9. Monetary Control Consultations

30 September 1980

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money stock and interest rates can be regarded as alternative instruments of policy, while the choice of instrument to be made is tautologous with the choice of proximate target.[112] It also perhaps reflects the feeling that

> ...policy indicators should describe more than the effect of actions explicitly taken. It is after all quite possible for lack of action to constitute a positive policy, /since/ for example, a Central Bank contemplating open market sales could desist from taking action if it perceived that an increase in liquidity preference of economic units was about to arise, which would accomplish the increase in interest rates called for. A change in economic behaviour may thus be acquiesced in by a monetary authority to achieve its ends and it is desirable that /a policy/ indicator should recognise this possibility and evaluate policy on the basis of any relevant changes in behaviour.[113]

But though, with some qualifications[114], the latter is quite correct, it does not follow that

> An indicator of the kind described, if one can be found, cannot help but form an appropriate target variable for the monetary authorities. There is apparently, no distinction between the two.[115]

Indeed, in the previous quotation the target is 'the increase in interest rates called for'. One may of course (when thinking of a cardinal scale and hence one that permits the possibility of assessing the change in policy instruments required to achieve any particular desired change in the target and goal variables) describe the policy objective as being the change in the policy indicator consistent with generating 'the increase in interest rates called for', thinking, that is, of the former as the target. But this does not alter the fact that an assessment of the effect of policy and of exogenous factors on the target variable is required in order to establish whether and what change in that variable to affect. In particular, suppose that the policymaker chooses an interest rate above the current level consistent with reducing aggregate demand, and manipulates his instruments until this target level of the interest rate is attained. If during this period expectations change, the policy actually undertaken may be one of lowering the interest rate to the previously defined target level, rather than raising it, thus increasing aggregate demand. In this context, as Savings notes, '...the use of an indicator can serve to separate the exogenous effect from the policy effect...' so as to determine the desirable future course of policy.

But how is the policy indicator constructed ? Here alas we are thrown back to the issue of knowledge or ignorance of the structure, for

> Since the task of the policy indicator /Saving explains/ is to gauge the effect of monetary policy, the choice of an indicator requires some hypothesis about the structure. In addition/since/ the indicator is/to measure /either directly or indirectly, i.e. through the target/...the effect of policy on the goal variables... the choice of indicator...involves the goal function. ...the indicator must be (1) easily observable with little or no lag, (2) quickly affected by the policy undertaken, and (3) related to the target and goal variables. Because the indicator of policy gauges the effect of the immediate past policy and because the future course of policy will be influenced by the policymaker's estimate of the effect of the policy, it is crucial that the indicator yields at least qualitatively correct results. Otherwise there is a danger that a policy will continue to be pursued that amplifies rather than moderates cyclical fluctuations in the goal variables.[116]

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Given that the problem defined arises from ignorance of the structure, it is perverse to be told that policy in such an environment 'requires some hypothesis abo[ut] the structure'. And this confusion is further fostered by the Brunner-Meltzer ambiguities regarding the role of probabilities. For in presenting '...a formal analysis of the problem of choosing an indicator', they acknowledge as one possibili[ty] a procedure that '...postulates that our information can be expressed as probability statements about hypotheses and classes of hypotheses', a 'procedure', which they no[te] 'permits us to assign numbers to specific combinations of policy variables and thus provides a scale or indicator for policy'.[117] But this implies that we construct so[me] specific new hypothesis from the alternatives perceived.

On a particular hypothesis about the structure, a policy indicator can be constructed as the weighted sum of the various instrument levels, with weights equal to the marginal multipliers of the corresponding instruments with respect to the target or (directly) the goal variable.[118] As the above quotation implies, the scal[e] thus derived will depend (directly or indirectly[119]) on the goal function. Granted the hypothesis about the structure and the goal function, it conveys information about the 'known' (expected) thrust transmitted by policy on the target variable. Observed movements in the target variable can thus be separated into policy-induced and exogenous components, causing policy adjustments aiming to offset undesirable impacts of unanticipated changes in exogenous variables on the goal variable.

On this interpretation, however, the combined target/policy indicator strategy is no different from the optimal policy derived in the context of the variance approach. And then, whatever the usefulness of the policy indicator as a shorthand expression of policy over any given interval of time, the construction of such an index does not seem to serve any real purpose in policy design. Furthermore, if pri[or] beliefs pertain to a linear structure with additive disturbances and a single goal variable, the policy indicator is no other than the instrument chosen for this goal. On the other hand, if prior beliefs pertain to a non-linear structure (or a structur[e] characterized by multiplicative disturbance) the construction of the scale is not feasible[120]; and policy design on the basis of summary descriptions in terms of intermediate targets and policy indicators is nonsensical, since the weights attaching to the various instruments deployed to secure the desired objective(s) depend also on the values of the exogenous variables in the system.

