

## The Theoretical Nondebate about Monetarism

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During the two decades since the publication of “Studies in the Quantity Theory of Money” [20], the debate over the content and relative merits of what has subsequently come to be called “monetarism” first ripened, then matured, and has now even begun to mellow. The thrust of Thomas Mayer’s [28] excellent taxonomical survey is that perhaps the time for a measured stock-taking has come. What, then, has “the monetarist debate” been all about?

One key to the overall thrust of the discussions involved in the monetarist debate is that most economists today view the macroeconomic process differently than they would have done twenty years ago. In strong contrast to the views which predominated in the wake of the Oxford [3, 29] and Harvard Business School [15] surveys, most economists now believe that what happens in financial markets does play a major role in determining nonfinancial economic activity. The nexus of prices and yields and quantities of assets — not excluding “money” — does “matter”.

What too often becomes lost in any economic discussion, however, is the distinction between *empirical* propositions and *theoretical* ones. This distinction is especially important in making an assessment of the monetarist debate because, as key participants in the debate have progressively elaborated exactly what they think on particular questions, it has become increasingly clear that the distinguishing content of monetarism is a set of *empirical* propositions. One corollary to this situation is that, while the debate has encouraged researchers on both sides to sharpen and extend their theoretical analysis, those lessons which economists have thus far learned and accepted from monetarism are

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primarily lessons about empirical issues. Another corollary is that the remaining points in dispute today — the monetarist debate is not, and probably never will be, over — are also primarily empirical issues of comparing relative variances and elasticities, distinguishing first-order from  $n$ -th order effects, and the like. From a theoretical standpoint the debate has by today achieved the status of a nondebate.

## I. Theory and Empiricism in Mayer's Taxonomy

*Mayer's* survey set forth twelve propositions as the basic building blocks in the belief structure of today's "monetarist" economist. Although much of his paper carefully developed the interrelationships among these twelve propositions, showing why a believer in one may well be a believer in others on the same list, *Mayer* also went to considerable effort to note that belief in or rejection of all twelve propositions together is not a necessary condition for consistent analytical thinking.

Of *Mayer's* twelve propositions, not one is theoretical in its distinguishing content. In other words, while each of these propositions rests on some underlying theoretical structure, in every case that theoretical base is neither more nor less than what most "Keynesian" economists also believe today. What distinguishes most of these "monetarist" propositions from what a "Keynesian" economist would be likely to believe, is their explicit statement about the magnitude of one or more parameters of the common underlying theoretical framework accepted by both monetarists and Keynesians.<sup>1</sup> For the remainder of *Mayer's* propositions, the distinguishing content is of a personal-preference nature; such preferences either are implicit statements about positive issues, like the magnitude of parameter values, or are nondebatable and non-explainable gustes of the non-disputandes kind.

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<sup>1</sup> One can, of course, trivialize the empirical/theoretical distinction by saying either that all models are special cases of a more general model with certain parameters set equal either to zero or to infinity, or that many theoretical propositions are subject to empirical testing. To do so, however, is to discard a useful concept which seems especially relevant to considering the development of the monetarist debate in general and *Mayer's* current survey in particular. To a certain extent, the process of scientific debate consists of resolving theoretical disagreements about different paradigms into agreement on a common paradigm (which, if appropriate, may be subject to empirical testing).

A brief review of eleven of *Mayer's* propositions, deferring for the moment his treatment of “the monetarist model of the transmission process”, indicates the empirical or personal-preference essential nature of each:

The quantity theory of money, in the sense of the predominance of the impact of monetary factors on nominal income (*Mayer's* proposition # 1) is clearly an empirical notion. It rules out no nonmonetary influences but rather simply asserts their subordination to monetary factors, presumably in the sense of explanation of variance.<sup>2</sup> Furthermore, as *Mayer's* discussion of the quantity theory makes clear, what is relevant here is the net result of monetary influences on nominal income, and not the particular way in which these influences come about. In the conceptual framework of formal models of causation, this is a proposition about the magnitudes of reduced-form coefficients and about the variances of factors taken to be exogenous, but not about the specification of the underlying structural system.

The stability of the private sector (# 3) is also an empirical issue, at least in the context of the monetarist debate.<sup>3</sup> A given system is typically stable or unstable, and in either case oscillatory or monotonic, according to the magnitudes of certain of its parameters.<sup>4</sup> Just as importantly, in light of the relevance of the stability question for the monetarist debate, the time required for a perturbed stable system to return to equilibrium also depends on certain key parameter magnitudes. Hence the question of the stability of the private sector is an empirical issue from the outset.

The rejection of the significance of allocative detail (even in the short run), together with the corollary belief in a “fluid” capital market (# 4), is again a basically empirical matter of separating first-order from secondary effects. Surely *Mayer* would not want to assert that monetarists believe the economic system to be wholly without friction —

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<sup>2</sup> Subdebates over whether the relevant variable to be explained is the variance of nominal income or the variance about trend, or over the relevant time unit to use in computing these variances, do not alter the fundamentally empirical nature of the quantity theory proposition.

