11-1982

Federal Reserve Control of the Money Stock: Comment

Allan H. Meltzer
Carnegie Mellon University, am05@andrew.cmu.edu

Follow this and additional works at: http://repository.cmu.edu/tepper
Part of the Economic Policy Commons, and the Industrial Organization Commons

Published In

This Response or Comment is brought to you for free and open access by Research Showcase @ CMU. It has been accepted for inclusion in Tepper School of Business by an authorized administrator of Research Showcase @ CMU. For more information, please contact research-showcase@andrew.cmu.edu.
Moreover, even though base growth has been essentially trendless over the decade, the core inflation rate moved from around 5 percent in the early seventies to almost 10 percent at the end of 1980.

Given the stability of annual growth rates of the base, and the not too unstable quarterly growth rates, the wide fluctuations in the economy between 1971 and 1980 can hardly be attributed to volatility in the base over periods shorter than a quarter. The problem with base targeting is that the monetary base is a faulty gauge of the effect of monetary policy on the economy.

Comment on Federal Reserve Control of the Money Stock

By Allan H. Meltzer

Ralph Bryant tells us both at the start and at the end of his paper that the issue he discusses is of minor importance. His announced aim is pedagogical; he seeks to eliminate one source of confusion or misperception about monetary control. Some misled economists and most noneconomists... seem to believe that the Federal Reserve can straightforwardly cause the money stock to follow a target path closely—month by month—provided only that the Federal Reserve conscientiously tries to do so.' This is not so, Bryant tells us. His paper attempts to explain why. Regrettably, he gives as much attention to transitory fluctuations in float or excess reserves as to serially correlated, persistent disturbances in borrowing or demand deposits. He neglects the serious issues that divide the Federal Reserve and its critics.

In the following section, I discuss Bryant's paper and mention some main issues about procedure that he neglects. Then I summarize some of the available evidence, produced by the Federal Reserve staff, on potential control of money, and compare actual variability to the measures of variability produced by the Federal Reserve's staff in [2]. This later section tries to bring out the differences between us; differences that are easy to state but, apparently difficult to resolve. Bryant's statement of the issue is, "the natural interpretation... is to ascribe a major part of the week-to-week and month-to-month irregularity in the money stock to nonpolicy factors beyond the control of the Federal Reserve rather than to available mistakes..."
in the conduct of policy." Many critics believe that variability of the money stock is not independent of the procedures that the Federal Reserve uses. That is why I devote space to a comparison between actual and potential control instead of concentrating on the admittedly minor issues to which Bryant directs our attention.¹

1. ANALYSIS OF OPERATING PROCEDURES

Bryant lists two sources of confusion about monetary policy in addition to the admittedly minor one to which he devotes principal attention—the mistaken belief that the Federal Reserve can control money "closely." One of these is the inadequate analysis of the procedures used for short-term control. The other is a "poor understanding of the two-stage decision process implicit in the strategy of using a target path for the money stock as a surrogate for the ultimate targets of economic policy."

Discussion of the two-stage procedure, under conditions of uncertainty about the duration of shocks to money, output, labor, and securities markets, would be useful. Some of the original arguments for the procedure emphasized the absence of detailed knowledge about the structure of the system and the nature of shocks [4]. Perhaps the most important reason for retaining the two-stage procedure is that the use of targets such as the monetary base, nonborrowed reserves, or market interest rates does not prevent the money stock from collapsing, as it did in the depression from 1931 to 1933. A reader of Bryant's discussion of the two-stage procedure does not learn that the Federal Reserve failed to function as lender of last resort in the thirties, in part because market interest rates seemed "low." Bryant ignores any relation between the choice of operating procedures and either the depression of the thirties or the inflation of the sixties, seventies, and eighties. The reader has no way of knowing whether the past fifteen years of inflation could have been avoided or whether the occurrence of inflation is independent of the operating procedures and techniques at the Federal Reserve. If he concludes that the emergence of inflation and its increase during the seventies is independent of the operating procedures and practices of the Federal Reserve, he must accept one of two alternative explanations. Either the inflation is an inevitable consequence of the political and economic arrangements in the U.S. or in the world, and thus could not have been avoided or reduced, or the experience is the result of proinflationary policies fostered deliberately by the Federal Reserve.

