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HOW FAR HAS THE DOLLAR FALLEN?

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ABSTRACT

The present paper introduces a new index of the real value of the dollar relative to 80 other currencies. The individual exchange rates are combined with weights that reflect the recent (1984) multilateral pattern of trade. This new index confirms that the dollar rose very sharply between January 1980 and February 1985 and that about two-thirds of that appreciation was reversed by July 1986. This is true for both our multilateral and bilateral real indices. The analysis also shows that any index that fails to adjust for differences in inflation rates will give a very misleading impression of the dollar's evolution in the 1980s.

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How Far Has the Dollar Fallen?

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According to the Federal Reserve Board's multilateral trade-weighted index, the real value of the dollar fell 33 percent between its peak in February 1985 and its value in October 1986. This decline reversed 74 percent of the appreciation of 78 percent recorded between January 1980 and the February 1985 peak.

Several recent articles¹ have criticized the Federal Reserve index because it is limited to the dollar's exchange rate with only 10 industrial currencies and because the weights are based on trading patterns in 1972-76. The critics generally argue that extending the currencies in the index to a wider group of industrial countries and developing nations and using more recent weights would show a much smaller decline in the dollar. Some calculations, such as those by Cox (1986) or Kellner (1986), show virtually no decline in the dollar.

The studies that conclude that the dollar's fall after February 1985 has been very small are misleading because of two

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¹These include Cox (1986), Kellner (1986), Rosensweig (1986), The Economist (1986), Fortune Magazine (1986), and the Morgan Guaranty Trust Company (1986).

basic problems. Most important, they compare nominal exchange rates when it is the real exchange rate that affects competitiveness and trade. In addition, they combine the exchange rates of different countries using weights that reflect only their direct trade with the United States (bilateral trade weights) rather than their share of total world trade (multilateral trade weights).

The failure to make any adjustment for differences in national inflation rates is relatively unimportant when attention is limited to the major industrial countries. Thus the Federal Reserve Board's index for 10 industrial countries indicates that between January 1980 and February 1985 the dollar rose 78 percent in real terms and 85 percent in nominal terms; between February 1985 and October 1986, the index implies that the dollar fell 33 percent both in real and nominal terms. But when the group of countries in the index is extended to include countries like Mexico, Brazil and Argentina that experienced inflation rates over 100 percent a year, a comparison of nominal exchange rates is very misleading. Although the dollar actually rose some 300 percent against the Mexican peso since February 1985, this was essentially an offset to the high inflation in Mexico. More generally, the analysis in the present paper shows that in nominal terms the dollar rose 23 percent against an average of all developing country currencies between February 1985 and July 1986 while the corresponding average real exchange rate with those countries remained unchanged.

Averaging the individual country exchange rates with weights that reflect their trade with the United States alone (bilateral trade weights) rather than their share of total world trade (multilateral trade weights) ignores the influence of the bilateral exchange rates on the competition for sales in third countries. For example, the exchange rate between the dollar and the German mark influences not only US-German trade but also the abilities of the two countries to compete for sales to other nations. Using bilateral trade weights gives much more emphasis to Canada which is relatively important in U.S. trade but which is not very significant as a competitor of the United States in third markets. The analysis in the present paper shows that the bilateral trade weighted real exchange value of the dollar fell only 16 percent between February 1985 and July 1986 while the more appropriate multilateral value fell 24 percent.

The present paper describes the construction of a new multilateral trade weighted general price index of the dollar's real value relative to 80 currencies that together represent 89 percent of world trade other than that of the United States and the Soviet Block. The study compares the behavior of this index since 1980 with the bilateral and nominal exchange rate indices for the same period. The analysis shows that the real value of the dollar in July 1986 was 24 percent lower than it had been in February 1985 but was still 24 percent higher than it had been in January 1980.

