

Automatism or Discretion in Monetary Policy?

1. It is generally accepted that money — or to be more precise, changes in the money supply (which will be defined below) — exert a profound influence on the economic process. This proposition is as old as monetary theory itself and has been examined in detail by all classical economists concerned with monetary problems. The same remark applies to the resulting conclusion, that the creation of money (means of payments) cannot be left to private initiative, to free uncontrolled individual decisions. Bagehot's famous dictum "Money does not manage itself" has not been contested by even the most ardent partisans of the classic *laisser-faire* doctrine. Hence, as we all know, the creation of central banks.

These two propositions at once prompt us to ask: (a) what will be the economic effects of a given change in the money supply? (b) how has the money supply to be manipulated, if a specific aim (or aims), set by the monetary policy authorities, is to be achieved?

2. One of the oldest attempts to answer these questions is the quantity theory of money. According to this theory there is a *causal* relation between the volume of the money supply and the price level of goods and services.

A more general version of this theory states a *causal* relation between the size of the money supply and the *level of economic activity*, as measured by the national income. If we call the level of money income Y and the money supply M , then, according to this more general version of the quantity theory, we have the functional equation:

$$[1] \quad Y = f(M),$$

which is interpreted as a *causal* relation between M and Y . M is the *cause* or the *determinant* of Y .

The more restricted formula previously alluded to obtains in the special case of a given and constant real income Y_r . As we have:

$$Y = Y_r \cdot P,$$

where P denotes the price level, [1] can be written as:

$$[2] \quad Y_r \cdot P = f(M).$$

So that, where Y_r is a constant [2] contains a relation between M and P .

3. By introducing the income velocity of money, v , defined by:

$$[3] \quad v = \frac{Y_r \cdot P}{M},$$

[2] can be written in the form of:

$$[2a] \quad v = \frac{f(M)}{M}.$$

The proposition of an unambiguous causal relation between M and Y can then also be formulated as a causal relation between M and v .

In the special case, where Y is directly proportionate to M :

$$[4] \quad Y_r \cdot P = v_0 \cdot M,$$

the income velocity of money is a constant v_0 .

It goes without saying that the conception of income velocity of money is unnecessary for the formulation of the relations [1] and [2]. It is a matter of personal preference whether this conception is brought in or not.

4. Assuming [4] as valid and considering M and Y_r as functions of time, the price level P is also a function of time, i.e.:

$$[5] \quad P(t) = v_0 \cdot \frac{M(t)}{Y_r(t)}.$$

By a simple process of calculation, we derive from [5]:

$$[6] \quad \frac{\dot{P}}{P} = \frac{\dot{M}}{M} - \frac{\dot{Y}_r}{Y_r},$$

where \dot{P} , \dot{M} , \dot{Y}_r denote the first time-based derivatives of P , M , and Y_r . Equation [6] says that the rate of growth of P is equal to the difference of the rates of growth of M and Y_r .

It follows from [6] immediately, that the rate of growth of P is zero or, in other words, the *price level remains constant through time, if the growth rate of the money supply is equal to that of real income* (1).

5. On the assumption of a constant or approximately constant income velocity it seems, therefore, to be possible to devise a simple rule for a policy aiming at price stabilization, i.e. it is only necessary to manipulate the money supply in such a way that its rate of growth is equal to that of real income. *Matters are no longer left to the central bank's discretion (based on a detailed and thorough diagnosis of a given situation and of expected future developments) but are governed by a simple, automatically functioning process.*

6. It is this rule for the regulation of money supply which Milton Friedman and his collaborators have been vigorously propagating for some ten years (2). Because of its simplicity, it has recently aroused some rather uncritical interest in the wide public. In the professional world, it has been received with more criticism than approval (3). This is hardly surprising.

(1) If v is not a constant through time, [6] must be replaced by:

$$\frac{\dot{P}}{P} = \frac{\dot{M}}{M} + \frac{\dot{v}}{v} - \frac{\dot{Y}_r}{Y_r}.$$

Price level remains now constant, when:

$$\frac{\dot{M}}{M} + \frac{\dot{v}}{v} = \frac{\dot{Y}_r}{Y_r}.$$

(2) "Past experience suggests that something like a 3 to 5 per cent per year increase in the stock of money is required for long-term price stability". (M. FRIEDMAN, *The Optimum Quantity of Money and Other Essays*, Macmillan 1969, p. 184).

(3) Out of the great number of critical voices, mention need be made of only the following articles:

It is *a priori* more than doubtful — and economists have always had doubts in this point — whether the complex relation between changes in the money supply and money income (or real income and prices) can be described by such simple relations as [1] and [2] (4).

