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Editor's Introduction

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The Thirty-Second Annual Policy Conference of the Federal Reserve Bank of St. Louis brought together economists working on the conduct of monetary policy under uncertainty. This subject, which has been a long-standing professional interest of President William Poole's, is of significant academic and theoretical interest, but also defines the environment that confronts central bankers around the world at each policy meeting. In the course of these conference presentations and discussions, frequent reference was made to "Rules-of-Thumb for Guiding Monetary Policy," which President Poole published in 1971 in *Open Market Policies and Operating Procedures—Staff Studies*. Because this volume is not readily available, we have reprinted the Poole contribution here as part of the conference proceedings.

OPTIMAL MONETARY POLICY UNDER UNCERTAINTY: A MARKOV JUMP-LINEAR-QUADRATIC APPROACH

In the first paper presented at the conference, Lars Svensson and Noah Williams consider policymakers who face uncertainty about the slope coefficients of their model of the economy. The economy is modeled as a New Keynesian dynamic structure with endogenous forward expectations. They consider two sources of uncertainty: (i) the degree of forward-looking behavior in inflation and (ii) the slope of the short-run Phillips curve. They analyze optimal policy under three assumed behaviors of the policymakers: (i) no learning; (ii) Baysian optimal policy, under which the policymaker engages in some policy experimentation to obtain information on the probability distribution of the model parameters; and (iii) adaptive optimal policy, under which it is assumed that the policymaker updates information on the probability distributions of the parameters each period but will not learn in the future from observations. They conclude, for the examples they consider, that there can be substantial benefits (lower values of the policymakers' loss function) from adaptive optimal policy compared with the "no learning" assumption, but that the benefits from experimentation (Baysian optimal policy) are modest.

ECONOMIC PROJECTIONS AND RULES OF THUMB FOR MONETARY POLICY

The second paper presented at the conference, by Athanasios Orphanides and Volker Wieland, investigates whether situations where policy actions appear to deviate from simple outcomes-based rules of thumb such as the Taylor rule, depend on policymakers' forecasts of key variables. They examine this question drawing on 20 years of published FOMC projections of inflation, real growth, and unemployment in the semiannual monetary policy reports to Congress. From the

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published forecast data they interpolate three-quarter-ahead forecasts of inflation and unemployment. They regress the intended funds rate on the day after the February and July FOMC meetings on a constant and the forecasts of the inflation and unemployment rates. In this specification, the constant term captures the equilibrium real interest rate, the inflation target, and the natural rate of unemployment—all of which are presumed to be roughly constant over the sample period. In parallel regressions they use the real-time information for the last four quarters available at the time of the February and July FOMC meetings to evaluate an outcomes-based rule of thumb for policy. Alternatives to both specifications include the intended funds rate adopted at the FOMC meeting prior the February or July meeting as an additional regressor to incorporate policy inertia. In both specifications, the lagged funds rate enters significantly, though the marginal contribution is smaller in the forecast-based specification.

One issue is that the FOMC has changed the preferred measure of inflation twice during the sample period. However, estimated coefficients from regressions on a shortened sample period ending with 1999, a period during which the FOMC was focused in CPI inflation, are little changed from those of the full sample period. The authors conclude that the forecast-based estimates better characterize historical FOMC decision-making than do the corresponding outcomes-based estimates.

HOUSE PRICES AND THE STANCE OF MONETARY POLICY

In the third paper presented at the conference, Marek Jarociński and Frank Smets investigate the role of housing markets and monetary policy in U.S. business cycles since the second half of the 1980s using an identified Baysian vector autoregressive (VAR) model. Their models include nine variables: real GDP, real consumption, the GDP deflator, residential investment as a share of GDP, real house prices, commodity prices, the federal funds rate, the long-term interest rate spread, and the money stock. The model is estimated in two ways: as a VAR in levels and as a differences VAR.

