

FRBSF WEEKLY LETTER

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Three Views of Real Interest

After 1979, interest rates in the U.S. economy became much more volatile. For example, the degree of volatility in short-term interest rates nearly doubled. At the same time, real interest rates (nominal rates adjusted for inflation) fluctuated around much higher levels than before. Since 1982, however, the volatility of short-term real rates has declined. More recently, the general level of real interest rates has tended to diminish as well.

Analysts have proposed three main explanations for these phenomena. First, they point to the lifting of deposit rate ceilings and other types of financial deregulation. Second is the October 1979 shift in the Federal Reserve's operating procedures, which put more emphasis on controlling bank reserves and less on controlling interest rates in the short run. The final explanation relates to the effects of large and growing federal budget deficits in the United States. This *Letter* discusses the theoretical relevance of these explanations and presents some empirical evidence to help discriminate among them.

Financial deregulation

During periods of tight credit prior to 1979, Regulation Q ceilings on deposit rates tended to restrict deposit flows into thrift institutions that specialized in housing finance. Although commercial banks also experienced run-offs in time and savings deposits, they were better able to offset the effects through asset and liability management.

Thrifts had difficulty offsetting the lack of deposit inflows by selling mortgage loans from their portfolios because of a relatively undeveloped secondary market and an unwillingness to show capital losses. They were also slow to develop new sources of funds and, in fact, did not issue significant amounts of large CDs until the late 1970s. In addition, usury ceilings reinforced the short-run tendency of mortgage lenders to ration credit by means other than interest rates. To the

extent that these restrictions in the availability of mortgage credit at thrift institutions could not be offset by other lenders, fluctuations in residential investment were more severe.

Regulation Q ceilings also tended to reduce the extent to which market interest rates on assets other than mortgage loans rose during periods of tight credit. In the extreme case where lenders regard thrift deposits and alternative market instruments as perfect substitutes, these market interest rates would not rise above the level of Regulation Q ceilings on deposit rates unless the level of deposits were driven to zero. On the more realistic assumption that deposits at thrifts are regarded as imperfect substitutes for alternative market instruments by at least some depositors, a positive interest differential would be required to attract funds away from deposits in periods of tight credit. In this more realistic case, market interest rates would rise as credit conditions tightened, but not by as much as they would in a completely unregulated financial environment.

Over the last decade, the market for mortgage credit has become more integrated with other financial markets mainly because of financial deregulation. Greater integration has tended both to reduce credit availability effects on housing and to increase the volatility of market interest rates. A recent study conducted at this Bank found that deposit rate ceilings and related factors did indeed exacerbate the housing cycle and reduce the volatility of market interest rates to a small but measurable degree prior to 1979. Financial deregulation was found to lessen the severity of the housing cycle and to increase the volatility of interest rates in a simulation that removed the estimated effects of deposit flows in the 1966-67, 1969-70, and 1974-75 periods of disintermediation and which assumed an unchanged rate of monetary growth. However, the quantitative magnitudes of these effects were estimated to be relatively small.

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The simulated effects on interest rates are shown in the chart, which compares the historical path of the real, or inflation-adjusted, 6-month commercial paper rate over the period 1962 to 1985 with that resulting from the simulation where no credit availability effects are allowed to operate through the effects of deposit flows.

The simulation shows that, in the absence of credit availability effects, real interest rates would have risen by somewhat more in periods of tight credit. However, because the effects themselves are estimated to have been quite small, the estimated increase in the overall variability of real interest rates is also small. In the 1966 to 1975 period, the standard deviation of the real commercial paper rate from its average level rises from 131 basis points in the historical observation to 141 basis points in the simulation. This small rise indicates that financial deregulation produced only a 7.6 percent increase in the volatility of real short-term interest rates.

After 1979, the actual variability of real short-term interest rates nearly doubled. Thus, the estimated effects of financial deregulation explain only a very small portion of the increased variability in real interest rates. Deregulation also does not fully explain the rise in the level of real interest rates after 1979. In the simulation, deregulation raised the levels of real interest rates very little, whereas the average level of real short-term rates increased about 400 basis points after 1979.

Monetary policy

One alternative explanation for the increase in the variability and level of real interest rates after 1979 is the effect of the Federal Reserve's switch in operating procedures in October of that year. The Federal Reserve put greater emphasis on controlling bank reserves and less on controlling interest rates in the short run. The new procedure should have increased the short-run volatility of interest rates because it meant that the Fed would no longer tend to accommodate short-run changes in the demand for money.

The Fed directed this new operating procedure at slowing the rate of monetary growth to reduce inflation. Reductions in monetary growth would

have produced temporary increases in the level of real interest rates until the price level had fully adjusted to a reduced stock of money. The slowing in monetary growth, thus, probably contributed to peaks in real interest rates from 1979 through 1982, but it cannot explain the continued high level of real interest rates since then.

In October 1982, when financial deregulation and disinflation were making monetary velocity much more unpredictable, the Federal Reserve shifted back to an operating procedure characterized by less precise short-run control over monetary growth. This shift provides a good explanation for the reduction in the volatility of interest rates that occurred after 1982. But real short-term interest rates were still about 200 basis points higher than in the pre-1979 period.