In any case, as Friedman is aware, “there is little to be said in theory for the rule that the money supply should grow at a constant rate” (5). His starting point is empirical research, which, as Friedman and his collaborators believe, shows that over long periods: (a) there is a close correlation between changes in the money supply, defined as currency plus demand deposits in commercial banks held by the non-banking *public* (i.e. excluding government deposits in the banking system) (6), and changes in nominal income; (b) changes in money supply have an effect on economic activity (measured by nominal income) with a variable lag of about one year or $1\frac{1}{2}$ years (7). However the relative constancy of in-

A. LERNER, “Review of Milton Friedman, A Program for Monetary Stability”, *Journal of the American Statistical Association*, vol. 57, 1962.

J. VINER, “The necessary and desirable Range of Discretion to be allowed to a Monetary Authority” (in: L. YEAGER, *In Search of a Monetary Constitution*, Cambridge, Mass, 1962, p. 244 et seqq).

“Comments to M. Friedman and A. J. Schwartz, Money and Business Cycles”, *The Review of Economics and Statistics*, vol. 45, Supplement February 1963, p. 64 et seqq.

F. MODIGLIANI, “The Monetary Mechanism and its Interaction with Real Phenomena”, *The Review of Economics and Statistics*, vol. 45, Supplement February 1963, p. 79 et seqq.

J. TOBIN, “Tobin attacks Friedman’s Theories of Money Supply”, *Washington Post*, Business and Finance Section, April 16, 1967.

C. R. WHITTLESEY, “Rules, Discretion, and Central Bankers” (in: *Essays in Money and Banking in Honour of R. S. Sayers*, Oxford 1968).

L. GLESKE, “Regelmechanismen für die Geld- und Kreditpolitik?”, *Der Volkswirt*, No. 51, 19-12-1969.

Two articles by L. HARRIS and A. WALTERS on “Does Money Matter?”. In: *The Bankers’ Magazine*, vol. 208, London, July 1969.

W. HELLER, “Is Monetary Policy being Oversold?” (in: M. FRIEDMAN and W. HELLER, *Monetary vs. Fiscal Policy. A Dialogue*, New York 1969).

H. C. WALLICH, *Eine Regel für die Geldpolitik*. Deutsche Bank. Beiträge zu Wirtschafts- und Währungsfragen und zur Bankgeschichte, No. 8, 1969.

(4) The best source of information is still A. MARGET, *Theory of Prices*. 2 volumes, New York 1938.

(5) M. FRIEDMAN, *A Program for Monetary Stability*, New York 1959, p. 98.

(6) Sometimes time deposits for a period of less than 6 months are also included in the money supply.

(7) M. FRIEDMAN and A. J. SCHWARTZ, “Money and Business Cycles”, in *The Review of Economics and Statistics*, vol. 45, Supplement, February 1963. This article includes a shorter version of the paper by M. FRIEDMAN and D. MEISELMAN, “The Relative Stability of Monetary Velocity and the Investment Multiplier in the United States, 1897-1958” (in *Stabilization Policies. A Series of Research Studies prepared for the Commission on Money and Credit*, 1963).

come velocity is not confirmed by the facts — not even by the monumental and very informative study by M. Friedman and A. J. Schwartz *A Monetary History of the United States 1867-1910* (8). There is, at any rate, no question of a close correlation between changes in the money supply and changes in nominal income (9).

7. In their paper “Money and Business Cycles” Friedman-Schwartz give another interpretation of their findings — an interpretation which does *not* imply the relative constancy of income velocity: “There seems to us... to be an extraordinarily strong case for the proposition that: (1) *appreciable* changes in the rate of growth of the stock of money are a *necessary and sufficient condition* [sic!] for *appreciable* changes in the rate of growth of money income; (2) this is true *both for long secular changes and also for changes over period* roughly the length of business cycles” (10).

It is important to observe that these propositions are in no way identical with the first proposition, that on assuming a constant or a nearly constant income velocity — the money supply must grow at the same rate as real income if the price level is to remain stable. The meaning and content of the second interpretation is — an important point, this — quite a different one. Friedman-Schwartz do not say simply that money is important — a proposition which is obvious and non-controversial, and which in this general formula permits of several interpretations (11). What we must ask is: Important in what connection? Further, Friedman-Schwartz do not say that in *all* cases the *only* changes which are of importance for changes in *national* income are changes in the money supply. What they say is this: “For *major* movements in income, ... *sizable* changes in the rate of change in the money stock are a *necessary and sufficient* [sic!] *condition* for *sizable* changes in the rate of

(8) Princeton University Press, 1963.