¹Bryant's discussions of excess reserves and borrowing are examples. He tells us that the Federal Reserve must react to the weekly fluctuations, not to the monthly average. It is not at all clear why they must react to either. Many of the fluctuations in weekly excess reserves appear to be transitory, self-reversing fluctuations. Operating rules, such as lag reserve requirements, encourage the Federal Reserve to intervene. On the other hand, Federal Reserve intervention has not eliminated a persistent average error (shown in Bryant's figures) in predicting excess reserves, borrowing, and deposits. Bryant's discussion of borrowing recognizes the difficulties the Federal Reserve faces in its efforts to estimate a satisfactory, reliable equation for borrowing. A different control procedure that reduces the importance of errors in the borrowing equation, or different rules that reduce fluctuations in borrowing, would make these persistent errors smaller or less costly.
There is no reason to believe that the governors of the Federal Reserve and the members of the Federal Open Market Committee are a changing group of willful, malevolent men who set out to inflate the economy. Nor is there reason to believe that the inflation is entirely the result of political arrangements, although these undoubtedly played a role in the process and raised the cost of slowing inflation, once inflation became established.

If we rule out malevolence, chance, and political arrangements as full explanations of the relation of money growth to inflation and deflation and of the contribution of monetary policy to periodic recessions, we must consider the contribution of operating procedures. Part of the economist's problem is to explain why monetary policy is procyclical (why money growth is higher in periods of economic expansion than in recessions), why the average rate of money growth rose from cycle to cycle during the past fifteen years, and why the Federal Reserve permitted money to fall during the depression of the thirties. About twenty years ago a series of studies by Meigs [9], Dewald [5], Friedman and Schwartz [6], Brunner and Meltzer [3], and later by Weintraub [12] contributed an explanation in which Federal Reserve procedures fostered procyclical monetary growth, increased the variability of money growth, and increased uncertainty about future prices and output. Bryant does not address these issues.

Bryant's paper pays no attention to the main issues about procedures that divide the Federal Reserve and its critics. All economists can accept, perhaps for different reasons, Bryant's strictures that perfect monetary control—(near) zero monthly deviation from target—is impossible. Here there is no serious dispute. Two more relevant issues are (1) whether Federal Reserve control procedures and procedures for seasonal adjustment increase or reduce the variance of money growth and the size of deviations, and (2) whether changes in regulations for reserve requirements, discounting, and interest ceilings—among others—would enable the Federal Reserve to reduce the size of deviations and improve control under all or most of the proposed operating procedures. Bryant now agrees that a shift to contemporaneous reserve accounting would reduce the size of errors, but he offers no analysis of other proposals, preferring to lash out at unnamed "zealous protagonists" instead of offering evidence.²

Transitory changes in the money market are not—and as far as I know have never been—a central issue. The reason is obvious. Transitory changes in the levels of money or interest rates, by definition, have no lasting effect. There are, perhaps, minor issues about the economic efficiency with which such daily or weekly changes are offset. The resources at the trading desk and at the board may not be employed optimally. The money market may be able to reduce the cost of smoothing seasonal fluctuations or intraweekly fluctuations in float. I do not wish to denigrate these issues totally, but they are not the issues that I consider central to the discussion of the past twenty years or more. There are two more important issues about transitory changes. One is the degree to which Federal Reserve operating

²In contrast, Stephen H. Axilrod [1] accepts many of the suggestions for change and appears to endorse them. See also Axilrod's introduction to Board of Governors [2].
The procedures introduce more variability than they remove. The other is the degree to which the Federal Reserve misinterprets persistent changes as transitory changes and moves market interest rates (or reserves) too much or too little, too fast or too slowly, too frequently or not frequently enough. The persistent errors show that large, persistent errors are made for a year, eighteen months, or perhaps longer. The issue, therefore, is whether and to what degree alternative procedures can avoid these errors.

