# Thomas Mayer on Monetarism

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When I use a word it means just what I want it to mean — neither more nor less.

Alice in Wonderland

I.

Professor Mayer and I collaborated amicably and — I hope — usefully during our Michigan State days in the 1950's. He has since gone West from Michigan, while I have gone East. It nevertheless seems strange to sit in judgement on his work — even at his own invitation. I have accepted the invitation mainly in the hope of clarifying some of my own ideas as a by-product of considering his.

II.

Mayer's essay on "The Structure of Monetarism"\* is a long exercise on the nature and inter-relationships of twelve propositions which he treats as comprising contemporary monetarism. The first four of these propositions — the quantity theory of money, some distinctly monetarist transmission mechanism between monetary and income changes, belief in the inherent stability of the private economy, and the unimportance of allocative (distributive) disaggregation for the explanation of short-run macroeconomic effects — he sees as necessary conditions for monetarism but offers no formal proof which might satisfy a professional logician. The other eight — including such well-known facets as preference for monetary rules, unconcern with guaranteed full employment, distrust of the *Phillips* curve and "incomes policies," dislike for inflationary finance — are either arguments in support of his "big four" or policy conclusions or corollaries from them, which most but not all monetarists do in fact support. The entire edifice is summarized

<sup>\*</sup> Kredit und Kapital, Vol. 8 (1975) pp. 190 and pp. 293.

<sup>&</sup>lt;sup>1</sup> M. Bronfenbrenner and Thomas Mayer, "Liquidity Functions in the American Economy." Econometrica (April, 1960.)

diagrammatically in a figure which seeks to include not only all twelve propositions but also the principal relations *Mayer* believes to exist between them. Any such construction is inevitably subjective, but *Mayer* hopes it may nevertheless be objectively helpful to his professional colleagues.

### III.

Mayer sets monetarism against the conventional "Keynesianism" of, say, the Northern wing of the American Democratic party and its economic spokesmen. I should myself have preferred the antithesis to have been "fiscalism" without quite so much emphasis on the doctrines of the late Lord Keynes, either in the "General Theory" of 1936<sup>2</sup> or as they may have been developing in the inflationary milieu at the time of his death ten years later.<sup>3</sup>

Let us denote by pure fiscalism the doctrine that "money does not matter." This implies that 1. the economic effects of a fiscal measure are independent of the way that measure is financed, and that 2. changes in the stock of money have no effect on the level of economic activity unless embodied in a fiscal measure for introducing the new money into the economy (or withdrawing money from it). Similarly, let us denote by pure monetarism the doctrine that "only money matters." This implies that (1) the economic effects of a change in the money stock are largely independent of the methods by which the positive or negative increment is injected into or withdrawn from the economy, and that (2) fiscal policy measures have negligible effects on the economy apart from their monetary consequences.

Let us also suppose, without asking embarrassing questions about measurement, that a continuum could somehow be set up, with pure fiscalists at one end (if any exist) and pure monetarists at the other (subject to the same restriction). Taxonomic exercises like *Mayer's* are valuable if, as I think he believes, economists tend to be bunched at the

<sup>&</sup>lt;sup>2</sup> Even in the depths of depression, there is room for doubt that "the economics of Keynes" was so fiscalist as "Keynesian economics" subsequently became. There doubts constitute, in part, the Clower-Leijonhufvud reinterpretation of the "General Theory", which I interpret as shifting emphasis from the shapes to the volatilities of certain crucial functions. See Axel Leijonhufvud, "Keynesian Economics and the Economics of Keynes" (New York: Oxford University Press, 1968).

<sup>&</sup>lt;sup>3</sup> J. M. Keynes, "The Balance of Payments of the United States," Economic Journal (June, 1946).

two ends of this continuum, with relatively few eclectics in the middle. They are less useful if, as I have come increasingly to intuit<sup>4</sup>, the distribution would be more or less even throughout the continuum (except perhaps at the two extremes) with no gaps or bald spots open for other-than-arbitrary cuts between monetarists and fiscalists.

