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Commentary

THE TITLE OF THE PAPER by Jerry Stein is somewhat misleading. A more accurate title would be "The Resurrection of M2 as a Monetary Indicator," or "M2 Lives; Long Live M2." The paper is really about how well the M2 aggregate functions as a monetary indicator to guide monetary policy. Because the paper provides support for M2 as a monetary indicator, Jerry concludes that the central bank can achieve price stability. I agree with Jerry that the central bank can achieve price stability, but this is not really the focus of the paper because, as I discuss later, the success of M2 as a monetary indicator is not required for a central bank to achieve the price stability objective.

THE BASIC IDEA

The basic idea behind the paper is a simple one: A monetary indicator may by itself convey little information about future inflation or unemployment—even though it is actually an excellent indicator for these variables—if the dynamic interaction between inflation and unemployment is ignored. This point may be a simple one, but it is important nonetheless because it has often been overlooked in the recent debates about whether the Federal Reserve should use M2 as a monetary indicator or target. What the model in Stein's paper shows is that dynamic interactions between inflation and unemployment imply that the effect of M2

growth on the economy depends very much on the current state of the economy. If the economy is slack with high unemployment and M2 growth rises, inflation is likely to fall at first, but then will rise in the long run. Similarly, if the economy is booming with unemployment low, a decline in M2 growth may be followed by rising inflation at first rather than falling inflation. The relationship between M2 growth and inflation may thus not be very apparent, even though there is a close relationship between M2 growth and inflation in the long run as the standard quantity theory of money predicts.

Recent research which finds that M2 is a poor monetary indicator has looked solely at the direct relationship between M2 growth and a particular economic variable such as inflation or real output. Stein's analysis indicates that this approach may be highly misleading and that, when the dynamic interactions between inflation and unemployment are taken into account, M2 comes out very well as an appropriate indicator for the monetary authorities. Stein's resurrection of M2 has advantages over other recent attempts to resurrect M2 as in Feldstein and Stock (1993). They find that M2 helps predict nominal output growth, but is not a good forecasting variable for either inflation or real output growth. It is not clear that the Feldstein-Stock finding is all that comforting to M2 advocates since we do not directly care about nomi-

nal output growth, but are more interested in its components—inflation and real output growth.

Indeed, Stein's paper may help explain why Feldstein and Stock find that M2 growth works well in forecasting nominal output growth, but does poorly in forecasting its components. When M2 growth rises, Stein's dynamic system indicates that real output rises at first but this rise does not continue, while inflation rises later. In both the short and the long run, nominal output growth is higher when M2 growth rises, and this may explain the link between M2 growth and nominal output growth that Feldstein and Stock find. On the other hand, the different response of real output growth and inflation in the short and long runs make it harder to find a link between M2 growth and real output growth and inflation.

SOME CRITICISMS

Stein's paper provides a useful perspective on how to interpret the evidence on monetary indicators and provides new evidence that M2 might have a useful role as a monetary indicator. This paper suggests that the abandonment of M2 by the Fed outlined in Alan Greenspan's recent testimony in Congress may be premature. Despite finding value in this paper, like any good discussant I have to poke some holes in its arguments and raise some criticisms.

One serious problem with the evidence in the paper is that the favorable findings for M2 growth as a monetary indicator only appear with annual data. Jerry deserves to be commended for being very forthright in indicating that M2 and his model do not fare well with the quarterly data in Appendix 2. Jerry attributes the problem with the quarterly data to the noisiness of this data. I continue to be quite disturbed, however, that the results with quarterly data are so poor. A key point of his analysis is that it focuses on dynamic interactions. When we are interested in dynamic interactions, we are particularly interested in looking at data observed at short intervals such as a quarter because data averaged over longer intervals such as a year may not reveal much about the dynamics. The disappointing results with quarterly data are thus very troubling, because this is the data that would seem to be more suited to tests of his model.

Another issue about the robustness of M2 as a monetary indicator arises when the paper uses

the M2 divisia index instead of M2 in the estimated equations. In K. Alec Chrystal's paper in this volume, divisia M2 tends to outperform simple-sum M2 in the forecasting equations, and yet Stein's results with divisia M2 do not satisfy the theoretical restrictions of his model. Since there are some theoretical restrictions arguments for divisia indices over simple-sum aggregates, the lack of robustness of the results using divisia M2 is somewhat disturbing, particularly because other researchers such as Chrystal find that divisia M2 does pretty well.

