

# ECONOMIC COMMENTARY

## A Correct Value for the Dollar?

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The dollar's rapid appreciation in foreign-exchange markets between mid-1980 and February 1985 greatly reduced the international competitiveness of many U.S. industries, contributed to unemployment in the trade-sensitive sectors of the economy, and heightened calls for protectionist legislation. Although the dollar has since depreciated in foreign-exchange markets, many analysts contend that it remains "overvalued" or "too high."

Complaints about the performance of the dollar in recent years have renewed interest among policymakers in managing exchange rates through more frequent exchange-market intervention. Some analysts advocate alternative exchange-rate systems which, in their view, would limit the ability of exchange rates to deviate from their so-called equilibrium values.

There is considerable disagreement and misunderstanding about what the term "overvalued" means. It implies that the present value of the dollar is incorrect in some sense, that it is unsustainable, and that the observer knows the correct, or equilibrium, rate. In this *Economic Commentary*, we discuss various interpretations of "equilibrium" and of "overvalued" exchange rates.

### Equilibrium and the Foreign Exchange Market

An exchange rate is the price of one nation's currency in terms of another's. Like all prices, exchange rates are determined by the laws of supply and

demand. A currency appreciates in the foreign-exchange market when the quantity demanded exceeds the quantity supplied. Individuals acquire foreign currency primarily because they wish to obtain something else with it. They might wish to purchase foreign goods and services, or to invest in foreign plants and equipment, or to hold a foreign financial asset. Consequently, the factors that underlie the demand for these items underlie the demand for foreign currency.<sup>1</sup>

There are many such factors, but differences in prices, income levels, and interest rates among nations seem to determine exchange rates most directly. Prices, income levels, and interest rates, in turn, are influenced by monetary and fiscal policies, by technological developments, and by other variables. Often the connections between these economic variables and exchange rates are complex and the relative importance of individual factors can change.<sup>2</sup> It is also important to remember that exchange markets are forward looking; participants adjust their exchange-rate quotes when expectations of future economic and political events change.

Economists define an equilibrium price as that which, at a given time, balances quantities demanded with quantities supplied in an unrestricted market. In this sense, the dollar is seldom overvalued. Exchange-market traders around the world continually assess market information and take

actions that move exchange rates minute by minute to quickly offset emerging or perceived imbalances in supply and demand.

Of course, exchange-market analysts have a more stable view of equilibrium in mind when they label an exchange rate overvalued. Because of the great difficulty in specifying all the factors underlying the long-term equilibrium, exchange-market analysts usually base their assessment of what constitutes an equilibrium exchange rate on a limited set of factors that they regard as the "fundamental" determinants of exchange rates. This set usually includes the current account and relative rates of inflation.<sup>3</sup> If exchange-market developments push exchange rates away from the levels dictated by these so-called fundamentals, then the exchange rates are considered overvalued or undervalued, as the case may be, even though they are equating quantities of currencies demanded and supplied.

While exchange-market analysts might define exchange-rate equilibrium in terms of the trade account, or in terms of relative inflation rates, they do not expect the rate to move continually along such an equilibrium path. Economists have observed that prices and trade-account transactions adjust slowly to economic shocks and policy changes, while exchange rates adjust quickly. Consequently, following an unexpected event, or a change in the market's expectations, exchange rates can overshoot these equilibrium paths. Often, therefore, overvalued exchange rates are consistent with the efficient operation of the exchange market. In

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The views stated herein are those of the authors and not necessarily those of the Federal Reserve

1. Because one purchases a foreign currency with dollars, the demand for a foreign currency creates a supply of dollars.

2. See Owen F. Humpage and Nicholas V. Karamouzis, "The Dollar in the Eighties," *Economic Commentary*, Federal Reserve Bank of Cleveland, September 1, 1985.

3. The current account measures trade in goods and services and unilateral transfers. Some analysts focus only on trade flows.

addition, speculation can push exchange rates off these equilibrium paths for short periods of time. The important point is that these deviations are transitory.

### The Long-Run "Fundamentals"

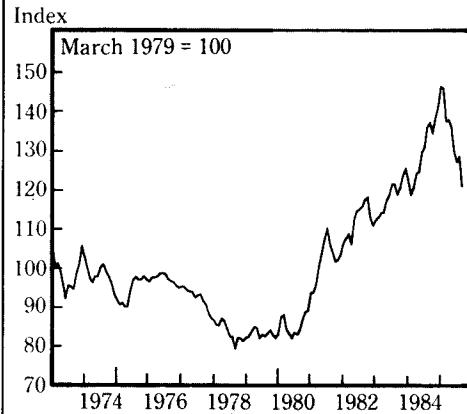
When exchange-market analysts speak of the fundamentals, such as the current account or inflation differentials among countries, they presume to fully understand the linkages among these fundamentals and other economic variables, and to understand their quantitative significance for exchange rates. Unfortunately, several recent studies have indicated how limited our knowledge of exchange-rate determination is. One study showed that predictions from major economic models of exchange rates generally were no more accurate than a simple guess that tomorrow's exchange rate will equal today's rate.<sup>4</sup> Other empirical studies of exchange rates often produce relationships among the variables that are not statistically significant or that are contrary to accepted theories. Although such results could reflect statistical problems, they suggest that we do not know enough about the behavior of exchange rates to pinpoint their "fundamental" determinants, or "equilibrium" values.

