrial organization view. However, we still cannot conclude with confidence very much about the exact linkages and impacts of the various factors causing such investment. As the literature reviewed above amply shows, multinational corporation activity can be motivated by numerous and complex conditions, suggesting that explaining MNC behavior via precise relationships is inherently difficult. From a technical and statistical perspective, the modest amount of information that is available gives rise to further ambiguity.

Because theories of foreign direct investment are not strong enough to tell us just which explanatory variables should be included in formal statistical tests, or the form in which they should be introduced, experimentation and trial-and-error analysis are mandated when econometric methods are used. Unfortunately,

major statistical problems arise in attempts to disentangle separate effects because several of the factors are highly correlated.

One specific statistical problem is that results are biased if a statistical regression model omits a relevant variable that is correlated with variables included in the model. Alternatively, including the variable can make it difficult to obtain reliable estimates of the effects of other variables, owing to the high degree of multicollinearity among the variables. Another major drawback with those formal statistical regression models that have been tried is the possible interdependence of foreign investment and "explanatory" variables. For example, high profitability in an industry may attract MNC investment, but profitability could also be high because of effective barriers to investment.

While these and other statistical problems plague econometric studies of foreign direct investment, surveys of foreign investors have problems, too. Misleading conclusions can be drawn when only investors are asked about investment influences because of the selection bias involved in excluding non-investors. Consequently, the determinants of foreign investment remain elusive.

Notwithstanding these difficulties, continued empirical study of the foreign direct investment phenomenon may eventually offer a promising research strategy. Survey design and sampling efforts can be improved to produce more meaningful analysis and interpretation of responses. Burgeoning foreign investment in the United States and efforts by the U.S. Department of Commerce to develop a useful, consistent data base will expand the pool of information on U.S. affiliate activities. As more information becomes available, formal econometric model-building and testing of hypotheses will be facilitated. Researchers must likewise continue to improve the theoretical and model-building aspects of foreign direct investment studies as a complement to better data.

Notes

[1]In the United States, ownership interest by a single investor of at least 10 percent of the voting securities, or the equivalent, specifies the investment as "direct."

[2]See U.S. Department of Commerce (1984) for a further discussion of these developments.

[3]Dunning and Rugman (1985), p. 228.

[4]See Hymer (1960).

[5]See Kindleberger (1969), Johnson (1970), and Caves (1971).

[6]The firm could also serve these markets with exports or could license a foreign firm to produce its, presumably, proprietary product. The choice between direct investment and sale of knowledge depends on the additional cost of doing business abroad versus the cost and feasibility of selling the knowledge. See the discussion about transactions costs below.

[7]See Teece (1985).

[8]Dunning and Rugman (1985), p. 230.

[9]For general surveys of the literature on foreign direct investment the reader is referred to Calvet (1981) and McClain (1983). Succinct criticisms and evaluations of the various theoretical contributions that are recommended to the reader include: Dunning and Rugman (1985), Teece (1985), and Kindleberger (1984).

[10]See Vernon (1966).

[11]See Knickerbocker (1974) and Graham (1974).

[12]See Vernon (1971).

[13]Owen (1983), p. 16.

[14]Little (1978), p. 45.

[15]Gaspari (1983), p. 77.

[16]See McClain (1983).

[17]Ibid.

[18]See Graham (1974) and Flowers (1976).

[19]See Volpe (1975).

[20]McClain (1983), p. 311.

[21]Ibid., p. 315.

[22]See Lall and Siddharthan (1982).

[23]Ibid., p. 679.

[24]Statistics pertaining to these research findings will be available in a forthcoming paper from the Research Department of the Federal Reserve Bank of Atlanta.

[25]U.S. Department of Commerce (1978).

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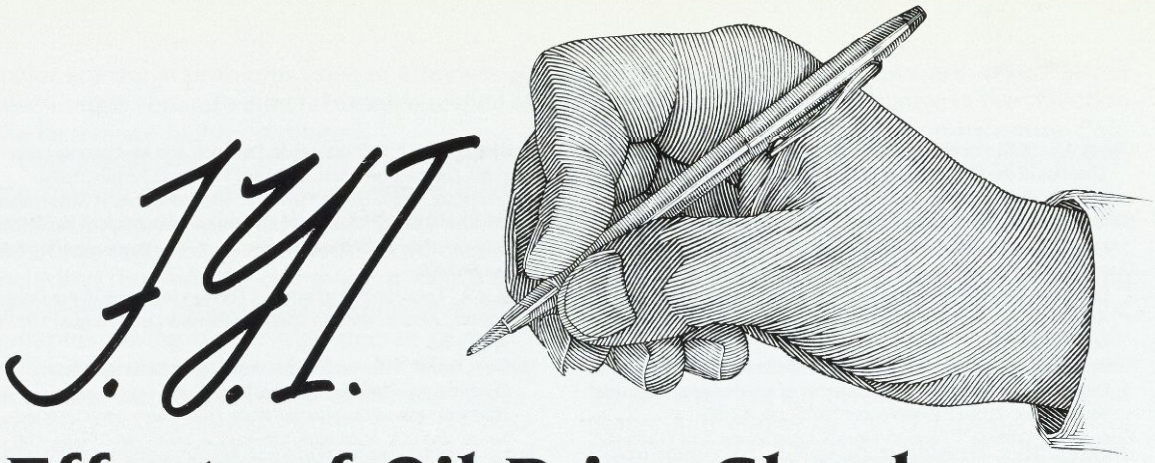

Effects of Oil Price Shocks On Measured GNP Growth

R. Mark Rogers

Economic indicators such as real gross national product (GNP) can be indispensable guides for making strategic business decisions as well as for economic policy—whether trading on Wall Street, expanding an auto plant, changing economic policy, or simply determining the best time to make a home purchase. Yet economic data series, no matter how carefully defined, do not always conform to the theoretical constructs we wish to measure. Changes in the economy likewise can have unexpected or overlooked effects on measured GNP—simply because the popular notion of GNP may diverge from the strictly defined official construct. In fact, this article will show that the direct effect of lower imported oil prices and inflation adjustment (rebasing) was actually to reduce measured real GNP growth in 1985 and 1986.

This article presents a close examination of the impact of a specific, large price change on measured GNP. In essence, we assume that other things are held constant in order to look at the effects of such a price change on the data series. Of course, in reality such static conditions do not hold. The actual dynamic macroeconomic impacts of lower imported oil prices are diverse, bearing on both supply and demand. While these often complex macroeconomic effects merit attention, such considerations are beyond the scope of this article.[1]

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GNP is typically referred to as a measure of national output—which is approximately true. Consequently, whatever changes in the economy are favorable for production and income are also generally thought to be favorable for GNP as measured. This relationship might hold true in a definitional sense if GNP were measured directly by adding up all domestically produced goods and services for final consumption. However, GNP is derived indirectly, through measures of expenditure.

In calculations of GNP, all domestic expenditures, whether by consumers, business, or state and local governments, are estimated and then adjusted for expenditures on imports and for production that is sold abroad (that is, exports). Of course, inventory changes also are taken into account so as not to confuse current expenditures for goods produced in the present period with outlays for goods produced in previous periods. The feature that we will explain about this indirect method of construction is that it can lead to movement in official measures of output, or GNP, that are often unexpected or simply inexplicable to the average observer. Nonetheless, since the financial and business communities attach such importance to changes in GNP, these instances of misunderstood effects can be important in themselves.

The confusion surrounding the composition of economic statistics weakens the public's grasp of how a number of recent events, par-

ticularly the declines in oil prices and in the exchange value of the dollar, affect measures of output. Only with a thorough examination of the construction of economic statistics can the economic consequences of these changes be understood and, often, anticipated. This article demonstrates that oil price shocks may have substantial effects on measured GNP statistics that defy the intuition of the average follower of business conditions. A somewhat closer look at the construction of the GNP accounts, and oil imports' place within them, will help demonstrate why measured GNP is affected in such unexpected ways.

Most of us understand that oil price changes can affect economic activity through impacts on the cost of production and on consumers' discretionary income. However, in a less straightforward and often overlooked manner, oil price changes also can have a significant bearing on real GNP growth. This effect has been particularly important since late 1985, when the GNP statistics began to reflect a combination of the U.S. Commerce Department's updating of the valuation period for GNP components (rebasing) and the fall in oil prices. The coincidence of these two events had an impact on measured GNP which is not obvious—indeed, the outcome seems paradoxical on the surface. Again, one might expect a price cut for oil imports to bolster real GNP growth, but it actually had the opposite effect—at least in the short run.

Over time, oil price shocks can cause a significant divergence in the direction in which oil prices and oil imports affect nominal and real, or inflation-adjusted, economic growth. This divergence is attributable simply to the way real GNP is defined. It is important to note that oil price shocks may lead to either a significant overstating or understating of real GNP growth owing to typically overlooked "definitional" effects. In fact, in 1986 oil price reductions appear to have led to a decline in economic activity as measured by constant-dollar GNP. These effects, which are discussed below, are generally described as counterintuitive, given the positive impacts on economic activity that are usually associated with lowered resource costs. In the present context, the terms understatement and overstatement do not refer to some failure of the GNP statistic to account for the change taking place. Rather than a technical distortion, understatement or overstatement is a clear divergence from the impacts that generally are expected by a casual user of the data.

GNP Measurement and Price Changes

To comprehend fully the impact of oil price shocks on measured nominal and real economic growth, one must first understand the basics of how GNP is measured and how price changes affect GNP estimates. In addition, the concept of rebasing GNP must be grasped. Defined as the value of all final goods and services produced in the United States, GNP includes exports and excludes imports, as the latter are produced elsewhere. GNP is measured in current dollars, reflecting present prices, but also can be measured in constant, or real, dollars. Measures of real GNP allow comparison of the actual volume of output in different years by eliminating those differences that are strictly attributable to price changes. In the process of adjusting nominal GNP to yield real GNP, the numerous GNP components are deflated. The deflator for each component (for example, consumption and investment) is a price index, which is used to remove whatever price change has occurred since the base period—that is, the point in time from which price movements are calculated. When the U.S. Department of Commerce rebases the GNP accounts, it adjusts the base year forward; in December of 1985 the department rebased GNP from 1972 to 1982. The latest rebasing had a significant impact on measured GNP growth for the year 1986 because substantially lower oil prices led to higher-volume oil imports in that year.

The base period chosen for real GNP statistics critically influences measured real GNP growth, primarily because of marked changes in relative prices in some important components. Some GNP components are eventually deflated or inflated far more than others when translated from current-dollar into constant-dollar measures. In essence, changing the base year specifically changes the valuation of constant-dollar GNP components relative to each other. Certain components receive greater weight in real GNP calculations depending on their relative importance in the base year. While this phenomenon can occur in any component, the most obvious current example is oil and petroleum product imports. In combination with recent dramatic declines in oil prices, the statistical impact of rebasing was quite large.

Considering the economic history of the post-World War II United States, it is natural to

BOX

How Changes in Oil Prices and Base Year Affect Measured Growth of Real GNP

For illustration, let us imagine a simple, four-component economy:

(1) good A is a non-oil good that is domestically produced for domestic consumption;
(2) good B is domestically consumed oil (both domestically produced and imported);
(3) good C is imported oil;
(4) good D is a non-oil good that is domestically produced for export.

One major assumption is critical: as the price of imported oil falls, domestic consumers respond by buying more oil from abroad and consuming more oil overall; they do just the reverse when faced with a price hike. Domestically produced oil is found to be total domestic consumption of oil minus oil imports. For simplicity, let us also assume that the only price change to occur is that for the price of oil. In Year 1, we assume that the real per-unit price of each good is $1 and that in this economy 100 units of A are consumed, 50 units of oil are consumed domestically, 25 units of imported oil are consumed, and 25 units of D are exported. We find that domestic oil production is $25 ($50 for total consumption of oil minus $25 for imports). Using an expenditure approach, real GNP is defined as $A + $B - $C + $D, or

Year 1; Base A

A: 100 x $1.00 = $100
B: 50 x $1.00 = +50
C: 25 x $1.00 = -25
D: 25 x $1.00 = +25

$150 of GNP in Year 1.

In Year 2, let us make different assumptions: no change in the price of oil and a 10 percent growth over Year 1 in all components. Real GNP would be as follows:

Year 2; Example A; Base A

A: 100 x 1.10 x $1.00 = $110.00
B: 50 x 1.10 x $1.00 = +55.00
C: 25 x 1.10 x $1.00 = -27.50
D: 25 x 1.10 x $1.00 = +27.50

$165.00 of GNP in Year 2.

Real GNP growth would be [$165/$150] - 1 × 100 = 10 percent.

Now, let us assume a 20 percent cut in the price of imported oil. Two factors are important in the following example. Since we are discussing real components, we still use the Year 1 figure for oil (domestic and imported)—even though we assume the nominal price falls. We also go back to the assumption that oil imports rise and consumption of domestic oil falls. (Domestic supplies are at a cost disadvantage and, with an upturn in oil imports, provide relatively less of overall oil consumption, though at a competitive price.) The price cut sparks growth in overall oil consumption in real terms. Let us assume this increase is 15 percent. Also, let us assume that as the price of imported oil falls—and domestic in turn—imported oil consumption rises 40 percent and domestic consumption of domestic oil drops, thereby filling the residual demand. We see that domestically produced oil falls to $22.50 ($57.50 - $35.00).

Year 2; Example B; Base A

A: 100 x 1.10 x $1.00 = $110.00
B: 50 x 1.15 x $1.00 = +57.50
C: 25 x 1.40 x $1.00 = -35.00
D: 25 x 1.10 x $1.00 = +27.50

$160.00 of real GNP in Year 2.

Notice that the growth rates are the same for A and D but differ for B and C to reflect the drop and rise, respectively, for domestic and imported oil. Real GNP would be $160.00 in Year 2 assuming the above real response to oil price changes. Real GNP advances only 6.7 percent instead of the 10 percent in Example A for Year 2. Of course, this example is dramatic because of the relative size of oil compared with overall GNP. Notice that real net exports (exports minus imports) went from zero, both in Year 1 and in Example A of Year 2, to a minus $7.50 in Example B, thereby decreasing measured growth.

The Effect of Different Base Years. We have gone through one set of examples using real prices of $1 for each good, with the prices in Year 1 as the base. What if we chose to use a base year in which the relative price of oil were cheaper? For example, in 1972 the price of oil certainly was cheaper than in 1982. In July 1986, the U.S. Department of Commerce switched the base year for GNP measurements from 1972 to 1982. To illustrate the impact of this move, let us recalculate the three earlier examples by changing *only* the price of oil from $1 to $.10, which actually is similar to the relative price of oil in 1972 compared with 1982.[1] Units consumed remain the same.

Year 1; Base B

A: 100 x $1.00 = $100.00
B: 50 x $ .10 = +5.00
C: 25 x $ .10 = -2.50
D: 25 x $1.00 = +25.00

$127.50 of real GNP in Year 1.

Real GNP would now be $127.50 instead of $150 as in Base A. The lower price of oil in the base year *has reduced the relative importance of oil.* However, our real interest is in growth rates more than levels. Note that domestic oil production is $2.50 ($5.00 - $2.50) and net exports are $22.50 ($25.00 - $2.50) in Year 1.

box continued

Using Base B, if the volume rose 10 percent for each component—no price change for oil—we would find the following:

Year 2; Example A; Base B

A: 100 x 1.10 x $1.00 = $110.00
B: 50 x 1.10 x $ .10 = +5.50
C: 25 x 1.10 x $ .10 = -2.75
D: 25 x 1.10 x $1.00 = +27.50

$140.25 of real GNP in Year 2.

Real growth remains 10 percent. The change in the base period has no effect on the growth rate since there is no change in relative shares of goods consumed. (This would change if there were a net surplus or deficit.)

