

MILTON FRIEDMAN AND THE MONETARIST COUNTER-REVOLUTION:
A RE-APPRAISAL

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Abstract

This paper provides a re-appraisal of the monetarist counter-revolution. The paper introduces a novel distinction between 'theoretical' and 'empirical' monetarism. Theoretical monetarism is identified as a critique of the IS/LM transmission mechanism. However, the IS/LM can be readily modified to accommodate this criticism. Empirical monetarism is identified with Friedman's business cycle research program. It was this latter program that was the principal source of contention, having theoretical and policy implications that were diametrically opposed to Keynesianism.

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INTRODUCTION

Over twenty-five years have passed since the initiation [Friedman and Schwartz, 1963a; 1963b] of the great monetarist debates of the 1960's. Since then much has changed, with monetarism being supplemented by new classical macroeconomics. | However, despite the passage of time, many of the differences between monetarists and IS/LM Keynesians remain opaque. The current paper is intended to provide a clarification and re-appraisal of the theoretical claims that constituted monetarism.

With regard to formal conclusions, the paper introduces a novel and important distinction between 'theoretical' and 'empirical' monetarism. Theoretical monetarism is identified with Friedman's work on the demand for money, as presented in his 1956 paper "The Quantity Theory of Money -- A Restatement". This branch of work contains a coherent theoretical criticism of Neo-Keynesian economics as represented by the IS/LM model. In principle, however, this criticism is fully consistent with Neo-keynesianism. Empirical monetarism is identified with Friedman's work, co-authored with Anna Schwartz, on money and business cycles. It is this second branch of monetarism that is the principle source of controversy, having conclusions regarding the causes of business cycles, the stability of market economies, and the desirability of discretionary monetary policy that were inimical to Neo-Keynesians. |

THE "TWO FACES" OF MONETARISM: THEORETICAL AND EMPIRICAL MONETARISM

Milton Friedman's classic 1956 paper "The Quantity Theory of Money: A Restatement" represents the critical point of departure for an understanding of theoretical monetarism. From this paper emerge many of the subsequent insights and claims that constitute its' basic tenets. Its' fundamental idea was that choice of money holdings by economic agents is part of a general utility

maximization program which involves simultaneously choosing levels of consumption, saving, and portfolio composition.

"The analysis of the demand for money on the part of the ultimate wealth-owning units in the society can be made formally identical with that of a demand for a consumption service."

[Friedman, 1956, 4]

Read superficially, the paper appears a simple application of the principle of utility maximization to choice of money balances, which would little distinguish it from the standard Keynesian approach to money demand. In one respect this is true, since Friedman's paper is very close to Hicks' paper "A Suggestion for Simplifying the Theory of Money" [1935]. In that paper Hicks described the choice of money holdings as part of a generalized choice problem which involved agents simultaneously deciding the level of all other choice variables that affected their welfare.

"Our method of analysis it will have appeared, is simply an extension of the ordinary method of value theory. In value theory, we take a private individual's income and expenditure account; we ask which of the items in what account are under the individual's own control, and then how he will adjust these items in order to reach a most preferred position." [Hicks, 1935,

12]

Unfortunately, however, Hicks failed to embody this treatment in his later paper "Mr. Keynes and the 'Classics'" [1937] which articulated the IS/LM model. Since the IS/LM model in turn became

the central analytic framework in which Friedman's critics [Tobin, 1974] tried to interpret monetarism, this obscured the similarities between the Neo-Keynesian and monetarist approaches to money demand.

Whereas Hicks had initially suggested that money demand be treated as part of a generalized choice problem, he introduced a bifurcation between the goods market (IS schedule) and the financial sector (LM schedule) in the IS/LM model. This bifurcation caused a separation of consumption and savings decisions from portfolio decisions dealing with the asset composition of wealth holdings, thereby rendering the IS and LM schedules independent of each other at any moment in time. Though this made the comparative statics relatively simple and definitive, it also meant that money demand was no longer part of a decision problem involving simultaneous choice of consumption, wealth, and the composition of wealth.

