A Fascination With Economics*

The study of economics in the context of an institutionalized vacuum of knowledge is a peculiar experience. You reach in all directions with no sense of discrimination. Good fortune may intervene on occasion and guide you to the inheritance left us by great thinkers. But such exposure is disturbing. It stirred an awareness that my doctoral dissertation, marking the ritual exercise assuring entry into the academic confrerie with the blessing of the University of Zürich, be immediately committed to oblivion. Still, I was more than ever fascinated by the spectacle of man and his problems in society. I also judged, with better intuition than reason, that economics could offer me the best avenue to satisfy my curiosity. But the intellectual wasteland characterizing the social sciences at Swiss Universities compelled a crucial decision between adaptation or departure. The offer of a grant by the Rockefeller Foundation determined the outcome. Four months at Harvard University and one and a half years as a visitor at the (then) Cowles Commission for Research in Economics (University of Chicago) introduced me to the American scene.

This experience produced utter confusion and urgent questions. The environment enjoyed at the Commission was in many ways admirable, valued in human terms and measured by the skilled intelligence and technical expertise. But all this impressive exhibition of human ingenuity remained blurred and out of focus. What did all these layers of adroit analytics involve, what was their point and what did really matter? Was it the superior skill in using a mathematical theorem within a context of "economic" vocabulary? Was it the "technical complexity" and "sophistica-

* Contribution to a series of recollections and reflections on professional experiences of distinguished economists. This series opened with the September 1979 issue of this Review.

tion " of an argument, or was it the felicitous re-articulation of views bearing on economic policy within the dominant postwar consensus, or an " innovative variation " of a well defined game fixed by some paradigmatic formulation? A master of the German postwar university scene advised me at the time to be guided by " astounding and new ideas. "

My encounter with Milton Friedman opened indeed " new and astounding " vistas. He violated the prevalent pattern of suggestively vague criteria addressed to the selection and evaluation of professional work. Most distressing was moreover the encounter with a group of economists systematically applying economic analysis (i.e. price theory) to social problems of our world. The resulting confusions yielded a fertile ground for the right environment, and UCLA at the beginning of the 1950's was for me the right place. The permanent discussion with a subtle mind (Armen A. Alchian), the impact of a lucid philosopher of science (Reichenbach), and the good fortune of questioning and determined students (Allan H. Meltzer, Tibor Fabian, later on Jerry Jordan and others) dispersed the intellectual fogs and gradually structured my thinking about economics and its role in our endeavor to understand the world.

This background influencing the evolution of my thoughts, addressed to the role and use of economics, guided my attention to three distinct major groups of problems. One covers the range of monetary analysis and policy and a second involves the nature of our cognitive endeavors expressed by our pursuits. The last strand of my persistent interests developed over time from my occupation with the previous two problems. There evolved a gradual understanding that economic analysis offers a systematic approach to the whole range of socio-political reality. These three distinct strands, however separated they may be on purely logical grounds, emerged in the actual practice of my thinking with a connected pattern. I wish to invite the reader to trace with me some of these aspects and interrelations.

I. Issues in Monetary Analysis and Monetary Policy

1. *The Development of a " Money Supply " Analysis*

Monetary problems already attracted my interest as a student. But I became, as many others, absorbed with the " Keynesian Revolution " and the study of Keynes' work. My old interest reemerged however during the early years at UCLA and the detachment from the Keynesian orthodoxy was under way. This detachment was guided by many uneasy questions bearing on the profession's dismissal of the classical program for monetary analysis. It was also encouraged by many discussions with Allan H. Meltzer during his doctoral work bearing on the " money supply process." So began a long and productive association which crucially influenced my work and ideas over many years.

My interest focussed during the 1950's most particularly on the total separation between " policy " and monetary analysis. This separation was best revealed by the occurrence of two unrelated and independent languages used for the discussion of policy and the formulation of analysis. This analysis offered little help for a systematic approach to important aspects covered by policy discussions. And the latter frequently proceeded with arguments and formulation unrelated to any economic analysis. This feature still lingers at many Central Banks. Our professional literature contained around the middle of the 1950's suggestive approaches attempting to trace the behavior of money stock or earning assets of banks in response to actions undertaken by the monetary authorities. These approaches were indeed rather " mechanical " in the sense that the behavior patterns used in the arguments showed no exposure to economic analysis. But this failure was not an inherent property of what became known as the " multiplier approach " to the analysis of the money stock. It occurred to me that a suitable exploitation of inherited attempts could articulate the problem within the context of an economic analysis recognizing the operation of relative costs and yields on the crucial behavior patterns. The result was an analysis of the " money supply process " describing the joint behavior of money stock, earning assets and interest rates resulting from the interaction between banks, the public and the monetary

authorities. The behavior of the money stock was made understandable by this approach as an outcome determined by interacting asset markets operating in response to Central Bank behavior.

