Issues of Post-Keynesian Monetary Analysis

A Contribution to the Discussion Opened by Professor Thomas Mayer*

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The "Keynesian cross" and its implicit disregard of monetary processes dominated the analysis of stabilization policies in the early postwar years and reemerged recently in the guise of the Neo-Cambridge theory. Monetary theory, best represented by the work of *Patinkin* in the early 1950's and the classic piece by Lloyd *Metzler*, was safely separated from contamination with the analysis of stabilization policies. *Patinkin* pursued the line introduced by *Hicks* and integrated monetary analysis and "value theory". The seminal work of Lloyd *Metzler* influenced aspects of growth theory, initiated a monetary interpretation of aggregative analysis and shaped the monetary approach to the international balance of payments.

Metzler and *Patinkin* offered important contributions to the gradual evolution of monetary analysis. But this field still suffered under a somewhat schizophrenic state, probably unavoidable in the slow development of a body of knowledge. Monetary theory and the discussion of monetary and credit policy belonged to separate worlds. Monetary analysis offered little basis for the clarification of actual problems confronting policymakers, and the usual discussion of policy and institutions proceeded without benefit of analysis. The "islamic" framework provided no basis for the discussion of "credit" policy and could not cope with the relation between credit and money. Major ideas guiding policymakers' evaluations emerged over many years independently of academic monetary theory and involved views contradicting central and

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well grounded propositions of economic theory.[1] The professional literature still failed to offer a coherent account for the behavior of monetary aggregates at the end of the 1950's. We find no analysis about the nature of the interaction between monetary authorities, the banks and the public. But without such analysis, supplemented with suitable information, discussions of monetary or credit policy and the views typically advanced by monetary authorities in public pronouncements of documents could barely be assigned much relevance. Similarly, the discussion bearing on interest rates was largely occupied with learned exercises about stocks and flows and whether such formulations could be conceivably made equivalent. They offered no useful explanation of observable interest rate behavior. We also lacked at the time an adequate explanation for the simultaneous occurrence of retardation in output, increasing unemployment and still rising money stock and prices. This phenomenon could not be explained by Keynesian or monetary theory without an array of ad hoc assumptions arbitrarily tailored for this purpose.

Recognition of this state of affairs contributed to the "monetarist revolution" in monetary and macro-theory. The implicit separation of our linguistic activities into a policy discussion without analysis in one volume, and a monetary theory yielding barely any relevant propositions for assessment and interpretation of monetary and credit policy in another volume, offered a serious intellectual challenge. The struggle for a monetary analysis applicable to policy problems typically confronting policymakers evolved into a central concern of the monetarist reexamination of monetary and aggregative analysis. The monetarist endeavor thus involved a decisive rejection of the "platonic games" so frequently cultivated in our professional literature.[2]

The desired connection between policy and analysis explains the other "sources" of monetarist evolutions. The gradual development of thought was strongly influenced by a search for broad empirical regularities. This

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[1] The different versions of the free reserve doctrine should be especially noted in this respect. These hypotheses are examined in some detail in a forthcoming book on "Theory and Practice of Central Banking" jointly authored with Allan H. *Meltzer*.

[2] Hans *Albert* presented an excellent critique of the "platonic games" pursued in our professional literature: "Modell-Platonismus. Der neoklassische Stil des ökonomischen Denkens in kritischer Beleuchtung", in: *Logik der Sozialwissenschaften*, ed. by Ernst *Topitsch*, Cologne-Berlin, 1971, pp. 406.

search affected important portions of monetarist thinking and guided the evolving analysis. Lastly, the required aggregative analysis was approached as an extension of price-theory to the aggregative plane and to aggregative issues. This conception contrasted with the prevailing Keynesian views and affected the interpretation of money demand (e. g. irrelevance of a liquidity trap[3]). It also influenced the interpretation of the interest elasticity of aggregate demand for output, views about the multiplier and about the roles of consumption and investment in the process, the rationale of a credit market in a full description of relevant portfolio adjustments and the range of channels transmitting monetary impulses.

Almost a generation has passed since the first questioning doubts in the postwar literature. The accumulated work and the ongoing disputes gradually modified the formulations and substance of monetary analysis. The views of active participants "in the action" hardly stayed fixed at the level of the middle 1960's. It appears thus most appropriate to survey at this time the nature of the issues behind the usual labels. The labels functioned in recent years more often as a psychological obstruction to understanding and searching analysis than as an economic device to summarize alternative conjectures and analytic ideas. *Mayer's* survey of the substantive issues should be welcome therefore as a valuable contribution. It directs attention away from labels burdened after years of dispute with emotive shadows and emphasizes the substantive nature of the questions to be addressed in future work. The following sections of my paper elaborate and clarify some important aspects covered by *Mayer's* argument. They describe in particular some of the crucial problems which will require our future attention[4].

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[3] A price-theoretical interpretation determines that a liquidity trap means an excess of marginal transaction costs over benefits for any level of transaction. This condition held in the 1930's only for the Federal funds market. Transactions continued on all other financial markets and assured thus the transmission of monetary impulses to economic activity and the price-level.

[4] The nature of the issues has been discussed on several occasions. The reader is referred to "The Monetarist Revolution in Monetary Theory", Weltwirtschaftliches Archiv 1970, "A Survey of Selected Issues in Monetary Theory", Schweizerische Zeitschrift für Volkswirtschaft und Statistik, 1971; note also the papers jointly authored with Allan H. *Meltzer*, "An Aggregative Theory for a Closed Economy" and "Monetarism: The Principal Issues, Areas of Agreement and the Work Remaining", and prepared for the Conference on Monetary Economics at Brown University in November 1974; to be published by North-Holland Publishing Co. in a Conference volume.

The organization of my discussion reflects a definite view of the structure of issues. *Mayer* distinguishes twelve separate aspects:

" 1. The quantity theory of money, in the sense of the predominance of the impact of monetary factors on nominal income.
2. The monetarist model of the transmission process.
3. Belief in the inherent stability of the private sector.
4. Irrelevance of allocative detail for the explanation of short-run changes in money income, and belief in a fluid capital market.
5. Focus on the price level as whole rather than on individual prices.
6. Reliance on small rather than large econometric models.
7. Use of the reserve base or similar measure as the indicator of monetary policy.
8. Use of the money stock as the proper target of monetary policy.
9. Acceptance of a monetary growth rule.
10. Rejection of an unemployment-inflation trade-off in favor of a real *Phillips*-curve.
11. A relatively greater concern about inflation than about unemployment compared to other economists.
12. Dislike of government intervention."

This presentation is somewhat unstructured and fails to convey the dependencies and interrelations between the issues. *Mayer* emphasizes the relative independence of several problems. This is useful and important. But he misses another important aspect, viz. the logical structure between the problems. Issues 1 to 4 form the basic core. Moreover, the basic four are not completely independent. The subsequent discussion reveals some cross connections influencing the actual clustering of analytic positions. Points 5 to 11 are essentially derived issues and depend on the decisions made concerning questions. Points 5 and 6 in particular are special aspects of the issues involved under point 4. The indicator (i. e. interpretation) and target (i. e. strategy) problem listed under points 7 and 8 are implications of the answers offered to the questions raised under the basic issues and the specifications introduced for this purpose. Point 9 moreover is only a special form of the strategy problem listed under point 8. Points 10 and 11 form essentially the same problem and the answer is again predetermined by the decisions made with respect to the basic issues. It depends most particularly on the views about the nature of the transmission mechanism. We should also note here that point 11 perpetuates a widespread

misconception. The problem is stated as a matter of relative *concerns*, a matter of personal preferences. This characterization is seriously misleading. It would be difficult to deny that preference orderings of social states are not involved. But there is substantially more to the problem. The conflicting positions are sensitively conditioned by the core issues which determine the comparative consequences of activist monetary-fiscal expansionism. The last point covers a range of problems of great importance for the future of western societies. This range is however not closely related to the propositions disputed in monetary analysis. Still, there is probably a statistical association involving more than historical accident between the positions occurring under this point and the core issues. Neither policy nor political problem raised by *Mayer* will be covered in my discussion. This does not impute any lack of significance to policy or political aspects. On the contrary, their importance deserves a more extended analysis in a separate paper.