The implications of this change are easily understood through an application of Walras' law. Within the IS/LM model Walras' law is represented by two sets of adding up constraints. In the goods market Walras' law is given by

$$(1) \quad (y_d - y_s) + dS = 0$$

where y = flow level of output

dS = unplanned change in the stock of inventory

and the superscripts 'd' and 's' represent demand and supply respectively. The IS schedule corresponds to all combinations of interest rates and income levels for which excess demands for either goods or inventory are zero. For the financial sector Walras' law is given by

$$(2) \quad (M_d - M_s) + (B_d - B_s) = 0$$

where M = stock level of money balances

B = stock level of bonds

The LM schedule corresponds to all interest rate-income combinations for which there are zero excess demands for either money or bonds. Equation (1) then implies that disequilibrium in the goods market results in unplanned inventory adjustments, while equation (2) implies that disequilibrium in the money market causes disequilibrium in the bond market, which forces an adjustment of interest rates. This description of the IS/LM model then serves to bring the Keynesian "transmission mechanism" clearly into focus. Now disequilibrium in the money market, perhaps induced by an open market operation, causes an adjustment of interest rates which in turn affects the level of aggregate demand (particularly planned investment spending).

The above description of the structure of the IS/LM model contrasts with Friedman's approach to money demand, and the transmission mechanism. Whereas the IS/LM implicitly separates the consumption-saving decision from portfolio decisions, these decisions represent part of a single utility maximization problem for Friedman. The variables that affect consumption therefore implicitly affect portfolio decisions, and vice-versa. Thus for Friedman, instead of two adding-up constraints to represent Walras' Law, there is a single constraint given by

$$(3) \quad (y_d - y_s) + (M_d - M_s) + (B_d - B_s) = 0.$$

Consequently, disequilibrium in the money market can spill directly into the goods market, as well as spilling into the bond market. The monetarist transmission mechanism is therefore broader than the Keynesian transmission mechanism. For instance consider the impact of an expansionary open market operation. Initially this creates an excess supply of money balances matched by excess demands for bonds and goods. If firms satisfy the demand for goods this results in an excess demand for inventory, and firms also have excess money balances as a result of increased sales. Ultimately nominal income and interest rates must adjust until agents are content to willingly hold the enlarged stock of money. This outcome is similar to that predicted by the IS/LM model, but the

adjustment process involves a broader transmission mechanism under which the IS and LM schedules display systematic co-movement. |

The above representation of the monetarist transmission mechanism is constructed using Walras' Law in the context of a one good economy. It can be easily extended to a multi-good context by adding additional excess demand for goods terms to equation (3), and then identifying each excess demand with a different goods market. Such an extension captures Friedman's references to the distinctions between capital (equities) and physical (durable) goods. When households have excess money balances, part of this excess is directed toward purchases of both capital and durables, with the extent of this spending depending on the relative degrees of substitutability between money, equities, and durables in the portfolios of households.

Another difference between the IS/LM and monetarism, which in fact turns out to be superficial, is the menu of financial assets. Friedman's description of the monetarist transmission mechanism [Friedman and Schwartz, 1963a, 60] involves a rich array of assets. Contrastingly the IS/LM model, being an aggregate model, has only two assets. Despite this, the IS/LM retains the basic monetarist asset market transmission channel, which is a change in relative asset prices and returns [Friedman and Schwartz, 1963a, 60]. Adding more assets, as Tobin [1969] did in his multi-asset rendering of the IS/LM, does not resolve any differences since the separation of consumption-savings and portfolio decisions still remains, and it is this latter issue which is the heart of the controversy. Lastly, Friedman emphasized the timing pattern of asset price changes in response to a monetary disturbance [Friedman and Schwartz, 1963a, 60]. Multi-asset IS/LM models agreed with the posited direction of these price changes, but their comparative static methodology said nothing explicit about timing patterns. In principle Friedman's suggested ordering of asset price

changes was perfectly compatible with Neo-Keynesian thinking, and as such was not an issue of contention.

A second key theoretical feature of Friedman's 1956 paper was the notion of a "stable" money demand function.

