

FRBSF WEEKLY LETTER

Number 93-01, January 1, 1993

An Alternative Strategy for Monetary Policy

In recent years considerable progress has been made in reducing inflation in the U.S. During 1992, consumer inflation ran at about 3 percent, the lowest rate since the mid-1960s. Federal Reserve officials have made it clear that reducing inflation further, to near-zero rates, is the long-run goal of U.S. monetary policy. Maintaining stable prices is viewed as the main contribution that the central bank can make to a higher rate of economic growth over the long run.

However, the Fed's low-inflation goal does not appear to be fully credible to the public. The current unusually wide gap between long-term and short-term interest rates suggests that many participants in financial markets are concerned that inflation will pick up again later. This same concern is expressed in well-known surveys, which report expectations of higher inflation over the next ten years—around 5 percent for consumers, and 4 percent for financial decision-makers.

This lack of credibility is important because it means that the cost, in terms of lost output and employment, of further reductions in inflation may be larger than would otherwise be necessary. This *Letter* explores an approach to monetary policy, involving the targeting of nominal GDP, that could assist the Fed in achieving its low-inflation goal and, in the process, enhance the credibility of that goal.

The monetary aggregates

Why does the public continue to believe that inflation will revert to higher levels in the future? One possibility is that persistently large federal budget deficits may be fueling fears that ultimately pressure will build for the Fed to monetize them. Although the Fed was able to reduce inflation substantially in the 1980s in the face of large deficits, the public may not yet be convinced that the Fed's resolve will hold firm into the distant future.

A second possibility is that conflicting signals coming from the monetary aggregates in recent

years have meant that the public has had a hard time monitoring the thrust of monetary policy to be sure that the Fed's commitment to low inflation remains intact. Since the mid-1970s, the Fed has established ranges for, and reported to Congress on, several monetary aggregates. The Fed followed the approach of gradually reducing the growth rate targets for the aggregates over time as a way to pursue gradual disinflation. Until 1983, a narrow aggregate, M1, was emphasized; since then, a broader aggregate, M2, has received most attention.

Unfortunately, the quality of the signals about the thrust of policy emanating from these aggregates has been garbled by financial innovation. The creation of new monetary and non-monetary instruments has altered the relationships between the various aggregates and spending in the economy, and this has made it difficult for the public to judge whether the Fed is maintaining its commitment to low inflation.

Developments in recent years illustrate this problem, since the various aggregates have sent conflicting signals. M1 has grown very rapidly, inducing some observers to worry about a surge in inflation in the future. At the same time, M2 has grown sluggishly, suggesting to others that policy has been too restrictive.

Nominal GDP

Given these problems with the aggregates, it seems worthwhile to investigate alternative approaches. One alternative would be for the Fed to set a target for *nominal GDP*, which is a measure of the aggregate demand for goods and services produced in the economy. This variable is appealing as an intermediate target because it has had a fairly consistent long-run relationship with price indices over the years. The only developments that could disrupt that relationship are unpredicted changes in the aggregate *supply* of goods and services, or *potential real GDP*. Although this variable is by no means perfectly predictable, it tends to evolve slowly. In particular, unexpected movements in aggregate supply

FRBSF

generally are far smaller than those that have affected the relationship between the monetary aggregates and prices.

The major problem with adopting nominal GDP as an intermediate target is the difficulty in controlling it in the short to medium term. In part, this is because the relatively long lags from monetary policy actions to changes in nominal GDP make it difficult to offset the effects of unexpected shocks. As a consequence, the Fed could not be held accountable for controlling nominal GDP even over periods as long as a year. Hence it would be difficult for the public to monitor the Fed's actions by observing nominal GDP and comparing it to the target.

A solution to this problem can be found in a strategy of monetary policy originally proposed by Professor Bennett McCallum of Carnegie-Mellon University. First, the central bank would establish and announce a target path for nominal GDP that would be consistent with the economy operating at its long-run potential and with inflation equal to the targeted rate. Second, the central bank would define a rule that would specify what monetary policy actions it would take when nominal GDP misses its target. These monetary policy actions, in turn, would be defined by changes in a policy instrument, such as a short-term interest rate or a measure of bank reserves. It is important that the instrument be subject to the close control of the central bank in the short run, so that it can be held accountable for following the rule.

An example of such a rule would be that each quarter the central bank would change the federal funds rate by a specified proportion of the nominal GDP target "miss" in the prior quarter. If nominal GDP were above the announced target, whether because of faster-than-expected inflation or real GDP growth, the funds rate would be raised. Conversely, if nominal GDP were to fall below target, policy would be eased.