Yet this intepretation (which, incidently, is that characteristic of Ben Friedman's work on the indicator problem[121], and suggests that policy indicators are at best superfluous[122]) is inappropriate. That this is so one suspects not only because this interpretation detracts from that perception of ignorance, or uncertainty distinct from risk[123], which I have described above, but also from the fact that (save for the ambiguity mentioned above) neither for Saving nor Brunner and Meltzer is the policy indicator sought a fixed weight index of parametrically determined instruments of policy — such as the discount rate, bank reserve ratios, bid and ask prices (or quantities of securities offered for sale) announced by the manager of the government's/central bank's security portfolio. If it were, then it would (at least) be quite unnecessary to require, as a criterion for choice of policy indicator, that the effect of exogenous variables on the policy indicator must be swamped by the policy effect.

In part, of course, the latter requirement (which properly interpreted should not detract from the statement quoted earlier, namely that policy indicators should describe more than the effect of actions explicitly taken) may reflect the fact that both Brunner and Meltzer, and Saving seek to identify some observable magnitude that may itself be said to convey information about 'the thrust of monetary policy'; and the candidates considered (namely, money, somehow defined, the interest rate, free reserves, 'the required rate of return on real capital', the monetary base and the adjusted monetary base)[124] are far from independent of the actions of market participants, though for some[125] it can be argued that they are policy-controlled variables. But their attempts to select an observable magnitude do reflect their conviction of the impracticality of constructing a policy indicator on the lines suggested above. The reason, of course, is ignorance or, if you prefer, the fact that

> ...we do observe alternative and competing hypotheses [about the structure of monetary processes] with little evidence (as yet) to discriminate about their cognitive status[126],

combined with a suspicion, one must conjecture, for the Bayesian approach to the problem.

As in the case of strategy evaluation under uncertainty, a maxi-min procedure that minimizes the dependence of the index selected on the alternative hypotheses about the structure and the values of the exogenous variables comes to mind, and is indeed suggested by Brunner and Meltzer[127] as a means by which to select 'an optimal scale from those offered for systematic examination [that] assures us that [the] ordering of

alternative actions by the monetary authority is closest to the true but unknown and non-computable ordering'.[128] In particular, the procedure suggested is that of finding first the lowest rank correlation between any given candidate and the alternative 'true' or 'ideal' indicators pertaining to the alternative states of nature comprised in our prior beliefs, and then selecting as the policy indicator that observable (or computable from observables) magnitude which has the maximum lowest rank correlation computed.[129]

Clearly such a procedure enables the conversion of what, in the light of a number of competing hypotheses about the structure, is a non-ordered set of vectors of instruments of policy to be approximated by an ordinal scale. But besides the convenience implied in that alternative combinations of instruments may, when interpreted through this proxy, be ranked in a manner that enables the policymaker to compare their consequences, the purpose of such a construct, as Saving's discussion reveals, is to enable the policymaker to draw inferences regarding the effect of exogenous factors on the target and goal variable(s), and hence on the need for revision in the policy pursued. It is in this sense that the indicator problem is an interpretation problem[130] arising from the need for continuous adjustment to changes in the environment occuring during the implementation of a particular policy; a problem resulting from ignorance of the structure combined with information lags which cause an endogenous variable to serve as the proximate target.

THE 'TWO-STAGE PROCEDURE', 'CONTROLLABILITY' AND 'CAUSALITY'

Ignorance of the structure and information lags commend, or result in, procedures in which policy actions utilize the information embodied in observable magnitudes to infer the impact of policy on the goal variables so as to adjust policy to conditions in the environment. But what insights does our discussion so far yield for the independent observer concerned in appraising the usefulness of any particular target and policy indicator which the authorities may employ in policy design ?

In Ben Friedman's world, we have seen, the optimal policy requires the decision-taker to infer, on the basis of his prior knowledge of the structure and its stochastic characteristics, the likelihood that an observed deviation of the information variable from its expected (and other things equal consistent with minimizing the variance in the goal variable) value is due to an IS disturbance as opposed to a disturbance in the relationship between the information variable and the goal variable, and then to adjust his instruments of policy in accordance with the parameter responses defined by his prior beliefs. A policy aiming to minimize the deviations of any particular observable endogenous variable from its expected value will be optimal if, and only if, the relationship is independent of all eventualities whether due to policy or purely exogenous factors. Correspondingly, in appraising alternative magnitudes as appropriate target variables we find that, besides observability with a regular frequency greater than that of the goal variable, statistical association to the goal variable is the relevant criterion, since, curiously in the words of Saving,

> All that is required is that the reduced form equations for the target variable and the goal variables be such that the policy vector that results in the target variable taking on its desired magnitude will when substituted into the reduced form for the goal variables result in their taking on certain values.[131]

In the latter sense the optimal target is no more nor less controllable than the goal variable. Furthermore the pursuit of policy objectives by means of targets does not imply any commitment to a prior belief that changes in the target variable cause changes in the goal variable. It is totally irrelevant whether causality, in the sense that a theoretical structure can be identified which predicts that changes in X will result in changes in Z, runs from the target variable to the goal variable or vice versa.[132] The term proximate target (rather than intermediate target) seems in this context more appropriate since it avoids any connotations of causal sequence. Indeed, unless we are prepared to argue that all influences bear on the goal variable only through their effect on the target, we must conjecture that causation cannot run from the target variable to the goal variable - certainly not, if in the context of the variance approach a proximate target strategy is not to be inferior to the optimal policy; and so perhaps a useful rule of thumb is to search for variables that are causedby the goal variable.

