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Volume Title: A Theoretical Framework for Monetary Analysis

Volume Author/Editor: Milton Friedman

Volume Publisher: NBER

Volume ISBN: 0-87014-233-X

Volume URL: <http://www.nber.org/books/frie71-1>

Publication Date: 1971

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Chapter URL: <http://www.nber.org/chapters/c0915>

Chapter pages in book: (p. 15 - 29)

(7) is the set of variables other than scale affecting the productivity of money balances. At least one of these—namely, expectations about economic stability—is likely to be common to business enterprises and ultimate wealth holders.

With these interpretations of the variables, equation (7), with w excluded, can be regarded as symbolizing the business demand for money and, as it stands, symbolizing aggregate demand for money, although with even more serious qualifications about the ambiguities introduced by aggregation.

5. The Keynesian Challenge to the Quantity Theory

The income-expenditure analysis developed by John Maynard Keynes in his *General Theory* (Keynes 1936) offered an alternative approach to the interpretation of changes in nominal income that emphasized the relation between nominal income and investment or autonomous expenditures rather than the relation between money income and the stock of money.

Keynes's basic challenge to the reigning theory can be summarized in three propositions that he set forth:

1. As a purely *theoretical* matter, there need not exist, even if all prices are flexible, a *long-run equilibrium* position characterized by "full employment" of resources.

2. As an *empirical* matter, prices can be regarded as rigid—an institutional datum—for *short-run economic fluctuations*; that is, for such fluctuations, the distinction between real and nominal magnitudes that is at the heart of the quantity theory is of no importance.

3. The demand function for money has a particular empirical form—corresponding to absolute liquidity preference—that makes velocity highly unstable much of the time, so that changes in the quantity of money would, in the main, simply produce changes in V in the opposite direction. This proposition is critical for both propositions (1) and (2), though the reasons for absolute liquidity preference are different in the long run and in the short run. Absolute liquidity preference at an interest rate approaching zero is a necessary though not a sufficient condition for proposition (1). Absolute liquidity preference at the "conventional" interest rate explains why Keynes regarded the quantity equation, though perfectly valid as an identity, as largely useless for policy or for predicting short-run fluctuations in nominal and real income (identical by proposition [2]). In its place, Keynes put the income identity supplemented by a stable propensity to consume.

a) *Long-Run Equilibrium*

The first proposition can be treated summarily because it has been demonstrated to be false. Keynes's error consisted in neglecting the role of wealth in the consumption function—or, stated differently, in neglecting the existence of a desired stock of wealth as a goal motivating savings.⁵ All sorts of frictions and rigidities may interfere with the attainment of a hypothetical long-run equilibrium position at full employment; dynamic changes in technology, resources, and social and economic institutions may continually change the characteristics of that equilibrium position; but there is no fundamental "flaw in the price system" that makes unemployment the natural outcome of a fully operative market mechanism.⁶

b) *Short-Run Price Rigidity*⁷

Alfred Marshall's distinction among market equilibrium, short-period equilibrium, and long-period equilibrium was a device for analyzing

⁵ Keynes, of course, verbally recognized this point, but it was not incorporated in his formal model of the economy. Its key role was pointed out first by Haberler (1941, pp. 242, 389, 403, 491–503) and subsequently by Pigou (1947), Tobin (1947), Patinkin (1951), and Johnson (1961).

⁶ This proposition played a large role in gaining for Keynes the adherence of many noneconomists, particularly the large band of reformers, social critics, and radicals who were persuaded that there was something fundamentally wrong with the capitalist "system." There is a long history of attempts, some highly sophisticated, to demonstrate that there is a "flaw in the price system" (the title of one such attempt [Martin 1924]), attempts going back at least to Malthus. In modern times, one of the most popular and persistent is the "social credit" doctrine of Major C. H. Douglas, which even spawned a political party in Canada that captured control (in 1935) of the government of one of the Canadian provinces (Alberta) and attempted to implement some of Major Douglas's doctrines. This policy ran into legal obstacles and had to be abandoned. The successor party now (1969) controls Alberta and British Columbia. But, prior to Keynes, these attempts had been made primarily by persons outside of the mainstream of the economics profession, and professional economists had little trouble in demonstrating their theoretical flaws and inadequacies.