(9) See *loc. cit.*, p. 682. ALVIN HANSEN comes to the same conclusion in his book *Monetary Theory and Fiscal Policy* (1949). “There appears to be no dependable or fixed trend in the ratio of M to Y. It is therefore not possible to determine from historical experience what is the appropriate quantity of money, given the level of income. Conversely, given the quantity of money, we cannot determine what the level of income will be. The money supply holds no dependable constant relation to the national income” (*loc. cit.*, p. 3).

(10) M. FRIEDMAN and A. J. SCHWARTZ, *loc. cit.*, p. 53 (My italics).

(11) See H. P. MINSKY in *The Review of Economics and Statistics*, vol. 45, Supplement 1963, p. 64 et seqq.

change in money income" (12). Their proposition refers solely to "sizable" changes of money income and to "sizable" changes of the money supply. (But when, we may ask, is a change regarded as "sizable"?). For such "sizable" changes — and only for these — they advance a higher, specific proposition which — if it is correct — is extremely important: Changes in the money supply are *necessary* and *sufficient* [sic!] for a change in the nominal income (13). This implies two propositions: (1) a "sizable" change of nominal income can *always* be realized by a "sizable" change of the money supply (sufficient condition); (2) without a sizable change of the money supply no "sizable" change of nominal income is possible (necessary condition). If they are correct, these two propositions amount to a monocausal monetary business cycle theory: "Sizable" changes of the money supply — *and such changes only!* — lead to sizable changes of nominal income (economic activity).

From this, Milton Friedman and his collaborators draw the conclusion that variations of fiscal-policy-parameters are useless as instruments of business cycle policy. What counts is only a monetary policy in the sense of a change of the money supply.

A less radical version of this thesis is that the multiplier effect of a change of the money supply is far stronger than the multiplier effect of a change of Government expenditure on goods and services or a change in the rate of taxation (14).

(12) M. FRIEDMAN and A. J. SCHWARTZ, *loc. cit.*, p. 63 (My italics). It is interesting to observe that A. JACOBSON SCHWARTZ in her article "Why Money Matters", (*Lloyds Bank Review*, October 1969), uses a different formulation:

"Cyclical studies indicate that changes in the monetary growth rate are a necessary and sufficient condition for changes in the growth of income over periods covering the different phases of the business cycle" (*loc. cit.*, p. 7).

Here she is no longer talking about "sizable changes" but simply about "changes in the monetary growth rate as necessary and sufficient conditions for changes in the growth of income".

(13) "... stock of money defined as including currency plus adjusted deposits in commercial banks (both demand and time) held by the nonbanking public (i. e., excluding both balances of the federal government and of banks)". M. FRIEDMAN and A. J. SCHWARTZ, *loc. cit.*, p. 34.

(14) This proposition is rejected by: A. ANDO and F. MODIGLIANI, "The Relative Stability of Monetary Velocity and the Investment Multiplier" (*The American Economic Review*, vol. 55, 1965, p. 693 et seqq.) and D. D. HESTER, "Keynes and the Quantity Theory. A Comment on the Friedman-Meiselman CMC-Paper" (*The Review of Economics and Statistics*, vol. 46, 1964, p. 364 et seqq.).

Further: M. DE PRANO and TH. MAYER, "Tests of the Relative importance of Auton-

8. All these conclusions are, it must not be forgotten, derived from statistical findings alone. However, as is well known, the closest correlation between variables, even if observed over fairly long periods, can tell us nothing about *causal* relations between the variables or changes of variables. A close correlation can never mean more than that the empirical findings do not contradict an *a priori*, theoretical proposition. It does not exclude the possibility of an inverse relationship, i. e., that changes of nominal income are the primary changes and that changes of the money supply are only passive adjustments to changes in nominal income or that other hitherto neglected variables have to be taken into consideration. Friedman-Schwartz do not contest this argument. But, they believe, "The key question at issue is not whether the direction of influence is wholly from money to business or wholly from business to money; it is whether the influence running from money to business is *significant*, in the sense that *it can account for a substantial fraction of the fluctuations in economic activity*. If the answer is affirmative, then one can speak of a monetary theory of business cycles or — more precisely — of *the need to assign money an important role in a full theory of business cycles*. The reflex influence of business on money, the existence of which is not in doubt in light of the factual evidence summarized above, would then become part of the partly self-generating mechanism whereby monetary disturbances are transmitted" (15).

9. This passage calls for two observations:

(a) The proposition that changes of the money supply exert significant influences on nominal income is *not* identical with the thesis that changes of the money supply are *necessary* and *sufficient* for changes of nominal income.

omous Expenditures and Money" (*The Review of Economics and Statistics*, vol. 46, 1964, p. 729 et seqq.).

