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Working Paper

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Working Paper, No. 03-9

Provided in Cooperation with:

University of California Davis, Department of Economics

Suggested Citation: Mayer, Thomas (2003) : The monetarist policy debate: an informal retrospective, Working Paper, No. 03-9, University of California, Department of Economics, Davis, CA

This Version is available at:

<https://hdl.handle.net/10419/23207>

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THE MONETARIST POLICY DEBATE: AN INFORMAL RETROSPECTIVE

Thomas Mayer*

This essay offers a critical sketch of the Keynesian-monetarist debate about monetary policy that took place in the United States in the second half of the 20th. century.¹ This debate has not disappeared altogether. Currently discussed issues, such as inflation targeting and central-bank transparency, are extensions of the older debate adapted to current circumstances. My discussion is informal and impressionistic and tries to convey the flavor of the debate rather than to contrast fully articulated models. I start by sketching the situation after World War II when American monetarism developed, then take up the main issues in this debate, and the relation of the current monetary-policy consensus to monetarism, and conclude with an evaluation of this debate.²

In such a discussion one should be open about where one is coming from. I got involved in the issues of the debate at a very early stage, have a strong Friedmanian methodological preference for combining theoretical analysis with empirical testing, started out with a more or less Keynesian orientation with respect to theory, and then shifted a good part of the way into the monetarist camp, but was never a full-blooded monetarist, or accepted by monetarists as "one of us".³

I. The Prevailing Paradigm

To understand the monetarist counter-revolution one needs to look at the ideas that monetarists were reacting against in the 1950s, when monetarism, which had previously been advocated only by a few economists, such as Lloyd Mints and Clark Warburton, began to revive.⁴ Only then can one appreciate both what made monetarism look so fresh and attractive at the time, and also the extent to which the

work of monetarists has entered the current mainstream. And to understand the ideas prevailing in the 1950s, one must also look briefly at economic conditions at the time. Parts of the Keynesian consensus had become easy targets for criticism because they were affirmed rather dogmatically without much empirical evidence. The importance of speculative liquidity preference and the potential occurrence of a liquidity trap were prime examples, as was the claim by Alvin Hansen (1957), the doyen of American Keynesians, that the money supply was an unimportant variable: that the marginal efficiency of capital, the marginal propensity to consume, government expenditures and exports determine income, so that essentially all the money stock does is to determine velocity. He also predicted that private-sector aggregate demand would at most times, and to an ever increasing extent, be insufficient for full employment. Still another example was the proposition that inflation could not become a problem until full employment was reached. Such ideas fitted in well with the leading theory of fluctuations, the multiplier-accelerator theory, which showed that for seemingly reasonable values of the coefficients the economy was highly unstable, much too unstable to allow one to rely on monetary policy as a remedy. And bitter memories of the Great Depression seemed to confirm this view.⁵

Acceptable macroeconomic performance therefore appeared to require extensive government intervention to raise aggregate demand, and economists were eager to provide the necessary expertise. They believed that monetary policy could and should play some role in such a policy. But most of the work would have to be done by fiscal policy. It was not widely understood that countercyclical fiscal policy, while easy to

describe in textbooks, would in practice encounter serious problems. Nor was there much concern that the Fed might blunder and exacerbate fluctuations or generate inflation. A generalized "can do" spirit pervaded the economics profession, and monetary economists tended to treat the Fed (which employed many economists) as "their agency," an agency that, while it sometimes behaved in exasperating ways, could with some effort be made to see reason.

But soon reality began to force economists to change their perceptions. The economy remained more or less stable with relatively low unemployment, a development hard to explain within the then prevailing Keynesian framework. Moreover, with our models not providing highly reliable forecasts, and recessions being short-lived, stabilization policy would have to be deft to do much, if any, good. Furthermore, when in 1953 the Federal Reserve became less accommodative there were enough complaints about tight money to suggest that money mattered after all. Subsequently, with residential construction slumping when interest rates rose, and when better econometric models showed the quantity of money to be an important variable, mainstream Keynesians conceded that money, and hence monetary policy did matter. And subsequently experience in the 1970s, (already foreshadowed by a brief episode in the 1950s) showed that inflation could occur at less than full employment.