I. The Nature of the Transmission Mechanism I: The Range of Asset Substitutions

The "islamic" framework defines a familiar reference scheme for our purposes. It occurs with two distinct interpretations involving substantially different and conflicting hypotheses. The "Hicksian" version imposes a restricted range of substitution relations on money. Money substitutes only with "bonds" representing a class of financial assets. Neither bonds nor money substitute with real assets. Real assets are frozen into portfolios by forbidding transaction costs. The "interest rate" represents a rate of return on financial assets. The textbook presentations of the Hicksian version explain moreover the interest-elasticity of aggregate demand in terms of relative borrowing cost. The comparative magnitude of these costs associated with the different expenditure categories determines the magnitude of this interest-elasticity. The Hicksian version dominated the textbook and particularly also econometric models.

An alternative interpretation is associated with *Metzler's* classic piece.[5] The "Metzlerian" version dominated growth theory and the monetary approach to the international balance of payments. It places money in a wide-ranging net of substitution-relations. Money substi-

[5] Lloyd *Metzler*, "Wealth, Saving and the Rate of Interest", The Journal of Political Economy, April 1951.

tutes with all assets in all directions. Substitutability is not constrained to a subset of existing assets. This *general* substitutability is supplemented with a characteristic Metzlerian postulate, viz. that financial and real assets are "perfect substitutes". This assumption reconciles a pattern of general substitutability with the implicit two-asset model of the "islamic" framework. The full portfolio adjustment is again described by a money market equation. The "interest rate" measures in this case however the real rate of return on real assets supplemented with the anticipated rate of inflation. The Metzlerian version generally rejects implicitly the borrowing cost interpretation of the interest elasticity of aggregate demand and the occurrence of a liquidity trap.

The Metzlerian postulate of "perfectly substitutable" financial and real assets admits two interpretations. It may represent a hypothesis that non-money financial assets are comparatively close substitutes with real assets, whereas money exhibits relatively looser substitution relations with both financial and real assets. It could be understood however as an elliptical description of a realm of application confining the analysis. It does not mean in this case that financial and real assets are comparatevely close substitutes. The assumption of "perfect substitutability" only means under the circumstances that the analysis is constrained to experiences exhibiting large monetary variations when compared to the relative variability of financial and real assets.

The alternative interpretations of the familiar paradigm confront us with the first issues in this section. We reject the Hicksian postulate of a restricted substitution range for money and we also reject the first interpretation of the Metzlerian version. We accept on the other hand the second variant of the Metzlerian analysis and find it a useful approximation for periods with dominantly monetary disturbances. We remain however quite reluctant to apply the Metzlerian analysis to problems of the international balance of payments in the manner developed over the past 15 years. The Metzlerian postulate is usually supplemented in this analysis with an assumption of perfectly substitutable financial assets denominated in different currencies. The results is an all-around perfect substitutability removing the analysis from any shorter-run relevance in periods not exhibiting very large inflation.

A more useful approach with a less confined range of application seems properly to emerge from the second interpretation of the Metzlerian version. We postulate thus for money a *general* and *imperfect* range of substitutions in all directions over the whole spectrum of assets.

This postulate is reflected in the analysis by the occurrence of a credit market equation supplementing the money market equation. Portfolio adjustments covering simultaneously three classes of assets involve under a general and imperfect substitutability assumption the explicit interaction between two asset markets. The concentration in our work on credit and money market does not reflect in this context a matter of logical necessity. It is determined by the relative convenience of empirical research and the opportunity to analyze directly propositions bearing on bank credit, credit policy and the role of financial intermediation and disintermediation in the monetary process.[6] An immediate corollary of the general and imperfect substitutability implies the rejection of a frequent and long repeated characterization of the issue. The substitutability assumption determines that the slope properties of the IS-LM curves are neither sufficient nor necessary conditions for any propositions about the relative efficacy of monetary impulses. More particularly, propositions about fiscal and monetary policy are not crucially dependent on the magnitude of the interest-elasticity of money demand. The dependence of money demand on interest rates forms no relevant issue, not even the absolute magnitude of this dependence expressed by an elasticity. This analytic fact reflects an important implication of general substitutability. This pattern substantially enlarges the range of transmission channels conveying monetary impulses to the pace of economic activity and the price level. The explicit formalization of this basic idea may vary. The *Brunner-Meltzer* model offers one particular representation of the basic idea emphasizing the role of relative price adjustments over the whole range of assets, between old assets and newly produced assets, and between assets and real consumption or yields of assets. Other formalizations of the basic idea are certainly possible and may be usefully explored in the future. *Mayer's* separate reference[7] to the range of substitution relations and the "*Brunner-Meltzer*" relative price and stock mechanism is somewhat misleading in this respect. The basic issue centers at this point on the range of substitution relations and the "B-M mechanism" forms only a particular attempt at analytic formalization in order to explore the ramifications of the idea more coherently.

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[6] A detailed discussion bearing on the aspects covered in the text can be found in the Comments addressed to the discussion at the Conference on Monetarism held in November 1974 at Brown University (see the reference under footnote 4).

[7] Thomas *Mayer*, page 203.

This is not the place to discuss in detail the implications of the alternative substitution hypotheses and their bearing on policy problems, or the choice of research procedures to assess the consequences of policies. These aspects were covered extensively at another occasion to which the reader is referred.[8] Another aspect may be emphasized in passing. One encounters occasionally assertions denying occurrence or relevance of the "substitution issue". But such assertions cannot be reconciled with the analytical facts. A careful examination of the literature cannot fail to demonstrate the *occurrence* of the alternative hypothesis. Moreover, an analysis of the alternative frameworks determines the empirical relevance of this issue and its significance for policy problems. This relevance is reflected by substantive differences in propositions about policy aspects derived from the alternative hypotheses. Our more immediate concern at this state bears on statements advanced by *Mayer* in his overview of the problems. These statements require our explicit attention.

Professor *Mayer* argues on page 215 that a "monetarist ... is concerned with people only as money holders and hence is interested in only one sector, the supply of and demand for money". On page 201 we read moreover: "... it is hard to see why a quantity theorist would prefer to use the interest rate in his description of the transmission process, it is not hard to see why a Keynesian may agree with a quantity theorist in looking at the money stock rather than the rate of interest." On page 198 *Mayer* stresses the relative stability of money demand as another issue bearing on the nature of the transmission mechanism. Lastly, detailed attention is directed to the comparative measurability, the comparative measurement errors, of money stock and interest rate. On page 199 we read that "monetarists prefer to use the money stock rather than the rate of interest because they believe that the money stock can be measured much better". The relative measurability of the two magnitudes influences according to *Mayer*'s account the properties of the transmission mechanism.

The first statement exemplifies a subtile shifting of attention to an irrelevant aspect frequently encountered in the literature. The confusion between statements about persons and statements about statements made by these persons occurs unfortunately much too frequently. The first type of statement involves an assertion about persons and not about a

[8] The reader is referred to my "Survey of Selected Issues in Monetary Analysis", (see footnote 4.).

piece of analysis. As a statement about persons called "monetarists" the assertion is simply false. "Monetarists" are concerned about many things and their attention roams over many facets of human life. All this may be terribly important for a human story to someone, but remains quite immaterial for the evaluation of monetary analysis. So what should we say about the second half of the statement quoted above after purging the irrelevant personal reference? Indeed, we do find formulations in the professional literature, most particularly in articles exploring the "monetary approach to the balance of payments", centering attention on the money market and the supply of and demand for money. But it is quite false and misleading to use such formulations as a general description of "monetarist analysis". The *Brunner-Meltzer* analysis emphasizes on the contrary the role of the credit market and analyzes extensively the interaction between asset markets and the output market subject to the feedbacks via the government sector's budget relation.[9] It is similarly misleading to characterize "monetarist analysis" as essentially (or only) concerned with an economy's adjustment to an excess supply of money (*Mayer*, page 205). *Brunner-Meltzer* developed over the past years in substantial detail the sort-run and long-run consequences of government debt. They also developed the long-run consequences of rising uncertainty about policy trends or of increasing instability in the "rules of the game" confronting private investors and producers.[10]

The second assertion (quoted above and appearing on page 201) continues an entrenched misconception about the nature of the issue under examination. The terminology used is somewhat unfortunate in this respect. The terms "quantity theory" and "quantity theorist" are quite ambiguous and they are frequently used with a deliberate ideological or political purpose (most certainly not by *Mayer* however). The analytic situation on the other hand is clearly determined by the accumulated publications. Careful examination of the available analysis should indeed reveal that the issues centered on the range of substitution relations cannot be meaningfully described as a choice between "looking at interest rates" or "looking at the money stock". "Looking at" does not characterize in any useful or relevant mode any piece of analysis. It

[9] This theme has been developed jointly with Allan H. *Meltzer* in a series of papers beginning with a paper presented at the First Konstanz Conference on Monetary Theory and Monetary Policy in 1970 and subsequently published in a Conference Volume. "A Monetarist Framework for Aggregative Analysis", Supplements to Kredit und Kapital, Supplement No. 1, Berlin 1972.

