
FRBSF WEEKLY LETTER

February 27, 1987

Has the Dollar Depreciated?

While the dollar has depreciated strongly against the currencies of most of its trading partners that are industrial countries, it has not depreciated against the currencies of a large number of less developed countries (LDCs). U.S. competitiveness therefore may not have improved as much as suggested by the major indices of the dollar, which only include the currencies of industrial countries. This is the message conveyed by the recently issued index of the trade-weighted value of the U.S. dollar presented by the Federal Reserve Bank of Dallas. According to the Dallas Fed index, which weights the dollar's value against the currencies of over 100 countries, the value of the dollar adjusted for inflation has fallen 13 percent since its peak in 1985, rather than the 23 percent indicated by the narrow Morgan index which compares the dollar with the currencies of 15 major U.S. trading partners.

This *Letter* reviews the differences among alternative dollar indices and the rationale for those indices. We also look at how the inclusion of LDCs in a dollar index affects the measurement of the dollar as well as the information conveyed about the international competitiveness of the United States.

Purpose of a dollar index

The value of the dollar is an indicator of the competitiveness of U.S. goods in world markets. As long as inflation in the U.S. and abroad are not very different, a weaker dollar means that U.S. goods will be cheaper in relation to foreign goods, and consequently, that U.S. exports will rise and imports fall, thus reducing the U.S. trade deficit.

The recent drop in the dollar's value has not, however, been uniform against all other currencies. Since the first quarter of 1985, the U.S. dollar has depreciated over 40 percent against the currencies of a large number of industrial countries, including the German deutschemark and the Japanese yen, but the U.S. dollar has depreciated by much less against the Canadian dollar, and has appreciated by large amounts against the currencies of a number of LDCs.

To determine whether the dollar is stronger or weaker *on balance*, and by how much, we need

to know what weight to assign to changes in the dollar value of each currency. The resulting weighted average measure of the dollar is known as an effective exchange rate index. What such an index will say about the value of the dollar depends on (1) the weights assigned to individual currencies and (2) the currencies included in the index.

Assigning weights to currencies

In assigning weights to currencies in a dollar index that seeks to assess U.S. competitiveness, the largest weight should be given to the currency whose value will most affect the international competitive position of the U.S. Most indices assign a weight to a currency according to the "size" of a country in U.S. export and import markets. The widely used Federal Reserve Board's index measures a country's size according to its total (exports plus imports) trade. Because the weights in this index are based on each country's trade with the rest of the world, the index is called a "multilateral" trade-weighted index. In contrast, the Morgan Guaranty and Dallas Fed indices assign weights according to the size of U.S. total trade with each country, and thus are known as "bilateral" trade-weighted indices.

Empirically, it appears to make very little difference whether bilateral or multilateral indices are used because the indices are highly correlated. To focus discussion on the implications of adding the currencies of LDCs to measures of the dollar, the following will only compare the Morgan and Dallas Fed bilateral trade-weighted indices.

Currencies included in the index

Traditionally, indices of the dollar have limited their coverage to the currencies of major industrial trading economies on the grounds that adding the currencies of LDCs does not give much more information about U.S. competitiveness and, in some respects, could distort the measurement of the dollar's value. There are two reasons for possible distortion.

First, trade with LDCs has consisted largely of primary products, which are generally priced in U.S. dollars. Primary products are not very sensi-

FRBSF

tive to variations in exchange rates because the demand for such products is not very responsive to price or exchange rate changes in the short run. Furthermore, as a result of market imperfections in the trade for these commodities, changes in exchange rates will, at least in the short run, not necessarily be reflected in changes in price. For example, heavy subsidies have reduced the influence of exchange rates in determining prices in the world market for agricultural commodities.

Second, very high inflation rates in a number of LDCs have resulted in very rapid depreciation in their currencies. These large depreciations can bring about large changes in the overall measure of the dollar that is out of proportion to their impact on U.S. competitiveness. For example, the estimated appreciation of the U.S. dollar against the Mexican peso of over 130 percent in 1986 has tended to make Mexican goods cheaper, as one dollar can now purchase many more pesos than it could a year ago. However, the resulting improvement in the competitiveness of Mexican goods was significantly offset by the price increases associated with an estimated Mexican inflation rate of 110 percent.

