Monetarist, Keynesian and Quantity Theories

By Allan H. Meltzer, Pittsburgh/Pa.*

In economics as in other developing sciences, change erodes the value of popular terminology. Monetarism is a name that has been given to a particular set of propositions at a particular point of time. Like Keynesianism, fiscalism, or the "Treasury view," the particular set of propositions called monetarism does not fully describe the body of thought accepted by a loosely knit group of practicing economists anymore than terms like Chicago, Cambridge or Austrian School describe the thought of all to whom the terms are applied. In the humanities, such connections are the subject of treatises; most economists are usefully employed at other, no less valuable, occupations.

Thomas *Mayer's* statement** of the set of propositions constituting "monetarism" and their interrelations takes the form of an inventory of a now successful counter — revolution in economic thought. *Mayer's* critics and commentators — Martin *Bronfenbrenner,* Karl *Brunner,* Phillip *Cagan,* Benjamin M. *Friedman,* Harry G. *Johnson* and David *Laidler* — appear to accept his inventory, although each would delete, de-emphasize, or combine some of the items; and some critics, correctly, add to the list propositions about exchange rates, balance of payments position, and determinants of the stock of money and the rate of inflation in open economies.

That the counter-revolution has been successful, there can be little doubt. Jerome *Stein* now writes that "a Keynesian can be a monetarist" (*Stein,* 1976), and James *Tobin* analyzes the conditions for the "crowding out" of private expenditure by debt finance (*Tobin* and *Buiter,* 1976, p. 296). Several central banks choose specific target rates of growth for

* This paper reflects many discussions with Karl *Brunner* and more recently with Edward *Prescott.* I am indebted to *Brunner* and *Prescott* and to André *Fourçans,* Benjamin *Friedman,* Robert *Hodrick,* David *Laidler* and particularly to Thomas *Mayer* for comments on an earlier draft. Wolf *Becker* Jr. drew the charts.

** Kredit und Kapital, Vol. 8 (1975) pp. 191 and pp. 293.

some monetary aggregate and, more importantly, they have shown greater ability to reach the targets than they once admitted or believed feasible.

It was not always so, and the history of science suggests that the particular set of propositions that *Mayer* has listed will not draw the same agreements and disagreements a year, or more surely, a decade from now. The meaning of "monetarism" will change if the term remains useful.

There is, also, general agreement between *Mayer* and the commentators on his paper that the remaining areas of disagreement are not analytical issues but are empirical issues related to policy. The point is, at times, implicit in *Mayer's* paper, at times explicit. *Brunner, Johnson* and *Laidler* support the point with examples of empirical differences about the effects of policies. Although Benjamin *Friedman* concentrates on analytic issues, he too notes that the "distinguishing content of monetarism is a set of empirical propositions" (*Friedman,* 1977, p. 347). *Cagan* and *Bronfenbrenner* discuss a particular policy arrangement — a fixed monetary rule — that has been closely associated with monetarism in the wirtings of mony non-monetarists and some monetarists. But *Bronfenbrenner* is emphatic also about the broader policy implications that constitute the monetarists' "vision."

To the extent that resolvable differences about policy remain, they result from two distinguishable types of empirical judgment. One is the value of parameters in particular equations; the second, and much more basic, empirical issue concerns the societal effects of government policies, including the relative costs and benefits of collective and private decision-making. The costs include any loss of freedom and increases in the nature and extent of uncertainty, loss of incentives and the like. *Mayer's* proposition 12, "dislike of government intervention" suggests that the differences about the appropriate roles for private and government decisions are solely a matter of taste. James *Tobin* (1976, p. 336) writes that "monetarist policy recommendations stem less from theoretical or even empirical findings than from distinctive value judgments."

I disagree with both statements. Both ignore the empirical and analytical bases of monetarist policy recommendations, and both take a very restricted view of the range of empirical issues in the Keynesian-monetarist debate. In some ideal world, differences between the

effects of government and private action may vanish, but many monetarists believe that, in practice, expansive fiscal policies "crowd out" real capital, lower the long-run value of output per man, encourage the growth of government and reduce freedom.

Discussions of counter-cyclical policy reflect more than differences in values and differences in emperical judgments about the long-term effects of Keynesian policies. Different conclusions are drawn about short-term effects. Many of these issues are not fully resolved at this time. Monetarists and Keynesians assign different meaning or interpretation to unemployment. Consequently, they differ about the costs and benefits of reducing or removing the risk of unemployment by government policy or collective action. The policies recommended by monetarists and Keynesians reflect empirical judgments about the effects of policies and, also, differences about the operation of labor markets and the meaning and interpretation of the fluctuations in employment. Differences about the interpretation of unemployment are basic to the Keynesian-monetarist discussion, but the differences are unresolved. Below I state the issues and their relation to the discussion.

Monetarist and Keynesian policy differences also reflect different assessments of evidence and differences in beliefs. Beliefs affect the judgments and decisions of scientists and policymakers, but evidence changes beliefs. Some experiments are judged a success; others are regarded as failures. The history of the first twenty-five postwar years, when the economic policy of many countries was inspired largely by Keynesian interpretations of events, constitutes a body of evidence. So, too, is the history of the past several years when countries, faced with the same real shock, adopted alternative strategies and achieved different outcomes.[1] Historical evidence of this kind may seem more tenuous or insubstantial than the output of some large, quarterly econometric model of the economy. It is, nevertheless, a main reason that beliefs and policies change.[2]

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[1] An assessment of some of these experiences can be found in Michael *Hamburger* and Rutberg *Reisch* (1976) and David *Laidler* (1976).

[2] This interpretation is by no means unique. See, for example, *Coddington* (1976, p. 1264) who describes the period of the fifties and early sixties as a period of "Keynesian enthusiasm", then adds picturesquely that Keynesian ideas "faltered sometime in the middle sixties and stumbled into the seventies". Historical evidence is most useful when there are claims and counterclaims as in the monetarist-Keynesian discussions of the sixties.

Change does not mean that the positions or beliefs of some past era are restored intact. Monetarism does not now deny all short-run real effects of fiscal policy on relative prices and real demands, whatever incorrect or incautious statements may have been made earlier. But, monetarists questioned the reliability and durability of fiscal effects and the long-run costs of achieving short-run increases in output by fiscal expansion. These conclusions — once scorned as error — are now widely held.[3]

Monetarism is neither the quantity equation rediscovered nor the quantity theory reborn. Thomas *Mayer's* comparison of quantity and Keynesian theories suggests that the quantity theory and monetarism are related but distinct.[4] I share this view. Resolution of policy issues in the monetarist-Keynesian debate does not depend on the truth of the traditional interpretation of the quantity theory or the belief that all relative prices are forever constant. Nor does it depend solely on the slopes of *IS* and *LM* as in Keynesian or neo-Keynesian theories. To advance the discussion and resolve issues, new elements have been introduced.[5] The new elements move the discussion beyond the discussion of quantity versus Keynesian theory.

In the following section, I consider the relation — and emphasize some differences — between quantity, Keynesian, and monetarist theories of the adjustment of economic activity and prices to nominal and real shocks. Then, I discuss the interpretation of unemployment, a subject on which many monetarists and quantity theorists have views that are distinguishable from the Keynesian view. My interpretation of unemployment has not, as far as I know, been presented in its present form but it will not seem startling to those who have followed recent developments in the theory of employment. I conclude by discussing

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[3] On the general point about the type of change in "beliefs" I find myself close to agreement with *Blinder* and *Solow* (1976 a, p. 502) although we may differ about the size and durability of short-run responses. The MPS (or FRB-MIT) model also shows that real effects of fiscal policy vanish after a short period.

[4] Among the commentators *Brunner* and *Johnson* share this view; *Cagan*, however, appears to regard monetarism as a return to the principles of the twenties — i. e. to some type of quantity theory.

[5] The government budget equation is a principal example. Among recent models formally incorporating the government budget equation are: Alan S. *Blinder* and Robert M. *Solow* (1973), Karl *Brunner* and Allan H. *Meltzer* (1972, 1976), Carl *Christ* (1968), Jerome *Stein* (1974) and James *Tobin* and William *Buiter* (1976).

some remaining differences about the meaning of unemployment and the role of government.