Once again, consider what happens to real GNP growth if the price of imported oil falls, thereby raising oil imports and lowering domestic oil production. We can assume the same quantity (units) response as in Example B for Year 2 in Base A. The only difference is relative prices from the base year.

Year 2; Example B; Base B

A: 100 x 1.10 x $1.00 = $110.00
B: 50 x 1.15 x $ .10 = +5.75
C: 25 x 1.40 x $ .10 = -3.50
D: 25 x 1.10 x $1.00 = +27.50

$139.75 of real GNP in Year 2.

With the price decline for oil—and quantity response—in Base B, real GNP in Year 2 is only slightly below that with no price change. Real GNP growth is 9.6 percent versus the 6.7 percent growth in Base A. Because the lower relative price reduced the significance of oil in these GNP accounts, percentage changes in the oil components have a smaller impact on real GNP growth. Also, note that the trade account improved in real terms from $22.50 in Year 1 to $24.00 in Year 2—the non-oil export component was of greater importance since the Base B GNP level was lower than in Base A.

In sum, the base year is important because it can affect the relative size of oil imports. More specifically, 1982-base GNP accounts weight oil imports more heavily than 1972 base year accounts simply because the price of oil was markedly cheaper in the earlier year. We can extrapolate from these simple illustrations to using actual GNP data to estimate the impact of oil price changes.

Note

[1]This is similar to the actual difference in oil import prices between 1982 and 1972. According to the implicit deflator for either the 1982- or 1972-based data, oil import prices were about 12 times higher in 1982 than in 1972.

assume that nominal GNP will regularly exceed real GNP since general price changes are always positive. The GNP deflator is typically more than 100—that is, rising from the base period—as are most of the component deflators. One of the complications of studying the impact of oil price changes on measured GNP is that the oil component price fell from the level prevailing in 1982, the new base period, while the overall deflator rose. Since we are unaccustomed to adjusting for *lower* levels of prices, the oil import deflator may look "unreasonable."

Aside from the intuitive versus measured GNP effects issue, the fact that oil imports are production inputs as well as final products further complicates efforts to assess the impact of oil price swings on economic growth. Since imports are negatives in the GNP accounts, maintaining the concept of GNP as a measure of final output is somewhat more difficult in the case of oil. Certainly, it is relatively straightforward that expenditures on imported autos should be subtracted from total expenditures on autos to isolate domestic auto production for the GNP accounts. This is similarly true for petroleum imports used at the retail level. However, when petroleum imports are used for inputs and the price falls, it seems that the reduction should constitute a positive from a cost perspective. This would be the case, except that the price drop encourages a rise in real oil imports, which immediately registers as a negative in the GNP accounts; the positive impact on production may take much longer to show up. While this web of relationships is anything but straightforward, it is important to understand, for oil price shocks have reverberated widely throughout the U.S. economy three times in recent history. The two earlier episodes are reviewed below before the latest price change is considered.

Recent Oil Price Hikes

The 1970s. Two oil price shocks occurred in the previous decade—in late 1973/early 1974 and in 1979. Oil prices rose dramatically in each

Table 1.
Deflator for Imports of Petroleum and Petroleum Products

Year: Quarter	1972 Base (1972 = 100) Level	Percent Change	Percent Change, SAAR*	1982 Base (1982 = 100) Level	Percent Change	Percent Change, SAAR*
1973: I	105.2	3.4	13.0	8.8	2.3	9.6
II	112.1	6.6	29.2	9.3	6.2	27.3
III	123.2	9.9	45.7	10.2	10.2	47.6
IV	163.4	32.6	209.4	13.5	32.1	204.2
1974: I	344.4	110.8	1,875.5	28.7	111.8	1,911.9
II	442.4	28.4	172.2	36.5	27.2	162.1
III	443.9	0.3	1.4	36.6	0.4	1.8
IV	437.3	-1.4	-5.8	36.2	-1.1	-4.5
1979: I	526.4	5.3	22.9	43.7	4.8	20.8
II	615.9	17.0	87.4	50.7	16.2	82.5
III	789.2	12.6	169.5	65.3	28.7	174.2
IV	888.4	19.7	60.6	74.0	13.4	65.2
1980: I	1,063.3	8.7	105.2	87.9	18.7	98.6
II	1,155.6	2.9	39.5	96.4	9.7	44.8
III	1,188.5	3.2	11.9	98.7	2.4	10.1
IV	1,227.0	7.1	13.6	102.1	3.4	14.2
1985: I	1,064.2	-2.1	-8.1	85.4	-3.3	-12.4
II	1,041.9	-1.4	-5.4	86.2	0.9	3.8
III	1,027.5	-3.7	-13.9	82.4	-4.4	-16.4
IV	N.A.	N.A.	N.A.	84.3	2.2	9.2
1986: I				68.7	-18.4	-55.8
II				42.1	-38.7	-85.9
III				36.4	-13.5	-44.0
IV				40.8	11.8	56.5
1987: I				50.1	22.8	127.6
II				55.5	10.8	50.7

* Seasonally adjusted annual rate.

Source: U.S. Department of Commerce.

period, though especially so during the first. In the initial quarter of 1974 alone, the deflator for imports of petroleum and derivative products more than doubled, rising 111.8 percent (see Table 1). As a result of oil price hikes, the *dollar value* of oil imports shot upward while their volume, measured in barrels, at first remained stable but then declined (see Table 2, cols. 5 and 6). In nominal terms, the oil price shocks raised oil imports markedly and, in turn, lowered net exports and nominal GNP growth. (Of course, in these highly inflationary years other factors greatly offset this negative impact on nominal GNP growth.[2])

In contrast to nominal oil imports, *real* oil imports in the mid- and late 1970s were affected in an opposite manner. The higher prices for imported oil induced conservation as well as substitution of domestic for imported oil; other energy sources were likewise substituted. Consequently, real oil imports, in terms of volume or barrels, fell following the initial oil price hikes, so that real net exports were higher than otherwise. Through the 1970s, real oil imports as expressed in 1972 dollars were a minute share of domestic demand, and so they had a very small weight in GNP estimates. Hence, the oil price shocks' net estimated effect on real GNP growth, while minimal, was positive. The small weight in real terms was due to the fact that this component was deflated heavily to reflect the upsurge in price from the base year through the oil embargo period. Overall, the sizable oil price hikes of the 1970s produced significantly opposite effects on nominal and real oil imports. Although other factors obscured the overall net effects, the marginal impacts—that is, the direct, most recent impacts—were also opposite on nominal and real net exports and on nominal and real GNP growth.

Table 2.
Petroleum and Petroleum Products Imports

Year: Quarter	1972 Base						1982 Base					
	Nominal Dollars			Real Dollars			Nominal Dollars			Real Dollars		
	Level* (billion $)	Quarterly Percent Change	Absolute Change (billion $)	Level* (billion $)	Quarterly Percent Change	Absolute Change (billion $)	Level* (billion $)	Quarterly Percent Change	Absolute Change (billion $)	Level* (billion $)	Quarterly Percent Change	Absolute Change (billion $)
1973: I	6.1	19.6	1.0	5.8	16.0	0.8	6.1	17.3	0.9	69.7	14.6	8.9
II	7.4	21.3	1.3	6.6	13.8	0.8	7.4	21.3	1.3	79.6	14.2	9.9
III	8.5	14.9	1.1	6.9	4.5	0.3	8.3	12.2	0.9	81.0	1.8	1.4
IV	11.6	36.5	3.1	7.1	2.9	0.2	11.8	42.2	3.5	87.2	7.7	6.2
1974: I	18.6	60.3	7.0	5.4	-23.9	-1.7	18.6	57.6	6.8	64.9	-25.6	-22.3
II	29.2	57.0	10.6	6.6	22.2	1.2	29.1	56.5	10.5	79.8	23.0	14.9
III	29.3	0.3	0.1	6.6	0.0	0.0	28.9	-0.7	-0.2	78.9	-1.1	-0.9
IV	29.3	0.0	0.0	6.7	1.5	0.1	29.8	3.1	0.9	82.3	4.3	3.4
1979: I	45.8	5.3	2.3	8.7	0.0	0.0	45.8	5.0	2.2	104.9	0.2	0.2
II	54.2	18.3	8.4	8.8	1.1	0.1	54.2	18.3	8.4	106.8	1.8	1.9
III	65.5	20.8	11.3	8.3	-5.7	-0.5	65.5	20.8	11.3	100.3	-6.1	-6.5
IV	76.4	16.6	10.9	8.6	3.6	0.3	76.4	16.6	10.9	103.2	2.9	2.9
1980: I	84.0	9.9	7.6	7.9	-8.1	-0.7	84.1	10.1	7.7	95.7	-7.3	-7.5
II	83.2	-1.0	-0.8	7.2	-8.9	-0.7	83.2	-1.1	-0.9	86.3	-9.8	-9.4
III	72.5	-12.9	-10.7	6.1	-15.3	-1.1	70.8	-14.9	-12.4	71.7	-16.9	-14.6
IV	77.3	6.6	4.8	6.3	3.3	0.2	79.0	11.6	8.2	77.4	7.9	5.7
1985: I	44.8	-20.6	-11.6	4.3	-18.9	-0.1	43.4	-24.4	-14.0	50.8	-21.8	-14.2
II	52.4	17.0	7.6	5.1	18.6	0.8	52.6	21.2	9.2	61.0	20.1	10.2
III	48.5	-7.4	-3.9	4.9	-3.9	-0.2	49.3	-6.3	-3.3	59.8	-2.0	-1.2
IV	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	56.3	14.2	7.0	66.8	11.7	7.0
1986: I							40.9	-27.4	-15.4	59.5	-10.9	-7.3
II							30.5	-25.4	-10.4	72.4	21.7	12.9
III							31.6	3.6	1.1	86.7	19.8	14.3
IV							32.0	1.3	0.4	78.5	-9.5	-8.2
1987: I							34.8	8.8	2.8	69.5	-11.5	-9.0
II							40.0	14.9	5.2	72.1	3.7	2.6

* Levels are annualized.

Source: U.S. Department of Commerce.

An important element in the masking of these effects was the need to deflate nominal oil imports substantially to arrive at real oil imports. In 1974, for instance, nominal oil imports had to be deflated by a factor of about 4 to get real oil imports (1972 base). A deflator of such high magnitude meant that changes in real import volume were considerably smaller than corresponding changes in nominal volume (see Table 2; compare cols. 3 and 4 with 5 and 6).

In summary, the oil price hikes of 1973-74 and 1979 (1972 base figures) resulted in the following:

(1) The deflator for oil imports rose sharply.
(2) Nominal oil imports rose dramatically.
(3) Real oil imports eventually declined in response to higher prices and resultant substitution effects.
(4) Real oil imports declined, although oil imports' share of domestic demand changed little since the dollar share was small initially.
(5) The large absolute change in nominal oil imports implied large adverse impacts on nominal net exports and on nominal GNP growth.
(6) The marginal impact of the oil price change on nominal GNP growth was adverse, although other factors more than offset the decline.
(7) The marginal impact on real GNP growth was positive due to lower real oil imports, but the net effect appeared to be minuscule. Other factors offset this positive effect on real GNP growth.

None of these effects is startling, but together they create a useful basis for comparison when discussing the impact of the oil price plunge in the next period.

The 1980s. In a reversal of the events of the early 1970s, oil prices plummeted in late 1985 and through the first part of 1986. Whereas the marginal impacts on economic activity are likely to be the opposite of those of the price increases, the effects on measured GNP did not reverse the earlier pattern. This asymmetry stems both from the rebasing (or changes in component valuation) of GNP accounts from 1972 dollars to 1982 dollars, a process that magnified the oil import effects on real GNP, and from the fact that oil prices were significantly higher in 1982 than in the period following the 1985-86 oil price cuts. Therefore, "deflating" 1986 nominal oil imports to yield real figures actually "inflates" the data, thus making net exports a larger negative and reducing real GNP growth. Lower oil prices actually encouraged greater importation of oil, which resulted in deterioration in real trade. The combination of rebasing GNP to 1982 dollars along with oil price cuts led to notably higher estimates of real imports and lower estimates for both net exports and real GNP growth than would have been the case with the 1972 base year.

Before looking at actual data for 1986, let us review a few hypothetical examples to see how rebasing and the plunge in oil prices might affect nominal GNP. For example, we might compare how 1986 would look had the only change in GNP growth from 1985 been the volume change in oil imports. That is, for the sake of simplicity we will assume that all other components of GNP (personal consumption, investment, and so on) grow at exactly the same rates in 1986 as in 1985.

Effects of Oil Price Cuts in Hypothetical 1986

First, we must make various assumptions about the extent of oil price declines, taking 25, 30, and 35 percent price drops just for illustration. Second, we will assume that all non-oil import components of GNP experienced the same growth rate in hypothetical 1986 as in actual 1985. Doing so gives us a reasonable baseline for comparing hypothetical 1986 growth excluding oil price cuts with growth rates including the assumed cuts (see middle row of Tables 3a-3c). Rates for nominal and real growth in 1986 are identical to those in 1985, assuming no changes in the overall price level; of course, absolute dollar changes differ for the two years.

Since the only variable in hypothetical 1986 that changed was petroleum imports, GNP must be calculated, or assumed, for 1986 on the basis of continuing 1985 growth rates for the other components. This calculation can be done in a "back-door" fashion using the concept of domestic demand. Domestic demand (DD) equals GNP minus net exports (X - M; see equation 1). We can further separate oil imports from net exports and calculate these two components from 1985 levels and growth rates. In this way, GNP equals domestic demand plus exports minus non-oil imports (M non-oil) and minus oil imports (M oil; see equations 2 and 3).

$$DD = GNP - (X - M) \quad (1)$$
$$DD = GNP - [X - (M \text{ non-oil}) - (M \text{ oil})] \quad (2)$$
$$GNP = DD + [X - (M \text{ non-oil}) - (M \text{ oil})] \quad (3)$$

Table 3a.
Estimated Impact of Oil Price Changes on Nominal and Real GNP Growth in Hypothetical 1986 Assuming a 25 Percent Annual Decrease in the Deflator for Imports of Oil and Petroleum Products*

Physical Volume	Imports: Petroleum and Petroleum Products—1982 Base				Imports: Petroleum and Petroleum Products—1972 Base				Gross National Product Annual Average Percent Change			
	Nominal Dollar Volume		Real Dollar Volume		Nominal Dollar Volume		Real Dollar Volume		1982 Base		1972 Base	
Percent Change	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	Nominal	Real	Nominal	Real
10	-17.5	-8.8	10.0	6.0	-17.5	-8.4	10.0	0.5	6.42	2.75	6.18	2.46
15	-13.8	-6.9	15.0	8.9	-13.8	-6.6	15.0	0.7	6.37	2.67	6.13	2.44
20	-10.0	-5.0	20.0	11.9	-10.0	-4.8	20.0	1.0	6.32	2.59	6.09	2.43
25	-6.3	-3.2	25.0	14.9	-6.3	-3.0	25.0	1.2	6.28	2.50	6.04	2.42
30	-2.5	-1.3	30.0	17.9	-2.5	-1.2	30.0	1.4	6.23	2.42	5.99	2.40
35	1.3	0.6	35.0	20.9	1.3	0.6	35.0	1.7	6.18	2.34	5.95	2.39
Baseline** -6.9, -10.5 (1982) (1972)	-12.1	-6.1	-6.9	-4.1	-16.3	-7.8	-10.5	-0.5	6.35	3.03	6.16	2.52
	Difference from Baseline											
10	-5.4	-2.7	16.9	10.1	-1.2	-0.6	20.5	1.0	0.07	-0.28	0.02	-0.06
15	-1.7	-0.8	21.9	13.0	2.5	1.2	25.5	1.2	0.02	-0.36	-0.03	-0.08
20	2.1	0.9	26.9	16.0	6.3	3.0	30.5	1.5	-0.03	-0.44	-0.07	-0.09
25	5.8	2.9	31.9	19.0	10.0	4.8	35.5	1.7	-0.07	-0.53	-0.12	-0.10
30	9.6	4.8	36.9	22.0	13.8	6.6	40.5	1.9	-0.12	-0.61	-0.17	-0.12
35	13.4	6.7	41.9	25.0	17.6	8.4	45.5	2.2	-0.17	-0.69	-0.21	-0.13

Assumptions:

(1) Except for the petroleum and petroleum products component, all GNP components rise at the same rate in 1986 as in 1985. The percentage changes for 1972 and 1982 base figures are calculated independently. Fourth-quarter data for 1985 in 1972 base figures are extrapolated from the first three quarters.
(2) The deflator for imports of oil and petroleum products falls 25 percent from its 1985 average.
(3) In response to the price decrease, physical import volume rises by the various percentages as shown above in the first column.