Notwithstanding the difficulties cited above, recent developments in international trade raise the question of whether measures of the dollar's value should continue to exclude LDCs. The share of LDCs in total U.S. trade rose from 28 percent in 1970 to 34 percent in 1985, and LDCs now supply 26 percent of all U.S. imports of manufactured goods. Such goods are more sensitive to exchange rate variations than are primary products.

Given the lack of depreciation in a large number of LDC currencies against the U.S. dollar, the newly industrializing LDCs, especially, may delay or reduce the improvement in the U.S. trade balance by taking up some of the market share conceded by industrial countries in U.S. export and import markets. Thus, excluding the currencies of LDCs from measurements of the dollar may result in the omission of important information about the international competitiveness of the United States.

Furthermore, the distortions introduced by inflation on nominal measures of the dollar, can be reduced by so-called "real" indices, which include adjustments for inflation. Such adjustments are particularly important when a dollar

index includes the currencies of LDCs with higher inflation rates. However, even real indices may not accurately reflect changes in U.S. competitiveness because timely and satisfactory data on inflation and exchange rates in LDCs are often not available.

How the dollar indices behave

Charts 1 and 2 illustrate the behavior, in nominal and real terms, of three bilateral indices of the dollar in the period 1983-86: (1) the Morgan narrow index, which includes the currencies of 15 industrial countries accounting for approximately 55 percent of the total U.S. trade, (2) the Morgan broad index, which covers 40 countries, including 22 LDCs accounting for nearly 90 percent of total U.S. trade, and (3) the Dallas Fed index, which, in its nominal version, covers 131 countries accounting for nearly 100 percent of U.S. trade, and, in its real version, covers 101 countries.

Chart 1, which illustrates the nominal indices, shows that the broad Morgan and Dallas Fed indices record a much stronger nominal appreciation of the dollar up to the first quarter 1985, and a much weaker subsequent depreciation, than does the narrow Morgan index. The nominal Dallas Fed index in particular records an almost insignificant depreciation in the value of the dollar since 1985.

Chart 1 also shows that the addition of just two high inflation countries (Mexico and Brazil, which account for 7.5 percent of U.S. trade) to the narrow Morgan index eliminates a large portion of the gap with the broad indices. This adjustment illustrates the extent to which the gap between the broad and narrow indices is caused by the impact of countries with high inflation rates. The broad nominal indices should therefore be interpreted with caution.

The real versions of the indices, which reflect adjustments for inflation, are illustrated in Chart 2. The gap between the narrow and broad bilateral indices of the dollar in the 1980s has been much narrower than the nominal indices would suggest. In fact, the correlation in the percent changes in each pair of the three real indices between 1976 and 1986 is approximately 90 percent or higher.

Furthermore, the two broad indices show that the real depreciation of the dollar since 1985 has been significantly stronger than indicated by

Chart 1
Comparison of Nominal Trade-Weighted
Dollar Exchange Rates,
(1983Q1—1986Q3)

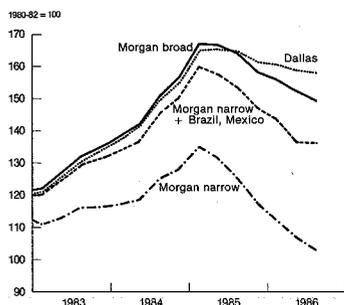
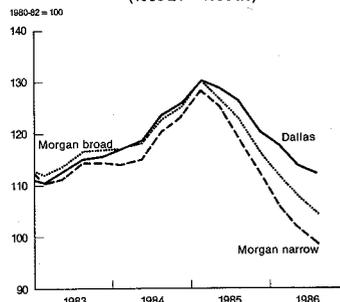


Chart 2
Comparison of Real Trade-Weighted
Dollar Indices,
(1983Q1—1986Q3)



their nominal versions in Chart 1. For example, up to the third quarter of 1986, the real Dallas Fed Index shows that the dollar had reversed 47 percent of its appreciation in the 1980s — much larger than the 9 percent reversal recorded by the nominal version of the same index.

Nevertheless, the narrow real Morgan index still shows a much steeper depreciation than do the broad indices. From the first quarter of 1985, to the third quarter of 1986, the real Dallas Fed index shows a depreciation of 13 percent, compared to 18 percent for the broad real Morgan index and 23 percent for the narrow real Morgan index.

A full assessment of the potential implications of these alternative measures for the volume of U.S. trade requires econometric analysis of U.S. trade flows using these alternative indices. However, the orders of magnitude involved may be illustrated by assuming that U.S. imports fall, and U.S. exports rise, $\frac{1}{3}$ of a percent for every percent depreciation in the real value of the U.S. dollar.

