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# FRBSF WEEKLY LETTER

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## Monetary Policy in a Changing Financial Environment

*This Letter is adapted from the papers and discussion at the Conference on Monetary Policy in a Changing Financial Environment held on March 3 and 4, 1995. The conference was jointly sponsored by the Center for Economic Policy Research at Stanford University and the Federal Reserve Bank of San Francisco.*

The financial environment has changed noticeably over the past two decades, both in the United States and abroad. Financial system deregulation and innovation, for instance, have led to greater interest rate flexibility. And technological advances as well as the decline in international capital restrictions have increased the cross-border flow of funds. Such developments have the potential to affect monetary policy in a number of ways. The relaxation of interest rate regulations and the expanding array of financial instruments allow interest rate changes to be transmitted more rapidly and pervasively to all sectors of the economy. At the same time, some have argued that the development of alternative channels of saving and investing may weaken the effectiveness of monetary policy, making it more difficult to attain inflation or output targets. The increased mobility of international capital has made the balance of payments and the exchange rate increasingly important channels for the transmission of monetary policy; yet it also has made domestic economic conditions more sensitive to foreign developments and may have made it more difficult for governments to maintain fixed exchange rates. These issues were the focus of the CEPR-FRBSF conference in March.

### **Is policy less effective?**

One way to assess the changing effect of monetary policy is to estimate and compare the behavior of an economic model over different time periods. John Taylor performs this exercise with a model that incorporates sluggish price adjustment and forward-looking expectations behavior in a multi-country framework. In this model, monetary policy works by directly influencing short-term nominal interest rates and,

through a term structure relation, nominal long-term rates. Thus a reduction in short-term nominal rates reduces not only long-term nominal rates, but, since prices adjust slowly, also the real (or inflation-adjusted) long-term rate. This stimulates consumption and investment and, therefore, GDP growth (in the short run). Another important channel of monetary policy in his model is the real exchange rate, which affects GDP through its effect on net exports.

Taylor uses this framework to analyze whether macroeconomic variables such as consumption and investment, and ultimately output, have responded differently to interest rates recently. For the United States, he finds evidence of a decline in the responsiveness of investment to changes in the long-term interest rate in the period after 1986. Consequently, a given change in policy has a noticeably smaller impact on real GDP. However, he finds no clear pattern for the other G-7 countries; in the case of Germany and Japan, for instance, the effect of monetary policy on real GDP has not changed much over this period.

Ray Fair's paper is also concerned with potential changes in the responsiveness of real GDP to interest rate changes for the U.S., but it focuses on the effect that the huge increase in federal debt during the 1980s may have had on this relationship. Fair argues that since households have ended up holding most of this debt, household income has become more sensitive to changes in interest rates. As a consequence, a given decrease in interest rates reduces the household sector's income by a larger amount than in the past. Thus, when the Fed eases monetary policy, income and consequently consumption spending fall by more than in the past, providing a larger offset to the stimulative effects of lower interest rates on investment, housing, and consumer durables. A key assumption here is that households believe that the taxes levied by the government are independent of the amount of interest payments it is required to make; otherwise, the effect that Fair focuses on could go away.

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Using his own empirical model, Fair estimates that the effectiveness of monetary policy, as measured by the size of the total response of real GDP over 16 quarters to a given interest rate change, has declined by an amount between 13 to 30 percent.

Note that the two models come up with different reasons for the change in the response of GDP to interest rates: Taylor finds that it is the responsiveness of investment that has changed, while in Fair's model it is the response of consumption. Further research is required before one can be sure exactly what is responsible for the change in the behavior of GDP, and even how large the change is. Nevertheless, it should be emphasized that the finding that the impact of a given monetary policy change has diminished does not imply that monetary policy is less capable of attaining its targets, since policymakers can compensate by undertaking larger policy changes to achieve a given target.

## Measuring the stance of monetary policy

Financial innovation also has raised questions about assessing the stance of monetary policy, that is, whether it is "tight" or "loose." Traditionally, the stance of monetary policy has been measured by the rate of growth of monetary aggregates. However, recent changes in technology and regulation have weakened the relationship between monetary aggregates and macroeconomic variables, such as GDP and inflation, making it difficult to use aggregates as indicators.

Different researchers have suggested alternative monetary policy indicators, including the federal funds rate as well as various measures of bank reserves. Ben Bernanke and Ilian Mihov construct a quantitative measure of monetary policy that allows them to pool information from more than one indicator. One reason for doing so is that the best indicator at any given time depends on the particular operating procedure that the Fed is using. For example, looking at changes in bank reserves to determine if the policy stance has changed may lead to misleading inferences during a period when the Fed is focusing on the funds rate.

Bernanke and Mihov find that a measure based on the funds rate was the best indicator of policy over the period 1966–1979 and again since the mid-1980s. However, during the intervening period, a measure based upon the relationship between different measures of bank reserves does best. These switches in the best indicator

correspond roughly to changes in the operating procedures employed by the Fed over this period.

