

Revising the Atlanta Fed Dollar Index

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THE FOREIGN EXCHANGE VALUE OF THE DOLLAR HAS MANY IMPORTANT USES IN ECONOMIC ANALYSIS INVOLVING EXCHANGE MARKETS, CAPITAL FLOWS, TRADE, COMPETITIVENESS, AND A HOST OF OTHER ISSUES. BECAUSE TRADE WITH A MULTITUDE OF COUNTRIES IS IMPORTANT TO THE U.S. ECONOMY, GOVERNMENT OFFICIALS, BUSINESSPEOPLE, AND ECONOMISTS ARE INTERESTED IN OVERALL INTERNATIONAL TRANSACTIONS. HOWEVER, AN ANALYSIS OF ALL TRADE AND CAPITAL FLOWS INTO AND OUT OF THE UNITED STATES WOULD REQUIRE FOLLOWING MORE THAN ONE HUNDRED SEPARATE BILATERAL EXCHANGE RATES. AS AN ALTERNATIVE TO SUCH A CUMBERSOME ANALYSIS, FOR MORE THAN A DECADE THE FEDERAL RESERVE BANK OF ATLANTA TRADE-WEIGHTED DOLLAR INDEX HAS SERVED AS A SUMMARY STATISTIC FOR THE FOREIGN EXCHANGE MOVEMENTS OF THE DOLLAR. RECENT REVISIONS ACKNOWLEDGING SIGNIFICANT CHANGES IN THE WORLDWIDE ECONOMY ENSURE THAT THE INDEX WILL CONTINUE TO BE A VALUABLE TOOL.

While broader information about international transactions might seem desirable, such an analysis not only would be unwieldy because of the number of countries involved but also would require making generalized conclusions of limited value. Furthermore, to treat each of the exchange rates equally would be misleading. A 10 percent depreciation of the dollar against the currency of a U.S. major trading partner would obviously have a much larger impact than a 10 percent depreciation against the currency of a minor partner. Clearly, there is a need for a tool for summarizing the movements in the value of the dollar.

The question, then, is how best to represent the movements for analysis. One approach would be to track a small set of bilateral exchange rates that includes

major trading partners, such as Canada, Japan, Mexico, the United Kingdom, and Germany. Together, these countries account for nearly half of all U.S. trade. Such an analysis would sharply reduce the number of rates to be tracked and would give a broad picture of the changes in the dollar's value. Unfortunately, the results would be largely qualitative and would only approximate movements in the value of the dollar, particularly when dollar exchange rates for the few countries move in different directions. What seems more appealing, and tractable, is an index like the Atlanta Fed Dollar Index that weights the exchange rates based upon their importance in U.S. trade. With these weighted values then aggregated into one or a small number of indexes, this index would provide a single number for comparison against other peri-

ods to determine changes in the value of the dollar. In addition, weighting the currencies by their importance in U.S. trade shows the larger effects of movements in the currencies of large trading partners and the correspondingly smaller effects of currency movements for smaller trading partners. Showing the significance of relationships is an important quality in any summary measure of the dollar. However, even such an index may become less useful as trade patterns and foreign exchange regimes change, and reevaluating the appropriateness of its structure is necessary from time to time. The original Atlanta Fed Dollar Index set forth in Rosensweig (1986) envisioned that the index would undergo periodic revisions to its trade weights.

Current circumstances call for modifying the dollar index so that it can continue to contribute valuable information into the future. One significant development is adoption of the euro by the eleven countries—Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain (often referred to as Euroland)—that surrendered their national currencies and embarked on the third stage of the European Monetary Union (EMU) on January 4, 1999. The original Atlanta Fed Dollar Index contained only six of these eleven countries. Without any modifications, the dollar index would underweight the new euro because it would lack the trade weights of the five excluded countries. It would not be enough simply to add the trade weights of the five countries because the index would not then be comparable before and after the launch of the euro. Deeper modifications are required to fully account for the creation of the euro.

Reexamining the Atlanta Fed Dollar Index in response to the launch of the euro provided an opportune time to undertake more extensive revisions. It is an understatement to say that the world has changed significantly since the inception of the index in 1986. The fall of communism and the spread of market-based economies, together with deregulation and privatization in many developed and emerging markets, have totally reshaped the trade environment in which U.S. firms do business. The passage of such trade agreements as the North American Free Trade Agreement (NAFTA) and the liberalization of financial flows have reduced many barriers to trade. Consequently, a revised Atlanta Fed Dollar Index introduces some important trading partners not included in the original formulation of the index and thereby enhances the value of the index as a summary statistic of the dollar's value.

The Original Dollar Index

The Atlanta Fed trade-weighted dollar index was originally developed to capture changes in U.S. trade patterns that seemed inadequately portrayed in other dollar indexes. Other indexes available

at the time focused mainly on the large, developed economies, such as the Group of Ten (G-10) countries. Consequently, many of the United States' most important trading partners (for example, Korea, Hong Kong, and Mexico) were absent, and the Atlanta Fed Dollar Index sought a way to include them. In addition, designing subindexes provided a means of monitoring the dollar's movement against the currencies of particular regions of the world, which other indexes did not offer. Overall, the Atlanta Fed Dollar Index was designed to close the gap between information in existing, rather narrow dollar indexes and the reality of more diversified U.S. trade patterns.