A central issue dividing the Federal Reserve and the critics of its procedures is whether current monetary arrangements reduce the risks that members of society must bear to an irreducible minimum or increase these risks. By current arrangements I mean the policy rules, operating principles, and institutionalized procedures that, together, constitute monetary policy. Particular aspects of this problem include the credibility of (or skepticism about) announcements; the type of announcements that are made; the degree to which deviations from announced targets can be reduced by changing operating procedures and traditional practices; the speed with which departures from announced targets are corrected; the circumstances under which they are corrected or are treated as transitory, self-correcting changes; and the extent to which rules and operating procedures increase the variability of prices and output and add to the uncertainty that must be borne.

To avoid misunderstanding, let me define monetary policy broadly as the set of procedures, rules, arrangements, and techniques for providing money. I include the tactics and strategies for giving and withholding information about current, past, and future policy, and the whole set of arrangements ranging from the choice of monetary standard to the choice of a definition for demand deposits adjusted, and trivialities such as the differences between "due from" and "due to" in the aggregates. The central issue, I believe, is how monetary policy can be conducted to minimize the variability and uncertainty that society must bear in a world subject to random shocks of unknown duration and, at times, of unknown origin.

Bryant’s empirical work relies on the board’s monthly model. Apparently the model ignores the correlation of errors across equations. Many of the transitory disturbances on which he dwells affect more than one equation. As one example, suppose the public unexpectedly increases its holdings of currency. A change of this kind can affect the errors in the equation for demand deposits, excess reserves, and member bank borrowing. The initial shock to the currency equation may be amplified or buffered by the time it reaches the money stock. Further, the reported errors for currency and deposits are biased. The bias occurs because Bryant’s equations estimate the relative rates of change of real currency holdings and real deposit holdings. The predictions from these equations are used to compute levels of currency and deposits and are converted to nominal values using the actual price level. This procedure is equivalent to assuming that prices are constant during a period of sustained inflation. All of the error from underestimating the price level is assigned to the nominal stocks.

These equations appeared in an appendix to the draft presented at the conference. The appendix has been removed, to shorten the paper, but the figures in the current version are the same as before.
Related problems affected Bryant’s demonstration at the conference of the alleged “high” variability of the multiplier of unborrowed reserves. The alleged “high” variability, according to Bryant, “undermines the presumption that short-run changes in the multiplier are small in importance relative to the policy actions of the Federal Reserve.” Bryant does not recognize that the negative correlation reflects, to high degree, the Federal Reserve’s use of lag reserve requirements and its policy toward the discount rate and discounting. In fact, he argues the opposite point when he claims that the reason for the negative correlation is unimportant. His observation of “high” variability in the unborrowed reserves multiplier reflects Federal Reserve procedures. Its variability, and presumptively the variability of short-term interest rates, could be reduced by changing procedures—shifting to contemporaneous reserve requirements and simultaneously keeping the discount rate above the short-term market rate. Bryant’s failure to relate the size of errors to the Federal Reserve’s procedures, regulations, and rules causes him to miss the opportunity to contribute to the issues he raises.

2. CONTROLLING MONEY

Some years ago in “Controlling Money” [10], I updated some estimates that Karl Brunner and I had prepared for our earlier study of the Federal Reserve [3]. These estimates suggested that slightly more than 85 percent of the variance of monthly changes in M1—currency and checking deposits—are systematically related to a few variables. Since that time, several more sophisticated studies have been made here and abroad of errors of forecast and of the variability of the money multiplier. In this section, I consider the potential for monetary control and propose a standard against which we can consider actual control. Then I discuss the errors we have experienced.