## Exchange rate targeting

Increasing international capital mobility also has influenced the conduct of monetary policy. Some countries have sought to "import" monetary discipline by pegging the exchange rate against a foreign country that has low inflation. However, Maurice Obstfeld and Kenneth Rogoff argue that pegging exchange rates is futile in a world of open capital markets, unless the government is willing to give up complete control of domestic monetary policy. When this commitment is less than absolute and markets perceive that governments have an incentive to abandon fixed rates, sooner or later the peg will be overwhelmed by speculative attacks. Consequently, exchange rate targeting is not an appropriate policy for achieving inflation credibility.

Obstfeld and Rogoff emphasize that increased international capital mobility has reduced policymakers' margin of error, because speculators can more quickly expose any limits in a central bank's resolve to maintain the peg. This conclusion is supported by a discussion of two recent "failures." In 1992, Europe's Exchange Rate Mechanism (ERM) succumbed to market pressure compelling individual countries to devalue against the Deutsche mark following Germany's reunification and the Bundesbank's desire to contain inflation pressures. At the end of 1994, Mexico's crawling peg ultimately collapsed, in part because of market concerns about the country's economic fundamentals.

Obstfeld and Rogoff contend that the best way to achieve anti-inflation credibility is not by pegging to a low-inflation country, but by creating an independent central bank. This includes delegating monetary authority to an independent central bank with a preference for lower inflation, or designing a contract with positive incentives for the central bank to maintain low inflation, as in New Zealand. In addition, a stock of credibility can be achieved from a previous history of low inflation.

Obstfeld and Rogoff's analysis raises questions about the determinants of speculative attacks against efforts by policymakers to target exchange rates. The traditional literature suggests that well-financed speculators have an incentive to provoke a crisis when current or future economic fundamentals are inconsistent with the exchange rate peg, because speculators know the

central bank will run out of reserves. These models suggest that attacks are triggered by a steadily worsening macroeconomic situation, as indicated by fiscal deficits, accelerating inflation, growing trade deficits, and so forth. In these models, governments "lose" to the currency markets when they attempt to defend positions that are indefensible.

Barry Eichengreen, Andrew Rose, and Charles Wyplosz examine these issues in the light of data on speculative attacks on pegged exchange rates in 22 countries between 1967 and 1992. While macroeconomic indicators do indeed behave as predicted prior to a crisis for many countries and time periods, the authors find that for Europe's ERM during the 1980s and early 1990s, the behavior of macroeconomic variables did not indicate that (the ultimately observed) crises were imminent. The authors conclude by suggesting that the 1992 exchange rate crisis might be better explained by newer theories of speculation. In these models, governments lose not because fundamentals are out of line, but because the markets successfully bet that they can pressure the government into changing policies in a direction that will yield speculative profits, thereby making the attack self-fulfilling. This view does not necessarily imply that macroeconomic fundamentals play no role, but it calls into question the ability to predict the precise timing of speculative attacks.

### **Financial and trade arrangements**

The magnitude of international capital flows depends not just on financial liberalization, but also on other policy measures. Eduardo Fernandez-Arias and Mark Spiegel investigate the implications of a North-South free trade accord, such as the North American Free Trade Agreement (NAFTA), for the ability of Latin American countries to attract foreign capital. The policy debate prior to the passage of NAFTA suggested that although the regional trade accord would lead to a small reduction in already low tariff levels between the NAFTA partners, the primary effect would be a change in the attractiveness of Mexico as a location for investment, resulting in a large amount of capital movement between the Northern and Southern trading partners. Fernandez-Arias and Spiegel model how a trade accord can generate additional capital inflows from the North, because it can be an ef-

fective mechanism for achieving more favorable treatment of foreign investments. The enhanced safety of investments in the Southern partner nation may cause the Northern partner to divert capital from other Southern nations as well.

### **Conclusions**

Financial market changes have altered the channels through which monetary policy affects the economy and have complicated the usefulness of traditional money aggregates as indicators. They have also increased the sensitivity of domestic economic conditions to foreign developments and made it more difficult to operate a fixed exchange rate regime. While these developments complicate the operation of monetary policy, the consensus is that the overall effectiveness of monetary policy is not necessarily impaired. As long as central banks maintain suitable economic targets and appropriately adjust the magnitude of policy changes, they may achieve these targets.

**Reuven Glick**  
**Vice President**

**Bharat Trehan**  
**Research Officer**

### **Conference Papers**

*These papers will appear in the Federal Reserve Bank of San Francisco Working Papers Series.*

Bernanke, Ben, and Ilian Mihov. 1995. "Measuring Monetary Policy." Mimeo. Princeton University.

Eichengreen, Barry, Andrew K. Rose, and Charles Wyplosz. 1995. "Speculative Attacks on Pegged Exchange Rates: An Empirical Exploration with Special Reference to the European Monetary System." Mimeo. University of California, Berkeley.

Fair, Ray C. 1995. "Is Monetary Policy Becoming Less Effective?" Mimeo. Cowles Foundation, Yale University.

Fernandez-Arias, Eduardo, and Mark M. Spiegel. 1995. "Financial Implications of Regional Trade Accords." Mimeo. Federal Reserve Bank of San Francisco.

Obstfeld, Maurice, and Kenneth Rogoff. 1995. "Exchange Rates and Monetary Policy." Mimeo. University of California, Berkeley.

Taylor, John B. 1995. "The Monetary Transmission Mechanism: An Empirical Framework." Mimeo. Stanford University.

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