FRBSF ECONOMIC LETTER

Number 2004-04, February 6, 2004

U.S. Monetary Policy: An Introduction

Part 4: How does the Fed decide the appropriate setting for the policy instrument?

This is the last of four issues devoted to our updated and expanded Q&A on monetary policy: (1) "How is the Federal Reserve structured?" and "What are the tools of U.S. monetary policy?" (2) "What are the goals of U.S. monetary policy?" (3) "How does monetary policy affect the U.S. economy?" and (4) "How does the Fed decide the appropriate setting for the policy instrument?" The revised text will appear in a pamphlet soon.

The Fed's job of stabilizing output in the short run and promoting price stability in the long run involves several steps. First, the Fed tries to estimate how the economy is doing now and how it's likely to do in the near term—say, over the next couple of years or so. Then it compares these estimates to its goals for the economy and inflation. If there's a gap between the estimates and the goals, the Fed then has to decide how forcefully and how swiftly to act to close that gap. Of course, the lags in policy complicate this process. But so do a host of other things.

What things complicate the process of determining how the economy is doing?

Even the most up-to-date data on key variables like employment, growth, productivity, and so on, reflect conditions in the past, not conditions today; that's why the process of monetary policymaking has been compared to driving while looking only in the rearview mirror. So, to get a reasonable estimate of current and near-term economic conditions, the Fed first tries to figure out what the most relevant economic developments are; these might be things like the government's taxing and spending policies, economic developments abroad, financial conditions at home and abroad, and the use of new technologies that boost productivity. These developments can then be incorporated into an economic model to see how the economy is likely to evolve over time.

Sounds easy—plug the numbers into the model and get an answer. So what's the problem?

There are lots of problems. One problem is that models are only approximations—they can't capture the full complexity of the economy. Another problem is that, so far, no single model adequately explains the entire economy—at least, you can't get economists to agree on a single model; and no single model outperforms others in predicting future developments in every situation. Another problem is that the forecast can be off base because of unexpected, even unprecedented, developments—the September 11 attacks are a case in point. So in practice, the Fed tries to deal with this uncertainty by using a variety of models and indicators, as well as informal methods, to construct a picture of the economy. These informal methods can include anecdotes and other information collected from all kinds of sources, such as the Directors of the Federal Reserve Banks, the Fed's various advisory bodies, and the press.

So now are we in a position to compare the Fed's estimates with its goals?

Not so fast. Coming up with operational measures of the goals is harder than you might think, especially the goal for the rate of maximum sustainable output growth. Unfortunately, this is not something you can go out and measure. So, once again, the Fed has to turn to some sort of model or indicator to estimate it. And it's hard to be certain about any estimate, in part because it's hard to be certain that the model or indicator the estimate is based on is the right one. There's one more important complication in estimating the rate of maximum sustainable growth—it can shift over time!

What problems does a shift in the rate of maximum sustainable growth cause?

The experience of the late 1990s provides a good example of the policy problems caused by such a shift. During this period, output and productivity surged at the same time that rapid innovation was transforming the information technology industry.

In the early stages, there was no way for the Fed—or anybody else—to tell why output was growing so fast. In other words, the Fed had to determine how much of the surge in output was due to unusually rapid technical progress and whether this implied an increase in the economy's trend growth rate.

This was a crucial issue because policy would respond differently depending on exactly why the economy was growing faster. If it was largely due to the spread of new technologies that enhanced worker and capital productivity, implying that the trend growth rate was higher, then the economy could expand faster without creating inflationary pressures. In that case, monetary policy could stand pat. But if it was just the economy experiencing a more normal business cycle expansion, then inflation could heat up. In that case, monetary policy would need to tighten up.

The Fed's job was complicated by the fact that statistical models did not find sufficient evidence to suggest a change in the trend growth rate. But the Fed looked at a variety of indicators, such as the profit data from firms, as well as at informal evidence, such as anecdotes, to conclude that the majority of the evidence was consistent with an increase in the trend growth rate. On that basis, the Fed refrained from tightening policy as much as it would have otherwise.

Does the trend growth rate ever fall?

Yes, it does. A good example, with a pretty bad outcome, was what happened in the early 1970s, a period marked by a significant *slowdown* in the trend growth rate. A number of economists have argued that the difficulty in determining that such a slowdown had actually taken place caused the Fed to adopt an easier monetary policy than it might otherwise have, which in turn contributed to the substantial acceleration in inflation observed later in the decade.

What happens when the estimates for growth and inflation are different from the Fed's goals?

Let's take the case where the forecast is that growth will be below the goal. That would suggest a need to ease policy. But that's not all. The Fed also must decide two other things: (1) how strongly to respond to this deviation from the goal and (2) how quickly to try to eliminate the gap. Once again, it can use its models to try to determine the effects of various policy actions. And, once again, the Fed must deal with the problems associated with uncertainty as well as with the measurement problems we have already discussed.

Uncertainty seems to be a problem at every stage. How does the Fed deal with it?

Uncertainty does, indeed, pervade every part of the monetary policymaking process. There is as yet no set of policies and procedures that policymakers can use to deal with all the situations that may arise. Instead, policymakers must decide how to proceed by going case by case.

