

# RULES VS. DISCRETION IN MONETARY POLICY

*Carl Christ*

## Introduction

In this paper I will take the phrase “stable money” to mean a monetary regime that insures zero inflation on the average over long periods, small variations (if any) in the price level over short periods, and either no effect or (better) a stabilizing effect on fluctuations in real output and employment during business cycles. In retrospect, it appears that economic policy in the United States came closer to this ideal during the immediate postwar period, from about 1948 to 1960, than at any time since.

A major problem since 1960, in my view, is that too often a short-term policy objective has been pursued, to the neglect of its long-term consequences. A conspicuous and unfortunate example is the expansionary policy that was followed from about 1961 into the 1970s. It yielded short-term results that seemed very good while unemployment was low in the 1960s, but in the longer term it yielded the inflation of the 1970s, and the low unemployment proved to be temporary.

One fundamental conclusion about inflation is abundantly clear from the experience of many countries in the years since the start of World War I: No nation can maintain a rapid inflation for an extended period of time without a correspondingly rapid increase in its money stock. And conversely, no nation can avoid rapid inflation over an extended period if it permits continuous rapid growth of its money

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*Cato Journal*, Vol. 3, No. 1 (Spring 1983). Copyright © Cato Institute. All rights reserved.

The author is Abram G. Hutzler Professor of Political Economy, The Johns Hopkins University, Baltimore, Md. 21218.

The author expresses appreciation to James Buchanan, Masahiro Kawai, Louis MacCini, and Jurg Niehans for their helpful comments on an earlier draft. He also wishes to thank David Lenze for his indispensable help with the word-processing program used in preparing this paper.

stock. There is not complete consensus about which comes first when inflation starts, the rise in prices or the rise in the money stock. But a continued rapid rise in either is a necessary and sufficient condition for a continued rapid rise in the other.

There is a second conclusion that is less well established than the foregoing one, but I believe that it is coming to be accepted by an increasing number of economists. It is this: When there is a significant change in the growth rate of the money stock, the first effect is a *temporary* change in real output and employment in the same direction, and the later effect is a change in the inflation rate in the same direction.

These conclusions suggest that in our search for stable money, we should adopt monetary policies that involve slow growth of the money stock on the average over long periods, so as to avoid inflation, and that involve only small and gradual changes in the rate of growth of the money stock over short periods, so as to avoid creating or exacerbating business cycles. They also suggest that we cannot, and hence should not try to, permanently reduce the long-run average unemployment rate by monetary policy. (For a thoughtful statement of a partially different view, see Tobin 1980.)

Monetary policy has been delegated to the Federal Reserve by the Congress, pursuant to Article I.8 in the Constitution that gives the Congress authority to coin money and regulate its value. It is important to remember, however, that monetary policy and fiscal policy interact. The Congress and the executive branch determine fiscal policy through tax rates and expenditure programs, which (together with the response of the economy) determine the federal budget deficit or surplus. The deficit (or surplus) is financed essentially by increasing (or decreasing) the sum of the monetary base plus private holdings of federal debt. Thus the deficit is essentially equal to the sum of the increases in the base and in private holdings of federal debt. The Federal Reserve directly controls the base. When the deficit is large, as in recent years, the Fed is faced with the difficult choice of whether or not to help finance the deficit. No matter which choice the Fed makes, there is trouble for the economy. If the Fed finances a large share of the deficit, the monetary base rises rapidly, which leads to inflation. If the Fed finances little or none of the deficit, the Treasury must sell large quantities of debt to the private sector. This leads to a high real interest rate, which crowds out private capital formation.

## An Optimum Policy Rule

In principle, one could derive an optimum policy rule by maximizing an objective function (defined over a time horizon of a number

of years) with respect to the policy variables, subject to the structure of the economy. But in practice, there are several difficulties.

First, an appropriate objective function has not been agreed on. It is determined and changed through the political process. Presumably, however, there is general agreement that positive value should be assigned to a stable price level, to a low rate of unemployment, and to increasingly efficient production.

Second, the structure of the economy is not perfectly known, to say the least. In particular, the demand for money function is not known with certainty. The survey by Judd and Scadding (1982) gives a good account of contemporary estimates of the money demand function, particularly of the apparent deterioration of the quality of its fit after about 1972.

Third, monetary policy variables (with which this paper is mainly concerned) are not the only policy variables that ought to enter into the kind of optimization procedure mentioned earlier. Hence the *monetary authorities alone, even if they were omniscient, could not successfully carry out the complete optimization described above.*

### A Constant Monetary Growth Rate Rule?

In my view, no constant monetary growth rate rule could be optimal if we knew enough to perform a complete optimization. A constant moderate growth rate for the monetary base would hardly have been good policy between 1929 and 1933. During that period the base grew by one fifth, but M1 fell by one third because of a large decline in the money multiplier (see Appendix Table 1). The velocity of the base has been increasing at a varying rate over the past three decades, as shown in Appendix Table 3, which suggests that a constant growth rate for the base would not have been the best policy.

The velocity of M1 has also increased at a varying rate over the past three decades, as shown in Table 3. Hence a constant growth rate of M1 would not have been likely to lead to perfect price stability. It should be noted, however, that had there been a steady increase in M1 or in the base at a modest rate such as two or three percent a year, we would not have had the inflation of the 1960s and 1970s; and the velocities of M1 and the base would have been more nearly constant than they actually were. This means that constant monetary growth would not have been as bad as the actual velocities of the base and M1 in Table 3 suggest.