Keynes's attempt was therefore greeted with enthusiasm. It came from a professional economist of the very highest repute, regarded, and properly so, by his fellow economists as one of the great economists of all time. The analytical system was sophisticated and complex, yet, once mastered, appeared highly mechanical and capable of yielding far-reaching and important conclusions with a minimum of input; and these conclusions were, besides, highly congenial to the opponents of the market system.

Needless to say, the demonstration that this proposition of Keynes's is false, and even the acceptance of this demonstration by economists who regard themselves as disciples of the Keynes of *The General Theory*, has not prevented the non-economist opponents of the market system from continuing to believe that Keynes proved the proposition, and continuing to cite his authority for it.

⁷ We are indebted to a brilliant book by Leijonhufvud (1968) for a full ap-

the dynamic adjustment in a particular market to a change in demand or supply. This device had two key characteristics. One, the less important for our purposes, is that it replaced the continuous process by a series of discrete steps—comparable with approximating a continuous function by a set of straight-line segments. The second is the assumption that prices adjust more rapidly than quantities, indeed, so rapidly that the price adjustment can be regarded as instantaneous. An increase in demand (a shift to the right of the long-run demand curve) will produce a new market equilibrium involving a higher price but the same quantity. The higher price will, in the short run, encourage existing producers to produce more with their existing plants, thus raising quantity and bringing prices back down toward their original level, and, in the long run, attract new producers and encourage existing producers to expand their plants, still further raising quantities and lowering prices. Throughout the process, it takes time for output to adjust but no time for prices to do so. This assumption has no effect on the final equilibrium position, but it is vital for the path to equilibrium.

This Marshallian assumption about the price of a particular product became widely accepted and tended to be carried over unthinkingly to the price level in analyzing the dynamic adjustment to a change in the demand for or supply of money. As noted above, the Cambridge cash-balances equation lends itself to a demand-supply interpretation along Marshallian lines (Pigou 1917). So interpreted, a change in the nominal quantity of money (a once-for-all shift in the supply schedule) will require a change in one or more of the variables on the right-hand side of equation (6)— k , or P , or y —in order to reconcile demand and supply. In the final full equilibrium, the adjustment will, in general, be entirely in P , since the change in the nominal quantity of money need not alter any of the "real" factors on which k and y ultimately depend.⁸ As in the Marshallian case, the final position is not affected by relative speeds of adjustment.

There is nothing in the logic of the quantity theory that specifies the dynamic path of adjustment, nothing that requires the whole adjustment to take place through P rather than through k or y . It was widely recog-

preciation of the importance of this proposition in Keynes's system. This subsection and the one that follows, on the liquidity preference function, owe much to Leijonhufvud's penetrating analysis.

⁸ The "in general" is inserted to warn the reader that this is a complex question, requiring for a full analysis a much more careful statement of just how the quantity of money is increased. However, these more sophisticated issues are not relevant to the point under discussion and so are bypassed.

nized that the adjustment during what Fisher, for example, called "transition periods" would in practice be partly in k and in y as well as in P . Yet this recognition was not incorporated in formal theoretical analysis. The formal analysis simply took over Marshall's assumption. In this sense, the quantity theorists can be validly criticized for having "assumed" price flexibility—just as Keynes can be validly criticized for "assuming" that consumption is independent of wealth, even though he recognized in his asides that wealth has an effect on consumption.

Keynes was a true Marshallian in method. He followed Marshall in taking the demand-supply analysis as his framework. He followed Marshall in replacing the continuous adjustment by a series of discrete steps and so analyzing a dynamic process in terms of a series of shifts between static equilibrium positions. Even his steps were essentially Marshall's, his short-run being distinguished from his long-run by the fixity of the aggregate capital stock. However, he tended to merge the market period and the short-run period, and, true to his own misleading dictum, "in the long run we are all dead," he concentrated almost exclusively on the short run.