For instance, when policymakers are more uncertain about their reading of the current state of the economy, they may react more gradually to economic developments than they would otherwise. And because it's hard to come up with unambiguous benchmarks for the economy's performance, the Fed may look at more than one kind of benchmark. For instance, because it's hard to get a precise estimate of the trend growth rate of output, the Fed may look at the labor market to try to figure out where the unemployment rate is relative to some kind of benchmark or "natural rate," that is, the rate that would be consistent with price stability. Alternatively, it might try to determine whether the stance of policy is appropriate by comparing the real funds rate to an estimate of the "equilibrium interest rate," which can be defined as the real rate that would be consistent with maximum sustainable output in the long run.

These issues are far from settled. Indeed the Fed spends a great deal of time and effort in researching various ways to deal with different kinds of uncertainty and in trying to figure out what kind of model or indicator is likely to perform best in a given situation. Since these issues aren't likely to be resolved anytime soon, the Fed is likely to continue to look at everything.

Suggested reading

For further discussion of the topics in this article, see the following issues of the *FRBSF Economic Letter*.

93-01 "An Alternative Strategy for Monetary Policy," by Brian Motley and John Judd. http://www.frbsf.org/publications/economics/letter/1993/el93-01.pdf

93-38 "Real Interest Rates," by Bharat Trehan. http://www.frbsf.org/publications/economics/letter/1993/el93-38.pdf

93-42 "Monetary Policy and Long-Term Real Interest Rates," by Timothy Cogley. http://www.frbsf.org/publications/economics/letter/1993/el93-42.pdf

97-29 "A New Paradigm?" by Bharat Trehan. http://www.frbsf.org/econrsrch/wklyltr/el97-29.html

97-35 "NAIRU: Is It Useful for Monetary Policy?" by John Judd. http://www.frbsf.org/econrsrch/wklyltr/el97-35.html

98-28 "The Natural Rate, NAIRU, and Monetary Policy," by Carl Walsh. http://www.frbsf.org/econrsrch/wklyltr/wklyltr98/el98-28.html

98-38 "Describing Fed Behavior," by John Judd and Glenn Rudebusch. http://www.frbsf.org/econrsrch/wklyltr/wklyltr98/el98-38.html

99-21 Supply Shocks and the Conduct of Monetary Policy," by Bharat Trehan. http://www.frbsf.org/econrsrch/wklyltr/wklyltr99/el99-21.html

99-33 "Risks in the Economic Outlook" by Robert T. Parry. http://www.frbsf.org/econrsrch/wklyltr/wklyltr99/el99-33.html

2000-21 "Exploring the Causes of the Great Inflation," by Kevin Lansing. http://www.frbsf.org/econrsrch/wklyltr/2000/el2000-21.html

2000-31 "Monetary Policy in a New Environment: The U.S. Experience" by Robert T. Parry. http://www.frbsf.org/econrsrch/wklyltr/2000/el2000-31.html

2001-05 "How Sluggish Is the Fed?" by Glenn Rudebusch. http://www.frbsf.org/publications/economics/letter/2001/el2001-05.html

2001-13 "The Science (and Art) of Monetary Policy" by Carl Walsh. http://www.frbsf.org/publications/economics/letter/2001/el2001-13.html

2003-14 "Minding the Speed Limit" by Carl Walsh. http://www.frbsf.org/publications/economics/letter/2003/el2003-14.html

2003-32 "The Natural Rate of Interest" by John Williams. http://www.frbsf.org/publications/economics/letter/2003/el2003-32.html

2003-34 "Should the Fed React to the Stock Market?" by Kevin Lansing. http://www.frbsf.org/publications/economics/letter/2003/el2003-34.html

ECONOMIC RESEARCH

FEDERAL RESERVE BANK

OF SAN FRANCISCO

P.O. Box 7702
San Francisco, CA 94120
Address Service Requested

PRESORTED
STANDARD MAIL
U.S. POSTAGE
PAID
PERMIT NO. 752
San Francisco, Calif.

Printed on recycled paper
with soybean inks

Index to Recent Issues of *FRBSF Economic Letter*

DATE	NUMBER	TITLE	AUTHOR
8/1	03-22	Disclosure as a Supervisory Tool: Pillar 3 of Basel II	Lopez
8/15	03-23	Understanding State Budget Troubles	Daly
8/22	03-24	Improving the Way We Measure Consumer Prices	Wu
8/29	03-25	The Present and Future of Pension Insurance	Kwan
9/12	03-26	Are We Running out of New Ideas? A Look at Patents and R&D	Wilson
9/19	03-27	The Fiscal Problem of the 21st Century	Jones
9/26	03-28	Earnings Inequality and Earnings Mobility in the U.S.	Daly/Valletta
10/3	03-29	Mortgage Refinancing	Krainer/Marquis
10/10	03-30	Is Our IT Manufacturing Edge Drifting Overseas?	Valletta
10/24	03-31	Good News on Twelfth District Banking Market Concentration	Laderman
10/31	03-32	The Natural Rate of Interest	Williams
11/7	03-33	The Bay Area Economy: Down but Not Out	Daly/Doms
11/14	03-34	Should the Fed React to the Stock Market?	Lansing
11/28	03-35	Monitoring Debt Market Information for Bank Supervisory Purposes	Krainer/Lopez
12/12	03-36	Japanese Foreign Exchange Intervention	Spiegel
12/19	03-37	The Current Strength of the U.S. Banking Sector	Krainer/Lopez
12/26	03-38	Is There a Digital Divide?	Valletta/MacDonald
1/16	04-01	U.S. Monetary Policy: An Introduction, Part 1	Economic Research
1/23	04-02	U.S. Monetary Policy: An Introduction, Part 2	Economic Research
1/30	04-03	U.S. Monetary Policy: An Introduction, Part 3	Economic Research