Difficulties are compounded by at least two other considerations:

- 1. A fiscal measure (an expansion) is accompanied by a monetary expansion to keep interest rates down and prevent multiplier attenuation. Is the resulting income increase to be attributed to the fiscal expansion in Hicksian terms, the shift in the IS curve or to its monetary corollary the shift in the LM curve?<sup>5</sup>
- 2. Assume that the *Mundell* assignment of policy tools is correct<sup>6</sup> fiscal policy to the internal balance and monetary policy to the external balance. Is this fiscalism or monetarism? Since *Mayer* is dealing with the closed economy at least 95 per cent of the time, I presume he would call *Mundell* a fiscalist; I am not sure of my own stand, especially for small countries with high international dependence.

## IV.

Accepting the risk of pedantry, I wish more macroeconomists — including Mayer — would distinguish carefully between stability and volatility in describing the functions with which they are dealing. To

<sup>&</sup>lt;sup>4</sup> Of my own colleagues at Duke University, perhaps seven (including myself) have recently taught or written in the macroeconomics — monetary policy — fiscal policy triangle. Of these, I should classify three as decidedly more fiscalist that I, two as decidedly more monetarist, and the other as located close to myself on my hypothetical continuum.

<sup>&</sup>lt;sup>5</sup> In my own eclectic and unoriginal view, the answer depends on the interest-elasticities of the two functions. An inelastic IS and/or an infinitely-elastic LM leads to fiscalist answers. An infinitely-elastic IS and/or inelastic LM leads to monetarist answers. The real world of the 1970's is "just a little bit in between", although the real world of the 1930's — when Keynes' "General Theory" was written — may indeed have conformed to fiscalism. What one might call "normative" fiscalism, however, depends not at all on the shapes of the macroeconomic functions. Whatever these shapes may be, it requires monetary policy to "validate" expansive fiscal policy by keeping nominal interest rates from rising. I am unaware of any corresponding normative monetarism.

<sup>&</sup>lt;sup>6</sup> Robert A. Mundell, "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability", IMF Staff Papers (March, 1962).

classify the distinction, suppose that a Hicksian IS-LM model in (Y, r) space, with error terms (shift parameters)  $e_t$  and  $\varepsilon_t$  may be written:

IS curve 
$$r_t = a - bY_t + e_t$$
  $(a, b > 0)$   
LM curve  $r_t = \alpha + \beta Y_t + \varepsilon_t$   $(\alpha < a, \beta > 0)$ 

Solving for  $Y_t$ , we have:

$$Y_t = \frac{(a-\alpha) + (e_t - \varepsilon_t)}{b + \beta}$$

This is a macrostatically stable solution by all the usual definitions I know about. (Neither IS nor LM slopes the wrong way, in other words.) But at the same time, the stable equilibrium value of  $Y_t$  is highly volatile, particularly if the error terms  $(e_t, \varepsilon_t)$  are negatively correlated. Similarly, solving for the interest rate  $r_t$ , we derive:

$$r_{t} = \frac{\beta (a + e_{t}) + b (\alpha + \varepsilon_{t})}{b + \beta}$$

which is also stable but volatile, particularly if the error terms are positively correlated.

What difference does this point make? Primarily, that the case for intervention and direct control is much stronger in unstable markets than in merely volatile ones. And secondarily, that a number of conceptually stable functions (investment functions, *Phillips* curves, possibly even liquidity functions) may exist but be so volatile over a wide range of shift parameters (not only economic but social and political) as to be disappointing when used for modelling, planning, tracking, and allied uses. (This, I fear, is particularly true of the once-so-promising *Phillips* curve with its neat unemployment — inflation trade-off.)

V.

Mayer's footnotes reveal a running debate with leading monetarists on the justifiability of Mayer's eight subordinate propositions. They are admittedly not logically essential to monetarism although many (probably most) monetarists accept them. Mayer's critics object to Meyer's excluding from their ranks the minority who do not accept one or more of this group of eight.