I. Adjustment in Monetarist and Quantity Theories

The term "monetarism" was coined in Karl *Brunner's* (1968) article, but many of the issues in the monetarist-Keynesian controversy had been brought to professional attention much earlier by *Friedman* (1956). Unfortunately, *Friedman* did not follow the promising path he developed but, instead, blurred the distinction between his new approach and the quantity theory. In this section, I distinguish monetarism from quantity and Keynesian theories.

Friedman's quantity theory of 1956 is neither Keynesian — as that term was understood at the time — nor a classical, quantity theory. Recognition of the role of interest rates in the demand function for money accepted one of *Keynes's* arguments that classical economists did not stress and may not have accepted. In other important respects, *Friedman's* demand function for money departs from Keynesian theory, *as that term was understood at the time,* in at least three ways.

First, *Friedman* (1956, pp. 4, 5, 10, 19) directs attention away from current income and toward wealth as a determinant of the demand for money. The concept of income relevant for his analysis is the capitalized value of all sources of "consumable services" — surely a long-run concept to be disstinguished from the concept of "income as it is ordinarily measured" (1956, p. 4).[6] The quantity of real balances that households desire to hold depends on wealth and income, not on current receipts.

Second, the way in which money affects economic activity differs from Keynesian analysis. *Friedman* discusses, at length, the effect on the demand for money of changes in yields on bonds, equities, physical goods and human wealth. Most of these yields were not, and often are not yet, arguments of the Keynesian demand function for money.[7]

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[6] This issue is not settled. Albert *Ando* and Franco *Modigliani* (1975) attempt to prove analytically that wealth does not affect the demand for money. They claim that only current income and short-term interest rates are relevant. *Selden* (1956) showed years ago that income velocity is more closely related to equity returns than to bond yields or bill rates, although he did not pursue the analysis. See *Hamburger* (1977) for more recent evidence on this point.

[7] One need only compare the recent empirical work by *Goldfeld* (1973, 1977) and *Hamburger* (1977) on the demand for money to see that the

Friedman's view of what is now called the transmission mechanism of monetary policy is distinct from the views expressed by Keynesians at the time. Most Keynesian theorists then claimed that changes in the stock of money are adequately summarized by the response of short-term interest rates to money, and of investment to interest rates. Many still do.[8] The Keynesian view is now found in the statement that the relative responses to monetary and fiscal policy are summarized by the interest elasticities of investment (or *IS*) and the demand for money (or *LM*). Monetarists, at least from the time of *Friedman's* essay, stressed the role of other relative prices and wealth in addition to interest rates and insisted that policies affect economic activity through many different channels.[9]

Third, the liquidity trap has much more importance in Keynesian theory than in the *General Theory*. Monetarists deny the relevance of the liquidity trap. One reason is that the demand for money depends on many relative prices or rates of interest in addition to the rate on short-

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differences are substantial and affect interpretation of past events and policies. *Goldfeld* chose the period of the early seventies to test the "stability" of demand functions for money. The test results are clear and *Goldfeld*'s interpretation of his results is incorrect. He does not show that the demand for money is unstable. Comparison of the papers by *Hamburger* and *Goldfeld* shows that the traditional Keynesian demand function in which money substitutes only for "bonds" is less reliable than a function that allows a broader range of substitutes.

[8] *Tobin* is a partial exception. His general equilibrium framework (*Tobin* 1969 and *Tobin* and *Buiter* 1976) is often used as evidence that there are few remaining differences about the transmission or adjustment process. One of *Mayer*'s commentators, Benjamin *Friedman* (1977) develops this argument, and it is correct as a statement about general equilibrium models. Although there are differences in detail and in method of presentation, there is little *formal* difference between the general equilibrium framework in *Tobin* (1969) or *Tobin* and *Buiter* (1976) and the models of wealth or relative price adjustment proposed in *Brunner* and *Meltzer* (1963) and developed in *Brunner* and *Meltzer* (1968, 1972, 1976). Here the similary ends. As *Tobin* (1976) points out, there are substantial differences in policy conclusions. *Tobin* appears to draw his policy implications from an IS-LM framework in which there is only a single rate of interest. The general equilibrium, relative price adjustment, of his formal model, appears to be neglected. The rate of price change seems to be determined by a *Phillips* curve that shifts slowly or not at all in response to all, anticipated and unanticipated, fiscal and monetary policies. *Brunner* and *Meltzer* do not neglect relative price changes and make the expected rate of inflation depend, *inter alia*, on past rates of monetary growth.

[9] The effect of wealth on the demand for money is mentioned by *Marshall* (1923); the neglect of wealth by *Keynes* was recognized early by *Haberler* (1952).

term securities. Keynesians selected the short-term rate as the only interest rate relevant for the demand for money (*Ando and Modigliani*, 1975). Hence, the allegation that the market interest rate on short-term securities approached a lower asymptote was sufficient evidence for many Keynesians to declare that a liquidity trap existed in the thirties. *Friedman's* insistence on the many rates relevant for portfolio choice denied the relevance of evidence of this kind.

The transmission process of *Friedman's* quantity theory (1956) not only differed from the Keynesian theory of the time he wrote, but the formal structure differs from the classical quantity theory. The quantity theory in *Thornton, Ricardo* or *Hume* relies mainly on the effect of changes in the quantity of money on expenditure and much less, if at all, on changes in relative prices and interest rates.[10] One reason is that, in the absence of changes in the conditions for producing gold, classical theorists expected the gold standard to keep the price level fluctuating around a value that remained constant for decades.[11] Fluctuations in interest rates, therefore, meant either long-run changes in real rates or short-run, temporary changes resulting from cyclical fluctuations of the price level around a long-run constant value. Fluctuations in the equilibrium real rates were treated as small, so the discussion of economic fluctuations centered on the consequences of departures of the price level from the long-run level determined by tastes, productivity, and real resources on one side and the quantity of money on the other.

This section presents a simple model to illustrate the adjustment mechanism in the classical quantity theory and the differences between

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[10] A recent, excellent reconsideration of classical theory of the balance of payments is *Frenkel* (1976). *Frenkel* discusses the role of relative prices (interest rates) in the classical theory of the balance of payments and contrasts two approaches to adjustment. One requires shifts in expenditure relative to income. The other requires changes in relative prices. See also *Viner* (1965). I believe classical theorists mainly discuss the first of these adjustments whereas *Friedman* (1956) emphasizes the second in his essay. *Friedman* (1956, p. 19), however, mentions the classical explanation and it is this approach that he followed subsequently.

[11] Persuasive evidence on the views of classical economists about the proper relation of price levels to money is the Report of the Committee on the High Price of Bullion written in 1810. The report urged the resumption of specie payments at the 1797 price of gold. The policy, adopted several years later, required a 50 % reduction in the price level. A century later, in 1919 - 25, the Bank of England deflated again to restore the 1797 price of gold in pounds sterling.

monetarist, Keynesian and quantity theories. In the classical quantity theory, portfolio theory is deemphasized; the principal alternative to holding money is spending to buy goods. In monetarist theory, as in Keynesian theory, money is held in portfolios, but the determinants of the demand for money and the response to changes in money differ.

The quantity equation sets aggregate spending, MV, equal to nominal output, py. Classical economists treated cyclical fluctuations in velocity as small, relative to changes in M, and minimized the effect on velocity of interest rates or relative prices and output. Equation (1) makes velocity constant, so fluctuations in spending are entirely the result of changes in money. A trend rate of change of velocity could be added to recognize improvements in payment arrangements.

$$MV = py \tag{1}$$

$$y = F(K, L) + \varepsilon \tag{2}$$

Equation (2) has two components. The first, called permanent output or permanent income, is equal to full employment output. The second recognizes that real shocks cause current real output (y) to depart from steady state equilibrium output. Deviations, ε, are assumed, here, to be normally distributed with zero mean and constant variance, σ, a modern interpretation of the classical view that output fluctuates around a stationary value (or trend rate of growth if technical change is admitted).

$$M = D + R \tag{3}$$

The money stock is base money and is the sum of domestic assets (D) and foreign reserves (R). The meaning of "money" changed from the 17th to the 19th century. Bullionists certainly did not include domestic earning assets as part of the money stock or monetary base. By the early 19th century, however, the effect on prices of issuing "paper credit" was recognized widely. Many writers included domestic earning assets as a source of base money (*Viner*, 1965).