I also have some problems with the paper's evidence on the poor forecasting performance of real interest rates in the dynamic model. The way the effect of real interest rates is tested is to add one lag of the nominal interest rate as an explanatory variable in the regressions, which also include one lag of the inflation rate. A rise in the lagged nominal interest rate is thus equivalent to a rise in the lagged ex-post real interest rate in these regressions. Although the coefficient on the lagged nominal interest rate therefore reflects the effect of the lagged ex-post real interest rate, it is the effect of the ex-ante real interest rate, a forward-looking variable, that is more relevant to the debate on whether real interest rates should be used as a monetary indicator. One variable that researchers have looked at that is meant to represent the effect of real interest rates is the spread between short- and long-term interest rates. The idea is that the long rate reflects expected inflation and so the short-long spread tells us something about the real short-term interest rate. The short-long spread does pretty well in forecasts of real economic activity [for example, see Hardouvelis (1991), Bernanke and Blinder (1992) and Bernanke and Mishkin (1992b)], and it might be worthwhile to look at how well it does in Stein's framework.

I also have some questions about the paper's evidence on the controllability of M2. The paper provides evidence that the coefficient on adjusted reserves in an M2 regression is not significant after 1975, thus casting doubt on the controllability of M2 in recent years. Although the conclusion that M2 is uncontrollable might be correct, I think the jury is still out on this one. Despite Stein's evidence, M2 might be more controllable than his evidence suggests because there are a lot of other factors that affect the relationship between M2 and adjusted reserves that are left out of his regression. If these factors are predictable by the monetary authorities,

then the monetary authorities might be able to offset them and exercise far tighter control of M2 than Stein's regression equation suggests.

POLICY IMPLICATIONS

The paper indicates that since M2 growth works well in the dynamic model, it is a good long-run indicator for inflation. In addition, Jerry comes to the conclusion that since his inflation equation has more stability than the unemployment equation, the Federal Reserve should focus on price stability rather than unemployment as the goal of monetary policy. I strongly agree that the primary focus of central banks should be price stability rather than the business cycle. The uncertain effects of monetary policy on real output is one reason, as Jerry points out. Another important reason, however, relates to the expectations created by a particular strategy for monetary policy.

Stein's paper does not emphasize this second reason for focusing on the price stability objective because it does not make use of rational expectations. Whether you buy into it completely or not, the rational expectations revolution has taught us important lessons about the problems that face central banks who attempt to manipulate real output or unemployment. If a central bank tries to reduce business cycle fluctuations, models such as Barro and Gordon (1983) indicate that this strategy will lead to high inflation without necessarily achieving any reduction in the degree of business cycle fluctuations. The problem is that attempts to reduce business cycle fluctuations destroy the credibility of the central bank and so create expectations that high inflation will be accommodated, which results in a self-fulfilling prophecy.

This lesson from rational expectations models has had an important impact on the economics profession. Most macroeconomists take the issue of credibility very seriously when discussing monetary policy and, as a result, tend to support the view that monetary policy should focus almost exclusively on price stability. Thus, whether macroeconomists are monetarist or not, or whether they accept the evidence in Stein's paper resurrecting M2 as a monetary indicator, they tend to agree with Stein's view that price stability should be the primary goal of a central bank.

The importance of credibility and expectations about monetary policy suggests an important

reason why monetary targeting might be useful for monetary policymakers. As Bernanke and Mishkin (1992a) point out, targets for growth rates of monetary aggregates might help signal the public about the long-run intentions of a central bank regarding inflation. Adherence to a monetary target may lower the public's inflation expectations, which helps keep inflation from getting out of hand. Stein's paper lends some support to the use of M2 targeting in the United States because it suggests that M2 growth is a good indicator for inflation in the long-run and, thus, can provide an appropriate signal to the public.

To finish my comments, I want to return to the issue of why I think the title of Stein's paper is misleading. Jerry's paper is not really about whether the central bank can achieve price stability. It is true that having M2 be an accurate monetary indicator makes it easier for a central bank to achieve price stability both because it provides a more accurate guide to monetary policy and because it enables the central bank to signal the public about its anti-inflationary stance. However, even if M2 or any other monetary aggregate is a poor monetary indicator, central banks can achieve price stability. Indeed, this is exactly what we have seen over the last 10 years in the United States.

The way I would characterize the Federal Reserve's strategy for the conduct of monetary policy in recent years is that it has not made much use of any specific monetary indicator. Instead, it has operated in the following manner: Whenever the economy has been getting close to full employment or inflation has risen, the Fed has stood ready to slam on the brakes by restricting reserves growth and raising interest rates until inflationary pressures subside. This strategy is not too different from nominal GDP targeting, although the weights on real output growth and inflation may not be equal as in nominal GDP targeting.

This strategy seems to work pretty well in the United States and in other countries as long as the central bank pursues the following rule-like behavior: It creates expectations that when inflationary pressures increase, it will pursue tighter monetary policy and then lives up to these expectations by actually carrying out this policy. The outcome of this policy in the United States has been a low inflation rate with very little variability. Since the success of this policy has not been based on the use of any monetary in-

indicator, it should be clear that price stability can be achieved without it. Thus, even if we are unable to find a satisfactory monetary indicator, there is still a strong case for rule-like behavior on the part of the central bank to control inflation.

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