* Figures are for annual averages.
** Assumes same trend in oil imports as in 1985. Hence, percent changes are the same as in 1985, save for rounding errors. Of course, absolute changes do differ from 1985. In real terms, volume fell 10.5 percent in 1985 for the 1972 base series and 6.9 percent for the 1982 base series.

Table 3b.
Estimated Impact of Oil Price Changes on Nominal and Real GNP Growth in Hypothetical 1986 Assuming a 30 Percent Annual Decrease in the Deflator for Imports of Oil and Petroleum Products*

Physical Volume	Imports: Petroleum and Petroleum Products—1982 Base				Imports: Petroleum and Petroleum Products—1972 Base				Gross National Product Annual Average Percent Change			
	Nominal Dollar Volume		Real Dollar Volume		Nominal Dollar Volume		Real Dollar Volume					
Percent Change	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	1982 Base Nominal	1982 Base Real	1972 Base Nominal	1972 Base Real
10	-23.0	-11.6	10.0	6.0	-23.0	-11.0	10.0	0.5	6.49	2.75	6.25	2.46
15	-19.5	-9.8	15.0	8.9	-19.5	-9.4	15.0	0.7	6.44	2.67	6.20	2.44
20	-16.0	-8.1	20.0	11.9	-16.0	-7.7	20.0	1.0	6.40	2.59	6.16	2.43
25	-12.5	-6.3	25.0	14.9	-12.5	-6.0	25.0	1.2	6.35	2.50	6.12	2.42
30	-9.0	-4.3	30.0	17.9	-9.0	-4.5	30.0	1.4	6.31	2.42	6.07	2.40
35	-5.5	-2.8	35.0	20.9	-5.5	-2.6	35.0	1.7	6.27	2.34	6.03	2.39
Baseline** -6.9, -10.5 (1982) (1972)	-12.1	-6.1	-6.9	-4.1	-16.3	-7.8	-10.5	-0.5	6.35	3.03	6.16	2.52
	Difference from Baseline											
10	-10.9	-5.5	16.9	10.4	-6.7	-3.2	20.5	1.0	0.14	-0.28	0.09	-0.06
15	-7.4	-3.7	21.9	13.0	-3.2	-1.6	25.5	1.2	0.09	-0.36	0.04	-0.08
20	-3.9	-6.0	26.9	16.0	0.3	0.1	30.5	1.5	0.05	-0.44	0.00	-0.09
25	-0.4	-0.2	31.9	19.0	3.8	1.8	35.5	1.7	0.00	-0.53	0.04	-0.10
30	3.1	1.6	36.9	22.0	7.3	3.5	40.5	1.9	-0.04	-0.61	-0.09	-0.12
35	0.6	3.3	41.9	25.0	10.8	5.2	45.5	2.2	-0.08	-0.69	-0.13	-0.13

Assumptions:

(1) Except for the petroleum and petroleum products component, all GNP components rise at the same rate in 1986 as in 1985. The percentage changes for 1972 and 1982 base figures are calculated independently. Fourth-quarter data for 1985 in 1972 base figures are extrapolated from the first three quarters.
(2) The deflator for imports of oil and petroleum products falls 30 percent from its 1985 average.
(3) In response to the price decrease, physical import volume rises by the various percentages as shown above in the first column.

* Figures are for annual averages.
** Assumes same trend in oil imports as in 1985. Hence, percent changes are the same as in 1985, save for rounding errors. Of course, absolute changes do differ from 1985. In real terms, volume fell 10.5 percent in 1985 for the 1972 base series and 6.9 percent for the 1982 base series.

Table 3c.
Estimated Impact of Oil Price Changes on Nominal and Real GNP Growth in Hypothetical 1986 Assuming a 35 Percent Annual Decrease in the Deflator for Imports of Oil and Petroleum Products*

Physical Volume	Imports: Petroleum and Petroleum Products—1982 Base				Imports: Petroleum and Petroleum Products—1972 Base				Gross National Product Annual Average Percent Change			
	Nominal Dollar Volume		Real Dollar Volume		Nominal Dollar Volume		Real Dollar Volume		1982 Base		1972 Base	
Percent Change	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	Percent Change	Absolute Change (billion $)	Nominal	Real	Nominal	Real
10	-28.5	-14.4	10.0	6.0	-28.5	-13.7	10.0	0.5	6.56	2.75	6.31	2.46
15	-25.3	-12.7	15.0	8.9	-25.3	-12.1	15.0	0.7	6.51	2.67	6.27	2.44
20	-22.0	-11.1	20.0	11.9	-22.0	-10.6	20.0	1.0	6.47	2.59	6.23	2.43
25	-18.8	-9.5	25.0	14.9	-18.8	-9.0	25.0	1.2	6.43	2.50	6.19	2.42
30	-15.5	-7.8	30.0	17.9	-15.5	-7.4	30.0	1.4	6.39	2.42	6.15	2.40
35	-12.3	-6.2	35.0	20.9	-12.3	-5.9	35.0	1.7	6.35	2.34	6.11	2.39
Baseline** -6.9, -10.5 (1982) (1972)	-12.1	-6.1	-6.9	-4.1	-16.3	-7.8	-10.5	-0.5	6.35	3.03	6.16	2.52
	Difference from Baseline											
10	-16.4	-8.3	16.9	10.1	-12.2	-5.9	20.5	1.0	0.21	-0.28	0.15	-0.06
15	-13.2	-6.6	21.9	13.0	-9.0	-4.3	25.5	1.2	0.16	-0.36	0.11	-0.08
20	-9.9	-5.1	26.9	16.0	-5.7	-2.8	30.5	1.5	0.12	-0.44	0.07	-0.09
25	-6.7	-3.5	31.9	19.0	-2.5	-1.2	35.5	1.7	0.08	-0.53	0.03	-0.10
30	-3.4	-1.7	36.9	22.0	0.8	0.4	40.5	1.9	0.04	-0.61	-0.01	-0.12
35	-0.2	-0.1	41.9	25.0	4.0	1.9	45.5	2.2	0.00	-0.69	-0.05	-0.13

Assumptions:

(1) Except for the petroleum and petroleum products component, all GNP components rise at the same rate in 1986 as in 1985. The percentage changes for 1972 and 1982 base figures are calculated independently. Fourth-quarter data for 1985 in 1972 base figures are extrapolated from the first three quarters.
(2) The deflator for imports of oil and petroleum products falls 35 percent from its 1985 average.
(3) In response to the price decrease, physical import volume rises by the various percentages as shown above in the first column.

* Figures are for annual averages.
** Assumes same trend in oil imports as in 1985. Hence, percent changes are the same as in 1985, save for rounding errors. Of course, absolute changes do differ from 1985. In real terms, volume fell 10.5 percent in 1985 for the 1972 base series and 6.9 percent for the 1982 base series.

Only the last component (M oil) is based on a rate unlike the previous year's. For control, we assume that the physical volume of oil imports grew at the same rate in hypothetical 1986 as in 1985. These measures of oil imports and GNP are calculated in nominal and real terms in both 1972 and 1982 base figures.[3] The calculations are presented in Tables 3a, 3b, and 3c, which, respectively, assume a 25, 30, and 35 percent decline in oil price from 1985 through 1986. On the left-hand side of each of these tables are a number of possible responses to oil price cuts in terms of the increase in oil import volume, ranging from 10 percent to 35 percent. Each of the major GNP components was assumed to continue to grow in the fourth quarter of 1985 at the compound rate that occurred from the fourth quarter of 1984 through the third quarter of 1985. Hence, 1972 base figures for 1985—and hypothetical 1986 in turn—are estimates, though quite usable ones, for our baseline comparisons.[4]

A few examples from Tables 3a-3c best illustrate the impact of oil price reductions on nominal and real GNP growth. First, let us assume that a 25 percent drop in the oil import deflator occurred for 1986 (see Table 3a). Let us also assume that the 25 percent "price" cut led to a 10 percent increase in oil imports (row 1). By assumption, real oil imports rose 10 percent, while nominal oil imports fell by 17.5 percent. For this one specific GNP component (oil imports, nominal and real), the base period did not affect the percentage changes in the series to any significant degree. Although base-period differences emerge for the absolute dollar changes in the nominal value of oil imports, these simply reflect the Commerce Department's "improvements in measurement." New data sources and revised estimates are embodied in the more recent current dollar series.

In contrast, the real dollar changes for oil imports present dramatic differences by base period. In 1972 dollars, a 10 percent physical volume increase led to only a $500 million upturn in real oil imports, while in 1982 dollars the absolute increase was $6.0 billion. Of course, 1982-based real GNP is higher than 1972-based real GNP for 1986—but only by a little more than twice as much. Because relative oil prices changed far more from 1972 to 1982 than did economy-wide prices, oil imports have a greater weight in GNP calculations in the later base data. Hence, we see a more forceful impact on real GNP from changes in oil imports in the 1982 base series compared with the 1972 base series.

Looking to the right side of Table 3a, we find that a 25 percent decrease in oil prices and a 10 percent increase in oil imports resulted in nominal GNP growth in hypothetical 1986 of 6.42 percent (1982 base) and 6.18 percent (1972 base). These rates are 0.07 percent and 0.02 percent higher than their respective baseline growth rates, indicating that the price cut and assumed modest increase in oil imports led to a slight improvement in nominal GNP growth.

Once again, the real figures tell quite a different story. As lower nominal prices induced growth in real oil imports in hypothetical 1986, real net exports for the year worsened. As a result, real GNP came in at 2.75 percent (1982 base) and 2.46 percent (1972 base), rates that were 0.28 and 0.06 percentage points lower than their respective baseline growth rates. The 1982-based real growth rate is more adversely affected than the 1972-based growth rate because the real oil import component is much larger relative to other GNP components in the later year. Thus, a given percentage change in 1982 dollar oil imports has a larger negative impact on real GNP growth than the same percentage change in the 1972 base series.

The right side of Table 3a yields other generalizations. A price cut is favorable, however slightly, on nominal GNP growth only up to the point at which the beneficial price effect offsets the increase in the import's physical volume. Should we assume a 30 percent increase in imports, nominal as well as real growth rates are adversely affected compared with baseline figures. Also, as we revise upward the assumption about the rise in oil imports, the adverse impact on real, and eventually nominal, GNP growth worsens. For example, if oil imports increase by 35 percent while all other conditions remain the same, real GNP growth will recede by 0.69 percentage points and 0.13 percentage points for the 1982 and 1972 base periods, respectively. Clearly, the impact of rising oil imports on 1982 base growth rates can be pronounced.

As the size of oil price cuts becomes larger, nominal oil imports drop lower than otherwise and nominal GNP growth rates inch slightly higher (see Tables 3b and 3c). This holds true for both 1982 and 1972 base periods. Furthermore, the greater the reduction in the oil import deflator, the more likely we are to see the percentage change in real oil imports reach into the higher end of the range. In turn, real GNP growth will register lower than otherwise.

In summary, for hypothetical 1986 we see the following effects of oil price changes:

(1) The oil import deflator declines significantly.
(2) Nominal oil imports rise or fall, depending on the size of the response to price declines.
(3) Real oil imports rise in response to lower prices.
(4) Nominal net exports may or may not be positively affected by the oil price cuts, depending on the relative size of the price cuts compared with the quantity increases in oil imports.
(5) Real net exports are negatively affected by oil price cuts, assuming any volume increase in imports occurs.
(6) Nominal GNP growth may or may not be adversely affected for the same reasons as in (4) above.
(7) Real GNP growth is adversely affected by oil price cuts, assuming any moderate increase in imports occurs. (Real GNP growth was modest enough for this statistical quirk to stand out.)

Effects of Oil Price Cuts in Actual 1986

Having already shown some weakness in 1985, the implicit deflator for imports of petroleum and related products fell significantly in the first three quarters of 1986. From the fourth quarter of 1985 through the third quarter of 1986, the deflator plunged by 57 percent (not annualized) before firming somewhat in subsequent quarters. The second and third quarters of 1986 provide dramatic contrasts in nominal versus real terms. In the second quarter, nominal oil imports dropped an annualized $10.4 billion (1982 base), while in real terms this component jumped $12.9 billion (see Table 2). Prices began steadying in the third quarter, and the divergence between nominal and real trends narrowed but still remained significant. During that period nominal oil imports edged up $1.1 billion, as real oil imports increased by $14.3 billion. These third-quarter effects were minimal in that the worsening in real oil imports from the second quarter level was only $1.4 billion. However, a $20.0 billion dollar "swing" in real oil imports knocked 0.5 percentage points off real GNP growth in the second quarter, leaving the figure at 0.6 percent.[5]

The last quarter of 1986 and the first of 1987 saw a modest reversal of earlier trends as oil prices continued to rebound moderately. Nominal oil imports crept upward even though real imports for these commodities fell a yearly $8.2 billion and $9.0 billion in the fourth quarter of 1986 and first quarter of 1987, respectively. The decline in real terms occurred too quickly to be entirely attributable to price effects. Likely supplemental explanations are that real economic activity slowed in the last two quarters of 1986, and oil inventories became somewhat overbuilt.

Quarterly effects can be difficult to distinguish because of the inherent quarter-to-quarter volatility of imports. For the year, however, changes in the import components do stand out. Using annual averages, the implicit deflator for oil imports fell 44.4 percent in 1986, following a 5.6 percent decline the year before. Nominal oil imports in 1986 decreased by $16.6 billion, following a $7.0 billion drop in 1985, for a swing in contribution to nominal GNP of $9.6 billion. This new figure added 0.2 percentage points to nominal GNP growth in 1986. In contrast, after falling $4.4 billion in 1985, real oil imports rose $14.7 billion the next year. This movement produced a swing in contribution to real GNP of $14.0 billion, which actually reduced real GNP growth for the year by 0.4 percentage points. These contrasting effects on nominal and real GNP growth rates were significant, especially considering that real GNP growth had already moderated considerably from 1984.

Summary

Notwithstanding the somewhat technical nature of this paper and its reliance on an accounting-type framework rather than a behavioral model, its assumptions are reasonable and its implications important. Clearly, a significant fall in oil prices can lead to a period of dampened growth in measured real GNP. On the other hand, such price cuts probably should be viewed as having a positive impact on economic growth and general welfare since they lower input costs for production. Yet, because of the way real GNP is measured, the opposite effect is apparent for at least a short-run period—real GNP growth is suppressed. From a policy perspective, we should be willing to explain a good portion of any such weakness in real GNP growth as a technicality.

The author would like to thank Maria McGinnis and Amy Bailey for their valuable research assistance.

Notes

[1]For discussion of the actual macroeconomic effects, see John A. Tatom, "The Macroeconomic Effects of the Recent Fall in Oil Prices," Federal Reserve Bank of St. Louis *Review*, vol. 69, no. 6 (June/July 1987), pp. 34-45.