One of the first questions raised in the construction of a dollar index is, of course, what would make it a good one? In many ways, the answer to this question lies in the index's usefulness in describing what it was designed to measure. For instance, in an index designed to measure the impact of changes in exchange rates on capital flows one would not want to

weight currencies based on trade. Instead, weighting would be based upon capital flows, and the countries included would most likely be the major countries originating and receiving capital flows to and from the United States. A study analyzing trade flows between developed economies would not want to use an index that includes all or a majority of the United States' trading partners since roughly 70 percent of U.S. trade is with Organisation for Economic Cooperation and Development (OECD) countries. Instead, a narrower index that includes only the developed economies would be appropriate. For the Atlanta Fed Dollar Index, the explicit purpose is to represent a broad range of countries—but not so many that distortions, such as black market exchange rates, can be introduced—with fixed, relatively recent trade weights. The design of the index makes it more useful for broad analysis than an index limited to developed economies would be. These broad objectives guide the current revisions to the Atlanta Fed Dollar Index.

Several key points must be balanced in selecting which countries to include in the index. Overall, the country coverage should mirror the index's purpose. If the index is designed to reflect trade flows, then the largest bilateral trading partners should be included. Furthermore, the country coverage should be large enough to accurately approximate the impact of foreign

For more than a decade the Federal Reserve Bank of Atlanta trade-weighted dollar index has served as a summary statistic for the foreign exchange movements of the dollar.

exchange movements on trade. However, including all trading partners is not desirable because it could introduce distortions. For example, the exchange rate movements between the United States and a country with a much higher inflation rate might reflect the inflation differential rather than relative price changes. Because changes in relative prices would be expected to induce changes in trade flows while inflation differentials would not, an index designed to reflect trade relationships would be designed to mirror changes in relative prices. Consequently, the countries included should

Current circumstances call for modifying the dollar index so that it can continue to contribute valuable information into the future. One significant development is adoption of the euro.

reflect a large portion of U.S. trade while allowing the index to accurately reflect changes in relative prices (Rosensweig 1987).

The criterion that the dollar index reflect changes in relative prices led to selecting countries with a single foreign exchange regime. Countries with multiple exchange rate regimes were excluded because of the difficulty of assigning weights to the differ-

ent exchange rates and the importance of accuracy in doing so if changes in relative prices of goods were to be reflected accurately. Countries with black market exchange rates were disqualified because of the obvious difficulty in attaining reliable data on these exchange rates as well as in weighting what portion of trade occurs at each rate.

Perhaps the most critical issue in selecting a country for the index was that it had a historical inflation experience similar to that of the United States (Rosensweig 1987). A real—that is, inflation-adjusted—dollar index would be the most valuable tool for analyzing the effect of movements in the dollar's value on U.S. trade. However, computing a real dollar index entails certain complications that reduce its feasibility. First, and foremost, is the timing of the data. Most inflation data are available with at least a one-month lag and sometimes a longer one. Consequently, a real dollar index would be several months old and probably behind the trade data it is designed to analyze. Also, a real dollar index is restricted to the monthly frequency of price indexes; in contrast, a nominal index offers the advantage that it can be computed daily. Another important challenge is finding a consistent set of price indexes that reflects the prices of traded goods. Such a set of price indexes does not exist, even in the United States, so it must be approximated using consumer or producer price data available in most

countries. However, even these common price indexes use different components and weights so that any price indexes chosen will be only a crude approximation to a consistent set of tradable goods.

While constructing a theoretically satisfying real dollar index is difficult, a nominal dollar index, properly constructed, can serve as a capable substitute. A nominal dollar index encompassing countries with inflation experiences similar to that of the United States would be a close proxy for a real dollar index. In the purest case, if all the countries in the nominal index had the same inflation rate as the United States, then that index would differ from the real dollar index only in levels. In reality, such performance is unlikely, but similar inflation rates result in a valid proxy for the real index, as the nominal Atlanta Fed Dollar Index proved to be a close approximation to a real Atlanta Fed Dollar Index constructed in Hunter (1990).

One of the most valuable features of a nominal index is that it can be calculated as soon as the exchange rate data become available. The Atlanta Fed index uses exchange rates that are the noon buying rates certified for customs usage by the Federal Reserve Bank of New York, which are published within hours of their certification. Overall, for countries having similar inflation experiences, the benefits of a nominal dollar index—the ease and frequency of calculation—outweigh the fact that it does not exactly track real exchange value.

The original Atlanta Fed Dollar Index comprised eighteen countries, including several Asian nations that were underrepresented in other indexes. Including these countries was important because they represented the fastest area of U.S. trade growth in the mid-1980s, when the dollar index was developed. Also, the Atlanta Fed Dollar Index featured trade weights that were significantly more recent than those in other dollar indexes in wide use at that time.

While the Atlanta Fed Dollar Index differentiated itself with the selection of countries in the index and in having more recent trade weights, it also did so in the weighting scheme chosen for the index—a fixed bilateral weighting scheme. The weight of an individual currency is based on the total trade between the United States and the particular country as a fraction of the total U.S. trade with all countries in the index. Such a weighting scheme ignores any third-party effects. For example, bilateral weights ignore whether a particular country does not trade with the United States but competes with the United States for exports to a third country. In theory, accounting for the third-party effects on trade would be optimal, but, in practice, accounting for these effects introduces potential distortions into the weighting scheme. The clearest example of these distortions is the regional trading block. When several countries agree to reduce trade barriers within their borders—for example,

the European Union—intraregional trade, which would be included in third-party effects, would distort the weighting scheme. Intraregional trade would most closely resemble trade among the individual states in the United States, and considering the reduced trade barriers would cause the index to overweight the third-party effects of trade, giving smaller countries a disproportionate weight in the index.

In addition to the Atlanta Fed Dollar Index's differentiation based on country selection, age of trade data, and weighting scheme, it also is distinctive in setting out several important subsets of U.S. trading partners. In addition to the overall index, the index reports on four component subindexes—the Canadian, European, Pacific, and Pacific-excluding-Japan. The regional subindexes are designed to isolate the dollar's movements against the various currencies in a particular region. For example, a textile manufacturer may be much more interested in the movement of the Pacific or Pacific-excluding-Japan subindex because the textile manufacturer would compete with producers from these countries, and information in the subindex would be more useful than the overall index.