The next equation tries to capture the spirit but not the letter of a classical theory of fluctuations. Changes in reserves depend on the difference between the domestic price level (p) and foreign price level (p^*). The exchange rate (X) gives the number of units of domestic currency that exchange for a unit of foreign currency. The response to prices

separates Keynesian from classical and monetarist economists. Keynesians assume that short-run price changes are small. Prices are inflexible. Most classical economists disagree. Changes in the relative prices of domestic and foreign goods have a large role in the classical theory of adjustment, (*Frenkel*, 1976; *Viner*, 1965).

$$\frac{dR}{dt} = h\,(p - p^* X) \quad h' < 0 \qquad h\,(0) = 0 \tag{4}$$

The steady state equilibrium price level with fixed exchange rates is the world price level (p^*) denominated in domestic currency units.[12] The price level and exchange rate fluctuate around the world price level in the short run. In this version of classical theory, the exchange rate fluctuates within limits set by the adjustment of prices. Equation (5) determines the exchange rate.

$$p = p^* X \tag{5}$$

The complete system has eleven variables. Five — $p, y, M, \frac{dR}{dt}$, and X — are determined by equations (1) to (5). V is a constant. If R is formally described as an accumulated stock, we are left with three predetermined variables — K, L, and p^* — and one policy variable, D. The system determines steady state values and adjusts to real (ε) and nominal (D) shocks for given technology and resources, $F\,(K, L)$, and for given anticipations of long-run output.

As the system stands, output fluctuates in response to real shocks but is unaffected by changes in monetary policy, D. In the absence of relative price changes, a response of output to nominal disturbances occurs only if output depends on the price level or the quantity of money. This is the point made in *Patinkin's* (1965) criticism that classical economists failed to provide a mechanism or relation by means of which changes in money affect output and the price level. His criticism is applicable in a closed economy in which the relative prices of all currently exchangeable goods — new production or existing assets, durables and non-durables — are unaffected by changes in money. The composite good theorem applies to all exchangeables.

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[12] *Frenkel* (1976, pp. 32 - 36) quotes from classical writers and neoclassical interpretations to show that the "law of one price" was an accepted proposition.

Many classical economists discussed the relation of money prices and output, but none are clearer than *Thornton*. The price level and output respond to changes in money, according to *Thornton*, because money wages adjust more slowly than the price level (1965, pp. 118 - 9. Italics in the original):

"It is true, that if we could suppose the diminution of bank paper to produce permanently a diminution in the value of all articles whatsoever, and a diminution ... in the rate of wages also, the encouragement to future manufactures would be the same, though there would be a loss on the stock in hand. The tendency, however, of a very great and sudden reduction of the accustomed number of bank notes, is to create an *unusual* and *temporary* distress, and a fall of price arising from that distress. But a fall arising from temporary distress, will be attended probably with no correspondent fall in the rate of wages; for the fall of price, and the distress, will be understood to be temporary, and the rate of wages, we know is not so variable as the price of goods. There is reason, therefore, to fear that the unnatural and extraordinary low price arising from the distress of which we now speak, would occasion much discouragement of the fabrication of manufactures."

A lengthy footnote to the passage (1965, p. 119) indicates why, under the assumed conditions, the fall in prices and output must be temporary. "The general and permanent value of bank notes must be the same as the general and permanent value of that gold for which they are exchangeable, and the value of gold in England is regulated by the general and permanent value of it all over the world; ... the gold price must, in a short time, find its level with the gold price over the rest of the world."[13] The content of this quotation is summarized by eq. (5).

A modern economist would be inclined to characterize as "unanticipated" the changes that *Thornton* describes as "temporary". The change in terminology is acceptable if unanticipated refers to the size and timing of the change. *Thornton* and many other economists after *Hume* regarded fluctuations in receipts as part of the adjustment required under the gold standard.[14]

Under *Thornton's* hypothesis, temporary or unanticipated price canges affect the level of output by temporarily changing real wages. Let the money wage be W and let

[13] *Thornton* (1965, pp. 96 - 7) also discusses changes in velocity and mentions the opportunity cost of holding money as a factor affecting velocity. *Thornton* emphasizes the role of confidence (or uncertainty), however.

[14] *Phelps* and *Taylor* (1977) develop a modern form of this argument for a world of rational expectations.

$$L = L\left(\frac{W}{p}\right) L' < 0$$

describe the demand side of the labor market. The demand for labor is a derived demand. Roal and monetary shocks shift the demand for labor along the supply curve, thereby changing the level of employment and output. Substituting for L in eq. (2) makes the short-run output supply curve depend on the domestic price level. Output and the price level are positively related along the aggregate supply curve.

$$y = F\left[K, L\left(\frac{W}{p}\right)\right] + \varepsilon \tag{2'}$$

The quantity equation is the classical spending equation. If we substitute $R + D$ for M and solve for y as a function of p, the spending relation is a rectangular hyperbola in the p, y plane that shifts position as R and D change. Equation (2') and the quantity equation jointly determine p and y. Adjustment of the balance of payments in response to relative prices provides the driving force in fluctuations.

A problem with this approach is that M is the home country stock of base money and py is domestic output at market value. By assuming constant velocity, we have eliminated any effects of relative prices on the distribution of purchases between foreign and home markets.

Brunner (1976) has shown that the rigidity of the quantity theory can be relaxed, and the theory can be brought into closer correspondence with observations showing cyclical changes in the current account balance. Rewrite eq. (1) as

$$\Phi MV + (1 - \Phi^*) M^* V^* X = py \tag{1'}$$

where Φ is the proportion of domestic spending to domestic output and $(1 - \Phi^*)$ is the proportion of exports (foreign spending) to domestic output,

$$\Phi = \Phi(p, p^* X) \quad \Phi_1 < 0 \; ; \; \Phi_2 > 0$$

$$\Phi^* = \Phi^*(p/X, p^*) \; \Phi_1^* > 0 \; ; \; \Phi_2^* < 0$$

Differentiating (1') with respect to y and converting the results to an elasticity, we obtain the slope of the spending relation in an economy with fixed exchange rates.

$$\varepsilon(p, y) = \frac{1}{\Phi^2 \varepsilon(\Phi, p) - \Phi^*(1 - \Phi^*) \varepsilon(\Phi^*, p) - 1} < 0 \tag{6}$$

The elasticity of p with respect to y, $\varepsilon(p, y)$, depends on the relative response of domestic and foreign purchases, and the shares of total spending.

Equation (6) shows that the expenditure equation, EE, obtained from (1′) has the negative slope shown in Figure 1. The position of EE depends on M and M^*. Equation (2′) is the aggregate supply curve, yy. Intersection of EE and yy determines the price level and level of domestic output.

Figure 1

Classical Adjustment to a Real Shock

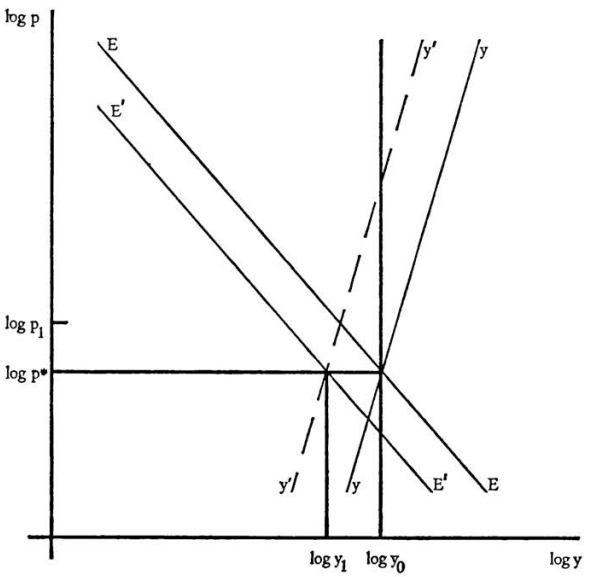

Figure 1 shows some features of the classical system. At output y_0 and price level p^* the system is in flow equilibrium. Real output is at a long-run equilibrium value, y_0, and $p = p^*$, so y_0, p^* is a long-run equilibrium position with $X = 1$. Suppose a real shock reduces output and raises the price level to the position shown by the intersection of $y'y'$ and EE. The amount of domestic spending on home goods falls as p rises. Exports fall and imports rise. The shift of the yy curve along the EE curve brings the economy to a short-run flow equilibrium in the output market at p.