Analysis of the differences model suggests that some of the housing boom in 2002-03 can be attributed to real and nominal GDP developments, but that these forces do not account for the acceleration in the growth of house prices in 2004-05. However, the model suggests that the unusually low levels of short- and long-term interest rates were important factors in the boom in housing markets in the United States in 2004-05. The authors also conclude that housing demand shocks have significant effects on housing investment and house prices, but that these shocks have limited impact on the aggregate economy. However, it appears that these conclusions are not particularly robust in the levels model specification.

In a second part of their paper, the authors address monetary conditions index (MCI) methodology. They construct MCIs, using the two specifications of the Baysian VAR. Their MCIs are weighted averages of current and lagged levels of the short-term interest rate, the term spread, and real house price growth. The MCIs are based on both expected output growth and expected inflation. Analysis shows that uncertainty about the MCIs is very high—it is not possible to reject the hypothesis that the monetary conditions were neutral during the entire sample period. Nevertheless, the authors conclude that taking house prices into account seems to matter for measuring the stance of monetary policy, and that, based on the results from their measured indices, monetary policy was relatively loose in 2004-05 and tight in 2007.

ASSESSING MONETARY POLICY EFFECTS USING DAILY FEDERAL FUNDS FUTURES CONTRACTS

In the fourth paper presented at the conference, James Hamilton tries to measure the magnitude of the effect of changes in the target that the FOMC sets for the overnight federal funds rate (the intended funds rate) on other interest rates, including those for Treasury securities with long maturities. In particular, Hamilton generalized previous analyses by assuming that there exists some day within a month when the intended funds rate may have changed, but does not condition on this date in constructing econometric estimates.

In the first stage of the analysis, Hamilton examines the relation between the effective funds rate and the intended funds rate. He develops a statistical description of how deviations between these two rates, together with a learning process by market participants, determine the volatility of spot-month (i.e., current month) futures rates. He constructs the variance of changes in the spot-month futures rate as the sum of two terms: one that represents the contribution of deviations of the effective funds rate from the intended rate and a second that represents the contribution of changes in the intended funds rate. He shows that these two terms imply that the variance of changes in the spot-month futures rate should decline over most of the month, but increase toward the end of the month. He finds that this model generally captures the intramonth volatility in the spot-month futures rate.

The second stage of the analysis addresses the question of what an observed movement in the spot-month futures rate signals about market expectations of the intended funds rate that will be set for the month. He concludes that this relationship can be derived from the properties of the deviations of the effective funds rate from the intended funds rate and from the squared changes in the spot-month futures rate. As the month progresses, the signal from changes in the spot-month futures rate about changes in the intended rate strengthens until after the middle of the month, from which point it decreases sharply to zero at the end of the month.

From the above analysis he concludes that the impact of changes in the spot-month futures rate should rise through the first half of the month and then fall off quickly to zero in the second half of the month. This predicted pattern is supported in the intramonth evidence of changes in Treasury yields in maturity ranges of one to ten years.

ANNOUNCEMENTS AND THE ROLE OF POLICY GUIDANCE

In the final paper presented at the conference, Carl Walsh investigates the role of transparency about the central bank's assessment of future economic conditions on the effectiveness of monetary policy. His framework is a New Keynesian model with Calvo-type price adjustment by monopolistic competitive firms. He assumes that central bank preferences are known. He assumes two alternative policy regimes. In the first regime, the central bank makes no announcements, so private agents observe only the current setting of the monetary policy instrument. In the second regime, the central bank releases its projections of future economic conditions. The central bank does not have perfect foresight, so the announced projections are subject to forecast errors. Private agents also possess noisy information about the future of the economy, and there is heterogeneity in the forecasts of the individual agents. The object of the analysis is to determine how private agents learn from the information provided by the central bank.

Several conclusions emerge from the analysis. First, higher-quality central bank information improves welfare, in that the central bank can implement more-effective stabilization policy. However, more information about the central bank's imperfect outlook for the future does not necessarily improve welfare. The increased transparency of the central bank lowers relative price dispersion across firms, because the set of information common to all firms is increased. But such increased common information can make private expectations more volatile, especially in those situations where firms have relatively poor information about the future.