Potential Control

The Federal Reserve study of monetary control, to which I referred earlier, summarizes some of the available evidence and provides new measurements of potential control. In [2], Lindsey and others show that the average error in predicting the money multiplier for the twelve months from October 1979 to October 1980 is 4.0 percent (annualized) with standard deviation of 5 percent. This result is achieved using the board’s monthly model, assuming that the monetary base is controlled. Lindsey and his coauthors raise some technical econometric objections to the result, and make some adjustments. After adjustment, a quantitatively similar result is achieved using other reserve aggregates to control money growth—for example, nonborrowed reserves or total reserves. Judgmental forecasts by the board’s senior staff reduce the errors a bit more. Although I do not accept some of the arguments used by the authors, the principal finding that I stress does not depend on differences in procedure. Any of a number of different procedures was capable

Papers by Keir and by Lindsey and others in [2] support my interpretation.
of controlling money monthly with an annualized average error of 4 percent to 5 percent in 1979–80.

This finding is striking for two reasons. First, 1979–80 was not an easier than average year for monetary control. The introduction of credit controls in March 1980, perhaps supplemented by other aspects of President Carter’s policy shift, was followed by a substantial, indeed dramatic, decline in the growth of all reported monetary aggregates. The Federal Reserve study suggests repeatedly that neither the sharp decline nor the subsequent surge in money growth was either planned or anticipated. Hence, we act prudently and take little risk if we interpret the estimated mean error and its standard deviation in the staff study as measures of the population values. Second, the measures are annualized values despite evidence showing little serial correlation. A more accurate rendering of the results would recognize the low serial correlation and describe the results as showing that the mean monthly error is about 1/3 percent (0.33 percent). Allowing for the estimated standard deviations, it appears reasonable to conclude that there are a number of control procedures capable of holding the average monthly growth of money within 1 percent to 2 percent of the announced target with high (95 percent) probability.

Additional information comes from three sources. First, quarterly data reported by Lindsey and others show annualized mean errors (again for growth of M1B using different control procedures) in the range 0.6 percent to 0.8 percent. The quarterly estimates suggest that quarterly growth rates can be held within 1 percent of the target with high probability. Second, in the same volume Pierce computed the noise generated by seasonal and purely transitory random factors in the announced growth rates and levels of money. He found that the estimated annualized standard deviation of the noise in the growth of M1 is about 4.5 percent monthly and 1.7 percent quarterly. His estimates suggest that the deviations from the annualized mean cannot be reduced much below ± 1 percent annually with 95 percent probability until seasonal adjustment procedures are improved. The conclusion, of course, depends on the model of the error term. More sophisticated models may find systematic components in Pierce’s random terms. Third, Rasche has used the equations of the Johannes-Rasche [7] time series model to forecast money multipliers for one to six months ahead at each meeting of the Shadow Open Market Committee. These forecasts are true (made in advance) forecasts. They suggest that control of annual growth within ± 1 percent can be achieved if there is close control of the monetary base. Johannes and Rasche [8] reach the same conclusion and, in addition, use Theil’s inequalities to show that most of the systematic error has been eliminated from their forecasts. The 1 percent error in monetary control found in several studies appears to be near the irreducible minimum error to be expected when controlling money growth. As such, it is a standard against which Federal Reserve policy can be judged.

5The forecasts are available from the authors for inspection.
6Bryant partly accepts this standard. He recognizes that money growth can be held within 1.5 percent of target annually. He does not indicate why he fails to accept the findings in [2] showing that better control is feasible.
Actual Control

How close does the Federal Reserve come to the minimum error? One measure that has become available in recent years is the deviation from preannounced target rates of growth. Table 1 shows the ranges for the preannounced targets for money growth from fourth quarter to fourth quarter for the past six years, the midpoint of the target, and the reported growth rate. I report M1 growth for 1976 through 1979 and M1B growth for 1980 and 1981. Other monetary aggregates may show a different pattern; my impression is that the conclusion I draw is not likely to depend on the choice of monetary aggregate, although the yearly errors and the reported means change.

