On Keynes and Monetarism

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It is an honor to be invited to speak at a conference honoring Keynes. His work has probably stimulated more pages of analysis, discussion and controversy than the work of any other economist. Many of the controversies proved sterile, but others have had lasting effects and some continue to shape economics.

The particular controversy about which I have been asked to speak – the monetarist controversy – remains one of the more productive controversies. The controversy stimulated developments in micro and macro economics, in econometrics, in the theory of expectations and the relation of expectations to econometrics and to micro and macro economics. At times, some disputants ignore these gains and appear to see only retrogression where there is progress. Kaldor (1982) is one example, but an example familiar to this audience. Other economists, who undertake to read the literature – though highly critical of recent developments and distressed by their policy implications – recognize that the monetarist controversy has caused them to rethink and change their views – Modigliani (1977) – and, more importantly, has caused lasting changes in economic theory – Tobin (1981, pp. 41-2). I take as given and obvious that both monetarism and our understanding of Keynes' theory continue to change, the former because it is part of economic science, the latter to considerable degree as a result of the excellent volumes containing Keynes' papers and letters produced for the Royal Economic Society.

Keynes died in 1946. The term "monetarism" originated, I believe, in Karl Brunner's (1968) article, so we cannot expect to find Keynes' responses or know how his criticisms would have changed the development of monetarism or how his own theory might have been altered by the development of monetarism.

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*I own an enormous debt to Karl Brunner who contributed in many ways to shape this essay, and my thinking and activity as an economist. My first exposure to the subtleties of the General Theory and its stock-flow analysis came as a student in his classroom. Our joint work on what is known as monetarism developed later. Frank Hahn pointed out an error in an earlier draft.

1The most probable rival is Karl Marx.

2I refer, of course, to The Collected Writings of John Maynard Keynes. I will follow the practice of referring to the volumes as JMK followed by a Roman numeral indicating the particular volume.
of monetarist theories. Many of the hypotheses that constitute monetarism have their origins in classical and neo-classical economics, but the same can be said of Keynes' hypotheses in the *General Theory* and before and after. Partly for these reasons, I regard as fruitless any attempt to offer a final assessment of the degree to which Keynes was or would have been a monetarist. \(^3\)

A further difficulty in relating Keynes to monetarism is the absence of widely accepted statements of either Keynes' main differences from classical economics or of monetarist theory. There are many statements and restatements of both hypotheses, but none is definitive. My recent attempt to offer a different interpretation of Keynes, Meltzer (1981), summarized and criticized some of the alternative interpretations of Keynes' *General Theory* but made no effort to summarize all of the literature or to reconcile differences. \(^4\) I continue to believe that "[N]o single set of statements is the correct restatement of the *General Theory*." Meltzer (1981, p. 37). The same must be said for monetarism also. There are at least four types of monetarist theory, and there are differences within each type. Some of these differences are likely to remain, but some will close and others widen as work continues.

Mayer's collection of essays on monetarism and his own contribution, Mayer (1978), show some of the difficulties that are inherent in any effort to obtain agreement about the unique features of a developing theory. Mayer recognizes that any listing of "principal" monetarist or Keynesian propositions will vary with the author and the date on which the list is drawn. Nevertheless there is some overlap. Recent efforts to state and analyze differences between monetarist and Keynesian analysis have produced agreements on some propositions that are distinctively monetarist. See Brunner (1970), Stein (1976), Laidler (1981) and Mayer (1978). One principal reason for the persistence of differences is that many arise from unresolved issues about relative magnitudes, speeds of adjustment, relative frequency of different types of shock and the relation of these issues to short-run non-neutrality of money. A second reason is that economists differ about the risks that policymakers should run in

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\(^3\)Hicks' (1974, pp 31-2) renders such a judgment based on the weak effect of nominal money on real activity, but Keynes (XIV, p. 79) explained in a letter to Hicks that the ineffectiveness of (anticipated) money is an implication of classical theory which had been neglected.

\(^4\)Patinkin's (1982) recent effort to state the contribution that is uniquely Keynesian recognizes also (ibid., p. 5) that "there is no unanimity on this question." Both Patinkin's book and other recent writing, e.g. Ohlin (1978), suggest that issues of priority are unsettled also.
an effort to reduce unemployment or to reduce inflation and the net benefit of any reductions achieved.\textsuperscript{5} My views on issues of this kind are available elsewhere.\textsuperscript{6}

Some of the participants in the disputes about policy claim more of a relation to Keynes than Keynes is likely to have reciprocated. We do no honor to Keynes by identifying him with many of the prescriptions offered by his followers. Keynes was a theorist with an active interest in policy and practice and a sense of empirical magnitudes. Like his teacher, Alfred Marshall, he avoided elaborate theorizing, had no interest in econometric models and cautioned against their use. He often preferred a simple assumption of constancy to rigorous analysis or careful computation of variables that have relatively low amplitude of fluctuation.\textsuperscript{7} Many of the empirical issues about which monetarists and Keynesians dispute, such as the slope of the Phillips curve or the relative responses of output to monetary and fiscal policy, are not central issues in the \textit{General Theory}, and some are unrelated. Keynes wrote about a world in which the price level can change, but there is no inflation.\textsuperscript{8} There is no basis for a claim that he would have favored the type of "Keynesian" policies that try to trade inflation for employment. There is, on the contrary, much reason to believe that he strongly opposed inflation and accepted the (long-run) neutrality of money in the \textit{General Theory} and after.\textsuperscript{9}

This paper compares an interpretation of Keynes' \textit{General Theory} to some specific monetarist theories. It does not further treat "Keynesian" theories or discuss how these theories are related to either Keynes' theory or to monetarist theories. To reduce ambiguity, I introduce an explicit monetarist hypothesis from the early 1970s and indicate some changes introduced later to incorporate rational expectations. I compare these types of monetarist theory to a restatement of Keynes' theory. The comparison suggests some distinguishing features and, of course, some similarities.