<sup>3</sup> Following *Clower* [13] and *Leijonhufvud* [27], a number of writers have recently explored this question in a theoretical context which has not yet intersected with the monetarist debate. *Tobin's* [45] contribution to this literature comes closest to relating it to questions raised by monetarism.

<sup>4</sup> See *Friedman* [17] for a discussion of this stability issue in the context of *Cagan's* [12] demand-for-money model.



i. e., that for every disappointed would-be homebuilder, unable to find a mortgage loan when short-term market interest rates exceed thrift deposit interest rate ceilings, someone else steps in with an exactly equal amount of nominal expenditure elsewhere in the economy; or that every medical student living in strapped circumstances does so because of personal preference or doubts about future earning power, rather than because of risk aversion reflected in bank lending practices. *Mayer* identified the monetarist approach in this respect as viewing expenditures as determined by the net excess demand for a single stock (real balances), but a quick reference to *Friedman's* [21] "Restatement" shows that net excess demands for other stocks (e. g., productive capital, inventories, houses, consumer durables) can theoretically matter also. Like acceptance of the quantity theory, dismissing the specific compositional detail reflects empirical rather than theoretical judgments.<sup>5</sup>

Since *Mayer's* first four propositions are the most familiar — and the most fundamental — elements of today's "monetarism", it is possible to deal even more briefly with the remaining eight.

Focusing on the overall price level instead of on individual sector prices (# 5) and using small rather than large econometric models (# 6) are elements of research strategy which follow naturally from the empirical dismissal of the importance of allocative detail.<sup>6</sup>

Using the reserve base as the instrument of monetary policy (# 7) and using the money stock as the intermediate target (# 8) constitute optimal monetary policy procedures only given certain parameter magnitudes, as *Poole* [38] and *Pierce and Thomson* [37], respectively, have shown in their analyses of these two issues.<sup>7i</sup>

A constant money growth rule (# 9) constitutes optimal monetary policy if and only if the variance of some relevant final-form parameter of the economic system is infinite (or if there is infinite risk aversion),

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<sup>5</sup> A reading of *Mayer's* own discussion of this proposition suggests that "unimportance" may describe what he had in mind better than "irrelevance" which he used.

<sup>6</sup> Parts of *Mayer's* discussion of the price level question seem to suggest a fundamental theoretical issue, but the discussion is highly inconclusive in this regard.

<sup>7</sup> The "indicator" issue has no unambiguous meaning, and no importance for monetary policy, unless the "indicator" is identical to the instrument which the central bank fixes; see *Friedman* [16].

just as a fully activist certainty-equivalent policy constitutes optimal monetary policy if and only if the variances of all relevant final-form parameters of the economic system vanish (or if there is zero risk aversion). As *Brainard* [8] has shown, whether the optimal degree of policy activism in the general case lies closer to the constant no-discretion rule or closer to certainty equivalence depends directly upon the variance-covariance structure of the system's final-form parameters,<sup>8</sup> and so preference for a constant no-discretion policy rule (as a first approximation to the optimal policy) is implicitly a statement about parameter values.

Belief in the absence of an inflation-unemployment trade-off (# 10) is largely an empirical proposition relating to money wage illusion, as a comparison of the *Phelps-Friedman* [23, 35, 36] and *Tobin* [44] views of the *Phillips* curve indicates.

Greater concern over inflation than over unemployment (# 11) and dislike of government intervention (# 12) are clearly personal preferences. They may reflect empirical judgments — for example, that the economy returns to full-employment equilibrium rapidly after a contractionary perturbation, or that a combination of cupidity and stupidity typically leads democratically elected officials to do the wrong thing — or they may reflect more abstract philosophical principles. In either case, they are empty of theoretical content in a macroeconomic sense.

With the exception of “the monetarist model of the transmission process”, then, none of *Mayer's* characteristic “monetarist” propositions has a theoretical macroeconomic issue as its fundamentally distinguishing content.

## II. Mayer on Monetarists on the Transition Mechanism

What about the “transmission mechanism”? In the context of the debate over monetarism, this term has become a familiar shorthand for the specification of that part of the structural economic system which relates to the effect of money on nominal income (or anything else which money is presumed to affect). Almost by definition, therefore, discussion of the “transmission mechanism” is the heart of whatever theoretical content the monetarist debate has had.

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<sup>8</sup> *Friedman's* [19] classic treatment of this problem summarizes the relevant part of the variance-covariance structure in a single correlation coefficient.

Mayer's treatment of "the monetarist model of the transmission process" identifies four elements which are variously described as "... substantive difference[s] between the Keynesian and monetarist transmission processes" and "... links between the hypothesis of the primacy of changes in the quantity of money and the monetarist — as opposed to the Keynesian — version of the transmission process": (1) the stability of the demand for money, (2) the relative measurability of money versus interest rates, (3) the range of assets considered, and (4) the relative price effects and stock effects discussed by *Brunner and Meltzer*. Because of the centrality of the transmission process proposition to the whole question of the theoretical content — or lack thereof — of the monetarist debate today, it is useful to examine each of these four sub-propositions separately.