This view of proximate targets emanating from Ben Friedman's world must seem odd to the economist accustomed to thinking of intermediate targets, of two-stage procedures where the authorities cause changes in income, the goal variable, by causing changes in the money stock; to the economist, that is, accustomed to arguments that

> The rationale for introducing...'proximate' or 'intermediate' targets which lie between the instruments (or tools) of policy and the goals of policy would seem to be the notion that a close and systematic relationship exists between proximate targets and goals, the relationship holding over time and space, while the relationship between the tools and the proximate targets depends heavily on institutional factors which are stable neither over time nor over space.[133]

and also to those for whom monetary targets stem from the fact, the opposite fact[134], that

> The lag with which money acts on /the goal variable/ is too long and too variable to make monetary policy an instrument of short-run stabilization.[135]

A proximate target that is no more controllable than the goal variable seems hardly consistent with orthodoxy which prescribes that

> The first requirement /for monetary/ policy is that the monetary

Nor, therefore, does it square with the empirical investigations that depart from the premise that

> While a particular monetary aggregate might give very good projections of the likely pattern of economic activity, that information is not very useful to the monetary authorities for achieving a desired pattern if they have virtually no control over that aggregate.[137]

Yet disregard of such issues is perfectly consistent with a circumstance in which, granted the absence of any doubts about the structure, we define, as in Ben Friedman, a problem that arises purely from information lags and hence as the sole scope of the inquiry the identification of the best observable proxy of the goal variable [138]

Suppose, for example, as is consistent with (indeed compelling in the context of) the IS-LM model, that expenditure decisions are thought to depend on the stock of all 'fixed-in-nominal-terms-realizable-at-short notice assets', FNRS.[139] Policy may then be directed towards securing a particular value (or rate of growth) of this aggregate. But unless we assume that: (1) the demand for this aggregate is known with certainty; (2) data on the stock of such assets are available on a continuous basis; (3) data on the determinants of demand for this aggregate (other than the goal variable) are available on a continuous basis, there can be room for selection of another aggregate, that for whatever reason is either found to bear a closer relationship to the goal variable, or observations on it are available on a more continuous basis than FNRS, to serve as the proximate target. Indeed, with nominal income as the goal variable, and in an IS-LM kind of world modified for anticipations and decision intervals, one may seek for this role an aggregate that corresponds to the transactions demand for money. Currency in circulation with the public, or narrow money, are candidates that easily come to mind, at least in demonstrating this point. For though no one can seriously suggest that changes in currency in circulation, or I contest - contrary to the impression one gets from some econometric studies resting on such models[140] - narrow money, lead to changes in aggregate expenditure[141], it may nonetheless be argued that for any given state of transactions technology (that is to say changes in the payments mechanism apart) this counterpart of Hicksian transactions demand[142] may serve as an index of aggregate expenditures; as the proximate target. Policy actions, to be sure, must still exploit the speculative/asset demand for money (defined as all safe assets), since the significance of such actions pertains to their implications for the determination of the opportunity cost of expenditures as defined by liquidity preference. But the need for such actions may be identifiable from the behaviour of narrow money; and if the relationship of the latter to the goal variable is proportional, policy may properly focus on minimizing the deviations of this variable from its expected value.

Such a variable may also serve as the target in a setting in which competing hypotheses about the structure are recognized. For though in that setting no unique expectation of this variable can be had, a strategy, which aims to minimize the deviations of this variable in accordance with one or other of the competing hypotheses about the structure, may nevertheless be superior to any strategy that minimizes the variance of some other endogenous variable including that which all of the alternative competing hypotheses suggest to be an important determinant of the goal variable. But the converse cannot in this case be precluded; and hence the correct strategy may be one where policy responses are geared towards achieving, or maintaining, some chosen path of the latter variable, although this path in no way mirrors the movement of the indicator of economic activity (as we may in the single goal variable, GNP, case call the optimal information variable), and does not therefore, in any regression analysis, render as close an association to the goal variable as the indicator of economic activity might.

In this case again no direct appeal to causality is made. But neither is any other criterion available that will secure the appraisal of the target in the absence of knowledge of the prior perception that has determined the policymaker's selection. The independent observer's appraisal of a particular target variable is thus confined to the examination of the validity of particular hypotheses that anecdotal or other material available from the policymaker reveal as essential ingredients in the perception of the environment that has conditioned his choice. And though the outcomes of such enquiries may result in revisions of the policymaker's beliefs, they would only afford the researcher the opportunity to suggest an alternative target variable when he is entitled to presume that he has simulated the decision-taker's imagination.