\textsuperscript{5}Differences of this kind are not limited to economics. Physical scientists have differed sharply about the safety of nuclear power plants, the disposal of wastes, the relative advantages of different treatments for cancer and other policy issues.

\textsuperscript{6}Economists who write down the same model may impose different restrictions when they draw policy implications. See, also, Brunner (1983).

\textsuperscript{7}One example is illustrative. Keynes (1939, p.48) treats the wage share as stable and described the stability as surprising and well-established. In a footnote, he defined stability implicitly. For the U.S. and Britain, his maxima are respectively 13\% and 6\% greater than the minima.

\textsuperscript{8}In August 1936, he wrote to Hicks, "[A] great part of my theory ceases to be required when the supply of output as a whole is inelastic." JMK(XIV, p. 71). In the \textit{General Theory} (1936, p. 303), he defines this position of supply inelasticity as "true inflation."

\textsuperscript{9}For examples of the latter see (1936, p. 142), JMK (XIV, p. 79).
There are many interpretations of Keynes and many versions of monetarism, as noted earlier. In my interpretation, the *General Theory* is Keynes' attempt to explain why the economy fluctuates around a stable equilibrium level that is below the level of output that society is capable of producing. In Meltzer (1981, 1983), I present and defend this interpretation by referring to specific passages in his *General Theory* and the papers and the letters that followed and by quoting extensively from Keynes' writings. Here, I rely on the previous work and repeat only those parts required for the discussion.

**Monetarist Theories**

Nobay and Johnson (1977) identify four distinct types of theory as "monetarist." The first, developed in the fifties and sixties, consists of empirical tests of single equations and relatively small models. These models and tests tried to distinguish, both analytically and empirically, between various monetarist and Keynesian propositions. Most of the studies neglected the foreign sector and the influence of international currency movements or exchange rates. The second distinct type, concentrating mainly on the role of money in an open economy, is associated with the work of Harry Johnson (1971), Robert Mundell (1968) and their students. In this tradition, the money stock is controlled only if exchange rates are flexible. Under fixed exchange rates the stock of money adjusts in response to commodity price (and interest rate) movements. "Money" refers to base money (or currency). Debt and real capital are perfect substitutes, so there are only two distinct assets - base money and either bonds or real capital. In the third type of monetarist theory, developed by Karl Brunner and Allan H. Meltzer (1968, 1972), there are three distinct assets - base money, bonds and real capital. The (conventional) stock of money is determined in the asset markets with the demand for money and the demand for and supply of bank credit. There is opportunity for intermediation and for differences in interest rates on short- and long-term assets. The fourth, distinct, type of monetarist theory is the rational expectations, monetary theory developed by Robert Lucas (1972, 1975), Robert Barro (1976). Thomas Sargent and Neil Wallace (1975), Finn Kydland and Edward Prescott (1977) among others.

To reduce the scope of this essay, I impose two restrictions. One removes issues raised by an open economy. Although the *General Theory* mentions foreign trade in a few places and devotes a chapter to mercantilism, the theory is properly regarded as applicable to a closed economy. The other restriction follows, without endorsing, the procedure used by such critics of monetarism as Modigliani (1977) and
Tobin (1981). These critics refer mainly to the works of Milton Friedman and a small number of rational expectations theorists as examples of monetarist theory.

Milton Friedman

Friedman (1974) is an effort "to set out explicitly the general theoretical framework that underlies them" [the series of monographs on money written with Anna J. Schwartz.] Friedman offers two main versions of his theory that he calls the quantity theory and the theory of nominal income. A third version, with prices fixed, is attributed to Keynes. Friedman notes (1974, p. 46) that his theory of nominal income is close to my own interpretation of the theory underlying Friedman and Schwartz (1963), developed in Meltzer (1965), but he misstates the main difference.

The demand for nominal money \( M^d \) depends on nominal income \( Y \) and the nominal rate of interest \( r \), as shown in (1).

\[
M^d = L(r)Y
\]

Friedman assumes that the demand for nominal money is proportional to nominal income (ibid., p. 34) and independent of the distribution of income between prices and real income. At times, the supply of money \( M_s \) depends on \( r \), but more often international capital movements and intermediation are ignored, and \( M_s \) is exogenous to the model. Let \( M_s = M_t \) so that, in equilibrium,

\[
M_t = L(r)Y_t.
\]

Friedman then rewrites the money equations as a quantity equation, a procedure I adopt below.


Decisions to consume or save and to invest depend on the real rate \( \rho \) and real income \( Y/P \). Let \( C \) and \( I \) be real consumption and investment respectively. Friedman assumes

\[
C = f_1(Y/P, \rho),
\]
I = f_2(\rho) \tag{4}

and

C + I = Y/P.

The IS curve is, then,

\[ \frac{Y}{P} = f_3(\rho). \tag{5} \]

To relate the nominal and real rates of interest, Friedman assumes that

\[ r = \rho^* - g^* + \frac{1}{Y} \frac{dY}{dt} \tag{6} \]

where \( g^* \) is the expected rate of growth of real income and \( \rho^* \) is the expected real rate of interest. Recognition of the effects of inflation on market rates is a significant step away from Keynes and toward a more general theory.

