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## Monetary Policy and Monetary Institutions

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*This Economic Letter summarizes the papers presented at a conference on Monetary Policy and Monetary Institutions held on March 5-6, 1999, under the joint sponsorship of the Federal Reserve Bank of San Francisco and the Stanford Institute for Economic Policy Research.*

The six conference papers (listed at the end) examine several different aspects of central bank behavior. Each focuses on how to construct an appropriate institutional framework or rule for behavior that would lead to appropriate monetary policy outcomes. Such research is particularly timely, in part because the recent formation of a new central bank—the European Central Bank—has highlighted many questions regarding the appropriate design of such institutions. Accordingly, three of the papers consider how monetary policy should be conducted in the euro-area.

Two of the other papers examine monetary policy in the U.S., concentrating in particular on delineating good policy “rules,” that is, specific formulas for adjusting the policy instrument in response to the state of the economy. The appropriate form of such rules is examined in two important situations, namely, when expectations in the economy are forward-looking and in the presence of model uncertainty.

A final paper focuses on the lender of last resort role that is assumed by many central banks around the world—again, an issue that has been much analyzed in recent debates about financial institution reform. As lender of last resort, the central bank acts to ensure financial liquidity, for example, by lending to an individual commercial bank that is solvent but has temporary difficulty in quickly meeting its payment obligations, perhaps because of an ongoing financial panic. In acting in such a role, the central bank must carefully balance the risk of contagion and overall systemic failure against the possibility of promoting future risky behavior.

### **Monetary policy issues for the Eurosystem**

Svensson’s paper discusses a number of issues regarding the conduct of policy by the Eurosystem. “Eurosystem” is the term for the European Central Bank (ECB) and the national central banks of the eleven member states that have adopted the euro, and it is the monetary policy institution analogous to Federal Reserve System in the U.S. Decisions in the Eurosystem are made by a Governing Council (analogous to the FOMC) consisting of the six members from the ECB and the eleven heads of the national central banks. The author supports a number of

aspects of the formulation of Eurosystem policy, notably the choice of price stability as the primary objective of policy; however, the author also points to several flaws.

First, the framework for policy decisions appears flawed by its overt emphasis on using movements in the stock of money as a rationale for policy. Such a strategy is undesirable because it gives a prominent role in communicating policy to what is in Svensson's model an irrelevant money-growth indicator, while at the same time obscuring the forecast of inflation, which will be the decisive input in policy decisions. This approach to communication borrows much from that of the German Bundesbank, and indeed, the Eurosystem may be trying to inherit some credibility from the Bundesbank. However, the lack of transparency such a strategy entails may be sizable relative to one that openly targets inflation (as practiced, for example, by the Bank of England).

As a related issue, the author argues that the Eurosystem is not clearly accountable to any other institution. Such accountability allows for appropriate monitoring and evaluation of performance and ensures that the goals of policy are met.

Finally, the author notes that exchange rate policy, which is intimately related to monetary policy in any open economy, is controlled by the finance ministers. The determined manipulation of exchange rates could thus threaten the ability of the Eurosystem to determine the stance of monetary policy independently.

### **Policymakers' revealed preferences**

The Cecchetti, McConnell, and Perez-Quiros paper considers two other factors that will help determine the effectiveness of the Eurosystem: the degree to which the countries in the euro-area have similar macroeconomic shocks and propagation mechanisms and the extent to which policymakers agree on the relative importance of the inflation and output stabilization objectives. Although limited by a very short sample of available data, the authors conclude that business cycles have not been very well synchronized across countries, suggesting differing national shocks or propagation mechanisms. Similarly, the authors find that in the past, the national central banks have attached differing (although all fairly high) weights on inflation stabilization relative to output

stabilization. To the extent that these findings are true for Europe currently, they could present serious challenges to the implementation of a common monetary policy.

### **Uncertainty and a model of the euro-area economy**

The Peersman and Smets paper presents evidence that monetary policy in Germany and the euro-area since 1980 can be described by a Taylor rule. The Taylor rule, which specifies the setting of the short-term policy rate in terms of inflation and the output gap, has been a popular descriptive model of central bank behavior in the U.S. (Judd and Rudebusch, 1998). The authors also describe the *optimal* Taylor rule for monetary policy in an estimated model of the economy of the euro-area. Their model is based on the simple aggregate supply and aggregate demand structure in Rudebusch and Svensson (1999) with the important addition that potential output is not known to the policymaker in real time with certainty. Instead, the policymaker must estimate it simultaneously with other elements of the model.

The uncertainty about potential output, and hence about the output gap, has important implications about the form of the optimal Taylor rule. Armed with the Taylor rule, policymakers have to set the policy interest rate in real time on the basis of their best guesses about the inflation rate and the output gap. If policymakers have only an uncertain or noisy estimate of the output gap, then the optimal Taylor rule coefficient on the output gap will be lowered; otherwise, with a high weight, the output gap uncertainty would tend to destabilize output and inflation. (Rudebusch 1998 provides similar results for the U.S.)