The two authors reach the conclusion, "that money is important. We reject, however, their negative conclusion that autonomous expenditures are not important... It is incorrect to stress either autonomous expenditures or money to the exclusion of the other variable" (*loc. cit.*, p. 747).

(15) M. FRIEDMAN and A. J. SCHWARTZ, *loc. cit.*, p. 49 (My italics). Cf. further: ANNA JACOBSON SCHWARTZ, "Why money matters". *Lloyds Bank Review*, No. 94, October 1969, p. 1-16.

(b) The proof that changes of the money supply exert a significant influence, "that money plays an important *independent* part" cannot be based on empirical time series *alone*. The question of the significance of monetary or other instrument-variables for the size of nominal-income can only be answered on the basis of a complete dynamic theoretical model, that is to say, a model covering the relevant monetary and real variables and the relevant time-lags. The conclusions reached within the framework of such a model have then to be tested empirically; it has to be shown in detail how an autonomous change of the money supply affects all (i.e. monetary and real) variables of the system (transmission problem); and a detailed sequence analysis of the same kind must show how quickly and powerfully changes of fiscal action parameters affect the system. Only in this way can the question of the relative efficiency of monetary policy and fiscal policy be answered (16).

10. The need for a theoretical analysis of the transmission mechanism of changes in the money supply was recognized very early. It was Richard Cantillon who first provided a detailed description of a process of this kind, which was unleashed by the discovery of new gold and silver mines (17). Other authors (e.g. Hume) have dealt with the same problem. But the breakthrough is due to K. Wicksell in his famous book *Geldzins und Güterpreise* (18), which is the basis and starting point for all modern research in monetary theory. Wicksell pointed out that (a) the notion of income velocity is "one of the flimsiest and most intangible factors in the whole of economics, and (b) the quantity of money, or that part of it which at any time is in the hands of the public, is not a *direct* and proximate price-determining force" (19).

(16) M. FRIEDMAN, "Has Fiscal Policy been oversold?", in: MILTON FRIEDMAN and WALTER W. HELLER, *Monetary vs. Fiscal Policy. A Dialogue*, New York 1969, p. 51. Friedman holds the same opinion but does not develop such a model.

(17) RICHARD CANTILLON, *Essai sur la nature du commerce*, London (Paris) 1755. II. Part., 6. Chap.: "De l'augmentation et de la diminution de la quantité d'argent effectif dans un Etat".

Further: F. A. HAYEK, *Preise und Produktion* (Wien 1931). Kap. I: "Die vier Stufen der Entwicklung der Theorie vom Einfluss des Geldes auf Preise und Produktion".

(18) Jena 1898.

(19) K. WICKSELL, *Geldzins und Güterpreise*, loc. cit., p. 38 (My italics). English translation under the title *Interest and Prices*, London 1936, p. 42 et seq.

Further: J. M. KEYNES: "The 'income-velocity of money' is, in itself, merely a name which explains nothing. There is no reason to expect that it will be constant. For it

Later in his "Vorlesungen über Nationalökonomie", which are based on this pioneer work, Wicksell stressed the fact that "A general rise in prices is therefore only conceivable on the supposition that the general demand has for some reason become, or is expected to become, greater than the supply. ... Any theory of money worthy of the name must be able to show how and why the monetary or pecuniary demand for goods exceeds or falls short of the supply of goods in given conditions" (20). This means, that the process must be laid bare which leads from a change in the money supply to a change in nominal income and (or) prices of goods and services. Friedman-Schwartz endorse this view: "It is one thing to assert that monetary changes are the key to major movements in money income; it is quite a different thing to know in any detail what is the mechanism that links monetary change to economic change; how the influence of the one is transmitted to the other; what sectors of the economy will be affected first; what the time pattern of the impacts will be, and so on. We have great confidence in the first assertion. We have little confidence in our knowledge of the transmission mechanism, except in such broad and vague terms as to constitute little more than an impressionistic representation rather than an engineering blueprint. Indeed, this is the challenge our evidence poses: to pin down the transmission mechanism in specific enough detail so that we can hope to make reasonably accurate predictions of the course of a wide variety of economic variables on the basis of information about monetary disturbances" (21). Moreover, the process must be discovered which can over long periods lead to the stability of the price level, if the rate of growth of the money supply is always equal to the rate of growth of real income. Up to now, *nobody has succeeded in providing a proof of this thesis within the framework of a complete dynamic model*. What has been analyzed is the transmission process of an autonomous change of the money supply — e.g. by an expansive open-market policy of the central bank or by a reduction of the minimum reserve rates — in the economic system as a whole and the influence of

depends... on many complex and variable factors. The use of this term obscures... the real character of the causation, and has led to nothing but confusion" (J. M. KEYNES, *The General Theory of Employment, Interest and Money*, London 1936, p. 299).