Overall, construction of the Atlanta Fed Dollar Index seeks to address concerns associated with existing dollar indexes. It is designed to provide a concise way to measure movements in the dollar's value against many of the major currencies in the world. It has also been formulated to provide a real-time index that closely approximates changes in the real value of the dollar. Furthermore, the dollar index includes several countries that were growing in importance in trade with the United States at the time the index was developed but were omitted from other dollar indexes. The regional subindexes of the Atlanta Fed Dollar Index facilitate analysis of regional groupings of countries without having to analyze the various bilateral exchange rates.

Modifications to the Dollar Index

In the spirit of the original design, modifications to the Atlanta Fed Dollar Index attempted to maintain a concise approximation to a real index. At the same time, the modifications address some weaknesses of the dollar index that have arisen over the years. These weaknesses are largely the exclusion of several important or potentially important trading partners in the changing world economy as well as the fading relevance of the current trade weights. For example, the original dollar index did not adequately reflect the exchange rate changes attendant with the much-discussed Asian financial crisis that began in July 1997 because South Korea is the only affected country included in the index.

In general in the years since 1984, U.S. trade with the developed world has been growing less rapidly than

trade with the newly industrialized countries of Latin America and Southeast Asia, which the original dollar index does not represent well. Two factors contributing to these countries' rapid growth in trade are their emphasis on exports and their exploitation of comparative advantages, such as lower labor costs. Because U.S. firms now face stiff competition from imports in a multitude of industries, textilemakers, for example, are continually pushed to improve efficiency and fend off competition from Asian imports (Lloyd 1999). U.S. producers of computer components locate plants in Southeast Asia, in part because of attractive labor costs, while facing competition from firms based in Asia (Gomes 1997).

In addition, the reductions of tariff and nontariff barriers to trade also boost the volume of international trade. Such trading arrangements as NAFTA tend to open new trade avenues and change the importance of trading partners. Agreements like the Generalized Agreement on Tariffs and Trade (GATT) help countries use their comparative advantages to increase world trade. In effect, the U.S. trade pie is getting larger, and the relative sizes of its slices are changing.

Probably the most glaring omission from the current dollar index is Mexico, a country that currently accounts for about 9 percent of U.S. trade. Mexico was originally excluded because its inflation experience differed dramatically from that of the United States. In spite of the increase in inflation in the wake of the peso devaluation in 1994, Mexico has been successful in bringing its inflation rate down from the chronically high levels of the 1980s. In order to more accurately capture these new trading patterns, the revised dollar index will use trade weights based on the average weights for the period from 1995 to 1997.

As discussed above, there is clearly an argument for periodically revising the trade weights used to calculate the dollar index. In addition, the revision offers an opportune time to include other countries that are emerging as more important U.S. trading partners. The question becomes one of how many countries to add. There are two contrasting views: an expansive index that includes most trading partners or a narrower index that concisely describes the major trading relationships. The first is illustrated in the dollar index produced by the Federal Reserve Bank of Dallas and the second in an index the Board of Governors prepares. The Dallas Fed Dollar Index contains 129 countries and employs a moving-average weighting scheme. The recently revised Board of Governors index contains twenty-six countries (increased from ten) and uses a multilateral weighting scheme (Leahy 1998). The original and current Atlanta Fed Dollar Index attempts to lie somewhere in the middle of this spectrum in its approach. The issue of the Atlanta Fed Dollar Index's place on this spectrum is more fully developed in a later section.

A revised Atlanta Fed Dollar Index introduces some important trading partners not included in the original index and thereby enhances the value of the index as a summary statistic of the dollar's value.

The eighteen countries that the original index covers make up approximately 70 percent of total U.S. trade. Expanding the number to twenty-five countries would reflect approximately 82 percent of total U.S. trade. The expansion would add Mexico, Brazil, Malaysia, Ireland, Finland, Austria, Portugal, and Luxembourg. Adding the latter five countries would include the trade weights of all the EMU members before and after the launch of the euro, which, as noted above, created an unavoidable break in the dollar index calculations. For the time before January 4, 1999, the revised index is calculated

using the individual trade weights and currency changes for the eleven EMU members. The base year for the currencies is the average value of each individual currency in 1995. For dates after January 4, 1999, the euro is used in calculating the dollar index, with the base year for the currency being the average value of the European Currency Unit in 1995. The trade weight assigned to the

euro is the sum of the individual trade weights of the participating countries.

In addition, Sweden is being dropped from the index. Since 1984 the importance of Sweden as a trading partner has diminished so that it is no longer one of the top-twenty U.S. trading partners. Keeping Sweden would seem to justify adding other countries with higher trade rankings, market exchange rate regimes, and similar inflation histories. Consequently, out of commitment to the conciseness of the dollar index, Sweden has been removed. It is important to note, however, that Ireland, Finland, Austria, and Portugal, all of which have lower trade rankings than Sweden, are necessarily being included to fully account for EMU members. Furthermore, if a country not presently in the dollar index joins the EMU, the index will require a further revision to add this country's trade weight. Other countries added to the expanded dollar index are the three remaining top-fifteen trading partners originally not included—Mexico, Malaysia, and Brazil.

In an effort to maintain continuity, the subindexes of the dollar index will remain largely the same. The European subindex will contain the United Kingdom, Switzerland, and Euroland. The Pacific and Pacific-excluding-Japan subindexes will add Malaysia. The Canadian subindex will be renamed the Americas subindex and will include Canada, Mexico, and Brazil.