The latter is also true of the policy indicator, whether we perceive of it as an index of the effect that policy will have on the target variable, or as an index that conditions our interpretation of the effect of exogenous factors and hence as a means for assessing the extent to which revisions in the target are called for. At the same time, we should note that Saving's discussion of the target and indicator strategy resembles the example given above regarding strategy in the context of the variance approach. When emphasis is placed on Saving's particular examples and on Ben Friedman's reminder that the money stock is not a control variable[143], both cases can be described as denoting a circumstance in which an intermediate target (such as FNRS or the interest rate) is chosen as the short-term objective (one element of the overall strategy) to be revised in the light of new information about the movement of the exogenous variables. Of course the inferences drawn by Savings from the policy indicator need not (and in general would not) reflect those referred by Ben Friedman's indicator of economic activity. But this does not detract from a description of

decisions where

> The choice of monetary policy is determined by the view taken of the mechanisms through which money influences the economy. A target should play a key role in the transmission mechanism and policy can be effective if both the influence of the monetary policy on the target and the impact of the target on the authorities' objectives are understood.[144]

Thus

> For the monetarist the money supply is the obvious target variable. The behaviour of the money supply can be controlled by operating on the monetary base and changes in the stock of money have predictable effects on economic activity....[145]

The selection of a short-run target (by which I mean an intermediate target revisable in the light of inferences regarding the impact of exogenous variables on the goal variable) then involves a causal relationship and thus implies identification with a particular subset of hypotheses pertaining to our economic environment.

DECISION AND SURPRISE

It should be stressed that in both cases, whether, that is, we accept the framework of the variance approach or whether we opt for a characterization of the policymaker's perception of his environment that comprises a variety of competing hypotheses about the structure and paths of the exogenous variables in the system, the discussion so far yields no insights regarding how the policymaker is to distinguish between changes that call for a revision of his perception of his environment and those that are consistent with his prior perception.

In the context of the variance approach for example, the feedback rule - being at the limit, when that is 'the money stock is continuously observable and the interest rate continuously adjustable'[146], 'identical to Poole's combination policy'[147], whereby granted the interest sensitivity of the demand for money, policy aims at obtaining '...the optimal slope of the LM by making the supply of money interest sensitive'[148] - comprises a policy aiming to alter the stochastic properties of the model by interjecting a new element of (co)variation in the form of the policymaker's adjustment of control variables. Nothing is said about how the policymaker is to respond to new data, to what Keynes[149] called 'the news', or indeed how, in a stochastic environment, he is to distinguish between observations that comprise a change in the data and those which in respect of his prior beliefs are stochastic and thus leave the equilibrium of the system unaltered. It is heartening to be told, by Ben Friedman for example, that the policymaker should consider all information available to him to establish the nature of the disturbance; to use his puzzling phrase, to examine the information comprised in '...predictors of the stochastic elements of income'.[150] But this in no way answers the question of how the policymaker is to interpret any particular piece of news into a response, when this may constitute either an observation consistent with his prior beliefs or one that calls for a revision of such beliefs.

The issue should not be obscured by Ben Friedman's emotive term of 'surprise'. The intuitive appeal of the information-feedback rules derives from the fact that we are tempted to interpret deviations of the information variable from its expected value as signifying non-stochastic changes, rather than chance happenings which, by definition, may vanish before policy is implemented.[151] Yet the 'optimal policy' renders no insights on this when the prior perceived variance-covariance matrix of disturbances is employed to infer the response to any given deviation from the prior defined expectation. And though the recommendation that the authorities should exploit all available information makes some amends, it does so in a very partial way, never challenging, that is, the durability of the set of parameters characterizing the policymaker's prior beliefs regarding responses of economic actors.

The same is true in the framework of ignorance described above, so long as we insist on precise quantitative expression, on 'optimal strategies' capable of such expression, notwithstanding the acknowledgement of a variety of competing hypotheses about the structure and the paths of the exogenous variables in the system. Here again the continuous adjustment of the policymaker's control variables, the feedback rules, are then conditional on a prior perception of the environment which however varied renders no device for its replacement.

At best therefore in both worlds we are then faced with a Myrdalian sequence analysis, being told neither how the policymaker is to accommodate the news, nor what role must be assigned to '...uncertainty itself which must surely flow from any experience of falability of expectation...'.[152] For Ben Friedman, of course, (and all other variance approach exercises) there can by definition be no room for such 'niceties'. Probability which comprises the cornerstone of the variance approach leaves, as Shackle told us often enough, no room for 'novelty'.[153] But in the Brunner-Meltzer framework, in which competing hypotheses about the structure and the paths of the goal variables in the system are recognized, in which, that is, the policymaker recognizes the insufficiency of the information available in establishing either a particular prior belief about the structure or a particular path of the exogenous variables in the system, we must also conjecture that while policy may lay down rules of conduct for the range of 'no potential surprise', the policymaker's perception of his environment cannot be immune to fresh knowledge from the occurrence of events whose possibility was looked at and rejected or which were never even imagined.