[2]Here and throughout this article the analysis of oil price shocks is static in the sense that the primary impacts on import prices are examined, while the impacts on the domestic petroleum industry, manufacturing productivity, and investment in nonresidential structures (oil drilling equipment), for example, are not taken into account.

[3]Note that, since 1972 base data exist only through the third quarter of 1985, the fourth quarter is extrapolated.

[4]Estimates for fourth quarter 1972 base components are based on the following formula: $DD_t = \{[(DD_{t-1}/DD_{t-4})^{(4/3)}]^{0.25}\} * DD_{t-1}$, where DD is domestic demand and t is the fourth quarter of 1985. Other components using comparable formulas are exports, non-oil imports, and oil imports.

[5]This swing is the change from a $7.3 billion decline in the second quarter to a $12.9 billion jump in the third quarter.

Book Review

In Whose Interest? International Banking and American Foreign Policy

by Benjamin J. Cohen.
New Haven and London: Yale University Press,
1986. 347 pages. $19.95.

What role did bankers play in gaining release of the American hostages in Iran? Did American banks' financial stake in Polish loans constrain U.S. support of the labor union Solidarity? Has American foreign policy in the Middle East been affected by Arab deposits in our nation's banks? How have Latin American loans complicated U.S. foreign policy in that region? Conversely, how have foreign policymakers helped to determine the international activities of American banks in all of these instances?

Benjamin J. Cohen addresses these questions and many others in his far-reaching analytical study, *In Whose Interest? International Banking and American Foreign Policy.* Benjamin Cohen is Professor of International Economic Affairs at Tufts University's Fletcher School of Law and Diplomacy. The book was commissioned by the Council on Foreign Relations, "a nonprofit and nonpartisan organization devoted to promoting improved understanding of international affairs through the free exchange of ideas."

Today, international banking and international politics are inextricably entangled. What makes the matter most interesting and most complex is that, although international bankers and the makers of foreign policy share the same turf, they are not playing the same game. Banks are rightfully profit-motivated; foreign policymakers have an agenda that includes other national interests. "The essence of the problem," Cohen writes, "is that bankers and policymakers do not share all the same motivations or goals. While their activities have become increasingly intertwined and interdependent, a potential for conflicting interests exists—and such conflict could severely handicap the public authorities in their ability to formulate and implement an effective foreign policy" (p. 4).

Recent events, most notably the Latin American debt situation, urgently bespeak our need to understand the relationship between international bankers and foreign policymakers. Cohen's book is a response: "[It] is written in the hope of promoting better general understanding of the complex issues involved in bank-government relations in the foreign policy area" (p. 5). Toward this end he succeeds.

Cohen has produced an informative, even-handed treatise that deals comprehensively with the interrelatedness of international banking and international politics. The book is void of histrionics. Not only is Cohen's style more sober and academic than that, but the subject matter simply does not call for an account of intrigue and conspiracy. Cohen explains convincingly why "conspiratorial social theories . . . have little intellectual or empirical substance" (p. 60). Banks' direct efforts to influence government as it forges foreign policy or, on the other hand, direct attempts by government "to shape the commercial decisions of banks" are rarely rational strategies in the overseas arena. Con-

siderations of effectiveness, efficiency, equity, and external relations, "the four e's" as Cohen calls them, serve as restraints.

Indirect influences are the more fundamental factors governing interactions between international bankers and policymakers. "Inevitably, if unintentionally, each side has an impact on the decision-making environment of the other through the ongoing pursuit of its own legitimate responsibilities and objectives" (p. 68). Cohen goes on to add: "Banks may have become more sensitive to noneconomic (political) considerations and influences and increasingly factor these into their ongoing commercial decisions. Banks, conversely, through their ongoing commercial decisions, may have impacts on the general foreign policy environment that alter the issues of salience for policy and/or the nature and scope of policy options available to government officials" (p. 59). The analysis of the book is focused on this more subtle but richer type of interrelationship.

Cohen couples his theoretical analysis with a historical discussion. Reaching as far back in time as ancient Babylonia, he recounts the rise and fall of history's great banks through tales that are both entertaining and illuminating. Parallels are easy to draw between events of the past and conditions today. For example, debt crises arose in the fourteenth century and again in the fifteenth century as the world's most powerful banking houses, then in Florence, faced default on loans to a then-developing country—England. In the seventeenth century the Hapsburgs could not repay their debts, a development that shook the Fugger bank of Germany. By the nineteenth century British banks took their turn at losing money on sovereign loans; the debtors were the newly independent nations of Latin America.

The author's historical digression serves two purposes. First, it puts into perspective the events of the "Incredible Quarter Century" (1957-1982) when international banking seemed to emerge and take off. International banking and lending to sovereign states are not new phenomena; their problems and pitfalls have been experienced before. History reveals a cycle of boom and bust in sovereign lending, followed by retreat from international banking. Subsequently, when the previous history has been forgotten, the cycle begins afresh.

Second, Cohen draws valuable lessons from the historical discussion. He emphasizes—and it must be emphasized—that international banking and lending to sovereign states are not inherently bad. On the contrary, mobilization of capital is extremely important for world prosperity. In order to grow, developing nations need investment funds, which cannot always be raised domestically. Foreign investors, on the other hand, benefit from the high returns development promises. The lesson to draw, rather, is that international banking, and sovereign lending in particular, is inherently dangerous. Sovereigns are not always good credit risks. Certainly countries do not go bankrupt, out-of-business, and into oblivion the way firms might, but it is precisely because they risk no financial death penalty that independent nations are often less restrained in their borrowing than they ought to be.

The historical experience, according to Cohen, yields further lessons in relation to the shortcomings of lenders. Cohen calls for increased regulation of international financial activity "to temper the drives that naturally result from the intensity of competition in the financial sector. Lenders' animal spirits must be kept firmly in check" (p. 115).

"International banking and lending to sovereign states are not new phenomena. . . . History reveals a cycle of boom and bust in sovereign lending, followed by retreat from international banking."

Analyzing the historical record, Cohen notes that "foreign lending manias have been closely associated with an oversupply of capital. Investors have been driven to find outlets for surplus funds" (p. 116). He therefore recommends more restraint on the part of governments in their management of liquidity. From the standpoint of economic theory, this observation is one of Cohen's most interesting contributions. Traditional monetary theory dictates that, as liquidity increases, funds are directed to investment projects offering highest returns, and any surplus funds are channeled to those with slightly lower returns. By satisfying the need for credit in the highest returning projects, an expansion of liquidity draws down the marginal productivity of capital and thus brings down

interest rates. Cohen's point is that surplus funds, rather than flowing to lower yielding projects, instead flow to riskier projects. On a risk-adjusted basis, interest rates will be lower, but the aggregate portfolio of investments will certainly be riskier. One way government can manage systemic risk, therefore, is via restraint in monetary policy. Cohen's argument is unconventional yet plausible, one that warrants further empirical research.

Four case studies illustrate the complex interactions of high finance and high politics in the modern era. Cohen describes and analyzes 1) the threat that Arab deposits in American banks could be manipulated to disrupt our domestic economy, 2) the Iranian hostage episode during which Iranian assets in U.S. banks were frozen, 3) the Polish debt crisis coinciding with the suppression of rights in Poland, and 4) the Latin American debt situation. In intricate cases such as these, international bankers and policymakers sometimes hinder one another and at other times support one another. At all times they must be aware of one another.

"Foreign policy ends are served when international financiers do not overextend, and economic ends are served when government officials refrain from intervening."

Cohen concludes his study with several prescriptions. "The ultimate goal is maximization of joint benefits. If the relationship between bankers and foreign policymakers cannot be ignored, why not, then, make the most of it?" (p. 280). To do so, he asserts, requires enhanced information, communication, and moderation. International bankers and government officials must gather and share pertinent information. Second, they must engage in a "structured dialogue" through which the two parties can discuss conflicts and mutual interests in a forward-looking manner. Such communication would enable them to plan strategically, eliminating the steady need to deal extemporaneously with problems stemming from past mistakes. Third, Cohen admonishes bankers and governments alike to curb their excesses and practice moderation. Foreign policy ends are served when international financiers do not overextend, and economic ends are served when government officials refrain from intervening.

The author labels these recommendations "an ounce of prevention," adding, however, that existing problems require "a pound of cure." The stubborn Latin debt crisis, Cohen claims, is an example of a market failure and consequently warrants government initiative. The solution to the global debt crisis is negotiated settlement wherein burdens are shared by all parties. This may seem unfair, but, as Cohen reminds us, the poor judgment that caused the problem was exercised by all parties, too. And, of course, he adds that a reduced federal budget deficit would bring down interest rates, thus making Third World debt service more manageable.

Cohen's work is indeed remarkable. He organizes a vast body of information, analyzes it, draws inferences, and relates these inferences to the pressing problems of today. Nonetheless, the author leaves room for marginal improvements. First, he limits the scope of the analysis to banks. Banks are special, according to Cohen, because they are highly leveraged and because their successes or failures have systemic implications. Granted, Cohen defines banking through function and not form, and thus includes some financial institutions that have increasingly entered into bank-like activities. But he excludes still other kinds of firms that are vulnerable and whose failures also would jeopardize the greater economy's health. Congress bailed out Chrysler and Lockheed when prospects of their bankruptcies threatened systemic well-being. When such industrial firms invest directly overseas, and when foreign multinationals buy assets inside the United States, do they not then satisfy the same criteria for special consideration that Cohen laid down for banks?

Calls for self-restraint by banks and for stricter supervision both are problematic. Theoretically, banks act in their own self-interest. A vague directive to practice self-restraint, which is equivalent to acting against one's own self-interest, cannot succeed. The request for stricter supervision, however, also misses the mark. Observations that banks may have acted imprudently in the past motivate Cohen's call. But, as he has shown, it is in an individual bank's own best interests to act prudently. If the profit motive does not encourage appropriate caution, then the challenge is to identify the rea-

sons for this market failure. Regulators then can intervene minimally, altering the market environment just enough to prevent the failure.

Cohen argues that banks were myopic in their lending practices, partly because managers were enticed by quick short-term profits accruable before those managers moved on to different jobs. A more likely explanation is that bank accounting standards and reporting practices bias managers toward seeking short-term returns. In either case, the questions arise: Why do bank stockholders and boards of directors allow such behavior? What minimal intervention would alter the incentive structure and thereby eliminate the inefficiency? Addressing these questions, and undertaking this sort of specific analysis, should prove more effective than structuring additional supervision and demanding greater self-restraint. Agencies for this type of intervention are already in place.

The author's call for more sharing of information and increased communication poses problems as well. A "structured dialogue" might evolve into yet another government agency intent on regulating banks—a prospect that banks are hardly likely to encourage. Moreover, one wonders where it will stop. Should foreign policymakers become involved with every enterprise that bears on international relations? Is banking really that special? Agriculture, the energy industry, even universities may affect foreign policy today; should foreign policymakers not engage them in a dialogue, too?

Cohen should expect some disagreement over his policy recommendations and some resistance to his singling out of banks for special treatment. Yet it is to his credit that the book is provocative, for this quality indicates that Cohen has succeeded in his primary task. The careful reader is rewarded with an "understanding of the complex issues involved in bank-government relations in the foreign policy area"—so much so that he should feel qualified to disagree with the specifics of Cohen's recommendations. For the interested and patient reader, *In Whose Interest?* is a valuable resource and well worth the investment.

—Steven P. Feinstein

The reviewer, a specialist in stock and options markets, is an economist in the financial section of the Atlanta Fed's Research Department. *He wishes to express his appreciation to Sheila Tschinkel for her helpful comments and suggestions.*

FINANCE

IMPORTANT MESSAGE FOR DATA USERS

In June of each year, changes are made to the deposit and reserve requirement criteria used to select institutions for inclusion in the sample on which these data are based. As of September 1986, current and previous monthly data are from institutions with over $26.8 million in deposits and $2.6 million of reserve requirements. Previously, data were based on a different sample of institutions. For publication purposes, monthly year-ago computations are made on the basis of these **current reporting criteria**. Therefore, they are not entirely comparable to or consistent with previously published data covering the past periods. Moreover, percent changes shown do not control for the sample change. Data users needing further detail should contact Cheryl Cornish, Database Coordinator, 404-521-8816.

$ millions

	JUL. 1987	JUN. 1987	JUL. 1986	ANN. % CHG.		JUL. 1987	JUN. 1987	JUL. 1986	ANN. % CHG.
UNITED STATES									
Commercial Bank Deposits	1,727,186	1,704,535	1,590,928	+ 9	S&Ls Total Deposits	676,831	673,822	611,053	+ 11
Demand	372,770	369,769	363,959	+ 2	NOW	34,476	33,938	27,606	+ 25
NOW	157,756	154,886	124,027	+27	Savings	161,526	163,676	138,174	+ 17
Savings	518,060	518,358	463,264	+12	Time	478,457	473,667	443,370	+ 8
Time	711,213	705,211	684,208	+ 4	Credit Union Deposits	66,391	65,046	46,793	+ 42
					Share Drafts	9,336	8,898	6,861	+ 36
					Savings & Time	56,225	55,291	38,993	+ 44
SOUTHEAST									
Commercial Bank Deposits	203,670	201,920	187,079	+ 9	S&Ls Total Deposits	86,424	87,646	77,829	+ 11
Demand	41,298	41,543	40,205	+ 3	NOW	5,524	5,535	4,267	+ 29
NOW	21,969	21,743	16,757	+31	Savings	20,021	20,607	17,715	+ 13
Savings	57,851	58,277	52,107	+11	Time	60,246	60,847	55,379	+ 9
Time	86,328	85,103	82,972	+ 4	Credit Union Deposits	7,435	7,290	5,261	+ 41
					Share Drafts	922	861	671	+ 37
					Savings & Time	6,223	6,120	4,343	+ 43
ALABAMA									
Commercial Bank Deposits	20,806	20,644	18,599	+12	S&Ls Total Deposits	4,302	6,008	4,713	- 9
Demand	4,117	4,178	4,075	+ 1	NOW	260	376	257	+ 1
NOW	2,184	2,167	1,583	+38	Savings	784	1,139	904	- 13
Savings	4,688	4,726	3,908	+20	Time	3,307	4,520	3,564	- 7
Time	10,197	10,057	9,562	+ 7	Credit Union Deposits	983	970	830	+ 18
					Share Drafts	148	143	163	- 9
					Savings & Time	808	793	688	+ 17
FLORIDA									
Commercial Bank Deposits	78,773	77,847	70,848	+11	S&Ls Total Deposits	56,210	55,895	54,818	+ 3
Demand	16,000	16,033	15,083	+ 6	NOW	3,476	3,388	2,869	+ 21
NOW	9,853	9,696	7,300	+35	Savings	13,852	14,024	12,942	+ 7
Savings	27,029	27,110	23,949	+13	Time	38,245	37,840	38,511	- 1
Time	27,445	26,864	26,520	+ 3	Credit Union Deposits	3,888	3,809	3,093	+ 26
					Share Drafts	481	449	362	+ 33
					Savings & Time	3,142	3,095	2,477	+ 27
GEORGIA									
Commercial Bank Deposits	32,751	32,417	29,735	+10	S&Ls Total Deposits	7,510	7,468	5,981	+ 26
Demand	8,628	8,739	8,519	+ 1	NOW	903	906	538	+ 68
NOW	3,129	3,090	2,317	+35	Savings	1,624	1,628	1,305	+ 24
Savings	8,939	9,069	8,454	+ 6	Time	5,013	4,978	4,181	+ 20
Time	13,443	13,186	12,036	+12	Credit Union Deposits	1,426	1,398	476	+200
					Share Drafts	164	151	56	+193
					Savings & Time	1,244	1,221	407	+206
LOUISIANA									
Commercial Bank Deposits	28,129	28,213	28,035	0	S&Ls Total Deposits	9,919	9,843	5,780	+ 72
Demand	5,109	5,133	5,233	- 2	NOW	403	396	282	+ 43
NOW	2,270	2,303	1,897	+20	Savings	2,146	2,181	1,384	+ 55
Savings	8,112	8,175	7,585	+ 7	Time	7,374	7,261	4,124	+ 79
Time	13,048	13,067	13,814	- 6	Credit Union Deposits	*	*	*	
					Share Drafts	*	*	*	
					Savings & Time	*	*	*	
MISSISSIPPI									
Commercial Bank Deposits	14,102	14,159	13,520	+ 4	S&Ls Total Deposits	1,805	1,812	760	+138
Demand	2,355	2,365	2,485	- 5	NOW	98	99	53	+ 85
NOW	1,421	1,418	1,160	+23	Savings	272	279	107	+154
Savings	3,042	3,099	2,747	+11	Time	1,343	1,343	566	+137
Time	7,512	7,510	7,435	+ 1	Credit Union Deposits	*	*	*	
					Share Drafts	*	*	*	
					Savings & Time	*	*	*	
TENNESSEE									
Commercial Bank Deposits	29,109	28,640	26,342	+11	S&Ls Total Deposits	6,678	6,620	5,777	+ 16
Demand	5,089	5,095	4,810	+ 6	NOW	384	370	268	+ 43
NOW	3,112	3,069	2,500	+24	Savings	1,343	1,356	1,073	+ 25
Savings	6,041	6,098	5,464	+11	Time	4,964	4,905	4,433	+ 12
Time	14,683	14,419	13,605	+ 8	Credit Union Deposits	1,138	1,113	862	+ 32
					Share Drafts	129	118	90	+ 43
					Savings & Time	1,029	1,011	771	+ 33