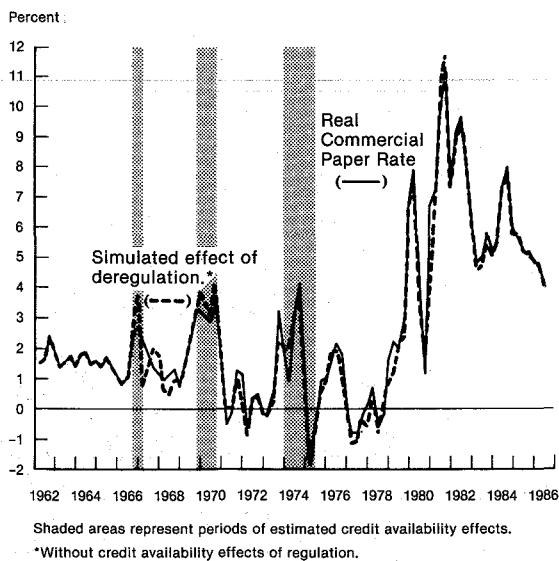
Large federal deficit

The federal budget deficit is the most important reason for continued high U.S. real interest rates after 1982, and there have been two main facets to its impact. First, larger U.S. budget deficits tend to drive up the international level of real interest rates. Because the world capital market is highly integrated and securities are highly substitutable, real interest rates tend to be equated across countries.

The U.S. structural budget position (including state and local as well as federal governments) shifted from a surplus equal to 1.2 percent of GNP in 1979 to a deficit equal to 2.1 percent of GNP in 1986. At the same time, the budget deficits of other major industrialized countries have shown little long-term trend. Thus, the net effect of larger U.S. budget deficits should have been to increase the world level of real interest rates.

Second, even in a fully integrated world capital market, real interest rates take several years to equalize across countries after a disturbance. The initial effect of larger U.S. budget deficits is to drive up real interest rates at home compared to those abroad. This leads to an increase in *desired* net capital inflows, which generates an appreciation of the dollar. But the interest differential in favor of the U.S. causes the dollar to overshoot its long-run equilibrium. An expected future depreciation of the dollar compensates for the difference in real interest rates.

Deregulation Raises Interest Rate Variability Only Slightly



As the full effect of a dollar appreciation manifests itself in a change in the trade balance, and thus in *actual* capital flows, U.S. real interest rates then tend to fall back toward foreign levels. U.S. short-term real interest rates remained relatively high from 1982 through 1984, but have since dropped close to foreign real rates. This suggests that the equalization process is nearly complete.

The equalization process may be attenuated somewhat by the effects of a growing accumulation of debt to foreigners. As foreigners absorb more and more U.S. debt, they may require a larger differential in the rate of return over investments in their home countries. This would reduce the size of the net capital inflows occurring in response to the U.S. budget deficit and drive a wedge between U.S. and foreign real interest rates. Although the weight of the evidence suggests that such differentials are small and that the world capital market is indeed

highly integrated, the foreign accumulation of U.S. debt is occurring rapidly enough that this factor may be of some importance in holding up U.S. real rates.

Conclusion

The unusually high level and volatility of real interest rates after 1979 are best explained by a combination of factors. An econometric simulation indicates that financial deregulation contributed only slightly. By producing higher peak levels of interest rates in periods of tight credit, financial deregulation tended to raise both the average level and volatility of real rates, but our estimates show these effects to be quite small.

Of greater importance have been the effects of monetary policy. The heightened volatility of interest rates from October 1979 to October 1982 was due basically to the Federal Reserve's shift in operating procedure that aimed at reducing inflation by slowing money growth. This procedure sought greater short-run control over bank reserves. When the Fed again changed its operating procedure in October 1982 toward less emphasis on controlling bank reserves in the short run, the volatility of interest rates fell significantly. Also, the Fed's disinflation policy could have generated higher real interest rates, but not for a prolonged period of time.

Real interest rates have been held at higher levels primarily by larger U.S. budget deficits. In an integrated world capital market, U.S. budget deficits drive up the world level of real interest rates. Since real interest rates take several years to equalize across countries after such a disturbance, U.S. real rates tend to rise by more than foreign rates for a while. Also, U.S. real interest rates may stabilize at a somewhat higher level than foreign rates if foreign investors require a higher relative return for their continued investment.

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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 | Change | Change from 10/16/85 | |
|---|-------------------------|-------------------------|----------------------|----------------------|
| | Outstanding 10/15/86 | from 10/8/86 | Dollar | Percent ⁷ |
| Loans, Leases and Investments ^{1 2} | 202,723 | 834 | 5,775 | 2.9 |
| Loans and Leases ^{1 6} | 182,101 | 911 | 4,281 | 2.4 |
| Commercial and Industrial | 49,754 | 9 | 919 | 1.8 |
| Real estate | 66,811 | 131 | 1,418 | 2.1 |
| Loans to Individuals | 39,478 | 51 | 1,704 | 4.5 |
| Leases | 5,617 | 1 | 228 | 4.2 |
| U.S. Treasury and Agency Securities ² | 12,639 | 66 | 810 | 6.8 |
| Other Securities ² | 7,982 | 143 | 681 | 9.3 |
| Total Deposits | 210,243 | 4,426 | 5,920 | 2.8 |
| Demand Deposits | 57,180 | 4,614 | 5,319 | 10.2 |
| Demand Deposits Adjusted ³ | 35,468 | 965 | 11,831 | 25.0 |
| Other Transaction Balances ⁴ | 17,773 | 114 | 3,475 | 24.3 |
| Total Non-Transaction Balances ⁶ | 135,291 | 73 | 2,872 | 2.0 |
| Money Market Deposit Accounts—Total | 46,858 | 483 | 1,515 | 3.3 |
| Time Deposits in Amounts of \$100,000 or more | 33,136 | 445 | 5,287 | 13.7 |
| Other Liabilities for Borrowed Money ⁵ | 26,981 | 605 | 2,528 | 10.3 |
| Two Week Averages of Daily Figures | Period ended 10/6/86 | Period ended 9/22/86 | | |
| Reserve Position, All Reporting Banks | | | | |
| Excess Reserves (+)/Deficiency (-) | 36 | 20 | | |
| Borrowings | 24 | 27 | | |
| Net free reserves (+)/Net borrowed(-) | 12 | 7 | | |

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