The formulation was deliberately chosen in order to "navigate" the analysis between the empty exercises represented by (what I called once) a "Forest of Jacobians" and the standard econometric approach relying on large models. The "multiplier approach" lacks the "neat elegance" much appreciated by our profession but does offer a procedure with useful advantages for anybody concerned with the real problems confronting us. It suggested a natural way to impose order constraints assuring a range of definite propositions about the results of the assetmarket interaction. It offered moreover a framework effectively geared to subsume important institutional aspects of the monetary system. The role of a shifting interbank deposit structure, or the consequences of changing reserve arrangement or of waning membership in the Federal Reserve System could be systematically evaluated in the context of this analytic framework. It offered also an opportunity to examine the dominant patterns shaping the behavior of the money stock and to appraise the many assertions usually encountered in this respect. Thus emerged an assessment of the relative importance of the public's, the banks' and the authorities' behavior in the evolution of the money stock over shorter and longer horizons. It yielded in particular a clarification of the conditions generating a "reverse causation" in the relation between money and income. The occurrence of this phenomenon depends on very specific institutional arrangements. It requires either a massive interest elasticity of the banks reserve and borrowing behavior or a pronounced interest sensitivity in the supply of the monetary base. The latter condition is probably more important. But such patterns are not a natural property of monetary processes. They are the product of a Central Bank's institutional policy. Variations of these arrangements over time modify the relative contribution of "reverse causation" to the observed association between money and income.

The analysis clarified moreover the meaning of loan ceilings occasionally imposed by important countries. It showed that this instrument hardly affected money stock and total earning assets. It created a captive market for government securities and lowered the relative cost of public borrowing and raised the cost of private

borrowing. It presented a typical example of wealth redistribution proceeding under the rhetorical cover of an anti-inflationary device. And lastly, the monetary control procedure developed by the Swiss National Bank or experimentally applied by Professor Robert Rasche on behalf of the Shadow Open Market Committee emerged basically from this equilibrium analysis couched in terms of a "multiplier approach."[1]

2. *The Study of Federal Reserve Policymaking*

This research on the money supply process prepared the ground for a detailed examination of Federal Reserve Policymaking jointly undertaken with Allan H. Meltzer. This work initiated a growing attention to the political economy of political institutions. We examined in particular the nature of the ruling conception guiding policies over the past decades. We also investigated the strategy associated with the ruling conception and the interpretations of events and actions made in this context. It became very clear that the Federal Reserve's policymakers shared with all other men the characteristic of a "theorizing animal." Their view of the world was controlled by a theory associated in the 1920's with their major figures. Federal Reserve actions and interpretations during the Great Depression were rationally conceived in terms of this theory. The problem centered on the adequacy of this theory developed without any connections with and exposure to systematic economic analysis. This theory, centered on the notion that banks are "inherently reluctant to borrow" (irrespective of costs and yields), gradually changed into the free reserve doctrine of the early postwar period. This tradition eventually faded away in the late 1960's and was replaced with the idea that the money stock is determined by a volatile money demand in the context of a more or less explicit IS-LM framework.

Several major results of our investigation were impressed on my mind. The history of monetary policymaking in the USA re-

[1] The reader may find a list of the major papers bearing on the issues discussed in the paper jointly authored with Allan H. Meltzer "Time Deposits in the Brunner-Meltzer Model of Asset Markets," *Journal of Monetary Economics*, January 1981. My paper on "A Diagrammatic Exposition of the Money Supply Process" published in the *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, 1973, summarizes the essential features of the accumulated analysis.

vealed to me, confirmed by many observations over the subsequent years, that only very special circumstances will produce a substantial change in conception and procedure well entrenched in the bureaucracy manipulating a political institution. It also revealed that policymaking is indeed rational. It involves however a rationality relative to the long-run interests and survival of a political institution not necessarily linked with systematic attention to the social welfare of the nation. A careful study of the minutes summarizing the meetings of the relevant policy committee indicated moreover the tragic and persistent misinterpretation of monetary actions and monetary events all through the Great Depression. This judgment does not depend on hindsight. It can be justified by the knowledge available at the time. Lastly, the persistent misinterpretation of monetary evolutions, also visible in the public record, was ultimately expressed by the *negative* association between the Federal Reserve's actions and rhetoric description. This " Orwellian inversion " (i.e. expansionary becomes contractionary and vice versa) of language affects the media's reporting and permeates the financial world to this day.[2]

3. *The Major Issues in the " Monetarist " Controversy*

The discussion gradually evolving over the 1950's proceeded however with a broader focus beyond the issues considered so far. The monetarist " counter-revolution " addressed some central tenets of the Keynesian position. The array of issues governing the discussions can be organized under four major groups. These problems refer to the nature of the transmission mechanism, the impulse patterns driving the economic process, the internal stability of the system and the relation between allocative processes and aggregative behavior. The controversies proceeding under the various headings involved substantially more than erudite scholarly

[2] A detailed argument bearing on these issues may be found in " Some General Features of the Federal Reserves Approach to Policy," February 1964, " The Discrepancy Between Federal Reserve Policy and Federal Reserve Statements," February 1964, " The Federal Reserve's Attachment to the Free Reserve Concept: A Staff Analysis," May 1964, " An Alternative Approach to the Monetary Mechanism,", August 1964, *Subcommittee on Domestic Finance. Committee on Banking and Currency. House of Representatives.* 88th Congress, Second Session, 1964. (with Allan H. Meltzer).

