
FRBSF WEEKLY LETTER

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Rules and Monetary Policy

In the 1980s, the Federal Reserve compiled a successful record in combatting inflation. Early in the decade, the Fed employed a monetary-aggregates-oriented procedure to do so. By 1983, however, deregulation of the financial system had led to a breakdown in the relationship between money, economic activity, and inflation. In response, the Fed deemphasized the monetary aggregates and has pursued a more discretionary approach ever since.

Some have argued that the Fed should return to a more rules-oriented approach to policy, and have proposed a variety of targets that could serve as "anchors" for the price level in the place of the monetary aggregates. These proposals reflect a belief that the discretionary approach lacks a long-term guidepost, and that it inevitably will have an inflationary bias. This *Letter* examines this argument and then assesses some substitutes for targeting the monetary aggregates.

Some definitions

In the context of formulating monetary policy, a rules-oriented approach represents a commitment on the part of the central bank to meet a specific and previously announced goal. To be enforceable, the goal of the rule must be achievable by the central bank, and the public must be able to observe whether the goal has been met. An example of such a rule is one that specifies a constant rate of money growth.

Rules also can be contingent upon the behavior of prescribed variables. For example, the central bank could specify in advance how it would respond to movements in certain business-cycle variables within the context of a longer-run goal for money growth. Such an approach might be able to reduce cyclical swings, while keeping inflation under control over time. However, to qualify as a rule, the contingent reactions must be specific enough to allow the public to determine whether the rule is being followed.

In contrast, when the central bank proceeds in a discretionary manner, it makes no prior commitments regarding the actions it will take. Instead,

its actions are decided on a period-by-period basis, allowing it to react in different ways to different indicators over time.

Time inconsistency

An argument favoring rules was made by economists Finn Kydland and Edward Prescott about a decade ago. They argued that discretionary policy is inferior to a rule because it suffers from "time inconsistency." That is, discretionary policy leads the central bank to take actions that may enhance welfare in the short run, but result in higher inflation and diminished welfare in the long run. Kydland and Prescott showed that time inconsistency is a problem for discretionary policies *even when the central bank and the public have the same dislike of inflation.*

In their model, the central bank and public both are assumed to dislike inflation, and to prefer higher levels of output and employment to lower levels. The economy is assumed to operate at equilibrium, or full-employment, levels of output and employment over the long run, and to return to equilibrium following any disturbance to those variables. These levels are determined by underlying factors, such as productivity, labor's choice between work and leisure, and population growth.

In this framework, the central bank's discretionary policy actions can raise output above full employment only temporarily, and then only to the extent that its actions are not anticipated by the public. Actions that are fully anticipated will not raise output even temporarily, but will, instead, cause inflation expectations and nominal interest rates to rise. Although the central bank's actions can surprise the public for a while, over a long period of time, expectations about policy are assumed to be correct *on average.*

Given both the public's and the central bank's preference for higher employment and output, the central bank may try to increase employment temporarily, since it may be able to surprise the public with the sudden change in policy stance. However, once the public catches on, there will

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no longer be a benefit from this policy. In fact, the public's welfare ultimately will be reduced, since the economy will return to full employment and the level of inflation inevitably will rise. The size of the inflationary bias will depend upon the relative importance attached by the central bank to low inflation versus high output.

A rule, in contrast, will not have such a bias. Commitment to a rule eliminates the problem of time inconsistency since it anchors all decisions to a long-run goal. This long-run perspective, moreover, leads the central bank to adopt a rule that is noninflationary, since any other rule would be unsuccessful over time, as attempts to raise output above the full-employment level would not be sustainable and therefore would not enhance welfare in the long run.

Reputation

Thus, Kydland and Prescott showed that strict adherence to a rule overcomes the problems inherent in a purely discretionary approach to policy. However, it may be possible to overcome these problems, to a large extent, even when policy is discretionary. Experience shows that current policy actions affect the central bank's reputation; that is, current policy actions influence expectations concerning future policies. Consequently, even under a discretionary approach to policy, the central bank may have an incentive to limit its attempts to raise output above the full-employment level. For example, a central bank that is known to have created inflation in the past may find that an expansionary policy action fairly quickly is met by a rise in inflation expectations, and a concomitant rise in long-term interest rates that mitigates the effects of the expansionary policy. Such an experience may deter similar policy actions later on.

Whether concern for reputation can produce results similar to those under a rule depends on the weight placed upon low inflation versus high output by the central bank. The more weight placed upon low inflation, the closer is the result to that under an enforceable rule. Thus, the West German Bundesbank, which is known to place a very heavy weight on inflation control, has been able to maintain very low rates of inflation without a strict rule, whereas a rule could make a larger contribution to inflation control in other, less inflation-conscious countries.