A constant growth rate for M2 looks as though it would have been a fairly good policy for the period from 1959 through 1981, since the velocity of M2 was nearly constant over this period (see Table 3).

This suggests that if M2 had been made to grow at a constant rate of, say, three percent a year over the period, nominal GNP might have been expected to grow at about the same rate, which would imply approximately zero inflation for the period. However, two caveats are in order. First, there is no guarantee that the constancy of the velocity of M2 would have been unaffected by a policy of making M2 grow at a steady three percent a year. Second, even leaving that problem aside, it is likely that the nearly constant velocity of M2 was an accident, due to the cancellation of opposite influences, and that this velocity cannot be relied upon to remain as nearly constant in the next two decades as it was in the past two.

As shown in Table 3, the velocity of M3 declined between 1959 and 1981. Thus there is a progression in the velocity behavior of the three M's: M1's velocity rose, M2's velocity was roughly constant, and M3's velocity fell. This behavior is consistent with the fact that over the period interest rates on assets included in M2 and especially in M3 (but not in M1) rose dramatically, which would be expected to lead to substitution away from M1 toward M2 and M3, and away from M2 toward M3. The Divisia indexes of these M's, proposed by William Barnett (1980) and now computed monthly by Paul Spindt and Clifton Wilson of the Federal Reserve Board staff, are a promising attempt to construct quantity indexes of the monetary aggregates, using as weights the degree of "moneyness" of each type of asset. The idea is that an asset, such as currency, that pays zero interest must be held exclusively for the monetary services it renders, while a high-yielding asset such as a long-term bond presumably provides little or no monetary services to its owner. Hence Divisia indexes give zero weight to the highest-yielding asset available, on the presumption that it provides no monetary services, and give to each other asset a weight corresponding to the difference between its interest yield and the highest available yield. At present, while the interest rates on many assets are still controlled by federal regulation, the technique has flaws. But when deregulation of all interest rates is complete, and borrowers and lenders have fully adjusted, Divisia indexes may be expected to respond negatively to interest-rate changes in a more predictable and regular manner than do M1, M2, and M3. Indeed, Barnett (1980) reports that this is true even now, before interest-rate deregulation is complete.

## Interest Rate Rules

In practice, an interest rate rule is going to be worse than a monetary growth rule. This is because in practice it is very difficult, one

might as well say impossible, to gauge correctly the target interest rate that is required from week to week in order to achieve desired results. The reason for this difficulty is that the long-run and short-run effects upon interest rates, when monetary growth rates are changed, are often in opposite directions. For example, putting aside expectational changes for a moment, when monetary growth rates are raised, the initial effect is to lower interest rates as an excess supply of money in nominal terms is created. But after the more rapid monetary growth rate has generated more rapid inflation, and the economy has adjusted to that inflation by reducing real money holdings and by bidding up nominal interest rates so that they include an expected inflation premium, then nominal interest rates are higher than they were in the first place. The result is that merely by looking at the level of nominal interest rates, one cannot tell whether monetary growth is too high or too low. A high nominal interest rate may be the short-run result of a recent reduction in the money stock or its growth rate; or it may be the long-run result of an increase in monetary growth that began some years earlier. When monetary growth rates are allowed to vary from quarter to quarter or year to year, it is *not possible to calculate the interest-rate path that would be required to bring inflation under control*. We simply do not have sufficient knowledge of the dynamic pattern of response of interest rates to monetary changes and other changes in the economy. This difficulty is compounded by the attempts of bond traders to anticipate future responses by the Fed to current changes in money stocks.

It is my view that the high nominal interest rates of the 1970s resulted mainly from the Fed's previous attempts to keep rates artificially low. By supplying additional base money (either by open market purchases or by permitting loans through the discount window at a below-market rate) when market rates threatened to exceed the unnaturally low target levels, the Fed permitted the monetary base to grow too fast. Inflation and higher nominal interest rates followed. A comparison of the FOMC's target ranges for the monetary growth rates and the federal funds rate, on the one hand, with the actual behavior of these quantities, on the other hand, suggests that this is the case. Surges in monetary growth often occurred when the federal funds rate went above, or threatened to go above, the upper limit of its target range. Poole (1982) has found the same pattern for the period since October 1979, when the Fed announced it would henceforth pay more attention to monetary growth rates than to interest rates.

Beginning in 1981 when large tax cuts were enacted without corresponding cuts in aggregate real federal expenditures, the prospect

of very large federal deficits may have contributed to the unusually high and variable real interest rates. Some ex post real interest rates are shown in Appendix Table 4.

## The Transition to Monetary Deregulation

The combination of interest-rate ceilings and inflation has caused profound changes in monetary markets, including the invention and proliferation of the money-market funds. The ceilings have been with us for many years, but they did not start to bite until inflation led to increases in the market-clearing levels of nominal interest rates in the 1960s. The Depository Institutions Deregulation and Monetary Control Act of 1980 and subsequent legislative accelerations of the deregulation process have created considerable debate about the proper definitions for the monetary aggregates, and uncertainty about the meaning of their behavior. This uncertainty will persist until the deregulation process is completed and market participants have adjusted to it fully. The process is likely to require another two or three years.