Friedman offers several alternative assumptions about \( \rho \) without expressing a preference for any. The simplest is to treat the difference as a constant, \( (k_0) \), so he writes (ibid., p. 29)

\[ \rho^* - g^* = k_0, \tag{7} \]

but a few pages later (ibid., p. 39) he also makes \( \rho^* \) a constant. This assumption fixes the value of real income. The IS curve is now degenerate, as can be seen in equation (5). The theory of nominal income becomes a version of Friedman's quantity theory. Real income is constant in both. Substituting (7) into (6) and the result into (2), we obtain (8) as a linear equivalent. Real income is given by (5), so for given \( M \), the theory of nominal income reduces to an equation relating current nominal income to its rate of change.

\[ \frac{Y_t}{M_t} = V_1(\frac{1}{Y} \frac{dY}{dt}) + V_0 \tag{8} \]

Friedman recognizes that the constancy of the real rate in the IS equation is unsatisfactory.\(^{12}\) He

\(^{12}\)Friedman (1974, p. 40) mentions some other omissions, principally the neglect of wealth, anticipations of inflation and the difference between measured and permanent income.
maintains that (1974, p. 40) "it seems entirely satisfactory to take the anticipated real interest rate ... as fixed for the demand for money." His reason is that fluctuations in the real rate, and deviations of actual from expected real rates, have at most a minor role in financial markets.

Random deviations of actual from expected real income affect nominal rates of interest and the price level, but they do not affect expected real income. Friedman's discussion of the adjustment process is not developed as an implication of his theory but appears compatible with the interpretation of the Phillips curve suggested in his Presidential address (1968). He relies on errors and misperceptions to explain the deviations of output and employment from expected values.

Friedman, like Keynes, offers a theory of the level of income. Real income fluctuates around its expected value, and prices change so, in this sense, Friedman's theory is a theory of nominal income. His framework differs from Keynes on two major points. The level of equilibrium real income does not depend explicitly on the variability of income, and inflation is incorporated.

What determines the expected value of real income? Here, and elsewhere, Friedman's expected income is a weighted average of past real income. This has proved a useful, empirical simplification in many applications, but it falls short as a response to Keynes' theoretical challenge. Friedman does not explain why expected real income is higher in some times and places than in others. There is no relation between expected real income and the risks or uncertainties that society bears. And unlike Keynes, Friedman does not suggest a relation between expected income and institutional arrangements that cause risks to be reduced or augmented.

But, Friedman's treatment of fluctuations is similar to Keynes' in a broad sense. Both offer static theories of income determination. Although both discuss fluctuations, fluctuations, or business cycle dynamics, are not part of either theoretical framework.¹³ For a "monetarist," theoretical perspective on business cycle dynamics, we turn to rational expectations monetarism.

Rational Expectations

Emphasis on rational expectations in macro economics began with Lucas (1972), and he has remained a major contributor. Lucas (1981) contains many of Lucas' contributions up to the time of

¹³Meltzer (1965) discusses the latter point more fully and notes that "transitory income" is difficult to distinguish from the cyclical deviation. I return to this discussion below when I compare Keynes and monetarism.
publication. He describes his research as "concerned almost exclusively with the attempt to discover a useful theoretical explanation of business cycles" (ibid., p. 2).

Economists from Thornton (1802, pp. 119, 189-90) through Marshall (1920, pp. 709-10) to Keynes (1936) relied on wage rigidity, at least in part, to explain the severity or persistence of unemployment during business cycles.14 Neither these authors, nor others, offered an explanation of the labor supply curve consistent with maximizing behavior. Marshall, like many who followed, refers to the power of labor unions. In the passage just cited, and elsewhere, Marshall finds some merit in the increased real wages received by those who continue to work during recessions.15 In Marshall's view, there are both welfare gains and losses during recessions. Keynes (1939) criticized Marshall's work on the grounds that Marshall had not provided a theory of labor supply useful for explaining the supply of output.

A major problem posed in the rational expectations literature on employment (or unemployment) and business cycles is to explain why people choose to vary hours of work instead of varying wages. The same general problem arises for other factors of production; for example, capital is used more intensively at the peak of the cycle than at the trough; time series on investment spending show relatively large cyclical changes. There is a presumption in much of the rational expectations literature, however, that once economists can explain how tastes and constraints combine to induce people to choose the patterns that produce aggregate unemployment, other aspects of the cycle will be easier to explain. This presumption differs from Keynes view that the duration of business cycles depends mainly on the relation of expectations to the marginal efficiency of capital and the carrying costs of inventories.

As in any scientific endeavor, there are rules or conventions guiding the procedures. Rational expectations business cycle theory can be described as an attempt to develop a theory of business cycle dynamics consistent with maximizing behavior. Although some markets may be missing, all existing markets clear (up to a stochastic component). Information is used efficiently; expectations are rational in the sense of Muth (1961). Business cycles arise because people misperceive what is happening, as in the Friedman (1968) and Phelps (1968) versions of the natural rate hypothesis. Some type of accelerator sustains the cycle and produces persistence, as in Lucas (1975).

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14 Keynes' principal explanation for the duration of recessions is the durability of capital and the slow recovery of the marginal efficiency. (1936, p. 317).

15 Keynes (1939) refers to Marshall's view and notes that Marshall based his conclusion about real wages on studies he and others had done in the 19th century. For references see Meltzer (1981, p. 51). Subsequent research does not support Marshall's conclusion about real wage changes. The pattern is mixed.
The basic idea, relating fluctuations to misperceptions, errors or misjudgements, is not novel. Uncertainty and errors of judgment have long been recognized in discussions of "over-investment" or "under-consumption" and more recently in some models of adaptive learning. Many models can be made to appear "rational" by appealing to costs of acquiring information or similar costs. Explanations of this kind introduce what Lucas calls free parameters; they are useful for some purposes but leave major questions unanswered. Why do we tolerate particular forms? Can institutional arrangements be found to lower costs of information and reduce uncertainty? Would different arrangements reduce the amplitude of fluctuations? Attempts to answer questions of this kind have produced a burgeoning literature on the role of money in the asset portfolios of optimizing households, the use of money as a medium of exchange and on alternatives to the Walrasian auctioneer as an institutional device for clearing markets. This literature has not reached the stage at which a professional consensus has formed, and it has not produced an explanation of contracts and institutions that is sufficiently general and parsimonious to be useful for a large class of problems.\footnote{I find it difficult to fathom why most of this literature remains separate from the theory of public choice and ignores the perceptive insights in, for example, Hayek's (1959) discussion of the formation and development of institutions. Equally difficult to justify is continued reliance on the assumption that governments do not alter the allocation of resources or that debt and capital are perfect substitutes.}

But it has given major impetus to the search for micro foundations that explain why we tolerate the costs of information and institutional or contractual arrangements that impose these costs. This impetus is broadly similar to the impetus that Keynes\footnote{Alchian (1977) contains some early efforts to develop alternatives and some applications to prolonged recessions. Patinkin (1965) states the relevant assumptions.} work gave to the analysis of existence and stability of general equilibrium micro foundations.