Here, I think, I am on Mayer's side on Schumpeterian grounds. For in raising the Schumpeterian question, what grand "vision" of the economic process inspired the development of monetarist ideology, it is to this group that we must look, rather than to the relative abstraction and aridity of Mayer's primary quartet. And if I select among the eight, I should select (1) a monetary growth rule as at least a "second best" guide to monetary policy (Mayer's # 9), (2) the corollary use of a money stock rather than an interest rate monetary target (his # 8), (3) a willingness to tolerate unemployment as a cost of price disinflation (# 11) coupled (after Phillips' 1958 paper) with rejection of the Phillips curve as a reliable trade-off indicator (# 10) and an essentially libertarian abhorrence of "suppressed inflation" and such direct controls as incomes policies, rationing, and allocations (# 12).8

### VI.

I might myself suggest, again on Schumpeterian grounds, one additional (ninth) member for Mayer's team of secondary propositions, raising his total to 13.9 This is the debatable proposition that the monetary authority — meaning the Federal Reserve in contemporary America — does in fact have the power, and accordingly the responsibility, to regulate the money supply. The aspect of monetarist vision involved here is that monetary mismanagement by the Federal Reserve has been and is the prime cause of the great booms and contractions of the American past and present, which have been unjustly blamed on the free enterprise system as a whole.

This proposition is debatable on at least three bases, two purely domestic and the third international.

<sup>&</sup>lt;sup>7</sup> A. W. *Phillips*, "The Relation between Unemployment and the Rate of Change of Money Wages in the United Kingdom, 1861 - 1957," Economica (November, 1958). For the most influential American application, see Paul A. *Samuelson* and Robert M. *Solow*. "Analytical Aspects of Anti-Inflation Policy," American Economic Review (May, 1960).

<sup>&</sup>lt;sup>8</sup> A particularly apt example in Milton *Friedman*, "What Price Guidepost?" in George P. *Shultz* and Robert F. *Aliber*, eds. Guidelines: Informal Controls and the Market Place (Chicago: University of Chicago Press, 1966), pp. 17 to 39.

<sup>&</sup>lt;sup>9</sup> Of, if *Mayer* inclines to triakaidekaphobia, this proposition might be substituted for the preference for small models over large ones (his # 6) which seems related only tenuously to the basic monetarist insight.

1. If M is the money stock and B the monetary base, we have:<sup>10</sup>

$$M = \frac{B}{\frac{C}{M} + \frac{R}{D} \left(1 - \frac{C}{M}\right)}$$

where  $\left(\frac{R}{D}\right)$  is the commercial banks' reserve ratio and controlled by the commercial banks themselves at least within legal limits and  $\left(\frac{C}{M}\right)$  is the public's ratio of currency to total money and controlled by the public. It is the contention of numerous writers (most prominently J. G. Gurley and E. S. Shaw)<sup>11</sup> that the Federal Reserve's control of B is inadequate to regulate M in either cyclical booms or depressions.

2. The Federal Reserve is a creature of Congress and cannot disregard current political sentiment, however wrong-headed it may be. There have been frequent attempts already, led for three decades by the expansionist Congressmen Wright Patman (D., Tex.) as Chairman of the House of Representatives Committee on Banking and Currency, to restrict particularly the system's anti-inflationary clout by limiting methods involving "tight money". (This term refers to rises in nominal interest rates and standards of credit-worthiness, "credit squeezes" on particular companies unusually dependent on borrowed funds, and pressure on savings institutions from "disintermediation", as deposits are withdrawn in search of higher interest incomes.) More recent congressional critics, such as Senator William Proxmire and Representative Henry Reuss (both D., Wis.) have been more sympathetic to monetarism in their proposals.<sup>12</sup>

$$M = C + D$$
 ( $C = \text{currency}$ ,  $D = \text{bank deposits}$ )  
 $B = C + R$  ( $R = \text{bank reserves}$ )

$$\frac{M}{B} = \frac{C+D}{C+R} = \frac{\frac{C}{M} + \frac{D}{M}}{\frac{C}{M} + \frac{R}{M}} = \frac{1}{\frac{C}{M} + \frac{R}{D} \cdot \frac{D}{M}} = \frac{1}{\frac{C}{M} + \frac{R}{D} \left(1 - \frac{C}{M}\right)}$$

<sup>&</sup>lt;sup>10</sup> The derivation below is based on Phillip Cagan, "Determinants and Effects of Changes on the Stock of Money, 1975 - 1960" (New York: Columbia University Press, 1965) p. 12

<sup>&</sup>lt;sup>11</sup> Gurley and Shaw, "Money in a Theory of Finance" (Washington: Brookings Institute, 1960).

<sup>12</sup> The belated rise of "monetarist" criticism of the Federal Reserve within Congress itself lends some support to monetarist reproaches against Federal Reserve "fleeing where no man pursueth" in connection with past ineptness.