In addition, several developments outside the monetary-policy area per se laid the foundation that allowed monetarists to develop a coherent set of proposals (such as Friedman, 1959) for the conduct of monetary policy. One was Friedman's (1956) publication of a revised and revitalized quantity theory of money, along with some

supportive evidence. Eight years later Karl Brunner and Alan Meltzer (1964) developed an alternative theoretical framework for monetarism in which they, too, attributed a central role to the money supply. Another was the empirical demonstration by Brunner and Meltzer (1964), David Laidler(1977) and many others, that the demand function for money had been stable for many years, and that money demand was not highly interest elastic. This suggested that changes in nominal income were driven primarily by changes in the money supply. Then, in 1968 Leonall Andersen and Jerry Jordan (1967), building on previous but more debatable work by Friedman and Meiselman (1963), published an influential (though as it turned out later questionable) set of regressions that showed changes in the quantity of money, but not fiscal policy, to have a powerful, lasting effect on nominal income. Finally, changes in the political climate gave the Fed (and other central banks) greater freedom to put less emphasis on full employment and to raise interest rates.

II. Development of the Monetarist Policy Paradigm

Thus many background factors combined to lay the foundation for a re-thinking of monetary policy. But "background factors" themselves do no thinking. That took a small, but remarkably able group of economists. Although usually lumped together as "monetarists" their work shows considerable diversity, internal disagreements and some rivalry. Instead of being a homogeneous school with a single leader monetarism had two main branches, one lead by Milton Friedman and the other by Brunner and Meltzer. But although their monetary theories differ substantially, on policy issues they largely agree. For reasons discussed below Friedman overshadowed Brunner and

Meltzer. But that should not detract, as it has tended to, from Brunner and Meltzer's contribution. Within the field of monetary policy (as distinct from monetary theory) their work may have been as, or perhaps even more, influential than Friedman's. Nor were these three the only ones to develop the monetarist policy position. At several Federal Reserve Banks, particularly the Federal Reserve Bank of St. Louis, others, such as Leonall Anderson and Jerry Jordan, Robert Hetzel and Michael Keran made important contributions, as did other economists, for example, Anna Schwartz, William Poole, William Dewald and Phillip Cagan.⁶

A powerful weapon in their attack on the Keynesian paradigm was the methodology that Friedman (1953, Ch. 1) had provided in his famous essay "The Methodology of Positive Economics." Although best known for its objection to testing a theory by the realism of its assumptions, it is also a powerful plea for testing a theory by the predictive success of its implications rather than by casual empiricism (that is by its surface plausibility) and for directing attention to testable theories. Applied to monetary policy this meant that, given long and variable lags and substantial forecasting errors, the feasibility of discretionary monetary policy (and even the good intentions of the central bank) should not be taken for granted, but should be treated as hypotheses that need empirical verification. The normative theory of monetary policy needs to be supplemented by public-choice theory or by a behavioral theory of central banking.⁷ Monetarists thus presented fresh and exiting ideas that provided numerous new research opportunities. One way monetarists took advantage of these opportunities was by studying the Fed's history, with results that at the time may have seemed

farfetched, but seemed less so during the Great Inflation of the 1960s and 1970s. Their most important contributions were Friedman and Schwartz's (1963) analysis of monetary policy in the Great Depression, and Brunner and Meltzer's work on monetary policy in the 1950s and early 1960s. The former argued that monetary policy in the 1930s, far from being expansionary but essentially powerless, as the prevailing story had it, had actually been highly restrictive and greatly damaging. While a number of economists, notably Peter Temin (1976) have challenged Friedman and Schwartz's account of the Great Depression on many points, few, if any, would now argue that the Fed's policy was correct and better than one of letting the money stock grow at a constant rate.