games. They reflected ultimately important aspects of the world bearing on the rationale of specific policies or of general approaches to policymaking.

a) The Transmission Mechanism

The Keynesian tradition subsumed two interpretations of the transmission mechanism associated with two alternative interpretations of the famous IS/LM apparatus. One version guided the econometric approach to macro-analysis and most of the textbook discussion. It emphasizes the substitution between money and financial assets represented by " bonds " and excludes substitution between money and real assets. Monetary impulses are conveyed under the circumstances by the play of interest rates on financial assets. The interest sensitivity of money demand and of major expenditure categories in the national income accounts determines therefore the impact of monetary policy. This interpretation explains investigations bearing on the efficacy of restrictive monetary policy organized by the US Department of Commerce in 1967 which concentrated on the response of business firms' capital budgeting to the observed increase in interest rates. It also explains the rationale developed by the Council of Economic Advisors for an activist use of fiscal policy supplemented with an accommodative stance of monetary policy. This particular version of the Keynesian transmission mechanism directed attention to the operation of borrowing costs associated with specific expenditure categories. The framework guiding policymakers' interpretation produced the conclusion that monetary impulses reach the economy via a narrow segment of total national expenditures most exposed to the impact of borrowing costs. This sector became identified with construction activity. The burden of monetary policy would be imposed under the circumstances on an industry with high " social and political priorities." This " social cost " of monetary policy could be avoided by confining monetary policy to an accomodation of prevailing trends guided by an interest rate set in accordance with the " needs of the housing sector." Activist management of aggregate demand was assigned on the other hand to fiscal policy.

Other policy issues reenforced attention to the nature of the transmission mechanism. This range of questions, motivated by policy problems, encouraged the systematic reexamination of this par-

ticular Keynesian strand. This reexamination was guided by an analysis of the social function of money as an asset emerging from the interaction between individuals in a social group. The self-interested search of interrelated individuals yields a pattern of asset uses minimizing information and transaction costs in a world where information and transactions require the investment of valuable resources. But money as a transaction-dominating asset substitutes in all directions, and most particularly over the whole array of assets. The text-book version of the Keynesian story centered on interest rates and borrowing costs could not subsume the monetary evolutions of countries without an organized capital market. Observations from a wide array of countries suggest that money substitutes beyond financial assets with real assets. This broad sweep of substitution relations radically changes the nature of the mechanism transmitting monetary impulses to the economy. This change lowers the significance of Keynesian " interest rates " as conveyors of monetary impulses and dismisses the role of relative borrowing costs. Some of the empirical studies designed to explore the efficacy of restrictive (or expansionary) policy appear thus to be misconceived or irrelevant. The monetary policy of accomodation loses moreover its justification.

A broader view was already contained in an alternative version of the IS/LM apparatus developed by Lloyd Metzler. In order to subsume an analysis acknowledging the full substitutability of money over all assets into a framework admitting only two assets all non-money items were lumped into a single asset juxtaposed to money. The " interest rate " refers in this case beyond rates on financial assets also to returns on real assets. But the procedure severely constrains the relevant range of application available for the analysis. It could only be used for episodes exhibiting comparatively negligible variation in relative yields between financial and real assets. This limitation excludes most of the cyclic fluctuations unfolding in contexts of modest inflation. These fluctuations usually produce shifts in relative yields affecting the interaction between asset markets and the real sector. A useful analysis would thus explicitly represent the important strands of the money substitution process. This motivated the analysis of a three-asset model of interacting asset and output market jointly developed with Allan H. Meltzer by the late 1960's.

This revision of the transmission process affected most particularly the crucial conditions ensuring the occurrence of monetary effects in the real economy. Keynesian analysis typically yielded statements emphasizing the role of the interest elasticity of money demand. Samuelson and others actually characterized the difference between a Keynesian and a Non-Keynesian view in terms of the relative magnitude of this interest elasticity. This characterization reflected a persistent misconception maintained over the years by the Keynesian establishment. This misconception assumed that everybody shared the basic assumptions yielding the specific economic content of the IS/LM approach. It reflected thus a pervasive failure to recognize the nature of the issue. Our analysis implies in contrast to the accustomed Keynesian view the comparative irrelevance of the absolute value of the interest elasticity of money demand. The essential (i.e. necessary and sufficient) condition assuring the transmission of monetary impulses involves an order relation, irrespective of absolute magnitudes, between interest elasticities on the credit-market and on the money market. The extension of the transmission mechanism affected furthermore standard interpretations offered by our Central Bank bearing on the observed variability of monetary growth. This variability was usually interpreted to express corresponding disturbances in money demand. The extended analysis determines however that *all* disturbances from *all* over the economic system are converted into corresponding gyrations of monetary growth whenever policy is geared to accommodate interest rates. This difference in interpretation affects again the evaluation of monetary policy.[3]

b) The Internal Stability of the Economic System

The " internal stability " of the system opposed a dominant Keynesian position that the private sector is inherently unstable. This issue was again associated with important policy problems and determines very different views of policymaking. It modifies