The expansion of the dollar index requires extensive truncation of the historical data for the dollar index and its subindexes, which will be discussed in more detail below. During the early stages of the modifications, it became apparent that this truncation could be problematic for many of the users of the dollar index, and there was a decided effort to reduce its impact. The most orderly solution seemed to be to create a new subindex that could be calculated back to 1973, providing users with a consistent set of data when needed. To minimize disruptions, the new subindex was designed to resemble the original dollar index as closely as possible. This historical subindex was dubbed the classic subindex. It is an analogue of the original index, the main difference being that it includes the entire group of first-wave EMU members and does not include Sweden. Therefore, the classic subindex consists of Canada, Japan, China, United Kingdom, Korea, Taiwan, Singapore, Hong Kong, Saudi Arabia, Switzerland, Australia, and Euroland. Table 1 provides a complete listing of the countries included in the dollar index and its subindexes, and the top section of Chart 1 provides the weights for various regions included in the dollar index. Table 2 compares the weights assigned to the currencies in the original and revised Atlanta Fed trade-weighted dollar index.

Ideally, the starting date of the proposed index would match the 1973 date of the current dollar index. However, adding new countries makes such a calculation impossible. The introduction of the *Real Plan* in Brazil in July 1994, which significantly cut that country's inflation rate, causes a break in the data. The tremendous swings in the currency's value before July 1994 would dominate the movements in the index, even though Brazil's weight is relatively small. Also, some of the countries in the new index had parallel exchange rate regimes in the years since 1973, and they were excluded from the original index because multiple exchange rates make it difficult to determine what percentage of trade occurs at each exchange rate and complicate the construction of the index. However, by 1995 these countries had dropped their parallel exchange rate regimes. As a result, the revised index begins on January 2, 1995, and is weighted so that 1995 equals one hundred. As mentioned earlier, the currencies that make up the euro are components of the euro only after January 1, 1999. Before this date the index is calculated using the individual currencies and trade weights. After this date the weight of the euro is the sum of the individual trade weights and the currency is indexed to the average value of the European Currency Unit for 1995. Chart 2 compares the expanded and original overall dollar index for monthly frequencies since 1995. Chart 3 shows the movements of the subindexes of the revised dollar index since 1995.

One important attribute of the original dollar index was that it served as a close proxy to a real dollar index,

TABLE 1 Countries in the New Atlanta Fed Dollar Index and Its Subindexes

Overall Index	Europe	Pacific	Pacific-excluding-Japan	Americas	Classic
Canada	Euroland	Japan	Korea	Canada	Euroland
Euroland	United Kingdom	Korea	Taiwan	Mexico	United Kingdom
Japan	Switzerland	Taiwan	Singapore	Brazil	Switzerland
Mexico		Singapore	Hong Kong		Japan
China		Hong Kong	Australia		Saudi Arabia
United Kingdom		Australia	China		Taiwan
Korea		China	Malaysia		Singapore
Taiwan		Malaysia			Hong Kong
Singapore					Australia
Malaysia					China
Hong Kong					Korea
Brazil					Canada
Saudi Arabia					
Switzerland					
Australia					

as discussed above. The inclusion of several countries with markedly different inflation experiences calls this assumption into question. The appendix shows the calculation of a real dollar index that includes the expanded list of countries, demonstrating that, overall, the newly expanded index remains a close approximation to a real index. However, because of data limitations at the time of this writing (June 1999) the analysis does not include the impact of Brazil's floating on the *real* in January 1999.

The comparison of the old and new dollar indexes in Chart 2 shows that they have performed similarly over the period since 1995. This similarity reinforces the subtlety of the index revisions. It is also unsurprising, given that the construction of the indexes is identical and the changes in the trade weights are not dramatic. However, the possibility for divergence between the indexes could be seen in the devaluation and subsequent floating of the Brazilian *real* in January 1999. While the introduction of the euro makes extending the old overall dollar index into 1999 problematic, the effect of Brazil's devaluation can be seen in Chart 4 in the divergence of the original Canadian subindex and the Americas subindex in the early part of 1999. While the top panel of Chart 4 shows the daily level of the Canadian and Americas subindexes from September 1998, the bottom panel shows the daily percentage change in these two indexes from the beginning of 1999. Even though the Brazilian *real* is only about 5 percent of the Americas subindex, the devaluation of the *real* has caused the old and new subindexes to diverge several times since January. Translated to the overall index, the effect of the devaluation would have been less pronounced because of Brazil's smaller weight.

Other Federal Reserve System Dollar Indexes

Board of Governors. Like the Atlanta Fed trade-weighted dollar index, the index produced by the Board of Governors of the Federal Reserve System underwent some modifications to incorporate the advent of the euro. The Board's index, established in 1971, measured the exchange value of the dollar against the currencies of the G-10 countries, which at the time accounted for the bulk of U.S. trade. The Board's old index employed a multilateral weighting scheme designed to measure the dollar's competitiveness in domestic and foreign markets. The new summary measures of the dollar's value introduced in October 1998 (Leahy 1998) aim to maintain the index as a measure of the dollar's competitiveness in world markets. The multilateral weights are designed to include third-party effects on trade. Furthermore, the weights are updated to reflect more closely the current pattern of U.S. trading relationships. The Board introduced three new measures to replace the existing G-10 index: the broad index, the major currencies index, and the other important trading partners index. The broad index covers twenty-six currencies. The major currencies index is a seven-currency subset of the broad index, and the other important trading partners index comprises the remaining nineteen currencies. Furthermore, there is a nominal and a real version of each of these indexes.

As in the original G-10 index, the Board of Governors' three new indexes employ a multilateral weighting scheme. However, the new measures use a somewhat different approach to better incorporate third-country effects in representing the dollar's international competitiveness. In addition, for the new index these trade weights are revised annually to incorporate changes in trade patterns.