/Looking at

Looking at policy as a process of decision, the latter appears to raise awkward questions regarding the meaning to be attached to 'strategy' in a context of competing hypotheses about the structure. Can policy decisions, in a world characterized by ignorance, be adequately described and analysed as processes conditional on a number of alternatives between which we know of no reason to discriminate, without the need to enquire into the emergence and durability of such beliefs ? Can the range of non-revision be 'objectively', 'universally' defined by appeal to statistical generalizations ? Can isolated decisions be motivated or examined through schemes that rest on laws of sequences of trials ? If we feel (and I suspect we may) that the answers to these questions are in the negative then: what role must be accorded to judgement ?

Yet on reflection we may feel that the analysis of policy under ignorance and uncertainty already described is not jeopardized by such conundrums; in that its purpose is not to render a precise formula, an algorithm, to replace the decision-taker but rather, as Keynes would have put it, to supply 'an apparatus of the mind technique of thinking that helps its possessor to draw correct conclusions.' The search for an ordinal scale that permits reliable interpretations, comparative statements, qualitatively correct results, of the thrust transmitted by policy points in this direction. And so does Saving's discussion of a target which is revised in the light of such 'qualitative' information. Obviously such 'classificatory' statements do not render a sharp divide that permits a delineation of responses in accordance with a particular complex prior belief and a revision of such belief. 'There is a zone where the non-surprising outcome melts into the surprising, and a zone where the outcome which does not call for policy revision melts into the one that does'.[154] To be sure this vision lacks the elegance and apparent precision of the paradigms that '...easily appeal to the sophisticated analytic instincts of economists'.[155] But then again the policymaker operates in a world in which 'things are too fluid, too complex, too mutually involved, too elusive, subjective, subtle, too much subject to learning processes, too evolutionary, restless and fertile of surprise to yield a scheme of ascertainable, reliable and permanent parameter estimates'.[156]

MONETARY TARGETS IN PANDORA'S WORLD

Bearing in mind the remarks at the end of the last subsection let us return to the conduct of policy in the three countries considered. A quick glance at official statements (and papers produced by bodies influential in policy design) does reveal considerable ecclecticism in the terms employed in connection with the chosen aggregates.[157] Intermediate target, proximate target, information variable, indicator of economic activity, policy indicator, monetary indicator, and even policy goal are liberally bandied around, sometimes even in the same document, to describe the aggregate chosen. Correspondingly causality, controlability tightness of association with nominal income, stability and other characteristics of demand for money are offered to 'explain' the proferred policies and the choice of one aggregate over another.

Leaving aside the query that our preceeding discussion poses regarding the meaning or significance which one should attach to any search for an aggregate that scores highly on all these counts,[158] we may note that the advent of, and aherence to, proferred policies cannot be said to have rested, or to rest, on convincing evidence regarding the merits of the chosen aggregates on any of these counts. Taking a longer term perspective:

The United States

In the US the second half of the 1960's was a period of radical reassessment of the role of monetary policy and of increasing scrutiny by Congress of the affairs of the Federal Reserve. In 1968 the Committee on Standards for Guiding Monetary Policy,[159] taking the view that the Federal Reserve can control the money stock, reasoned that while monetary policy has significant effects on expenditure, output and prices, our knowledge is not such as to commend fine tuning policies. Thus, while stressing the need for clearer indications of policy objectives by Congress to the monetary authorities (even entertaining the possibility that weights be attached to the various goals in order to define a goal function) it emphasized the need to avoid large swings in policy and noted '...that a steady rise in the money supply more or less consistent with the projected rate of economic growth - generally in the range of 3-5 per cent per year - would be a healthy long run ideal'.[160]
It furthermore recommended that a report to Congress be tabled at the beginning of each year concerning monetary policies for the coming twelve months. Meanwhile a move towards greater emphasis in policy design on credit and monetary aggregates can be traced in the deliberations of the F.O.M.C.

By the end of the 1960's the latter body had begun to distinguish between the 'operating targets' (summarized in terms of money market conditions, and relating to the Federal Funds rate, member bank borrowings, net reserves and sometimes the Treasury Bill rate) which had comprised its entire concern previously and which were deemed to be under the short-run control of the Manager of the System's Account, and 'intermediate targets' (initially bank credit and subsequently also monetary aggregates) which though not under their immediate control and subject to longer lags in data availability were deemed to bear a more determinate relationship to ultimate goal variables than interest rates. The new setting could be interpretted to imply a process running from money market conditions to monetary and/or credit aggregates, and therefore (perhaps through changes in relative yields) to ulimate goal variables; but a conception of monetary aggregates, at best, as an indicator of economic activity rather than an intermediate target did not vanish.[161] On the other hand a longer run outlook did emerge and with it more emphasis on systematic inferences of anticipated outcomes both through econometric forecasts (drawn from the Fed-MIT-Pen and other, smaller, models) combined with judgemental projections. Furthermore, a serious effort to examine questions relating to controlability of alternative aggregates,[162] the stability of demand for money relationships,[163] the relationship of alternative aggregates to nominal GNP,[164] and also the implications of alternative strategies (placing different degrees of emphasis on monetary aggregates and interest rates),[165] was made.