[3] Some material pertaining to this section may be found in my paper on " The Monetarist Revolution in Monetary Theory " in *Weltwirtschaftliches Archiv*, 1970. My " Survey of Selected Issues in Monetary Theory " published by the *Schweizerische Zeitschrift für Volkswirtschaft und Statistik* 1971 also contains some relevant material. Lastly, the paper and comments jointly authored with ALLAN H. MELTZER and published in the volume on *Monetarism*, edited by Jerome Stein, Amsterdam 1976, may also be usefully consulted.

in particular the role assigned to the public sector. The Keynesian tradition views the government as the stabilizer of a flawed system. Under the alternative view the government's actions contribute, in conjunction with other shocks affecting supply and demand conditions, to maintain the system in motion. The system's internal stability operates to absorb these shocks and assures that the system converges forever to its normal position. Persistent deviations from this position, as in the 1930's, do not result from an inherent instability. They are produced by a long and massive series of negative shocks lowering aggregate demand beyond the system's shorter-run absorption capacity impaired by the information load imposed by the long series of shocks. Such a series is moreover (and usually) the creation of government. This conclusion contributed to the proposal that government policy would best serve the economy with a stable framework of reliably predictable actions.

The view of an unstable or meta-stable process contrasting with the classical notion of a system absorbing all shocks in a perpetual convergence around its normal position seems difficult to reconcile with pervasive patterns of monetary experience. These aspects attracted my attention in the late 1950's when I pondered in many discussions with Allan H. Meltzer and Armen Alchian the large differences in the level of monetary growth observed at peaks or troughs of cydic fluctuations over time within a country or across time between countries. It dawned on us that neither the level of monetary growth nor of the money stock could be expected to affect significantly the real variables. The inherent stability of the system projects the persistent patterns bearing on these magnitudes into the price-level or the inflation rate. We settled at the time, as Milton Friedman did, on the idea that real effects are produced by monetary accelerations not yet absorbed into the prevailing price structure. It followed that a general recognition of persistent accelerations would shift the real effects to higher level time derivatives of the time path followed by the money stock. The role assigned to a non-passive and economically relevant aggregate supply interacting with aggregate demand determines ultimately the stabilizing property of the private sector process. This interaction assures that monetary impulses cannot raise output permanently beyond its normal level. The property of an internally stable process precludes this result by eventually translating such

impulses into price effects. The evolution of these ideas was spread over many years and became eventually fixed in our analysis by the end of the 1960's.[4]

c) The Impulse Problem

The impulse problem dominated initially to some extent the public debate. Keynesians usually advance a thoroughly eclectic position with respect to "cydic" fluctuations in real variables. This ecletic position has recently been extended to explanations of inflation. The vision bearing on this issue is closely connected with the alleged flaws of the price mechanism associated with the denial of the system's internal stability.

The monetary analysis emerging during the 1950's attributed to monetary impulses a dominant role in the process generating business cycles and most particularly in the inflation process. The second strand bearing on inflation fully acknowledges the operation of real shocks modifying an economy's underlying condition. These shocks may significantly affect the price-level and over time our economic welfare. Their contribution to the persistent inflation remains however at the most quite modest. The first strand involving the fluctuations around the normal level, is much less robust and more sensitively influenced by specific historical conditions. The contribution of monetary accelerations (and decelerations) to economic fluctuations changes over time with the comparative mixture of monetary and real shocks. This mixture explains, at least in part, the variability of the lags acknowledged in the literature This operation of monetary impulse in a context of shifting and unpredictable mixtures of shocks reenforced the notion of a non-activist approach to monetary policymaking.[5]

d) The Relation Between Allocation Processes and Aggregative Behavior

The last issue, centered on the relation between allocative processes and aggregative evolutions of the economy, may appear

[4] Relevant material on this point is contained in my paper on "The Monetarist Revolution in Monetary Theory" and "Inflation, Money and the Role of Fiscal Arrangements," in *The New Inflation and Monetary Policy,* Macmillan, London 1976.

[5] Note here also my paper on "The Monetarist Revolution in Monetary Theory."

to be somewhat remote from policy issues. The rationale of large-scale model construction, pursued by the translation of a Keynesian tradition into an econometric language, was based on the idea that allocative processes determine the economy's aggregative behavior. The monetary analysis evolving since the 1950's does not deny all possible spillovers from allocative processes into aggregative patterns. It contends however that this spillover is comparatively small and remains confined to the shorter-run noises in the aggregate data. This position reflects an assumption that aggregative evolutions and the detail of allocative processes are approximately separated to an extent increasing with the lapse of time.