Notes: All deposit data are extracted from the Federal Reserve Report of Transaction Accounts, other Deposits and Vault Cash (FR2900), and are reported for the average of the week ending the 1st Monday of the month. Most recent data, reported by institutions with over $26.8 million in deposits and $2.6 million of reserve requirements as of June 1986, represents 95% of deposits in the six state area. The major differences between this report and the "call report" are size, the treatment of interbank deposits, and the treatment of float. The total deposit data generated from the Report of Transaction Accounts eliminates interbank deposits by reporting the net of deposits "due to" and "due from" other depository institutions. The Report of Transaction Accounts subtracts cash in process of collection from demand deposits, while the call report does not. The Southeast data represent the total of the six states. Subcategories were chosen on a selective basis and do not add to total.
* = fewer than four institutions reporting.

EMPLOYMENT

	MAY 1987	APR 1987	MAY 1986	ANN. % CHG		MAY 1987	APR 1987	MAY 1986	ANN. % CHG
UNITED STATES									
Civilian Labor Force - thous.	119,695	118,347	117,199	+2	Nonfarm Employment - thous.	102,164	101,390	99,815	+2
Total Employed - thous.	112,377	111,041	109,041	+3	Manufacturing	18,983	18,924	18,981	+0
Total Unemployed - thous.	7,318	7,306	8,158	-10	Construction	5,041	4,840	4,950	+2
					Trade	23,999	23,758	23,541	+2
Unemployment Rate - % SA	6.2	6.2	7.1		Government	17,367	17,352	16,981	+2
					Services	24,118	23,950	23,072	+5
Mfg. Avg. Wkly. Hours	40.9	40.4	40.6	+1	Fin., Ins. & Real. Est.	6,576	6,532	6,257	+5
Mfg. Avg. Wkly. Earn. - $	403	399	395	+2	Trans., Com. & Pub. Util.	5,349	5,311	5,252	+2
SOUTHEAST									
Civilian Labor Force - thous.	16,270	16,119	15,916	+2	Nonfarm Employment - thous.	13,405	13,376	13,029	+3
Total Employed - thous.	15,208	15,006	14,701	+3	Manufacturing	2,336	2,330	2,318	+1
Total Unemployed - thous.	1,063	1,113	1,215	-13	Construction	790	787	778	+2
					Trade	3,351	3,341	3,229	+4
Unemployment Rate - % SA	6.8	7.1	7.8		Government	2,351	2,350	2,303	+2
					Services	2,947	2,945	2,803	+5
Mfg. Avg. Wkly. Hours	41.1	40.5	40.9	+0	Fin., Ins. & Real. Est.	794	791	767	+4
Mfg. Avg. Wkly. Earn. - $	359	355	350	+3	Trans., Com. & Pub. Util.	734	731	720	+2
ALABAMA									
Civilian Labor Force - thous.	1,889	1,870	1,899	-1	Nonfarm Employment - thous.	1,486	1,482	1,466	+1
Total Employed - thous.	1,740	1,716	1,714	+2	Manufacturing	357	356	360	-1
Total Unemployed - thous.	150	154	185	-19	Construction	77	77	75	+3
					Trade	329	327	318	+3
Unemployment Rate - % SA	8.5	8.6	10.3		Government	303	302	302	+0
					Services	267	267	259	+3
Mfg. Avg. Wkly. Hours	41.1	40.6	41.0	+0	Fin., Ins. & Real. Est.	71	71	68	+3
Mfg. Avg. Wkly. Earn. - $	359	355	354	+1	Trans., Com. & Pub. Util.	72	72	71	+0
FLORIDA									
Civilian Labor Force - thous.	5,879	5,768	5,550	+6	Nonfarm Employment - thous.	4,797	4,797	4,584	+5
Total Employed - thous.	5,581	5,469	5,256	+6	Manufacturing	525	524	517	+2
Total Unemployed - thous.	297	299	293	+1	Construction	338	337	338	0
					Trade	1,309	1,312	1,228	+7
Unemployment Rate - % SA	5.4	5.5	5.7		Government	735	734	708	+4
					Services	1,276	1,279	1,200	+6
Mfg. Avg. Wkly. Hours	40.6	40.3	40.6	0	Fin., Ins. & Real. Est.	354	353	339	+4
Mfg. Avg. Wkly. Earn. - $	329	326	322	+2	Trans., Com. & Pub. Util.	250	249	245	+2
GEORGIA									
Civilian Labor Force - thous.	3,089	3,083	3,005	+3	Nonfarm Employment - thous.	2,754	2,749	2,663	+3
Total Employed - thous.	2,939	2,921	2,833	+4	Manufacturing	569	567	563	+1
Total Unemployed - thous.	150	161	172	-13	Construction	157	157	154	+2
					Trade	695	693	662	+5
Unemployment Rate - % SA	5.0	5.4	5.9		Government	471	469	456	+3
					Services	535	536	501	+7
Mfg. Avg. Wkly. Hours	41.7	40.3	40.7	+2	Fin., Ins. & Real. Est.	150	150	144	+4
Mfg. Avg. Wkly. Earn. - $	350	339	341	+3	Trans., Com. & Pub. Util.	169	168	166	+2
LOUISIANA									
Civilian Labor Force - thous.	1,932	1,928	2,010	-4	Nonfarm Employment - thous.	1,493	1,489	1,534	-3
Total Employed - thous.	1,716	1,695	1,749	-2	Manufacturing	166	166	168	-1
Total Unemployed - thous.	216	233	261	-17	Construction	84	83	91	-8
					Trade	357	355	373	-4
Unemployment Rate - % SA	11.4	11.9	13.2		Government	319	320	327	-2
					Services	318	317	321	-1
Mfg. Avg. Wkly. Hours	41.7	41.5	41.3	+1	Fin., Ins. & Real. Est.	85	85	86	-1
Mfg. Avg. Wkly. Earn. - $	452	450	438	+3	Trans., Com. & Pub. Util.	106	105	107	-1
MISSISSIPPI									
Civilian Labor Force - thous.	1,157	1,147	1,176	-2	Nonfarm Employment - thous.	864	861	850	+2
Total Employed - thous.	1,054	1,041	1,039	+1	Manufacturing	223	223	222	+0
Total Unemployed - thous.	103	107	138	-25	Construction	35	35	36	-1
					Trade	187	186	183	+2
Unemployment Rate - % SA	9.0	9.6	11.9		Government	194	195	191	+2
					Services	139	138	134	+4
Mfg. Avg. Wkly. Hours	39.9	39.4	40.2	-1	Fin., Ins. & Real. Est.	39	38	37	+4
Mfg. Avg. Wkly. Earn. - $	302	297	299	+1	Trans., Com. & Pub. Util.	40	40	39	+2
TENNESSEE									
Civilian Labor Force - thous.	2,325	2,323	2,276	+2	Nonfarm Employment - thous.	2,011	1,998	1,932	+4
Total Employed - thous.	2,178	2,164	2,110	+3	Manufacturing	496	494	488	+2
Total Unemployed - thous.	147	159	166	-11	Construction	98	97	84	+17
					Trade	474	469	465	+2
Unemployment Rate - % SA	6.7	7.0	7.1		Government	330	331	319	+3
					Services	412	408	388	+6
Mfg. Avg. Wkly. Hours	41.5	40.6	41.4	+0	Fin., Ins. & Real. Est.	96	94	92	+4
Mfg. Avg. Wkly. Earn. - $	364	361	347	+5	Trans., Com. & Pub. Util.	98	98	92	+7

NOTES: All labor force data are from Bureau of Labor Statistics reports supplied by state agencies.
Only the unemployment rate data are seasonally adjusted.
The Southeast data represent the total of the six states.

EMPLOYMENT

	JUN 1987	MAY 1987	JUN 1986	ANN. % CHG		JUN 1987	MAY 1987	JUN 1986	ANN. % CHG
UNITED STATES									
Civilian Labor Force - thous.	121,153	119,695	119,644	+1	Nonfarm Employment - thous.	102,670	102,103	100,183	+2
Total Employed - thous.	113,498	112,377	110,869	+2	Manufacturing	19,151	18,991	19,081	+0
Total Unemployed - thous.	7,655	7,318	8,775	-13	Construction	5,208	5,040	5,098	+2
					Trade	24,171	23,976	23,705	+2
Unemployment Rate - % SA	6.3	6.1	7.1		Government	17,104	17,345	16,716	+2
					Services	24,260	24,093	23,280	+4
Mfg. Avg. Wkly. Hours	41.1	40.9	40.8	+1	Fin., Ins. & Real. Est.	6,648	6,575	6,347	+5
Mfg. Avg. Wkly. Earn. - $	406	403	396	+3	Trans., Com. & Pub. Util.	5,393	5,352	5,184	+4
SOUTHEAST									
Civilian Labor Force - thous.	16,317	16,279	16,065	+2	Nonfarm Employment - thous.	1,490	1,486	1,466	+2
Total Employed - thous.	15,210	15,213	14,740	+3	Manufacturing	2,344	2,336	2,317	+1
Total Unemployed - thous.	1,092	1,084	1,327	-18	Construction	795	790	783	+2
					Trade	3,360	3,351	3,237	+4
Unemployment Rate - % SA	6.9	6.6	8.1		Government	2,304	2,352	2,261	+2
					Services	2,948	2,942	2,813	+5
Mfg. Avg. Wkly. Hours	41.3	41.1	41.1	+0	Fin., Ins. & Real. Est.	800	795	773	+3
Mfg. Avg. Wkly. Earn. - $	362	359	352	+3	Trans., Com. & Pub. Util.	739	734	709	+4
ALABAMA									
Civilian Labor Force - thous.	1,890	1,892	1,895	-0	Nonfarm Employment - thous.	1,490	1,486	1,466	+2
Total Employed - thous.	1,744	1,741	1,702	+2	Manufacturing	359	357	363	-1
Total Unemployed - thous.	146	151	192	-24	Construction	78	77	75	+4
					Trade	331	329	319	+4
Unemployment Rate - % SA	8.6	7.8	10.3		Government	297	303	296	+0
					Services	270	267	259	+4
Mfg. Avg. Wkly. Hours	41.4	41.1	41.2	+0	Fin., Ins. & Real. Est.	71	71	69	+3
Mfg. Avg. Wkly. Earn. - $	362	358	355	+2	Trans., Com. & Pub. Util.	72	72	72	+2
FLORIDA									
Civilian Labor Force - thous.	5,883	5,879	5,656	+4	Nonfarm Employment - thous.	4,787	4,796	4,564	+5
Total Employed - thous.	5,570	5,581	5,315	+5	Manufacturing	525	525	516	+2
Total Unemployed - thous.	297	313	342	-13	Construction	341	340	341	0
					Trade	1,308	1,309	1,227	+7
Unemployment Rate - % SA	5.4	5.0	5.8		Government	723	735	690	+5
					Services	1,274	1,274	1,201	+6
Mfg. Avg. Wkly. Hours	40.8	40.6	41.0	-0	Fin., Ins. & Real. Est.	357	355	342	+4
Mfg. Avg. Wkly. Earn. - $	332	328	325	+2	Trans., Com. & Pub. Util.	250	249	238	+5
GEORGIA									
Civilian Labor Force - thous.	3,102	3,089	3,025	+3	Nonfarm Employment - thous.	2,756	2,753	2,676	+3
Total Employed - thous.	2,943	2,938	2,842	+4	Manufacturing	570	569	563	+1
Total Unemployed - thous.	158	151	183	-14	Construction	157	157	157	0
					Trade	696	694	669	+4
Unemployment Rate - % SA	5.0	5.0	5.9		Government	467	471	457	+2
					Services	537	534	507	+6
Mfg. Avg. Wkly. Hours	42.2	41.6	41.1	+3	Fin., Ins. & Real. Est.	150	150	146	+3
Mfg. Avg. Wkly. Earn. - $	355	349	341	+4	Trans., Com. & Pub. Util.	171	169	164	+4
LOUISIANA									
Civilian Labor Force - thous.	1,950	1,935	2,007	-3	Nonfarm Employment - thous.	1,489	1,491	1,518	-2
Total Employed - thous.	1,731	1,719	1,727	+0	Manufacturing	168	166	166	+1
Total Unemployed - thous.	219	219	280	-22	Construction	84	84	89	-5
					Trade	359	356	373	-4
Unemployment Rate - % SA	11.5	10.8	13.6		Government	312	319	319	-2
					Services	315	317	318	-1
Mfg. Avg. Wkly. Hours	41.6	41.8	41.4	+0	Fin., Ins. & Real. Est.	85	85	86	-2
Mfg. Avg. Wkly. Earn. - $	451	455	439	+3	Trans., Com. & Pub. Util.	107	105	106	+1
MISSISSIPPI									
Civilian Labor Force - thous.	1,158	1,158	1,178	-2	Nonfarm Employment - thous.	856	864	848	+1
Total Employed - thous.	1,045	1,055	1,028	+2	Manufacturing	224	223	224	0
Total Unemployed - thous.	113	103	150	-25	Construction	36	35	36	-2
					Trade	188	187	183	+3
Unemployment Rate - % SA	9.0	9.2	12.0		Government	185	194	186	-1
					Services	138	139	135	+2
Mfg. Avg. Wkly. Hours	40.2	39.9	40.5	-1	Fin., Ins. & Real. Est.	39	39	38	+4
Mfg. Avg. Wkly. Earn. - $	304	301	302	+1	Trans., Com. & Pub. Util.	40	40	39	+3
TENNESSEE									
Civilian Labor Force - thous.	2,335	2,326	2,306	+1	Nonfarm Employment - thous.	2,015	2,011	1,931	+4
Total Employed - thous.	2,177	2,179	2,126	+2	Manufacturing	498	496	485	+3
Total Unemployed - thous.	158	148	181	-13	Construction	99	98	84	+17
					Trade	480	475	467	+3
Unemployment Rate - % SA	6.7	6.7	7.1		Government	320	330	313	+2
					Services	415	411	393	+6
Mfg. Avg. Wkly. Hours	41.7	41.3	41.3	+1	Fin., Ins. & Real. Est.	97	96	91	+6
Mfg. Avg. Wkly. Earn. - $	367	364	348	+5	Trans., Com. & Pub. Util.	99	99	91	+9

NOTES: All labor force data are from Bureau of Labor Statistics reports supplied by state agencies.
Only the unemployment rate data are seasonally adjusted.
The Southeast data represent the total of the six states.

