

FRBSF WEEKLY LETTER

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Monetary Policies and Exchange Rates

In theory, floating exchange rates can insulate an economy from the effects of foreign monetary policies. For example, under a floating-exchange-rate system, inflationary monetary policies pursued abroad should cause the *nominal* exchange value of the home currency to appreciate, thereby maintaining its purchasing power. Thus, the *real* value of the home currency—that is, its nominal exchange rate adjusted for differences in the general level of prices at home and abroad—would not change, insulating the domestic economy from the effects of inflation abroad.

Experience with floating exchange rates since the breakdown of the Bretton Woods system in 1973, however, shows that floating rates have *not* stabilized real exchange rates, so that economies still have been subject to monetary (as well as nonmonetary) disturbances emanating from abroad. The main reason for this experience is that wages and prices adjust relatively slowly to changes in monetary policies, and as a result, real interest rates, output, and employment can be affected by such changes in the medium term. Differences in real interest rates across national economies, in turn, produce shifts in international capital flows, with consequent effects on real exchange rates and the balance of trade.

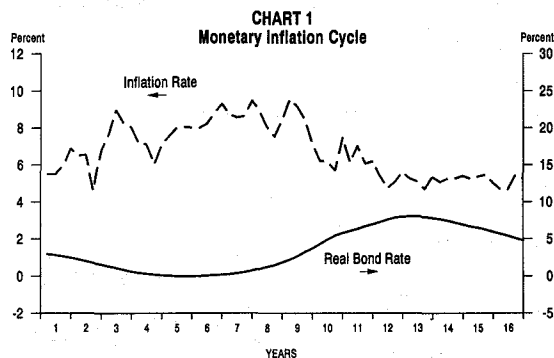
This *Letter* suggests that through their effect on real interest rate differentials, divergent national monetary policies have contributed to fluctuations in the real value of the dollar during the period of floating exchange rates. The preceding *Letter* (September 15, 1989) suggested that divergent national fiscal policies also have had a significant influence on the real value of the dollar, but not primarily through their effect on real interest rate differentials. Taken together, monetary and fiscal policies explain most of the fluctuations in the dollar's value in the floating-rate period.

Inflation cycles

The United States and its major trading partners experienced major fluctuations in inflation and

real interest rates during the 1970s and 1980s. A common view of these fluctuations is that they resulted from erratic monetary growth. However, as will be explained below, fluctuations in real interest rates and inflation also can be dynamic responses to sustained increases or decreases in the rate of monetary growth.

Chart 1 shows the basic features of such a dynamic inflation cycle, produced by simulating a structural model of the U.S. economy developed at the Federal Reserve Bank of San Francisco. In the simulation, a sustained increase in the rate of monetary expansion first puts downward pressure on both nominal and real interest rates because wages, prices, and expectations of future inflation adjust relatively slowly. (The assumption that expectations of inflation are formed adaptively—that is, based on past inflation—is common to macroeconomic models that follow neo-Keynesian theory.)



The decline in real interest rates then produces an expansion in the demand for real output, a reduction in the unemployment rate, and therefore a rise in the inflation rate. Thus, in the first phase of the cycle, real interest rates are falling and the inflation rate subsequently is rising, with declines in real interest rates preceding increases in the rate of inflation by one to two years.

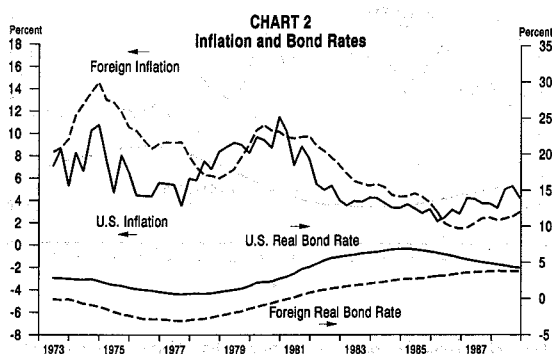
In the second phase of the cycle, the rising inflation rate eventually begins to exceed the rate of

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monetary growth, thereby putting upward pressure on nominal and real interest rates. As real interest rates rise, output slows, unemployment rises, and the rate of inflation begins to decline, even though the rate of monetary expansion remains unchanged. The increases in real interest rates again precede the declines in inflation by a year or two. The cycle in real interest rates and inflation then tends to repeat itself, damping out only gradually.

U.S. and foreign inflation cycles

Chart 2 shows the actual cycles in inflation and real bond rates experienced by the United States and its major trading partners during the period of floating exchange rates. Compared with earlier years, this period has been characterized by a higher trend rate of monetary growth in both the United States and abroad. The behavior of inflation and real interest rates—both at home and abroad—conforms quite strikingly to the simulated inflation cycles produced by a permanent increase in monetary growth. Troughs (peaks) in real interest rates lead peaks (troughs) in inflation, and the periodicity and amplitudes of the cycles in real interest rates and inflation are similar to those in the simulation. The biggest differences between simulated and actual inflation occurs in 1974 and 1979–80, due to surges in oil prices.