Ex post real interest rates have varied much more than usual in the past few years, as can be seen in Table 4. I conjecture that this is because of the increased uncertainty concerning the inflation rate that has accompanied the large changes in the inflation rate. If the path of the inflation rate had been correctly foreseen by most borrowers and lenders, it is likely that nominal interest rates would have incorporated a correct inflation premium, and that the ex post real interest rate would not have varied as much. (Of course it is the ex ante real interest rate, based on expected rather than actual inflation, that influences investment. It varies across persons and is much harder to measure than the ex post real rate.)

For the two years after the new monetary control procedures were announced in October 1979, the annual growth rates of the base and of M1 were about two percentage points lower than in the two years before. This is a change in the right direction. (The growth rate of M2 rose about half a point.) However, the standard deviation of the quarterly time series of annual growth rates of all three aggregates approximately trebled (see Appendix Table 5). This confirms the by now well-known fact that the variability of the growth rates of the monetary aggregates increased substantially after the new control procedures were announced. Interest rates also became more variable, as expected. Whether the new procedures were responsible for all of this increase in variability is an unsettled matter thus far. It is

at least possible that the uncertainty surrounding the deregulation process has made some contribution to it.

Events of late 1982 have made it difficult to decide what is the most appropriate action for the Fed to take. The Fed accurately predicted that M1 would grow more rapidly than the other aggregates toward the end of the year, as the all-saver certificates matured in quantity beginning in October and depositors “parked” substantial amounts of these maturing funds in checkable deposits while waiting to see the terms on which banks would offer the newly permitted money market accounts in December and super-NOW accounts in January. Indeed, the growth rate of M1 accelerated greatly, reaching 22 percent, at an annual rate, in October and 18 percent in November, and slackening to nine percent in December. The growth rate of the base showed no significant change through November, but accelerated to 12 percent in December. M2 showed no significant acceleration through October, but an acceleration to 12 percent in November, with a retreat to nine percent in December. (See Appendix Table 6.)

Thus very different actions would have been required in late 1982 to keep the growth rate of M1 constant, as compared with keeping the growth rates of the base and M2 constant. Because the economy is still adjusting to monetary deregulation, I believe that the wiser choice was made—namely, to maintain the growth rate of the base approximately constant, rather than to suppress temporary rapid growth of M1. But if the Fed allows the rapid growth of M1 to persist and the growth rates of M2 and the base to accelerate, as computed from the money stock levels reached in the fourth quarter of 1982, we risk losing all the headway we have made, at such high cost, against inflation.

### Policy Recommendations for More Precise Monetary Control

Three rather simple changes in Fed procedures would contribute to improved ability to make the monetary aggregates come close to their target values. One, which is already in the process of being adopted, is the return to *contemporaneous* reserve accounting. Admittedly, such a return will be inconvenient for small banks. But it will mean that when the Fed changes the monetary base in any week, the response of M1 and M2 will be prompter and more precise than under two-week lagged reserve accounting.

The second change would be to peg the discount rate to the previous week's 90-day Treasury bill rate, at a level of say one percentage

point higher. This would insure that the Fed would always be available as a lender of last resort, at a rate sufficiently high that banks would take advantage of it only when threatened by a critical shortage of liquidity. When inflation is finally brought down to zero, the differential between the discount rate and the Treasury bill rate could be reduced perhaps to half a percentage point or less.

The third change would be to discontinue the practice of announcing target ranges for the federal funds rate, and use targets only for the monetary aggregates. The last two changes would make it clear that the Fed was no longer going to try to calculate and achieve the proper interest rate week by week, a task that we have seen cannot be carried out successfully in the present or likely future state of knowledge. It would mean actually adopting the change that was announced in October 1979 but has not yet been actually adopted, namely, that of shifting attention from interest rates to money stocks.

### Policy Recommendations for Stable Money

Suppose it is agreed that no one yet knows how to write a monetary policy rule that is optimal, and that, a fortiori, no constant monetary growth rate rule is optimal. (The reason for the latter is that from time to time events occur that disturb the velocity, or the money multiplier, or both, of one or more of the monetary aggregates. Or events occur that disturb the growth rate of real GNP.) Under such circumstances, what kind of monetary policy gives the best prospect of leading to stable money? I do not believe we know the full answer to this question.

My judgment is that we would have been better served over the last 23 years by a strictly constant growth rate of the monetary base, or of M1, or of M2, at some modest rate such as three percent a year, than we were by the policies that we actually adopted. We would certainly not have had the inflation that has plagued us in the 1970s. And we would not have had the procyclical behavior of the money stock, rising rapidly in booms, and less rapidly, or even declining, in recessions.

Nevertheless, until economic research gives us better knowledge of the structure of the economy and of the effects of monetary policy changes, it is advisable to give the monetary authorities some discretion to try to deal with the kinds of events mentioned above, so as to try to ameliorate the vicissitudes of the business cycle and of liquidity crises. But this discretion must be strictly circumscribed, in order that it not be used to create or permit inflation as was done in the 1960s and 1970s.



What combination of discretion and monetary growth rate rule would be suitable? The question has two parts, the long-range part dealing with the proper policy to follow once the inflation rate has been brought down to zero, and the immediate part dealing with the proper policy to achieve the transition from our present state to a state of zero inflation. Again, I do not think we know the full answers, although we do know that rapid growth of the money stock should not be permitted, that declines in the money stock should be avoided, and that rapid and substantial changes in the growth rate of the money stock should also be avoided. With this in mind, I shall attempt to formulate a combination of discretion and a monetary growth rate rule that could be serviceable if discretion were wisely used. (Of course, if we could be certain that discretion would always be wisely used, there would be no point in circumscribing it. But the experience of the past two decades makes it clear that discretion is not always wisely used.)