TABLE 2
Weights of the Currencies in the Original
and Revised Atlanta Fed Dollar Index^a

Country	Original Index	Revised Index
Canada	28.8	24.6
Euroland	20.3 ^b	16.6
Japan	21.3	15.6
Mexico	N/A	11.0
China	1.6	5.5
United Kingdom	6.9	5.1
Korea	4.1	4.1
Taiwan	5.0	4.2
Singapore	2.0	3.0
Malaysia	N/A	2.3
Hong Kong	3.0	2.1
Brazil	N/A	1.9
Saudi Arabia	2.4	1.4
Switzerland	1.5	1.3
Australia	1.95	1.3
Sweden	1.3	N/A

^a Weights may not sum to one hundred because of rounding.

^b The weight for Euroland is the sum of the weights of the EMU members contained in the original index: Germany, France, Italy, the Netherlands, Belgium, and Spain.

Source: U.S. Bureau of the Census (1996–98).

In one important revision, the calculation of the third-country effects excludes intra-EU trade because of the close trading relationships among these countries and the start of monetary union. For comparison, Chart 1 breaks the Board index into regions as defined by the Atlanta Fed revised index.

Federal Reserve Bank of Dallas. The Dallas Fed created a dollar index that is substantially different from other dollar indexes, including the Atlanta Fed Dollar Index (Cox 1986). As noted earlier, the Dallas Fed Dollar Index is a trade-weighted dollar index that includes all 129 U.S. trading partners. The index is a bilateral weighting of the exports plus imports, like the Atlanta Fed Dollar Index, but the weights are a moving average of the three previous years. Consequently, the Dallas Fed Dollar Index provides a complete picture of the dollar's movement against the other currencies of the world. By including all U.S. trading partners, this broad measurement would provide the clearest proxy for the dollar's competitiveness in world markets, excluding any third-country effects. Since other indexes use only a small subset of U.S. trading partners, they can measure competitiveness only against this limited number of countries. It is quite possible that the dollar could be moving in the opposite direction against the

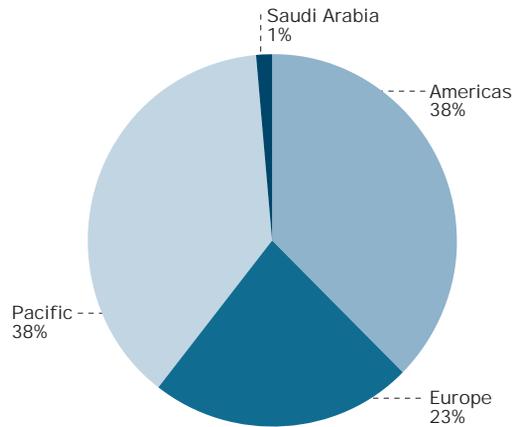
currencies not included in these indexes, and the net effect of the two disparate movements would be to cancel each other out. Again, for comparison, Chart 1 shows the trade weights of the countries in the Dallas Fed trade-weighted dollar index grouped in regions as defined by the Atlanta index.

Limitations. While both the Board of Governors and Dallas Fed Dollar Indexes fulfill important uses, each has limitations that the new Atlanta Fed Dollar Index seeks to address. Likewise, the Board of Governors and Dallas Fed Dollar Indexes complement the Atlanta Fed index with features that address its drawbacks. As mentioned earlier, the design of a dollar index is in many ways dependent on what it intends to measure. Because all three indexes were created for different purposes, it is not surprising that they were constructed in different ways. The following discussion highlights some of the features of the two other Federal Reserve System indexes addressed by the Atlanta Fed Dollar Index. The analysis is not meant to imply superiority of one index over another but to show that each has a place in certain instances. The key point for analysts is that they should take care to identify the index best suited for a particular analysis.

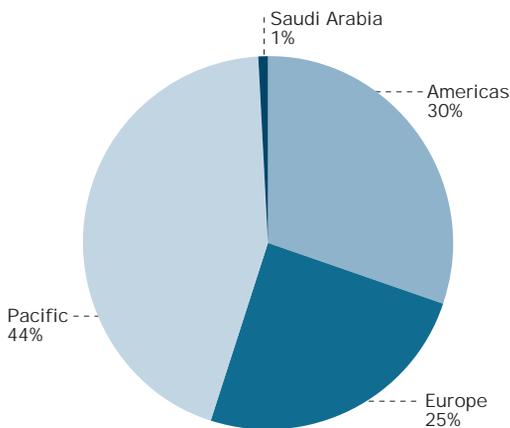
The primary potential drawback shared by the Board of Governors and Dallas Fed indexes is the changing trade weights on which they are based. Each index notes that by updating the trade weights annually it detects the most recent changes in U.S. trading relationships. However, doing so also introduces an element of uncertainty. It is difficult to determine if a change in the index is due to a change in the underlying exchange rates or a change in the trade weights. Moreover, the trade data undergo annual revisions that would further change the index. A fixed-weight index, such as the Atlanta Fed index, distinguishes changes in the underlying exchange rates. In order to maintain an accurate assessment of U.S. trading relationships, the fixed weights can be updated periodically. When the fixed weights are updated, the entire index would be revised, and it would not be continuous with the previous index, as the old and new Atlanta Fed Dollar Indexes cannot be compared directly. However, any difference between two dates in the indexes solely reflects changes in the component exchange rates.