### **Robust monetary policy**

The Onatski and Stock paper also examines the optimal coefficients of a Taylor rule in Rudebusch and Svensson's small macroeconomic model (estimated on U.S. data). However, the authors emphasize that policymakers recognize that any such model is merely an approximation and that there is great uncertainty about the parameters of the model. In addition, the authors consider a new definition of what constitutes the best policy rule, namely, "robust" rules that attempt to minimize the maximum potential loss that might occur under certain model settings. The key idea is that it may be desirable to sacrifice some of the

performance that might be obtained by fine-tuning the policy rule to a particular model in exchange for a cap on potential losses in case the model turns out to be quite different from what was expected. It turns out that, in most cases, these robust policies are more aggressive than the optimal policies absent model uncertainty. Robust policy rules, in order to avoid extreme outcomes (like the Great Depression) under a worst case scenario, are quick to respond to even small deviations from targets. This result is in contrast to the usual result (as in the Peersman and Smets paper) where model uncertainty damps the response of policymakers to new information.

### **Optimal monetary policy inertia**

Many have noted that central banks appear to modify the stance of policy by moving the policy interest rate in a sequence of small steps in the same direction, so the rate at a given point in time is not too different from its previous level. This apparent interest rate smoothing or inertia is puzzling because in many economic models, including the Rudebusch and Svensson model discussed above, the policy rate should move quite quickly in response to the latest figures on output and inflation (at least in the absence of uncertainty).

The Woodford paper provides an explanation showing how inertial policy can be optimal. There are two key elements in this explanation. First, economic agents must be forward-looking (in contrast to the backward-looking Rudebusch and Svensson model); in particular, output depends on long-term interest rates, which in turn depend on the expected path of future short-term interest rates. Second, the central bank must be able to commit credibly to following a monetary policy rule. In this case, a small increase in the policy interest rate that is believed to be followed by further increases will induce an immediate large reaction in long-term rates and a sizable output response. The inertia in the short-term policy rate shapes private-sector expectations, and the bond market does much of the central bank's work for it. Thus, in the Woodford paper, good policy actions do look sluggish, but that is because they carry with them the credible promise of future actions in the same direction.

### **A model of the lender of last resort**

There have been few formal models analyzing when and why central banks have provided lender of last resort services to individual commercial banks, even though such acts have been a regular, albeit often contentious, occurrence for well over a century. The Goodhart and Huang paper provides such a model of the central bank's choice about providing temporary funds to an individual bank that is experiencing liquidity problems. In making this decision, it is assumed that the central bank does not have complete information but only knows the probability that the illiquid bank is also insolvent. If the individual bank is just illiquid, there are no costs to the central bank if it acts as lender of last resort; however, if the bank is also insolvent, the central bank faces costs that are directly proportional to the size of the bank. In addition, if the central bank does not loan to an illiquid bank, there are costs associated with the disruption of the payments system or banking relationships that increase (at an increasing rate) with the size of the bank.

With this set-up, the authors investigate several interesting issues. First, they demonstrate that a central bank's optimal policy follows a "too big to fail" strategy because large bank failures are quite costly. Second, they incorporate "contagion" where the probability of illiquidity increases with the abundance of failures of other banks. Finally, they tackle the problem of "moral hazard" in which increasing the number of bank rescues boosts the probability of risky behavior and insolvency by other banks. With regard to these last two elements, the authors conclude that debates about the lender of last resort role that focus largely on moral hazard concerns are inadequate unless they also address the possibility of contagion.

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## **Conference Papers**

Cecchetti, Stephen, Margaret McConnell, and Gabriel Perez Quiros. "Policymakers' Revealed Preferences and the Output-Inflation Variability Trade-Off: Implications for the European System of Central Banks." Federal Reserve Bank of New York.

Goodhart, Charles, and Haizhou Huang. "A Model of the Lender of Last Resort." International Monetary Fund.

Onatski, Alexei, and James H. Stock. "Robust Monetary Policy under Model Uncertainty in a Small Model of the U.S. Economy." Harvard University.

Peersman, Gert, and Frank Smets. "Uncertainty and the Taylor Rule in a Simple Model of the Euro-Area Economy." European Central Bank.

Svensson, Lars E.O. "Monetary Policy Issues for the Eurosystem." Stockholm University.

Woodford, Michael. "Optimal Monetary Policy Inertia." Princeton University.

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Rudebusch, Glenn D. 1998. "Is the Fed Too Timid? Monetary Policy in an Uncertain World." Manuscript. Federal Reserve Bank of San Francisco.

Rudebusch, Glenn D., and Lars E.O. Svensson. 1999. "Policy Rules for Inflation Targeting." Forthcoming in *Monetary Policy Rules*, ed. John B. Taylor. Chicago: University of Chicago Press.

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