First, a quick glance at page 199 of the "General Theory" [26] immediately imposes the burden of proof onto any aspiring exegete purporting to identify a belief in the *theoretical* instability of the demand for money as part of the usual Keynesian baggage. Once it is possible to specify the arguments of a behavioral function, as Keynes did in his famous  $M = L_1(Y) + L_2(r)$  expression, then the two most familiar notions of the stability of that relationship — the variance of the implicit additive residual disturbance and the variance-covariance structure of the right-hand-side coefficients — are both empirical questions.

Mayer's distinction between "numerical" and "functional" stability is at its root simply a question of what variables belong on the right-hand side of the behavioral relationship. Most economists would argue that the simple money demand function  $M = f(Y)$  used by *Friedman* [22], for example, is unstable in the sense that it omits the systematic influence of the current interest rate as in the inventory-theoretic model of *Baumol* [4] and *Tobin* [40]; the stable relationship would be  $M = f(Y, r)$ . Similarly, a strict interpretation of *Keynes'* speculative demand model would imply that the function  $M = f(Y, r)$  is also unstable in that it omits the difference between the current interest rate and the expected future interest rate; the stable relationship, according to this argument, would be  $M = f(Y, r, r - r^e)$ . The argument with respect to other theoretically oriented variables, such as the anticipated rate of price inflation, or more strictly institutional influences on money demand, such as deposit interest ceilings (including the zero nominal yield on demand deposits), is exactly analogous. Once



there is agreement on the specification of the behavioral relationship, questions of stability become empirical issues in the analysis of variance. Since *Friedman's* "Restatement" presents a theoretical specification of the money demand function which admits of many right-hand-side variables, and since most empirical work on money demand by monetarists<sup>9</sup> has included interest rates as right-hand-side variables just as in the Keynesian approach summarized most recently by *Goldfeld* [25], it is clear that the stability of the money demand function, in any of its various disguises, is an empirical rather than a theoretical issue.<sup>10</sup>

What about either the liquidity trap, which was the object of much attention in the demand-for-money literature of some years ago, or the more recently discussed "crowding out" effects associated with debt-financed fiscal policy? Both involve essentially empirical questions about the stability of the money-demand function as it relates to the presence of a wealth variable, or total portfolio constraint. The Keynesian liquidity trap requires a form of the  $M = f(Y, r)$  function which is not single-valued at some point  $r^*$  and is not defined for  $r < r^*$ .<sup>11</sup> By contrast, the continuous and universally defined function  $M = f(Y, r, W)$  reflects a liquidity trap if  $\frac{\partial M}{\partial W} = 1$  for  $r < r^*$ . Similarly, as *Blinder* and *Solow* [5, 6] and *Tobin* [46] have shown, the mechanics of the "crowding out" analysis hinge on a shift in the  $M = f(Y, r)$  function as the system receives an injection of outside bonds. Simply restated, the point here is that the  $M = f(Y, r)$  function is unstable because the correctly specified money demand function should be  $M = f(Y, r, W)$ . The issue, once again, is not whether the demand for money is a stable behavioral relationship or an unsystematic outcome but, instead, whether a particular specification of this relationship is made to appear "unstable" by attributing to the additive residual and the several included right-hand-side coefficients effects due to systematic variation of an excluded variable. Questions of this kind are empirical and lie far

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<sup>9</sup> For an early example, see *Meltzer* [30].

<sup>10</sup> A result established in *Friedman* [16] is that using the money stock as a straightforward intermediate target variable constitutes the optimal monetary policy procedure only if the money demand function is both interest inelastic and perfectly stable in the sense of zero residual variance.

<sup>11</sup> Conceptualizing the problem in this way avoids the difficulties of *Patinkin's* [34, Ch. 14] discussion, which determines that the liquidity trap notion is inherently a logical contradiction.

from the sense of the “stability” issue as *Mayer* related it to the monetarist debate.<sup>12</sup>

The second issue raised in *Mayer’s* treatment of the “transmission mechanism” is the relative degree of measurement difficulty associated with “money” versus “the interest rate”. As is clear from *Mayer’s* discussion, neither of these two concepts necessarily corresponds to a quantity or price which is readily observable. Variation of expected future price inflation and of asset risk differentials complicate the identification of “the interest rate”. Variation of asset preferences and of institutional arrangements complicate the identification of “the money stock”.

There is no way of knowing, a priori, which sources of variation are more severe in any given economy. The answer must reflect empirical judgments. Furthermore, even if the precise variances of the two respective measurement errors were known, how would one evaluate their relative importance, i. e., their relative contribution to the variance of prediction or control of nominal income or whatever other key variable provides the ultimate criterion for choice? Is a measurement error variance of  $X_1$  per-cent-per-annum-squared for the interest rate more or less troublesome than a measurement error variance of  $X_2$  billions-of-dollars-squared for the money stock? The answer requires empirical information about relevant aspects of the overall economic system.