TABLE 1
MONEY GROWTH 1975-81

<table>
<thead>
<tr>
<th>Period: 4 Quarters Ending in 4th Quarter</th>
<th>Percent Growth</th>
<th>Actual or Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target Range</td>
<td>Target Midpoint</td>
</tr>
<tr>
<td>1976 (M1)</td>
<td>4.5-7.5%</td>
<td>6.0%</td>
</tr>
<tr>
<td>1977 (M1)</td>
<td>4.5-6.5%</td>
<td>5.5%</td>
</tr>
<tr>
<td>1978 (M1)</td>
<td>4.0-6.5%</td>
<td>5.25%</td>
</tr>
<tr>
<td>1979 (M1)</td>
<td>3.0-6.0%</td>
<td>4.5%</td>
</tr>
<tr>
<td>1980 (M1B)</td>
<td>4.0-6.5%</td>
<td>5.25%</td>
</tr>
<tr>
<td>1981 (M1B)</td>
<td>6.0-8.5%</td>
<td>7.25%</td>
</tr>
</tbody>
</table>

In five of the six years, reported money growth was more than 1 percent above or below the target midpoint, and in four of the six years, actual growth was outside the target. The errors, measured from the target midpoint, range from -2.25 percent to +2.4 percent. Their means is 0.9 percent with standard deviation of 1.8 percent. If the errors are measured as absolute values, the mean is 1.6 percent and the standard deviation is 0.9 percent. Judged either way, actual performance is substantially less than the attainable best. Instead of a 95 percent probability of coming within ±1 percent of the annual target, these data suggest that the 95 percent probability region is ±3.5 percent. Given that most of the errors have been positive in the small sample to date, we must use this statistic cautiously.

A second summary statistic is, perhaps, more revealing. The mean of the reported target midpoints in Table 1 is 5.6 percent; the mean of the reported growth rates is nearly 1 percent higher, 6.4 percent. The actual compound annual growth of M1B for the period is above 7 percent. Part of the latter difference, but only part, is explained by differences between the growth of M1B and the growth of M1 in the first four years. The rest mainly reflects the shifts in the base from which annual targets start—sometimes called the ratchet effect.

A discouraging finding is the evidence showing that the (absolute) errors in 1980 and 1981 are no smaller than the errors for earlier years. One explanation may be that the sample periods are too small to make any comparison meaningful. Another explanation is that the changes made in 1979, although described frequently as an effort to control money, are in fact a return to the free reserves procedures of the fifties. This point is developed in [11].
A third summary statistic measures the variability we experience within a year. Table 2 of Lindsey and others [2] reports the standard deviation of seasonally adjusted monthly and quarterly growth rates of M1B for 1971–79 and for 1980. The quarterly annualized standard deviations for the two periods are, respectively, 3.0 percent and 6.4 percent. The comparable figure for 1981, based on preliminary data, is 3.6 percent. Again, actual variability is considerably above the computed minimum.

3. CONCLUDING COMMENTS

My main criticism of Bryant's paper is that it fails to discuss, or even mention, some of the principal issues that divide the Federal Reserve and its critics. I list here three examples.

1. Money typically grows faster during expansions than during recessions. This pattern has made inflation higher, and more variable, and has made recessions deeper and more durable, in the opinion of the critics.
2. The Federal Reserve focuses mainly on short-term (daily or weekly) fluctuations in the money market. Persistent changes in the growth of money are often neglected or ignored for months or even years. Costs of reducing or increasing the money growth rate are much higher as a result.
3. Federal Reserve operations add more variability to income and prices than they remove. The Federal Reserve, on average, raises variability of income and prices above the level that would be achieved with more stable policies. The Federal Reserve augments, instead of reducing, variability in the economy.

Let me close with a modest proposal.

A main purpose of economic policy is to reduce the risks that people bear to the minimum inherent in nature and trading arrangements. Reaching the minimum requires much more reliable knowledge about the deterministic and stochastic structure of the economy than we currently possess. We can, however, move toward the attainable minimum found in the studies I have cited, and in other studies, done within and outside the Federal Reserve.

I propose that we run the experiment—control the stock of money without relying on estimates of the demand for money or interest rates—and evaluate the results. The experience with monetary targets during either the past six years or the past six months is so far from the attainable minimum that we are unlikely to do worse than we have.

LITERATURE CITED