"The quantity theorist accepts the empirical hypothesis that the demand for money is highly stable...the quantity theorist need not, and generally does not, mean that the real quantity of money demanded per unit of output, or the velocity of circulation of money, is to be regarded as numerically constant over time;...For the stability he expects is in the functional relation between the quantity of money demanded and the variables that determine it...."

[Friedman, 1956, 17]

Here, regrettably, much of the later confusion appears to have been semantic, with "stable" being misinterpreted as a "vertical" money demand function. By placing the choice of money holdings in a utility framework, and assuming tastes, transactions technologies, and asset menus to be relatively constant over time, Friedman maintained that money demand could be systematically understood as a predictable function of a number of defined variables. Optimally chosen money holdings will of course vary in response to changes in these variables, and in particular money demand will be a negative function of the nominal interest rate. However, the function itself is stable in the sense that it is not subject to huge and frequent unpredictable shifts. The validity of this claim is an empirical issue, and if considered in isolation, it would not have generated the controversy it did.

However, stability of money demand becomes a critical component of monetarist theorizing when linked with the other side of Friedman's work, namely the attempt to empirically explain the pattern of business fluctuations. It is to this subject we now turn.

Friedman's restatement of the quantity theory, which is the foundation of theoretical monetarism, was complemented by an empirical program (empirical monetarism) investigating the relationship of the money supply to the level of economic activity.⁴ This latter work is theoretically less rigorous, yet was more significant in popularizing the cause of monetarism, particularly with regard to its claim that the Great Depression was the result of a mistaken monetary contraction initiated by the Federal Reserve. The key propositions stemming from this work are that (i) there exists a stable long-run relationship between the money supply and the level of nominal income, and (ii) variations in the money supply are the ultimate cause of the business cycle.

The over-arching theoretical framework for empirical monetarism was provided by the Fisher equation of exchange given by

$$(4) \quad MV = Py$$

where M = the nominal money supply

V = the GNP velocity of money

P = the price level

y = the level of real GNP

Though usually considered an identity, within Friedman's framework the Fisher equation has theoretical content. Effectively, it captures the dynamic circuit of money, and links this circuit to the goods market by simultaneously serving as a goods market clearing condition, in which the value of aggregate nominal demand (MV) equals the value of aggregate nominal supply (Py) at

each moment in time. Given this framework, the critical elements in Friedman's theoretical account of the business cycle are

(i) The money supply is exogenous, and subject to the control of the Federal Reserve.

(ii) Velocity is identified as a phenomenon relating to money demand. As Friedman [1982, 205] writes in a later book: "An analysis of the behavior of velocity is an analysis of the demand for money."

(iii) Changes in the MV component of the Fisher equation are argued to cause changes in nominal income. |

Putting the pieces together, there are two causes of the business cycle. The first is random fluctuation in V, while the second is fluctuation in the exogenously determined money supply. For both causes the transmission mechanism is as developed in the "Restatement".

The above description of empirical monetarism illuminates its central propositions and policy conclusions. First, since money demand is relatively stable, this implies that fluctuations in V are relatively small, and that fluctuations in M are the principal cause of the cycle. It is this reasoning that explains why stability became such a controversial issue. With regard to the sources of fluctuations in M, these were identified with both policy induced fluctuations and exogenous discoveries of gold. However, the characteristics of the business cycle were argued to be independent of the source of change in M. Second, since money supply fluctuations were principally responsible for variations in nominal income, this suggested that a money supply rule could serve to limit money supply variability. This policy recommendation was further buttressed by arguments concerning the problem of inside and outside implementation lags.

Finally, the assumption of exogenous money linked with stable money demand implied that the private sector was stable, and not subject to regular macroeconomic crisis. | Of course there could

still be periodic disturbances to money demand, but by definition a stable money demand function means that these are few and far between. Exogenous money combined with the stability of money demand therefore became Friedman's "surrogate" proof for his deep-seated belief in the stability of competitive market economies. |

MONETARISM AND ITS' CRITICS

The conclusions of empirical monetarism, about the dominant role of the money supply in the history of the business cycle and the Great Depression, diametrically opposed traditional Keynesian interpretations which emphasized fluctuations in aggregate spending. The most severe of Friedman's critics was Tobin [1970, 1974] who directed his argument at two points.