The alternative conjectures about the processes governing an economy's aggregative evolution may be formulated in terms of a probability distribution covering the relevant dimensions of an economy. Monetary analysis asserts that the force shaping the *position* of this distribution are approximately independent from the forces controlling the location of individual elements *under* the distribution. The Keynesian tradition motivating an approach to large (and larger) econometric models asserts in contrast that the forces shaping the location under a distribution also determine its position. This difference affects in particular alternative proposals to control inflation. The first conjecture requires suitable monetary policy actions whereas the second usually leads to sequential proposals of incomes policy. The second conjecture influences furthermore the views bearing on the impulse patterns. It tends to encourage a diffuse electicism in this matter. Economic fluctuations are dominantly attributed to shifting combinations of allocative disturbances widely ranging over the private sector. The government possesses under the circumstances the only opportunity to smooth the aggregative fluctuations generated by the array of allocative processes.[6]

4. *Government Deficits and "Crowding Out"*

The structure of this analysis evolving over the 1960's and early 1970's influences our approach to a systematic evaluation of permanent deficits in the government's budget. This issue moved in the middle of last decade beyond the pages of learned Journals and was submitted to the public attention by the Shadow Open Market Committee.

[6] Note here also my paper on "The Monetarist Revolution in Monetary Theory."

The analysis anchored on the interaction between a credit-market and a money market implies that persistent and large increases in government debt induce portfolio adjustments. The resulting pressures on relative yields eventually lower the stock of real capital in the private sector. Government thus "crowds out" real capital and lowers normal output. This conclusion is strongly contested on two grounds however. One strand invokes the public's rational expectations of tax increases matching the increased obligation to pay interest on new debt. The other strand emphasizes that new tax liabilities change the agents' risk pattern. They restore with suitable hedging their preferred risk position revealed in a prior state. They purchase under the circumstances the new debt issued in accordance with their expected tax liability. The first strand removes the wealth effect and the second strand exorcises any substitution effect of deficits financed by issues of debt. With both effects removed the financial choice between taxes and debt is immaterial. "Crowding out" does not result from a *financial* decision but from a *real* phenomenon expressed by the relative size of the government's absorption of real resources and the characteristics of the government sector's production process. Further reflection about this matter suggests that the difference between the alternative conjectures developed within monetary analysis do not bear significantly on the longer-run outcome under appropriate assumptions about the public sector's production process. They influence mostly the views about the shorter-run impact on the economy. But the relative magnitudes of the effect on aggregate demand involved in this controversy seem to be of second order of significance.[7]

5. *The Contribution of the "Rational Expectations Analysis"*

"Rational expectations" entered our scene during the last decade and substantially affected the nature of our discussions. Ori-

[7] Aspects of crowding out appear in the paper published in the volume on *Monetarism* (footnote 3) and also in the second paper mentioned under footnote 4.

ginally introduced by Jack Muth twenty years ago it lay dormant for many years until Robert Lucas effectively resurrected this idea. Its central theme advances a systematic extension of economic analysis to information problems. Men are not passive engineering particles. They grope and cope with their natural and social environment. They will thus exploit whatever information they may acquire. This theme was moreover developed in the context of new analytic formulation which extended the opportunities for useful explications of intuitive ideas. Such explication is hardly ever a trivial endeavor and the history of science demonstrates its creative dimension. This dimension became again visible with the appearance of the rational expectations analysis. It opened aspects to our attention beyond the direct explication of initially available ideas. This point may be exemplified for our purposes with the analytic explication obtained for the idea mentioned above that money stock and monetary growth exert no real effects. Rational expectations analysis provides an explicit form for the intuitive notion that we need to consider monetary acceleration for this purpose. It generalized the idea and directed our attention to unpredictable or surprising movements in the money stock not discounted into the current prices or prevailing price movements. It also provides a more powerful formulation addressed to an examination of the conditions controlling the absorption of monetary (or fiscal) impulses by price movements with little deviation of output from its normal level. Prior analysis could produce similar results in a somewhat " mechanical fashion " by suitable adjustments in the elasticity of price expectations with respect to the current level.

The rational expectations analysis sharpened our awareness of the information problem. An intuitive sense of this awareness was brought to our work from many discussions with Armen Alchian during the early 1960's. These discussions led us to the nature of the information problem explaining the emergence of a wide range of social institutions, including money, middlemen, specialists of various kinds, etc. We understood also that rationally behaving agents' exposure to incomplete information could explain the conjunction of " long-run " neutrality of nominal impulses and their " short-run " non-neutrality. The emergence of a rational expectations analysis made us aware however that monetary analysis need attend more explicitly to the specification of the relevant information

structure confronting agents. Two distinct patterns of incomplete information have been used in recent years. The pioneering work initiated by Lucas, Sargent and Barro relied on Phelps' " island story. " It argues basically that local information is cheaply available whereas global information is costly. Global information beyond an agent's location accrues thus with a lag. Agents face under the circumstances an inference problem defined by insufficient information to separate local and global effects in observed local price movements. They do not know whether changes in specific prices represent relative or aggregative price changes. Their behavior would moreover substantially differ with the interpretations of the observations. The structure of incomplete information determines ultimately the optimal inference made. Even this best inference deviates however from the true but unknown state. This wedge, produced by the specific form of incomplete information, assures the (transitory) real effect of monetary impulses. An alternative structuring of the problem emphasizes incomplete information about the composition of contemporaneously known allocative and aggregative shocks. Agents face continuous changes in relevant conditions, but they do not know to which extent these conditions are " permanent " or " transitory ". Their behavior over a wide range of activities depends on the other hand sensitively on their inferences made in this respect. Their best inferences will generally deviate from the true composition of the shocks. This deviation defines in this case the potential leverage of monetary impulses on real variables.