In the early 1960s the congressional subcommittee responsible for overseeing monetary policy commissioned Brunner and Meltzer to analyze Fed policy making, and provided them with access to confidential Fed documents. Their findings (Brunner and Meltzer, 1989, Chs. 1-2) were startling. Instead of well reasoned analysis the Fed relied on vague, untested notions, many of which turned out to have no empirical support. Using the growth of monetary aggregates rather than, as the Fed was doing, changes in short-term interest rates as their gauge of monetary policy. Brunner and Meltzer found that in many cases the Fed thought it was pursuing an expansionary policy when instead it was pursuing a restrictive policy, and converse. Thus, during recessions when interest rates fell because of a declining demand for loans, the Fed interpreted this fall in interest rates as its policy being expansionary, even if the reserve base was falling. And if interest rates fell far enough the Fed would think its policy was too

expansionary and become more restrictive. Brunner and Meltzer attributed the Fed's confusion and perverse policies largely to its adherence to the discredited real bills doctrine, which by accommodating changes in the demand for money and credit, results in a procyclical policy.⁸ Both their work and Friedman and Schwartz's, described a Fed that differed sharply from the benign and competent central bank pictured in textbooks. As someone who had taught the textbook version of Fed behavior for many years, I remember how shaken up I was by these revelation.

III. A Framework for Policy: Goals, Targets and Instruments

To replace the Fed's vague and confused notions Brunner and Meltzer proposed a framework that coherently relates the Fed's ultimate goals to its tools. A central bank does not aim *directly* at its goals, such as price stability or full employment. With the impact of its open market operations on its goals being delayed, it cannot tell from the current behavior of the goal variable when and by how much to change open market operations. It therefore has to aim at some intermediate target, such as the money supply or the long term interest rate, that has a predictable relation to its goals, and yet is closer to what it can actually control. But even such an intermediate target is not close enough. The central bank also needs lower level targets - often called instruments - such as short term interest rates or total reserves, that it *can* control directly, and which, in turn, affect the target variable. Using explicit targets and instruments also allows the central bank to undertake mid-course corrections. Suppose that to increase aggregate demand by x percent it makes an open market purchase that it expects will raise the money supply by y percent. If it then sees that the money supply

has risen only by, say 0.7% it knows that it should make additional purchases. It can also use changes in these instruments as indicators of whether its policy is expansionary or contractionary. This framework achieved widespread acceptance for a time - and not only by monetarists - so that much of the monetary-policy literature focused on which specific variables should be used as goals, intermediate targets and instruments.

But in the 1970s this framework was challenged by an alternative that applied control theory. As Benjamin Friedman (1977) pointed out, the Brunner-Meltzer framework is inefficient because it ignores some of the available information. Even if one grants that the growth rate of money is the most important determinant of nominal income, it is surely not the only one, and similarly, the reserve base (or any other lower-level target) is not the sole determinant of the higher-level target. Hence, instead of using a single variable as the target and a single variable as the instrument, the central bank should look at everything that might be relevant for the behavior of the goal variables. In addition, it should take into account that if it misses either its lower-level or higher-level targets, that suggests an error somewhere in the set of functional relationships that it is using, and we know from Walras's Law that if one function is misestimated, so is at least one other function of the complete system. What is therefore required instead of the Brunner-Meltzer framework is an econometric model.

From the viewpoint of formal optimization theory these criticisms are indisputable. But monetarists can, and did, reply that one should also take public-choice theory into account. The Brunner-Meltzer framework has the advantage of providing transparency

and hence central-bank accountability. Suppose, for example, that it has announced an inflation goal of, say 3 percent, and uses the money supply as its target. If it then systematically exceeds its money target the public will become aware that it has abandoned its 3 percent inflation goal. Initially this advantage of the Brunner-Meltzer framework did not receive sufficient attention. With the growing taste in economics for formalism, it first had to be formulated within a rigorous model. Such a model was not published until 1977, and then by two economists who did not have a strong association with monetarism (Kydland and Prescott, 1977). Now their the time-inconsistency model now is probably the most widely cited criticism of discretionary monetary policy.⁹ But whether this model and its offsprings can explain and predict the way central banks actually behave is open to question (see McCallum, 1995, Mayer, 1999).

All in all, the question whether the Brunner-Meltzer framework is helpful, (apart from its important initial use of showing that the Fed was flying blind) is partly a question of positive political theory - whether one can trust the central bank - and partly one of economics - whether econometric models are accurate enough to provide much of an advantage over the cruder goals-targets framework, and whether a useful target variable can be found.¹⁰ Ultimately it lost support because, with velocity becoming unstable, no reliable target variable was available.