A considerable gap remains between the goal of producing micro foundations compatible with observations at the macro level and current monetary theory. As Grossman (1983) notes in a recent essay, the market clearing, rational expectations model of a business cycle that is driven by monetary surprises survives despite the failure to achieve a theory that is compatible with observations at the macro level.

The Walrasian auctioneer who clears the market also provides costless information about market clearing prices. At these prices, we aggregate individual demands to get market demands, and with some additional restrictions, aggregate market demands to get aggregate demand. The range of problems to be solved after using the auctioneer to dispose of the problem of price setting in individual markets is greatly reduced.\footnote{It takes a lot of ingenuity to derive the persistence of aggregate excess supply or demand, or to derive persistent deviations of actual from expected values, using a micro foundation in which everyone has the same information and is permitted to recontract until a general equilibrium is reached. The auctioneer}
has proven to be a useful institutional arrangement for many issues addressed by economic theory, but it
does not seem to be useful for investigating the non-neutrality of money. Once the auctioneer is removed and
prices are "rationally" set for one period, using all available information, there is no problem in showing
that unforseen changes in money growth cause fluctuations in inventories, aggregate demand, employment
and real wages. If, in addition, people cannot instantly distinguish persistent and transitory changes in
money growth, changes in money growth (or real variables) are sufficient to generate fluctuations broadly similar
to those we observe. See Brunner, Cukierman and Meltzer (1983).

Current rational expectations macro models differ from Friedman's (1974) framework not only by
giving more explicit attention to the way information and disturbances (or shocks) affect market participants
but also by introducing a supply equation, or Phillips curve, as a part of the model. The micro-foundation
for the latter are not fully developed. A popular linear version of the rational expectations model, used
in McCallum (1980), is reproduced in equations (9) to (11).

\[ y_t = a_0 - a_1 [i_t - E_{t-1}(p_{t+1} - p_t)] + \nu_1 t \]  \hspace{1cm} (9)

\[ m_t - p_t = c_0 + c_1 y_t - c_2 i_t + \nu_2 t \]  \hspace{1cm} (10)

\[ y_t = a_0 + a_1 (p_t - E_{t-1} p_t) + a_2 y_{t-1} + u_t \]  \hspace{1cm} (11)

The three equations are, respectively, the IS, LM and supply curves representing equilibrium solutions
for the expenditure, money, and output sectors of the economy. Productive capacity is assumed constant
throughout. Real income (y), price level (p), and money stock (m) are in logarithms; i is the nominal rate
on a one-period asset. \( E_{t-1} p_{t+j} \) is the expectation of the price level expected to prevail in period \( t+j \) based
on all information available at the end of period \( t-1 \). The \( \nu_t \) and \( u_t \) are random variables with zero mean,
constant variance and other properties useful for removing covariances, serial correlation and other
complications.

For given values of money and rational price expectations, the model determines \( y, p, i \) and
the real rate of interest. Output and the real rate are not fixed, as in Friedman's theory; output can vary
around the predetermined level of productive capacity. McCallum's use of \( y_{t-1} \) introduces persistence,
but there is no reason given for a persistent difference between \( y_{t-1} \) and capacity output. By assumption
there is no relation between the size or frequency of random disturbances and the level of capacity output.
The convenient assumption that excludes any effect of past or current disturbances on productive capacity is not innocuous. Lucas' (1981, pp. 104-30) critique of econometric models implies that structural parameters of the investment, consumption, production and asset equations are not constant but depend on policy rules and, more generally, on institutional structure. Structures or policies that reduce or dampen fluctuations can be expected to induce different behavior than structures or policies that augment fluctuations. Lasting effects of fiscal and monetary policies on capacity output can occur if policies increase (or reduce) the variance of prices and output or if government debt, issued to finance consumption, is held in asset portfolios in place of claims to real capital issued to finance investment.¹⁸

A potential link between Keynes and rational expectations models lies in the relation of policy rules and procedures to investment, the size of the capital stock, the choice of labor or leisure, the size of the labor force and expected output.

A basic problem in models of this kind arises from the assumption that all bonds are one period assets. It is hard to see how this assumption can be reconciled with observations on the term structure of interest rates. Risk, or liquidity, premiums are difficult to reject empirically. If risk premiums differ, there must be at least two asset markets in which people trade claims to assets with different risk premiums. One of these markets is missing. Its absence from a model of long-run equilibrium may be a useful simplification; its absence from a model of the business cycle that relies on misperceptions and expectations is more difficult to accept.

One of the main implications of rational expectations monetarism is known as the policy ineffectiveness proposition. See Sargent and Wallace (1975). This proposition states that real variables are independent of systematic – known or predicted – changes in money. McCallum and Whitaker (1979) extend this result to include the systematic part of a feedback rule for fiscal policy, using a linear model in which policy-makers and the public have the same information. Built-in stabilizers can reduce the variance of real variables but, as before, the variance of output does not affect the interest rate, the level of capacity output or the size of the capital stock.¹⁹

¹⁸McCallum (1980, pp. 726-9) considers effects on capacity arising from a real balance effect and cites some previous discussion of this problem. See also Barro (1976). The effect of debt arises if debt is not a perfect substitute for money or real capital and if the government spending financed by debt alters the allocation of resources between consumption and investment. Brunner and Meltzer (1972) suggest some of the reasons for an effect of debt on capacity output (crowding out) by treating debt, money and capital as distinct assets.