1. The Sample of Currencies

The index developed in the present study combines the exchange rates between the dollar and the 80 countries for which data on domestic prices and trade could be obtained. These 80 countries, which include 21 OECD industrial countries and 59 developing countries, represent 89.1 percent of the adjusted total non-Soviet non-U.S. trade in 1984. More specifically, the total of the imports and exports of these 80 countries was 89.1 percent of the 1984 non-Soviet trade as measured by the International Monetary Fund and adjusted by excluding the trade of the United States, Hungary, Rumania and Yugoslavia and adding back the trade of Taiwan.

Table 1 presents the 25 leading countries in the index and indicates the share of adjusted total non-Soviet non-U.S. trade in 1984 for each country. Together these 25 countries represent 87.3 percent of the trade of the 80 countries in the sample.

2. Real Exchange Rates

There is no ideal price index for converting the nominal exchange rates to real exchange rates. Some experts argue that an appropriate index would include only internationally tradeable goods. Economists at the Morgan Guaranty Trust Company argue for excluding agricultural products and fuels because trade in agriculture is generally restricted by quotas while fuel prices are generally set in dollars; the Morgan Guaranty real effective exchange rate index (Morgan Guaranty Trust Company, 1986) uses

Table 1
Multilateral Trade Weights
for 25 major currencies

<u>Country</u>	<u>Weight</u>
West Germany	0.119
Japan	0.112
France	0.074
United Kingdom	0.073
Canada	0.062
Italy	0.058
Netherlands	0.047
Belgium-Luxemburg	0.039
Saudi Arabia	0.026
Korea	0.022
Taiwan	0.022
Hong Kong	0.021
Sweden	0.021
Switzerland	0.020
Singapore	0.019
Spain	0.019
Australia	0.018
Brazil	0.015
Mexico	0.013
Indonesia	0.013
Austria	0.013
Denmark	0.012
Norway	0.012
South Africa	0.012
Malaysia	0.011

Weights reflect the country's share in the total 1984 trade of the 80 countries in the index. See text for more detail.

wholesale price indices for intermediate and finished manufactured products. Pursuing this approach, it might also be argued that, in principle, textiles and many other manufactured products should also be excluded because they are subject to quotas, "voluntary restraint agreements", and other quantity restrictions. At the same time, the ideal coverage might be broadened to include nonmanufactured products like timber and fish that are traded without quota restrictions. In fact, however, the data are not available to pursue such adjustments.

The present study uses the consumer price indices for converting each of the 80 nominal exchange rates to a real exchange rate. This use of the consumer price indices follows the procedure of the Federal Reserve Board and has the advantage that the resulting NBER exchange rate index is a natural extension of the Federal Reserve's multilateral real exchange rate index applied to a much larger set of countries with more recent trade weights. The consumer price index also has the advantage that it is available for a large number of countries on a relatively timely basis.²

3. Multilateral Trade Weights

The real exchange rates are combined with weights that correspond to the ratio of each country's trade with all other

²The data on consumer prices are available in the International Monetary Fund's International Financial Statistics with the exception of Ireland, Australia and New Zealand (for which the data were obtained from the OECD statistics) and for Italy and Taiwan (for which the data were obtained from Data Resources, Inc.).

countries (the sum of its total exports and imports) to the total 1984 trade of the 80 countries in the index. When the 80 countries are classified into the 21 industrial countries in the OECD and the 59 developing countries, the OECD countries represent 73.2 percent of the total weight. The largest 25 weights are shown in Table 1.

The NBER exchange rate index is a geometric average of the 80 real exchange rates, a procedure adopted in virtually every study because it makes the overall index less sensitive to wide shifts in individual exchange rates.

This multilateral index corresponds to the procedure adopted by the Federal Reserve. Its purpose is to reflect the potential importance of each bilateral dollar exchange rate movement on that country's potential competition with the United States in all other markets as well as its direct trade with the United States. This is a clear potential advantage over the traditional bilateral weighting arrangement that ignores the importance of the country's trade with other nations.