Keynes also followed Marshall in assuming that one variable adjusted so quickly that the adjustment could be regarded as instantaneous, while the other variable adjusted slowly. Where he deviated from Marshall, and it was a momentous deviation, was in reversing the roles assigned to price and quantity. He assumed that, at least for changes in aggregate demand, quantity was the variable that adjusted rapidly, while price was the variable that adjusted slowly,⁹ at least in a downward direction. Keynes embodied this assumption in his formal model by expressing all variables in wage units, so that his formal analysis—aside from a few passing references to a situation of "true" inflation—dealt with "real" magnitudes, not "nominal" magnitudes (Keynes 1936, pp. 119, 301, 303). He rationalized the assumption in terms of wage rigidity arising partly from money illusion, partly from the strength of trade unions. And, at a still deeper level, he rationalized wage rigidity by proposition (1): under conditions when there was no full-employment equilibrium, there was also no equilibrium nominal price level; something had to be brought in from outside to fix the price level; it might as well be institutional wage rigidity. Put differ-

⁹ I have referred to "quantity," not "output," because I conjecture that Keynes, if pressed to distinguish the market from the short-run period, would have done so by regarding quantity available to purchase as adjusting rapidly in the market period largely through changes in inventories, and in the short-run period through changes in output.

ently, flexible nominal wages under such circumstances had no economic function to perform; hence they might as well be made rigid.

However rationalized, the basic reason for the assumption was undoubtedly the lack of concordance between observed phenomena and the implications of a literal application of Marshall's assumption to aggregate magnitudes. Such a literal application implied that economic fluctuations would take the form wholly of fluctuations in prices with continuous full employment of men and resources. Clearly, this did not correspond to experience. If anything, at least in the decade and a half between the end of World War I and the writing of *The General Theory*, economic fluctuations were manifested to a greater degree in output and employment than in prices. It therefore seemed highly plausible that, at least for aggregate phenomena, relative speeds of adjustment were just the reverse of those assumed by Marshall.¹⁰

Keynes explored this penetrating insight by carrying it to the extreme: all adjustment in quantity, none in price. He qualified this statement by assuming it to apply only to conditions of underemployment. At "full" employment, he shifted to the quantity-theory model and asserted that all adjustment would be in price—he designated this a situation of "true inflation." However, Keynes paid no more than lip service to this possibility, and his disciples have done the same; so it does not misrepresent the body of his analysis largely to neglect the qualification.

Given this assumption, a change in the nominal quantity of money means a change in the real quantity of money. In equation (6) we can divide through by P , making the left-hand side the real quantity of money. A change in the (nominal and real) quantity of money will then be matched by a change in k or in y .

Nothing up to this point seems to prevent Keynes from having a purely monetary theory of economic fluctuations, with changes in M being reflected entirely in y . However, this conflicted with Keynes's interpretation of the facts of the Great Depression, which he regarded, I believe erroneously, as showing that expansive monetary policy was ineffective in stemming a decline (Friedman 1967). Hence, he was inclined to interpret changes in M as being reflected in k rather more

¹⁰ I do not mean to suggest that Marshall's assumption is always the best one for particular markets. On the contrary, one of the significant advances in recent years in relative price theory is the development of more sophisticated price adjustment models that allow the rates of adjustment of both price and quantity to vary continuously between instantaneous and very slow adjustment. However, these developments are not directly relevant to the present discussion, although they partly inspire section 12 below.

than in y . This is where his proposition (3) about liquidity preference enters in.

Indeed, in the most extreme, and I am tempted to say purest, form of his analysis, Keynes supposes that the whole of the adjustment will be in k . And, interestingly enough, this result can also be regarded as a direct consequence of his assumption about the relative speed of adjustment of price and quantity. For k is not a numerical constant but a function of other variables. It embodies liquidity preference. In Keynes's system, the main variable it depends on is the interest rate. This too is a price. Hence, it was natural for Keynes to regard it as slow to adjust, and to take, as the variable which responds, the real quantity of money people desire to hold.

If changes in M do not produce changes in y , what does? Keynes's answer is the need to reconcile the amount some people want to spend to add to the stock of productive capital with the amount the community wants to save to add to its stock of wealth. Hence Keynes puts at the center of his analysis the distinction between consumption and saving, or more fundamentally, between spending linked closely to current income and spending that is largely independent of current income.