The first concerned Friedman's interpretation of the pattern of timing evidence, and its implications for causality. Here, Tobin [1970] showed that an ultra-Keynesian model, in which the monetary authority targeted interest rates so that the money supply accommodated income, could generate timing changes in the rates of growth of money and income which were fully consistent with the evidence advanced by Friedman and Schwartz. Methodologically, the significance of this paper is that it highlights that empirical differences were not the cause of the division between Keynesians and monetarists. Rather, it was differences in the organization and interpretation of empirical observations. This feature recurs in the Post Keynesian criticisms of regarding money-income causality.

Tobin's second point of criticism centered on Friedman's use of the Fisher equation. Whereas for Friedman the Fisher equation captured the dynamic circuit of money within the goods market, Tobin [1974] interpreted the Fisher equation as an equation of money demand equivalent to the Cambridge equation of money demand. | When interpreted in this way, and placed in the IS/LM

model, this generated the familiar vertical LM schedule which Neo-Keynesians have used to characterize monetarists. This characterization was adopted despite the fact that Friedman had consistently argued in the "Restatement" that money demand is a negative function of nominal interest rates. Furthermore, the the IS/LM model failed to include the monetarist transmission mechanism owing to its separation of the consumption and portfolio decisions.

A second critic of the monetarist explanation of the Great Depression was Temin [1976]. Temin used an IS/LM framework to predict the pattern of interest rate and income adjustments under both the Keynesian (expenditure shock) and monetarist (money supply shock) accounts of the Great Depression. He then confronted these predictions with the historical record, and concluded that the Keynesian story was superior with regard to the historical facts. However, though Temin did not adopt the caricature of a vertical LM to represent monetarism, he did use the standard IS/LM framework. As such, he failed to include the monetarist transmission mechanism in constructing his testable hypotheses.

This failing is potentially critical since Temin's conclusions were based on an examination of the pattern of income and interest movements. Figure (1) shows Temin's interpretation of the monetarist hypothesis in the standard IS/LM model. This has the LM shifting up with the IS unchanged, so that interest rates rise and income falls. Contrastingly Figure (2) shows what happens when the full monetarist transmission mechanism is included. Now the monetary contraction shifts the LM up, but in addition the IS shifts left as a result of reduced spending caused by an excess demand for money balances. The result is that income falls, while the direction of change in interest rates is ambiguous. Whether or not interest rates fall depends on the relative shifts of the IS and LM schedules, as well as their slopes. If the monetarist transmission mechanism is strong (large IS shift) and the LM is steep, a fall in rates is more likely. Such an analysis

challenges Temin's [1976, 169] claims to have unambiguously rejected the monetarist explanation of the Depression

"Did Monetary forces cause the Depression?...if there had been deflationary monetary pressure, it would have had to be visible in the financial markets...At the time when monetary pressure was applied to the economy, a temporary rise in these interest rates should have been visible. If the pressure was strong - strong enough to send the economy into its deepest depression - then the rise should have been dramatic and obvious...Yet there was no rise in short-term interest rates in this two-year period."

The above analysis focuses on the short-run response to a monetary contraction in an IS/LM model that includes a monetarist transmission mechanism. The medium-run response needs to account for the deflationary effects of monetary contractions. Once the disequilibrium in money holdings is eliminated, the IS returns to its equilibrium condition as agents return to normal patterns of spending based on permanent/life-cycle income. However, if the monetary contraction has initiated a process of deflation, then nominal interest rates can remain low. The IS and LM schedules are given by

$$(5) y = y(i - p, A, M/P) \quad y_1 < 0, y_2 > 0, y_3 > 0$$

$$(6) M/P = L(i, y) \quad L_1 < 0, L_2 > 0$$

where p = rate of inflation (< 0 for deflation)

A = autonomous expenditures.