At price level p_1, home prices exceed world prices, and there is a current account deficit. Equation (4) implies that the home country < 0. The loss of reserves lowers R, thereby loses foreign reserves; $\frac{dR}{dt}$ reducing expenditure and the domestic price level. When p reaches $p^* X$, the flow of reserves ceases, $\frac{dR}{dt} = 0$, and the decline in expenditure ends. A new short-run equilibrium is shown at the intersection of $E'E'$ and $y'y'$. In Figure 1, the level of output is shown as y_1; X is assumed to be unity.

If the real shock is permanent, money wages must fall for output to move from y_1 toward y_0. *Thornton's* analysis suggests that an unanticipated, one-time shock induces a smaller adjustment of money wages than of prices, so I hold money wages fixed in this example. Once the shock passes, the short-run supply of output returns to yy.[15] If spending remains at $E'E'$, the domestic price level is less than $p^* X$, a position inconsistent with equilibrium of the balance of payments. Exports rise and imports fall; spending is reallocated from foreign to domestic markets increasing R and shifting the spending curve along yy. Reserves accumulate; the money stock rises; the price level rises; and long-run equilibrium is restored.[16]

The classical quantity theory treats the output of each country as a composite good in both the short-run and the long-run. Emphasis is on short-run changes in the relative prices of domestic and foreign goods and in cost of production (wage) relative to market price. A partial revival of this line of reasoning is found in the monetary approach to the balance of payments where the "law of one price" is invoked to minimize the effect of short-run changes in relative prices and, often improperly, extended to world prices.[17] Emphasis in the monetary ap-

[15] After the recent temporary disappearance of the Peruvian anchovies and maintained increase in the money price of imported oil, the difference between temporary and permanent real shocks is familiar.

[16] The wealth loss during the adjustment from one long-run equilibrium to the next is ignored here. The quotation reproduced above from *Thornton* (1965, p. 118) shows that, contrary to *Patinkin's* (1965) claim, real wealth effects of price changes were recognized by (some) classical writers. *Thornton* recognized that wealth changed, but he appears to have regarded the changes as a secondary effect and the change in real wages and the quantity of output as the primary effects. We can presume that *Thornton's* reference to "all articles whatsoever" includes money balances, although he does not dismiss or mention real balance effects separately.

[17] A difference between recent and older work is the role assigned to interest rates in the demand function for money and in the adjustment

proach is often restricted to the determinants of the long-run stock of reserves and the supply of money. Such emphasis may, at one time, have served the useful role of freeing the theory of balance of payments adjustment from its Keynesian heritage, but neglect of short-run adjustment seems a step back from the level of sophistication achieved by classical economists like *Thornton.*

Keynesian theory introduced asset adjustment as the principal adjustment to monetary policy. The slow adjustment of money wages, recognized by *Thornton,* received more emphasis, but prices were also assumed to adjust slowly. Classical emphasis on adjustment of domestic prices relative to foreign prices was replaced by changes in the market rate of interest. The effect of relative price changes on the goods market was minimized (elasticity pessimism). Relative prices became identified with the market rate of interest and market rates with costs of holding money in lieu of short-term assets or costs of borrowing. The response of spending to interest rates, or the slope of *IS,* determined the effectiveness of monetary policy, and the response of the demand for money to interest rates, or the slope of *LM,* determined the effectiveness of fiscal policy. This argument has become familiar with frequent repetition and has been made recently by *Tobin* and *Buiter* (1976). Many textbooks elaborate the details of the Keynesian transmission mechanism, and I shall not repeat them. Neither do I play on the now familiar distinction between Keynes and the Keynesians. That distinction was not part of the discussion during the first twenty-five years or longer (*Johnson,* 1961). The main points of the monetarist critique were fully developed by the time the distinction became prominent.

Monetarist analysis places much greater emphasis on the role of relative prices in the transmission of monetary policy than either the quantity theory or the Keynesian theory. Interest rate changes are not confined to changes in the cost of borrowing but include the relative prices of many different assets and output. Fluctuations in relative prices and the components of real wealth are the principal means by

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of the balance of payments in modern work. Since p^* is the anticipated price level, we can rewrite eq. (4) as $\frac{dR}{dt} = \tau\left(\frac{p^*}{p}\right)$, describe p^*/p as an interest rate and introduce p^*/p as an argument of the demand function for money and therefore of velocity. Since spending in eq. (6) depends on p relative to p^*, no important change in the formal model results from the introduction of "interest rates".

which the response to government policies spreads from asset markets to output and the price level. The classical mechanism of adjustment — changes in the price level — reappears in monetarist analysis, but now changes in the price level induce substitution between new production and existing assets as well as between domestic and foreign assets and output. Substitution over a broad range of existing assets changes relative prices of assets and the prices of assets relative to new production as in *Brunner* and *Meltzer* (1963, 1976).

The importance given to relative prices in Keynesian analysis differs with the level of abstraction. Much emphasis is given to a broad range of substitutes in general equilibrium macro models, but there is much less emphasis in discussion of policy or policy implications. (See Footnote 8.) Keynesian economists frequently assume away the classical mechanism of adjustment by holding price levels constant during periods of less than full employment, (*Tobin* and *Buiter,* 1976). A fixed price level leaves portfolio adjustment, often narrowly conceived as substitution between money and short-term securities, to do the work elegantly described in the general equilibrium macro model. The additional assumption that bonds and real capital, or bonds and money, are perfect substitutes brings the formal model into closer correspondence with policy recommendations.

The interest rates in *Friedman's* (1956) demand function for money cannot be reduced to a single rate of return, "the interest rate" of Keynesian theory, by assuming than all rates of price change are fully anticipated. The difference between the rate of interest on bonds and equities is approximately (1956, p. 9)

$$r_b - r_e = \frac{1}{r_b}\frac{dr_b}{dt} - \frac{1}{r_e}\frac{dr_e}{dt} + \frac{1}{p}\frac{dp}{dt}$$

where r_b and r_e are interest rates on bonds and equities, $\frac{1}{r}\frac{dr}{dt}$ is the capital gain or loss anticipated (or received) on bonds or equities and $\frac{1}{p}\frac{dp}{dt}$ is the anticipated (or actual) rate of inflation.

The "rational expectation" that actual and anticipated rates of inflation are equal is not sufficient to equate real returns to bonds and equity. Fluctuations in earnings streams, particularly the anticipated earnings accruing to owners of real capital, induce short-run changes in the relative prices of assets and output. Government policies affect anticipations of future earnings by changing the applicable tax rates, by

altering perceived risks, by raising or lowering the net benefits accruing to those who bear risk, and in other ways. Cyclical fluctuations, whether induced by real shocks or by changes in the stocks of financial assets, affect the current and future prices of assets and output.

Moreover, a change in the anticipated rate of inflation affects *Friedman's* demand for money by changing the prices of the goods held as inventories relative to the value of the services of the goods. *Friedman,* like *Thornton,* dismisses the wealth effect of a change in asset values, but I know of no evidence that this channel is less important than others for short-run adjustments. If we denote the prices of assets as P and the price of the output (or services) by p, as before, the per period relative rates of change of the two price levels enter the demand for money and become part of the adjustment process.