Yet another potential problem in this context, also not precluded on a priori grounds, is that the respective sources of interest rate and money stock measurement error may bear different comparisons in different time units. How is one to choose if the inflation expectations which lead to measurement error in identifying “the interest rate” change only slowly each quarter but vary greatly over the course of a decade, while the institutional factors which lead to measurement error in identifying any specific observable aggregate as “the money stock” vary greatly from quarter to quarter in ways which largely wash out

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<sup>12</sup> The *Ando-Shell* appendix to *Ando and Modigliani* [2] is somewhat exceptional in this regard, since it attempts to demonstrate theoretically the independence of money demand from a wealth variable (rather than arguing, as did *Goldfeld* [25], that a wealth dependence is reasonable a priori but is empirically insignificant). This position is Keynesian in averting the “crowding out” problem but anti-Keynesian in precluding a liquidity trap. (Both of these propositions require redefinition in a money-shorts-longs world instead of a money-bonds world, however.)



over a decade or so? Even choosing the proper time unit for such a comparison is essentially an empirical problem.

The third “transmission mechanism” issue considered by *Mayer* is the “range of assets” for which the net excess demand may rise (fall) in response to an increase (decrease) in the public’s holdings of money balances. An often repeated view, sketched by *Mayer*, is that the monetarist adopts a generalized portfolio approach, according to which the response is nonzero for all “assets” including both securities and “real assets” such as capital goods and consumer goods, whereas the Keynesian adopts, a priori, a segmented approach which assumes zero response for (nondurable) consumption goods. If true, this difference would indeed constitute a genuine point of theoretical difference at the core of the debate over monetarism. Nevertheless, while the “Keynesian” half of this theoretical distinction may be a valid description of the model of the “General Theory” itself,<sup>13</sup> it is in no way a valid description of the modern Keynesian position which is relevant to an assessment of the monetarism debate today.

A key point to note at the outset is that the only category of expenditure in any dispute whatever is that on consumption of services and nondurable goods. Consumer durables and residential dwellings are both analogous to producers’ capital goods in their treatment, by Keynesians and monetarists alike, as assets bearing returns (in the form of services) and subject to ready incorporation within a generalized model of portfolio choice. The fact that only this one category of expenditures remains in question is important because, by definition, services and nondurable goods do not comprise an “asset” to be treated analogously with all of the other assets. Like leisure, nondurable consumption is a flow for which the integral over time is not a physical stock which can be bought or sold but is rather simply a cumulant over time of past and/or future activity. Hence it is at best misleading to imply that, in “the monetarist model of the transmission mechanism”, increased money balances raise the public’s net excess demands for “. . . all types of real

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<sup>13</sup> Even in the “General Theory”, *Keynes* was simplifying on the basis of an empirical judgment that, given the observed variation of interest rates, the interest elasticity of consumption was sufficiently small to render interest-induced consumption effects insignificant in comparison with the income-induced consumption effects which lay at the heart of his multiplier process; see [26, pp. 93-94].

assets”, thereby leading the public to equilibrate marginal yields by spending the “... excess balances to acquire ... consumer goods”.

Incorporating the determination of a pure flow variable along with asset stock variables within a generalized portfolio model is not necessarily easy, as *Merton* [31] and *Samuelson* [39] have shown in the explicit context of interrelated saving and portfolio decisions. The standard simplification of this problem today is probably the “life cycle” saving model developed by *Modigliani*, *Brumberg* and *Ando* [1, 33], according to which the value of the stock of consumer wealth (including money balances) is a key determinant of the flow of consumer spending (including nondurables and services). This theoretical model has served as the foundation for a substantial amount of empirical work, often by “Keynesian” economists, investigating the effects of wealth on consumption spending.<sup>14</sup> There is no a priori reason for assuming homogeneity of effects among different kinds of wealth increments and different kinds of expenditures, and so whether money balances have as large an effect as do other assets, and whether nondurable consumption is affected as much as are other expenditures, are both empirical questions.<sup>15</sup> From the standpoint of identifying *theoretical* differences between the monetarist and Keynesian models of the “transmission process”, however, the “range of assets” included in the portfolio model demonstrates more agreement than difference.

### III. Brunner and Meltzer and Tobin on the Transmission Process

The fourth “substantive difference” between the monetarist and Keynesian transmission processes, in *Mayer’s* survey, is the *Brunner-Meltzer* [9, 10] analysis which “... focuses on a relative price process and stock effects which tend to bring the system towards a classical rather than a Keynesian equilibrium.” Since *Mayer* merely cited this point of dif-

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<sup>14</sup> See, for example, *de Leeuw* and *Gramlich* [14], *Modigliani* [32], *Tobin* and *Dolde* [47], and *Friend* and *Lieberman* [24]. Much of this empirical literature has emphasized the market value of consumers’ equity portfolios, but this focus is natural in view of the relative magnitude and variability of consumers’ equity holdings in comparison with money balances or other forms of wealth. The key point is that dependence of nondurable consumption on money balances is not precluded a priori.

<sup>15</sup> *Bosworth’s* [7] results, for example, are curious in suggesting that changes in the value of equity portfolios stimulate nondurable consumption but not purchases of consumer durables.

ference without explanation, and since the *Brunner-Meltzer* model is somewhat complicated, this subject bears more extensive investigation. In particular, comparing *Brunner's* and *Meltzer's* "monetarist" model with a "Keynesian" model such as *Tobin's* [43] is a useful way to evaluate the extent of theoretical dispute between alternative models of the "transmission process".