Let me begin with the long-range part of the problem, which is the easier part. Recall that it deals with a situation where the inflation rate has already been brought down to zero. We can take it for granted that by the time this happens, the Deregulation Act will have taken full effect and markets will have completed their adjustment to it. The growth rate of real output has averaged about three percent a year for many decades (though it has slowed recently). Hence we may take three percent as an estimate of its average growth rate for the next decade or so. The velocity of M1 has grown at an average rate of about three percent a year since 1948, very likely in large part because nominal interest rates were rising during the whole period. Hence we may take one percent a year as an estimate, at zero inflation, of the average growth rate of the *velocity of transactions balances* (that is, currency plus checkable deposits) over the succeeding decade or so. This means that to insure a zero average inflation rate, the required average growth rate of transactions balances should be about  $3 - 1 = 2$  percent a year. Of course, if the difference between the growth rates of real output and velocity turns out to be different from two percent a year, then the appropriate average growth rate for transactions balances will need to be adjusted accordingly. Such an adjustment, if required, is not likely to be large or sudden, and therefore no serious harm will be done.

So much for the *average* growth rate of transactions balances. What kind of discretion should the monetary authorities have to vary this growth rate from its average, in the short run and in the long run? Short-run variations might be desirable in order to dampen business cycles. For example, it might be desirable to make the money stock

grow slightly faster than its average rate during recession, so as to counteract the spending decline and slightly slower than its average rate during boom, to dampen the excess-demand pressure. (The Fed has typically used its short-run discretion in the opposite way in the past.) I suggest that the authorities be given discretion to allow the annual growth rate of transactions balances in each calendar quarter to vary by, at most, plus or minus two percent from the average—that is, within the range from zero to four percent.

Erratic changes in the growth rate of the money stock should be avoided. I therefore suggest that discretionary changes in the growth rate of transactions balances be limited to algebraic changes (at an annual rate) of two percent in any calendar quarter, and two percent in any calendar year. This would mean that if the long-run growth rate of real income/velocity is two percent, the *average* growth rate of the money stock would be confined to between zero and four percent a year over long periods and would not change rapidly or substantially.

Now let us consider the more difficult part of the problem, namely, how to combine discretion and a monetary growth rate rule for the purpose of getting from where we are now to a zero inflation rate, so that the long-range policy just described can be put into effect. Should the transition be made suddenly or gradually? I prefer gradualism. As Friedman and Schwartz (1963) have pointed out, abrupt reductions in the growth rate of the money stock have historically been followed in most cases by recessions. Hence I have advocated (1978, 1979) that the growth rate of the money stock be reduced very gradually, at about one-half to one percent a year, for several years until the inflation rate comes down to zero. Let a gradual adjustment speed of one percent a year be adopted. This policy could be carried out if the Federal Reserve were required to make the monetary base grow at a rate between five and nine percent in 1983, and then between four and eight percent in 1984, three and seven percent in 1985, and so on until the inflation rate reaches zero. Thereafter the long-range rule discussed above could be put into effect. An adjustment speed of one-half percent a year would work similarly, but more slowly.

The experience in the United States since the reduction of two percentage points in the growth rates of the monetary base and M1 in October 1979 (see Appendix, Table 5) does not contradict the Friedman-Schwartz finding mentioned above: We are having the most severe recession since World War II. Of course there are other contributing factors. But historical experience suggests that a more gradual reduction of monetary growth would have had a lower cost in terms of forgone output and increased unemployment. And there

is no doubt that it could be successful at bringing the inflation rate down to zero.

Why was the monetary growth rate increased, beginning in the 1960s? Arthur Burns, in his lecture entitled "The Anguish of Central Banking" (1979), delivered after the completion of his service as Federal Reserve Board chairman, gave a very frank answer to this question:

Viewed in the abstract, the Federal Reserve System had the power to abort the inflation at its incipient stage fifteen years ago or at any later point, and it has the power to end it today. At any time within that period, it could have restricted the money supply and created sufficient strains in financial and industrial markets to terminate the inflation with little delay. It did not do so because the Federal Reserve was itself caught up in the philosophical and political currents that were transforming American life and culture.

He then referred to the Full Employment Act of 1946, which imposes on the federal government the responsibility "to promote maximum employment, production, and purchasing power" but does not include price stability among the goals to be promoted.

The removal of the gold reserve requirement against member bank reserves and Federal Reserve notes, in two steps in 1965 and 1968, made possible the subsequent monetary expansion. At the time, I was in favor of removing the gold-reserve requirement, because I believe (and still believe) that such a requirement can at times interfere with a prudent expansion of the money stock. I also believed (which I can no longer believe because of the excessive monetary expansion that followed the removal of the gold-reserve requirement) that monetary authorities could be relied upon to use unfettered discretion in a non-inflationary manner. The gold standard certainly has severe problems of its own, but the persistence of substantial inflation is not one of them.

*Before concluding*, I would like to direct attention to a quite different type of proposal for achieving stable money. It is found in the last chapter of Jurg Niehans's book, *The Theory of Money* (1978), entitled "The Art of Central Banking." Niehans proposes that the monetary policy of the central bank be divided into three functions. He describes them by imagining that they are assigned to three separate departments.

The *price department* is initially assigned the entire security portfolio of the central bank, and is given a single responsibility: to assure that the inflation rate remains at or near zero (say, between  $-1$  and  $+1$  percent) on the average over the long run. It is free to engage in any operation it regards as necessary to reach this objective.