The results of the investigations into the areas listed above did reinforce the belief that attention on monetary aggregates was not unwarranted. But neither the studies at the turn of the 1960's nor those that followed rendered an unequivocal verdict in favour of an intermediate target strategy in one or other of the aggregates, or on any feedback strategy based on observation of monetary aggregates alone. Significant doubts regarding the parameters of demand functions for some of the aggregates, short-run stability problems, relatively large errors in prediction based on monetary aggregates and such, combined with recognition of objectives more closely linked to interest rates (in particular international movements and sectoral considerations - e.g. housing), ensured that - except perhaps for a brief period - the shift in emphasis never went much beyond the point of directives for growth of bank credit and monetary aggregates to be achieved on average over the two months following the F.O.M.C. meeting, subject to a clearly defined and rigidly adhered to Federal funds rate proviso.[166] Only briefly in 1972 was something more akin to the policy indicator favoured in Brunner's writings, namely at first total reserves and shortly afterwards reserves against private deposits (i.e. a concept analogous to the reserve component of CBM) adopted as an 'operating target'.

Viewed from the standpoint of beginning 1975 the situation so far as knowledge of monetary processes is concerned looked no rosier than before. Certainly the more simple demand for money functions for M_1, the aggregate on which 'primary emphasis' at first continued to be placed in the F.O.M.C.'s instructions to the Manager of the System's Open Market Account, as is well documented [167] and as Tables IVa and IVb may serve to remind us, did exhibit considerable variation in parameter estimates depending on the sample period taken. The situation is better for M_2 which by 1976 came to command an equal weight in instructions pertaining to the monthly guidelines; but here again there is considerable variation suggested in quarterly estimates. Conversely insofar as control of monetary aggregates is perceived in terms of '...sliding up and down the demand for money function' [168] by changing interest rates (treated as control variables) these functions render no precise solution to the control of monetary aggregates problem, while the same is true of results from approaches that focus on the relationship between the monetary base and the money supply.[169] In the same vein relationships focusing on monetary aggregates as indicators of nominal income (revealing correlations in logarithmic first differences below those secured by focusing on the lagged value of the dependent variable) clearly suggest the rather limited value that one may have properly attached to them in this capacity when considering their merits as monetary targets. And whereas for a time reduced form relationships did appear to provide support for fast, strong and predictable effects of money on nominal GNP,[170] while statistical analyses supporting 'unidirectional causality' from the former to the latter [171] may have permitted the inference that such estimates could be relied upon in policy design without the risk that they will be shown to be specific to the policy regime (the institutional environment, the contingent circumstances) of the time interval from which they were drawn,[172] even in St. Louis the precise parameter estimates drawn from reduced form equations on different sample periods showed tremendous diversity.
Furthermore as C. Christ noted[173] in 1975, competing structural models of the US economy '...disagree so strongly about the effects of important monetary and fiscal policies that they cannot be considered reliable guides to such policy effects',[174] and no less to the point he stressed '...that econometric forecasts can be improved by the use of subjective judgement'[175] while straight '...use of actual values [in models not subjectively adjusted] does not help...'[176]

On such an information set it seems hard to think of the announced targets and strategy as bearing any direct relationship to models couched on a particular prior belief about the structure. Nevertheless the two-stage-targeting procedure

(i.e. quarterly revisions in the rate of growth of monetary aggregates and monthly guidelines to the Desk -see Section II above) has been interpretted as a scheme where '...at least in principle the F.O.M.C. takes advantage once per quarter of the opportunity to reassess the money income relationship and determine what money stock growth is consistent with ultimate objectives',[177] but within the quarter 'pursues an operating strategy which makes the money stock the intermediate target for policy'.[178] A strict interpretation along mean-variance lines furthermore has caused Ben Friedman to conclude that the abstinence of the F.O.M.C. from exploiting the within the quarter flow of new information - by determining how much of the money stock surprise is due to a spending disturbance and then allowing (granted that the demand for the relevant aggregates is certainly not independent of opportunity costs, see Table IVa to IVd and Appendix B) for the LM curve slope in gauging the optimal policy - is lamentable.

The descriptive account of Section II above does reveal that in the US the quarterly policy reviews comprise occasions in which the F.O.M.C. utilizes whatever information is available to decide whether and what revisions are required to its projected growth ranges for the various aggregates. But although announcements regarding the yearly growth ranges are only made on such occasions it is at best a gross simplication to argue that the Committee pursues in the intervals between the quarterly policy reviews an intermediate target strategy of the kind described in pp. above. True enough the setting of tolerance ranges and the granting of specific instructions regarding responses if such ranges are violated, does bear a resemblance to a strategy in which, within specified limits, the short-run objective is to minimize the expectation of the square of the deviation of M_1 or M_2 (i.e. the aggregate chosen as the focus from the short-run operational standpoint) from the path considered at the last policy review as consistent with the attainment of the desired value of the goal variables. But the resemblance (at least to the certainty equivalance variant of the variance approach) wanes when we remember that: (a) tolerance ranges are set not only for monetary aggregates but also for the Federal funds rate; (b) the percentage point spreads embodied in the two months monetary aggregate ranges have generally been set considerably wider than the spreads announced in the quarterly/one year target ranges; (c) the monthly instructions to the Manager of the Open Market Account have varied considerably in emphasis as between monetary aggregates and interest ranges - so much so in fact as to have directives labelled 'aggregates' directive and 'money market' directive - and often recorded considerable changes in the width of the range for the Federal funds rate;[179] (d) tolerance ranges for both monetary aggregates and interest rates are thus often varied within the quarter; and even so (e) whereas deviations of the Federal funds rate from the specified ranges have been rare they have not been so for monetary aggregates nor have they regularly provoked responses that will bring the aggregates within 'tolerance'.[180]