The *Brunner-Meltzer* model consists of explicit representations of economic behavior in three markets — output, bank credit, and money.<sup>16</sup>

The output market equations represent (1) the equilibrium condition for real output of the private sector,  $y$ , (2) the determination of private expenditures,  $d$ , and (3) the determination of the price level,  $p$ :

$$(1) \quad y = d + g$$

$$(2) \quad d = d(i - \pi, p, p^*, P, e, W_n, W_h), \quad d_3, d_4, d_5, d_6, d_7 > 0 > d_1, d_2$$

$$(3) \quad p = p(y, K, w, \Phi), \quad p_1, p_3, p_4 > 0 > p_2$$

where  $g$  is government expenditures,  $i$  is the nominal interest rate,  $\pi$  is the rate of price inflation expected by credit market participants,  $p^*$  is the price level expected by producers,  $P$  is the price of existing real capital assets,  $K$  is the stock of existing real capital assets,  $w$  is the efficiency wage rate,  $\Phi$  is the price level expected by suppliers, and sub-scripted notations indicate partial derivatives. Subsidiary relationships determine (4) nonhuman wealth,  $W_n$ , (5) human wealth,  $W_h$ , and (6) the anticipated per-unit return on real capital assets,  $e$ :

$$(4) \quad W_n = PK + v(i, \tau)S + (1 + \omega)B, \quad v_1 < 0$$

$$(5) \quad W_h = W_h(y, \tau), \quad W_{h1} > 0$$

$$(6) \quad e = e(y, \tau), \quad e_1 > 0$$

where  $v$  is the price per face-amount dollar of government securities,  $\tau$  is a vector of tax rates,  $S$  is the face-value amount of government securities outstanding,  $\omega$  is the ratio of the banking system's net worth to the monetary base, and  $B$  is the monetary base itself.

The credit market equations represent (7) a market-clearing equilibrium condition, (8) the asset multiplier of the commercial banking

<sup>16</sup> The form of the *Brunner-Meltzer* model presented here is from [10]. This model has evolved through various forms and has appeared in several published sources over a number of years.



system,  $a$ , and (9) the stock of assets offered to banks by the nonbank public,  $\sigma$ <sup>17, 18</sup>:

$$(7) \quad aB = \sigma$$

$$(8) \quad a = a(i, p, P, W_n, W_h, e), \quad a_1, a_3, a_4 > 0 > a_2$$

$$(9) \quad \sigma = \sigma(i - \pi, P, p, p^*, \Phi, e, S, W_n, W_h), \quad \sigma_3, \sigma_4, \sigma_5, \sigma_6, \sigma_7 > 0 > \sigma_1, \sigma_2.$$

*Brunner* and *Meltzer* conceptually assigned to the credit market equations the role of (proximately) determining  $i$ , along with  $a$  and  $\sigma$ .<sup>19</sup>

The money market equations analogously represent (10) a market-clearing equilibrium condition, (11) the money multiplier of the commercial banking system,  $m$ , and (12) the nonbank public's desired nominal stock of money,  $L$ :<sup>20</sup>

$$(10) \quad mB = L$$

$$(11) \quad m = m(i, p, P, W_n, W_h), \quad m_1, m_2 > 0 > m_3, m_4$$

$$(12) \quad L = L(i, p^*, \Phi, e, p, P, W_n, W_h), \quad L_5, L_6, L_7, L_8 > 0 > L_1, L_2, L_3, L_4.$$

*Brunner* and *Meltzer* conceptually assigned to the money market equations the role of (proximately) determining  $P$ , along with  $m$  and  $L$ .

The final component of the model is the description of the government's role in the economy. The government budget constraint is

$$(13) \quad pg + \bar{w}lg + IS - t = \dot{B} + \dot{S}$$

<sup>17</sup> Although the model as presented in [10] omits any mention of time deposits, time deposits must be present as an additional asset in the model to prevent the banking system's asset and money multiplier functions from being inconsistent; see *Friedman* and *Froewiss* [18]. Some earlier versions of the model included the yield on time deposits,  $i_t$ , as an explicit argument of equations (8) and (9) and *Brunner* and *Meltzer* [11] have made clear that the version of the model in [10] assumes  $i_t$  to be implicitly present in these two equations.

<sup>18</sup> The earlier version [9] specified  $\frac{\partial a}{\partial w_h} > 0$ ,  $\frac{\partial a}{\partial e} < 0$  and  $\frac{\partial \sigma}{\partial s} = 1$ .

<sup>19</sup> In long-run steady-state equilibrium  $i = \frac{p}{P} e + \pi$ .