EMPLOYMENT

	JUL 1987	JUN 1987	JUL 1986	ANN. % CHG		JUL 1987	JUN 1987	JUL 1986	ANN. % CHG
UNITED STATES									
Civilian Labor Force - thous.	114,652	113,498	111,832	+3	Nonfarm Employment - thous.	101,932	102,696	99,440	+3
Total Employed - thous.	116,372	115,216	113,504	+3	Manufacturing	19,017	19,152	18,867	+1
Total Unemployed - thous.	7,453	7,655	8,471	-12	Construction	5,315	5,210	5,227	+2
					Trade	23,702	24,172	23,711	-0
Unemployment Rate - % SA	5.9	6.0	6.9		Government	16,277	17,105	15,811	+3
					Services	24,350	24,267	23,402	+4
Mfg. Avg. Wkly. Hours	40.6	41.1	40.2	+1	Fin., Ins. & Real. Est.	6,705	6,658	6,409	+5
Mfg. Avg. Wkly. Earn. - $	401	406	392	+2	Trans., Com. & Pub. Util.	5,351	5,392	5,243	+2
SOUTHEAST									
Civilian Labor Force - thous.	16,425	16,345	16,176	+2	Nonfarm Employment - thous.	13,310	13,390	12,948	+3
Total Employed - thous.	15,278	15,233	14,761	+4	Manufacturing	2,330	2,345	2,298	+1
Total Unemployed - thous.	1,147	1,112	1,415	-19	Construction	801	794	797	+1
					Trade	3,361	3,357	3,246	+4
Unemployment Rate - % SA	6.5	6.6	8.3		Government	2,232	2,306	2,182	+2
					Services	2,940	2,948	2,813	+5
Mfg. Avg. Wkly. Hours	40.8	41.4	40.6	+0	Fin., Ins. & Real. Est.	803	799	777	+3
Mfg. Avg. Wkly. Earn. - $	358	361	350	+2	Trans., Com. & Pub. Util.	741	739	727	+2
ALABAMA									
Civilian Labor Force - thous.	1,907	1,899	1,909	-0	Nonfarm Employment - thous.	1,488	1,488	1,470	+1
Total Employed - thous.	1,760	1,753	1,712	+3	Manufacturing	360	359	358	+1
Total Unemployed - thous.	146	147	198	-26	Construction	79	78	78	+1
					Trade	329	330	323	+2
Unemployment Rate - % SA	7.2	7.8	9.9		Government	296	297	297	-0
					Services	270	269	260	+4
Mfg. Avg. Wkly. Hours	41.1	41.5	41.0	+0	Fin., Ins. & Real. Est.	71	71	70	+2
Mfg. Avg. Wkly. Earn. - $	360	362	352	+2	Trans., Com. & Pub. Util.	72	72	72	0
FLORIDA									
Civilian Labor Force - thous.	5,985	5,883	5,721	+5	Nonfarm Employment - thous.	4,741	4,787	4,530	+5
Total Employed - thous.	5,630	5,570	5,329	+6	Manufacturing	521	525	512	+2
Total Unemployed - thous.	356	313	392	-9	Construction	343	341	343	0
					Trade	1,304	1,305	1,227	+6
Unemployment Rate - % SA	5.3	5.0	6.5		Government	687	725	654	+5
					Services	1,269	1,276	1,196	+6
Mfg. Avg. Wkly. Hours	40.2	40.8	40.5	-1	Fin., Ins. & Real. Est.	358	356	343	+4
Mfg. Avg. Wkly. Earn. - $	328	331	326	+1	Trans., Com. & Pub. Util.	250	250	246	+2
GEORGIA									
Civilian Labor Force - thous.	3,075	3,104	3,041	+1	Nonfarm Employment - thous.	2,747	2,757	2,673	+3
Total Employed - thous.	2,917	2,945	2,848	+2	Manufacturing	568	571	556	+2
Total Unemployed - thous.	158	160	193	-18	Construction	158	156	161	-2
					Trade	699	696	674	+4
Unemployment Rate - % SA	4.7	5.0	6.0		Government	456	468	442	+3
					Services	535	536	510	+5
Mfg. Avg. Wkly. Hours	42.3	42.4	40.3	+5	Fin., Ins. & Real. Est.	152	151	148	+3
Mfg. Avg. Wkly. Earn. - $	351	352	335	+5	Trans., Com. & Pub. Util.	171	170	168	+2
LOUISIANA									
Civilian Labor Force - thous.	1,960	1,964	1,995	-2	Nonfarm Employment - thous.	1,485	1,491	1,506	-1
Total Employed - thous.	1,750	1,742	1,717	+2	Manufacturing	167	168	166	+1
Total Unemployed - thous.	210	222	279	-25	Construction	83	84	91	-8
					Trade	358	358	370	-3
Unemployment Rate - % SA	10.3	10.9	13.6		Government	308	313	309	-0
					Services	316	316	316	0
Mfg. Avg. Wkly. Hours	41.1	41.7	41.6	-1	Fin., Ins. & Real. Est.	85	85	86	-2
Mfg. Avg. Wkly. Earn. - $	450	450	446	+1	Trans., Com. & Pub. Util.	108	107	108	0
MISSISSIPPI									
Civilian Labor Force - thous.	1,162	1,163	1,181	-2	Nonfarm Employment - thous.	851	856	840	+1
Total Employed - thous.	1,050	1,050	1,026	+2	Manufacturing	221	224	222	-0
Total Unemployed - thous.	113	113	154	-27	Construction	36	36	37	-1
					Trade	189	188	183	+3
Unemployment Rate - % SA	9.2	9.2	12.3		Government	179	185	180	-1
					Services	140	138	135	+4
Mfg. Avg. Wkly. Hours	39.9	40.2	39.3	+2	Fin., Ins. & Real. Est.	39	39	38	+3
Mfg. Avg. Wkly. Earn. - $	300	304	292	+3	Trans., Com. & Pub. Util.	40	40	40	+1
TENNESSEE									
Civilian Labor Force - thous.	2,335	2,332	2,329	+0	Nonfarm Employment - thous.	1,998	2,011	1,929	+4
Total Employed - thous.	2,171	2,174	2,130	+2	Manufacturing	494	498	485	+2
Total Unemployed - thous.	164	159	199	-18	Construction	102	99	88	+16
					Trade	483	480	470	+3
Unemployment Rate - % SA	6.7	6.7	8.3		Government	306	319	300	+2
					Services	411	412	396	+4
Mfg. Avg. Wkly. Hours	40.4	41.7	40.8	-1	Fin., Ins. & Real. Est.	98	97	92	+6
Mfg. Avg. Wkly. Earn. - $	360	367	350	+3	Trans., Com. & Pub. Util.	99	99	92	+7

NOTES: All labor force data are from Bureau of Labor Statistics reports supplied by state agencies.
Only the unemployment rate data are seasonally adjusted.
The Southeast data represent the total of the six states.

EMPLOYMENT

	AUG 1987	JUL 1987	AUG 1986	ANN. % CHG		AUG 1987	JUL 1987	AUG 1986	ANN. % CHG
UNITED STATES									
Civilian Labor Force - thous.	121,614	122,105	119,471	+2	Nonfarm Employment - thous.	102,148	101,934	99,641	+3
Total Employed - thous.	114,527	114,652	111,515	+3	Manufacturing	19,198	19,023	19,042	+1
Total Unemployed - thous.	7,088	7,453	7,955	-11	Construction	5,368	5,313	5,301	+1
					Trade	23,761	24,169	23,797	-0
Unemployment Rate - % SA	6.0	6.0	6.8		Government	16,072	16,200	15,674	+3
					Services	24,457	24,416	23,435	+4
Mfg. Avg. Wkly. Hours	40.9	40.6	40.7	+0	Fin., Ins. & Real. Est.	6,710	6,698	6,428	+4
Mfg. Avg. Wkly. Earn. - $	403	401	394	+2	Trans., Com. & Pub. Util.	5,385	5,367	5,211	+3
SOUTHEAST									
Civilian Labor Force - thous.	16,353	16,414	16,186	+1	Nonfarm Employment - thous.	13,316	13,310	12,962	+3
Total Employed - thous.	15,254	15,261	14,864	+3	Manufacturing	2,347	2,331	2,310	+2
Total Unemployed - thous.	1,099	1,154	1,303	-16	Construction	804	802	802	+0
					Trade	3,359	3,357	3,254	+3
Unemployment Rate - % SA	6.8	6.5	8.2		Government	2,217	2,234	2,169	+2
					Services	2,942	2,942	2,817	+4
Mfg. Avg. Wkly. Hours	41.2	40.9	41.0	+0	Fin., Ins. & Real. Est.	802	802	778	+3
Mfg. Avg. Wkly. Earn. - $	360	359	352	+2	Trans., Com. & Pub. Util.	741	740	725	+2
ALABAMA									
Civilian Labor Force - thous.	1,902	1,901	1,910	-0	Nonfarm Employment - thous.	1,491	1,490	1,460	+2
Total Employed - thous.	1,764	1,754	1,702	+4	Manufacturing	362	360	355	+2
Total Unemployed - thous.	137	147	190	-28	Construction	79	78	78	+1
					Trade	331	330	324	+2
Unemployment Rate - % SA	7.4	7.3	10.1		Government	294	298	290	+1
					Services	271	270	259	+5
Mfg. Avg. Wkly. Hours	41.5	41.2	41.1	+1	Fin., Ins. & Real. Est.	71	71	70	+2
Mfg. Avg. Wkly. Earn. - $	363	361	349	+4	Trans., Com. & Pub. Util.	72	72	72	0
FLORIDA									
Civilian Labor Force - thous.	5,925	5,985	5,698	+4	Nonfarm Employment - thous.	4,734	4,737	4,535	+4
Total Employed - thous.	5,589	5,630	5,361	+4	Manufacturing	524	521	514	+2
Total Unemployed - thous.	336	356	337	-0	Construction	342	342	344	-1
					Trade	1,301	1,300	1,230	+6
Unemployment Rate - % SA	5.7	5.3	6.0		Government	677	687	651	+4
					Services	1,272	1,270	1,199	+6
Mfg. Avg. Wkly. Hours	40.3	40.1	40.6	-1	Fin., Ins. & Real. Est.	358	358	343	+4
Mfg. Avg. Wkly. Earn. - $	329	327	326	+1	Trans., Com. & Pub. Util.	251	250	246	+2
GEORGIA									
Civilian Labor Force - thous.	3,083	3,078	3,089	-0	Nonfarm Employment - thous.	2,753	2,747	2,689	+2
Total Employed - thous.	2,927	2,917	2,906	+1	Manufacturing	571	568	563	+1
Total Unemployed - thous.	156	161	183	-15	Construction	159	158	162	-2
					Trade	697	697	676	+3
Unemployment Rate - % SA	5.1	4.8	6.0		Government	457	456	443	+3
					Services	537	536	514	+4
Mfg. Avg. Wkly. Hours	41.6	42.1	41.2	+1	Fin., Ins. & Real. Est.	152	152	149	+2
Mfg. Avg. Wkly. Earn. - $	344	350	341	+1	Trans., Com. & Pub. Util.	171	171	169	+1
LOUISIANA									
Civilian Labor Force - thous.	1,962	1,956	2,004	-2	Nonfarm Employment - thous.	1,484	1,487	1,500	-1
Total Employed - thous.	1,759	1,744	1,728	+2	Manufacturing	168	167	166	+1
Total Unemployed - thous.	202	212	276	-27	Construction	85	84	91	-7
					Trade	359	359	368	-2
Unemployment Rate - % SA	10.4	10.4	13.8		Government	304	309	307	-1
					Services	316	316	316	0
Mfg. Avg. Wkly. Hours	41.6	41.3	41.8	-0	Fin., Ins. & Real. Est.	84	85	86	-2
Mfg. Avg. Wkly. Earn. - $	449	450	442	+2	Trans., Com. & Pub. Util.	107	107	106	+1
MISSISSIPPI									
Civilian Labor Force - thous.	1,158	1,158	1,171	-1	Nonfarm Employment - thous.	853	851	835	+2
Total Employed - thous.	1,045	1,045	1,025	+2	Manufacturing	225	221	223	+1
Total Unemployed - thous.	113	113	146	-23	Construction	36	36	37	-2
					Trade	189	189	184	+3
Unemployment Rate - % SA	9.8	9.2	12.5		Government	180	179	176	+2
					Services	137	140	131	+5
Mfg. Avg. Wkly. Hours	40.4	39.9	40.2	+0	Fin., Ins. & Real. Est.	39	39	38	+3
Mfg. Avg. Wkly. Earn. - $	307	301	300	+2	Trans., Com. & Pub. Util.	40	40	38	+2
TENNESSEE									
Civilian Labor Force - thous.	2,323	2,336	2,314	+0	Nonfarm Employment - thous.	2,002	1,998	1,943	+3
Total Employed - thous.	2,170	2,170	2,142	+1	Manufacturing	498	494	488	+2
Total Unemployed - thous.	153	166	172	-11	Construction	103	102	90	+14
					Trade	482	482	473	+2
Unemployment Rate - % SA	7.1	6.7	8.2		Government	305	305	301	+1
					Services	409	411	399	+3
Mfg. Avg. Wkly. Hours	41.5	40.8	41.2	+1	Fin., Ins. & Real. Est.	98	98	92	+6
Mfg. Avg. Wkly. Earn. - $	364	363	352	+3	Trans., Com. & Pub. Util.	100	99	93	+7

NOTES: All labor force data are from Bureau of Labor Statistics reports supplied by state agencies.
Only the unemployment rate data are seasonally adjusted.
The Southeast data represent the total of the six states.