Despite the many unsuccessful attempts to model exchange-rate behavior, many analysts continue to judge the appropriateness of exchange rates on the basis of certain factors that theory suggests could be fundamental determinants of the long-term value of exchange rates. Below, we discuss three such factors: relative inflation rates, the current accounts, and asset preferences for currencies.

### Purchasing Power Parity

The purchasing power parity theorem (PPP) maintains that relative rates of inflation determine long-term equilibrium exchange-rate movements. According to PPP, exchange rates adjust so that a dollar, after conversion to a foreign-currency equivalent, buys as much abroad as it does in the United States. If inflation in the United States is higher than in Germany, German goods will gain a competitive price advantage over U.S. goods in world markets. As consumers buy more German goods and services, demand for German marks increases, and the mark appreciates in exchange markets. The mark's appreciation raises the foreign-currency price of German goods and lowers the mark price of non-German goods. According to PPP, the mark appreciates until it completely offsets the German price advantage.

Chart 1 CPI Adjusted Trade Weighted Dollar 1973-1985



SOURCE: Board of Governors of the Federal Reserve System.

PPP allows that certain exchange-market developments, notably capital flows, can push exchange rates away from their PPP path for short periods of time. These deviations will not persist, according to PPP, because they will alter the relative prices of traded goods among countries and again create incentives to change trading patterns so as to return exchange rates to their PPP paths.

Although the logic of the PPP theorem is attractive, experience shows that exchange rates often deviate from their PPP path by large amounts, and for long periods of time. Chart 1 shows movements in the real trade-weighted dollar. When PPP holds, the real trade-weighted dollar should equal 100, its base-year value. By this measure the dollar has deviated from PPP for four years and by as much as 46 percent in February 1985. The patterns suggest that the mechanisms to ensure a return to PPP might take decades, rather than months, to work through.

Many technical difficulties hamper the application of PPP. Unless one can obtain good estimates of the equilibrium exchange rates with PPP, one can never judge existing exchange rates as overvalued or undervalued. One major difficulty in attempting to apply PPP is that the price indexes used to calculate PPP values differ among countries. Consequently, similar price pressures in countries using differently constructed price indexes could produce different responses in each price index. The price indexes then would not provide a reliable guide to exchange-rate movements.

A second problem with applying PPP is that it should be measured against a base period characterized by equilibrium. Usually base periods are chosen because the current account or trade account was in balance. Often there are more than one possible base period, and the resulting PPP path will differ depending on which is chosen. If mid-1977 is chosen as the base period for the PPP calculation, the dollar in February 1985 was overvalued relative to the mark by 81 percent. If mid-1981 is chosen as the base year, the dollar was overvalued by only 43 percent.

Another problem with defining the equilibrium exchange rate solely in terms of inflation differentials is that other factors can alter the equilibrium exchange rate. Productivity differentials, technological changes, changes in tastes, and changes in trade laws can

4. See Richard A. Meese and Kenneth S. Rogoff, "Empirical Exchange Models of the Seventies: Do they Fit Out-of-Sample?" *Journal of International Economics*, Vol. 14, no. 1/2 (February 1983), pp. 3-24.

all alter the relationship between relative price changes among countries and exchange-rate movements independent of the inflation process. Assume, for example, that an oil-exporting country raises oil prices. The oil-exporting country would experience a surplus, while the oil-importing countries would experience a deficit. Even if inflation differentials between these countries did not change, we would expect the currencies of the oil-importing countries to depreciate relative to the currency of the oil-exporting country. The depreciation would reflect the need of the oil importers to sell more goods to pay for the higher-priced oil.

### The Current-Account Balance

Many exchange-market analysts avoid the problems associated with PPP by focusing directly on the current account. According to this criterion, the equilibrium exchange rate will maintain balance in the current account after allowing for the short-term effects of business cycles and the distortions of trade barriers. Nations running current-account deficits absorb more resources through private consumption, through investment, and through government deficits than they produce. Since incomes reflect the value of production, nations running current-account deficits absorb in excess of their income and finance the difference with foreign savings. Nations that persistently run current-account deficits eventually become debtor nations; their liabilities to foreigners eventually exceed their holdings of foreign assets.

Current-account deficits can persist only as long as creditor nations will finance the excess absorption by acquiring claims on the deficit countries. If the world's willingness to acquire claims on a deficit country is limited, then current-account imbalances eventually produce adjustments in exchange rates, prices and incomes that work to correct the current-account imbalances. Deficit countries, for example, should experience depreciating currencies that work to reduce imports and to increase exports.

By this criterion, only exchange rates that maintain a balance in a nation's current account are sustainable in the long term. With allowances for business cycles and trade barriers, an exchange rate that permits a current-account deficit to persist is overvalued and one that permits a current-account surplus to persist is undervalued.