Some economists who do not regard themselves as monetarists for policy purposes accept what I have called the monetarist theory of adjustment, just as many economists once accepted the Keynesian theory of adjustment without fully accepting policy statements about the impotence of monetary policy. Theories of adjustment, or transmission, provide a framework for assessing evidence and drawing conclusions about relative effects and about the size and timing of adjustment. Keynesian conclusions may continue to be drawn, and Keynesian policies recommended, by those who accept a monetarist transmission theory in general if they deny specific aspects or make assumptions about empirical magnitudes. *Tobin* and *Buiter* (1976) assume that the price level or rate of inflation remains fixed when there is unemployment. Thus, they deny an important piece of the monetarist adjustment process without denying the validity of the theoretical framework. *Ando* and *Modigliani* (1975) deny that the demand for money depends on wealth and on many of the relative prices just discussed.

Brunner and *Meltzer* draw monetarist policy conclusions from their framework and their judgments about relevant responses. In their version of monetarist theory (1972, 1976) the response of output to changes in money and in debt financed fiscal policy depend on the elasticities of the price level with respect to the monetary base and the stock of government debt. The larger the response of the price level to the base, the larger is the response to monetary policy. The smaller the response of the price level to government expenditure and to debt issued

to finance deficits, the smaller is the response to fiscal policy. Judgments about the relative response of the price level to monetary and fiscal variables lead *Brunner* and *Meltzer* to monetarist policy conclusions. *Stein* (1974) reaches very similar conclusions in a different way.[18] Acceptance of a common theory of adjustment neither eliminates differences in policy nor makes all remaining differences depend on value judgments.

II. Interpreting Unemployment

The monetarist-Keynesian debate is not restricted to differences about the ways in which aggregate spending, output and the price level are brought to a new equilibrium. The meaning and interpretation of measured unemployment differs. This section relates the alternative interpretations to theories of employment.

Keynesians follow Keynes and regard all cyclical unemployment as involuntary, the result of insufficient spending by the private sector. Even if the unemployed receive compensation equal to the prevailing money wage, society loses all of the output that would have been produced at full employment. Hence, government policies to eliminate unemployment have low costs and large social benefit. If the rate of inflation remains at the fully anticipated rate following the recession, there are few costs to offset the benefits of expansionist policies.

In Keynesian theory, not only is cyclical unemployment involuntary, it is uncertain as to timing, duration and frequency. Workers cannot reduce unemployment by reducing money wages, or at least they do not. Downward rigidity of money wages explains the excess supply of labor, and slower adjustment of wages than of the price level explains why real wages rise in periods of recession.

Social policy is based on the Keynesian interpretation. The current legal definition of unemployment treats all cyclical unemployment as "involuntary". A worker is unemployed if he is described as having looked for work at least once in a four week period.[19]

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[18] *Stein* (1976), *Meltzer* (1977) and Korteweg and Meltzer (1978, forthcoming) present evidence showing that in all countries and time periods examined the response of domestic prices to domestic fiscal policy is small.

[19] *Feldstein* (1975) discusses some of the ways in which the definition is expanded.

The problem starts from the ambiguity in *Keynes's* definition of in voluntary unemployment. *Keynes* (1936, p. 15) called unemployment "involuntary" if a rise in the price level that reduces real wages increases employment. The definition and its subsequent use by Keynesians and policymakers ignores two distinctions. One is the distinction between anticipated and unanticipated price and wage changes, the other the distinction between anticipated income and current receipts. The first distinction has been clarified in the extended discussion of the *Phillips*-curve, but the degree to which fluctuations in employment are anticipated remains.

The classical interpretation of unemployment differs from the Keynesian interpretation. The quotation from *Thornton* (1965, pp. 118—19), reproduced above, does not deny the possibility of cyclical unemployment. On the contrary, *Thornton* describes unemployment as "unusual and temporary distress" arising for reasons that are widely known as Keynesian: Money wages are more rigid downward than are prices. For *Thornton,* however, money wages are rigid upward as well if anticipated inflation remains constant.

Thornton's characterization of unemployment as "unusual and temporary distress" is no les sambiguous than *Keynes's* term, "involuntary." The mechanism producing employment is clearer, however. For classical theorists, cyclical fluctuations in employment and output are a consequence of real shocks acting on the quantity of commodities currently demanded by shifting supply and of monetary disturbances acting on spending. Shifts in aggregate spending and in aggregate supply induce larger fluctuations in prices than in money wages, so real wages change inversely to the price level when spending increases and change directly with the price level when supply increases. Unemployment and real wages are positively related following a reduction in spending but are negatively related following a reduction in supply. *Thornton* (1965, pp. 237 - 9) is explicit about the relation of prices and output.[20]

[20] *Thornton's* argument (pp. 237 - 9) has a modern ring. A producer confounds the extra gain resulting from the rise in the price of his inventories "with the other profits of his commerce and is induced, by the apparent success of his undertakings to pursue them with more than usual spirit." *Thornton* subsequently quotes approvingly from *Hume*'s Essay on Money (italics in *Thornton):* "'In my opinion, it is only in this interval or intermediate situation between the acquisition of money and the rise of prices' (Mr. Hume must mean, no doubt, the completion of the rise, and not the commencement

Classical and monetarist interpretations of unemployment differ from the Keynesian interpretation in a similar way. Both treat the type of unemployment observed during mild cycles as a temporary or transitory phenomenon. The monetarist interpretation antedates recent formal work on the theory of employment and fluctuations by *Azariadis* (1975), *Baily* (1974), *Lucas* (1977), *Phelps* (1970) and *Phelps* and *Taylor* (1977). However, recent work by these and other economists, many of whom are not monetarists, provides a better foundation for the monetarist interpretation.

The monetarist interpretation starts from *Friedman*'s (1957) distinction between permanent and transitory income — or between income defined as an expected stream and current receipts.[21] Suppose a worker, who behaves according to the permanent income hypothesis, experiences a cyclical "lay off". The permanent income theory implies that, at first, he has no reason to search for alternative employment or to reduce his real wages. As long as his experience remains consistent with the anticipations he held when he chose his job or career, as modified by subsequent experience, he regards the lay off as a drawing from the anticipated distribution of time between labor and leisure that he used to determine permanent income and lifetime consumption. Each day of lay off contains information leading to a revision of his anticipated income, but each day of lay off has little effect on workers in industries subject to cyclical swings in employment and output.

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of it) 'that the encreasing quantity of gold and silver is favourable to industry.'" A footnote to this passage criticizes *Hume* for suggesting that the increased money changes relative prices at home. *Thornton* argues for the mechanism discussed in a previous section. The increase in money sends money abroad by rising "the gold price of articles above their level in other countries, allowing for the charges of transportation." But this takes time, as *Thornton* reminds his readers in the same footnote. "[I]t is affirmed by French writers that the notes of Mr. Law's bank appeared for a time to have a very powerful influence in extending the demand for labour, and in augmenting the visible ... property of the kingdom."

[21] *Friedman*'s important contribution to the theory of employment (1968) does not rely on this distinction between permanent and transitory income but, instead, emphasizes the difference between anticipated and unanticipated changes in wages or nominal income. Unanticipated and transitory changes are related, of course, and both affect real wages. As used in economics, the two are not the same. The distinction between anticipated and unanticipated separates current or future from past effects of inflation on real values; the distinction between permanent and transitory applies to the effects of fluctuations in economic activity on current receipts and employment.

Every day of lay off is counted as part of measured unemployment, but, as long as income anticipations are not revised, permanent income remains unchanged and the worker is not unemployed *in an economic sense*. There is no loss of aggregate output.

A worker becomes unemployed when he revises, downward, his permanent income. He no longer anticipates that current leisure and future earnings are consistent with his consumption plan. He faces the choice of reducing *income* and consumption either by remaining idle or by reducing his current real wage. If his anticipation is correct, his loss of *income* is a measure of the loss of output to society.

The distinction between measured and economic unemployment is the familiar distinction between current receipts and income, basic to classical and modern theory. For classical economists, as for *Friedman* (1957), anticipated income is known; the timing of receipts is uncertain. Receipts flucttuate around anticipated income, but, as long as anticipations are firmly held, the present value of every negative deviation is offset by anticipated positive deviations. When negative deviations are not offset, anticipations change; workers are unemployed.