The Board of Governors index features a multilateral weighting scheme in order to take into account third-party effects of trade. A caution for using this approach is that implementing third-party effects can introduce outsized trade weights for some small countries. With its recent revision, the Board of Governors tried to reduce these effects by removing intra-EU trade. However, any expansion of existing trade arrangements, such as the addition of new countries to NAFTA, could introduce similar problems. The Atlanta Fed's use of a bilateral weighting scheme avoids prob-

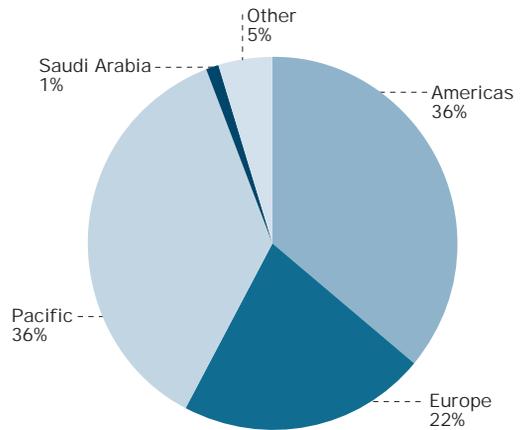
Revised Atlanta Fed Dollar Index



Board of Governors Broad Currency Index^a



Dallas Fed Dollar Index^a



^a Regions are broken out as defined by the Atlanta Fed Dollar Index for the purpose of comparing the three indexes. The Board and Dallas Fed indexes do not contain subindexes for these regions.

lems with third-party effects and also emphasizes simplicity in the weighting scheme.

The goal of the Federal Reserve Bank of Dallas Dollar Index is to get a complete picture of the environment in which dollar-denominated goods must compete. However, including all currencies can also inject distortions into the index. Some countries set official exchange rates, but trading in these countries often occurs at some other unofficial, or black market, exchange rate (International Monetary Fund 1992–95). Including the official but not the black market rate would present a distorted view of this currency’s weight in the dollar index. Besides, it would be difficult to assign shares of trade that occurred at the official rate and those that occurred

at the black market rate. Also, if a country is experiencing very high inflation rates, its currency will experience a nominal depreciation. If the depreciation is rapid enough, it can overshadow other changes in the index. One particular example is the case of the Brazilian hyperinflation of the early 1990s. In the early stages of modifying the Atlanta Fed Dollar Index, the Brazilian currency was included. Introducing it caused the index’s value to increase rapidly, and it was not possible to neutralize the effect of the *reals* rapid depreciation on the overall index. To address this significant problem, the Atlanta Fed chose January 1995, after the *Real Plan* had significantly reduced Brazil’s inflation rate, as the starting point for the revised index.

CHART 2
The Revised and Original Atlanta Fed Trade-Weighted Dollar Index, 1995–98

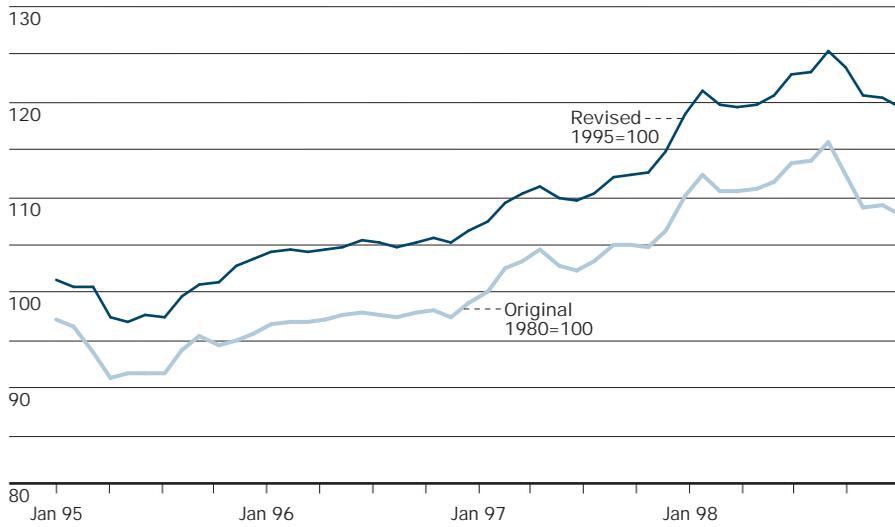


CHART 3
Subindexes of the Revised Atlanta Fed Trade-Weighted Dollar Index, 1995–98