¹⁹McCallum (1980) shows that the policy ineffectiveness proposition remains in a limited class of structures that have prices set in advance if the price incorporates expected policy.
Another major development of rational expectations policy analysis is the time inconsistency proposition of Kydland and Prescott (1977). These authors build on Lucas’ result (1981, pp. 104-30) showing that the choice of policy rules affects the structure of the policymakers model of the economy. Since changes in policy rules induce changes in structure, a policy that is optimal for a particular structure does not remain optimal. Kydland and Prescott show that the choice of policy (or politician) affects expectations, the structure of the model and, therefore, the optimal policy. They demonstrate, also, that in some (specified) structures frequent policy changes can destabilize an economy.

These studies do not establish specific conditions under which any particular rule is optimal, but they show that, under rather general conditions, known (announced) policy rules are superior to discretionary policy changes. The main reason is that surprises are costly to individuals and to society. Surprises, or shocks, cannot be avoided but they can be reduced to the minimum inherent in nature and market processes. Unless policymakers have an uncommon advantage in forecasting future shocks, they are unable to predict shocks or offset them, and their attempts to reduce variability will fail. These policy implications of rational expectations models are more closely related to one of the main issues Keynes addressed in the *General Theory* than they may appear. Keynes directed attention to the relation of institutional structure to expectations, to the variability of output and to the distribution of risk between the public and private sectors. The main policy recommendation of the *General Theory* is a proposal for a policy rule that, Keynes believed, would reduce fluctuations in investment.

**Keynes and the Monetarists**

Keynes would not object to the monetarist proposition that the systematic portion of monetary policy has no effect on the equilibrium value of real variables. He wrote that he had difficulty understanding Irving Fisher's theory of interest because (1936, p. 142)

"[I]t is not clear whether the change in the value of money is or is not assumed to be foreseen. ...[I]f it is foreseen, the prices of existing goods will be forthwith so adjusted that the advantages of holding money and of holding goods are again equalized, and it will be too late for holders of money to gain or to suffer a change in the rate of interest which will offset the prospective change during the period of the loans in the value of the money lent."
A few lines later, Keynes added (idem):

"The prices of existing assets will always adjust themselves to changes in expectation concerning the prospective value of money." (Italics in the original.)

Keynes corresponded with J.R. Hicks, after Hicks sent his classic (1937) article. Keynes commented that Hicks had not stated the classical position accurately. Early classical writers had been free of the inconsistency that crept into later classical doctrine. JMK(XIV, 79)

"The inconsistency creeps in, I suggest, as soon as it comes to be generally agreed that the increase in the quantity of money is capable of increasing employment. A strictly brought up classical economist would not, I should say, admit that. We used formerly to admit it without realizing how inconsistent it was with our other premises."

In these passages and elsewhere, Keynes is free of the belief that employment, output and other real variables depend on the expected nominal stock of money. He rejects the type of non-neutrality that is prominent in the Keynesian tradition and in criticisms of rational expectations. Viewed in the context of these statements, Keynes frequently quoted proposition about the ineffectiveness of monetary policy in an early statement of the rational expectationists policy ineffectiveness proposition.

The major differences between Keynes and the monetarists are not about money illusion or the effect of nominal money on equilibrium real output. Keynes is not guilty of these vulgar errors that are identified as Keynesian. The differences between Keynes' theory and monetarists' theories are more basic.

In the remainder of this section, I compress the differences under four headings that bring some main differences and similarities into focus but are not meant to be either exhaustive or exclusive.

**Impulses**

Keynes and the monetarists reach very different conclusions about the dominant impulses affecting the economy. For Keynes, changes in the marginal efficiency of capital are the main cause of fluctuations in investment and output. During periods of expansion, investors become excessively optimistic about the
future returns to investment. A sudden shift in sentiment causes a collapse of investment and an increased demand for money. The latter drives up the rate of interest and intensifies the decline in investment, "but the essence of the situation is to be found, nevertheless, in the collapse in the marginal efficiency of capital..." (1936, p. 316)

Keynes does not deny that monetary surprises can affect investment by changing the rate of interest or affecting expectations, but his emphasis is on non-monetary factors. Principal among the latter is "confidence". Confidence affects current (private) decisions by changing investors subjective beliefs about the quality of forecasts (1936, p. 48) and, thus, confidence is a major determinant of the marginal efficiency of capital.

Monetarists typically treat the private sector as stable. Government policies, particularly monetary policies are the major cause of instability. Shifts in sentiment (or confidence) are seen, principally, as a response to shifts in "underlying conditions," but the principal shifts discussed in much of this literature remain in the classical tradition; emphasis is on changes in money and in the rate of money growth.

In the rational expectations literature changes in "confidence" and in conditional expectations do not occur haphazardly as a consequence of "animal spirits." Changes in belief are a rational response to perceived changes in the environment or, in contemporary jargon, the information set. For rational expectations monetarists changes in the environment are dominantly, but not exclusively, monetary.