3. Under a regime of fixed exchange rates and unregulated short-term capital movements, the power of any country's monetary authority is circumscribed by the tendency to international equality of interest rates. Monetary expansionism, lowering short-term rates at home, is thus counteracted by capital outflows, and vice versa. During the 1960's, moreover international aspects of monetary control have been exacerbated for the United States by the rise of the Eurodollar market. This market has become a vehicle for foreign banks, including foreign branches of American banks, to create dollar deposits on a large scale by loans subject neither to reserve nor to reporting requirements, so that the Federal Reserve can only estimate more or less inaccurately the total volume of the dollars outstanding and overhanging the American money market. It is obviously difficult to regulate a quantity when one does not know with adequate precision what that quantity is!

The basis of scepticism regarding monetarism is summarized by a "Wall Street Journal" editorialist: 13 "[A]fter so much government manipulation over so many years, private commerce has become exceedingly adroit in switching to money imports and substitutes, chiefly trade credit and credit cards, both of which are sources of liquidity" i. e., of autonomous changes in velocity.

### VII.

Three random comments on Mayer's exposition of individual propositions and I close:

During the Great Depression, for example, and under the gold standard, Friedman and Schwartz deny that the fear of gold drains constituted a rational explanation for Federal Reserve phobia against expansionary openmarket operations. Milton Friedman and Anna J. Schwartz, "The Great Contraction, 1929 - 1933", (Princeton: Princeton University Press, 1965), pp. 103 to 110.

<sup>18</sup> Jude Wanniski, "The Mundell-Laffer Hypothesis — A New View of the World Economy", Public Interest (Spring, 1975), p. 28 n., citing Professor Robert Mundell. — More generally, the monetarist theory of the international balance of payments seems itself inconsistent with any notion of over-riding power in the hands of domestic monetary authorities. This is because it sees a balance of payments deficit (surplus) as primarily a manifestation of an excess supply of (demand for) money, and an avoidance of the authority's authority. See Donal Kemp, "A Monetary View of the Balance of Payments", Federal Reserve Bank of St. Louis Review (April, 1975) and sources cited, (including Professor Mundell).

1. On that alleged "black box" — the transmission mechanism between monetary changes and the real economy - Mayer should perhaps have spelled out in more detail what he thinks monetarists believe that process to be, or if indeed they seem to him hopelessly divided among themselves. To me, any explanation must involve the proposition, resting on Pigou and Keynes effects, that money changes effect real variables through price-level changes separately from and in addition their effects through interest changes both nominal and real. If so, it is important "whether one formulates the analysis in terms of M or in terms of r", since the effects, despite substantial overlaps, are significantly different. It is easy to criticize monetarist coyness in deciding between the  $M_1$ ,  $M_2, \ldots, M_n$  concepts of money (I have seen n values as high as 7). But the critics owe Professor Friedman in particular the concession of mentioning his belief (unconfirmed, to the best of my knowledge) that all the ratios  $\frac{M_i}{M_i}$  would be sensibly constant but for such constraints as the ban on interest payments on demand deposits and the "Regulation Q" interest ceilings on savings deposits.

I likewise have questions about Mayer's sentence: "An increase in the real stock of money lowers the imputed real interest rate on money balances" (italics his) as a part of the transmission process, unless indeed this statement implies a rise in the price level.<sup>14</sup>

2. It may involve no more than my inflated ego to point out the existence of a compromise proposal (of my own)<sup>15</sup> midway between the *Friedman - Shaw* constant monetary growth rule (*Mayer's* proposition

$$MV = pY = pN \pi$$
, whence  $\log M + \log V = \log p + \log N + \log \pi$   $d \log M + d \log V = d \log p + d \log N + d \log \pi$   $\frac{dM}{M} + \frac{dV}{V} = \frac{dp}{p} + \frac{dN}{N} + \frac{d\pi}{\pi}$   $G_m + G_v = G_p + G_n + G_\pi$ 

the expression in the text follows, if  $G_p = 0$ , i.e., if price-level stability is maintained.

<sup>&</sup>lt;sup>14</sup> In personal correspondence, *Mayer* has clarified my difficulty here. By "imputed real interest rate" he means what I would call the marginal utility of an increment to real balances. I do not think that our difference is more than verbal.