Obviously the Federal funds rate proviso sets a limit to the freedom afforded to the Desk to pursue an intermediate target strategy. 'So long as the funds rate remains within its specified range the Manager does have leeway to respond to evidence that the weighted growth rates for M_1 and M_2 are approaching or moving outside the limits of their ranges';[181] but 'if growth rates for M_1 and M_2 ...appear to be remaining outside the Committee's desired ranges and the Manager's actions to counter this deviation have moved the funds rate to the upper or lower limits of its range, he must request new instructions from the Committee'[182] who, in turn, as is abundantly clear from its monthly directives, utilizes whatever information is available to it to identify the source of the disturbance so as to respond according to its 'Judgement' of the situation and hence in apparent conformity to what in Ben Friedman's analysis comprises the 'optimal strategy'. Two features should be noted however. The first is that the objectives implicit in the monthly revisions do not coincide with those conditioning longer term choices. From a short-run standpoint external considerations and concern with conditions in financial markets continue to play a more major role than what may be considered longer-run ultimate objectives. Secondly, (though not quite unrelated to the former) the width of the tolerance ranges highlights the fact that in contrast to the simple variance models the absence of precise information about the structure, at least over shorter intervals of time, in general precludes any systematic inferences from deviations in the growth of monetary aggregates on the gains to be had from offsetting any part of such deviations. As Davis has noted, there is no really good way to detect when short-run deviations in monetary growth from longer-run targets are truly temporary and when they reflect more fundamental developments... [and hence] to avoid over-reacting to short-term developments the Federal Reserve has in practice to tolerate short-run swings over fairly wide ranges.[183] Consequently short-run variations in the money stock comprise if at all a very limited source of information on the basis of which the F.O.M.C. may alter its policy instruments either 'efficiently' or 'inefficiently' - and correspondingly short-run deviations of the aggregates from their 'desired' path are not in general a source of concern since 'there seems to be little or no evidence that short-run fluctuations in monetary growth rates even over periods of up to six months have major impacts on the economy.[184] On the contrary '...the Committee's belief [is] that the short-run volatility in market interest rates likely to result from...a policy [seeking to attain closer short-run control of monetary aggregates] would

risk greater disruption to the economy than the short-run instability in money growth rates the policy was seeking to avoid.'[185]

In this environment where precise relationships seem ephemeral and, as A. Burns noted, 'the relationships between monthly or even yearly rates of monetary expansion and of the performance of the economy is subject to considerable uncertainty under the best of circumstances',[186] where even for the narrower aggregates there are questions of coverage and errors in measurement,[187] where lags in effect of instruments of policy on monetary aggregates are long relative to forecasting ability,[188] where 'the demands of the public are subject to rather wide short-term variations',[189] the question of yielding to fixed formulae hardly arises. In this environment as P. Volcker put it '...the Federal Reserve has pointed out now and again that it is neither possible nor desirable to attempt close control over the growth of monetary aggregates during short periods of time of say a few weeks or even months'.[190] In this environment 'confronted with an unexpected overshoot or undershoot of its money growth targets the F.O.M.C. has taken moderate action neither fully responding nor fully ignoring the miss, until the underlying growth tendency can be differentiated from the noise of short-term aberations in the data'[191] while it continuously taps on all sources of information available to it to gauge the movements in its goal variable(s). In this environment

> '...monetary policy represents [the Fed's] best Judgement of what is appropriate in the light of evolving economic and financial developments'[192]

Monetary aggregates serve neither as an intermediate target nor as a unique source of information;[194] and so also the recommendation that the F.O.M.C. 'abandons its operating strategy which makes the money stock the intermediate target for policy'[195] is quite superfluous.

The United Kingdom

A similar picture emerges in the context of the UK. Here again the late 1960's did witness a shift towards greater attention on monetary aggregates. To some extent this shift in emphasis - away from interest rates and credit conditions towards Domestic Credit Expansion and the 'money supply' - was 'encouraged' by the requirements which the International Monetary Fund placed in extending its support to the UK. But the advent of Competition and Credit Control, allegedly heralding the era of money stock control, of emphasis on 'quantities' rather than 'prices', also reflected the optimism that the early (and rather few) studies on the demand for money fostered.[195] Indeed, at least in retrospect, the extravagance of the claims that hinged on them is quite staggering. For in one clean sweep they appeared, and were interpreted it seems, to afford a revision of long cherished beliefs regarding not only the ability to control monetary aggregates, but also, in a more vague sense, the desirability of so doing, and the information value of such aggregates.