Some have pointed out that money grew erratically around the higher growth trends during the floating-exchange-rate period, and have suggested that this may account for the observed cycles in inflation. However, because of the relatively long lags between money and prices, these short-term movements in money had relatively little impact on the path of inflation. Moreover, financial deregulation since about 1980 contributed to erratic movements in measured money,

without having any corresponding impact on inflation. Overall, then, the evidence suggests that the recent cycles in real interest rates and inflation in the U.S. and abroad predominantly have been lengthy dynamic responses to a higher trend rate of monetary expansion, and were not primarily the result of erratic short-run monetary movements.

Moreover, as shown in Chart 2, until the mid 1980s, U.S. and foreign cycles in real interest rates and inflation showed a relatively high degree of conformity under floating exchange rates. From 1973 to 1977, real interest rates at home and abroad were declining, and subsequently inflation accelerated in both cases, reaching peak values in 1980. Similarly, real interest rates began to rise in the late 1970s both at home and abroad, peaking in the U.S. in 1985. Decelerations in inflation followed these rising real interest rates in both cases. After 1984, however, U.S. and foreign real interest rates became "uncoupled," with the U.S. real bond rate declining sharply and the foreign real bond rate continuing to rise.

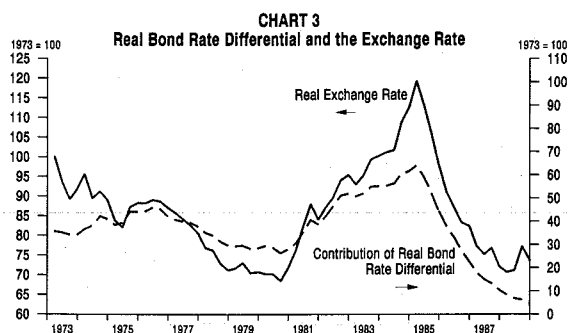
Exchange rate implications

The conformity between foreign and domestic real-interest and inflation rates prior to 1985 is consistent with an apparent tendency for central banks to conduct monetary policies with consideration given to stabilizing the real value of the dollar. Specifically, prior to 1985, central banks apparently tended to minimize changes in the differential between U.S. and foreign real bond rates, thereby reducing changes in capital flows that affect exchange rates.

Alternatively, if the U.S. had pursued a course for monetary policy in the 1970s that was substantially different from that of its trading partners, fluctuations in the real value of the dollar would have increased. For example, if U.S. monetary policy had been significantly tighter than that of its trading partners, interest rates would have risen relative to those abroad, attracting inflows of capital and appreciating the real value of the dollar significantly. The stronger dollar, in turn, would have depressed the U.S. tradeable goods sector.

Simulation of the structural model suggests that changes in the real bond rate differential accounted for swings of no more than 20 percent in

the dollar's value prior to 1984. In contrast, between the beginning of 1985 and the end of 1987, the real bond rate differential dropped about 3½ percentage points, contributing an estimated 50 percentage points to the dollar's depreciation in the later period (Chart 3).



These results suggest that the less-than-perfect coordination of U.S. and foreign monetary policies from 1975 through 1984 contributed to the dollar's depreciation in the late 1970s and appreciation in the early 1980s. As discussed in the preceding *Letter*, divergent U.S. and foreign fiscal policies during these two periods also contributed to the dollar's movements. Specifically, the tightening of U.S. fiscal policy and the easing of foreign fiscal policies between 1975 and 1980 contributed to the moderate depreciation in the dollar observed in that period, while the easing of U.S. fiscal policy and the tightening of foreign fiscal policies from 1980 to 1984 contributed to the subsequent sharp appreciation of the dollar.

After 1984, when U.S. and foreign cycles in real interest rates became significantly less synchronized, the large decline in the dollar appears to have been predominantly the result of changes in monetary policy at home and abroad. Consistent with this view, the decline in real interest

rates in the United States relative to foreign rates was associated, after a lag, with an acceleration of inflation in the U.S. compared to inflation abroad. In contrast, changes in fiscal policy in this period were too small to explain the sharp change that occurred in the dollar.

Policy coordination

As we have seen, ad hoc coordination among central banks contributed relative stability to the real value of the dollar in the 1970s and early 1980s. Beginning with the Plaza Agreement among the G-5 countries in 1985, the international coordination of monetary policy became more formalized. But from 1985 to 1987, the goal of coordination changed, with the G-5 expressing a desire to bring the real value of the dollar down, rather than to stabilize it. As shown above, the real bond rate differential and the real value of the dollar declined sharply, consistent with that desire.

Two factors appear to explain this change in goal and the resultant "uncoupling" of U.S. from foreign real interest rates after 1985. First, fiscal shifts both in the U.S. and abroad between 1980 and 1985 produced a sharp worsening in the U.S. trade balance, which tended to generate protectionist pressures in the United States. A decline in the real value of the dollar was considered desirable in order to correct this problem. Second, concern about inflation generally was greater abroad than in the U.S., so an easing of U.S. real interest rates relative to foreign rates seems consistent with this divergence of concerns.

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