There are two sources of uncertainty about the timing of receipts relevant for the aggregate — the real and nominal shocks introduced into the classical model summarized by equations (6) and (2′). Both shocks change current output, y, relative to anticipated output, $F(K, L)$, in equation (2′). Nominal shocks change the price level relative to money wages, and real shocks change current output by ε. If the observed fluctuations in current output are drawings from the anticipated distribution, the deviation of current output from

$$y_0 = F(K, L)$$

does not cause a revision of plans in the aggregate. Any changes in individual plans cancel. The community's anticipated income remains consistent with productive capability, y_0.[22]

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[22] This statement requires adjustment to take account of (1) differences between monetary and barter economies and (2) any differences in the non-pecuniary services of debt and real capital. The reason is that the services of money and any non-pecuniary services of debt and capital are part of income available for consumption but are not included in the market value of the income produced. (The term income used here is, as in the text, distinct from current receipts.) The qualification does not affect the main point in the text if the non-pecuniary services are like y_o, a long-term independent of current receipts.

Classical writers did not, as far as I know, provide an economic explanation of the slower adjustment of wages than of prices. *Keynes*, like *Thornton*, first assumes that wages are slow to adjust, then offers an explanation based on a particular set of assumptions about anticipations (1936, Chap. 19).

The permanent income theory of employment starts by recognizing the difficult inference problem faced by individual workers and employers in an economy subject to real and nominal shocks. Relative prices and the general price level change. A worker who is laid off cannot be certain whether the change is permanent or temporary, whether he will soon return to work at his previous employment, as many do (*Feldstein*, 1975), or must seek new employment. An offer to reduce real wages in recession to maintain employment introduces variability into *income* for the purpose of smoothing current receipts. Unless the worker is certain that the reduction in income resulting from lower real wages today can be fully offset by increases in future real wages and income, lifetime consumption and utility are reduced. The permanent income theory gives no reason for workers to reduce real wages as long as anticipations are unchanged.

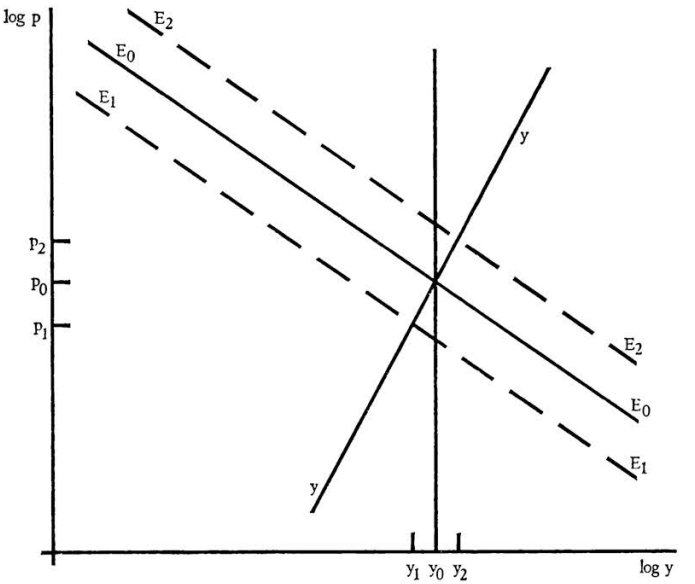
Figure 2 shows the effect of changes in expenditure on output and prices. Anticipated income remains at full employment, y_0, but current output and receipts fluctuate. A nominal shock reduces spending to E_1 E_1; current production falls to y_1, and the price level falls to p_1. At p_1 y_1, the economy reaches temporary, short-run equilibrium. The demand for labor falls. The amount of the labor supplied depends in p, so the quantity supplied increases as p falls. Money wages, w, fall if the assumption that wages change less than prices is correct. Employment is less than L_0, the level of employment when output is y_0, so there is temporary measured unemployment. As long as aggregate anticipated income remains y_0, anticipated lifetime earnings for the labor force remain fixed. The difference between current earnings and anticipated earnings is transitory income.[23]

Measured unemployment varies cyclically in the permanent income theory. At y_1 p_1, employment is less than full employment, L_0, but

[23] For periods of inflation and growth, the classical and permanent income theories of employment should be recast in terms of rates of wage change relative to rates of price change and rates of change of output. This modification is ignored in the text and has no importance for the analysis presented here.

Figure 2

The Effect of Changes in Spending on the Output Market



greater than "Keynesian employment" because w falls. In the Keynesian theory, money wages are completely rigid, and the labor supply curve is drawn as a reverse "L" at the full employment wage. In the permanent income theory, workers do not reduce real wages by lowering money wages in recession, unless anticipated lifetime income changes. Neither do they maintain money wages at the full employment money wage, w_0. To maintain w_0 requires workers to accept more reduction in employment than is consistent with their lifetime plans and current anticipations.

Money wages are "rigid" downward in the permanent income theory but are also "rigid" upward as long as anticipations of future prices and permanent income remain unchanged. In periods of high expenditure, shown as $E_2\,E_2$ in Figure 2, output is y_2, and the price level is p_2 at the intersection of $E_2\,E_2$ and yy; employment and money wages rise. If *Thornton's* assumption is correct, money wages rise less than prices, so real wages fall. Workers could raise the real wage rate to a level equal to $\frac{w_0}{p_0}$ by reducing the supply of labor. Instead, they regard the reduced

real wage and increased employment during this period as part of their experience that includes increased real wages and lower employment following nominal shocks that bring recessions, lower real wages and reduced employment following negative real shocks, and higher real wages and higher employment following positive real shocks. As long as the present value of the gains and losses of real income remains consistent with anticipated lifetime income, there is no reason for the supply curve of labor as a function of the real wage to shift.[24]

The permanent income theory of employment does not deny that workers can speculate on real wages, offering more employment when real wages rise, and reducing employment when real wages fall. The theory suggests, however, that workers as a group must forecast wages and the demand for employment, separating temporary from permanent shocks and real from nominal shocks. This task is easier in a classical world, where relative price changes are restricted to the relative price of domestic and foreign output. In a monetarist economy, relative prices of existing assets and new production of home country goods and services also respond to real and nominal shocks and induce changes in the allocation of spending and in output that must be separated from the aggregate effects. The inference problem is more difficult.

The permanent income theory implies that real wages rise if recession is induced by a nominal shock and fall if recession is induced by real shocks. The simple correlation between real wages and unemployment discussed by *Modigliani* (1977, p. 7) contains no information about the permanent income theory (or any other theory) until it is combined with a statement about the dominant cause of recessions and booms. A positive association between real wages and unemployment during recessions supports the permanent income hypothesis if recessions are mainly the result of shifts in aggregate demand.

Monetarists' policy statements distinguish one large, negative real shock in recent years — the oil embargo and subsequent rise in the relative price of oil in 1973/74. All other post — World War II recessions are attributed to government policies and mainly to monetary policies

[24] *Feldstein* (1975) shows that during relatively mild cycles a rise in measured unemployment does not lead many workers to search. Workers anticipate, correctly, his study suggest, that most will return to work at their previous employment after a short time. For them, as for Thornton, actual and anticipated unemployment is a temporary phenomenon.

as a principal driving force in the economy. A comparison of turning points in real wages and in economic acttivity is not a decisive test of the permanent income theory, but it provides some evidence on a principal implication of the theory.[25] Table 1 compares the peaks and troughs in the economy to the troughs in real wages from 1948 to 1974.

In the first five postwar cycles in the U.S.-real wages rose during all or most of the contraction as the hypothesis implies. In four of the five, the trough in real wages comes at the peak of the preceding expansion or earlier. In the 1957/58 contraction real wages fell for the first months of contraction, but started to rise before the trough in the economy.

Table 1

Dates for Turning Points in Real Wages and Economic Activity 1948 - 1974 (USA)

Trough in Real Wages	Peak in Economy	Trough in Economy
2nd qtr. 1948	Nov. 1948	Oct. 1949
2nd qtr. 1952	July 1953	May 1954
1st qtr. 1958	Aug. 1957	April 1958
2nd qtr. 1960	April 1960	Feb. 1961
4th qtr. 1969	Dec. 1969	Nov. 1970
4th qtr. 1974	Nov. 1973	March 1975

Source: BCD, June 1976, pp. 112 and 93; BCD, Feb. 1977, p. 105.