Since several of the studies that claim that the dollar has not changed appreciably since early 1985 were based on a bilateral index, we also present a bilateral index for the 80 countries. In this index, the exchange rates are combined with weights that correspond to the ratio of each country's trade with the United States (the sum of its exports to and imports from the United States) to the total trade between the United States and the 80 countries. In the bilateral index, the OECD countries

represent 65.0 percent of the total weight.³

In principle the ideal weights would reflect the sensitivity of trade to the changes in individual bilateral exchange rates. Although the multilateral weights may be a better general approximation than bilateral weights, the multilateral index may give too much weight to intra-European trade that is not particularly sensitive to the value of the dollar. Similarly, a bilateral index weighted by U.S. imports from each country might be a better index for measuring the competitiveness of U.S. products vis-a-vis imports.

4. The Rise and Fall of the Dollar

Table 2 summarizes the rise and fall of the real multilateral trade weighted value of the dollar since January 1980 as well as the behavior of three other indices of the dollar's movements. The first column of the table shows the period of the rising dollar from January 1980 through February 1985. The second column shows the dollar's decline from February 1985 through July 1986, the most recent month for which price data were generally available. The final column shows the overall movement between January 1980 and July 1986.

The real multilateral value of the dollar rose 62.5 percent from January 1980 through February 1985. This reflects a 74.1 percent rise against the currencies of the industrial OECD

³The Morgan Guaranty Trust Company's widely cited traditional exchange rate index uses bilateral trade weights. The new Morgan Guaranty broad index is a hybrid of multilateral and bilateral procedures.

Table 2

Movements in the Value of the Dollar:

A Comparison of Four Exchange Rate Indices

<u>Index</u>	<u>Percentage Changes</u>		
	<u>Jan. 1980- Feb. 1985</u>	<u>Feb. 1985- July 1986</u>	<u>Jan. 1980- July 1986</u>
Multilateral Real			
Total	62.5	-23.9	23.6
OECD	74.1	-31.3	19.7
LDC	33.7	.3	34.1
Bilateral Real			
Total	38.2	-15.8	16.4
OECD	43.3	-25.0	7.4
LDC	29.1	-4.6	35.0
Multilateral Nominal			
Total	104.9	-19.2	65.5
OECD	84.9	-30.6	33.5
LDC	171.3	22.5	232.5
Bilateral Nominal			
Total	95.8	-5.9	84.2
OECD	48.4	-24.2	12.4
LDC	228.6	40.5	361.5

Note: The OECD index is composed of 21 OECD countries and represents 73.2% of the weights in the total index for the multilateral case and 65.0% for the bilateral case. The LDC index is composed of the other countries.

countries and a 33.7 percent rise against the currencies of the 59 less developed countries in the index. Recall that the OECD countries represented 73.2 percent of the total weight in the overall index.

From February 1985 through July 1986 the real value of the dollar fell 31.3 percent against the currencies of the OECD countries but remained unchanged (rose 0.3 percent) against the currencies of the 59 developing countries. The overall weighted average therefore shows that the total real value of the dollar declined 23.9 percent.

The third column shows that, as of July 1986, the real value of the dollar was still 23.6 percent above its value in January 1980. This reflects a net appreciation of 19.7 percent against the OECD currencies and 34.1 percent against the currencies of the developing countries.

5. A Comparison of Four Indices

The three other measures of the dollar's movements presented in Table 2 show very different patterns from the behavior of the dollar's real multilateral trade-weighted value. All four measures are also compared in figure 1 (with the indices all normalized to 100 in January 1980).

Simply shifting from multilateral to bilateral weights reduces the calculated real appreciation between 1980 and 1985 from 63 percent to 38 percent. This reflects a sharp fall in the appreciation relative to the other OECD countries (largely because of the greatly increased weight on Canada) and some