[10] The reader is referred to the papers listed under footnote 4.

is not a proposition about statements representing an analysis, but about the behavior of a person at a particular moment, independently of the precise analytic structure under examination. Examination of published analysis clearly establishes that the money stock forms only a minor part of the transmission mechanism. This mechanism is essentially defined by a relative price process covering all assets and yields of assets on the one side as against a narrow range of interest rates on financial assets on the other side of the issue. We note just in passing that the statement on page 198 on the relative stability of money does not bear on the nature of the transmission mechanism and will be considered at its appropriate place under the impulse problem.

Mayer assigns lastly great significance to the measurement problem and discusses in great detail the "relative measurability" of money stock and "interest rate". He argues that monetarist analysis of the transmission mechanism implicitly assumes a comparatively small measurement error for the money stock, whereas Keynesians are inclined to assign this pattern to interest rates. This is simply and clearly false and belongs to the "imaginative interpretation" occasionally cultivated in the literature. Comparative measurement errors have no logical relation whatsoever with the issue circumscribed above. A generalized relative price process is consistent with any distribution of measurement errors and so is also the Hicksian position of a restricted substitution range. The relative errors condition the appropriate strategies of empirical research but do not discriminate in any sense between the alternative views about the transmission mechanism. Measurement errors bear however on the target problem, i. e. the choice of an optimal strategy for monetary policy.

II. The Nature of the Transmission Mechanism II: Properties of the Phillips Curve

A second range of important problems subsumable under the first issue is centered around the *Philipps* curve and the role of expectations. *Mayer* covers these aspects in points 10 and 11. The emphasis in point 11 is somewhat misdirected and important contributions made in recent years require elaboration. The controversy is characterized by conflicting views bearing on the existence of a long-run and a short-run trade-off between inflation and output (or unemployment). Three positions emerged in the literature. One thesis maintains the persistent occurrence of a trade-off in the shorter-run and over the longer-run ex-

ploitable by suitable manipulation of monetary-fiscal policies. Another thesis acknowledges the occurrence of an exploitable trade-off for the shorter-run but denies its persistence over the longer-run. The trade-off is asserted to vanish in the forseeable future before "we are all dead". The second thesis argues in particular that unemployment converges over a longer-range to a natural rate of unemployment determined by prevailing institutions and the patterns of real shocks imposed on the economy. This natural rate of unemployment occurs independently of monetary policy but is responsive to fiscal policies (taxes and transfer policies). The last thesis denies the occurrence of any trade-off over any relevant horizon. It involves a strong assertion of the natural rate hypothesis for output and unemployment.

The three alternative hypothesis yield radically different implications about the transmission of financial impulses to real variables and the price-level. They also determine radically different evaluations about the range of useful policy making. The first thesis is rarely, if ever, accepted by monetarist analysis. It remains a characteristic Keynesian position. Monetarist analysis typically incorporates on the other hand the second or third thesis. The crucial divergencies between the three hypotheses reflect substantially different views about the role of expectations and the patterns governing supply behavior on the output market. The "islamic" framework is somewhat incomplete or implicit in this respect. The description of aggregate supply usually associated with this framework uses essentially two extreme assumptions. The Hicksian version assumes a horizontal supply curve, i. e. prices are constant. The Metzlerian version assumes on the other hand a vertical supply curve, i. e. prices and wages are fully adjustable and output settles at "fall output". The *Phillips* relation replaces this simple pattern with a more general analysis. The third thesis yields of course a Metzlerian pattern but offers a rationale for this result.

The "Keynesian thesis" does not necessarily exclude expectations, but they are assigned a comparatively moderate role. They may affect the position of the *Phillips* curve. Substantial shifts in the *Phillips* curve are frequently attributed however to structural changes in the labor market including various "cost-push" processes. This view about the role of expectations also affects explanations of interest rates. The high level of nominal rates recently observed reflects according to a prevalent Keynesian position high levels of real rates. The inflation premium contributes in this view a minor portion of the observed variations in nominal

rates. The whole approach to labor and credit market processes seems to emphasize real factors. The *Phillips* curve is therefore comparatively stable or its shifts result mostly from "real events" allowing a long-run trade-off. The second and third thesis emphatically reject these views. The role of expectations and the adjustment of wages and prices move the economy towards a natural rate of unemployment. Moreover, inflationary expectations occur with a major weight in explanations of larger changes of the nominal rate of interest. The third thesis uses furthermore a very special hypothesis about expectation formation. Expectations are formed rationally according to beliefs identical to the model incorporating the expectations and their effects. Psychological expectations are thus identical to mathematical expectations defined relative to a specified stochastic model.[11] The conjunction of rational expectation with a specific class of output supply functions implies that no systematically anticipated monetary impulses can affect the real variables. Output, the real rate of unemployment and the real rate of interest move independently of systematic monetary impulses and follow essentially a random process. Systematic monetary impulses are immediately converted into price effects under rational expectations. The *Lucas-Sargent* output supply conjoined with rational expectation thus removes all opportunities for systematic exploitation of a trade-off by means of financial manipulation. The trade-off vanishes even for the short-run. The actual unemployment rate coincides under the circumstances at any moment with a (fluctuating) natural rate.[12]

[11] The idea was introduced by Jack *Muth* in a seminal paper. It has been extensively developed for monetary analysis by Robert *Lucas*, Thomas *Sargent*, Neil *Wallace* and Robert *Barro*.

[12] Consider a *Phillips* relation

$$p_t - p_{t-1} = f\,[s_t, \pi_t]; \quad f_1, f_2 > 0 \tag{1}$$

where p_t is the log of the price-level in t, $E_{t-1}\,p_t$ the expected (in $t-1$) rate of inflation for the period $(t-1)$ to t, and s designates a state variable depending on output y and real capital K, so that $s = s\,(y, K)$. Assume furthermore that $f_2 = 1$ and $\pi_t = E_{t-1}\,p_t - p_{t-1}$. It follows that

$$p_t = E_{t-1}\,p_t + f^*\,(y, K) \tag{2}$$

We obtain under standard constraints on f^* also

$$y = h\,[K, p_t - E_{t-1}\,P_t]; \quad h_1, h_2 > 0 \tag{3}$$

Equation (3) represents the type of supply function used by *Lucas* and *Sargent-Wallace*. The same assumptions allow us to derive (1) from (3). Under the assumptions made, (1) and (3) are thus equivalent. They are usually associated

The second thesis recognizes rational expectations in *Muth's* sense as a longer-run phenomenon. It also recognizes that expectations are rationally formed on the basis of available information in the context of some beliefs about the nature of the process generating the expected magnitudes. The conditioning beliefs barely coincide however with the structure of the hypothesis incorporating the expectations. The occurrence of explicit and implicit contracts in labor and output markets reflecting an essentially incomplete information determines a lag pattern preventing a full adjustment of prices and wages to the underlying trend situation. This contractual situation could be interpreted as a deviation from the information state postulated by *Muth's* rational expectations, adjusting in the longer-run to accruing information about the underlying trend. The second thesis emphasizes thus a learning process with systematic revision of information and beliefs. It has been demonstrated that rational expectations in this wider sense can actually be formulated in a Baysian framework to yield an adaptive process of expectations for-

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however with different economic interpretations. Equation (1) is used whenever one wishes to express that causation runs from output to price-level, whereas equation (3) is used to express causation running from price-level to output.