The sixth contraction combines a real shock and a monetary contraction. The monetary contraction came almost a year after the real shock and followed a sharp reduction in the growth of money. Real wages fell following the real shock, reached a trough during the monetary contraction, fourth quarter 1974, then rose. The movement of real wages during this contraction is consistent with the permanent income hypothesis also.

Quarterly data on real wages are not available for earlier periods in the century. The three highest rates of change of real wages during

[25] Judgment enters in the choice of troughs in real wages. Real wages do not fall in 1953 and 1960. The rate of change becomes near zero or zero in these two cases. I have omitted a peak and trough in real wages following the start of the Korean War. There was no recession.

the years 1900 - 17 are in years of recession. In two the economy reached a trough during the year (1904 and 1908), and in one (1913) the contraction lasted for the entire year. The highest rates of increase in real wages come during the only recessions that occurred. Again, the evidence seems consistent with the permanent income theory of employment, although more detailed tests are required to separate the effects of nominal and real shocks.

Workers as a group cannot expect to find a set of consistent contract provisions that maintain both employment and real wages when there are unanticipated real and nominal shocks that change relative prices and the composition of spending and output. The best they can do is reduce the cost of fluctuations in receipts to the minimum cost consistent with the risks inherent in nature, trade and monetary arrangements. Contractual arrangements distribute the cost of bearing risk among the labor force. Seniority provisions of formal and informal contracts permit experienced workers to reduce variability in employment by accepting variability in real wages. The discussion of Figure 2 above shows that slow adjustment of money wages and fluctuations in aggregate spending imply counter cyclical fluctuations in the real wages of the employed. For the employed the excess of receipts over income during recessions offsets the excess of income over receipts in expansions. For the unemployed, the situation is reversed. They take unemployment in periods of relatively high real wages and work during periods of low real wages. Seniority rules impose this choice on new workers but also permit new workers to anticipate a different future. Where training costs are high, one can expect employers to offer seniority provisions so as to receive the delayed benefits of early training.[26]

Seniority clauses are not the only means by which workers adjust to the risks inherent in nature, trade and monetary or social arrangements. Those with a strong preference for stability of receipts enter occupations or industries where anticipated variability is low, as in the civil service, or predictable, as in teaching, utilities, or most consumer non-durables.

[26] *Gordon* (1977) shows that women and teenagers have been prominent in the groups of workers willing to offer labor services at times of high employment. Rising prices and less flexible money wages induce employers to hire workers with less training and experience, and seniority provisions assure that such workers will not be retained when spending declines and real wages increase. Seniority provisions give the firm a means of reducing real wages paid to such workers without reducing money wages.

Workers in industries subject to fluctuations in activity could, in principle, sign contracts for payment of real wages, and to some degree they do. Indexation of wage contracts reduces the cost of nominal price changes, but ignores the costs imposed on workers and owners of firms by changes in relative prices. Monetarist theory assigns considerably more importance to fluctuations in relative prices of assets and output than Keynesian or classical theory and suggets reasons for the absence of contracts for payment of real wages. A more difficult problem is to explain why firms and workers do not agree in advance to adjust real wages *ex post* by compensating the lossers for losses arising from unanticipated real and nominal shocks.

In the labor market theories of *Azariadis* (1975) and *Baily* (1974), workers who receive variable streams of earnings demand additional return for bearing the risk of fluctuations in receipts. Whether such compensation is demanded or paid depends on the type of income streams available, the preferences of workers at the margin and on social arrangements for sharing risks.[27]

The amount of compensation demanded and paid for accepting the cost of fluctuations in receipts affects the structure of wages but does not affect the interpretation of unemployment. If the variability of receipts (earnings) is correctly anticipated, the timing of receipts is uncertain, but anticipated income is known. Measured unemployment affects lifetime consumption only if it changes the value of the permanent or anticipated income stream. Teachers are not typically regarded as "involuntarily unemployed" in the summer; construction workers are not involuntarily unemployed when it rains; industrial workers are not involuntarily unemployed in mild cycles of short duration.

Social policies that reduce measured unemployment during recessions increase measured real income only if workers substitute current labor for current and future leisure. If permanent income is unaffected by employment policies, the long-run supply of labor is unaffected also. Employment today is exchanged for future leisure. Workers gain from the exchange to the extent that they prefer to choose periods of employment and leisure or if they have positive time preference and are permitted to reduce the variability of receipts without sacrificing income.

[27] Professors and civil servants influence the rules governing unemployment compensation and defining unemployment. Both groups probably include a disproportionate number of workers with strong preferences for low variability of earnings. Who bears the cost of unemployment insurance?

Permanent income theory makes the supply of labor depend on real wages and anticipated lifetime income, not on real wages alone. The theory explains why money wages appear rigid downward and upward (when anticipated inflation remains constant) but does not require errors in anticipation, or disequilibrium to explain wage rigidity. The theory does not require auction markets for labor, a main point of *Modigliani*'s (1977) criticism of rational expectations. Much more important for our results is consistency in workers, plans. Workers must expect to supply lator at real wages that permit them to earn the income required by their anticipated consumption.

Labor market data appear to show that voluntary terminations of employment, "quits," rise in periods of sustained high demand for labor. Quitting is not required to search for employment, as *Gordon* (1977) and others have insisted. Workers "quit" for many reasons but one such reason is to adjust the distribution of hours between labor and leisure — to return to the supply curve of labor implied by their permanent income. The data on "quits" appears to support the theory.

Permanent income is not immutable for individuals or for society. During this century, experience in Britain during the twenties and thirties and in many countries during the thirties or the sixties may have changed anticipations of lifetime earnings. A long depression probably reduces anticipated income and the rate of increase of real wages; a long expansion probably increases anticipated income, thereby encouraging workers to anticipate fewer layoffs. Quitting and increasing "absenteeism" are some of the means workers use to distribute increases in permanent income between goods and leisure.

Fluctuations in economic activity and in employment change receipts. Keynesian theory treats all cyclical changes in receipts as involuntary unemployment. Unemployment compensation is paid to redistribute the private costs of unemployment more evenly. The loss of unemployment becomes mainly a social loss — the output we would have had in a fully employed economy.

Classical theorists described cyclical unemployment as unusual and temporary. The permanent income theory provides a firmer foundation for their interpretation and an explication of the terms "unusual" and "temporary." If anticipated or permanent income remains constant during mild cycles, there is no loss of output. Cyclical fluctuations change receipts relative to income, but do not change income. Un-

employment compensation smooths receipts but can change incomes only to the extent that real wages do not fully adjust to the reduced variability of receipts.

Monetarist policy recommendations are closer to classical than to Keynesian theory. This is shown by the emphasis placed on real wages and the "natural" rate of unemployment and by many denials that employment and output move independently of prices during business cycles.

Classical and monetarist theories of fluctuations recognize risks inherent in nature and trade. To these risks, they add the uncertainty introduced by social arrangements. The gold standard, once regarded as a means of minimizing fluctuations imposed by monetary arrangements, ended in the depression of the thirties. The Bretton Woods system and the widespread use of Keynesian policies encouraged a belief in the fifties and sixties that the new policy arrangements reduced risk. This belief ended for many with the world inflation of the early seventies and the subsequent experience of economies that abandoned "fine tuning" and fixed exchange rates.[28]

III. Conclusion

Thomas *Mayer's* summary of monetarist propositions captures much of the spirit as well as the substance of the monetarist position and the basis of monetarist policy recommendations. The commentators on his paper criticize specific aspects but accept the general argument. All agree that the remaining issues in the monetarist debate are empirical, not analytical.

Monetarists and some modern Keynesians accept rather similar theories of adjustment to real and nominal shocks. I compare this common framework to the early Keynesian and classical theories and indicate some of the principal changes that distinguish the common framework from the earlier theories.

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[28] In a recent paper, *Mayer* (1977) shows that average unemployment and loss of output in 1900 - 29 are not significantly larger under the gold standard than under the dollar standard from 1948 or 1953 to 1975. *Mayer* recognizes that the average unemployment rate or its variance is not an entirely adequate measure of fluctuations induced by policy arrangements when differences in the extent of real shocks and changes in social arrangements are neglected. Moreover, the risks or costs introduced by social arrangements depend not only on the variability of output but on the variability of prices.