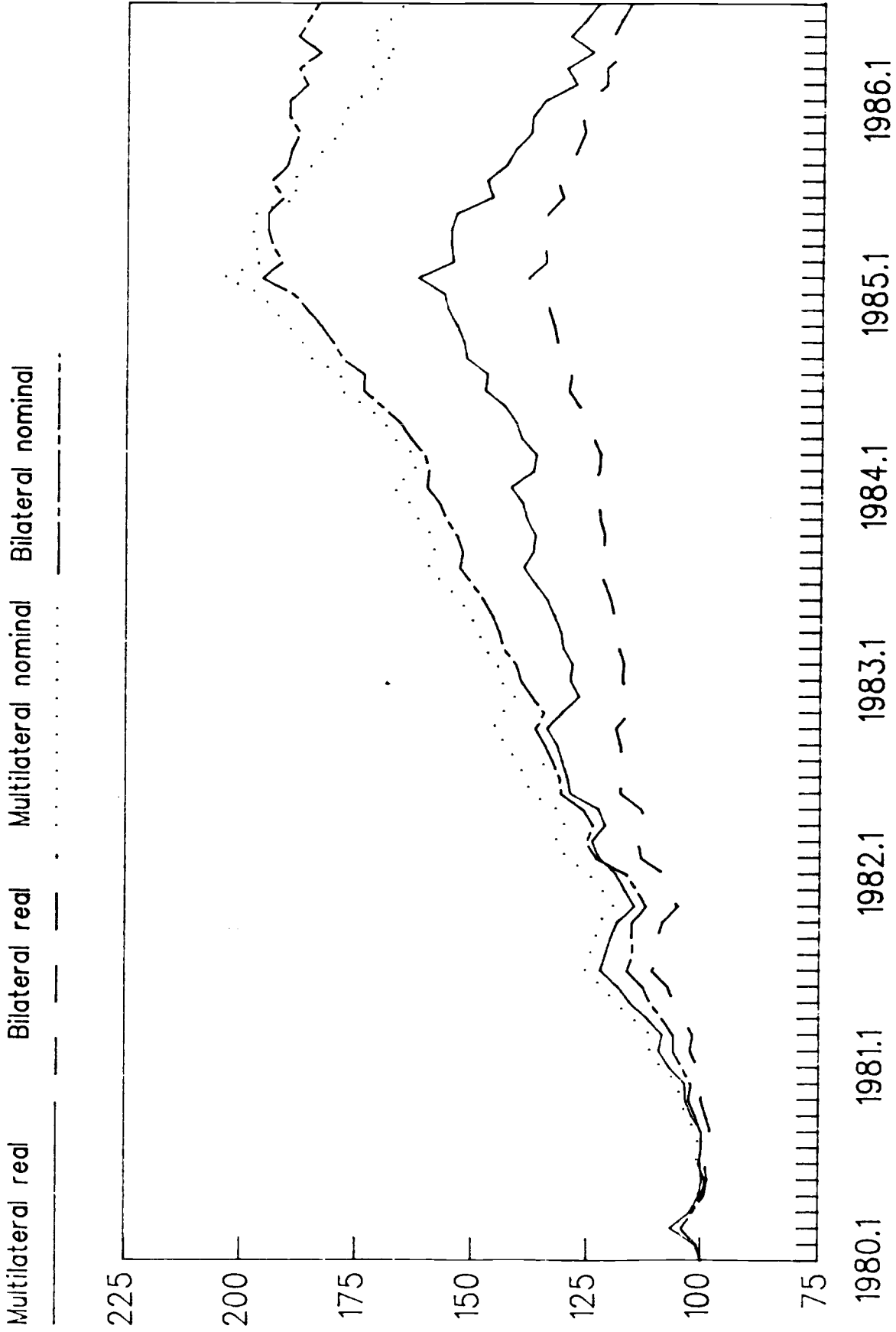
increase in the weight given to the developing countries. The estimated decline after February 1985 is also reduced, from 24 percent to 16 percent. As a result, the net appreciation from January 1980 through July 1986 is reduced from 24 percent to 16 percent. It should be noted, however, that the bilateral and multilateral real indices both imply that by July 1986 the decline had reversed slightly more than 60 percent of the previous rise. Figure 1 shows that the combination of inflation adjustment and bilateral weights produces the index that varied the least over the period.