While one might apply the current-account criterion to a trade-weighted average exchange rate, one cannot use the criterion on a currency-by-currency basis. Assume that the United States has a \$30 billion deficit in trade with Japan and a \$30 billion surplus in trade with Germany, while Germany has a \$30 billion trade surplus with Japan. There is no reason for the exchange rates among these currencies to change, since for each currency the overall quantities demanded and supplied balance.

The current-account deficit provided a reasonable guide to the trade-weighted dollar in the early 1970s. In 1970-71 and again in 1977-78, the United States incurred current-account deficits, and the dollar depreciated. This suggested that the dollar was moving to a new equilibrium consistent with a current-account balance. More recently, however, the United States has experienced record current-account deficits with the dollar showing no tendency to depreciate.

The current-account balance and PPP define equilibrium exchange rates in terms of a supply and demand model that reflects only trade in goods and services and transfer payments. The difficulty with these approaches is that they do not permit individuals to hold dollar-denominated assets for portfolio considerations. They do not recognize that private capital flows, responding to preferences for financial assets denominated in foreign currencies, influence the long-term value of the dollar.

### Portfolio Demand For Dollars

The failure of PPP and the current account to explain exchange-rate movements has led many researchers to investigate asset preferences for dollars. According to this approach, international investors hold in their portfolios assets denominated in many currencies. Such diversification affords them protection against losses associated with political events or with unforeseeable exchange-rate movements. The dollar exchange rates and interest rates adjust to ensure that the supply of dollar-denominated assets provided through the current-account deficit equals foreigners' demands for dollar-denominated assets.

According to this view, a current-account deficit can persist if the quantity of currency being supplied through a current-account deficit matches the quantities demanded by private international investors. The dollar is overvalued only if the current-account deficit supplies more dollars to the exchange market than private asset demands can absorb.

Central banks can support this situation for a limited time by intervening in the foreign exchange market and purchasing the excess currency. However the quantity of international reserves that these central banks have at their disposal for purchasing the overabundant currency ultimately limits such intervention. Consequently, if a nation is systematically losing international reserves, its currency would seem to be overvalued.

The size of the sustainable current-account deficit depends on the attractiveness of a nation's currency to international investors. The U.S. dollar is an important currency in world markets. Individuals and firms hold dollar-denominated assets as a store of wealth and to facilitate trade. This role of the dollar emanates from the breadth of the U.S. financial market and from the relative stability of the U.S. economic situation.

political environment. Individuals worldwide can hold dollars with few political or economic risks, as compared to the other world currencies.

One would think that international investors must have some limit to their total holdings of dollar assets and, consequently, that a U.S. current-account deficit cannot persist indefinitely. In a growing world economy, however, asset holders will not worry about the absolute amount of dollar-denominated assets they hold, but will consider instead the proportion of their portfolio denominated in dollars. If foreign portfolios are growing, asset demand for dollars can continue to grow, and the United States can run a persistent current-account deficit. By this criterion, therefore, the dollar is "overvalued" if the current rate at which foreigners are accumulating dollar-denominated assets exceeds their long-term desired rate.

Economists do not know enough about the determinants of portfolio

demands for dollar-denominated assets to determine when the U.S. current-account deficits will saturate foreign asset demands for dollars. Some recent projections of the scale of U.S. indebtedness relative to various measures of wealth and GNP suggest that in 10 or 20 years the proportion of dollar-denominated assets in foreign portfolios will be high by historic standards.<sup>5</sup>

Moreover, as interest payments to foreigners grow, becoming an increasing share of the total current-account deficit, the portion of the current-account deficit attributable to the trade deficit must eventually shrink. Otherwise, U.S. liabilities to foreigners eventually would exceed foreigners' willingness to hold dollar-denominated assets. A dollar depreciation, therefore, will be necessary to facilitate the smaller trade deficit. Unfortunately, we cannot pinpoint either the size or the timing of such a depreciation.

the factors underlying foreign-currency demands and supplies today are not sustainable in the long term. The practical difficulties of making such judgments are great.

If policymakers wish to alter the exchange rate in a fundamental manner, they must alter the economic environment in which the exchange rate exists by changing monetary and fiscal policies. Often this involves a trade-off with other policy objectives. Expanding the money supply to encourage dollar depreciation, for example, can risk higher inflation. Moreover, because each exchange rate involves two currencies, a coordinated effort seems necessary to limit exchange rate movements. Otherwise, one nation's gain could become another's loss.

We adopted floating exchange rates in 1973 because of the enormous difficulties in identifying and maintaining "equilibrium" exchange rates. While the current exchange rate system is not perfect, it has yet to be shown inferior to its predecessor.

### Is the Dollar Overvalued?

There are many difficulties in determining if an exchange rate is either overvalued or at its long-term equilibrium value. Generally, exchange rates are "overvalued" only in the sense that

5. See Paul R. Krugman, "Is The Strong Dollar Sustainable?" Paper prepared for a Federal Reserve Bank of Kansas City conference at Jackson Hole, Wyoming, August 21-30, 1985; and Stephen N. Marris, "The Decline and Fall of the Dollar: Some Policy Issues," *Brookings Papers on Economic Activity*, 1:1985, pp. 237-44.