GENERAL

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.		JUNE 1987	R MAY 1987	JUNE 1986	ANN. % CHG.
UNITED STATES										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	3,589.7	3,529.7	3,430.6	+ 5	Prices Rec'd by Farmers				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Index (1977=100)	131	129	121	+ 8
Plane Pass. Arr. (thous.)		N.A.	N.A.	N.A.		Broiler Placements (thous.)	92,068	91,353	86,019	+ 7
Petroleum Prod. (thous.)	MAY	8,444.0	8,413.3	8,848.0	+ 5	Calf Prices ($ per cwt.)	78.80	77.60	58.10	+36
Consumer Price Index						Broiler Prices (¢ per lb.)	27.60	30.00	34.00	-19
1967=100	JUNE	340.1	338.7	327.9	+ 4	Soybean Prices ($ per bu.)	5.36	5.33	5.19	+ 3
Kilowatt Hours - mils.	APR	185.0	193.7	193.0	- 4	Broiler Feed Cost ($ per ton)	(Q2)183	(Q1)174	(Q2)189	- 3
SOUTHEAST										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	436.8	428.9	419.2	+ 4	Prices Rec'd by Farmers				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Index (1977=100)	117	118	115	+ 2
Plane Pass. Arr. (thous.)	MAY	6,059.0	6,438.0	4,928.1	+23	Broiler Placements (thous.)	38,481	37,944	35,815	+ 7
Petroleum Prod. (thous.)	MAY	1,426.0	1,422.5	1,417.0	+ 1	Calf Prices ($ per cwt.)	77.51	75.11	54.96	+41
Consumer Price Index						Broiler Prices (¢ per lb.)	25.84	28.83	32.93	-22
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.53	5.41	5.22	+ 6
Kilowatt Hours - mils.	APR	29.2	29.0	30.9	- 6	Broiler Feed Cost ($ per ton)	(Q2)173	(Q1)168	(Q2)181	- 4
ALABAMA										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	45.9	45.2	44.8	+ 2	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: MAR., MAR.	416		447	- 7
Plane Pass. Arr. (thous.)	MAY	182.0	170.8	146.1	+24	Broiler Placements (thous.)	13,317	13,292	12,342	+ 8
Petroleum Prod. (thous.)	MAY	56.0	55.0	62.0	-10	Calf Prices ($ per cwt.)	76.00	76.80	52.80	+44
Consumer Price Index						Broiler Prices (¢ per lb.)	25.00	29.00	33.10	-24
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.61	5.43	5.20	+ 8
Kilowatt Hours - mils.	APR	4.1	4.1	3.8	+ 8	Broiler Feed Cost ($ per ton)	177	175	181	- 2
FLORIDA										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	171.6	169.2	163.6	+ 5	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.						Dates: MAR., MAR.	1,537		1,554	- 1
Plane Pass. Arr. (thous.)	MAY	2,787.5	3,263.5	2,391.2	+17	Broiler Placements (thous.)	2,488	2,401	2,388	+ 4
Petroleum Prod. (thous.)	MAY	23.0	21.0	31.0	+26	Calf Prices ($ per cwt.)	80.70	81.10	58.50	+38
Consumer Price Index		**MAY**	**MAR**	**MAY**		Broiler Prices (¢ per lb.)	25.00	29.00	32.00	-22
1977=100 MIAMI		179.1	178.4	173.0	+ 4	Soybean Prices ($ per bu.)	5.61	5.43	5.20	+ 8
Kilowatt Hours - mils.	APR	8.5	8.3	8.1	+ 5	Broiler Feed Cost ($ per ton)	177	175	181	- 2
GEORGIA										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	83.6	82.2	79.4	+ 5	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: MAR., MAR.	585		607	- 4
Plane Pass. Arr. (thous.)	MAY	2,301.8	2,190.5	1,765.9	+30	Broiler Placements (thous.)	15,489	15,178	14,191	+ 9
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.		Calf Prices ($ per cwt.)	73.30	72.80	51.70	+42
Consumer Price Index						Broiler Prices (¢ per lb.)	25.00	28.00	32.00	-22
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.45	5.31	5.20	+ 5
Kilowatt Hours - mils.	APR	5.0	5.0	4.7	+ 6	Broiler Feed Cost ($ per ton)	177	175	181	- 2
LOUISIANA										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	50.3	49.4	50.8	- 1	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: MAR., MAR.	256		308	-17
Plane Pass. Arr. (thous.)	MAY	346.7	372.2	314.7	+10	Broiler Placements (thous.)	N.A.		N.A.	
Petroleum Prod. (thous.)	MAY	1,268.0	1,267.0	1,240.0	+ 2	Calf Prices ($ per cwt.)	83.50	73.50	58.00	+44
Consumer Price Index						Broiler Prices (¢ per lb.)	28.30	29.80	35.50	-20
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.51	5.32	5.20	+ 6
Kilowatt Hours - mils.	APR	4.2	4.1	4.3	- 2	Broiler Feed Cost ($ per ton)	159	147	181	-12
MISSISSIPPI										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	26.0	25.0	24.9	+ 4	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: MAR., MAR.	307		438	-30
Plane Pass. Arr. (thous.)	MAY	48.0	46.1	38.1	+26	Broiler Placements (thous.)	7,186	7,073	6,874	+ 5
Petroleum Prod. (thous.)	MAY	79.0	79.0	84.0	- 6	Calf Prices ($ per cwt.)	77.90	74.00	55.60	+40
Consumer Price Index						Broiler Prices (¢ per lb.)	28.20	29.80	34.40	-18
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.62	5.38	5.20	+ 8
Kilowatt Hours - mils.	APR	2.0	1.9	1.9	+ 5	Broiler Feed Cost ($ per ton)	159	147	181	-12
TENNESSEE										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	59.4	57.9	55.7	+ 7	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: MAR., MAR.	397		418	-5
Plane Pass. Arr. (thous.)	MAY	393.0	394.9	272.1	+44	Broiler Placements (thous.)	N.A.		N.A.	
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.		Calf Prices ($ per cwt.)	74.70	71.80	53.30	+40
Consumer Price Index						Broiler Prices (¢ per lb.)	27.00	29.10	30.50	-11
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.40	5.41	5.31	+ 2
Kilowatt Hours - mils.	APR	5.4	5.6	8.0	-32	Broiler Feed Cost ($ per ton)	205	187	189	+ 8

NOTES: Personal Income data supplied by U. S. Department of Commerce. Taxable Sales are reported as a 12-month cumulative total. Plane Passenger Arrivals are collected from 26 airports. Petroleum Production data supplied by U. S. Bureau of Mines. Consumer Price Index data supplied by Bureau of Labor Statistics. Agriculture data supplied by U. S. Department of Agriculture. Farm Cash Receipts data are reported as cumulative for the calendar year through the month shown. Broiler placements are an average weekly rate. The Southeast data represent the total of the six states. N. A. = not available. The annual percent change calculation is based on most recent data over prior year. R = revised.

GENERAL

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.		JULY 1987	R JUNE 1987	JULY 1986	ANN. % CHG.
UNITED STATES										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	3,589.7	3,529.7	3,430.6	+ 5	Prices Rec'd by Farmers				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Index (1977=100)	128	131	125	+ 2
Plane Pass. Arr. (thous.)		N.A.	N.A.	N.A.		Broiler Placements (thous.)	89,586	92,068	84,208	+ 6
Petroleum Prod. (thous.)	JUNE	8,358.9	8,444.0	8,808.1	- 5	Calf Prices ($ per cwt.)	80.70	78.80	59.80	+35
Consumer Price Index						Broiler Prices (¢ per lb.)	28.10	27.60	42.40	-34
1967=100	JULY	340.8	340.1	328.0	+ 4	Soybean Prices ($ per bu.)	5.20	5.36	5.07	+ 3
Kilowatt Hours - mils.	MAY	189.0	185.0	179.4	+ 5	Broiler Feed Cost ($ per ton)	(Q3)193	(Q2)183	(Q3)190	+ 2
SOUTHEAST										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	436.8	428.9	419.2	+ 4	Prices Rec'd by Farmers				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Index (1977=100)	114	117	119	- 4
Plane Pass. Arr. (thous.)	JUNE	5,635.2	6,058.9	5,089.4	+11	Broiler Placements (thous.)	37,388	38,481	34,924	+ 7
Petroleum Prod. (thous.)	JUNE	1,423.0	1,426.0	1,408.0	+ 1	Calf Prices ($ per cwt.)	80.79	77.51	57.28	+41
Consumer Price Index						Broiler Prices (¢ per lb.)	26.28	25.84	41.85	-37
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.35	5.53	5.19	+ 3
Kilowatt Hours - mils.	MAY	31.3	29.2	28.9	+ 8	Broiler Feed Cost ($ per ton)	(Q3)181	(Q2)173	(Q3)184	- 2
ALABAMA										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	45.9	45.2	44.8	+ 2	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: APR., APR.	564		592	- 5
Plane Pass. Arr. (thous.)	JUNE	175.8	182.0	151.8	+16	Broiler Placements (thous.)	13,024	13,317	12,112	+ 8
Petroleum Prod. (thous.)	JUNE	56.0	56.0	57.0	- 2	Calf Prices ($ per cwt.)	79.00	76.00	54.10	+46
Consumer Price Index						Broiler Prices (¢ per lb.)	25.00	25.00	42.00	-40
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.29	5.61	5.20	+ 2
Kilowatt Hours - mils.	MAY	4.5	4.1	3.9	+15	Broiler Feed Cost ($ per ton)	(Q3)185	(Q2)177	(Q3)189	- 2
FLORIDA										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	171.6	169.2	163.6	+ 5	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.						Dates: APR., APR.	2,197		2,450	-10
Plane Pass. Arr. (thous.)	JUNE	2,639.5	2,787.5	2,340.2	+13	Broiler Placements (thous.)	2,430	2,488	2,241	+ 8
Petroleum Prod. (thous.)	JUNE	22.0	23.0	29.0	-24	Calf Prices ($ per cwt.)	84.20	80.70	63.00	+34
Consumer Price Index		JUL	MAY	JUL		Broiler Prices (¢ per lb.)	25.50	25.00	48.00	-47
1977=100 MIAMI		180.5	179.1	171.2	+ 5	Soybean Prices ($ per bu.)	5.29	5.61	5.20	+ 2
Kilowatt Hours - mils.	MAY	9.3	8.5	8.3	+12	Broiler Feed Cost ($ per ton)	(Q3)185	(Q2)177	(Q3)189	- 2
GEORGIA										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	83.6	82.2	79.4	+ 5	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: APR., APR.	781		808	- 3
Plane Pass. Arr. (thous.)	JUNE	2,177.6	2,301.8	1,999.5	+ 9	Broiler Placements (thous.)	14,951	15,489	13,969	+ 7
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.		Calf Prices ($ per cwt.)	76.70	73.30	53.20	+44
Consumer Price Index						Broiler Prices (¢ per lb.)	25.50	25.00	42.00	-39
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.15	5.45	5.20	- 1
Kilowatt Hours - mils.	MAY	5.5	5.0	5.1	+ 4	Broiler Feed Cost ($ per ton)	(Q3)185	(Q2)177	(Q3)189	- 2
LOUISIANA										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	50.3	49.4	50.8	- 1	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: APR., APR.	299		371	-19
Plane Pass. Arr. (thous.)	JUNE	304.3	346.7	285.8	+ 6	Broiler Placements (thous.)	N.A.		N.A.	
Petroleum Prod. (thous.)	JUNE	1,267.0	1,268.0	1,238.0	+ 2	Calf Prices ($ per cwt.)	86.00	83.50	60.00	+43
Consumer Price Index						Broiler Prices (¢ per lb.)	29.30	28.30	44.00	-33
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.46	5.51	5.20	+ 5
Kilowatt Hours - mils.	MAY	4.7	4.2	4.5	+ 4	Broiler Feed Cost ($ per ton)	(Q3)165	(Q2)159	(Q3)169	- 2
MISSISSIPPI										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	26.0	25.0	24.9	- 4	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: APR., APR.	393		547	-28
Plane Pass. Arr. (thous.)	JUNE	47.3	48.0	40.0	+18	Broiler Placements (thous.)	6,982	7,186	6,602	+ 6
Petroleum Prod. (thous.)	JUNE	78.0	79.0	84.0	- 7	Calf Prices ($ per cwt.)	80.20	77.90	58.90	+36
Consumer Price Index						Broiler Prices (¢ per lb.)	29.30	28.20	40.80	-28
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.37	5.62	5.14	+ 4
Kilowatt Hours - mils.	MAY	2.1	2.0	2.0	+ 5	Broiler Feed Cost ($ per ton)	(Q3)165	(Q2)159	(Q3)169	- 2
TENNESSEE										
Personal Income						Agriculture				
($ bil. - SAAR)	Q1	59.4	57.9	55.7	+ 7	Farm Cash Receipts - $ mil.				
Taxable Sales - $ bil.		N.A.	N.A.	N.A.		Dates: APR., APR	531		549	- 3
Plane Pass. Arr. (thous.)	JUNE	290.7	392.9	272.1	+ 7	Broiler Placements (thous.)	N.A.		N.A.	
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.		Calf Prices ($ per cwt.)	79.30	74.70	54.30	+46
Consumer Price Index						Broiler Prices (¢ per lb.)	26.80	27.00	41.00	-35
1967=100		N.A.	N.A.	N.A.		Soybean Prices ($ per bu.)	5.38	5.40	5.24	+ 3
Kilowatt Hours - mils.	MAY	5.2	5.4	5.1	+ 2	Broiler Feed Cost ($ per ton)	(Q3)208	(Q2)205	(Q3)205	+ 1

NOTES: Personal Income data supplied by U. S. Department of Commerce. Taxable Sales are reported as a 12-month cumulative total. Plane Passenger Arrivals are collected from 26 airports. Petroleum Production data supplied by U. S. Bureau of Mines. Consumer Price Index data supplied by Bureau of Labor Statistics. Agriculture data supplied by U. S. Department of Agriculture. Farm Cash Receipts data are reported as cumulative for the calendar year through the month shown. Broiler placements are an average weekly rate. The Southeast data represent the total of the six states. N. A. = not available. The annual percent change calculation is based on most recent data over prior year. R = revised.

CONSTRUCTION

12-month cumulative rate

	MAY 1987	APR 1987	MAY 1986	ANN. % CHG		MAY 1987	APR 1987	MAY 1986	ANN. % CHG
UNITED STATES									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	47,289	47,290	61,149	-23	Value - $ Mil.	96,230	96,859	88,225	+9
Industrial Bldgs.	8,250	8,374	8,846	-7	Residential Permits - Thous.				
Offices	13,840	13,849	15,823	-13	Single-family units	1,069.4	1,082.6	1,005.0	+6
Stores	12,095	11,991	11,644	+4	Multifamily units	589.2	610.0	770.4	-24
Hospitals	2,449	2,513	2,403	+2	Total Building Permits				
Schools	1,192	1,180	1,090	+9	Value - $ Mil.	143,520	144,149	149,374	-4
SOUTHEAST									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	7,787	7,866	10,361	-25	Value - $ Mil.	15,765	15,797	15,564	+1
Industrial Bldgs.	1,058	1,125	1,178	-10	Residential Permits - Thous.				
Offices	1,868	1,883	2,482	-25	Single-family units	205.0	206.2	203.7	+0
Stores	2,412	2,397	2,343	+3	Multifamily units	120.6	123.8	157.6	-23
Hospitals	416	445	420	-1	Total Building Permits				
Schools	146	152	161	-9	Value - $ Mil.	23,552	23,663	25,925	-8
ALABAMA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	570	561	632	-10	Value - $ Mil.	667	678	607	+10
Industrial Bldgs.	67	72	59	+13	Residential Permits - Thous.				
Offices	169	164	149	+13	Single-family units	11.0	11.2	10.2	+8
Stores	185	174	181	+2	Multifamily units	6.1	6.7	8.2	-26
Hospitals	14	17	21	-36	Total Building Permits				
Schools	21	21	17	+25	Value - $ Mil.	1,237	1,239	1,239	-0
FLORIDA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	3,752	3,852	5,349	-30	Value - $ Mil.	8,772	8,733	8,696	+1
Industrial Bldgs.	399	407	469	-15	Residential Permits - Thous.				
Offices	841	891	1,197	-30	Single-family units	108.3	108.0	106.2	+2
Stores	1,154	1,162	1,203	-4	Multifamily units	78.3	80.0	94.7	-17
Hospitals	288	314	243	+19	Total Building Permits				
Schools	34	32	53	-37	Value - $ Mil.	12,523	12,585	14,045	-11
GEORGIA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	1,788	1,752	1,979	-10	Value - $ Mil.	3,613	3,682	3,546	+2
Industrial Bldgs.	310	350	352	-12	Residential Permits - Thous.				
Offices	446	411	524	-15	Single-family units	49.5	50.7	50.3	-2
Stores	548	532	393	+39	Multifamily units	19.8	20.6	28.4	-30
Hospitals	20	21	35	-43	Total Building Permits				
Schools	42	42	26	+60	Value - $ Mil.	5,400	5,434	5,525	-2
LOUISIANA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	445	448	955	-53	Value - $ Mil.	479	493	707	-32
Industrial Bldgs.	37	38	37	0	Residential Permits - Thous.				
Offices	91	91	325	-72	Single-family units	7.3	7.5	10.7	-32
Stores	135	130	215	-37	Multifamily units	1.7	1.8	4.7	-64
Hospitals	34	36	34	0	Total Building Permits				
Schools	36	41	43	-16	Value - $ Mil.	923	941	1,662	-44
MISSISSIPPI									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	233	240	307	-24	Value - $ Mil.	320	323	350	-9
Industrial Bldgs.	22	21	31	-30	Residential Permits - Thous.				
Offices	55	59	69	-21	Single-family units	5.3	5.4	5.8	-9
Stores	82	81	79	+3	Multifamily units	1.7	1.6	2.7	-37
Hospitals	24	24	16	+45	Total Building Permits				
Schools	8	8	6	+28	Value - $ Mil.	553	563	658	+49
TENNESSEE									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	1,001	1,012	1,138	-12	Value - $ Mil.	1,915	1,889	1,658	+16
Industrial Bldgs.	223	235	229	-3	Residential Permits - Thous.				
Offices	267	267	218	+22	Single-family units	23.6	23.4	20.5	+15
Stores	308	317	272	+13	Multifamily units	13.0	13.1	18.8	-31
Hospitals	37	33	69	-47	Total Building Permits				
Schools	6	7	15	-59	Value - $ Mil.	2,916	2,901	2,796	+4

NOTES: Data supplied by the U.S. Bureau of the Census, Housing Units Authorized by Building Permits and Public Contracts, C-40.
Nonresidential data excludes the cost of construction for publicly owned buildings.
The southeast data represents the total of the six states.