2. Expectations and Risk

Keynes treatments of expectations and risk differs from the rational expectationists and Friedman. Neither Friedman nor the rational expectationists directs attention to perceived changes in risk, whereas risk and uncertainty are of major importance for Keynes' interest rate theory and for liquidity preference. Keynes distinguishes between short- and long-period expectations. The distinction is used to explain why short-term rates of interest differ from long-term rates. In contrast, Friedman assumes that the real rate of interest is fixed, and the rational expectationists either do not distinguish between short- and long-term rates or, at times, omit the interest rate. See Lucas (1975)

Keynes defines a person's short-term (sales) expectations in a way that rational expectationists can find attractive. Sales expectations are the expectations of proceeds which, if held with certainty,
would lead to the same behavior as does the bundle of vague and more various possibilities which actually make up his state of expectation when he reaches his decision." (1936, p. 24, n. 3).

In Keynes 1937 lecture notes, we find a clear statement of his intention to keep these expectations equal to actual outcomes.

"All one can compare is the expected and actual income resulting... from a particular decision. Actual investment may differ through unintended stock changes, price changes, alterations of decision...

"I began as I said by regarding this [the mistake in short-period expectations] difference as important. But eventually I felt it to be of secondary importance, emphasis on it obscuring the real argument. For the theory of effective demand is \textit{substantially the same if we assume that short-period expectations are always fulfilled}. ...

"I now feel that if I were writing the book again I should begin by setting forth my theory on the assumption that short-period expectations were always fulfilled; and then have a subsequent chapter showing what difference it makes when short-period expectations are disappointed." JMK (XIV, pp. 180-1 Italics added.)

The lecture notes then discusses differences between Keynes' theory and the theories of Robertson, Hawtrey and the Swedish economists. These writers "find the whole explanation in the \textit{differences} between effective demand and income; ...in my treatment \textit{this is not so}." JMK (XIV, p. 181) Keynes remarks:

"I'm more classical than the Swedes, for I am still discussing the conditions of short-period \textit{equilibrium}. (ibid., p. 183 Italics added.)."22

The discussion of long-term expectations starts off in a similar way. "We are assuming, in effect, that the existing market valuation, however arrived at, is uniquely \textit{correct} in relation to our existing knowledge of the facts which will influence the yield of the investment..." (1936, p. 152) Emphasis in the original.) Keynes continues, "[A]n investor can legitimately encourage himself with the idea that the only risk he runs is that of a genuine change in the news \textit{over the near future}, as to the likelihood of which

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22 In a letter to Ohlin, Keynes explained that he assumed perfect competition and diminishing marginal productivity. JMK (XIV, p. 190). See also (1936, p. 114) where Keynes assumes diminishing marginal productivity. Ohlin (1978, p. 147) regarded these simplifications as radical.
he can attempt to form his own judgment, and which is unlikely to be very large." (ibid; pp. 152-3)

The problem is that the stability of long-term expectations depends on the assumption that our beliefs about the future will not be very different tomorrow. This assumption, or convention, breaks down, Keynes believed, because market valuations are dominated by the opinions of speculators who are either ill-informed or unconcerned about the more distant future. When there are changes in opinion, Keynes's "bulls and bears" produce sudden changes in the marginal efficiency of capital.

Keynes regarded the economic system and equilibrium output as stable, despite the volatility of long-term expectations. Shackle (1967, p. 129) interprets Keynes' discussion of long-term expectations as evidence of Keynes' belief that expectations are not only volatile but irrational. This interpretation is a radical departure from Keynes' early work on probability, work to which he refers the reader of the General Theory (1936, p. 148) to supplement the explanation he offered there.

A random walk with relatively large permanent variance and relatively small transitory variance captures the central idea. Suppose, for example, that the yield or price of each durable good, $p^i_t$, follows a random walk, as in equation (12).

$$p^i_t = p^i_{t-1} + u^i_t,$$

where $u^i_t$ and $\Delta p^i_t$ are normally distributed with zero mean and variances $\sigma^2_u$ and $\sigma^2_{\Delta p}$ respectively. Prices (or yields) are subject to discrete changes which, for relatively large $\sigma^2_{\Delta p}$, produce rapid adjustment in the market for the particular good. If changes in the prices of durables are correlated, as Keynes' examples of uncertainty (XIV, pp. 113-4) suggest, large changes in expected prices can induce the swings in the marginal efficiency of capital and in investment that Keynes placed at the center of his theory. The larger the price changes, the greater is the induced change in investment and the variability of output.

The General Theory differs from Keynes' earlier work by giving greater attention to the relation of variable expectations to risk premiums, and of risk premiums to interest rates and the level of equilibrium output. Keynes tells us that the "necessary condition [for a liquidity preference for money as a means of holding wealth] is the existence of uncertainty as to the future of the rate of interest, i.e., as to the complex

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23This type of uncertainty is compatible with the method called rational expectations. See Brunner, Cukierman and Meltzer (1980, 1982). An alternative interpretation of uncertainty, based on Bayesian theory, allows people to learn gradually about changes in the conditional distributions of structural parameters. See Cyert and DeGroot (1974).
of rates of interest for varying maturities which will rule at future dates." (1936, p. 168). The premium for uncertainty or risk raises the equilibrium market and the effective (risk augmented) real rate of interest and lowers equilibrium investment, the capital stock and the level of output. The more volatile are expectations, the larger the size and frequency of fluctuations in the marginal efficiency of capital and, therefore, in the level of income. The larger and more frequent are fluctuations in actual income, the greater the risk borne by society and embedded in risk premiums.

These considerations are not reflected in the monetarist theories of Friedman and the rational expectationists. On these issues, Keynes' and monetarists' theories are distinct.

3. Supply and Demand

Although Friedman (1968) is a principal reference for the rational expectations supply curve, the supply curve of output is not an integral part of Friedman's framework. In one version, real output is fixed at its equilibrium value. In the other, the division of nominal output between prices and real output is one of the less satisfactory features, as I noted earlier.