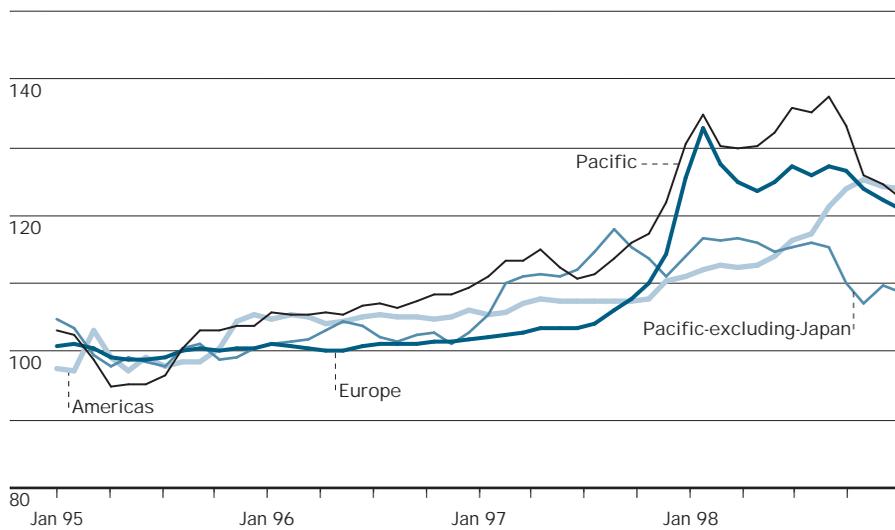
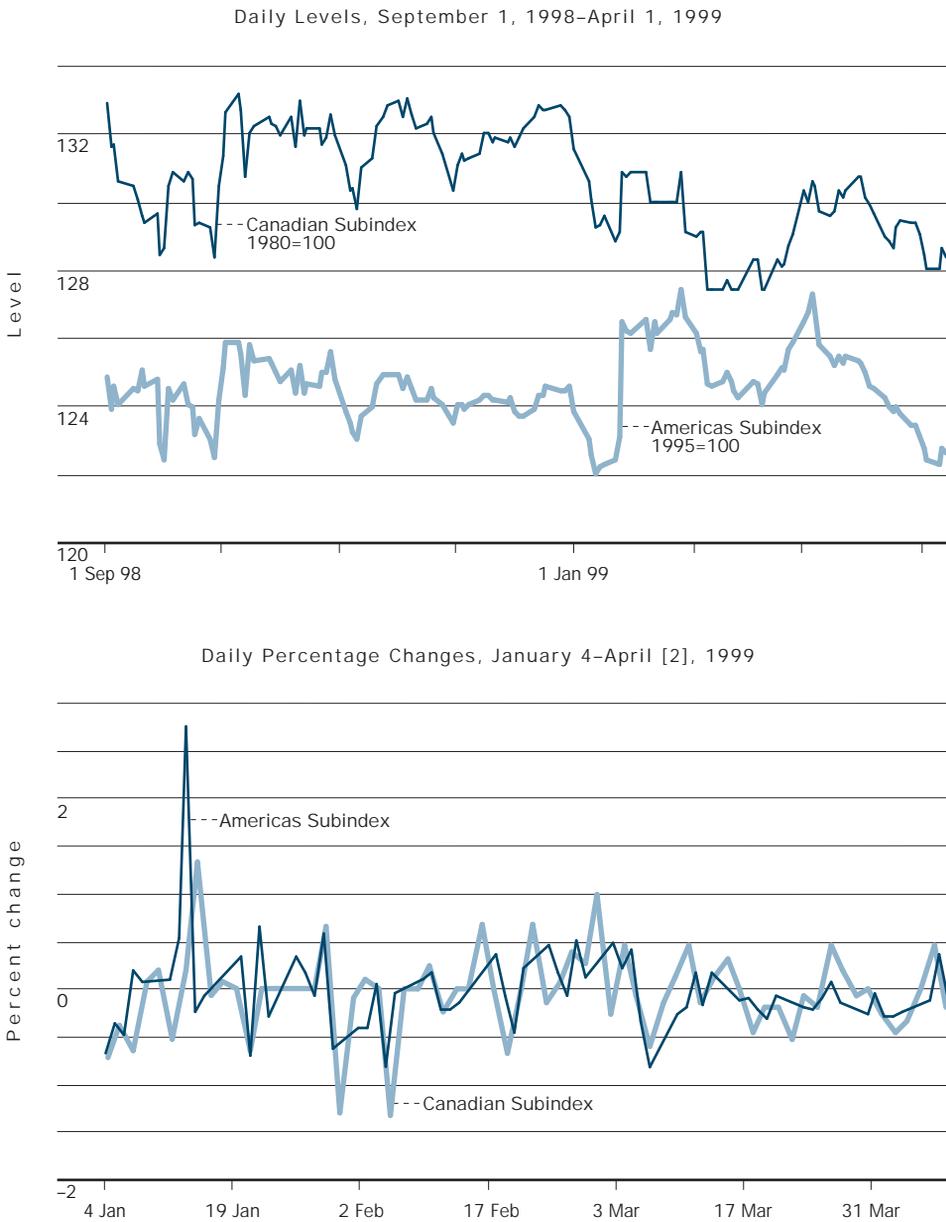


CHART 4
Comparison of Canadian and Americas Subindexes of the Atlanta Fed Dollar Index



Conclusion

The Atlanta trade-weighted dollar index has been a valuable tool for analyzing developments in foreign exchange markets. However, like most other fixed-weight price indexes, the dollar index requires occasional adjustments to reduce distortions inherent in using a static procedure to describe a dynamic process.

The modifications to the dollar index—adding important trading partners and updating country weights—ensure that the Atlanta Fed Dollar Index will continue to reflect developments in foreign exchange markets and relationships with trading partners and to be the valuable tool for analysts that it has been since its inception in 1986.