CONSTRUCTION

12-month cumulative rate

	JUN 1987	MAY 1987	JUN 1986	ANN. % CHG
UNITED STATES				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	47,747	47,289	59,517	-20
Industrial Bldgs.	8,127	8,250	8,866	-8
Offices	14,071	13,840	15,573	-10
Stores	12,230	12,095	11,850	+3
Hospitals	2,531	2,449	2,405	+5
Schools	1,204	1,192	1,126	+7
Residential Building Permits				
Value - $ Mil.	96,733	96,230	90,028	+7
Residential Permits - Thous.				
Single-family units	1,068.8	1,069.4	1,026.9	+4
Multifamily units	572.1	589.2	765.4	-25
Total Building Permits				
Value - $ Mil.	144,480	143,520	149,545	-3
SOUTHEAST				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	7,836	7,787	10,120	-23
Industrial Bldgs.	1,050	1,058	1,175	-11
Offices	1,833	1,868	2,402	-24
Stores	2,428	2,412	2,415	+1
Hospitals	436	416	404	+8
Schools	174	146	159	+9
Residential Building Permits				
Value - $ Mil.	15,882	15,765	15,818	+0
Residential Permits - Thous.				
Single-family units	207.1	205.0	204.4	+1
Multifamily units	115.0	120.6	159.0	-28
Total Building Permits				
Value - $ Mil.	23,718	23,552	25,938	-9
ALABAMA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	566	570	630	-10
Industrial Bldgs.	59	67	63	-5
Offices	166	169	155	+7
Stores	185	185	180	+3
Hospitals	14	14	21	-33
Schools	26	21	17	+54
Residential Building Permits				
Value - $ Mil.	685	667	615	+11
Residential Permits - Thous.				
Single-family units	10.9	11.0	10.4	+5
Multifamily units	6.5	6.1	8.2	-21
Total Building Permits				
Value - $ Mil.	1,252	1,237	1,245	+1
FLORIDA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	3,776	3,752	5,227	-28
Industrial Bldgs.	426	399	448	-5
Offices	814	841	1,187	-31
Stores	1,167	1,154	1,212	-4
Hospitals	302	288	236	+28
Schools	35	34	52	-32
Residential Building Permits				
Value - $ Mil.	8,934	8,772	8,796	+2
Residential Permits - Thous.				
Single-family units	111.1	108.3	105.4	+6
Multifamily units	73.4	78.3	96.9	-24
Total Building Permits				
Value - $ Mil.	12,710	12,523	14,023	-9
GEORGIA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	1,792	1,788	1,945	-8
Industrial Bldgs.	276	310	351	-21
Offices	440	446	510	-14
Stores	548	548	427	+28
Hospitals	20	20	33	-41
Schools	60	42	28	+115
Residential Building Permits				
Value - $ Mil.	3,555	3,613	3,692	-4
Residential Permits - Thous.				
Single-family units	48.9	49.5	51.5	-5
Multifamily units	19.8	19.8	28.6	-31
Total Building Permits				
Value - $ Mil.	5,346	5,400	5,637	-5
LOUISIANA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	453	445	872	-48
Industrial Bldgs.	37	37	36	+2
Offices	91	91	267	-66
Stores	143	135	215	-33
Hospitals	34	34	34	-1
Schools	35	36	43	-17
Residential Building Permits				
Value - $ Mil.	480	479	673	-29
Residential Permits - Thous.				
Single-family units	7.4	7.3	10.4	-29
Multifamily units	1.7	1.7	3.9	-56
Total Building Permits				
Value - $ Mil.	933	923	1,545	-40
MISSISSIPPI				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	237	233	309	-23
Industrial Bldgs.	31	22	31	-1
Offices	55	55	69	-21
Stores	75	81	90	-17
Hospitals	24	28	16	+48
Schools	9	8	6	+57
Residential Building Permits				
Value - $ Mil.	320	320	358	-11
Residential Permits - Thous.				
Single-family units	5.3	5.3	5.9	-10
Multifamily units	1.5	1.7	2.9	-48
Total Building Permits				
Value - $ Mil.	558	553	666	-16
TENNESSEE				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	1,012	1,001	1,137	-11
Industrial Bldgs.	221	223	246	-10
Offices	267	267	214	+25
Stores	311	308	291	+7
Hospitals	43	40	63	-33
Schools	8	6	13	-42
Residential Building Permits				
Value - $ Mil.	1,907	1,915	1,684	+13
Residential Permits - Thous.				
Single-family units	23.4	23.6	20.9	+12
Multifamily units	12.1	13.0	18.6	-35
Total Building Permits				
Value - $ Mil.	2,919	2,916	2,821	+3

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Nonresidential data excludes the cost of construction for publicly owned buildings.
The southeast data represents the total of the six states.

CONSTRUCTION

12-month cumulative rate

	JUL 1987	JUN 1987	JUL 1986	ANN. % CHG
UNITED STATES				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	47,615	47,747	57,224	-17
Industrial Bldgs.	8,183	8,127	8,851	-8
Offices	13,974	14,071	15,405	-9
Stores	12,237	12,230	11,929	+3
Hospitals	2,488	2,531	2,503	-1
Schools	1,170	1,204	1,112	+5
Residential Building Permits				
Value - $ Mil.	96,424	96,733	91,483	+5
Residential Permits - Thous.				
Single-family units	1,059.3	1,068.8	1,040.3	+2
Multifamily units	557.1	572.1	759.7	-27
Total Building Permits				
Value - $ Mil.	144,040	144,480	148,707	-3
SOUTHEAST				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	7,802	7,836	9,312	-16
Industrial Bldgs.	1,001	1,050	1,218	-18
Offices	1,855	1,833	2,339	-21
Stores	2,465	2,428	2,374	+4
Hospitals	432	436	378	+14
Schools	182	174	143	+27
Residential Building Permits				
Value - $ Mil.	15,805	15,882	16,001	-1
Residential Permits - Thous.				
Single-family units	206.0	207.1	205.1	+0
Multifamily units	109.6	115.0	159.5	-31
Total Building Permits				
Value - $ Mil.	23,606	23,718	25,313	-7
ALABAMA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	553	566	608	-9
Industrial Bldgs.	53	59	64	-17
Offices	159	166	155	+3
Stores	184	185	173	+6
Hospitals	15	14	21	-25
Schools	27	26	10	+156
Residential Building Permits				
Value - $ Mil.	689	685	631	+9
Residential Permits - Thous.				
Single-family units	11.0	10.9	10.4	+6
Multifamily units	5.7	6.5	8.6	-34
Total Building Permits				
Value - $ Mil.	1,242	1,252	1,239	+0
FLORIDA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	3,791	3,776	4,582	-17
Industrial Bldgs.	391	426	468	-16
Offices	851	814	1,157	-26
Stores	1,157	1,167	1,216	-5
Hospitals	307	302	213	+44
Schools	37	35	43	-13
Residential Building Permits				
Value - $ Mil.	8,914	8,934	8,887	+0
Residential Permits - Thous.				
Single-family units	111.2	111.1	105.2	+6
Multifamily units	69.8	73.4	99.0	-29
Total Building Permits				
Value - $ Mil.	12,705	12,710	13,469	-6
GEORGIA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	1,769	1,792	1,934	-9
Industrial Bldgs.	274	276	366	-25
Offices	464	440	483	-4
Stores	559	548	433	+29
Hospitals	21	20	34	-38
Schools	72	60	29	+150
Residential Building Permits				
Value - $ Mil.	3,577	3,555	3,720	-4
Residential Permits - Thous.				
Single-family units	48.3	48.9	52.0	-7
Multifamily units	20.3	19.8	27.6	-26
Total Building Permits				
Value - $ Mil.	5,346	5,346	5,654	-5
LOUISIANA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	464	453	790	-41
Industrial Bldgs.	37	36.9	33.8	+9
Offices	89	91	246	-64
Stores	176	143	186	-5
Hospitals	22	34	41	-47
Schools	28	35	44	-37
Residential Building Permits				
Value - $ Mil.	461	480	660	-30
Residential Permits - Thous.				
Single-family units	7.1	7.4	10.0	-29
Multifamily units	1.5	1.7	3.6	-58
Total Building Permits				
Value - $ Mil.	925	933	1,450	-36
MISSISSIPPI				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	242	237	278	-13
Industrial Bldgs.	31	31	27	+12
Offices	58	55	67	-14
Stores	73	75	86	-15
Hospitals	22	24	8	+159
Schools	10	9	3	+215
Residential Building Permits				
Value - $ Mil.	311	320	363	-14
Residential Permits - Thous.				
Single-family units	5.2	5.3	5.9	-12
Multifamily units	1.3	1.5	3.0	-57
Total Building Permits				
Value - $ Mil.	552	558	641	-14
TENNESSEE				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	983	1,012	1,120	-12
Industrial Bldgs.	215	221	259	-17
Offices	233	267	231	+1
Stores	316	311	279	+13
Hospitals	44	42	61	-27
Schools	8	8	14	-44
Residential Building Permits				
Value - $ Mil.	1,854	1,907	1,740	+7
Residential Permits - Thous.				
Single-family units	23.1	23.4	21.6	+7
Multifamily units	11.0	12.1	17.8	-38
Total Building Permits				
Value - $ Mil.	2,837	2,919	2,861	-1

NOTES: Data supplied by the U.S. Bureau of the Census, Housing Units Authorized by Building Permits and Public Contracts, C-40.
Nonresidential data excludes the cost of construction for publicly owned buildings.
The southeast data represents the total of the six states.

CONSTRUCTION

12-month cumulative rate

	AUG 1987	JUL 1987	AUG 1986	ANN. % CHG
UNITED STATES				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	47,265	47,615	55,031	-14
Industrial Bldgs.	8,032	8,183	8,758	-8
Offices	13,715	13,974	15,093	-9
Stores	12,450	12,237	11,952	+4
Hospitals	2,425	2,488	2,526	-4
Schools	1,070	1,170	1,181	-9
Residential Building Permits				
Value - $ Mil.	96,711	96,424	91,586	+6
Residential Permits - Thous.				
Single-family units	1,057.2	1,059.3	1,040.3	+2
Multifamily units	543.2	557.1	744.3	-27
Total Building Permits				
Value - $ Mil.	143,976	144,040	146,617	-2
SOUTHEAST				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	7,722	7,802	8,903	-13
Industrial Bldgs.	993	1,001	1,197	-17
Offices	1,871	1,855	2,196	-15
Stores	2,474	2,465	2,328	+6
Hospitals	397	432	404	-2
Schools	174	182	138	+26
Residential Building Permits				
Value - $ Mil.	15,909	15,805	15,917	-0
Residential Permits - Thous.				
Single-family units	206.3	206.0	204.6	+0
Multifamily units	116.7	109.6	157.4	-25
Total Building Permits				
Value - $ Mil.	23,631	23,606	24,820	-5
ALABAMA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	545	553	581	-6
Industrial Bldgs.	52	53	62	-16
Offices	164	159	146	+12
Stores	180	184	162	+11
Hospitals	15.8	15.5	22	-28
Schools	26	27	12	+112
Residential Building Permits				
Value - $ Mil.	656	689	668	-2
Residential Permits - Thous.				
Single-family units	10.9	11.0	10.5	+4
Multifamily units	4.5	5.7	9.7	-54
Total Building Permits				
Value - $ Mil.	1,200	1,242	1,249	-4
FLORIDA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	3,740	3,791	4,398	-15
Industrial Bldgs.	399	391	454	-12
Offices	837	851	1,089	-23
Stores	1,147	1,157	1,214	-6
Hospitals	289	307	227	+27
Schools	39	37	42	-6
Residential Building Permits				
Value - $ Mil.	9,073	8,914	8,806	+3
Residential Permits - Thous.				
Single-family units	111.6	111.2	105.2	+7
Multifamily units	80.2	69.8	97.8	-18
Total Building Permits				
Value - $ Mil.	12,813	12,705	13,203	-3
GEORGIA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	1,748	1,769	1,868	-6
Industrial Bldgs.	267	274	362	-26
Offices	496	464	392	+27
Stores	568	559	446	+27
Hospitals	17	21	39	-55
Schools	65	72	36	+80
Residential Building Permits				
Value - $ Mil.	3,573	3,577	3,708	-4
Residential Permits - Thous.				
Single-family units	48.3	48.3	51.7	-7
Multifamily units	19.0	20.3	27.7	-31
Total Building Permits				
Value - $ Mil.	5,321	5,346	5,577	-5
LOUISIANA				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	465	464	703	-34
Industrial Bldgs.	36.9	37	27	+37
Offices	94	89	233	-60
Stores	179	176	174	+3
Hospitals	16	22	42	-62
Schools	26	28	30	-14
Residential Building Permits				
Value - $ Mil.	454	461	626	-27
Residential Permits - Thous.				
Single-family units	7.0	7.1	9.6	-27
Multifamily units	1.4	1.5	3.0	-53
Total Building Permits				
Value - $ Mil.	920	925	1,330	-31
MISSISSIPPI				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	238	242	266	-11
Industrial Bldgs.	29	31	26	+11
Offices	61	58	71	-14
Stores	75	73	83	-10
Hospitals	17	22	12	+47
Schools	7	10	7	+3
Residential Building Permits				
Value - $ Mil.	308	311	360	-14
Residential Permits - Thous.				
Single-family units	5.1	5.2	5.8	-12
Multifamily units	1.2	1.3	2.9	-59
Total Building Permits				
Value - $ Mil.	546	552	626	-13
TENNESSEE				
Nonresidential Building Permits - $ Mil.				
Total Nonresidential	986	983	1,087	-9
Industrial Bldgs.	209	215	267	-22
Offices	219	233	265	-17
Stores	325	316	248	+31
Hospitals	42	44	62	-33
Schools	11	7	11	-2
Residential Building Permits				
Value - $ Mil.	1,845	1,854	1,749	+5
Residential Permits - Thous.				
Single-family units	23.3	23.1	21.8	+7
Multifamily units	10.4	11.1	16.3	-36
Total Building Permits				
Value - $ Mil.	2,831	2,837	2,836	-0

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Federal Reserve Bank of Atlanta
104 Marietta St., N.W.
Atlanta, Georgia 30303-2713

Address Correction Requested

Bulk Rate
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