The rational expectations model, in equations (9) to (11), has IS and LM equations and a supply equation for aggregate output. A principal difference between this model and Keynes' is that the rational expectationists assume that capacity output is given. Keynes' principal concern on the supply side is the position or level of capacity output. He wrote to Lerner, JMK (XXIX, p. 215):

"It was an important moment in the development of my own thought when I realized that the classical theory had given no attention at all to the problem at what point the supply of output as a whole and the demand for it would be in equilibrium. When one is trying to discover the volume of output and employment, it must be this point of equilibrium for which one is searching."

The same idea is repeated many times. In his discussion of the classical theory of interest, Keynes points out that an equation is missing. In letters to Robertson, who commented extensively on early versions of the text, he explained that the equilibrium level of employment is unique (for given risk). JMK (XIII, pp. 513-14):

24 Keynes would not have written the same equations. I repeat below two of Keynes three equations used in my interpretation, Meltzer (1983).

25 "[T]he functions used by the classical theory...do not furnish material for a theory of the rate of interest; but they could be used to tell us what the level of income will be, given (from some other source) the rate of interest; ..." (1936, p. 181). See also ibid., pp. 178 and 183.
"I argue that there is only one value of N for which D = D' and that this may have a lower value than the N given by the classical theory. In this case actual employment is given by the lower value.\textsuperscript{26}...

"The notion that supply is never heard of again suggests that you think that I like yourself throw over all my fundamental principles when I come to study fluctuations."

Keynes' 1937 restatement makes a similar point. JMK (XIV, pp. 122-3).

"In a system in which the level of money income is capable of fluctuating, the orthodox theory is one equation short of what is required to give a solution. ...[I]t has always tacitly assumed that income is given, namely, at the level corresponding to the employment of all the available resources.\textsuperscript{27}

The particular form and arguments of the supply curve are not critical for exposition of Keynes' theory or its differences from classical and monetarist theories. We are in the realm of Keynes' theory as long as the supply curve of output is not inelastic. In this range, the expected level of equilibrium output can be increased by reducing risk or uncertainty.

The principal points can be made using two equations.\textsuperscript{28} Once again, there are two interest rates, a long-term rate \( r^e \), that changes much less during cycles than the short-term rate, \( r \).

\begin{align}
\text{IS: } & \frac{Y}{W} = A(r, \frac{Y}{W}, E) \\
\text{LM: } & \frac{Y}{W} = B(r, r^e, \frac{M}{W})
\end{align}

\( \frac{Y}{W} \) and \( \frac{M}{W} \) are income and money stock in wage (W) units; \( r \) is the rate of interest; \( E \) is the expected level of equilibrium income based on available technology \textit{and} the prevailing institutions that determine the risk that society must bear; \( r^e \) is the (long-term) real rate of interest that includes that risk. In Keynes' words, \textit{
\begin{flushright}
\end{flushright}\textsuperscript{26}D is aggregate demand; D' is aggregate supply; and N is the volume of employment. \\
\textsuperscript{27}See also Keynes (1936, p. 276, p. 181 and pp. 183-4) for other references to the indeterminacy in the classical model caused by failure to determine the position of supply. \\
\textsuperscript{28}Meltzer (1981, 1983) relates these equations to some of Keynes' specific statements and includes a supply curve of output that, following Keynes. (XIV, pp. 71, 104; 1936, p. 26, 243) becomes inelastic at full employment (potential output).}
r is the "rate of interest which will preserve the status quo." (1936, p. 234). Generally, r is not the optimum or "neutral rate ... which is consistent with full employment." (idem.)

The two interest rates, r and re, can be taken as measures of long- and short-term rates. The long-term rate (re) includes the risk factor that is relevant under prevailing institutions. The long-term rate changes much less during business cycles than the short-term rate, r.

A permanent reduction in risk reduces re and reduces the demand for money. The reduction in money lowers r and increases real income (in wage units). Once everyone expects the increase in income to persist, employment is expected to remain at a higher level, on average. The demand for labor increases. The economy experiences smaller fluctuations around a higher (average and expected) level of income. For Keynes, the limit to increases of this kind is full or maximum employment – the position at which the elasticity of the supply of output reaches zero.

4. Business Cycle Dynamics

The General Theory analyzes an economy in which output fluctuates around its equilibrium value. It is not a dynamic theory of fluctuations or of the business cycle. It is true that the General Theory includes a chapter called "Notes on the Trade Cycle," but the chapter is written to show that Keynes' theory is applicable to the business cycle and consistent with its principal characteristics.

Rational expectations monetarist theory is a dynamic theory of fluctuations. Misperceptions, errors and unforeseen changes introduce deviations of actual from anticipated values. The principal observations, as seen by Lucas (1981, p. 15), include the volatility of business investment and the volatility of employment over the cycle. These observations are the principal observations that, Keynes believed, lacked a satisfactory explanation.

Both Keynes and the rational expectationists develop and use equilibrium theories. Keynes' equilibrium is a stable equilibrium level that lies below the level that the economy has the potential to achieve. His problem is to explain the relation of institutional structure to expectations and of expectations to the size of fluctuations in investment, employment and output. The main proposition in his book is that the size of fluctuations affects the position of stable equilibrium that the economy reaches. Most of his book is concerned with developing a framework for analyzing the determinants of this position and showing how the equilibrium can be changed. He then, proposed changes to dampen fluctuations and
raise the level of equilibrium output to (or toward) potential output.

Neither Friedman's model nor the rational expectations model addresses Keynes' central concern. Both reach equilibrium with full use of resources. The rational expectation model remains in equilibrium up to a stochastic component that, at times, is large enough to produce cyclical patterns. Rational expectations theorists have not attempted to relate the size or frequency of shocks to the equilibrium level of capacity (or potential) output or to relate the efficiency of policy rules to capacity output.

