

MONEY, CREDIT, AND FEDERAL RESERVE POLICY: REPLY TO PORTER AND OFFENBACHER

*Benjamin M. Friedman**

I am grateful for the careful and painstaking effort that Richard Porter and Edward Offenbacher have devoted to replicating and extending parts of my empirical work on the relationship between nonfinancial economic activity and the economy's total net credit outstanding, and I welcome the chance to respond to their paper as an opportunity to comment on several important questions about monetary policy in the context of that relationship. My views on these issues are in agreement with those expressed by Porter and Offenbacher, at least in most respects.

The research that I and others have done, highlighting the credit-income relationship in the United States, raises two separate questions for the conduct of monetary policy :

- (1) Should the Federal Reserve System formulate and implement monetary policy in terms of pre-specified targets for the growth of a small number of financial aggregates?
- (2) If the Federal Reserve does make monetary policy in this way, which aggregates should it use ?

In addition, Porter and Offenbacher raise a methodological issue about the statistical techniques employed in some parts of my empirical work on this subject:

- (3) What light can the results of vector autoregression analysis shed on either of these questions, or, for that matter, on any other policy questions ?

I shall comment in turn on each of these issues.

Aggregate Targets for Monetary Policy

As I have argued in some detail elsewhere,¹ on strictly economic grounds the use of financial aggregate growth targets as the central focus of monetary policy is clearly inferior to more flexible policy procedures. If a financial aggregate bears a close and

reliable relationship both to the ultimate economic objectives that the Federal Reserve wants monetary policy to affect (for example, price inflation and real economic growth) *and* to instruments directly under the Federal Reserve's control (for example, nonborrowed reserves or the federal funds rate), then it is at least plausible to conduct monetary policy by first determining what target growth rate for that aggregate is most likely to be consistent with the specific desired pattern of economic objectives and then conducting open market operations so as to achieve that growth target as closely as possible. As is now widely understood, this familiar two-step procedure is equivalent to using the chosen financial aggregate to summarize, in a specific way, all developments that affect the impact of monetary policy actions on the ultimate economic policy objectives.

The most obvious shortcoming of this two-step procedure is that it fails to take advantage of relevant information about such developments contained in readily observable variables other than the chosen aggregate. Moreover, except in extreme circumstances this procedure does not even use efficiently the information that the chosen aggregate does contain. The argument against the two-step procedure *is* essentially unchanged if the Federal Reserve bases policy on growth targets for more than one aggregate, although then there is the additional complication of determining the relative importance to be attached to each one.

On strictly economic grounds, therefore, the Federal Reserve should not use financial aggregate targets at all, but should instead use the most efficient available way of incorporating into its policy actions all relevant and available information—in practice, a combination of econometric tools applied to some areas and judgment applied to others that are less conducive to explicit quantitative treatment. Nevertheless, since the early 1970s the Federal Reserve has, with varying dedication, made growth targets for the standard monetary aggregates the principal focus of U. S. monetary policy, and the central banks of other major industrialized economies have adopted similar approaches. The reason, of course, is that

* Professor of Economics, Harvard University.

¹ See Friedman (1975, 1977).

more than strictly economic criteria typically are (and should be) apposite to the structuring of economic policy procedures. In the United States, the Federal Reserve is responsible to the Congress for the conduct of monetary policy, and Congress accordingly bears responsibility for overseeing the Federal Reserve's actions. In the course of seeking a policy framework that will enable it to execute this oversight responsibility, Congress has legislated a role for money and credit aggregates in the monetary policy process.

One theme running throughout Porter and Offenbacher's paper is that, although in the work on which they focus I have advocated the use of a credit target for monetary policy, the empirical results I have reported there do not make the bottom-line case for the use of such a target. Porter and Offenbacher are entirely correct in this regard. They are correct because the goal of this work was not to address the primary issue of whether the Federal Reserve should focus monetary policy on a growth target for credit or any other financial aggregate, but instead, *taking as given* that the Federal Reserve does use such targets, to ask the more limited question-discussed immediately below-of what specific aggregates it should use. Moreover, at a more fundamental level Porter and Offenbacher would be correct in this regard in any case, regardless of the objectives I had intended. Whatever justification there is for the use of financial aggregate growth targets in the monetary policy process must ultimately rest on political or organizational (bureaucratic) considerations, not economic ones. No set of empirical economic findings can resolve these conflicts.