One could also argue with Stanley *Fisher* that the temporal structure of (formal or implicit) contracts produces a pattern described by output supply equation (3′)

$$(3') \qquad y_t = h\,[K, p_t - E_{t-1}\,p_t, p_t - E_{t-2}\,p_t]; \quad h_1, h_2, h_3 > 0$$

Fisher assumes for this purpose that wage contracts are made for two periods. In each period one set of contracts is renegotiated. *Fisher* demonstrates that with output supply (3′) monetary authorities have an opportunity to influence systematically output and the variance of output. The reader is referred to Stanley *Fisher:* "Long Term Contracts, Rational Expectation and the Optimal Money Supply", The Journal of Political Economy 1976. *Fisher's* analysis directs our attention to an interesting problem bearing on the interpretation of rational expectations. It seems somewhat doubtful that the postulated layering of wage contracts is consistent with rational expectations. I conjecture that rational expectations also induce adjustment in the structure of contracts.

A simple transformation of equaion (3′) produces a *Phillips* type relation (assuming standard properties of h).

$$(1') \qquad p_t - p_{t-1} = g\,[y, K: \pi_t, \pi_{t-1}; E_{t-2}\,p_t - E_{t-2}\,p_{t-1}]$$

with the properties

$$g_i > 0, \quad i = 1 \ldots 4$$

and

$$g_3 + g_4 = 1 \quad \text{and} \quad g_4 = g_5$$

mation.[13] The learning and information problems emphasized in this general approach also determine the different interpretations of monetary growth and monetary acceleration. These magnitudes were offered as simple empirical approximations to important analytic categories (anticipated and unanticipated movements). The analysis assigned to monetary growth essentially a price effect and no significant output effect. The output effects were associated with monetary acceleration, and neither with the money stock nor with monetary growth.[14]

Proponents of the second thesis would emphasize that concern about indexation appears irrelevant in a world operating according to *Muth's* rational expectation hypothesis. Moreover, the difficulties we encounter in judging the future course of the monetary authorities or in assessing the credibility of their public announcements about prospective policies suggest some caution with respect to shorter-run applications of rational expectations in the narrower sense. This caution is reenforced by the problems encountered in weighing the correctness of official interpretations bearing on past events and actions. On the other hand, when attending to the "Keynesian position" a proponent of the second thesis may note that actual utilization of resources moves over the longer run with the amount of resources available. Furthermore, the upwards cycling of unemployment and inflation in the typical graph used for descriptions of the *Phillips* curve appears inconsistent with an entrenched "Keynesian position". The Keynesian may refer to the experiences of labor markets in the 1930's to refute both the second and third theses.[15] This experience is indeed a somewhat unresolved problem. But the case remains open and future work may reconcile and subsume under a unified hypothesis both the labor market experiences of the later 1930's and also of the last ten years.[16]

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[13] Benjamin *Friedman*, "Rational Expectations are Really Adaptive After All", Harvard Institute of Economic Research Discussion Paper # 430, August 1975.

[14] Robert *Barro* offered recently an interesting suggestion to improve this approximation: "Unanticipated Money Growth and Unemployment in the United States." Research paper, available on request.

[15] Robert *Gordon* emphasized this point in his paper "Recent Developments in the Theory of Inflation and Unemployment", The Journal of Monetary Economics, April 1976.

[16] This issue has been reconsidered by David *Coulter* at Carnegie-Mellon University. He shows that the problems encountered by the *Lucas-Rapping* model and criticized by Albert *Rees* disappear when the government's demand for labor is properly incorporated into the analysis.

It would be a serious mistake to settle comfortably on the middle thesis ("because it is in the middle"). Some important issues moving beyond the old alignments emerge in this range of problems. They involve interpretations of observed fluctuations in real variables and also concerns views about the adjustment in prices and wages. The first and second theses imply in contrast to the third thesis that prices and wages are not fully adjusted over shorter-run horizons to the underlying (and uncertainly comprehended) trend. The second and third theses assert on the other hand the occurrence and operative significance of a natural rate of unemployment independent of monetary manipulation. Moreover, observable fluctuations in real variables are interpreted by the first two theses to contain a systematic component. The third thesis implies in this respect essentially a generalization of *Slutsky's* proposition. Fluctuations in real variables are expressions of a random process without systematic time structure. It should be recognized that the challenging work on rational expectations offered to the profession by Robert *Lucas*, Thomas *Sargent*, Neil *Wallace* and Robert *Barro*, forced us to reexamine the role of accruing information and the consequences of shifting policy patterns. This impact affects in particular recent disputes in the summer and fall 1975 about the course of financial policies.

III. The Nature of the Transmission Mechanism III: Fiscal Policy and "Crowding Out"

Some attention should be directed at this stage to fiscal policy. Many discussions created the impression that the intellectual conflicts in monetary analysis depend on propositions about fiscal policy. In particular, it has been frequently asserted that "monetarist analysis" assigns no aggregative significance to this policy. There should be little doubt that the analysis of fiscal policy gradually changed over the past ten years in some pieces of "monetarist analysis". The *Brunner-Meltzer* analysis, developed since 1970, assigns distinctive roles fiscal policy for the shorter and the long-run. Their analysis implies a definite impact of fiscal policy affecting output and price-level. But this impact differs substantially between the shorter and the longer-run. Over the short-run increasing government expenditures raise the private sector output. This increase depends inversely on the responsiveness of prices to changes in output. Moreover, this responsiveness depends on the revisions in expectations induced by fiscal expansionism. With price and wage expectations fully adjusted to the fiscal policy, an increase in government

demand for labor or private output is completely absorbed by the price-level and produces no change in the private sector's output. An increase in the government sector's demand for output determines under the circumstances even for the shorter run a complete "crowding out". The incremental absorption of output by the government sector implies a matching reduction in output absorbed by the private sector. This analysis contrasts with the usual "islamic" procedure which determines a particular position of the LM curve as a necessary and sufficient condition for short-run crowding out. The *Brunner-Meltzer* analysis assigns on the other hand no particular significance to the properties of the money demand underlying the slope of LM. The critical conditions are placed with the slope of output supply and the responsiveness of money wage and price expectations to fiscal actions. A pronounced short-run impact of fiscal policy on output requires a comparatively flat output supply curve (i. e. small elasticity of price setting with respect to output) and a comparatively small responsiveness of expectations (in the short-run). A genuine multiplier effect (i. e. a negative "crowding out") occurs for approximately flat supply curves, unresponsive expectations and a feedback via the asset markets dominated by positive responses of prices and real assets. Positive crowding out emerges even over a shorter run whenever these conditions are violated.

The feedbacks via the budget relation associates, over an intermediate run, financial consequences with fiscal policy actions. The short-run impact effect is thus supplemented with the effect produced by expanding financial stocks. It follows that the total effect of fiscal policy appears as the sum of a pure fiscal effect (i. e. the impact effect) and a financial effect. The latter effect exceeds according to this analysis the pure fiscal effect. The general patterns shaping the impact effect of fiscal policy on output and price-level also determine the response over an intermediate run containing adjustments of financial stocks to an underlying state of fiscal policy. One would surmize however that an extension of the horizon beyond the short-run increases the change of substantial revisions in expectations. There emerges thus a greater probability for the occurrence of some measure of "crowding out".

These remarks on "crowding out" over a shorter to intermediate run require however some qualifications. They neglected the relative position of the system's state, i. e. they neglected the interaction of an evolving state with the natural rate of unemployment or normal output. For states below normal output fiscal expansion accelerates the approach of

the state towards normal output, whereas for states above normal output expansive fiscal action raises output only temporarily. These deviations from normal output involve of course less than fully adjusted expectations and price-level. It follows that fiscal action affects over a shorter or intermediate run the volume of the private sector's output. Shorter-run "crowding out" seems more significant therefore for output levels beyond normal output.