As a result of both experience and further theoretical analysis, there is hardly an economist today who accepts Keynes's conclusion about the strictly passive character of k , or the accompanying conclusion that money (in the sense of the quantity of money) does not matter, or who will explicitly assert that P is "really" an institutional datum that will be completely unaffected even in short periods by changes in M (Friedman 1968, 1970b).

Yet Keynes's assumption about the relative speed of adjustment of price and quantity is still a key to the difference in approach and analysis between those economists who regard themselves as Keynesians and those who do not. Whatever the first group may say in their asides and in their qualifications, they treat the price level as an institutional datum in their formal theoretical analysis. They continue to regard changes in the nominal quantity of money as equivalent to changes in the real quantity of money and hence as having to be reflected in k and y . And they continue to regard the initial effect as being on k . The difference is that they no longer regard interest rates as institutional data, as Keynes in considerable measure did. Instead, they regard the change in k as requiring a change in interest rates which in turn produces a change in y . Hence, they attribute more significance to changes in the quantity of money than Keynes and his disciples did in the first decade or so after the appearance of *The General Theory*.

A striking illustration is provided in a recent Cowles Foundation Monograph, edited by Donald Hester and James Tobin, on *Financial Markets and Economic Activity* (Hester and Tobin 1967). A key essay in that book presents a comparative static analysis of the general equilibrium adjustment of stocks of assets. Yet the distinction between nominal and real magnitudes is not even discussed. The entire analysis is valid only on the implicit assumption that nominal prices of goods and services are completely rigid, although interest rates and real magnitudes are flexible.¹¹

The National Bureau series of monetary studies illustrates the other side of the coin—the approach of those of us who do not regard ourselves as Keynesians. Many of the questions discussed in these monographs would not have appeared to be open questions, and large parts of them would never have been written, had we, implicitly or explicitly, accepted Keynes's assumption that prices are an institutional datum.

c) *Absolute Liquidity Preference*

Keynes gave a highly specific form to equation (6) or (7). The quantity of money demanded, he argued, could be treated as if it were divided

¹¹ See Tobin and Brainard (1967). A specific example documenting this statement is that Tobin and Brainard explicitly assume that central banks can determine the ratio of currency (or high-powered money) to total wealth including real assets (Hester and Tobin 1967, pp. 61–62). If prices are flexible, the central bank can determine only nominal magnitudes, not such a real ratio.

Other papers in Monograph 21, notably the paper by Brainard, "Financial Institutions and a Theory of Monetary Control" (Brainard 1967), make the same implicit assumptions. The word "prices" does not appear in the cumulative subject index of this monograph and of two companion volumes, Monographs 19 and 20.

Still another more recent example is a paper by the same authors, "Pitfalls in Financial Model Building" (Tobin and Brainard 1968), in which they present a simulation of a "fictitious economy of our construction." In this economy, the replacement value of physical assets is used as the numeraire of the system, and all prices are expressed relative to the replacement value. The result is that the system—intended to illuminate the problems of monetary analysis—takes the absolute price level as determined outside the system. The Central Bank is implicitly assumed to be able to determine the *real* and not merely the *nominal* volume of bank reserves.

Another striking example is Gramley and Chase (1965). In this article, the assumption about price rigidity is explicit and presented as if it were only a tentative assumption made for convenience of analysis. Yet the empirical significance Gramley and Chase attach to their results belies this profession.

See also the econometric study by Goldfeld (1966), which concentrates on real forms of the functions estimated because of "the superiority of the deflated version" (p. 166).

Evidence for a somewhat earlier period is provided by Holzman and Bronfenbrenner (1963). Theories of inflation stemming from the Keynesian approach stress institutional, not monetary, factors.

into two parts, one part, M_1 , "held to satisfy the transactions- and precautionary-motives," the other, M_2 , "held to satisfy the speculative-motive" (Keynes 1936, p. 199). He regarded M_1 as a roughly constant fraction of income. He regarded the (short-run) demand for M_2 as arising from "*uncertainty* as to the future of the rate of interest" and the amount demanded as depending on the relation between current rates of interest and the rates of interest expected to prevail in the future (Keynes 1936, p. 168; italics in original). Keynes, of course, emphasized that there was a whole complex of interest rates. However, for simplicity, he spoke in terms of "the rate of interest," usually meaning by that the rate on long-term securities that involved minimal risks of default—for example, government bonds. The key distinction to Keynes was between short-term and long-term securities, not between securities fixed in nominal value and those that were not. The latter distinction was rendered irrelevant by his assumption that prices were rigid.