Money and Credit Aggregates

If the Federal Reserve is going to use financial aggregate growth targets to formulate and implement monetary policy, it must specify which aggregates to target. The prevailing legislation simply refers to money and credit, appropriately leaving to the Federal Reserve the actual selection. In recent years (until 1983), the Federal Reserve has reported to Congress its targets for the growth of three monetary aggregates (M1, M2 and M3) and one credit aggregate (commercial bank credit).^{*} In practice,

² Most observers believe that the Federal Reserve in practice placed little if any emphasis on the stated bank credit target, and Porter and Offenbacher reinforce this impression by ignoring that it ever existed. For a brief period, the Federal Reserve reported separate targets for M1-A and M1-B.

most observers have concluded that the narrow" M1 aggregate has been the principal focus of policy.

I have argued for the use of total net credit as an additional target for monetary policy, if policy is to have such targets at all, for three reasons each closely related to the structure of the policy process based on aggregate targets: First, because of the potential dangers of placing exclusive reliance on a single aggregate, using two targets is better than using one -especially when there is reason to believe that the two draw on disparate sources of, information from within the economy's financial markets. A *credit* aggregate, by drawing on the *liability* side of the economy's balance sheet, supplements the information about the economy's asset holding contained in the monetary aggregates, and thereby usefully diversifies the information base underlying the signals that presumptively matter for monetary policy. Second, in the United States the total net credit aggregate bears as close a relationship to nonfinancial economic activity as does any of the standard monetary aggregates. This relationship is also not simply that of a mirror reflecting what has already happened; rather, credit contains useful information about future movements of income and prices. Third, with some lag the total credit aggregate bears a relationship to the Federal Reserve's direct operating instruments that is roughly comparable to that for the standard monetary aggregates. Hence over time the Federal Reserve plausibly could, if it chose, influence the growth of total net credit.

Porter and Offenbacher focus their substantial and impressive efforts on my empirical results documenting the relationship between total net credit and U. S. nonfinancial economic activity. In particular, they replicate and extend the work, that I did using vector autoregression methods to examine dynamic aspects of this relationship. Their individual findings are not without interest, although in the end it is difficult to know in what way (if any) they affect the overall conclusion to be drawn from the analysis. As did I, Porter and Offenbacher find that monetary aggregates appear more closely related to nonfinancial economic activity in some specific contexts, while the credit aggregate is apparently more closely related in others. They usefully reinforce this ambiguity by demonstrating that many of the individual results are "quite sensitive to slight changes in either arbitrary or seemingly innocuous assumptions." Not all of

their changes and extensions are of equal merit,³ but on the whole the set of exercises they report provides a useful addition to understanding of the relationships involved.

I disagree in an important way with only two aspects of Porter and Offenbacher's attempt to contrast our mostly similar findings. The first is their interpretation of the implications of the effect of adding interest rates to vector autoregression systems including income and financial aggregates. Mehra and Sims had earlier shown that the appearance of a major role for money in the determination of income typically disappears upon the introduction of interest rates.⁴ Porter and Offenbacher show a similar result for the total net credit aggregate. In addition, using comparisons among respective variance decomposition analyses, they argue that the effect of introducing interest rates is even stronger for systems including credit than for systems including money. In my similar work on this subject, I have found results leading to somewhat different conclusions than those reached by Porter and Offenbacher,⁵ but I surely agree that the relationships under study are not invariant to the inclusion or exclusion of interest rates.

Indeed, nor should they be. No familiar theory of macroeconomic interaction implies that quantities matter while relative prices do not. As I have argued elsewhere,⁶ it is helpful to think of the systems under study here as consisting of three markets: those for goods and services, for money, and for credit. In addition to its three quantity variables, such a system has two relative prices; as usually stated, they are the price of goods in terms of money, and the price of credit in terms of money—that is, the interest rate. The primary thrust of my work on this subject is to argue that what happens in both the money market and the credit market is relevant to the determination of income. It is possible, of course, to attempt to capture the relevant information from the credit market by using only that market's quan-

³ For example, I question the relevance in this context of distinctions found by extending the simulations past twenty quarters.