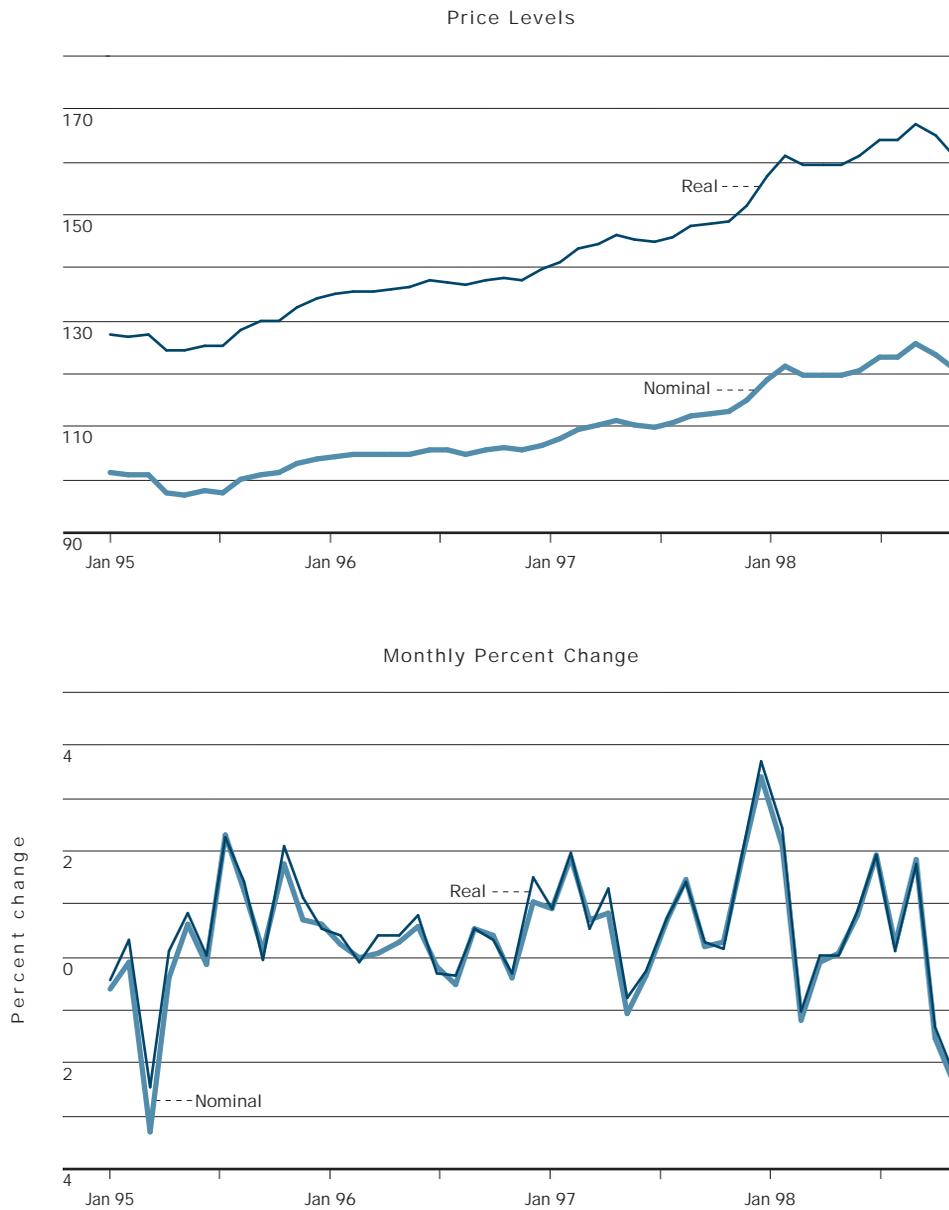
Real Dollar Index

One of the criteria in selecting countries for the original and revised dollar index was that countries have inflation histories similar to that of the United States. This approach ensures that the nominal dollar index approximates a real index. To determine how well the new dollar index would approximate a real index, a real dollar index was calculated for the expanded twenty-five countries for

comparison. The real index is calculated from January 1995 to October 1998 because of data constraints.

A primary problem in constructing a real dollar index is the choice of price measures to use in comparing the countries. In order to reduce the size of this problem, a consistent data set was used when possible. The price measure for twenty-two of the countries is the monthly consumer price

Comparison of Real and Nominal Atlanta Dollar Indexes
January 1995–October 1998



Source: Calculated using monthly CPI data from International Monetary Fund (1999), Data Resources International, and the Organisation for Economic Cooperation and Development.

index taken from the International Monetary Fund (1999). The price measures for Taiwan and China are the consumer price index, as released by their respective governments (Data Resources International). Finally, the Australian CPI is available only on a quarterly basis, so monthly data are interpolated and taken from the Organisation for Economic Cooperation and Development (OECD).

The real dollar index was calculated using the same weighting scheme as the nominal dollar index, with the only difference being that the indexed exchange rates are multiplied by the ratio of the foreign price level to the U.S. price level before computing the trade-weighted exchange rate. The real and nominal dollar indexes are depicted in the top

panel of the chart. The bottom panel depicts the monthly percentage change in the real and nominal dollar indexes and shows a close approximation of the two.

Given the lags with which the price data for some countries are reported, it is not feasible to produce a monthly report of the real dollar index. As long as the nominal dollar index approximates the real changes in the trade-weighted value of the dollar, the benefits of the timeliness of the nominal dollar index will outweigh the costs of not producing a real index. However, if countries in the dollar index maintain a radically different inflation rate than that of the United States, it would be wise to revisit the real dollar index.

REFERENCES

- COX, W. MICHAEL. 1986. "A New Alternative Trade-Weighted Dollar Exchange Rate Index." Federal Reserve Bank of Dallas *Economic Review* (September): 20–28.
- GOMES, LEE, DEAN TAKAHASHI, AND WAYNE ARNOLD. 1997. "Sweet and Sour: Asian Currency Chaos Roils U.S. Tech Firms, but It Isn't All Bad; Production in the Region Will Become Cheaper; Sales Will Take a Hit; Here Come Lower Priced PCs." *Wall Street Journal*, December 12, sec. A, 1.
- HUNTER, KAREN R. 1990. "Inflation and the Dollar Index." Federal Reserve Bank of Atlanta *Economic Review* 75 (September/October): 32–43.
- INTERNATIONAL MONETARY FUND. 1992–95. *Exchange Arrangements and Exchange Restrictions Annual Report*.
- . 1999. *International Financial Statistics*, March.
- LEAHY, MICHAEL P. 1998. "New Summary Measures of the Foreign Exchange Value of the Dollar." Federal Reserve Bulletin 84 (October): 811–18.
- LLOYD, MARY ELLEN. 1999. "U.S. Makers of Textiles for Apparel to Post Lower Profits on Imports, Sales." *Wall Street Journal* via DowVision. Available online at <<http://today.newscast.com>> [April 12].
- ROSENSWEIG, JEFFREY A. 1986. "A New Dollar Index: Capturing a More Global Perspective." Federal Reserve Bank of Atlanta *Economic Review* 71 (June/July): 12–22.
- . 1987. "Constructing and Using Exchange Rate Indexes." Federal Reserve Bank of Atlanta *Economic Review* 72 (Summer): 4–16.
- U.S. BUREAU OF THE CENSUS. 1996–98. *FT 900 U.S. International Trade in Goods and Services: Supplement*. Washington, D.C.: GPO.