But recent analysis suggests that the problem does not center on "short-run crowding out". The *Brunner-Meltzer* analysis implies that for any given combination of fiscal policies there exists a long-run level of financial stocks and a long-run price-level. There is also associated with each combination of fiscal policies a normal output level depending on long-run capital intensity, normal rate of unemployment and normal labor supply to the private sector. Fiscal policies affect the determinants of normal output. In particular, increasing real expenditures by the government sector lower the private sector's normal output. This reduction in normal output expresses the long-run crowding out induced by government expenditures. These long-run consequences are necessarily built into the system with prevailing budget policies and will be revealed as the years pass. The long-run crowding out eventually appears even with a genuine multiplier effect operating over the shorter-run.

The occurrence of both short and long-run "crowding out" are disputed by *Tobin* and *Buiter* among others. The second author asserts in particular the very opposite, viz. that an increase in real government expenditures raises long-run output and the long run stock of real capital. *Buiter* develops his argument in the context of a Metzlerian model. This issue remains wide open and will certainly require some attention in the future.[17] The description of the budget, the nature of expenditure policies, the responsiveness of tax revenues, and also the assumptions made concerning asset substitutions appear to affect the resulting propositions. The resolution of this issue seriously conditions our evaluation of future developments.

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[17] The papers listed under footnote 4 develop an extensive analysis. An alternative view can be found in James *Tobin* and William H. *Buiter*, and also in a paper by *Buiter*, "The Long-Run Effects of Fiscal Policy", Econometric Research Program, Research Memorandum No. 187, October 1975.

IV. The Issues of Internal Stability and Impulse Dominance

The Brown University Conference on Monetarism held in November 1974 concentrated explicit attention essentially on matters pertaining to the transmission mechanism. The other basic issues were largely disregarded and occurred only in oral statements made by *Friedman*, *Meltzer* and *Brunner*. They still exist however. Any survey of the literature, critical examination or analytic interpretation of policy discussions reveals the nature of these issues.[18]

Keynesian analysis traditionally emphasized the fundamental instability of the private sector. This position is partly associated with the Keynesian denial of the natural rate hypothesis. We note in this context one of several connections between the issues listed under the four categories. The assertion of a "fundamental flaw in the price mechanism", or the proposition of an "inherent instability of the private sector" is closely associated with the rejection of the relevant operation of a natural rate of unemployment. Keynesians frequently deny that the private sector is a self-adjusting process. It is argued occasionally that the process is self-adjusting but tends to settle at "unacceptable" levels of unemployment. The criterion of "unacceptability" remains quite vague and unsubstantiated however. The natural rate actually determined by a given institutional situation may indeed be suboptimal The natural rate hypothesis yields no attribution of social optimality. This is a separate and supplementary issue worthy of some closer examination. Proponents of the second and third thesis argue specifically that major and persistent changes in the natural rate of unemployment reflect demographic trends and policies pursued by the government. Their analysis would imply that suitable changes in policies and specific institutional rearrangements could be expected to lower the natural rate of unemployment. But we should also beware of the "Can do fallacy". The fact that it can be done does not establish that the social benefits of such actions necessarily exceed the associated social cost.[19] Proponents of the second (or third) thesis also argue that the

[18] James *Tobin* emphasizes in a paper included in the Proceedings of the American Economic Association, May 1975, the importance of the suspected instability of the private sector. His paper prepared for the Brown University Conference contained no references to this fundamental problem.

[19] Martin *Feldstein* contributed probably most effectively to a clarification of several problems noted in the text. His recent publications on Social Security and unemployment are particularly instructive.

patterns of deviations from the natural rate of unemployment and the level of the natural rate are substantially affected by the increasing instability of the "rules of the game" imposed by legislative bodies, the government sector's bureaucracy or the nation's courts. This institutional trend is reenforced by erratic and uncertain policies affecting many branches of an economy.

The view of a fundamental instability of the private sector produces farreaching implications. It determines an activist and highly interventionist concept of policy. The government sector necessarily appears as the "ultimate stabilizer". The instability thesis favors the development of a large bureaucracy attending daily to a wide ranging detail of regulations and programs. The alternative hypothesis essentially reverses the traditional Keynesian view. It argues that the private sector is essentially a shock-absorbing, stabilizing and self-adjusting process. Instability is produced dominantly by the operation of the government sector. It is also argued on occasion that this instability increases with the relative size of the government sector. This view determines obviously radically different implications for rational policy making and institutional arrangements. It is important to recognize in this context that we are confronted here with serious cognitive issues bearing on a fundamental property of the social process. The cognitive aspects of these problems should be recognized inspite of ideological trappings, subterfuges and semi-theological rhetoric frequently cultivated in public discussions.[20] Recognition of a cognitive core beyond all the ideological rhetoric should encourage further examination and research explicating precisely the nature of the issue in order to exploit observations more effectively in discriminating assessments. Simple references to the occurrence of economic fluctuations yield no discriminating evidence. We note here only in passing that all econometric models systematically examined in this respect yield no support for the instability thesis. They describe a highly stabilized and shock-absorbing process.[21] It is also possible to assess systematically whether the "public interest hypothesis" or an "entrepreneurial hypothesis" of established bureaucracies and legis-

[20] The public discussion in Germany observed in recent years suffered somewhat from an easy substitution of ideological rhetoric and purpose for a serious cognitive effort.

[21] My review of the two volumes on "Econometric Models of the Cyclical Behavior", edited by Bert *Hickman*, Columbia University Press, in the Journal of Economic Literature, Vol. XI, No. 3, September 1973, contains more detail in this respect.

lative bodies offers more useful explanations of observed behavior and developments.[22] The "public interest" hypothesis yields the view of an essentially stabilizing government sector, whereas the "entrepreneurial" hypothesis implies that the political process dominantly generates destabilizing patterns.

Recognition of a basically self-adjusting character of the private sector, either in the limited sense of some Keynesians[23] or in the full sense of proponents of the natural rate hypothesis, directs our attention to the explanation of observable fluctuations in real variables. A central issue reflected in many policy discussions pertains to the systematic occurrence of a dominant impulse pattern. One thesis maintains that as a matter of historical fact (and not as an expression of Ontological Reality) monetary impulses dominate the observable fluctuations of real variables. This impulse hypothesis conflicts of course with the strong thesis of rational expectations and can only be combined with the first and second thesis of labor market processes. The textbook versions of "Keynesian analysis" explicitly assign to fiscal policies the dominant weight. It is argued that an assessment of economic evolution over a shorter-run horizon depends crucially on the course of fiscal variables. A Wicksellian tradition recognizes on the other hand the driving force in autonomous swings of entrepreneurial anticipations. This tradition was occasionally translated into an "animal spirits hypothesis" of economic fluctuations.

The hypothesis of a "dominant impulse pattern" is frequently contested. The alternative is an essentially "eclectic view" propounding the operation of shifting combinations of impulses. We note however once again that the record of econometric models yields little support for the eclectic thesis. Moreover, an eclectic thesis remains essentially empty and offers usually almost no empirical content. This need not be the case however. A modified eclectic view may well systematically combine several of the alternatively listed dominant impulse forces. This combination may produce a systematic pattern subsuming several (possibly)

[22] Elements of an "entrepreneurial hypothesis" of the political process and bureaucracies are noted in my Comments on Robert *Gordon's* paper, "The Demand for and Supply of Inflation", to be published as a Conference volume sponsored by the National Bureau of Economic Research in The Journal of Law and Economics. A more extensive development of the hypothesis is presented in a paper by William *Meckling* prepared for the Third Interlaken Seminar on Ideology and Analysis 1976.

[23] The "limited sense" alluded to above means an equilibrium adjustment of real flow variables to the setting of predetermined policy variables.

interdependent factors. The combination of fiscal and monetary policy in recent work developed by *Brunner-Meltzer* offers one example in this respect. It should also be noted that in recent work *Brunner-Meltzer* increasingly emphasized and moved beyond the role of financial policies (or behavior). The whole range of government behavior systematically eroding the predictability, the range and interpretation of the "rules of the game" seems to require more attention in the future. Such attention should also include the systematic attrition of property rights resulting from the political process of all Western countries. This attrition lowers an economy's capital intensity and raises the natural level of unemployment. Both events lower the natural level of output. We need hardly refer to the Third World for exemplification of these trends.