IV. Choosing the Correct Goal for Stabilization Policy

Why did monetarists choose price stability or a stable (preferably low) inflation rate as the main goal for monetary policy, while Keynesians chose low unemployment?

(Balance of payments considerations have played only a limited role in postwar American monetary policy.) The Keynesian theory of nominal income determination does not logically entail the proposition that stabilization policy should focus on unemployment rather than on inflation. Nor does the quantity theory logically entail the opposite. But in practice the choice between these two goals is, at least in part, a consequence of using Keynesian or quantity-theory theoretical tools. Looking at aggregate demand the Keynesian way one is likely to be impressed by the likelihood of serious economic instability and intolerably high unemployment. Compared to that the problem that inflation may accelerate in the long run, seems less demanding of action here and now. By contrast, given a stable growth rate of the money supply, a quantity-theory view of aggregate demand is more consistent with the belief that the economy is stable. Hence, compared to Keynesians monetarists are more likely to worry about the longer run problem of accelerating inflation than about unemployment. Moreover, while the quantity theory tends to direct attention to the long run, Keynesian theory tends to direct it to the short run, and thus to highlight the problem of fluctuations in employment. It does not require logical entailment for our theories to influence the way we think about other issues.

Some Keynesians (see Modigliani, 1977) have suggested another reason. The burden of unemployment falls disproportionately on the poor, while the burden of inflation falls primarily on the rich because they hold relatively more nominal assets.¹¹ And, the story goes, we compassionate Keynesians are more concerned about the welfare of the poor than are the callous monetarists. This argument is questionable - on moral as well as

factual grounds - because making unverifiable derogatory claims about the motives of one's opponent is inappropriate.¹²

In his famous presidential address to the American Economic Association Friedman (1968) justified making price stability *the* goal of monetary policy by the long-run Phillips curve being vertical. He thus explained the monetarists' choice, not by the slope of their indifference curve between unemployment and inflation, but by the slope of the budget line. This Friedman-Phelps vertical Phillips curve was a fundamental shock to both Keynesian theory and to Keynesian ideas about the goals of monetary policy. (See Leeson, 2000.)

V. Choosing the Target Variable

The debate about target variables centered on the choice between some monetary aggregate (such as the monetary base, M-1 or M-2) or the long-term interest rate. For a time an aggregate credit or debt variable seemed a promising candidate, but the previously tight relation that such a variable had had to nominal income disappeared around the same time as it did for money.

Three issues dominated the choice between a monetary aggregate and the interest rate, the predictability of the target's relation to income, the accuracy with which it can be measured and its controllability. On predictability the outstanding work, which started an entire sub-literature, was that of William Poole (1970). His sophisticated analysis can be approximated - but only very crudely - by saying that when the central bank observes an undesirable change in income it should try to offset it by changing the interest rate if it is due to a shift of the IS curve, and by a change in the money

supply if it is due to a shift of the LM curve. But deciding which of these two contingencies has occurred is hardly an easy problem. This literature led to the application of control theory to monetary policy, but that approach lost, at least temporarily, some of its appeal when the Lucas critique (with its implication that the adoption of control theory would change the behavior of agents enough to outdate the parameter estimates used in the control theory) swept through macroeconomics. In any case, once velocity became unstable in the 1980s the growth rate of some monetary aggregate was no longer an appealing target. Attempts were made to overcome this problem by shifting to one monetary aggregate after another, with new M's being discovered and then discarded at a fast rate. Goodhart's Law held; as soon as a new monetary variable was used for policy guidance, it, too, lost its stable relation to income.¹³

Both monetary targets and interest-rate targets have substantial measurement problems. For the former they are that real-time data on monetary growth rates contain substantial errors, and the uncertainty about which of the many measures of money to use. For the interest rate target they are how to combine the numerous interest rates, such as rates on securities of various maturities and degrees of risk, to represent the theoretical concept of "the" rate of interest, as well as the difficulty of deriving the expected real interest rate from the observed nominal rates.

Both target variables also have controllability problems. On the one hand, the instability of the money multiplier limits the central bank's short-run control over the money supply. Moreover, some critics of monetarism argued, if the central bank tries to tightly

control the money supply over a short horizon and does not accommodate the demand for money at all, interest rate might fluctuate enough to endanger the financial system.¹⁴ But the interest-rate target also has a control problem: the changes in long-term interest rates that the Fed can generate by changing the federal funds rates is both limited and hard to predict.