The output department is initially assigned a portfolio of zero, and is given a single responsibility: to reduce the fluctuations of output and employment in the Keynesian short run. It is free to buy government securities on the open market, or to borrow securities from the price department and sell them on the open market, in any amount, provided that it brings its portfolio back to zero at some time within the next five years. Whenever its portfolio reaches zero again, be it after two months or four or five years, a new five-year period begins. Since the output department, while being free to attempt to counteract short-run fluctuations, is required to undo any action it takes at some point not more than five years later, it is unlikely to disturb the success of the price department.

The liquidity department is also initially assigned a portfolio of zero, and is given a single responsibility: to prevent critical fluctuations in bank liquidity from day to day and week to week. It too is free to buy or sell securities on the open market in any amount, but unlike the output department it must return its portfolio to zero some time within the next six months. Since it must reverse its actions after roughly one quarter, it is unlikely to interfere with the operations of the price or output departments.

Niehans adds that his scheme is a crude one, and that more ingenious and intellectually satisfying schemes could be invented, but that this crude device seems to be good enough to convey his basic idea. Though it is quite different in technique from my proposal, I believe it springs from the same desire to limit the central bank's freedom to create or permit inflation, while leaving some leeway for reducing the severity of business cycles and for serving as a lender of last resort.

APPENDIX TABLE 1

MONETARY STOCKS AND RATIOS, 1929-1933  
(Stocks are for December, Seasonally Adjusted)

Year	Y	H	VH	R	VR	C	VC	D	VD	M1	V1	M1/H
1	2	3	4	5	6	7	8	9	10	11	12	13
Source	*	*	2/3	3-7	2/5	*	2/7	*	2/9	7+9*	2/11	11/3
Levels												
1929	103.4	7.0	14.8	3.2	32.3	3.8	27.2	22.6	4.6	26.4	3.9	3.8
1930	70.7	7.1	12.8	3.3	27.5	3.8	23.9	21.1	4.3	24.9	3.6	3.5
1931	76.1	7.7	9.9	3.1	24.5	4.6	16.5	17.3	4.4	21.9	3.5	2.8
1932	58.3	8.0	7.3	3.2	18.2	4.8	12.1	15.5	3.8	20.3	2.9	2.5
1933	55.8	8.3	6.7	3.5	15.9	4.8	11.6	14.9	3.7	19.8	2.8	2.4
Growth Rates, Annual Average (percent)												
1929-33	-14.3	4.4	-18.0	2.3	-16.2	6.0	-19.2	-9.9	-5.3	-6.9	-8.0	-10.9

\*See note on sources.

APPENDIX TABLE 2  
 MONETARY STOCKS AND NOMINAL GNP SINCE 1948  
 (Stocks are for December, Seasonally Adjusted)

Year 1	Y 2	HF 3	HS 4	C 5	R 6	M1 7	M2 8	M3 9	D1 10	D2 11	D3 12
Source	*	*	*	*	4-5	*	*	*	*	*	*
Levels											
1948h	260	—	37.2	25.8	11.4	111.5	147.6	147.6	—	—	—
1959h	488	44.3	45.2	28.9	16.3	141.2	297.1	298.3	—	—	—
1961	525	45.7	46.8	29.6	17.2	146.7	334.4	338.3	—	—	—
1969h	944	67.9	70.0	46.1	23.9	205.9	588.6	611.4	1.025	1.028	1.018
1971	1078	77.1	80.0	52.6	27.4	231.0	711.1	771.1	1.147	1.210	1.223
1973h	1326	90.3	93.4	61.6	31.8	266.4	859.8	977.9	1.323	1.435	1.483
1975	1549	104.5	109.1	73.8	35.3	291.8	1024	1163	1.456	1.670	1.696
1979h	2414	142.5	150.3	106.1	44.2	390.5	1525	1776	1.939	2.246	2.303
1980	2626	155.0	162.5	116.1	46.4	415.6	1669	1965	2.093	2.367	2.431
1981	2938	162.7	169.9	123.1	46.8	440.9	1823	2188	2.384	2.499	2.592
1982	3058	—	183.4	132.6	50.8	478.5	1999	2404	—	—	—
Growth Rates, Annual Average (percent)											
1948-79	7.5	—	4.6	4.7	4.5	4.1	7.8	8.4	—	—	—
1948-59	5.9	—	1.8	1.0	3.3	2.2	6.6	6.6	—	—	—
1959-69	6.8	4.4	4.5	4.8	3.9	3.8	7.1	7.4	—	—	—
1969-79	9.8	7.7	7.9	8.7	6.3	6.6	10.0	11.3	6.6	8.1	8.5
1979-80	8.8	8.8	8.1	9.4	5.0	6.4	9.4	10.6	7.9	5.4	5.6
1980-81	11.9	5.0	4.6	6.0	.9	6.1	9.2	11.3	13.9	5.6	6.6
1981-82	4.1	—	7.9	7.7	8.5	8.5	9.7	9.9	—	—	—

\*See note on sources.