⁴ See Mehra (1978) and Sims (1980).

⁵ For example, in recent work with a six-variable system including real income, prices, money (M1), total net credit, the high-employment federal deficit as a percentage of potential income, and a short-term interest rate, Richard Clarida and I have found that the distributed lags on credit and the interest rate are each significant at the .10 level in the real income equation. See Clarida and Friedman (1984).

⁶ See especially Friedman (1983).

ty, but presumably the associated price (the interest rate) matters too. The information contained in the credit quantity when it is the only aspect of that market included will in general differ from the information contained in the quantity when used in conjunction with the interest rate.

What is the implication, for the choice of monetary policy targets, of finding that interest rates do matter in this context, perhaps even more than either money or credit?⁷ One possible implication would be to reject financial aggregate growth targets altogether in favor of gauging policy entirely by interest rates, although that idea lies outside the scope of the work under study here. In addition, the problems with basing monetary policy entirely on nominal interest rates are well known. Another possible implication would be to argue for some combined money-and-interest-rate system. A third would be to choose a money-and-credit-and-interest-rate system. Any of these is plausible. But there is no reason to reject entirely the relevant information from the credit market just because some of that information is contained in the price (interest rate) rather than the quantity variable, or because the respective information contained in the price and quantity variables overlaps.

The second aspect of Porter and Offenbacher's paper with which I disagree is their presumption that the theoretical foundation underlying the relationship to nonfinancial economic activity of M1 or M2 is more substantial than that for credit. To be sure, there are many models of the demand for money for transactions purposes, as well as of the demand for asset holding. Neither set of models, however, necessarily matches up with the M1 or M2 aggregates in the circumstances prevailing in today's financial markets. The deposits and currency included in M1 are hardly the only way of effecting transactions, and M2 is far from identical to total liquid assets. Failing these conditions, what is needed is a more general theory describing the holding of inside assets, and in particular relating inside asset holding to the determination of nonfinancial economic activity. In the end, however, theories of inside asset holding are inseparable from theories of inside liability issuing.

Among the familiar financial aggregates, the only one for which a genuinely well worked out theory

⁷ In addition to the possible implications given here, there is always the possibility that the interest rate merely appears to be important in this context because of the well-known forecast element in asset prices; see, for example, Sims (1982). This possibility is greater the longer is the term of the asset in question.

exists to relate it to nonfinancial economic activity is the monetary base. Models in which all assets are outside assets, and (inside) liabilities do not exist, have been a staple of macroeconomics for decades, and at the theoretical level they have delivered many valuable insights. Whether such models are helpful in choosing an aggregate target for monetary policy is another question. The world they describe corresponds to a modern economy only if inside assets and liabilities exist but do not much matter. The empirical evidence relating the monetary base to nonfinancial economic activity suggests 'that' that is not so.

Apart from the monetary base, there is little way of choosing for this purpose from among today's plethora of financial aggregates on purely theoretical grounds. The practical question of what aggregate(s) to use as the target(s) of monetary policy-again, *if* any are to be used at all-is an empirical issue. The approach I took to address this issue was to employ a variety of statistical approaches that previous researchers had claimed offered empirical support for using one or another money aggregate target and to attempt to show that, on balance, they provided about the same support for using a total net credit target'. The vector autoregression methods on which 'Porter and Offenbacher focus were one of several such approaches to which I turned in this spirit.

Porter and Offenbacher conclude their paper by saying that "the most that can be said in Friedman's favor is that VAR methods are not capable of distinguishing the proper monetary target." *But that is exactly my point* -along with the parallel finding that none of the other methods that I tried do so either. The empirical evidence, no matter how sorted, does not provide grounds for using a money target instead of a credit target (or vice versa). In the absence of any strong theoretical presumptions, one way or another, how can one choose money versus credit on the basis of the available evidence?