At the opposite extreme is the multilateral nominal exchange rate. Because U.S. inflation was slightly less than the inflation in the other OECD countries in the period from January 1980 through February 1985, the dollar's nominal value rose more than its real value. The difference however is relatively small: a 74 percent rise in the real value of the dollar and an 85 percent rise in the nominal value of the dollar. For the developing countries, however, the difference is much greater. The dollar's real appreciation was only 34 percent but the nominal appreciation during the same period was 171 percent. This simply underlines the inappropriateness of using nominal exchange rates.

The result is similar during the period since February 1985. There is virtually no difference between the nominal and real fall in the dollar relative to the currencies of the other industrial countries but with respect to the developing countries the dollar's real value remained unchanged while its nominal

FIGURE 1

EVOLUTION OF THE DOLLAR: FOUR ALTERNATIVE INDICES



value rose 23 percent. Figure 1 shows that the rise in the multilateral nominal index was the greatest of all four indices.

The final portion of the table corresponds to the bilateral weighted nominal exchange rates. This is conceptually the same as the indices constructed by Cox (1986) and Kellner (1986) although the actual figures differ because of differences in the countries included. The OECD subindex is very similar to the bilateral real index, understating both the rise and the fall in the dollar's value relative to the multilateral weighted indices. But the primary distortion comes from including the 362 percent nominal appreciation of the dollar relative to the currencies of the developing countries since 1980 instead of the 34 percent real appreciation. As figure 1 shows, this strong upward trend in the dollar's nominal exchange rate relative to the currencies of the very inflationary developing countries had the effect of implying a very sharp rise in the dollar's value through 1985 and then virtually no decline. It is clear from table 2 that this is a specious result that reflects the high average rate of inflation in the developing countries.

6. Conclusion

The present paper introduces a new index of the real value of the dollar relative to 80 other currencies⁴. The individual exchange rates are combined with weights that reflect the recent

⁴We plan to extend this work by constructing a manufacturing price index of the dollar's value, using manufacturing trade weights and manufacturing value added price deflators.

(1984) multilateral pattern of trade. This new index confirms that the dollar rose very sharply between January 1980 and February 1985 and that about two-thirds of that appreciation was reversed by July 1986. This is true for both our multilateral and bilateral real indices. The analysis also shows that any index that fails to adjust for differences in inflation rates will give a very misleading impression of the dollar's evolution in the 1980s.

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Appendix
 Multilateral Real Value of the Dollar
 January 1985 = 100

	January	February	March	April	May	June	July	August	September	October	November	December
1975	68.529	67.030	67.567	67.526	66.725	67.572	70.958	71.173	72.483	70.814	71.884	71.852
1976	71.183	70.780	71.102	70.957	71.521	71.135	71.012	70.756	70.250	70.515	70.735	69.486
1977	69.818	69.689	69.271	69.070	68.963	68.538	68.208	68.502	68.047	66.816	66.872	64.985
1978	64.859	64.184	63.892	64.633	65.212	64.332	62.848	62.279	61.840	58.387	62.944	61.388
1979	62.504	62.596	62.962	63.862	64.563	63.641	62.972	63.231	62.281	64.163	63.463	63.243
1980	63.723	64.527	67.951	65.233	64.064	63.596	63.880	63.658	63.667	64.996	65.938	66.055
1981	68.222	69.706	69.257	71.308	73.790	75.477	77.960	77.279	76.500	75.548	73.231	74.566
1982	75.801	78.220	79.199	77.466	78.368	82.253	82.670	83.378	84.057	85.394	83.367	80.998
1983	82.208	81.951	83.193	83.513	84.434	85.402	87.078	88.676	87.391	87.073	88.273	88.847
1984	90.489	87.359	86.989	89.024	89.795	91.379	94.155	93.869	96.832	97.202	98.161	99.386
1985	100.000	103.578	98.786	99.025	98.988	98.289	93.272	94.056	91.319	89.954	87.899	87.648
1986	86.051	81.841	83.045	79.557	82.563	80.558	78.773					

The multilateral real value of the dollar is a trade-weighted average of the exchange rates for 80 countries.

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