APPENDIX TABLE 3

MONEY VELOCITIES AND MULTIPLIERS SINCE 1948  
(Based on Data from Table 2)

Year	VHS	VC	VR	VM1	VM2	VM3	VD1	VD2	VD3	$\frac{M1}{HS}$	$\frac{M2}{HS}$	$\frac{D1}{HS}$	$\frac{D2}{HS}$
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Source in Table 2	2/4	2/5	2/6	2/7	2/8	2/9	* 2/10	* 2/11	* 2/12	7/4	8/4	** 10/4	** 11/4
Levels													
1948h	7.0	10.1	22.8	2.33	1.76	1.76	—	—	—	3.00	3.97	—	—
1959h	10.8	16.9	29.9	3.46	1.64	1.64	—	—	—	3.12	6.57	—	—
1961	11.2	17.7	30.5	3.58	1.57	1.55	—	—	—	3.13	7.15	—	—
1969h	13.5	20.5	39.5	4.58	1.60	1.54	.92	.92	.93	2.94	8.41	1.46	1.47
1971	13.5	20.5	39.3	4.67	1.52	1.40	.94	.89	.88	2.89	8.89	1.43	1.51
1973h	14.2	21.5	41.7	4.98	1.54	1.36	1.00	.92	.89	2.85	9.21	1.42	1.54
1975	14.2	21.0	43.9	5.31	1.51	1.33	1.06	.93	.91	2.67	9.39	1.33	1.53
1979h	16.1	22.8	54.6	6.18	1.58	1.36	1.24	1.07	1.05	2.60	10.2	1.29	1.49
1980	16.2	22.6	56.6	6.32	1.57	1.34	1.25	1.11	1.08	2.56	10.3	1.29	1.46
1981	17.3	23.9	62.8	6.66	1.61	1.34	1.23	1.18	1.13	2.60	10.7	1.40	1.47
1982	16.7	23.1	60.2	6.39	1.53	1.27	—	—	—	2.61	10.9	—	—

RULES VS. DISCRETION

APPENDIX TABLE 3 (cont.)

Year	VHS	VC	VR	VM1	VM2	VM3	VD1	VD2	VD3	$\frac{M1}{HS}$	$\frac{M2}{HS}$	$\frac{D1}{HS}$	$\frac{D2}{HS}$
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Source in							*	*	*			**	**
Table 2	2/4	2/5	2/6	2/7	2/8	2/9	2/10	2/11	2/12	7/4	8/4	10/4	11/4
Growth Rates, Annual Averages (percent)													
1948-79	2.7	2.7	2.9	3.2	-.3	-.8	—	—	—	-.5	3.1	—	—
1948-59	4.0	4.8	2.5	3.7	-.6	-.6	—	—	—	.4	4.7	—	—
1959-69	2.3	1.9	2.8	2.8	-.2	-.6	—	—	—	-.6	2.5	—	—
1969-79	1.8	1.1	3.3	3.0	-.1	-1.2	3.0	1.5	1.2	-1.2	1.9	-1.2	.1
1979-80	.6	-.9	3.7	2.3	-.6	-1.5	.8	3.7	2.9	-1.5	1.0	.0	-2.0
1980-81	6.8	5.8	11.0	5.4	2.5	.0	-1.6	6.3	4.6	1.6	3.9	8.5	.7
1981-82	-3.5	-3.3	-4.1	-4.1	-5.0	-5.2	—	—	—	0.4	1.9	—	—

\* Columns 8, 9, and 10 have been divided by 1000.

\*\*Columns 13 and 14 have been multiplied by 100.



APPENDIX TABLE 4  
EX POST REAL YIELD ON 90-DAY TREASURY BILLS

Year	Nominal	Inflation	Real
1	r	Rate	r
Source	*	*	2-3
1948	1.0	6.9	-5.9
49	1.1	-.9	2.0
1950	1.2	2.1	-.9
51	1.6	6.6	-5.0
52	1.8	1.4	.4
53	1.9	1.6	.3
54	1.0	1.2	-.2
1955	1.8	2.2	-.4
56	2.7	3.2	-.5
57	3.3	3.4	-.1
58	1.8	1.7	.1
59	3.4	2.4	1.0
1960	2.9	1.6	1.3
61	2.4	.9	1.5
62	2.8	1.8	1.0
63	3.2	1.5	1.7
64	3.5	1.5	2.0
1965	4.0	2.2	1.8
66	4.9	3.2	1.7
67	4.3	3.0	1.3
68	5.3	4.4	.9
69	6.7	5.1	1.6
1970	6.5	5.4	1.1
71	4.3	5.0	-.7
72	4.1	4.2	-.1
73	7.0	5.7	1.3
74	7.9	8.7	-.8
1975	5.8	9.3	-3.5
76	5.0	5.2	-.2
77	5.3	5.8	-.5
78	7.2	7.4	-.2
79	10.0	8.6	1.5
1980	11.5	9.3	2.5
81	14.1	9.4	5.0
82	10.7	6.0	4.7

\*See note on sources.

APPENDIX TABLE 5  
 MEANS AND STANDARD DEVIATIONS OF QUARTERLY DATA FOR MONETARY GROWTH  
 (Growth at Annual Percentage Rates)

Period 1	HS		M1		M2	
	Mean 2	Std. Dev. 3	Mean 4	Std. Dev. 5	Mean 6	Std. Dev. 7
Before Oct. 1979						
8 quarters 1977 <sup>3</sup> –1979 <sup>3</sup>	8.7	1.0	8.4	1.6	8.8	1.2
1 quarter 1979 <sup>3</sup> –1979 <sup>4</sup>	8.2	—	4.6	—	5.8	—
After Oct. 1979						
8 quarters 1979 <sup>4</sup> –1981 <sup>4</sup>	6.3	2.8	6.3	5.8	9.4	3.0
12 quarters 1979 <sup>4</sup> –1982 <sup>4</sup>	6.8	2.5	7.1	5.9	9.5	2.4

SOURCE: *Monetary Trends*, Federal Reserve Bank of St. Louis.