As Porter and Offenbacher partly acknowledge in their introduction, the Federal Reserve has recently resolved this issue by focusing on both money and credit. Probably the best way to view this change is as a response to the break-down of the traditional presumption favoring M1. In October 1982, Federal Reserve Chairman Paul Volcker announced a suspension of the M1 target-in other words, a monetary policy which deliberately moved in the direction opposite to what would have been needed to restore' M1 to (or even near) its 1982 target growth range. In February 1983, the Federal Reserve included in its formal report to Congress the "associated range"

for total net credit that Porter and Offenbacher mention. In July 1983, the Federal Reserve reported to 'Congress that it had chosen to change the 1983 target growth range for M1 rather than pursue a policy which. would restore M1 to (or near) the initially stated target range. At the same time, it reclassified the ranges for both M1 and total net credit as "monitoring ranges." Porter and Offenbacher simply do not say whether they agree with these successive steps.⁸I believe that they were an appropriate response to the situation and the evidence at hand.

Value of the Vector Autoregression Method

Finally, a largely methodological issue that Porter and Offenbacher raise is whether vector autoregression analysis can usefully address policy question like those I have discussed above (or, indeed, any others). Along with the finding by Porter and Offenbacher of great sensitivity to apparently, small and arbitrary details, there is the 'broader, issue of whether vector autoregression methods are capable of judging what would happen under a new policy regime because the regime change itself would in general alter whatever structure underlies the vector autoregression.⁹At the same time, Sims has argued that these methods are typically more robust than Porter and Offenbacher find, as well as that regime changes of the kind that would pose such fundamental problems do not represent the best way of thinking about practical policy choices.¹⁰

This reply is not the right place for a methodological discussion of the issues involved here. Moreover, I remain agnostic on the subject in any case. That is why I used not only vector autoregression analysis but other forms of evidence, as well as non-empirical arguments, to make a case for including a total net credit target in the monetary policy process. My objective in the work on which Porter and Offenbacher focus was to be as methodologically catholic

⁸ Even so, the evolution of the successive drafts of the Porter-Offenbacher paper present an interesting case study of the interaction between research and policy-making in a bureaucratic setting. The earliest draft that I received from the authors, written before the October 1982 suspension, maintained the implicit but nonetheless clear presumption that M1 was the right target, and took the question at issue to be whether anything in the empirical evidence was sufficient to change that presumption. The presumption in favor of M1 has gradually, disappeared from subsequent drafts, so that the final version in fact gives the stencil of the evidence the same coloring I do.

⁹ See, for example, McCallum (1983).

¹⁰ See again Sims (1982).

as possible. Beyond that, it was to play, deliberately, on "the other team's turf"-that is, to use forms of evidence on which other researchers, who had claimed a special positive and/or policy role for some monetary aggregate, had relied to support their claims. I concluded that this evidence is equally supportive of a role for total net credit. I think Porter and Offenbacher agree.

References

- Clarida, Richard H., and Benjamin M. Friedman. "A Statistical Analysis of the Behavior of U.S. Short-Term Interest Rates." *Journal of Finance*, forthcoming 1984.
- Friedman, Benjamin M. "Targets, Instruments and Indicators of Monetary Policy." *Journal of Monetary Economics* 1 (October 1975), 443-73.
- _____. "The Inefficiency of Short-Run Monetary Target's for Monetary Policy." *Brookings Papers on Economic Activity*, 1977:2, pp. 293-335.
- _____. "The Roles of Money and Credit in Macroeconomic Analysis." Tobin (ed.), *Macroeconomics, Prices and Quantities: Essays in Memory of Arthur M. Okun*. Washington: The Brookings Institution, 1983.
- McCallum, Bennett T. "Macroeconomics after a Decade of Rational Expectations: Some Critical Issues." Federal Reserve Bank of Richmond, *Economic Review* 68 (November/December 1982), 3-12.
- Mehra, Yash P. "Is Money Exogenous in Money-Demand Equations." *Journal of Political Economy* 86 (April 1978), 211-28.
- Sims, Christopher A. "Comparison of Interwar and Postwar Business Cycles: Monetarism Revisited." *American Economic Review* 70 (May 1980), 250-57.
- _____. "Policy Analysis with Econometric Models." *Brookings Papers on Economic Activity*, 1982:1, pp. 107-52.
-