The distinction between short-term and long-term securities was important to Keynes because it corresponded to differences in risk of capital gain or loss as a result of changes in interest rates. For short-term securities, changes in interest rates would have little effect. For long-term securities, the effect is important. Leijonhufvud has argued, and we believe correctly, that Keynes used the term "money" as referring not only to currency and deposits narrowly defined but to the whole range of short-term assets that provided "liquidity" in the sense of security against capital loss arising from changes in interest rates.¹² Needless to say, Keynes also regarded other kinds of risks, such as risks of default, as highly relevant, but, consistent with his proposition (2), he almost entirely disregarded risks arising from changes in the price level of goods and services (Leijonhufvud 1968, chap. 2).

It is therefore somewhat misleading to regard Keynes, as most of the literature does, as distinguishing between "money" and "bonds." Nonetheless, we shall continue to follow current practice and use that terminology. One justification for doing so is that Keynes did treat the short-term assets he labeled "money" as yielding no interest return. (It is well to recall that he was writing at a time when short-term interest rates were extremely low both absolutely and relative to long-term rates. His procedure would seem highly unrealistic today.)

¹² In this respect, the Radcliffe Committee is faithful to Keynes in treating "liquidity" broadly defined as the relevant monetary aggregate rather than "money" narrowly defined.

To formalize Keynes's analysis in terms of the symbols we have used so far, we can write his demand function as

$$\frac{M}{P} = \frac{M_1}{P} + \frac{M_2}{P} = k_1 y + f(r - r^*, r^*), \quad (8)$$

where r is the current rate of interest, r^* is the rate of interest expected to prevail, and k_1 , the analogue to the inverse of income velocity of circulation of money, is treated as determined by payment practices and hence as a constant at least in the short run.¹³ The current interest rate, r , is an observed magnitude. Hence it will be the same for all holders of money, if, like Keynes, we abstract from the existence of a complex of interest rates. The expected rate, r^* , is not observable. It may differ from one holder to another and, for each holder separately, is to be interpreted as the mean value of a probability distribution, not as a single value anticipated with certainty. For an aggregate function, r^* should strictly speaking be interpreted as a vector, not a number. Though I have introduced P into the equation for consistency with my earlier equations, Keynes omitted it because of his proposition (2), which meant that P , or, more precisely, the wage rate, was taken to be a constant.

In a "given state of expectations," that is, for a given value of r^* , the higher is the current rate of interest, the lower will be the amount of money people would want to hold for speculative motives. The cost of holding money instead of securities would be greater in two ways: first, a larger amount of current earnings would be sacrificed; second, it would be more likely that interest rates would fall, and hence security prices rise, and so a larger amount of capital gains would be sacrificed.

Although expectations are given great prominence in developing the liquidity function expressing the demand for M_2 , Keynes and his followers generally did not explicitly introduce them, as I have done, into that function. For the most part, Keynes and his followers in practice treated the amount of M_2 demanded simply as a function of the current interest rate, the emphasis on expectations serving only as a reason for their attribution of instability to the liquidity function.¹⁴

The reason for this omission is their concentration on the short-run demand function. For that function, they regarded r^* as fixed, so that the speculative demand was a function of r alone. I have introduced

¹³ Later writers in this tradition have argued that k_1 too should be regarded as a function of interest rates. See Baumol (1952), and Tobin (1956). However, this issue is not relevant to the present discussion.

¹⁴ A notable exception is Tobin (1958, pp. 65-86).

r^* in order to distinguish between the different reasons that are implicit in Keynes's analysis for absolute liquidity preference in the short run and the long run.