APPENDIX TABLE 6  
 RECENT SHORT-PERIOD GROWTH OF MONETARY AGGREGATES, 1982-83  
 (Growth at Annual Percentage Rates)

Month or Week 1	H Monthly		M1 Monthly		M2 Monthly	
	Level 2	Growth 3	Level 4	Growth 5	Level 6	Growth 7
January 1982	171.6	12.7	448.6	23.1	1841	13.0
February	173.2	11.8	447.3	-3.4	1848	4.5
March	173.7	3.5	448.3	2.7	1865	11.8
April	175.1	10.1	452.4	11.5	1881	10.4
May	176.6	10.8	451.5	-2.4	1898	11.3
June	177.9	9.2	451.4	-.3	1908	6.8
July	178.0	.7	451.3	-.3	1923	10.2
August	179.3	9.1	455.2	10.9	1946	15.3
September	179.9	4.1	460.5	14.9	1954	5.1
October	181.0	7.6	468.4	22.6	1968	8.5
November	181.7	4.7	475.0	18.3	1987	12.2
December 1982	183.4	11.8	478.6	9.5	2002	9.4

SOURCE: *Monetary Trends*, Federal Reserve Bank of St. Louis.

## Note on Sources for Data in Tables

### Table 1:

Col. 2: Y = nominal GNP, \$billion per year, from U.S. Bureau of Economic Analysis, *National Income and Product Accounts of the U.S. 1929-74*, p. 324.

Col. 3: H = high-powered money, \$billion, from Friedman and Schwartz (1963), pp. 803-4.

Cols. 7, 9, and 11, \$billion, from Friedman and Schwartz (1963), pp. 712-14:

C = currency held by the public.

D = demand deposits in commercial banks.

M1 = C + D.

### Table 2:

Col. 1: h = business cycle high or peak.

Col. 2: Y = nominal GNP, \$billion per year, from *Economic Report of the President*, 1983, p. 1963.

Cols. 3 and 4: monetary base, adjusted for changes in reserve requirements:

HF is from the Banking Section of the Federal Reserve Board.

HS is from releases of the Federal Reserve Bank of St. Louis. The 1948 figure is from that bank's *Review*, July, 1977, p. 24. Later figures are from *Monetary Trends* and a supplement thereto dated 10/14/81.

Cols. 5, 7, 8 and 9 are from the *Economic Report of the President*. The 1948 figures are from 1972, p. 256; the others are from 1983, pp. 233-4.

C = currency outside banks.

M1 = C + checkable deposits + travelers' checks.

M2 = M1 + savings and small time deposits + overnight RP's and Eurodollars + balances at non-institutional money market funds.

M3 = M2 + large time deposits + term RP's + balances at institution-only money market funds.

Cols. 10, 11, and 12 are from the monthly release, "Recent Behavior of the Divisia Monetary Aggregates" by Paul Spindt and Clifton Wilson of the Division of Research and Statistics of the Federal Reserve Board.

D1, D2, D3 = Divisia indexes of M1, M2, M3.

*Note on Sources* (cont.)

## Table 4:

Cols. 2 and 3 are from *Economic Report of the President*, 1983, pp. 169 and 240.

$r$  = 90-day Treasury bill rate (p. 240).

inflation rate = annual percentage change in the GNP deflator (p. 169).

## References

- Barnett, William A. "Economic Monetary Aggregates." *Journal of Econometrics* 14 (Summer 1980): 11-48.
- Burns, Arthur F. *The Anguish of Central Banking: The 1979 Par Jacobsson Lecture*. Washington, D.C.: International Monetary Fund, 1979.
- Christ, Carl F. *Review of Monetary Policy in 1977*. Hearing before the Subcommittee on Domestic Monetary Policy of the Committee on Banking, Finance and Urban Affairs, House of Representatives, 95th Congress, Second Session, January 30, 1978, pp. 4-24 and 42-54, esp. p. 49.
- Christ, Carl F. *The 1979 Economic Report of the President*. Hearings before the Joint Economic Committee, 96th Congress, First Session, February 6, 1979, pp. 189-204 and 213-230, esp. pp. 192 and 197.
- Friedman, Milton, and Anna J. Schwartz. *A Monetary History of the United States 1867-1960*. Princeton, N.J.: Princeton University Press for the National Bureau of Economic Research, 1963.
- Judd, John P., and Scadding, John L. "The Search for a Stable Money Demand Function," *Journal of Economic Literature* 20 (September 1982): 993-1023.
- Niehans, Jurg. *The Theory of Money*. Baltimore: The Johns Hopkins Press, 1978.
- Poole, William. "Federal Reserve Operating Procedures," *Journal of Money, Credit, and Banking* 14 (November 1982, Part 2): 575-596.
- Tobin, James. *Asset Accumulation and Economic Activity: The 1978 Yrjo Jahnsson Lectures*. Oxford and Chicago: Basil Blackwell and University of Chicago Press, 1980.