Differences in monetarist and Keynesian policy recommendations are not entirely explained by differences about the size of relative responses, although these differences receive considerable attention in discussions of monetary and fiscal policy. Two related issues have, until recently, remained in the background during the monetarist controversy. Yet, they are the basis of many of the differences in policy and, I believe, help to explain why economists who accept the same formal analysis can be identified as monetarists or Keynesians.

One of the issues is the nature and meaning of unemployment. Keynesians, like *Keynes,* treat all cyclical unemployment as "involuntary," a loss of output to society and, if not compensated, a loss of income to the individuals who are unemployed. This reasoning ignores the distinction between income and current receipts basic to the model of time preference that economists use. Monetarists, like mainstream classical economists, distinguish between current receipts and income and regard much of the unemployment observed during mild cycles as a consequence of fluctuations in receipts. Cyclical unemployment alters permanent or anticipated income streams and consumption only if fluctuations in receipts cause a reevaluation of the mean level or variability of earnings from particular occupations and in the aggregate.

Social arrangements can inncrease or reduce the risks inhepent in nature and trade. Government policies that change the relation between risk and return, that socialize or collectivize risk, or that reduce fluctuations, change anticipated income and the variability of income streams. Optimal social arrangements minimize fluctuations in a society dominated by individuals who prefer smooth to variable streams. The extent to which macro policies reduce fluctuations and lower risk without reducing returns is the analytical and empirical issue familiarly known as "rules versus authority." That issue, long in the background of the monetarist debate, now emerges as a central issue in discussions of the policy implications of a theory incorporating rational expectations *Lucas* (1977), *Prescott* (1977), *Phelps* and *Taylor* (1977).

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Zusammenfassung

Monetaristische, Keynesianische und Quantitäts-Theorien

Monetarismus ist weder eine wiederentdeckte Quantitätstheorie noch eine Neuauflage der keynesianischen Theorien. Thomas *Mayer's* Bilanz der monetaristischen Lehrsätze* erfaßt viel sowohl von dem Charakter als auch vom

* Kredit und Kapital, 8. Jg. (1975), S. 191 ff. und S. 293 ff.

Inhalt monetaristischer Sätze über eine umfassende Politik in einer geschlossenen Volkswirtschaft. Sie arbeitet Ähnlichkeiten und Unterschiede der monetaristischen und keynesianischen Theorien gut heraus.

Die formale Ähnlichkeit von monetaristischer und keynesianischer Theorie ergibt sich aus der Entwicklung beider Theorien bis zu einem Punkt, bei dem die verbleibenden Unterschiede nur noch empirischer Natur sind. Dies ist jedenfalls die Position, die in der einen oder anderen Weise von Thomas *Mayer* und den meisten Kommentatoren seines Aufsatzes vertreten wird.

Die vorliegende Arbeit führt viele der hauptsächlichen Unterschiede zwischen den monetaristischen, keynesianischen und Quantitäts-Theorien auf drei miteinander in Beziehung stehende Ursprünge zurück. Einer davon ist die Rolle der relativen und absoluten Preise beim Anpassungsprozeß von einer Gleichgewichtslage zur anderen. Ein zweiter ist die Auswirkung von Schwankungen des Realeinkommens, von Risikoänderungen und der Vorwegnahme von Änderungen der relativen Preise einschließlich der Preise für reale und nominale Anlagen. Der letzte schließlich ist ein wesentlicher Unterschied, der zu unterschiedlichen Politik-Empfehlungen von Keynesianern und Monetaristen führt.

Beschäftigungs- und Produktionsschwankungen werden vom monetaristischen Standpunkt ausgehend von einem Zeitpräferenzen-Modell erklärt, das im übrigen bei vielen ökonomischen Theorien eine Rolle spielt. Das Modell unterscheidet zwischen erwartetem Einkommen und laufenden Bezügen oder (in *Friedman's* Terminologie) zwischen dauerndem und vorübergehendem Einkommen. Es geht von einer ganz anderen Erklärung der Unterbeschäftigung aus als die keynesianische Theorie (sowohl die ältere als auch die jüngere), in der jede konjunkturelle Unterbeschäftigung „unfreiwillig" ist.

Es werden einige Folgerungen aus der Theorie des dauerhaften Einkommens gezogen und der Grund für die Annahme diskutiert, daß zwischen alternativen Theorien der Unterbeschäftigung unterschieden werden kann.

Summary

Monetarist, Keynesian and Quantity Theories

Monetarism is neither the quantity theory rediscovered nor Keynesian theory rewritten. Thomas *Mayer*'s summary of monetarist propositions* captures much of the spirit as well as the substance of monetarist proposition about aggregate policy in a closed economy and brings out similarities and differences between monetarist and Keynesian theories.

The formal similarity between monetarist and modern Keynesian theory is the result of development of both theories to a point at which the remaining differences are empirical. This is the position taken, in one way or another, by Thomas *Mayer* and most of the commentators on his paper.

* Kredit und Kapital, Vol. 8 (1975) pp. 191 and pp. 293.

The paper traces many of the principal differences between monetarist, Keynesian and quantity theories to three related sources. One is the role of relative and absolute prices in the process of adjusting from one equilibrium position to the next. A second is the effect of fluctuations in real income, changes in risk and anticipations on relative prices including the prices of real and nominal assets. A third is the meaning and interpretation of fluctuations in output and employment. The last is a principal difference leading to differences in the policy recommendations by economists identified as Keynesian and monetarists.

Monetarist interpretations of fluctuations in employment and output start from the model of time preference that underlies much of economic theory. The model distinguishes between anticipated income and current receipts or, in *Friedman*'s version between permanent and transitory income. This model suggests a very different interpretation of unemployment than the Keynesian theory, in old or new forms, where all cyclical unemployment is regarded as "involuntary". Some implications of the "permanent income theory" are drawn, and there is discussion of evidence that could discriminate between alternative theories of unemployment.

Résumé

Théories monétaristes, keynesiennes et quantitatives

Le monétarisme n'est ni une théorie redécouverte de la quantité ni une reformulation des théories keynesiennes. Le bilan des thèses monétaristes tiré par Thomas *Mayer** retient une bonne part du caractère et de la teneur des thèses monétaristes sur une politique globalisante dans une économie fermée. Ce bilan fait très bien ressortir les similarités et les disparités existant entre les théories monétaristes et keynesiennes.

La similarité formelle des théories monétariste et keynesienne résulte du développement des deux théories jusqu'au point où les divergences restantes ne sont plus que de nature empirique. C'est en tout cas la position défendue d'une manière ou d'une autre par Thomas *Mayer* et par la plupart des commentateurs de son étude.

Le présent article impute nombre des principales différences constatées entre les théories monétariste, keynesienne et quantitative à trois origines qui ne sont pas sans lien entre elles. Une de ces origines est le rôle des prix relatifs et absolus dans le processus d'ajustement d'une situation d'équilibre à une autre. Une deuxième est l'effet des variations du revenu réel, des changements de risques et des anticipations de modifications des prix relatifs, y compris des prix des placements réels et nominaux. La troisième origine enfin est une divergence essentielle qui conduit les keynesiens et les monétaristes à formuler des recommandations politiques dissemblables.

* cfr. Kredit und Kapital, 8e année (1975), pages 191 et suites ainsi que 293 et suites.

Les fluctuations d'emploi et de production s'expliquent du point de vue monétariste au départ d'un modèle de préférences temporelles, qui intervient d'ailleurs dans de nombreusses théories économiques. Le modèle distingue entre revenu escompté et salaires courants ou (selon la terminologie de Friedman) entre revenu durable et transitoire. Les monétaristes ont une toute autre explication du sous-emploi que les keynesiens (tant dans l'ancienne que dans la nouvelle théorie) pour lesquels tout sous-emploi conjoncturel est „accidentel".

Certaines conclusions sont tirées de la théorie du revenu durable avant d'examiner les fondements de l'hypothèse de la possibilité de dégager des théories alternatives du sous-emploi.