Targets

The decision whether to adopt a rule also depends, in part, on the availability of an adequate target. In the past, the money supply fit this need. In this decade, however, the relationship between money, the aggregate demand for goods and services, and inflation has become less reliable, making a money growth rule inadvisable.

Problems with monetary targeting have turned attention to the possibility of targeting nominal income. Many analysts contend that the growth in real, or inflation-adjusted, GNP has a stable long-run trend, which they call "potential GNP." This trend is determined by long-run supply conditions, including growth in the labor force and productivity. Although potential GNP growth may vary somewhat from year to year, most estimates put its average rate in a range around 2½ percent. Thus, as long as nominal GNP is allowed to grow at around that rate and no faster, these analysts argue, price stability can be maintained in the long run.

Maintaining a steady growth rate of nominal GNP also appears to have desirable automatic stabilization properties. An unexpected fall in saving, for example, automatically would elicit enough policy tightening to bring real GNP back to its long-run potential rate of growth, leaving the price level ultimately unaffected.

Unfortunately, a nominal income rule does not work as well in the face of a supply shock to the economy, such as a sudden rise in productivity. Such a shock leads to an increase in potential GNP, and if the target is not adjusted accordingly, would require an unnecessary decline in the price level under a nominal income target.

Alternatively, some have proposed that the price level be targeted directly. A price rule may work more effectively than nominal income in the face of a supply shock. This approach also has the advantage of eliminating the intermediate target and focussing directly on the ultimate goal of monetary policy. However, targeting the price level directly may induce very sharp movements in real GNP that may not be desirable.

Tactics

Moreover, both proposals suffer from the disadvantage that neither nominal income nor prices

are as controllable over a period of a year or so as are the monetary aggregates. Thus, it would be difficult for the public to evaluate the central bank's performance with respect to a nominal-income or a price rule.

Economist Bennett McCallum has suggested an approach that overcomes this problem by establishing a more clearly defined method of accountability. This rule specifies the change in the monetary policy instrument (the monetary base) that the central bank would make in response to a given deviation of actual from targeted levels of nominal GNP or prices (with an adjustment for changes in the trend velocity of the base).

Such a feedback approach would have the advantage of defining policy in terms of a controllable instrument, that is, the monetary base. But the rule is contingent in the sense that the variable to which policy would respond is nominal GNP or prices. Such a rule would enable the public to form expectations based both on the behavior of a highly controllable instrument and on deviations of the goal variable from its targeted values.

Evaluation

McCallum has evaluated alternative targets for monetary policy in testing the effectiveness of this feedback rule. He tested the robustness of this rule across four alternative theoretical views of how the economy works. He found that the price rule holds the price level constant reasonably well, but appears to be somewhat less robust to model specification than the nominal income rule. In contrast, the nominal income rule stabilizes the price level reasonably well in all cases, and also appears to produce less volatility in real GNP than does the price rule.

This evidence suggests that nominal income targeting under a feedback rule could be used effectively to control inflation, and is to be preferred somewhat to a price rule. But these results must be considered preliminary because they are based upon rudimentary representations of the four macroeconomic theories tested.

Moreover, such a feedback rule, if strictly applied, would preclude even occasional adjustments in the course of policy to take account of

changes in the relationship between nominal income and inflation. Given the experience in this decade with the breakdown in the money/nominal-income relationship, commitment to such a rigid rule may not be prudent.

An alternative approach to nominal income targeting that does not involve adherence to a rule *per se* is one in which the central bank would adjust the policy instrument (such as the monetary base or the federal funds rate) in response to deviations of a forecast of nominal GNP from its target. That is, the policy instrument would be adjusted to hold a forecast of nominal GNP on a target path. If the model's forecast were correct on average, the nominal GNP target would be achieved over the long run. Such a forecasting approach, discussed in this *Letter*, July 8, 1988, explicitly takes into account the lags between policy actions and their effects on the economy. It provides for a more flexible policy, since it does not define in advance the exact actions that will be taken when (observed) nominal income deviates from target. Under this approach, however, the central bank's willingness to preserve its reputation for fighting inflation would need to play a major role in combatting inflationary biases.

Assuming the central bank places a heavy weight on inflation control, concern for reputation can be nearly as effective as strict rules. For example, highly credible central banks such as the Bank of Japan and the Bundesbank are able to control inflation with flexibly implemented targets.

The Fed's credibility appears to have grown as its record of controlling inflation has lengthened. Over the past year, for example, this credibility has been cited as the reason that long-term interest rates have not risen substantially in the face of sharp increases in short-term rates. This factor enhances the advantages of a flexibly implemented nominal income target.

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