Drawn in real output - nominal interest space, deflation shifts the IS down. Thus, despite the fact that monetary contractions shift the LM left, nominal interest rates can still fall if there is induced deflation. Turning to a longer-run horizon, as the price level falls, this gives rise to the Keynes and

Pigou effects which shift both the IS and LM schedules right. | Whether price level reductions can restore full-employment is the heart of the debate between Keynes and the Classics, a debate which still continues in macroeconomics.

A third group of critics has been the Post Keynesians. | This group focused on Friedman's assumption of assumption money supply exogeneity, which implied that the only causes of changes in the money supply were contractionary monetary policy or gold discoveries. Post Keynesians disagree with this assumption, and maintain instead that the money supply is endogenously driven by the level of bank lending [Moore, 1988]. This approach challenges both the monetarist interpretation of the Great Depression, as well as the monetarist approach to inflation. With regard to the former, the acknowledged contraction in the M1 money supply that occurred at the start of the Depression is explained as a result of a privately induced reduction in bank lending. | This reduction in lending extinguished bank deposits through a process of loan repayment. Viewed in an IS/LM context, the Post Keynesian explanation is "observationally equivalent" with the monetarist transmission mechanism: an originating expenditure shock shifts the IS left, and at the same time shifts the LM left because of the reduction in bank lending. If the IS shift dominates, nominal interest rates fall.

With regard to inflation, the Post Keynesian theory of endogenous money explains how cost-push inflations can be self-sustaining. This is because bank lending and the money supply expand to accomodate rising factor prices (particulary nominal wages), so that there is no monetary constraint forcing such inflations to burn themselves out. This contrasts with the monetarist approach to inflation, in which the exogeneity of the money supply means that cost push inflations cannot persist indefinitely without accomodation by the monetary authority.

Finally, the Post Keynesian view also undermines Sims' [1972] defense of the monetarist view of money-income causality. Sims showed that money expanded temporally prior to income, and used this evidence to reject Tobin's [1970] argument regarding ex-post monetary accommodation. However, in a Post Keynesian monetary framework money will expand prior to income because it is needed to finance (bank loans) purchases of output (expenditure shocks). |

What are we to make of these varied criticisms? First, criticisms based on the IS/LM model failed to address the monetarist transmission mechanism because of its' separation of consumption and portfolio decisions. Despite this, the monetarist transmission mechanism can be incorporated into the IS/LM model. Paradoxically, while potentially weakening the Neo-keynesian critique of the monetarist explanation of the Great Depression, it also reveals the breadth of IS/LM.

Second, the criticisms are much more concerned with empirical monetarism and its interpretation of business cycle history, than with theoretical monetarism as defined by the 1956 "Restatement". In part this was because the theoretical reasoning backing empirical monetarism was less rigorous, but in part it was because the empirical program contained the propositions that were inimical to Keynesianism. Whereas theoretical monetarism was in principle capable of synthesis with Neo-Keynesianism, empirical monetarism completely over-turned the stylized facts of economic history as maintained by Neo-keynesians. In doing so it fundamentally rejected the Neo-Keynesian explanation of business cycles as the product of autonomous fluctuations in aggregate demand, and instead explained the business cycle as the product of fluctuations in the money supply, for the most part caused by government actions [Friedman and Schwartz, 1963a, 51-52].

CONCLUSION

This paper has provided a re-appraisal of the monetarist counter-revolution initiated in the mid-1960's. The paper introduced a novel distinction between theoretical and empirical monetarism. Theoretical monetarism was identified as a coherent critique of the IS/LM model, and its representation of the transmission mechanism. Empirical monetarism was identified with Friedman's program of business cycle research, of which the central claim was that money supply fluctuations induced by the monetary authority were the principle cause of the U.S. business cycle. This claim rested on three hypotheses: exogeneity of the money supply, stability of velocity, and uni-directional causality from money to income. Together, these three hypotheses also implied that free market economies were basically stable, and not subject to the recurrent threat of macroeconomic failure.