VI. Setting a Monetary Target Variable

Some monetarists - but not all - went beyond advocating the use of money rather than interest rates as a target. They wanted this target to be a permanently fixed growth rate (which could be zero) of the money supply, thus rejecting any attempt at counter-cyclical stabilization or exchange-rate stabilization. Such a policy should be seen as a decision to adopt an attainable second-best objective in place of a first-best, but unattainable one. In a better world the Fed would follow a counter-cyclical policy. But the world being as it is, Federal Reserve policy has been more destabilizing than stabilizing; remember the role the Fed played in the Great Depression and in the inflation of the 1960s and 1970s. Even if, despite the long and variable lags in the effectiveness of monetary policy, the Fed had the technical ability to stabilize GDP, both political pressure and the self-interest of its bureaucracy would frequently prevent it from doing so. On the other side, Keynesians, while conceding that the Fed did not cover itself with glory in the Great Depression, argued that the Fed (which since then has acquired an impressive research capability) has learned enough to be an effective stabilizer (see Modigliani, 1977.)¹⁵

One characteristic of this discussion is that while both sides spoke in tones denoting

certainty, the available evidence was skimpy. Yes, lags, political pressures and central bank self-interest do reduce the efficacy of stabilization policy, but do they reduce it to zero? Yes, the Fed has learned much, but has it learned enough? Neither side could offer evidence that would come anywhere near to matching its tone of certainty. Those monetarists who advocated a fixed growth rate of money were correct in *questioning* the Keynesian faith in stabilization policy, but were wrong in elevating their *possibility* argument that even now countercyclical policy may, as it has in the past, do more harm than good, into a claim that stabilization policy actually is harmful. And Keynesians were correct in not accepting the monetarist claim at face value, but were wrong in simply ignoring it. The argument came down to an insufficiently supported claim versus an almost dogmatic refusal to consider the claim. (see Mayer 1998)

VII. Selecting an Instrument

This leaves one major issue in the debate, the choice among potential instruments. Monetarists favored total reserves while Keynesians, by and large, accepted the Fed's choice of first the federal funds rate, and later of borrowed reserves.¹⁶ This debate, too, was flawed since it took the participants a long time to realize that the real issue was not whether it was the volume of reserves rather than the federal funds rate that the Fed should adjust in response to changing conditions. The real issue was the Fed's reluctance to adjust its chosen instrument - which just happened to be the federal funds rate - as much as was needed for effective stabilization policy, because it feared disturbing (or merely inconveniencing?) financial markets.¹⁷ Keynesians, as heirs to the Wicksellian tradition, should have realized that holding the nominal funds rate below

the expected inflation rate leads to accelerating inflation. I suspect that with the Fed claiming to use the funds rate as its instrument, and monetarists strongly criticizing it for this, Keynesians automatically rallied to the defense of the Fed, without stopping to consider that the Fed was not *targeting* the funds rate in the sense they wanted - that is allowing it to vary as much as is needed for income stabilization - but instead was limiting its variability.

VIII. The Current Synthesis

In recent years the Keynesian- monetarist debate has died down. One reason is that the new classical counter-revolution has shifted attention away from the down-to-earth framework of the Keynesians - monetarists debate to a more abstract plane that pays greater attention to the logical implications of a set of parsimonious assumptions. Second, evolving conditions, for example, the proliferation of M's - none of them with a stable velocity - have outdated some monetarist positions. Third, and connected with that, a synthesis that many economists find appealing has emerged.

This synthesis has several elements. First, among central banks, though to a lesser extent among American academic economists, the monetarist position that controlling inflation should be the dominant goal of monetary policy has won out.¹⁸ This is hardly surprising given the experience of the 1970s and the intellectual appeal of a long-run vertical Phillips curve, particularly to economists with a strong preference for elegant models.¹⁹ The idea of an unemployment - inflation trade-off has therefore been replaced by the more correct idea that there is a trade-off between the *variances* of the inflation and unemployment rates.