<sup>&</sup>lt;sup>15</sup> M. Bronfenbrenner, "Monetary Rules: A New Look", J. L. E. (October, 1965). — If we write the standard equation of exchange as:

- # 9) and the complete discretion the Federal Reserve has traditionally sought for itself. This suggested compromise it that the monetary-stock growth rate  $G_m$  be set one year at a time as  $(G_n + G_\pi G_v)$ , i. e., the estimated growth rate of the labor force plus the estimated growth rate of its man-hour productivity minus the estimated growth rate of the velocity of circulation (at the real interest rates expected to prevail during the coming year).
- 3. Mayer's proposition 10 reads: "Rejection of an unemployment-inflation trade-off in favor of a real *Phillips* curve." My conception of the monetarists' "real *Phillips* curve" is precisely a natural (but not necessarily invariant) rate of unemployment. Mayer clearly means something else, but it is not clear what it is, unless it be a short-run artifact involving money illusion and approaching the natural rate with the passage of time.

To make matters more difficult rather than less, one notes from Mayer's summary Figure I that the notion of a natural rate of unemployment enters only to connect "relative unconcern with inflation" (# 11) with the "transmission mechanism" (# 2) by a line labelled "r", and is not connected with the "real Phillips curve" in any way. Surely this omission is a slip or oversight — which is not to deny the relation on which Mayer concentrates his attention.

#### VIII.

Four summary questions and answers in conclusion: Is Mayer's exercise worth attempting? I think so. Is his proposition set an impressive one? Yes. Is his diagrammatic summary of the multifarious interrelations of the proposition set helpful? Yes, but primarily to one who, like Mayer, has worked the components out carefully for himself. Does Mayer's study pre-empt the field against further, and possibly quite highly variant, attempts any similar lines by other scholars? No, and Mayer as I know him would be the last man to claim otherwise.

# Zusammenfassung

### Thomas Mayer über Monetarismus

Der Beitrag besteht aus einer Reihe von Kommentaren und Anmerkungen zu dem Aufsatz von Mayer in dieser Zeitschrift\*, und hat keinen hiervon un-

<sup>\*</sup> Kredit und Kapital, 8. Jahrgang (1975) S. 190 ff. und S. 293 ff.

<sup>31</sup> Kredit und Kapital 4/1975

abhängigen und aus sich selbst heraus bestimmten Inhalt. Die Abschnitte I, II und VIII sind als Einführung bzw. als Ergebnis der Überlegungen zu betrachten. Sie stellen fest, daß Mayers Beitrag durchaus der Anstrengungen wert ist, die seine Niederschrift bereitete, daß er jedoch unvermeidlicherweise subjektiv gefärbt ist und so die Mühe zu eigener Analyse für alle jene nicht überflüssig macht, die den Monetarismus zu beschreiben versuchen.

Abschnitt III regt an, daß die Antithese zu "Monetarismus" wohl besser "Fiskalismus" statt "Keynesianismus" lauten sollte, und Abschnitt IV vergleicht positive und normative Formen des Fiskalismus. Er gibt außerdem zu bedenken, daß es vielleicht eine Art von Kontinuum zwischen den extremen fiskalistischen und monetaristischen Ansichten gibt; jedenfalls eher als ihre Bündelung an den beiden Extrempunkten, wie sie Mayers Beitrag zu implizieren scheint. Abschnitt IV entwickelt eine Unterscheidung zwischen der "Stabilität" und der "Flüchtigkeit" (volatility) ökonomischer Funktionen, die der Verfasser gern in makroökonomischen Arbeiten, einschließlich der von Mayer, beachtet sähe.

Abschnitt V stimmt — im wesentlichen auf Schumpeter fußend — Mayers Einfügung einiger ergänzender Anregungen zu den spezifischen Unterscheidungen der Monetaristen zu, die nicht streng aus seinem Hauptpostulaten folgen und von den Monetaristen nicht generell akzeptiert werden. Abschnitt VI fügt seinerseits (zumindest für die USA) eine weitere ergänzende Anregung zu denen von Mayer hinzu: Nämlich, daß die monetären Autoritäten die Macht und die Verantwortung für die Geldmengensteuerung besitzen.