<sup>20</sup> The earlier version [9] specified  $\frac{\partial m}{\partial w_h} < 0$  and also included  $e$  as an argument of equation (11) with derivative  $\frac{\partial m}{\partial e} > 0$ .

where  $pg$  and  $\bar{w}lg$  are government purchases of goods and labor services, respectively, and subsidiary relationships determine (14) interest payments per face-value unit of government debt,  $I$ , and (15) tax revenues,  $t$ :

$$(14) \quad I = I(i), \quad I_1 > 0$$

$$(15) \quad t = t(p, y, \bar{w}lg, \tau), \quad t_1, t_2, t_3 > 0.$$

The financing mix of the net deficit follows as

$$(16) \quad \dot{B} = \mu [pg + \bar{w}lg + IS - t] + \nu$$

$$(17) \quad \dot{S} = (1 - \mu) [pg + \bar{w}lg + IS - t] - \nu$$

where  $\mu$  is by definition the portion of a deficit financed by issuing or withdrawing  $B$ , and  $\nu$  is the amount of  $B$  issued or withdrawn independently of the deficit.

Since one of equations (13), (16) and (17) is redundant, the model in this form is a system of sixteen independent relationships in the sixteen jointly determined variables ( $y, d, p, W_n, W_h, e, a, \sigma, i, m, L, P, I, t, \dot{B}, \dot{S}$ ). This system is capable of generating responses to monetary policy, and *Brunner* and *Meltzer* have elaborated extensively the mechanics of the resulting “transmission mechanism”.<sup>21</sup> The key aspect of this mechanism, which *Mayer* cited as constituting a substantive difference from Keynesian models of the transmission process, is the dependence on relative price effects and stock effects. In other words, monetary policy in the form  $\nu \neq 0$  disturbs the asset market equilibrium, thereby causing portfolio adjustments which change  $P$  and  $i$ .<sup>22</sup> An open market purchase of securities ( $\nu > 0$ ), for example, increases commercial banks’ supply of deposits and demand for earning assets, and a fall in  $i$  and rise in  $P$  are necessary to increase the public’s demand for deposits and supply of loans, so as to restore equilibrium in the asset markets. These changes in  $P$  and  $i$  then lead to further adjustments in the goods market because of the direct dependence of  $d$  on  $P$  and  $i$ , a host of indirect effects operating through the direct dependence of  $W_n$  on  $P$  and  $i$ , and finally the dependence of  $p$  on  $y$ .

<sup>21</sup> The *Brunner-Meltzer* model is also capable of generating fiscal policy responses, but a discussion here of the differences between monetary and fiscal effects in the model would not add to the examination of the model’s “transmission mechanism” for monetary policy. See the analysis of the “bbe line” in [10].

<sup>22</sup> All other things equal,  $e$  varies inversely with  $P$ .

How does this “monetarist model of the transmission process” differ from a Keynesian alternative?

*Tobin's* [43] Model II consists of explicit representations of economic behavior in three markets — capital, (short-term) government securities, and money.<sup>23</sup> Although *Tobin* presented the model more compactly, it is useful here, for purposes of comparison, to describe it in a form analogous to the outline of the *Brunner-Meltzer* model presented above.

The capital market equations represent (I) a market-clearing equilibrium condition in real terms, (II) the public's demand for capital as a fraction of real wealth,  $f_K$ , and (III) a definition of the real rate of return on capital,  $r_K$ :

$$(I) \quad f_K W = qK$$

$$(II) \quad f_K = f_K \left( r_K, r_S, r_M, \frac{Y}{W} \right), \quad f_{K_1} > 0 = f_{K_4} > f_{K_2}, f_{K_3}$$

$$(III) \quad r_K = \frac{R}{q}$$

where  $K$  is the stock of real capital;  $q$  is the ratio of the market price of capital to its reproduction cost (equivalent to  $P/p$  in the *Brunner-Meltzer* model);  $Y$  is real income;  $r_S$  and  $r_M$  are the real yields on government securities and money, respectively;  $R$  is the marginal efficiency of capital relative to reproduction cost; and  $W$  is the stock of real wealth defined as

$$(IV) \quad W = qK + \frac{S}{p} + \frac{M}{p}$$

where  $S$  is the nominal amount of government securities outstanding and  $M$  is the nominal money stock.

The government securities market equations analogously represent (V) a market-clearing equilibrium condition in real terms, (VI) the

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<sup>23</sup> *Tobin's* model also has evolved through various forms over a number of years; see, for example, *Tobin* [42]. The more detailed Model III, also presented in [43], is more comparable to the *Brunner-Meltzer* model in that it distinguishes the public's assets and liabilities from those of the banking system, so that items such as deposits, loans and the monetary base are explicitly identified. For purposes of seeing the analytic principle of the “relative price effects and stock effects”, however, the simpler Model II is sufficient.



public's demand for government securities as a fraction of real wealth,  $f_S$ , and (VII) a definition of  $r_S$ :

$$(V) \quad f_S W = \frac{S}{p}$$

$$(VI) \quad f_S = f_S\left(r_K, r_S, r_M, \frac{Y}{W}\right), \quad f_{S_2} > 0 > f_{S_1}, f_{S_3}, f_{S_4}$$

$$(VII) \quad r_S = i_S - \pi$$

where  $i_S$  is the nominal yield on government securities and  $\pi$  is the expected rate of price inflation.