Keynes's special twist was less expressing the demand function in the general form described by equation (8) than the particular form he gave to the function $f(r - r^*, r^*)$. For given r^* , he believed that this function would be highly elastic at $r = r^*$, the degree of elasticity at an observed numerical value of r depending on how homogenous the expectations of different holders of money are and how firmly they are held.¹⁵ Let there be a substantial body of holders of money who have the same expectation and who hold that expectation firmly, and f will become perfectly elastic at that current interest rate. Money and bonds would become perfect substitutes; liquidity preference would become absolute. The monetary authorities would find it impossible to change the interest rate because speculators holding these firm expectations would frustrate them.

Under such circumstances, if the monetary authorities sought to increase the amount of money by buying bonds, this would tend to raise bond prices and lower the rate of return on bonds. Even the slightest lowering would, Keynes argued, lead speculators with firm expectations to absorb the additional money balances and sell the bonds demanded by the holders of money. The result would simply be that the community as a whole would be willing to hold the increased quantity of money; k would be higher and V lower. Conversely, if the monetary authorities decreased the amount of money by selling bonds, this would tend to raise the rate of interest, and even the slightest rise would induce the speculators to absorb the bonds offered. (In Keynes's analysis, the result would be the same if the amount of money were increased or decreased by operations that added to or subtracted from total wealth, rather than by substituting one form of wealth for another, because he assumed that wealth had no direct effect on spending.)

Or, again, suppose there is an increase in nominal income for whatever reason. That will require an increase in M_1 , which can come out of M_2 without any further effects. Conversely, any decline in M_1 can be added to M_2 without any further effects. The conclusion is that *under circumstances of absolute liquidity preference* income can change without a change in M or in interest rates and M can change without

¹⁵ Tobin (1958) presents an excellent and illuminating analysis of this case. Because he assumes that shifts into or out of securities involve commitments for a finite period equal to the unit of time in terms of which the interest rate is expressed, his critical value is not $r = r^*$ but $r = r^*/(1 + r^*)$, current income on the securities compensating for an expected capital loss.

a change in income or in interest rates. The holders of money are in metastable equilibrium, like a tumbler on its side on a flat surface; they will be satisfied with whatever amount of money happens to be.

For the long-run demand schedule, the reason for liquidity preference is different. In long-run equilibrium, r must equal r^* , so $f(r - r^*, r^*)$ reduces to a function of r^* alone. Let there be a deficiency of investment opportunities, the kind of situation envisaged in Keynes's proposition (1), so that r^* becomes very low. The lower the rate, the lower the return from capital assets other than money—whether these be bonds, equities, or physical assets (recall that because of the assumption that the price level is rigid, Keynes did not regard the distinction among these as important). Accordingly, the lower r^* , the lower the cost of holding money. At a sufficiently low, yet finite rate, the extra return from holding nonmoney assets would only just compensate for the extra risks involved. Hence at that rate, liquidity preference would be absolute. The "market rate" of interest could not be indefinitely low; a bottom limit was set by the widespread desire to substitute money for other assets at low interest rates.

This conclusion was a key element in Keynes's proposition (1). One way to summarize his argument for that proposition is in terms of a possible conflict between the "market" and the "equilibrium" rate of interest. If investment opportunities were sparse, yet the public's desire to save were strong, the "equilibrium" rate of interest, he argued, might have to be very low or even negative to equate investment and saving. But there was a floor to the "market rate" set by liquidity preference. If this floor exceeded the "equilibrium rate," he argued, there was a conflict that could only be resolved by unemployment that frustrated the public's thriftiness. The fallacy in this argument is that the introduction of money not only introduces a floor to the "market rate"; it also sets a floor to the "equilibrium rate." And, in the long run, the two floors are identical. This is the essence of the so-called Pigou effect (Friedman 1962, pp. 262–63).

Neither Keynes himself, nor most of his disciples and followers, distinguished as sharply as I have between the short-run and long-run liquidity traps. They tended to merge the two and, in line with the general emphasis on the short run, to stress elasticity with respect to current, not expected, interest rates.¹⁶

Keynes regarded absolute liquidity preference as a strictly "limiting case" of which, though it "might become practically important in

¹⁶ Tobin makes an explicit distinction of this kind, though not in connection with a liquidity trap as such.

future," he knew "of no example . . . hitherto" (Keynes 1936, p. 207). However, he treated velocity as if in practice its behavior frequently approximated that which would prevail in this limiting case.