# MONETARY RESEARCH, MONETARY RULES, AND MONETARY REGIMES

*James M. Buchanan*

I want to raise some general points in the whole rules-versus-authority set of issues. And, since comments are supposed to be critical, let me start by stating that Carl Christ joins many of his economist peers in what I have long considered to be a major error in the whole discussion, although, to his credit, he does acknowledge the problem. The error lies in using empirical data accumulated in a history when there existed no policy rule as evidence for or against the efficiency of such a rule, had such a rule been in existence.

Do we really want to assume that individual behavior in monetary matters would remain invariant as between two quite distinct monetary regimes? For example, Christ referred to the historical record over the period 1929–33 to suggest that a growth rule tied to the monetary base would not have worked well because the base moderately increased over the period while M1 fell dramatically. But would this relationship have been observed under a rule tied to the base? The fact is that there was no such rule then in existence; there was basic uncertainty about policy, as it was implemented by the authorities. There was a wholly different monetary constitution or regime from one that would have embodied an effective monetary rule, whether tied to the base or anything else.

If we do assume that behavior would have been invariant, it is always possible to demonstrate that no rule could possibly have worked so well as an ideally omniscient authority. Further, it is also always possible to use the data in the historical record to construct, *ex post*, a complex rule that would have worked better than any simpler rule. I am not sure here just what limit those who play such

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The author is University Professor of Economics and General Director of the Center for Study of Public Choice, George Mason University, Fairfax, Va. 22030.

games would want to place on the mathematical order of the fitted "optimal" rule.

My criticism is, of course, a simple and obvious one. Presumably, the error continues to be made because the only data we have are historical, and we really do not have much history of rule-oriented regimes. Further, modern economists do not really feel "with it" unless they can refer to data somehow.

My second main point is not primarily directed at Carl Christ, although I think that he, too, may fall within its targets. I think that the debate-discussion is prematurely joined when we start referring to the advantages and disadvantages of this rule or that rule, this regime or that regime, all within the set of regimes that are alternatives to that which is in existence. I agree, of course, that any monetary reform must ultimately replace the existing regime with *one* alternative that has, in the process of the dialogue, emerged as "winner." Debates about which of the alternative regimes is to be preferred must take place. But, prior to this discussion, we should try to attain consensus on the need for *some* alternative regimes that will embody greater predictability than the unconstrained monetary authority that exists. The familiar analogy is with traffic chaos that would exist if there were no rules. The first requirement is that there be rules of the road. Whether or not these rules require driving on the left or the right is of secondary importance to the requirement that there be a rule.

In our monograph, *Monopoly in Money and Inflation* (London: Institute for Economic Affairs, 1980), Geoffrey Brennan and I distinguished among three stages or levels of monetary argument. First, debate about the appropriate direction for policy under an existing regime is, of course, where most attention has been centered until very recently. (In this respect I am quite pleased with the organization of this conference, which does represent an attempt to shift beyond this first level of discussion.) Second, there are or should be debates about whether or not the unconstrained monetary regime works as well as alternatives that would embody more predictability. In other words, the debate at this level is over whether there should or should not be a shift in regimes. Here the debate is properly joined between the nonconstitutionalist (the supporter of continued discretionary authority) and the constitutionalist (the supporter of some alternative regime). Third, there are the debates already mentioned, between the supporters of this or that option among the set of alternatives to the existing regime.

There seems to be continuing confusion and shifting between the second and third levels of discussion. Careful distinction would allow

the supporters of Friedman-like money growth rules, commodity-based monetary arrangements, and competitive currencies to join in arguments against those who support unconstrained discretionary monopoly. In other words, the central issue is not one of "rules versus authority"; the central issue is one of "alternative monetary constitutional regimes versus unconstrained monopoly." Let us first agree that genuine constitutional reform is needed before wasting our energies in arguing with each other as to merits of this or that regime.

Having been critical, either directly or indirectly, in my comments on this point, let me support Carl Christ's emphasis on the effects of the foreshortened political time horizon in generating the modern stagflation dilemma. We are in a classic dilemma here, as the events of the last two years have indicated. Attempts to reduce the rate of inflation generate unemployment that is not acceptable politically; the short-run Phillips curve is too flat. Yet we all recognize that there is no advantage whatever, while there are major disadvantages, in sustaining inflation at rates of the 1970s. We were politically motivated by the prospects of moving up short-run Phillips curves, and we kept doing so even as these curves shifted successively upward and outward. We may have reached some sort of political equilibrium in the 1979-80 period, as analyzed by Kydland-Prescott, Barro-Gordon, and others.

I do not think that ordinary politics, whether at the level of the existing monetary authorities, the Congress, or the Presidency, can get us out of the dilemma. And this conviction becomes, for me, the strongest of all arguments for genuinely *constitutional* change, for a change in regimes. I am referring here to reform that must extend beyond any announced adoption of a rule by the *monetary authority* and also beyond any mere congressional instruction to this authority. I am referring to a *change in the constitutional setting* for monetary institutions.

Prospects for dramatic constitutional change may seem dim in the political climate of 1983. But it is possible that some such reform *might even find support* from the central bankers themselves. We suffer now from the absence of credibility in the pious pronouncements of policy direction. Credibility can be restored only if the monetary authorities are bound constitutionally. And should not these very authorities, like Ulysses, agree to be so bound in their own long-term interests?

Unless we can get an effective change in regimes, we cannot expect our politicians or our central bankers to resolve the stagflation dilemma. Until and unless we begin to take the long-term perspective in our



private and in our public capacities, including the adoption of new and binding constitutional constraints on the fiscal and monetary powers of government, we are doomed to remain mired in the muck of modern politics.