The second approach to the structuring of incomplete information offers in my judgment substantial advantages. The second type of inference problem affects the behavior of agents much more pervasively than the first one. This would be confirmed by observations showing vastly larger investments to cope with a more reliable interpretation of contemporaneously known shocks than with the problem of lagging global information. Beyond these immediate factual issues loom important empirical problems exemplified by the credibility of Central Bank policy or the lamented unresponsiveness of prices to current conditions. These issues can be usefully subsumed under the second but cannot be explicated with the first inference problem. The range of relevant empirical problems requiring our attention thus suggests that the pattern of

incomplete information be advantageously explicated according to the second version really initiated many years ago by Milton Friedman.[8]

6. *The Monetarist Policy Rule*

One subject, usually dominating the attention of wider circles, has been omitted so far. The " monetarist rule " of a constant monetary growth is frequently assigned center place in many of our disputes. It addresses indeed an important problem. This should not obscure however the central cognitive issues surveyed above. The monetarist rule derives from two distinct justifications. One strand is based on the " internal stability " of the system supplemented with the dominance of monetary impulses. These conditions would indeed be sufficient to justify a " monetarist rule ". But this argument lacks substantial force and depends too much on seriously contested conditions. There is an alternative and in my judgment much more pervasively relevant argument in support of a constant monetary growth. The argument evolves from an examination of the case made on behalf of activist regimes or " discretionary policies ". A close scrutiny of these arguments reveals without exception two crucial conditions invoked to establish the efficiency of activist policymaking expressed in one form or another. The first condition assures the policymakers' perfect information about the detailed structure of the economic process. The second condition rests on a particular implication of the sociological model of man expressed by the " goodwill theory " or the " public interest " theory of government. Both conditions are blatantly falsified by massive evidence. Our vision of the structure governing the economic process suffers under a diffuse uncertainty, whatever the policymakers', their staff's and academic advisors' subjective feeling may be. This diffuse uncertainty is exemplified by the array of econometric models producing very different answers to the quest for an optimal policy. An activist regime may thus " luck in " and actually stabilize the economy, or " luck out " and substantially destabilize the economy. An analysis of this problem shows moreover that the risks are asymmetrically tilted towards potential destabilization. It follows that in the context of diffuse uncertainty a neutral strategy of constant monetary growth is optimal.

This conclusion is reenforced by the rejection of the second strand more or less implicitly adduced in support of an activist regime. A political economy analysis of political institutions determines the basic ambiguity of such institutions. The information problem confronting citizens imposes very high costs on effective monitoring of a political agency. Such monitoring costs create opportunities for trade-offs enjoyed by the personnel operating political agencies. Private and self-interested behavior replaces to some extent attention to the " public interest ". These trade-offs are moreover reenforced by the diffuse uncertainty about the economy's basic structure and the resulting vagueness of the public interest. This environment fosters " discretionary policies " exhibiting shifting patterns of unpredictable activism imposing serious information problems on economic agents. The subtle temptations of office shaped by inadequate monitoring opportunities resulting from the pervasive information problem need be removed by a constitutional or legislated constraint. Thus emerges the case for a neutral strategy operated as a policy of constant monetary growth. Diffuse uncertainty about the economy's structure and the political economy of political institutions constitute the crucial conditions of the justification. This argument needs however to be supplemented by an analysis addressed to the choice of benchmark level of monetary growth, and also to the important institutional and implementation aspects of such a policy.[9]

[8] This section refers to current work jointly undertaken with Alex Cukierman and Allan H. Meltzer. A first piece has been published in the *Journal of Monetary Economics*, October 1980. Several other pieces bearing on the issues discussed in the text are in progress.

[9] The reader may find an extensive argument in my paper on " Controlling Monetary Aggregates " to be published in 1981 by the Federal Reserve Bank of Boston. A summary statement appeared in the Lloyd's Bank *Monthly Review* in the winter 1980/81.

II. Beyond Monetary Problems

The search for a sense in our intellectual activities sharpened an awareness beyond the range of monetary phenomena. The struggle about purpose and content compelled my efforts to acquire a better comprehension of the logical aspects of our endeavors. It increasingly occurred to me that our behavior and procedures expressed most particularly by prevailing language patterns frequently obstruct whatever degree of provisional and partial resolution could possibly be achieved. The nature of this obstruction deserved in my judgment some exploration.

The cognitive enquiry beyond " money " involved however also the vision about content and range of economics. The inherited division of the social sciences appeared increasingly without logical or empirical justification. The broad sweep of Adam Smith's vision had been narrowed and confined to "economic issues". But economic analysis offers in my judgment the only usable analytic core in the social sciences. Political science and sociology define an important range of problems but provide no developed analytic framework to cope with these issues. The fashionable appeal to sociology over an expanding range of problems cultivated by many professionals seemed to sacrifice a potentially useful framework with a substantial empirical foundation for essentially ad hoc verbalisms and programmatic classifications or promises.