Absolute liquidity preference is no longer explicitly avowed by today's economists—the failure of central banks in their attempts to peg interest rates at low levels have made that proposition untenable. Yet, like absolutely rigid prices, it still plays an important role in the theorizing of many an economist. It is implicit in the tendency to regard k or velocity as passively adjusting to changes in the quantity of money. It is explicit in the tendency to regard the demand for money as "highly" elastic with respect to interest rates.

Consider again equation (6). Let there be a change in M . Economists in the Keynesian tradition continue, as noted earlier, to regard P as an institutional datum and so unaffected. They must therefore regard the change in M as affecting either k or y or both. With absolute liquidity preference, k can absorb the impact without any change in the interest rate. Since they take the interest rate as the only link between monetary change and real income, the whole of the change would then be absorbed in k with no effect on y . If liquidity preference is not absolute, k can change only through a change in the interest rate. But this has effects on y through investment spending. The more elastic is the demand for money, the less interest rates will have to change. The more inelastic are investment spending and saving with respect to the interest rate, the less will any given change in the interest rate affect y . Hence the tendency for these economists to regard k as absorbing the main impact of changes in M means that implicitly or explicitly they regard the demand for money as highly elastic with respect to the interest rate and investment spending and saving as highly inelastic.

The tendency on the part of many economists to assume implicitly that prices are an institutional datum and that the demand for money is highly elastic with respect to the interest rate underlies some of the criticisms that have been directed against earlier work by myself and associates. We have been interpreted, wrongly, we believe, as saying that k is completely independent of interest rates (Friedman 1966). In that case, changes in M need not be reflected at all in k . If, also, P is taken as an institutional datum, all of the effect will be on y . This is the implicit source of the criticism leveled against us, that we regard the quantity of money as determining the level of economic activity. Not only, say our critics, do we believe that money matters, we believe that money is all that matters (Okun 1963; Tobin 1965a, p. 481).

If P is not regarded as an institutional datum, and we have not so

regarded it, then even if we supposed k to be completely insensitive to interest rates and to anything else that might be affected by changes in M (such as the rate of change in P or in y) and so to be an absolute constant, aside from random disturbances, something other than the quantity of money would have to be brought into the analysis to explain how much of the change in M would be reflected in P and how much in y (see section 12, below).

We have always tried to qualify our statements about the importance of changes in M by referring to their effect on *nominal* income. But this qualification appeared meaningless to economists who implicitly identified nominal with real magnitudes. Hence they have misunderstood our conclusions.

We have accepted the quantity-theory presumption, and have thought it supported by the evidence we examined, that changes in the quantity of money as such *in the long run* have a negligible effect on real income, so that nonmonetary forces are "all that matter" for changes in real income over the decades and money "does not matter." On the other hand, we have regarded the quantity of money, plus the other variables (including real income itself) that affect k as essentially "all that matter" for the long-run determination of nominal income. The price level is then a joint outcome of the monetary forces determining nominal income and the real forces determining real income (Friedman 1958, pp. 242–46; Friedman and Schwartz 1963*b*, p. 695).

For shorter periods of time, we have argued that changes in M will be reflected in all three variables on the right-hand side of equation (6): k , P , and y . But we have argued that the effect on k is empirically not to absorb the change in M , as the Keynesian analysis implies, but often to reinforce it, changes in M and k frequently affecting income in the same rather than opposite directions. Hence we have emphasized that changes in M are a major factor, though even then not the only factor, accounting for short-run changes in both nominal income and the real level of activity (y). I regard the description of our position as "money is all that matters for changes in *nominal* income and for *short-run* changes in real income" as an exaggeration but one that gives the right flavor of our conclusions. I regard the statement that "money is all that matters," period, as a basic misrepresentation of our conclusions (Friedman 1958, pp. 246–51; Friedman and Schwartz 1963*a*, pp. 38–39, 45–46, 55–64; Friedman and Schwartz 1963*b*, p. 678).