(20) English translation: *Lectures on Political Economy*, London 1935, vol. II, p. 159 et seq.

(21) M. FRIEDMAN and A. J. SCHWARTZ, loc. cit., p. 55.

such an autonomous change on real income, prices and money income.

In their paper referred to above (22) Friedman-Schwartz give a tentative sketch of such a process, initiated by an "increased rate of open market purchases by a central bank": If e.g. *commercial banks* sell long-term securities, their reserves (free central bank money) and credit potential increase simultaneously with a decrease of the long-term rate of interest. If *private individuals* in the non-bank sector sell long-term securities, their demand deposits in the commercial banks will increase; so that both the stock of money in the non-bank sector and the excess reserve and, therewith, the credit potential of the commercial banks increase simultaneously with a decrease of the long-term rate of interest. Individuals in the non-bank sector, and commercial banks as well will alter the composition of their assets: commercial banks will give fresh credit to entrepreneurs, who — with the lower long-term rate of interest — are offered new profitable investment opportunities. These credits will contribute to an increase of the quantity of money in the non-bank sector (23); non-entrepreneurs will buy more remunerative financial assets or will buy goods (e.g. durable consumer goods) in line with the motives which led to the sale of securities. The reader may care to think through the subsequent phases of this process. In the last analysis, they will bring about an increase of money income (this may take the form of an increase in real income without an increase of prices; an increase in real income *and* an increase in prices; price increases only. Which of these three possibilities will be the outcome, depends on whether the process starts from a full-employed or a non-full-employed economic system). In a later stage — as a consequence of price increases — there will be a sale of securities with a corresponding increase of interest rates. The process would follow an entirely different course, if the cause of the increase of the money supply were an increase of Government expenditure on goods and services financed by the central bank. The actual course of the process is always determined by *where* the increase of the money supply begins and *which sectors* of the economy are influenced first.

(22) M. FRIEDMAN and A. J. SCHWARTZ, "Money and Business Cycles", *loc. cit.*, p. 59 et seqq. (A tentative Sketch of the Mechanism Transmitting Monetary Changes).

(23) It is the entrepreneurs' effective demand, which is the *cause* of the creation of money by the commercial banks!

But, wherever the process starts from, sooner or later, it also leads to a change in interest rates and, via a change in interest rates, to a change in purchases of goods and services, and in certain circumstances to an increase in prices.

An autonomous change of the money supply will exert its influence as regards goods only via a change in effective demand. There is no other possible way. If an autonomous increase of Government expenditure on goods and services is financed by a loan from the central bank, effective demand and the quantity of central bank money in commercial banks will increase simultaneously, with corresponding increases in the credit potential of the latter banks. If, on the other hand, an autonomous increase of central bank money is caused by an expansive open-market policy, the change of effective demand is a consequence of the change in interest rates: "The crucial point is that, if there are no important income or wealth effects stemming from the process of money creation, then this final substitution into goods *can only take place as a result of the shifts in relative interest rates that are set in motion by the monetary process*" (24).

II. The reader familiar with the literature ranging from K. Wicksell via the Stockholm School with its sequence analyses to Keynes' General Theory and post-Keynesian work will find no essential difference between Friedman-Schwartz' "tentative sketch" (not reproduced here in full detail) and modern monetary theory (25). The same remark applies to Friedman's thesis that "we cannot predict at all accurately just what effect a particular monetary action will have on the price level and, equally important, just when it will have that effect" (26), a thesis, which is not controversial either and is completely in line with modern monetary theory. The same is true of fiscal-policy measures. But precisely for that reason, it is

(24) RICHARD G. DAVIS, "How Much Does Money Matter?" Federal Reserve Bank of New York, *Monthly Review*, vol. 51, No. 6, June 1969, p. 129 (*My italics*).

Further: L. ROBBINS, "Monetary Theory and the Radcliffe Report" (in *Politics and Economics. Papers in Political Economy*, London 1963).

(25) This is true, too, of Friedman's analysis of the economic effects of an open-market policy in his "Presidential Address" (29-12-1967) to the American Economic Association (M. FRIEDMAN, "The Role of Monetary Policy", *American Economic Review*, vol. 58, 1968, p. 6).

The same argument has been developed earlier by the Danish economist, K. PHILIP, in his paper "Betragtninger over Kvantitetsligningen". *Nationaløkonomisk Tidsskrift*, vol. 81, 1943, p. 109 et seqq.