1. *The Rules of the Game and the Idea Market*

The market for ideas and intellectual products may be examined as any other market. We may investigate the patterns shaping the supply of intellectual products or affecting the demand. We may question the conditions controlling the survival of ideas on this market. We may particularly probe the dominant rules of the game which contribute to determine the supply and survival of ideas competing for our attention. A close examination of many argument patterns widely used in textbooks or used in papers published in leading professional journals influenced eventually my conjecture that our prevailing rules of the game contain important strands

obfuscating the nature, significance or irrelevance of our intellectual activities and their products.

We hear on occasion that the social sciences address a subject matter inherently more difficult than the natural sciences. It would appear that the gods controlling social processes play an essentially hostile and non-cooperative game with the economics profession, whereas the gods controlling " natural " processes play a cooperative game with the scientists. There is however an alternative conjecture emphasizing the rules of the game dominating our activities. It is argued in particular that the rules of the game actually influencing our intellectual conduct contribute somewhat hesitantly to the relevant sorting between competing ideas. We should note however that the truth of this conjecture would not remove the other conjecture bearing on an inherent difference between natural and social processes. The truth of the second conjecture could simply aggravate the problem already recognized by the first conjecture. The immanent difficulties posed for the comprehension of social processes could thus reenforce the obstructive effect of questionable rules of the game. A selection of some of our patterns cultivated in our learned endeavors drawn from a large sample may exemplify my concern.

The pervasive occurrence in many variations of the " modality fallacy " offers some instructive information. We may encounter for instance a long series of possibility statements bearing on monetary policy. Somehow, by the end of the series of statements rather miraculously a categorical statement denying (or asserting) any relevant impact of monetary policy emerges. Alternatively, we find that monetary policy " does not necessarily " modify the money stock (or anything) and is therefore potentially impotent. Both types of statements are inherently ambiguous and require careful scrutiny. A strictly logical interpretation of possibility statements simply conveys the information that the sentence subjected to the possibility modifier involves an empirical (i.e. non-logical) assertion. Similarly, the denial of necessity on a strictly logical interpretation means that the connections asserted are empirical and not of a logical nature. This meaning of the argument pattern is however quite innocuous and offers no grounds for the conclusions asserted.

The context of these argument patterns suggests however an alternative interpretation. The modality " it is possible that something " is meant to convey that the " something " should be con-

sidered to occur with a probability exceeding one half. The denial of necessity appears furthermore to reflect on many occasions the existence of alternative conjecture asserting the operation of different patterns. Statements are categorically judged in this manner simply on the grounds that an unsupported (stochastic) hypothesis can be invented or formulated. The argument pattern so widely encountered offers either no adequate grounds for the categorical statement advanced or no reason for the rejection of a particular conjecture addressed. The reader is lulled by the impressionistic effect of the linguistic evolution into a judgment lacking any relevant logical justification. This procedure is particularly rampant in critical objections addressed to a hypothesis (or theory) on the grounds that another hypothesis can be conceived (is possible). The substitution of impressionistic responses to a logical analysis of propositions subsumed by an analysis can be recognized moreover in many comparative judgments bearing on competing structures. The criteria seem occasionally affected by purely formal aspects with little attention to the empirical content obtained.

The role attributed to " assumptions of a hypothesis " (or theory) offered for many years the most pervasive example of the ambiguous operation of the prevailing rules governing the idea market. A standard argument regulated the cognitive status of a hypothesis on the basis of the " realism of its assumptions ". Milton Friedman's intuition understood very early the logical fallacy in this argument. In the absence of an explicit logical analysis of this issue the discussion initiated by Friedman's famous essay concentrated on intuitive and basically analogistic examples used by Friedman. The profession, represented by the published responses, refused to examine the logical merits of the problem and interpreted the needed clarification essentially as an ideological exercise. But an explicit logical analysis of the structure of hypotheses and their confirmation procedures establishes unambiguously that Friedman's intuition was right, whatever the relevance and effect of his argument may be. The standard argument pattern is logically untenable. Other patterns of our linguistic habits could be adduced to buttress my case but I wish to introduce just one additional example of great importance which has troubled me for many years. Econometrics emerged with a promise of ultimately assuring the victory of the cognitive adventure constituted by

science. But this promise, still potentially inherent in the instrument shaped by econometric theory, has been converted into a travesty by the effort directed at large scale model construction. The cognitive effort has been replaced by a numerological exercise on a level with astrology. Most of the models violate the essential requirements imposed on an empirical hypothesis, i.e. their empirical content remains on many occasions a mystery. Their actual use is a rigmarole of technical ad hocery frequently conflicting with some of the explicitly advanced stochastic hypotheses used to infer a quantitative structure from the data. They are moreover logically impossible to test in their present form. They also contributed to an unfortunate confusion between forecasting exercises on the one hand and logically acceptable test procedures on the other hand. At this stage large scale model construction should be understood not so much as a relevant cognitive effort but as rational wealth-maximizing behavior. The use of such models among political institutions directs moreover our attention to the peculiar socio-political incentive structures of political agencies. But this leads us to the last major strand of my intellectual experience.[10]