The inability, despite great effort, to find an exogenous monetary variable that has a stable velocity means that we have willy-nilly to use an interest-rate target. As one central banker put it: "we did not abandon money, money abandoned us." But the monetarists are still right in saying that the central bank has no way of knowing what level of long-run interest rates would generate the appropriate level of aggregate demand. With neither long-term interest rates nor monetary aggregates able to serve as a target the Brunner-Meltzer framework has largely been replaced by a simple heuristic that has received much attention and support. It is that the Fed should change the federal funds rate in accordance with the Taylor rule or some variant of it. Although this departs from the traditional monetarist recommendation it is consistent with the fundamental monetarist idea that long and variable lags, as well as principle - agents problems in the relation between the public and the central bank, make discretionary policy inappropriate. An announced Taylor rule, though open to a number of serious criticisms, also provides the transparency of monetary policy that monetarists have called for.²⁰

IX. Evaluation and Conclusion

If we assume - and it is a far from trivial assumption - that the current consensus is more or less correct, then the monetarist debate has been highly productive. It, along with the additional data that the passage of time revealed, showed much that was right and much that was wrong in both the Keynesian and monetarist positions. But that provides little justification for professional self-satisfaction. The debate was not an example of how science *should* proceed; it took too long and took too much of the time

of first rate minds. Why was that?

One obvious suspect is the role of ideology. This term is too often used to denote that those who disagree with us suffer from mental or moral obtuseness, or at least that their value judgments are inferior to ours. But since we have virtually no way of knowing our opponents' motives, such a smug, ad hominem argument is worthless. One factor that increased the temptation to employ such an invalid argument is the prominence of Friedman's strongly expressed and, at least among economists, not widely shared political views. In principle, there is nothing to prevent a leftist from accepting Friedman's views on monetary theory and policy, but in the world of ideas, too, there is guilt by association.

But not everything that can be labeled ideology should be dismissed out of hand. As David Colander (1992) has emphasized economic policy choices involve not only value judgments and judgment about economic theories and parameters, but also judgments about the efficiency of government policy-making. Since such matters are usually (though not always) treated as outside the blessed circle of economics analysis, economists tend to lump them along with value judgments into "ideology". In that sense, ideology did have a legitimate and important role in the debate. But it was not allowed to fulfill this role adequately. That would have required Keynesians to take seriously the monetarist arguments that central banks act in their self-interest, and are insufficiently committed to their stabilization task. But until the rise of the time-inconsistency literature they brushed such considerations aside, perhaps because they could not be readily treated with the conventional tools of economics, so that the

debate on one basic central monetarist position was not properly joined.²¹

The principle that the most cost-effective way of refuting your opponents is to ignore what they are saying, was not forgotten even on what is clearly an issue in economics, In his *Essays in Positive Economics* Friedman (1953, Ch. 4) used the sum-of-variances theorem from statistics to quantify the relation between the maximum degree of stabilization that could be achieved and the errors made both in forecasting the path of GDP in the absence of a policy innovation, and in predicting the effect of the policy innovations on GDP. He showed that for plausible magnitudes of such errors, stabilization policy might well be destabilizing. Given the then prevailing enthusiasm for countercyclical policy one would have expected this paper to have received much attention and to have generated at least some efforts to meet Friedman's challenge. But that did not happen; it was virtually ignored. On the other side of the debate, monetarists, while enthusiastically citing the Fed's previous blunders, did little, if anything, to counter the argument that the Fed is capable of learning.

Such a failure to respond seriously the other side's argument is, of course, a personal failings and not just the product of ideology. And there were other personal failings as well. One was that, perhaps inevitably, personal characteristics and rivalries played an unfortunate role in the debate. Friedman's charismatic personality and brilliant debating style provokes great loyalty among his followers - and great animosity among his opponents. His writings, while seemingly remarkably clear on a first reading, sometimes made him appear to claim more than he actually could be charged with saying. The resulting difficulty in debating him angered his opponents. By no means all of the

opposition to Friedman was due to his political views.