The money market equations analogously represent (VIII) a market-clearing equilibrium condition in real terms, (IX) the public's demand for money as a fraction of real wealth,  $f_M$ , and (X) a definition of  $r_M$ :

$$(VIII) \quad f_M W = \frac{M}{p}$$

$$(IX) \quad f_M = f_M\left(r_K, r_S, r_M, \frac{Y}{M}\right), \quad f_{M_3}, f_{M_4} > 0 > f_{M_1}, f_{M_2}$$

$$(X) \quad r_M = i_M - \pi$$

where  $i_M$  is the (typically zero) nominal yield on money.

Since the adding-up constraints implied by the wealth definition (IV) constrain the derivatives of asset demand functions (II), (VI) and (IX), one of these four relationships is redundant. Hence *Tobin's* model in this form is a system of nine independent equations in the nine variables  $(f_K, r_K, q, W, f_S, r_S, i_S, f_M, r_M)$ .<sup>24</sup> This system too is capable of generating responses to monetary policy, and *Tobin* has also analyzed carefully the resulting "transmission mechanism". In contrast to the implication of *Mayer's* paper, however, the key aspect of this mechanism is once again its dependence on relative price (yield) effects and stock effects. Monetary policy in the form  $dM = -dS \neq 0$  disturbs the asset market equilibrium, thereby causing portfolio adjustments which change  $r_K, q, r_S, i_S, r_M$  and  $W$ . The "mechanism" is thus essentially identical to that employed by *Brunner* and *Meltzer*.

<sup>24</sup> *Tobin* explicitly noted that different interpretations of the model are possible, depending upon the particular set of nine variables assumed to be endogenous.

While *Tobin's* model is explicitly more detailed than the *Brunner-Meltzer* model in its treatment of the asset markets, it is less explicit in incorporating the goods market. Nevertheless, *Tobin* explained clearly that the private-demand-for-goods equation which he graphed as a form of *IS* curve in  $(R, Y)$  space depends positively on  $q$ .<sup>25</sup> Just as in the *Brunner-Meltzer* model, therefore, the asset market adjustments due to monetary policy lead in turn to further adjustments in the goods market.

Furthermore, both the *Tobin* model and the *Brunner-Meltzer* model adopt the same disaggregation methodology to sidestep completely the "asset aggregation" question which dominated much of the monetarist debate a decade ago. In particular, the issue which attracted so much attention at that time concerned the asset substitution implications of moving from the Keynesian-Hicksian-Metzlerian world, in which the only two assets were money and capital, to a three-asset world including money and capital and securities.<sup>26</sup> Were securities to be treated as (approximately) perfect substitutes for capital, leaving the only (or principal) dividing line that between money and all non-money assets, or were securities (approximately) perfect substitutes for money, leaving the only (or principal) dividing line that between capital and all financial assets?<sup>27</sup> Both *Tobin* and *Brunner* and *Meltzer* have disposed of this question by simply preserving the full three-way asset disaggregation and acknowledging that, in principle, the demand for every asset depends upon (among other things) the yield on all other assets. Relative substitutabilities are therefore an empirical matter of elasticities of functions explicitly included in the model with respect to arguments explicitly included in those functions, rather than a theoretical matter of competing paradigms.

What is one to make of all this? Perhaps *Brunner* and *Meltzer* are not monetarists. Or perhaps *Tobin* is not a Keynesian. Perhaps. A more likely conclusion, however, is that, once monetarists and Keynesians

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<sup>25</sup> From (III), any variation in  $r_K$  requires an inverse variation in  $q$  for fixed  $R$ ; see footnote 22. *Tobin* did not indicate the nature of the supply-of-goods equation which would accompany his model; in the *Brunner-Meltzer* model the price-setting equation (3) describes the behavior of suppliers.

<sup>26</sup> See, for example, the discussion in *Tobin* [41]. The discussion usually assumed that the securities in question were nominally denominated and non-indexed.

<sup>27</sup> See *Leijonhufvud* [27] for an argument which resolves this question according to whether the securities are of short or long maturity.

specify clearly the “transmission mechanism” by which monetary policy has its effect in their respective theoretical models, these alternative mechanisms are by and large identical. On this key issue, which is the essence of the theoretical dimension of the monetarist debate, it is hard to find significant disagreement.

#### IV. Conclusion

From a *theoretical* standpoint, the “monetarist” label today is an old school tie. Like other such emblems of association, it may convey information about the bearer’s institutional affiliations, or about his mode of expressing himself, or about his tastes and preferences, or even about who his friends are. It does *not* bear information about the bearer’s theoretical conception of money and its role in the macroeconomic system. Theoretical questions there are plenty, but these are *not* bound up in the monetarist debate. Instead, in part as a result of two decades of discussion, the focus of the monetarist debate today lies with *empirical* issues.

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## Zusammenfassung

### Die theoretische „Nicht-Auseinandersetzung“ über den Monetarismus

Bei einer Beurteilung der monetaristischen Diskussion ist es besonders wichtig, zwischen empirischen und theoretischen Thesen zu unterscheiden. Als Schlüssel hierzu haben die Diskussionsteilnehmer immer deutlicher ihre Auffassung zu einzelnen Fragen herausgearbeitet; es ist zunehmend klar geworden, daß der charakteristische Inhalt des Monetarismus eine Reihe von empirischen Behauptungen ist. Alle Lektionen über Monetarismus, die die Volkswirte insoweit erhalten und angenommen haben, aber auch jene Fragen, die noch umstritten sind, betreffen in erster Linie empirische Punkte.