Abschnitt VII stellt einige kleinere Ausnahmen zu einigen spezifischen Punkten der Analyse von Mayer dar, u. a. (1) die Behandlung des Pigou- und Keynes-Effekts, (2) einen Kompromiß zwischen einer Geld-Mengensteuerung vom Friedman-Typ und einer vollständig diskretionären Steuerung und (3) die Rolle von Phillipskurven.

### Summary

# Professor Mayer on Monetarism

This paper is basically a set of commentaries and notes on Professor Mayer's\*, and cannot claim significant independent content of its own. The digest which follows is accordingly diffuse and disorganized.

Section 1, 2, and 8 are of introductory and summary character. They argue that *Mayer's* essay is well worth the effort required for its preparation, but that it is inevitably subjective and cannot preclude similar exercises by other scholars seeking to define monetarism.

<sup>\*</sup> Kredit und Kapital, Vol. 8 (1975) pp. 190 and pp. 293.

Section 3 suggests that the antithesis of "monetarism" should perhaps be "fiscalism" rather than "Keynesianism", and (in Note 4) compares positive and normative forms of fiscalism. It also suggests that there may be a continuum between extreme fiscalist and extreme monetarist views, rather than the bunching at the two extremes which Mayer's paper seems to imply.

Section 4 develops a distinction between the *stability* and the *volatiliy* of economic functions, which the writer would like to see reflected in much macroeconomic writing, including *Mayer's*.

Section 5 approves, on essentially Schumpeterian grounds, Mayer's inclusion among the differentia specifica of monetarism of several subordinate propositions which do not follow rigorously from his major postulates and which are not universally accepted by monetarists. Section 6 goes on to add (at least for the U.S.) another subordinate proposition to Mayer's group, namely, that the monetary authority has the power and responsibility for monetary regulation.

Section 7 takes several minor exceptions to specific points in Mayer's analysis, including (1) treatment of Pigou and Keynes effects, (2) compromises between a Friedman-type monetary rule and complete discretion, and (3) the role of Phillips curves.

### Résumé

# Le monétarisme selon le Professeur Mayer

L'étude constitue une série de commentaires et d'observations sur l'article de *Mayer* publié dans le présent périodique\*; elle ne présente de ce fait ni contenu autonome, ni substance originale. Le résumé qu'on lira ci-après n'est par conséquent guère systématique.

Les sections I, II et VIII sont à considérer respectivement comme introduction et conclusion des considérations formulées par l'auteur de l'étude. Elles établissent que le travail auquel s'est livré *Mayer* mérite de retenir l'attention, mais qu'il n'en présente pas moins immanquablement une coloration subjective; ceux qui tentent de décrire le monétarisme ne peuvent donc croire qu'il est devenu superflu de se donner la peine d'effectuer leur propre analyse.

La section III recommande d'appeler d'antithèse du « monétarisme » plutôt « fiscalisme » que « Keynesianisme » et la section IV compares les formes positives et normatives du fiscalisme. L'auteur se demande s'il n'existe pas éventuellement une sorte de solution de continuité entre les points de vues fiscalistes et monétaristes extrêmes; cette thèse lui apparaît de toute manière plus vraisemblable que leur liaison aux deux points extrêmes, comme semble l'impliquer la théorie

<sup>\*</sup> Kredit und Kapital, 8e année (1975), page 190 et suivantes, et page 293 et suivantes.

de Mayer. La section IV développe une distinction entre la «stabilité» et la «volatilité» des fonctions économiques que l'auteur aurail aimé voir prendre en considération dans des études macroéconomiques, y compris dans celle de Mayer.

En s'appuyant principalement sur Schumpeter, la section V est favorable à l'introduction par Mayer de quelques propositions complémentaires aux distinctions spécifiques établies par les monétaristes, propositions qui ne dérivent pas rigoureusement de ses postulats essentiels et qui ne sont généralement pas acceptées par les monétaristes. La section VI ajoute pour sa part (au moins en ce qui concerne les Etats-Unis) une suggestion qui complète celles de Mayer, à savoir que les autorités monétaires ont les moyens et la responsabilité de maîtriser le volume monétaire.

La section VII enfin définit quelques petites exceptions à apporter à certains points spécifiques de l'analyse de Mayer, et notamment: le traitement de l'effet de Picou et Keynes, un compromis entre l'action sur le volume monétaire de type Friedman et sa maîtrise discrétionnaire complète et le rôle des courbes de Phillips.