Brunner and Meltzer faced a different problem. Brunner's exposition was sometimes ponderous, and perhaps because of his broader interests and European training, it is likely that some American economists perceived him as an outsider. Moreover, since Brunner and Meltzer's theoretical expositions (Brunner and Meltzer, 1989, Ch. 4, and Brunner and Meltzer 1976) were extraordinarily hard to follow, they tended to be ignored and their work considered just an offshoot of Chicago monetarism. In general, Friedman's brilliance, both as an economist and as expositor, as well as his large cohort of loyal graduate students, attracted to him some of the attention that should have gone to Brunner and Meltzer's less easily accessible and less sparkling work.²² But personalities shaped the outcome of the debate less than did the emerging facts. That the velocity of money became less predictable after the mid-1970s is a fact that monetarists had to live with. And so is the greater than expected difficulty of controlling the money supply, as well as the great improvement in the Fed's understanding that occurred in the last two or three decades. The two Fed chairmen since 1979 have been the two best chairmen ever, and that makes it harder to argue that effective countercyclical policy is beyond the Fed's grasp.

On the other side of the debate Keynesians could not ignore the episodes of stagflations that occurred the 1960s and 1970s as inflationary expectations shifted the Phillips curve outward, thus destroying the idea of a useable unemployment-inflation trade-off, and as incomes policies failed to resolve this problem.²³ On a more fundamental level, as previously discussed, the Keynesian vision in both its initial

pessimistic version and its subsequent optimistic versions of the 1960, just did not fit in with what one saw when looking out of the window.

All in all, the monetarist debate does not exemplify the simplistic picture of "scientists" motivated only by an entirely objective search for the truth. But neither does it exemplify the post-modernist story of science as a political arena peopled by power-seeking gladiators who are immune to reason and to the so-called "facts".

Endnotes

* I am indebted to Thomas Cargill and Minguel-Angel Galindo for helpful comments.

1. In other countries the debate took different forms. In Britain monetarists had to spend more effort than in the U.S. to counter the argument that monetary policy should be used to attain full employment, with incomes policy taking care of inflation. In Germany, they had to spend less effort on expounding the dangers of inflation. For many countries exchange-rate stability was a much more important consideration than for the United States, and it limited the scope for independent monetary policy.

2. In doing so I will not try to emulate Harry Johnson's (1971) brilliant analysis of the sociological aspects of the monetarist counter-revolution, but anyone who remembers Johnson's discussion will see his influence on this paper.

3. I was trained at Columbia University whose orientation then was a mixture of Keynesianism and (old) institutionalism, but I was heavily influenced by Albert Hart, who was part Keynesian, part Chicagoan.

4. On Warburton see Cargill (1979). The relation between Friedmanian monetarism and the monetary economics taught at Chicago in the 1930s is controversial. This debate, which Don Patinkin (1969) initiated, has spawned an extensive literature.

5. By no means all Keynesians, and certainly not Keynes himself, accepted all of these views, but they were prevalent among American Keynesians. For example, Keynes was more sanguine about the potential role of monetary policy. (See Leijonhufvud, 1968.)

6. The decentralization of the Federal Reserve System and the relative liberty this provided for the research departments of various Federal Reserve Banks provided a significant impetus to the spread of monetarism. The Federal Reserve Banks of St. Louis, Richmond and to a lesser extent San Francisco, were monetarist, while the Federal Reserve Banks of Boston, New York and Kansas City were strongly anti-monetarist. Monetarists also had an important forum in Congress, where a monetarist, Robert Weintraub, was for a time the economist for the House subcommittee charged with overseeing the Fed. This subcommittee held numerous hearings and published responses of academic economists to questions about monetary policy. The independence that American universities provide for young

faculty members compared to European universities also facilitated the spread of monetarism, by making it more acceptable for young faculty members to accept new ideas. Johnson (1971) argued that one reason the Keynesian revolution had such strong appeal to young economists in the 1940s and 1950s was that it provided them with a tool for wresting power and prestige from their elders. This was much less so for monetarism. For reasons discussed in the last section there was so much hostility (some of it visceral) to monetarism that the right career move for most new Ph.D's would have been to sneer at monetarism.

7. For other applications of public-choice analysis to the Fed see Havrileski (1993), Toma (1986), Mayer (1990).

8. Romer and Romer (2002) have argued that the Fed of the 1950s had a better grasp of monetary policy than did the Fed of the 1960s and 1970s. (If so, this is ironic, since the Fed employed more economists and paid more attention to them and to academic economists in the 1960s and 1970s than in the 1950s). While they are clearly correct with regard to the goals of monetary policy (and the vertical Phillips-curve) they presents little evidence on the Fed's understanding of the how to conduct monetary policy.