(26) *American Economic Review*, vol. 58, 1968, p. 15.

difficult to understand why "a monetary total" (e.g. the money supply) should be "the best currently available immediate guide or criterion for monetary policy" (27).

The volume of purchases by households and entrepreneurs, which in a market economy are decisive for employment, prices and income, are basically dependent on expectations of income and profit, and are not directly related to changes in the money supply (28).

12. The process resulting from an autonomous change in the money supply or in fiscal policy parameters is a very complex one and can, as already observed, only be described within the framework of a dynamic model containing *all* the relevant variables and lags (29). Simple regression equations are not sufficient. This is true both for a short-period analysis, which was what Keynes was mainly interested in and for the long-term relations between changes of the money supply, changes of prices and of real income (30).

13. The few econometric investigations on the efficiency of monetary and fiscal measures carried out on the basis of such complex models (31) have not led to definite results. Anderson-Jordan found

(27) *American Economic Review*, vol. 58, 1968, p. 15.

(28) B. OHLIN, "Stockholmskolan contra Kvantitetsteorien", *Ekonomisk Tidskrift*, vol. 45, 1943.

B. OHLIN, "On the Quantity Theory of Money", in *Money Growth and Methodology. Essays in Honor of Johan Åkerman*, Lund 1961.

(29) Keynes had already drawn attention to this fact: "... if we have all the facts before us, we shall have enough simultaneous equations to give us a determinate result. There will be a determinate amount of increase in the quantity of effective demand which, after taking *everything* into account, will correspond to, and be in equilibrium with, the increase in the quantity of money" (J. M. KEYNES, *The General Theory of Employment, Interest and Money*, London 1936, p. 299 (My italics)).

(30) Keynes, by the way, also tried his hand at a simple description of such a long-period process (*loc. cit.*, p. 306 et seqq.).

(31) First of all: The St. Louis-Model and the Federal Reserve-M.I.T. Econometric Model. These models are dealt with in the following papers:

L. C. ANDERSON and J. L. JORDAN, "Monetary and Fiscal Actions. A Test of their relative Importance in Economic Stabilization", *Federal Reserve Bank of St. Louis Review*, November 1968.

F. DE LEEUW and E. M. GRAMLICH, "The Federal Reserve-M.I.T. Econometric Model", *Federal Reserve Bulletin*, January 1968.

F. DE LEEUW and E. M. GRAMLICH, "The Channels of Monetary Policy. A further report on the Federal Reserve-M.I.T. Econometric Model", *Federal Reserve Bulletin*, June 1969.

F. DE LEEUW and E. M. GRAMLICH, "The Channels of Monetary Policy. A further report on the Federal Reserve-M.I.T. Model", *The Journal of Finance*, vol. 24, 1969, p. 265 et seqq.

that the effects of monetary measures (e.g. expansive or contractive open-market policy) on economic activity (measured by real income) are larger, faster and more predictable than the effects of fiscal policy measures (f.ex. increase of Government expenditure for goods and services, reduction of income tax rates).

Within the Federal Reserve-M.I.T. Model, the *opposite* result is reached: "Monetary policy works more slowly than fiscal policy... because it takes time for the open market operations to be reflected in changes in long-term interest rates and even more time for these rate changes to be reflected in investment decisions" (32). If the lag for the effect of open market operations on investment decisions would have been shorter, the result would, of course, have been different. In any case, the model is "flexible enough to permit monetary policy to be *either a dominant or a rather minor force* and to permit the income-expenditure approach with its implication of important fiscal policy effects to be *either completely overshadowed or largely valid*" (33) [sic!]. What are of decisive importance for the economic effects of a change of an action parameter are always the *size* of the change, *when* (point of time) and *where* the change is made (e.g. whether a change in income tax-rates relates to upper or lower income brackets) and the *length* of the relevant lags.

For the time shape of the process initiated by a change of an action parameter, the length of the lags — which, of course, can only be ascertained empirically — is vitally important. Considerable attention has been paid to this issue in the relevant literature (34).

(32) FRANK DE LEEUW and EDWARD M. GRAMLICH, *loc. cit.*, p. 490.

(33) FRANK DE LEEUW and EDWARD M. GRAMLICH, *loc. cit.*, p. 490 (My italics).

The same conclusion is reached by CARL F. CHRIST in his remarkable paper "A Short-run Aggregate-Demand Model of the Interdependence and Effects of Monetary and Fiscal Policies with Keynesian and Classical Interest Elasticities" (1966). *American Economic Review*, vol. 57, 1967, p. 434 et seqq. However this model is a static, not a dynamic model. The author derives his results from a comparative static analysis.