Given a real annualized level of U.S. imports of goods and services of \$541 billion and exports of \$385 billion (both in 1982 dollars) in the fourth quarter of 1986, the Dallas Fed index would predict an improvement in net exports that is approximately \$30 billion smaller than that predicted by the narrow Morgan index for the dollar. The broad Morgan index would predict an improvement in net exports that is \$15 billion smaller than the narrow Morgan index. (Because we have assumed that the impact of changes in the dollar on trade flows is the same for all indices, the differences using the alternative indices may be smaller than indicated above. Nevertheless, the figures show that

potentially large amounts are involved.) It is unclear which of the indices provides the most accurate measure of U.S. competitiveness, and, in particular, which of the two broad indices best represents the effects of LDCs on U.S. trade.

Conclusion

The inclusion of the currencies of LDCs with high rates of inflation in broad nominal indices of the dollar may give a misleading picture of U.S. competitiveness. As a result, such broad nominal indices of the dollar should be interpreted with caution. In particular, there has been a significant improvement in U.S. competitiveness since the dollar's peak in 1985, contrary to what may have been inferred from the discussion of the nominal Dallas Fed index in the media. By all measures, the U.S. trade balance should improve.

However, when adjustments are made for inflation, the broad real dollar indices still indicate a smaller dollar depreciation since 1985 than does a narrow index that excludes LDCs. "Back-of-the-envelope" calculations suggest that the improvement in U.S. competitiveness and in the trade balance indicated by the broad indices may be much smaller than that indicated by conventional narrow indices of the dollar.

Since there are many difficulties associated with gathering data from LDCs, it is not possible to say that the broad indices of the dollar will consistently provide a better measure of U.S. competitiveness than will the narrow indices. It is also more difficult to make the broad indices available on a timely basis. However, the broad indices do provide a useful point of comparison in attempting to establish the future likely path of the U.S. trade balance.

Ramon Moreno

Opinions expressed in this newsletter do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco, or of the Board of Governors of the Federal Reserve System.

Editorial comments may be addressed to the editor (Gregory Tong) or to the author . . . Free copies of Federal Reserve publications can be obtained from the Public Information Department, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 974-2246.

Alaska Arizona California Hawaii Idaho
Nevada Oregon Utah Washington

Research Department Federal Reserve Bank of SAN FRANCISCO

BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding	Change from	Change from	2/5/86
	2/4/87	1/28/87	Dollar	Percent ⁷
Loans, Leases and Investments ^{1 2}	206,197	- 936	3,029	1.4
Loans and Leases ^{1 6}	185,135	- 915	1,441	0.7
Commercial and Industrial	54,960	335	1,594	2.9
Real estate	67,201	141	1,232	1.8
Loans to Individuals	38,481	- 76	- 2,000	- 4.9
Leases	5,488	- 7	- 141	- 2.5
U.S. Treasury and Agency Securities ²	13,938	18	2,821	25.3
Other Securities ²	7,123	- 40	- 1,235	- 14.7
Total Deposits	209,101	3,782	6,711	3.3
Demand Deposits	53,724	3,075	5,589	11.6
Demand Deposits Adjusted ³	36,349	616	- 7,407	- 16.9
Other Transaction Balances ⁴	19,626	799	4,391	28.8
Total Non-Transaction Balances ⁶	135,751	- 92	- 3,270	- 2.3
Money Market Deposit Accounts—Total	46,896	- 57	1,295	2.8
Time Deposits in Amounts of \$100,000 or more	32,387	- 253	- 6,716	- 17.1
Other Liabilities for Borrowed Money ⁵	24,474	- 2,201	- 2,130	- 8.0
Two Week Averages of Daily Figures	Period ended 1/26/87	Period ended 1/12/87		
Reserve Position, All Reporting Banks				
Excess Reserves (+)/Deficiency (-)	67	1		
Borrowings	15	3		
Net free reserves (+)/Net borrowed(-)	52	- 1		

¹ Includes loss reserves, unearned income, excludes interbank loans

² Excludes trading account securities

³ Excludes U.S. government and depository institution deposits and cash items

⁴ ATS, NOW, Super NOW and savings accounts with telephone transfers

⁵ Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources

⁶ Includes items not shown separately

⁷ Annualized percent change