9. In this model the central bank promises to maintain low inflation and then, to take advantage of the short-run Phillips-curve trade-off, fails to do so. With the public knowing that the central bank is untrustworthy, the outcome is a higher inflation rate with no reduction in unemployment.

10. Friedman and Brunner and Meltzer distrust large econometric models. For a discussion of Friedman's position see Leeson (2000)

11. Kenneth Scheve (2002) has shown that there is a positive correlation between people's holdings of nominal assets and their inflation aversion.

12. Franco Modigliani (1977) has argued that since monetarists and Keynesians rely on the same positive economic theory, differences in their policy recommendations must be due to differences in normative judgments. But that ignores differences in estimated parameters and in the behavior ascribed to central banks.

13. Some monetarists advocated targeting the monetary base since it has a stabler relation to GDP than do any of the M's. The problem is, however, that the monetary base consists largely of currency, and it seems likely that causation runs more from GDP to currency rather than the reverse. Moreover, a large (and hard to estimate) proportion of outstanding American currency, and hence the base, is held abroad. Goodhart's law probably reflects the central bank's accommodation of changes in the demand for money.

14. This is somewhat similar to the claim often made, particularly by post-Keynesians, that the money supply is endogenous, so that the correlation between changes in the money supply and in nominal GDP does not suffice to support the quantity theory. This criticism should be taken seriously, but it is an issue in monetary theory rather than in monetary policy.

15. The debate resembled Raphael's painting of the School of Athens, with Plato (the Keynesians) pointing to heaven (what the ideal central bank should aim for) and Aristotle (the monetarists) pointing to earth (the actual behavior of central banks.)

16. The seemingly technical debate about whether the Fed should set the total reserves of member banks or unborrowed reserves (that is total reserves minus borrowed reserves) or borrowed reserves (that is member bank borrowings from the Fed) comes down to the issue of how tightly the Fed should control the money supply. Controlling total reserves gives it relatively tight control over the deposits that banks can create. Controlling unborrowed reserves allows the banking system to counteract this control to some extent by borrowing from the Fed. If it controls borrowed reserves the Fed automatically accommodates changes in the demand for reserves (and hence changes in the money supply) by adjusting the reserves it supplies through open market operations.

17. We now know that in many models slow adjustment of the funds rate is appropriate for stability, This was not known at the time.

18. A survey of American academic economists asked them to quantify their agreement with the proposition that the primary concern of monetary policy should be to control inflation. On a scale on which 1 indicates strong agreement and 5 strong disagreement the mean was 2.9 (see Mayer, 2001) I suspect that the mean would have been considerably smaller if the question had been asked only of economists specializing in monetary economics.

19. Akerlof et al (1996) show downward wage inflexibility restores a negative slope to the Phillips curve. Yet in the very long run - but presumably only very slowly, perhaps too slowly to matter for current policy - a stable inflation rate of, say 3 percent would shift the point at which wages are inflexible from zero to 3 percent, thus restoring the vertical Phillips curve.

20. Test of Taylor rules are subject to the Lucas critique. Taylor rules also suffer from the difficulty of determining the natural or appropriate target rate of unemployment, and from errors in real-time data. Moreover, if as seems likely, aggregate demand depends more on long-term than short-term interest rates, then using a short-term rate as an instrument puts more weight on the expectations theory of the term structure than this theory should be asked to bear. The arguments in favor of the Taylor rule are first that it performs well in simulations in a wide variety of models (though there is the problem that many of these tests do not use real time data), and second that the alternatives also have their problems. For an evaluation of Taylor rules see Svensson (2003)

21. For a long time a similar problem occurred in discussions of counter-cyclical fiscal policy (see Buchanan and Wagner (1972).

22. Brunner and Meltzer shared many of Friedman's political views, but did less to popularize them, so that they evoked less opposition from liberal economists. For a sympathetic evaluation of Brunner's work see Laidler (1991).

23. Leeson (2000 p. 102) remarks that: "the Great Inflation ... ended the Old Keynesian era."

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