(34) Important contributions are:

W. L. SMITH, "On the Effectiveness of Monetary Policy", *The American Economic Review*, vol. 46, 1956.

TH. MAYER, "The Inflexibility of Monetary Policy", *The Review of Economics and Statistics*, vol. 40, 1958.

TH. MAYER, *Monetary Policy in the United States*, New York 1968 (Chapter 6: "The Problem of Lags").

M. FRIEDMAN, "The Lags in Effect of Monetary Policy", *The Journal of Political Economy*, vol. 69, 1961.

E. LUNDBERG, *Die Möglichkeiten der Geldpolitik*, Skandinaviska Banken, Jg. 42, 1961, p. 109 et seqq.

A. ANDO, E. CARY BROWN, R. M. SOLOW, and J. KAREKEN, "Lags in Fiscal and Mo-

Yet, up till now, no firm results have been obtained. Most of the authors who have dealt with the problem do not regard credit policy as a reliable instrument for the stabilization of the economic process because the so-called operational lag alone (35) (that is, the time period elapsing between the initiating of the action and its observable effects) is at least half a year. In any case, research seems to indicate that an anticyclical monetary policy will very probably have destabilizing effects on the time shape of prices and income. It is only the effect on the balance of payments that seems to emerge very rapidly, practically without a time-lag. "If we take seriously the empirical work actually carried out to date in this area, in particular the writings of Liu, Mayer, and Kareken-Solow, we are forced to conclude that monetary policy *may* well prove destabilizing in its operation, and there is therefore a strong case either for reforming its operations or abandoning it" (36).

Nobody, however, will be willing to renounce recourse to monetary policy as an instrument for influencing the economic process; and nobody will be prepared, for stabilization purposes, to rely *only* on fiscal policy measures. Here, too, we have to reckon with lags which may have destabilizing effects (37). There is, therefore, no alternative but to look for ways and means of reducing the relevant lags and improving the effectiveness of both monetary and fiscal policy actions. But, even if such an approach were successful, monetary and fiscal policy actions *in the world, in which we live, can only be discretionary decisions of the relevant authorities* — discretionary decisions, which, of course, have to be coordinated and be based on as reliable as possible diagnoses and prognoses. It is

netary Policy" (in *Stabilization Policies. A Series of Research Studies prepared for the Commission on Money and Credit, 1963*).

H. MÜLLER, "Die Bedeutung der time-lags für die Wirksamkeit der Geld- und Kreditpolitik in der Bundesrepublik Deutschland", *Weltwirtschaftliches Archiv*. Bd. 100, 1968.

H. MÜLLER, *Die Politik der deutschen Zentralbank 1948-1967. Eine Analyse der Ziele und Mittel*. Kieler Studien No. 96, Tübingen, 1969.

E. LUNDBERG och A. OLSÉNI, *Frågor kring penningpolitikens effektivitet*, Skandinaviska Banken, 1969, p. 104 et seqq.

(35) W. L. SMITH distinguishes between "recognition lag, administrative lag, and operational lag" (*The American Economic Review*, vol. 46, 1956).

Further: H. MÜLLER, *loc. cit.*, p. 273.

(36) V. ARGY, "The Lags in Monetary Policy. An Assessment of Alternative Approaches", *Banca Nazionale del Lavoro Quarterly Review*, June 1965, p. 167 (My italics).

(37) M. FRIEDMAN, *Supply of Money and Changes in Prices and Output*, *loc. cit.*, p. 186. Further: W. W. HELLER, "CED's Stabilizing Budget Policy after Ten Years", *The American Economic Review*, vol. 47, 1957, p. 645 et seqq.

for further research and for policy to make both instruments as flexible as possible, so that policy can be rapidly modified as soon as destabilizing effects become visible or as soon as a new diagnosis calls for a reconsideration of the policy in a particular context.

14. In order to avoid such rapid changes in monetary policy, Friedman proposes that discretionary decisions be replaced by an automatic rule. However, the application of such a rigid, automatic rule presupposes that the central bank (a) has full control of the money supply, (b) does not need to warn about prices of goods and services, rates of interest, and the balance of payments. Assumption (a) can only hold good, when commercial banks are not in a position to create new money. This is possible only when the minimum reserve ratio is 100% (Chicago-Plan) (38). Then — and only then — is the multiplying power of bank reserves destroyed. The money supply is always equal to the quantity of central bank money (monetary basis). Assumption (b) can hold good only when prices and exchange rates are fully flexible (free variable). And these exactly are the preconditions which Friedman postulates for the validity of his rule. However, the necessary preconditions are not present in the world we live in. On this ground alone, Friedman's rule is not applicable (39).