A subject raised by *Mayer* in the section devoted to the transmission mechanism is more properly examined as part of the impulse problem. He correctly emphasizes that the relative stability of money demand was a matter of dispute. The view that money demand is highly unstable has been particularly adopted by some groups in the Federal Reserve bureaucracy. This doctrine replaced the defunct free reserve conception which dominated Federal Reserve thinking over many decades. The possibility of an unstable money demand has been suggestively generalized by James *Tobin*. He argues that autonomously shifting demand and supply over a wide range of financial assets also limit impulses affecting price-level and output. This position fits naturally into an eclectic thesis of the nature of the impulse problem which denies the dominance (over time) of any particular impulse pattern. "Financial market eclecticism" in conjunction with the traditional interest target policy of Central Banks implies however a pattern conflicting with the observed association between monetary acceleration (decleration) and subsequent expansion (retardation) of economic activity. Furthermore, the accumulated empirical work pertaining to money demand produced no support for the instability thesis. One suspects that the authorities were misled on this point by their usual myopia to overrate the role of random events proceeding over a shorter-run horizon.

The impulse and stability problem also includes the "cost-push" controversy. The term is used somewhat ambiguously in the literature and is occasionally applied to radically different interpretations emanating from conflicting hypotheses. It is necessary therefore to clarify two views encountered in the literature and yielding (under identical value systems) vastly different policy conclusions. The two views involve

alternative interpretations of wage-price movements. One view postulates that wages and prices evolve in response to market conditions and are systematically modified by changes in these conditions. Another view asserts that prices and wages move (at least in part) independently of market conditions and reflect the operation of autonomous social forces. The first and essentially price-theoretical thesis subsumes observable wage-price movements under the operation of the transmission mechanism. This yields an interpretation of "cost-push" consistent with the basic price-theoretical view. The term refers to an identifiable phase in the adjustment process. Financial decelerations in the context of inherited inflations determine a simultaneous occurrence of price inflation and retardation of output or rising unemployment. The nature of the transmission mechanism, conditioned by expectional adjustments and past policy experiences, determines in conjunction with the magnitude or persistence of the financial deceleration the length and severity of this intervening adjustment phase. The second view, replacing price-theory with sociological considerations, moves the observable behavior of wages an prices to the range of impulse forces. The "cost-push" in this sense refers to an important impulse explained by institutional arrangements and sociological factors beyond the response patterns summarized by price-theory.

The distinction between a price-theoretical and a "sociological" view of price-wage movements appears analytically more useful than the traditional classification into demand pull and cost-push explanations. In particular, the ambiguity of "cost-push" obstructed the development of adequate empirical tests. The distinction formulated on the other hand in terms of price-theoretical categories encourages analytic formulations yielding discriminating tests bearing on the fundamental issue. It is remarkable to note that many economists fail on occasion to comprehend the issue and deny the occurrence of seriously conflicting (i. e. logically inconsistent) hypotheses in this matter. Robert *Gordon* writes for instance that "monetarists tended to regard any claim that inflation is caused by non-economic factors ... as a contradiction of the monetary approach ...".[24] It seems necessary to emphasize that the "institutionalist" or "sociological view" of observed price-wage movements involving an explicit denial of price-theoretical pattern (i. e. assertion of non-responsiveness to evolving market conditions) is no monetarist illusion. It is actually argued and advanced on many oc-

[24] See the paper under footnote 15.

casions. The New York Times has sanctified this view in editorials in an essentially Galbraithian spirit. Science Magazine added in 1975 an editorial arguing this position in most explicit terms. We may disregard that the "sociological view" conforming to an intuitive sense of obviousness (as the Ptolemaic view of the relation between earth and sun) dominates the conception of the intelligentsia. More important for our purposes are the professional economists propounding this view. Abba *Lerner* argued that a deficiency of aggregate demand combined with rising prices reveals the occurrence of special forces operating independently of market conditions. Sir John *Hicks* admonishes us that English "troubles are not of a monetary character and can not be cured by monetary means". Monetary policy is thus dismissed both as a sufficient and necessary condition of inflation. And Roy *Harrod* maintains that "the causes of the wage-price explosion are sociological". A detailed survey of the "sociological explanations" will be presented at another occasion in order to demonstrate their frequent occurrence inspite of assertions to the contrary that "nobody means what is really said". It is noteworthy in this context that Robert *Gordon* usefully contributes to exemplify our case. He formulates in the same paper quoted above a cost-push theory of inflation and unemployment. The significant aspect for our purposes is the circumstance that the cost-push factor introduced into *Gordon's* analysis operates independently of evolving market conditions and is responsive neither to expected policy patterns nor to market conditions. It functions as a completely autonomous factor crelative to price-theoretical processes) shaping wages, unemployment and prices.[25]

The alternative hypotheses outlined above express non-contrived and genuine differences in views about the economic process. They affect substantially the policies deemed appropriate to cope with unemployment and inflation. The occurrence of pronounced differences among policy programs and proposals advanced in public debate should be rather obvious even to an inveterate "consensus seeker". Moreover, these differences cannot be reduced according to the media's usual procedure to "ideological positions" or "differences in values". The conflict in pro-

[25] The point is developed in my Comments on *Gordon's* paper to be published also in The Journal of Law and Economics. *Gordon* senses correctly the inadequacy of the traditional classification of inflation theories but fails to recognize the existence of a genuine issue between hypotheses asserting a pervasive and systematic responsiveness of prices and wages (incl. "administered" prices), and "sociological" hypotheses denying such responsiveness.

posals and programs reflects a fundamental conflict in substantive views about the world. It seems more useful to recognize this conflict, direct attention to it and challenge our cognitive energies to asses and resolve it in our future endeavors.

V. The Relation between Allocative Detail and Aggregative Processes

Mayer's discussion contains some useful characterizations of the issues under this title. These aspects were also essentially neglected at the Brown University Conference on Monetarism. Such neglect would be quite appropriate for an essentially esoteric problem of cosmetic significance. But this is not the case. Alternative views of the relation between allocative detail (across and over time) and aggregative processes reflect fundamentally different conceptions of the cognitive process. They also determine substantial variations in proposals or evaluations of policies.

We find on the one side, particularly among econometric practitioners engaged in large scale model building, an explicit belief linking aggregative behavior with detailed allocative processes. We notice at this stage another interdependence with aspects of other issues. An eclectic position bearing on the impulse problem is frequently used to justify the dependence of aggregative behavior on wide ranging allocative processes. Aggregate fluctuations are understood to emerge from the cumulative effect of changes and disturbances occurring in all corners and parts of the economy. Allocative detail is thus unavoidably required to model effectively the course of aggregate fluctuations. This thesis implies further that large models produce better explanations of aggregate behavior than smaller models. It is particularly believed that the sequence of expanding models converges (stochastically?) to the "true model".