The rule would be set up such that if it were followed consistently over time, there would be a high probability of achieving the nominal GDP target (as well as the inflation goal) over the long term, even though there might be significant deviations in the short run. Thus for the public to be confident that the long-run inflation target would be achieved, the central bank would need only

to achieve the instrument settings defined by the rule.

Historical analysis

We have examined how the U.S. economy might have performed over the past 30 years if such a rule had been in place (Judd and Motley 1992). We carried out counterfactual simulations under various sets of assumptions regarding the structure of the economy and how monetary policy was set. We first assumed that the instrument of monetary policy is the monetary base, which consists of the stocks of currency held outside the banking system and of bank reserves. Our empirical analysis suggested that the Fed could have maintained stable prices over the 30-year period if it had followed such a rule-based strategy. Even if the economy had been hit by random shocks that were as variable as those that actually occurred, there was a high probability that prices would have ended the period at about the same level as at the beginning.

However, except for a short period in the early 1980s, the Fed generally has preferred to conduct policy by manipulating a short-term interest rate. In part, this preference reflects concern that if it controlled the stock of bank reserves or the monetary base closely, interest rates would become excessively volatile. Moreover, a high proportion of U.S. currency is held abroad today, which casts doubt on a strategy that uses the base as an instrument to control aggregate demand in the U.S. economy.

Hence, we also analyzed the effects of a regime in which the policy instrument is a short-term interest rate, such as the federal funds rate. We found that a rule-based strategy using an interest rate instrument was likely to cause extreme fluctuations in the economy if the level of nominal GDP were targeted. The problem appears to be that the lags from changes in the interest rate to the level of nominal GDP are so long that policy was not able to prevent the economy from substantially overshooting its target in response to shocks. Such overshooting tends to set off cycles of ever increasing amplitude.

However, our results suggest that this volatility could be avoided if the interest rate were changed only in response to the growth rate of nominal GDP. Since the growth rate of nominal GDP could be returned to target more quickly

than its level, the problems of instability are avoided. We found that a rule defined in terms of the growth rate of nominal GDP could, with a high degree of probability, keep inflation low without causing excessive fluctuations in output. In fact, the variance of real GDP would be about the same as under the policies actually followed over the last 30 years, while the volatility of interest rates would be reduced somewhat.

However, a rule that aimed at a target for the *growth rate*, rather than the *level* of nominal GDP, would automatically accommodate shocks to the level of nominal GDP, and thus would allow for the possibility that the price level might drift over time. In other words, it would not guarantee precise control of the average rate of inflation over long periods of time. Such drift would occur only if there were a prolonged series of positive or negative shocks. However, on the rare occasions when this occurs, it could be offset by one-time adjustments to the level of the targeted nominal GDP growth path. Thus this problem would not be insurmountable.

Rules and discretion

Given that it is impossible to foresee all future circumstances, central banks are understandably wary of committing themselves to rigid adherence to any rule, no matter how sensible that rule may seem to be. However, a rule such as the one under discussion may make a contribution to policy even if it were used only to modify the Fed's traditional discretionary approach. At present, the Fed evaluates alternative policy actions relative to a status quo policy of holding nominal interest rates unchanged. Naturally, the discussion tends to focus on whether the funds rate should be raised or lowered *from its recent level*. This may be misleading, because leaving the funds rate unchanged does not necessarily imply that the effect of policy on the economy also will remain unchanged. For example, if the economy

is operating above its long-run capacity and nominal interest rates are held constant, a surge in inflation will have the effect of lowering real interest rates and so stimulating the economy even more.

If the Fed were to use a rule to specify its baseline policy, this problem could be mitigated. The rule would provide information as to the direction the interest rate should be moved to keep the economy on a stable growth path with low inflation. Although the Fed could, at its discretion, choose to modify the policy indicated by the rule, a debate that focused on whether policy should ease or tighten *relative to what the rule suggested* might be more useful than one that focused only on whether the interest rate should be changed from its recent level. In particular, putting the debate into such a framework could help policymakers make short-run discretionary decisions without losing sight of the long-run goal of controlling inflation.

So long as the instrument settings indicated by the rule were achieved on average over time, the rule would work to achieve the long-run inflation objective. Moreover, once the public began to see that the rule was being followed, the Fed's credibility would be enhanced. This would make it easier to maintain stable prices without causing undue disruption to real economic activity.

Brian Motley
Senior Economist

John P. Judd
Vice President and
Associate Director
of Research

Reference

Judd, John P., and Brian Motley. 1992. "Controlling Inflation with an Interest Rate Instrument." *Federal Reserve Bank of San Francisco Economic Review* 3, pp. 3-22.