Another, more subtle, difference between the approach of the economists in the Keynesian tradition and the approach that we have adopted

has also contributed to much misunderstanding. This difference is in the transmission mechanism that is assumed to connect a change in the quantity of money with a change in total nominal income (= total spending). The Keynesians regard a change in the quantity of money as affecting in the first instance "the" interest rate, interpreted as a market rate on a fairly narrow class of financial liabilities. They regard spending as affected only "indirectly" as the changed interest rate alters the profitability and amount of investment spending, again interpreted fairly narrowly, and as investment spending, through the multiplier, affects total spending. Hence the emphasis they give in their analysis to the interest elasticities of the demand for money and of investment spending. We, on the other hand, stress a much broader and more "direct" impact on spending, saying, as in section 1 above, that individuals seeking "to dispose of what they regard as their excess money balances . . . will try to pay out a larger sum for the purchase of securities, goods and services, for the repayment of debts, and as gifts than they are receiving from the corresponding sources."

The two approaches can be readily reconciled on a formal level. The transmission mechanism that we have stressed can be described as operating "through" the balance sheet and "through" changes in interest rates. The attempt by holders of money to restore or attain a desired balance sheet after an unexpected increase in the quantity of money will tend to raise the prices of assets and reduce interest rates, which will encourage both spending to produce new assets and spending on current services rather than on purchasing existing assets. This is how an initial effect on balance sheets gets translated into an effect on income and spending.

The difference between us and the Keynesians is less in the nature of the process than in the range of assets considered. The Keynesians tend to concentrate on a narrow range of marketable assets and recorded interest rates. We insist that a far wider range of assets and interest rates must be taken into account—such assets as durable and semi-durable consumer goods, structures and other real property. As a result, we regard the market rates stressed by the Keynesians as only a small part of the total spectrum of rates that are relevant (Friedman 1961, pp. 461–463; Friedman and Meiselman 1963, pp. 217–222; Friedman and Schwartz 1963a, pp. 59–63; Friedman 1970b, pp. 24–25; Brunner 1970, pp. 3–5).

This difference in the assumed transmission mechanism is largely a by-product of the different assumptions about price. The rejection of absolute liquidity preference forced Keynes's followers to let the interest

rate be flexible. This chink in the key assumption that prices are an institutional datum was minimized by interpreting the "interest rate" narrowly, and market institutions made it easy to do so. After all, it is most unusual to quote houses, automobiles, let alone furniture, household appliances, clothes and so on, in terms of the "interest rate" implicit in their sales and rental prices. Hence the prices of these items continued to be regarded as an institutional datum, which forced the transmission process to go through an extremely narrow channel. On our side, there was no such inhibition. Since we regarded prices as flexible, though not "perfectly" flexible, it was natural for us to interpret the transmission mechanism in terms of relative price adjustments over a broad area rather than in terms of narrowly defined interest rates.

6. A Simple Common Model

We can summarize the key points of the preceding sections of this paper, and lay a groundwork for the final sections, by setting forth a highly simplified aggregate model of an economy that encompasses both a simplified quantity theory and a simplified income-expenditure theory as special cases. In interpreting this model, it should be kept in mind that the same symbols can have very different empirical counterparts, so that the algebraic statement can conceal a difference as fundamental as that described in the preceding four paragraphs.

For the purpose of this summary, we can neglect foreign trade, by assuming a closed economy, and the fiscal role of government, by assuming that there are neither government expenditures nor government receipts. We can also neglect stochastic disturbances. What I shall concentrate on are the division of national income between induced and autonomous expenditures and the adjustment between the demand for and supply of money.

The simple model is given by six equations:

$$\frac{C}{\bar{P}} = f\left(\frac{Y}{\bar{P}}, r\right); \quad (9)$$

$$\frac{I}{\bar{P}} = g(r); \quad (10)$$

$$\frac{Y}{\bar{P}} = \frac{C}{\bar{P}} + \frac{I}{\bar{P}} \text{ (or, alternatively, } \frac{S}{\bar{P}} = \frac{Y - C}{\bar{P}} = \frac{I}{\bar{P}}); \quad (11)$$

$$M^D = P \cdot l\left(\frac{Y}{P}, r\right); \quad (12)$$