Von den zwölf charakteristischen monetaristischen Thesen, die Thomas Mayer aufzählt\*, haben elf als typischen Inhalt entweder empirische oder vorzugsweise empirische Gegenstände. Die zwölfte „Das monetaristische Modell des Transmissionsprozesses“ verbindet im wesentlichen umstrittene empirische Aussagen (die Stabilität des Verhältnisses der Geldnachfrage und die relativen Schwierigkeiten, die mit der Messung von Veränderungsraten von Geldvolumen versus Zinsniveau verbunden sind) sowie theoretische Punkte, die bei näherer Betrachtung unumstritten sind (die Rangskala von Anlagen, bei denen überschüssige Netto-Nachfrage den Änderungen der Geldanlagegewohnheiten des Publikums entspricht, und das Vertrauen auf Effekte beim Vermögensbestand und bei den relativen Preisen). In der Tat ist der Transmissionsmechanismus oder das Strukturmodell wie es in Brunner's und Meltzer's „monetaristischem Modell“ umrissen wird, im wesentlichen nicht von jedem Modell zu unterscheiden, das von Tobin „keynesianisches Modell“ genannt wird.

Das schließliche Ergebnis einer jahrelangen *theoretischen* Debatte auf beiden Seiten des monetaristischen Forums ist darin zu sehen, daß die Thesen hinreichend geklärt wurden, um zu zeigen, daß gegenwärtig nur noch ein geringer Widerspruch besteht. Der Inhalt der Auseinandersetzung ist stets empirisch gewesen und bleibt empirisch.

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\* 8. Jg. (1975) S. 191 ff. und 293 ff.

## Summary

### The Theoretical Nondebate about Monetarism

The distinction between empirical propositions and theoretical ones is essentially important in making an assessment of the monetarist debate. As key participants in the debate have progressively elaborated exactly what they think on particular questions, it has become increasingly clear that the distinguishing content of monetarism is a set of empirical propositions. Those lessons which economists have thus far learned and accepted from monetarism, as well as those questions which remain in dispute, all concern primarily empirical issues.

Of Thomas Mayer's twelve characteristically monetarist propositions\*, eleven are clearly either empirical or preferential in their distinguishing content. The twelfth, "the monetarist model of the transmission process," combines essentially empirical issues which are in dispute (the stability of the demand-for-money relationship, and the relative degree of measurement difficulty associated with money versus interest rates) and theoretical issues which, on close inspection, are not in dispute (the range of assets for which the net excess demand responds to changes in the public's holdings of money balances, and

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\* Vol. 8 pp. 191 and pp. 293.



reliance on asset stock effects and relative price effects). Indeed, the transmission mechanism, or structural model, specified in *Brunner's* and *Meltzer's* "monetarist model" is essentially indistinguishable from that specified in *Tobin's* "Keynesian" model.

The net impact of many years of theoretical contributions on both sides of the monetarist debate has been to clarify the issues sufficiently to demonstrate that there is actually but little theoretical disagreement. The content of the debate has been empirical all along and remains empirical.

## Résumé

### La « non-querelle » théorique sur le monétarisme

Pour juger la querelle monétariste, il est particulièrement important de distinguer les thèses empiriques des thèses théoriques. Dans cette optique, les participants à la querelle ont toujours plus clairement développé leurs idées sur des questions isolées; il est devenu de plus en plus évident que le contenu caractéristique du monétarisme constitue une série d'affirmations empiriques. Tous les cours sur le monétarisme donnés et acceptés jusqu'à présent par les économistes, mais aussi toute les questions qui demeurent controversées, concernent en première instance des points empiriques.

Des douze thèses typiquement monétaristes que dénombre Thomas *Mayer*\*, onze offrent comme contenu distinctif des sujets empiriques ou de préférence empiriques. La douzième, « le modèle monétariste du processus de transmission », lie pour l'essentiel des affirmations empiriques controversées (la stabilité de la relation de la demande monétaire et les difficultés relatives liées à la mesure des taux de changement du volume monétaire par rapport au niveau des taux d'intérêt) à des éléments théoriques (les échelles de classement des placements, qui permettent de constater qu'une demande nette excessive correspond à des modifications des habitudes d'investissement du public et la confiance dans les effets sur le patrimoine existant et sur les prix relatifs). En réalité le mécanisme de transmission ou le modèle structurel tel qu'il a été cerné dans le « modèle monétariste » de *Brunner* et de *Meltzer*, ne se distingue par rien d'essentiel du modèle appelé « keynesien » par *Tobin*.

Le résultat final de la longue querelle *théorique* opposant les deux ailes du forum monétariste consiste à constater que les thèses sont suffisamment débroussaillées pour démontrer que les contradictions sont aujourd'hui devenues mineures. Le contenu de la querelle a toujours été empirique et continue à le demeurer.

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\* Voir Année 1975, pages 191 et svtes et 293 et svtes.