Conclusion

Keynes' theory differs in several ways from the monetarist theories represented by Friedman (1974) and by recent rational expectations theories. One difference is methodological. Methods in economics have changed in the direction of increased formalism since Keynes time. Keynes never wrote down an algebraic statement of his theory, although he accepted Hicks (1937) algebraic restatement with some important, specific qualifications. Rational expectations theories and, to a more limited extent, Friedman's theory are stated algebraically, so the logical structure is often clearer for these theories than for Keynes'. Further, Keynes' theory is static; his discussion of business cycle dynamics is a postscript written to sketch the application of his theory to an important problem that was one of his lifetime concerns. Rational expectations monetarism is a dynamic theory of fluctuations. Friedman (1974) takes an intermediate position. His theory is static, but he devotes many pages to the dynamics of adjustment and the fluctuations induced by unforseen changes in monetary and real variables.

Differences are not limited to the method of presentation or to the choice of statics or dynamics. The General Theory touches on many topics that are not closely related to Keynes' theory. The chapter on mercantilism seems out of place in a book developing the theory of a closed economy. Keynes' lengthy discussions of user cost and the measurement of national income have no counterpart in monetarist theory. These differences are clearly peripheral.

The most important difference is in the issues that the theories address. Keynes main criticism of classical theory is that the equilibrium position is assumed to be given. Fluctuations occur around
the equilibrium level, but neither the size of fluctuations nor their frequency affects investment, the size of
the capital stock and equilibrium output. Classical theories assume that the level of equilibrium income
is at society's maximum or potential income. The rate of interest reaches equilibrium at a value consistent
with the efficient use of the economy's resources. Keynes called this rate of interest the "neutral" rate
(1936, p. 183), and he denied that it is the relevant rate.

The monetarist theories of Friedman and the rational expectationists, considered here, are open to
Keynes criticism of classical theory. They treat the level of full employment income as a given, or what is
the same, as determined by factors that are given. There is, at most, one rate of interest, the equilibrium
rate.

The *General Theory* offers an explanation of the factors that determine the level of output at which
the economy reaches equilibrium and the forces causing changes in that level. Keynes states this objective
in the preface and repeats the point many times.²⁹ Keynes' problem is to explain why fluctuations in
income have their observed size and frequency and how the size and frequency of fluctuations affect the
level of equilibrium income. His answer is that the variability of long-term expectations depends, *inter alia,*
on the institutional structure; change relevant institutions and policy rules and the size and frequency
of fluctuations will change. Risk and risk premiums in interest rates will change, and these changes, in
turn, will change the level of equilibrium income that the economy achieves.

For given institutions, changes in expectations may arise because of misperceptions, as in the
monetarist theories discussed here. Keynes offers some additional reasons. These include differences in
expectations (bulls and bears), and uncertainty about the timing or occurrence of major events.

In his summary of the *General Theory*, Keynes wrote: (1936, p. 249-50):

"[I]t is an outstanding characteristic of the economic system in which
we live that, whilst it is subject to severe fluctuations in respect of
output and employment, it is not violently unstable. Indeed it seems
capable of remaining in a chronic condition of sub-normal activity for
a considerable period without any marked tendency towards recovery or

²⁹"This book...has evolved into what is primarily a study of the forces which determine changes
in the scale of output and employment:..." (1936, p. vii).
towards complete collapse. Moreover, the evidence indicates that full, or even approximately full, employment is of rare and short-lived occurrence. ... [A]n intermediate situation which is neither desperate nor satisfactory is our normal lot."

I interpret this summary as a restatement of the main point of the General Theory: the equilibrium level of income lies below the level that could be achieved with different institutions that engender different expectations. Keynes argued in the very next paragraph (and throughout the book) that the higher level of income cannot be achieved unless it is expected to persist. And it cannot be expected to persist unless risk is reduced.

Monetarist theories build on the micro foundations of Walrasian general equilibrium. Keynes assumes perfect competition, but he was not a Walrasian and, I believe, he would regard the impressive work of Arrow (1964) and Debreu (1959) as an inadequate foundation for macroeconomics. The reason is that, currently, Walrasian general equilibrium micro theories do not include relevant institutions that augment or reduce risk. A valid theory of the risk premium, the liquidity premium and the role of money remain among the missing elements of a micro foundation for Keynes' macroeconomics.

Keynes described his reasons for departing from classical theory as "definitive", his policy recommendation as "not definitive" (JMK, XIV, p. 122). His main policy recommendation in the General Theory, state direction of investment, is offered as a possible solution to the problem he saw. Later, he appears to have changed his mind about state direction. He favored rules and the type of pre-announced fiscal policy called "build-in stabilizers." He opposed counter-cyclical tax changes to stimulate consumption.

Keynes' recommendations, like most policy advice given by economists, neglects a major difference between governmental and private decisions in democratic, market economies. Governments, particularly elected governments, cannot forever ignore voters preferences as expressed in the polling place. The voting rules under which governments are elected to office may be inconsistent with the policy rules designed to minimize risks in the process of achieving the Pareto-efficient outcomes that lie on the (dynamic) production frontier.

30 Keynes refers to the environment and the psychological propensities instead of institutions and expectations. He considers both "ultimate independent variables".

In the *General Theory*, Keynes blamed the private sector for the relatively high and persistent unemployment experienced in Britain during the twenties and in most market economies during the thirties. He looked to government for a solution and presumed that government would act to reduce variability. Monetarists give greater emphasis to instability caused by the absence of policy rules, the types of government policy and the variability induced by frequent, large changes in public policy. Issues about the relative effect of impulses introduced by the private and public sectors and the degree to which they contribute to variability have received far more attention in the monetarist than in the non-monetarist literature. The central policy difference between Keynes and the monetarists is unlikely to be resolved as long as this neglect continues.

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32 Lindbeck (1976, p. 17) recognizes that "the functioning of the political system is not always in good harmony with the requirements of stabilization policy." He proposes changes in both political and economic arrangements to improve stability.
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