The alternative view rejects this implicitly descriptivist conception of science. It also rejects a pervasive instrumentalist approach to science cultivated by many econometricians. This instrumentalist approach is well expressed by a pronounced emphasis on forecasting (unrelated to test statements) and "sophisticated manipulation" with minor attention to the formulation of assessable cognitive claims about the world. This instrumentalist conception has clearly determined the adjustments made on the "class of Brookings models" over the past years. The concentration on cognitive criteria reveals moreover the dangers associated with a cherished principle, viz. "that everything depends on everything else". The his-

tory of our cognitive progress over thousands of years demonstrates that our knowledge expanded as a result of a deliberate disregard of this empty principle. Useful and felicitous formulations of hypotheses involve a differentiation between relevant orders of magnitudes and a systematic exploitation of such differences. The alternative view thus radically rejects the idea that "all allocative detail" should in principle be incorporated in the analysis. It rejects in particular the view that more detail improves the resulting explanation of aggregate fluctuations. It is not asserted that all allocation patterns are of comparatively small order of significance and can be (approximately) disregarded and conveyed to a random residual. It expressess essentially a thesis of analytic parsimony. One selects a small range of allocation patterns considered to be highly relevant and disregards the others. They are not disregarded because an Ontological Law promulgated by a Hegelian "Geist" or "Idee" determines the irrelevance of the discarded detail. One may well recognize that the omitted detail exerts some influence. The omission simply expresses an assessable empirical hypothesis that this influence operates mostly at a minor scale and contributes quite marginally to the power of the explanation. This conjecture remains of course always exposed to new questioning and new rounds reexaminations. These reassessments may well shift occasionally the range of admittedly relevant or irrelevant detail according to the reformulation of the aggregative hypothesis. But there seems so far little evidence supporting the descriptivist-instrumentalist claim to "all the detail". The performance of larger and larger models offers no ground for support of the basic claim.[26]

The descriptivist-instrumentalist misconception of science guiding the approach to larger models also produces patterns of immunization which protect the evolving constructions from critical exposure to relevant observations. Such immunizations involve of course an implicit denial of cognitive standards and the whole endeavor really abandons under the circumstances any cognitive goal. The concentration on forecasting has distracted practitioners from attention to appropriate test procedures. Moreover, the forecasting procedures with their "sophisticated manipulation" of constants, expected exogeneous variables and expected

[26] The reader is referred to my review of the *Hickman* volumes (footnote 21). The reader should particularly note that Laurence *Klein's* reformulation of the Brookings model moves in the opposite direction. A smaller structure with more dummy variables emerged.

random terms are simply incompatible with the requirements of an assessable empirical hypothesis. The whole affair becomes, as I indicated at another occasion, an exercise in numerology.[27] One more aspect deserves attention in this context. The size of the models frequently raises a problem of "degrees of freedom" whenever the number of predetermined variables exceeds the number of observation points. In order to execute estimation and also fill the initially empty formulae with some content various auxiliary procedures were used. But they all involve the implicit imposition of supplementary hypotheses by computational fiat. The content, structure and meaning of these supplementary hypotheses remains however quite obscure.[28]

The cognitive content of the final construction remains thus essentially unclear. Immunization is under the circumstances complete. It is logically impossible to determine any relevant test statements and numerology has vanquished science. Recent analytic developments also bear on the relevance of the ambitious econometric attempts. The discussion about the role of expectations made us realize that economic agents interact in a vast and continuous learning process. It follows that variations in policy patterns and new ranges of experiences modify the response patterns expressed by the structural detail of an econometric model. Information about the evolution of interest rates over the past 10 years was absorbed by an expanding sector of the public. We expect therefore different and more sensitive response patterns to relative interest rate changes than in the early 1960's. Similarly, ten years of inflation with repeated failures of policies modified probably the shorter-run responses of price-level and output to nominal impulses. This problem was first submitted to the profession's attention in explicit analytic terms by Robert *Lucas*.[29] His analysis implies in particular that an

[27] The point was elaborated in my review article (footnote 21).

[28] The problem has been analyzed in detail by Robert *Basmann* in an important chapter, "The Brookings Quarterly Econometric Model: Science or Number Mysticism?", in Problems and Issues in Current Econometric Practice, edited by Karl *Brunner*, Columbus, Ohio 1972.

[29] Robert *Lucas*, "Some International Evidence on Output-Inflation Tradeoffs", American Economic Review Vol. LXIII, No. 3, June 1973; and "Econometric Policy Evaluation: A Critique", Carnegie-Rochester Conference Series, Vol. I, January 1976, North-Holland Publishing Co. The operation of the "*Lucas* effect" has been particularly explored for the inflation-output tradeoff by Michael *Hamburger* in a paper: "Inflation, Unemployment and Macroeconomic Policy in Open Economies: An Empirical Analysis", Carnegie-Rochester Conference Series, Volume VI, forthcoming.

economy's response structure is not invariant relative to changing patterns of policies. One surmizes that the effect of the learning process affects large models with detailed structural specifications more extensively than smaller and more compacted formulations. Moreover, compacter formulations are less susceptible to immunization from critical tests. They also recognize more easily results of the public's learning process.

The fundamental issue confronting us in this section produces important ramifications. It subtly affects conflicting positions bearing on the relevant explanatory horizon. The emphasis on allocative detail is frequently associated with attempts to explain as much detail as possible across and over time. It is expressed by a concern to explain systematically very short-run movements of wages and prices and other variables. The alternative thesis maintains that these short-run movements contain a major portion of white noise from various origins. It argues in particular that we can reasonably explain with adequate approximation movements and patterns evolving beyond the shorter-run. This seems to apply especially to inflation. It emphasizes moreover that persistent attempts at short-run and shortest-run explanation tend to confuse the unavoidable white noise with systematic effects. One seems to become more prone to interpret observed deviations from a previously fitted short-run regression as evidence that "the world has changed".[30]

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[30] Many specific disputes should be recognized as exemplifications of the basic issue. This applies to the question of whether or not the details concerning the mode of entry of money and credit into the system really matter. It also applies to the current approaches to an explanation of the price-level. One explanation asserts that the position and form of the frequency distribution of price changes depends crucially on selected segments of price changes under the distribution independent of policy patterns. The other explanation denies this and asserts that the position of the distribution is affected mostly by nominal shocks and wide-ranging real shocks. The difference between the two explanations is probably conditioned to some extent by the difference in the time horizon addressed. The second explanation does recognize a feedbak from politically sensitive segments of price-changes to the position of the distribution, provided the Central Bank indulges in accommodative policies.

There remains lastly the perennial controversy about "signle equation versus structure" and about "black-boxes". Two aspects should be considered here. The accusation of "black-boxing" made by one side is balanced by the accusation of adducing irrelevant detail by the other side. An ability to write more equations assures no relevant information. Neither does the omission of detail guarantee success. The issue has been stated above. The "single equation versus structure" requires partly the same comment. We should also note that "single

VI. Concluding Remarks

My discussion disregards some issues covered in *Mayer's* wide ranging survey. The policy analysis and the analysis of political-institutional processes which appear in *Mayer's* last point should be reserved for another occasion. The policy analysis is properly centered by *Mayer* on the indicator and target problem. The indicator problem refers to the appropriate interpretation of monetary policy and monetary trends. The target problem describes the choice of optimal policy strategy by monetary authorities. The analysis of both interpretation and strategy problem are essentially predetermined by the basic specifications bearing on transmission mechanism, impulse pattern, internal stability and the relevance of allocative detail. The same range of basic specification determines also wider ranges of differences in policy conception. An activist stance of fine-tuning financial policies is usually based on a combination of specifications stressing internal instability and the relevant operation (with respect to aggregative behavior) of a wide-ranging allocative detail. So are most programs of extensive credit controls or proposals to allocate credit. Both interpretation and strategy problems are still much disputed at this stage. They also affect the evaluation and the proposed course of monetary policy in the summer of 1975 or the winter 1975/76. This state and the wider policy implications of the basic issues guides our attention to the analytic and empirical work still required on major questions and conflicting hypotheses. Such cognitive endeavors will reach in the future beyond the traditional boundaries of policy analysis. Mayer's last point opens this issue. The evaluation of "government" involves more than personal preferences and values. It requires an analysis, in particular empirical hypotheses, about the behavior of bureaucracies, legislative bodies and the consequences of various institutional arrangements. The apparently intractable dispute between advocates of "larger government" and proponents of "very limited government" is ultimately reducible, beyond easy ideological feelings, to different conjectures about man and his behaviour under various institutional structures.[31] It is noteworthy that the conjecture underlying the

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equations" often provide useful test statements for a "structure" or more particularly a "class of structures". Under such circumstances the controversy becomes pointless.

[31] The issue is confronted in a paper prepared by William *Meckling* for the Second Interlaken Seminar on Ideology and Analysis 1975 and to be published in the "Schweizerische Zeitschrift für Volkswirtschaft und Statistik,"

proponents of limited government emerges as a natural generalization of the price-theoretical basis of the transmission mechanism. Beyond all the "esoteric" analytics loom non-contrived problems and questions bearing on the economic process and the future course of societies. We will need the determined work of many competent researchers in order to meet this challenge.