With regard to the lasting impact of monetarism, this derives almost exclusively from empirical monetarism. First, its use of the Fisher equation opened the issue of the "missing equation," and the question of the extent to which variations in the money supply translate into movements of real output as opposed to prices. The lasting impact of monetarism has been the question itself, which has become the central concern of mainstream macroeconomics. Second, the implicit message in empirical monetarism that market economies were not subject to regular macroeconomic failure, reintroduced a viable alternative to the then dominant Keynesian orthodoxy that macroeconomic failure was a persistent and present danger. These twin phenomena, a revised interest in the relation of money and prices, and a belief in the stable market clearing properties of market economies, have since come to be the hallmarks of new classical macroeconomics, which has superseded monetarism. The irony is that new classical macroeconomics has been almost as hostile to monetarism as it has to Keynesianism, since it maintains that money supply fluctuations

have no long-run effect on real output, and any short-run effect is restricted to the unanticipated component.

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Interest Rates

LM1

LM0

i_1

i_0

IS0

y_1 y_0 Output

FIGURE I

Interest Rates

LM1

LM0

i_0

IS0

IS1

y1 y0 Output

FIGURE II

| .Tobin [1981] makes the distinction between Mark I and Mark II monetarism. The mark I version refers to the original monetarist controversy initiated by Milton Friedman in the early 1960's; the mark II version refers to new classical macroeconomics which emerged in the 1970's, and in which Friedman was also involved. The current paper is concerned with mark I monetarism.

| . Hirsch and de Marchi [1990] also make a case for there being two Friedmans. However, their distinction rests on a division between Friedman's methodologies of positive economics and political economy. The current paper draws the division between "theoretical" and "empirical" monetarism.

| .The monetarist transmission mechanism is clearly compatible with Hicks' [1935] initial approach to money demand. Ironically, Friedman's fiercest critic [Tobin, 1970] later came to adopt this transmission mechanism in his own end-of-period multi-asset rendering of the IS/LM [Tobin, 1981].

4. Empirical monetarism is used to refer to Friedman's empirical program. However, two features should be noted. First, this program embodied its' own distinctive theoretical framework. Second, the program made use of multiple empirical methodologies [Hirsch and de Marchi, 1986].

| .Hirsch and de Marchi [1986] show that Friedman used a wide range of evidence to make this claim. They also admit that no single argument was conclusive. Instead, Friedman's empirical methodology is described as that of the 'criminal prosecutor' who assembles as many strands of evidence as possible.

| .Friedman's analysis allows for supply-side shocks to real income, which are then balanced by offsetting price level adjustments. In this case it is nominal income which is stable, and real income can still fluctuate owing to autonomous supply shocks.

| .As early as 1948 in "A Monetary and Fiscal Framework for Economic Stability" Friedman was making claims to this effect:

"The basic long-run objectives, shared I am sure by most economists, are political freedom, economic efficiency, and substantial equality of economic power...I believe that all three objectives can best be realized by relying, as far as possible, on a market mechanism within a "competitive order" to organize the utilization of economic resources [Friedman, 1948, 246]." These early beliefs are revealing of an underlying free market ideology that characterized monetarism. This ideology was given intellectual coherence by the Chicago School, and monetarism may be interpreted as the macroeconomic twin of the microeconomic ideas of Coase and Stigler. In this connection, Reder has argued that the Chicago School was characterized by a shared belief in "Tight Prior Equilibrium". One assumption behind this belief was that "the prices at which individuals currently agree to transact are market clearing prices that are consistent with optimization by all decision makers [Reder, 1982, 11]."

| .The Cambridge equation of money demand is given by $M_d = kY$

where M_d = nominal money demand

k = constant coefficient of proportionality

Y = level of nominal income

| .The Keynes effect refers to the increase in the real money supply that results from price level reduction. The Pigou effect refers to the increase in real aggregate demand that results from the effect of price level reductions on the real value of nominally denominated assets.

| .Kaldor [1970, 1982] was the initiator of this line of criticism.

| .This reading of history completely exonerates the Fed, and in fact between 1929 and 1933 the stock of high powered money (which is what the Fed truly controls) rose 25% from \$4 billion to \$5 billion [Fisher, 1936, 6].

| .Sims [1980] finds that when nominal interest rates are included in the vector autoregression testing for causality, money ceases to Granger-cause income. This finding therefore challenges his own earlier conclusion on the relation of money to income.