15. Friedman's approach is basically the same as the one developed in 1936 by the founder of the so-called Chicago-School, Henry C. Simons, in a classical essay "Rules versus Authorities in

(38) H. C. SIMONS, *A Positive Program for Laissez Faire* (Chicago 1934).

Further: A. G. HART, "The 'Chicago Plan' of Banking Reform. A Proposal for Making Monetary Management Effective in the United States", *The Review of Economic Studies*, vol. II, 1934-35.

(39) "If Milton's policy prescription were made in a... world without price, wage and exchange rigidities — a world of his own making — it would be more admissible. But in the imperfect world in which we actually operate, beset by all sorts of rigidities, the introduction of his fixed-throttle money-supply rule might, in fact, be destabilizing. Or it could condemn us to long periods of economic slack or inflation as the slow adjustment processes in wages and prices, given strong market power, delayed the economy's reaction to the monetary rule while policy makers stood helplessly by" (W. HELLER, "Is Monetary Policy being Oversold?", in: *M. Friedman and W. Heller, Monetary vs. Fiscal Policy. A Dialogue*, New York 1969, p. 26).

Further: H. C. WALLICH, *loc. cit.*, p. 17 et seqq.; M. C. LOWELL and E. TRESKOTT, "Money, Multiplier, Accelerator Interaction, and the Business Cycle", *The Southern Economic Journal*, vol. 35, 1968, p. 60 et seqq.

Monetary Policy" (40): "In a free-enterprise system we obviously need highly definite and stable rules of the game, especially as to money. The monetary rules must be compatible with the reasonably smooth working of the system. Once established, however, they should work *mechanically* [sic], with the chips falling where they may" (*loc. cit.*, p. 137). "For the present [i.e. as long as the *laissez-faire* program has not been realized] we obviously must rely on a large measure of discretionary money management [sic] — on a policy of offsetting and counteracting, by fiscal and banking measures, the effects of monopoly and custom upon prices and wage-rates" (*loc. cit.*, p. 15). So far, the position has not changed, and is unlikely to change in the foreseeable future (41).

16. Friedman's ideas on monetary policy have recently been vigorously propagated by some newspapers as a blow at the alleged excessive emphasis on the efficiency of fiscal policy instruments in economic policy. In this connection, Keynes is held responsible for the neglect of monetary policy, and Friedman is praised as the "Siegfried", who has killed the bad dragon Keynes (42). Anyone who has studied Keynes' difficult books — books, which can only be understood after a long and profound study — knows that nobody has done more than Keynes to clear up the role of money in the economic process, and that he devoted a great part of his life to problems of monetary theory and policy. Both his *Treatise on Money* (1930) and *The General Theory of Employment, Interest and Money* (1936) are witness enough that he did know "how much money matters". For him, monetary policy was an instru-

(40) *The Journal of Political Economy*, vol. 44, 1936 (My italics).

(41) No automatism in monetary policy has ever existed. Also the classic Gold-Standard was, as A. L. Bloomfield has shown in his admirable study *Monetary Policy under the International Gold Standard: 1880-1914* (New York 1959), a monetary system, in which "central banks were constantly called upon to exercise, and did exercise, discretion and judgment in a wide variety of ways" (*loc. cit.*, p. 60).

The same opinion is expressed in the famous Macmillan-Report (*Report of the Committee on Finance and Industry*, London 1931, Reprinted 1961) § 40: "Whenever gold is lost, the Central Bank is provided with an 'automatic' signal of the emergence of conditions which may make positive action necessary. The ultimate aim — the restoration of the international value of the currency — is clear, but the action to be taken, and the precise moment at which it should be taken, remain in the *sphere of discretion and judgment, in a word with 'management'*" (My italics).

(42) An over eager journalist asked P. A. Samuelson whether Keynes was really dead. Samuelson answered wittily: "Yes, as dead as Newton and Einstein" (Quoted from *Frankfurter Allgemeine Zeitung*, No. 5, 7-1-1970).

ment as essential as fiscal policy. But he, too, well knew the limits of monetary actions. He knew under what circumstances monetary measures can be effective and when such measures will be less efficient. For that very reason, he urged his fellow economists and economic politicians not to neglect the instruments of fiscal policy. For him, the decision as regards both instruments was never "either — or". It was always a question of "both — and" (43). Keynes cannot therefore be accused of neglecting monetary policy as some of the Post-Keynesians have done.

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(43) See on this question now the excellent book: A. LEIJONHUFVUD, *On Keynesian Economics and the Economics of Keynes. A Study in Monetary Theory*, New York 1968 (Chapter VI, n. 2: "Keynes' Applied Theory: The Effectiveness of Monetary Policy").