Zusammenfassung

Probleme der nach-keynesianischen monetären Analyse: Ein Beitrag zu der von Professor Thomas Mayer eröffneten Diskussion

Zu dem in dieser Zeitschrift erschienenen Übersichtsartikel vom Professor *Mayer** zur monetären Analyse werden im vorliegenden Beitrag folgende korrigierende bzw. differenzierende Feststellungen gemacht:

(1) In der *Hicks*'schen Version der IS/LM-Analyse steht Geld nur mit Bonds in einer Substitutionsbeziehung. Weder Geld noch Bonds substituieren gegen Realaktiva. In der *Metzler*schen Analyse substituiert Geld mit allen Aktiva in allen Richtungen; jedoch werden Finanz- und Realaktiva als perfekte Substitute behandelt. In der Monetären Analyse von *Brunner/Meltzer* werden hingegen allgemeine und nicht-perfekte Substitutionsbeziehungen zwischen allen Aktiva in allen Richtungen postuliert. Dies führt u. a. zur Einbeziehung des Kreditmarktes neben einem Geldmarkt.

(2) Die noch offene Diskussion um die *Phillips*-Kurve läßt sich in 3 Themen zusammenfassen:

a) Es besteht kurz- und langfristig ein trade-off zwischen Inflationsrate und Beschäftigung.

b) Dieser trade-off besteht nur langfristig.

c) Weder kurz- noch langfristig besteht ein trade-off (strenge Version der „natürlichen Arbeitslosigkeits"-These).

Diese Unterschiede reflektieren wesentliche Meinungsverschiedenheiten über die Rolle der Erwartungen und über das Angebotsverhalten auf dem Gütermarkt. Die neueren monetaristischen Arbeiten führen zur Zurückweisung der 1. These.

(3) In der *Brunner/Meltzer*-Analyse spielt die Fiskalpolitik im short-run und im long-run eine unterschiedliche Rolle. Steigende Staatsausgaben erhöhen bei kurzfristiger Betrachtung die private Produktion, während bei langfristiger Betrachtung neben diesem „reinen" Fiskaleffekt noch ein — dominierender — Finanzeffekt tritt, der zu einem „crowding-out"-Effekt führt.

1976. Two other papers, prepared by Gerard *Gäfgen* — Hans Georg *Monnissen* and Willi *Meyer* for the Third Interlaken Seminar, examine the issue in futher detail.

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

(4) Nach keynesianischer Sicht ist der private Sektor relativ unstabil, und der Staat wird daher als „letzter Stabilisator" angesehen. Die monetaristische Position besteht genau im Gegenteil und behauptet insbesondere, daß der Private Sektor ein schock-absorbierender, sich-von-selbst-anpassender Apparat ist. Je größer der Staatliche Sektor (relativ gesehen), um so größer die von ihm ausgehende Instabilität.

(5) Die monetaristische Analyse bevorzugt „kleine Modelle" und ist nicht der von vielen Ökonometrikern vertretenen Meinung, daß alle (oder möglichst viele) allokativen Details in einem Modell erfaßt werden müssen, um aggregative Phänomene analysieren zu können. Es wird vermehrt Wert gelegt auf die adäquate Berücksichtigung von sich ändernden Erwartungsreaktionen.

Summary

Problems of Post-Keynesian Monetary Analysis: A Contribution to the Debate Opened by Professor Thomas Mayer

This article relates to the survey on monetary analysis by Professor *Mayer*, which appeared in this journal*, and contains the following corrective and differentiating comments:

(1) In *Hicks'* version of IS/LM analysis there is a substitution relationship only between money and bonds. There is no substitution between real assets and either money or bonds. In *Meltzer's* analysis, there is substitution in all directions between money and all assets; however, financial and real assets are treated as perfect substitutes. In the *Brunner/Meltzer* monetary analysis, on the other hand, general and non-perfect substitution relationships are postulated between all assets in all directions. Among other things, this involves inclusion of the credit market in addition to a money market.

(2) The still open debate on the *Phillips* curve can be summarized in the form of 3 theses:

(a) In the short as well as the long run there is a trade-off between the inflation rate and employment.

(b) That trade-off exists only over the long run.

(c) There is neither a short-term nor a long-term trade-off (rigorous version of the "natural unemployment" thesis).

These differences reflect important differences of opinion on the role of expectations and on supply behaviour on the goods market. The more recent monetarist studies conclude that the 1st thesis must be rejected.

(3) In the Brunner/Meltzer analysis, fiscal policy plays different roles in the short run and the long run. In the short run rising government expen-

* Vol. 8 (1975) pp. 191 and pp. 293.

ditures increase private production, while in the long run this "purely" fiscal effect is augmented by a — dominating — financial effect, which leads to "crowding out".

(4) According to the Keynesian view, the private sector is relatively unstable and the government is therefore regarded as the "ultimate stabilizer". The monetarist view is exactly the contrary and avers in particular that the private sector is a shock-absorbing, self-adjusting mechanism. The larger the public sector (relatively speaking), the greater is the instability it causes.

(5) Monetarist analysis prefers "small models" and does not support the view of many econometricians that all (or as many as possible) allocative details must be included in a model in order to be able to analyse aggregative phenomena. Increasing importance is being attached to adequate consideration of anticipatory reactions.

Résumé

Les problèmes de l'analyse monétaire post-keynesienne: une contribution à la discussion ouverte par le professeur Thomas Mayer

A un résumé de l'analyse monetaire du Professeur *Mayer* publié ici-même*, le présent article rétorque par un certain nombre de constatations correctrices ou divergentes:

(1) Dans la version de *Hicks* de l'analyse IS/LM, la monnaie fiduciaire n'est mise en relation de substitution qu'avec la monnaie scripturale. Aucune de ces deux monnaies n'ont de valeur de substitution aux actifs réels. Dans l'analyse de *Meltzer*, la monnaie se substitue à tous les actifs dans toutes les directions; les actifs financiers et réels n'en sont pas moins traités en parfaits substituts. Mais l'analyse monétaire de *Brunner/Meltzer* établit par contre en postulat des relations de substitution générales et imparfaites entre tous les actifs dans toutes les directions. Ceci conduit notamment à l'incorporation, aux côtés d'un marché monétaire, du marché du crédit.

(2) La discussion, qui est loin d'être close, portant sur la courbe de *Phillips* se résume en trois thèmes:

a) A court comme à long terme, un choix est à faire entre le taux d'inflation et l'emploi.

b) Ce choix ne peut s'établir qu'à longue échéance.

c) Il n'y a choix ni à court, ni à long terme (version stricte de la thèse du « chômage naturel »).

Ces différenciations reflètent des divergences essentielles d'opinions sur le rôle des anticipations et sur le comportement de l'offre sur le marché des mar-

* 8e année (1975) p. 191 et p. 293.

chandises. Les plus récentes études monétaristes conduisent au rejet de la 1ère thèse.

(3) Dans l'analyse de *Brunner/Meltzer*, la politique fiscale joue un rôle différent dans le court et dans le long terme. A courte vue, l'accroissement des dépenses publiques augmente la production privée, alors qu'à visée plus lointaine, l'effet fiscal « pur »se double d'un effet financier, d'ailleurs prédominant, qui aboutit à un effet de « congestion ».

(4) Le keynesianisme estime le secteur privé relativement instable, l'Etat étant considéré comme le « stabilisateur ultime ». La position monétariste prétend exactement le contraire, à savoir en particulier que le secteur privé est un appareil s'auto-ajustant et absorbant les chocs. Plus le secteur public est relativement important, plus l'instabilité qu'il secrète est grande.

(5) L'analyse monétariste favorise les « modèles réduits » et ne partage pas l'avis de nombreux économétristes selon lequel il convient d'inscrire tous (ou au moins le maximum) les détails allocatifs dans un seul modèle à l'effet d'analyser des phénomènes aggrégatifs. L'on donne plus d'importance à la prise en considération adéquate des modifications des réactions d'anticipation.