2. *The Renaissance of Adam Smith's Vision*

Our examination of Federal Reserve Policymaking in 1963/64 alerted me to the importance of institutional problems. It occurred to me at the time that our profession had unnecessarily and without adequate grounds sacrificed Adam Smith's broad vision of economics. Any cognitive efforts coping with monetary policy or inflation increasingly directs our attention moreover to consideration of socio-political aspects. But political science or sociology offered no analytic help in these matters. Many problems listed under these headings seemed on the contrary well designed for a systematic exploration with the aid of " economic " analysis. I

[10] The following papers provide additional information on these issues: " Assumption and the Cognitive Quality of Theories," *Synthese*, 1969, " The Importance of Rules in the Competitive Market for Ideas," *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, 1962; " Econometric Practice Between Numerology and Empirical Science," *Journal of Economic Literature*, 1973; " Some Reflections on the State of Econometric Practice," *Vielfalt der Wirtschaftspolitik*, Zurich, 1969.

gradually accepted as a working hypothesis that economic analysis constitutes the basic apparatus potentially unifying the social sciences. The traditional partitions would at best survive, if at all, as specializations of interest over subclasses of social phenomena.

The social sciences offer however beyond economic analysis a highly influential but also very undeveloped and ultimately very questionable alternative approach to social processes. The nature of this issue is best recognized by an examination of the intellectual background motivating radically different approaches to society. This background produces most particularly divergent evaluations of political institutions or of the operation of political agencies. It seems customary to reduce differences in views about socio-political arrangements to a purely "ideological" dimension. The media and many professionals argue as if all views bearing on political institutions are condemned to a range beyond assessable cognition. This pervasive attitude is in my judgment fundamentally wrong and intellectually pernicious. The different evaluations of the operation of political structures reflect ultimately, so I began to recognize, two radically distinct perceptions of man. One perception was introduced to the social sciences by the Scottish moral philosophers of the 18'th century. Man occurs in this view as a resourcefully coping, groping and evaluating agent persistently bent on improving his lot according to his own best lights. This basic pattern of behavior proceeds irrespective of any specific institutions. Such arrangements only modify the particular forms of man's self-interested expressions. An influential sociological tradition produced on the other side an entirely different perception. In this view man is totally shaped by exogenous social forces or entities. He is in the words of my colleague Michael Jensen a vacuous, aimless and passively reactive man. He plays a role determined by his position in society. He reveals no basic patterns invariantly operating over the whole spectrum of institutions. According to this perception man's self-interested pursuits are limited to the range of private property or the market place but wane in the context of political institutions.

The alternative perceptions present essentially two very different empirical assertions about man's conduct in society. They determine the different views and evaluations pertaining to social

arrangement and most particularly to the role of political institutions. These differences can thus be recognized as the product of underlying perceptions which are in principle analyzable and assessable. The easy reduction of all disputes about socio-political aspects to an "ideological" dimension thus fails to recognize a cognitive problem of fundamental importance.[11]

The perception of man formalized by economic analysis appears to be substantially confirmed by a vast array of historical evidence. An application of suitably adjusted economic analysis to the operation of political institutions thus promises useful insights and answers to important socio-political issues. We obtain in this way, for instance, a better appreciation of the ambivalence of "stabilization policies". We begin to understand why "stabilization policies" are at best randomly stabilizing and mostly designed for purposes of wealth redistribution. We also recognize more clearly the dangers associated with any kind of policy-activism. The problem addressed in the context of monetary policy actually characterizes the full range of government activities. Activist policy-making pursued by agencies imposing massive monitoring costs on the citizens usually produces the swamp of "discretionary policies" with unreliable shifts, or stop and go. This erratic performance reenforces however the adjustment burden imposed by natural shocks and destabilizes the economy over time and in the average.

Lastly, the failure to recognize the alternative perception of man contributes to a widening influence of more or less indirect or subtle forms of essentially sociological explanations of inflation. Interpretations of price movements as "self-generated, self-propelled and self-sustained autonomous processes" rely basically on a sociological role-playing pattern and cannot be reconciled with a "resourcefully evaluating maximizing man". The fundamental issue influences at this stage our approach to the inflation problem. It affects in particular our judgment how to cope with it most effectively. Whatever the detail of the sociological approach may be, it will always favor, for reasons inherent in its basic perception, a complex set of political institutions controlling prices or wages.

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[11] The crucial ideas were developed in a paper jointly authored with WILLIAM MECKLING on "The Perception of Man and the Conception of Government," *Journal of Money, Credit and Banking*, Vol. 9, No. 1, Part 1, Feb. 1977.

Once we recognize more fully the underlying nature of these differences we may discard easy ideological accusations and seriously consider the cognitive issues at stake. The rising importance of socio-political problems and institutional issues raises in my judgment the significance of economic analysis. The range of problems posed by our social evolution may encourage a new appreciation of Adam Smith's broad vision guiding our intellectual discipline. My own appreciation slowly evolving along the intellectual road, was shaped by many discussions with many colleagues in the profession. It was decisively influenced however by my colleagues and friends in Rochester (foremost William Meckling) and by my longtime friend Allan H. Meltzer. A younger and international group of friends has contributed its share in recent years. And I naturally hope that fate grants me future opportunities to continue to learn from them.

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