In 1969 the authorities' concern to exercise greater control of Domestic Credit Expansion was still subdued by long-standing doubts[196] regarding the effect of more aggressive operations on the gilt-edged market. Reflecting views expressed since the late 1950's, and eloquently presented in the Bank of England's 1966 description of 'Official Transactions in the Gilt-Edged Market',[197] the official position was that 'Because the market response to a moderate price change for gilt-edged has been found to be unstable and often perverse in the short-term the movement of interest rates required to achieve adequate liquidity absorption through debt operations may be so large that a rapid or seemingly arbitrary adjustment could permanently damage the willingness of investors to hold gilt-edged, compounding the difficulties of monetary management in the future... [Thus] official operations in gilt-edged continue to be constrained both by the underlying market situation and by long-term concern for the maintenance of a broad market.'[198]

In 1970 the Bank in its evidence to the Select Committee examining its actitivies continued to refer to the '...difficulty ...[of] reconciling the pedestrian day to day desire for an orderly gilt-edged market with the policy of restraining the money supply'.[199] But by 1971 the Competition and Credit Control announcements seemed to suggest no conflict of this kind any more. As Charles Goodhart put it

> 'The early studies on demand for money functions [within the Bank] which appeared to show a fairly stable relationship between money holdings and current and previous income and interest rates helped to dissipate the previous pessimism that financial markets are so fickle and susceptible in the short-term to the wayward play of extrapolative expectations, that control of the monetary aggregates through normal market mechanisms would be impracticable... Insofar as the demand for money has a stable and predictable inverse relationship with interest rates it would seem to imply that an increase in rates by the authorities would have a determinate effect on the money stock... Furthermore, by concentrating on the relationship between the aggregate money stock, incomes and interest rates, the thrust of this research pointed towards a policy of controlling monetary aggregates through market mechanisms and away from the previous policy of controlling a component of domestic credit through physical rationing'.[200]

To be sure the gains to be had from such control were far from clear, as ignorance (evident no less in the total absence of monetary variables from forecasting models)[201] surrounded the effects of changes in the money stock on the composition of expenditures and even reduced form relationships, replicating investigations of US experience, seemed to render much more equivocal an answer for the 'importance of money' than believers might have hoped.[202] But then again there was evidence of sorts in the Bank's own research[203] that such correlation as there was between money and income run from the former to the latter, while also (and one may add, curiously) since under fixed exchange rates '...the level of interest rates was largely determined by external considerations, the demand for money equation seemed to allow one to read off what rate of monetary growth would be consistent (or more restrictive or more expansionary) than the government's domestic objectives.'[204]

Paying little attention to the considerable differences in parameter estimates rendered by different formulations of demand for money functions and by even small variations in the time period employed, it was furthermore reasoned that the estimated relationships can serve to infer the movement in income. 'In practice', Lionel Price argued, 'the authorities do not know the current level of incomes in the economy as a whole; a reasonably comprehensive and reliable picture emerges only some months after the event. Meanwhile they must grasp at straws in the wind. As interest rates are known from day to day and monthly data on the money stock are received quite quickly, the demand for money equation could be applied to discover what level of income would be consistent with the observed interest rates and money stock; this provides an early if approximate indicator of movements in income besides those already available.'[205]

Whether such perceptions amounted to monetary aggregates being seen as information variables, whether they commended the pursuit of a policy aiming to minimize the deviations of monetary aggregates from their expected path, or whether a feedback rule seemed in the circumstances preferable, is hard for the outsider to decipher. Most likely no clear view had emerged as even looking back Charles Goodhart conflated these issues when suggesting that one could '...indeed go further [than L.Price] by adding that by taking steps to counteract the divergences of monetary aggregates from their expected path - when such divergences were not held to be due to money market disturbances - one could hope to use [the] information [about income rendered by the demand for money function] to stabilize the path of incomes'.[206] But at any rate targets did not come then; and by the time they came nothing of the confidence of the turn of the 1970's remained.

The precise experience in the post-Competition and Credit Control pre-targets era, is conveyed too clearly elsewhere in this volume[207] to permit that I venture into a detailed description, which at any rate would be beyond the scope of this paper. But whatever the reasons the ground in which targets sprouted has a more ragged appearance, resembling more in some respects the 1960's and the view of the US described above, than 'the brave new world' that Competition and Credit Control envisioned. Indeed, looking back, Competition and Credit Control, as alas one could have predicted,[208] seems to have been the last and most short-lived of the manifestations of 'the permissive society'. By mid-1972 the emphasis on control of quantitites through variation in prices seemed a delusion, or at least something to be interpreted much more cautiously than some had (a year earlier) been encouraged to surmise, as the discomfort provoked by anticipations of unloading of gilts by the banks was relieved by the authorities' provision of a 'special loan facility' to the banks, alleviating the squeeze on their reserves at a time of unprecedented increases in bank lending to the private sector and in the money supply. Informal requests to the banks regarding lending, a ceiling on savings deposit rates and last but not least the supplementary deposits scheme, suggested that neither sectoral effects were beyond the concern of the authorities nor was control of deposits through variation in interest rates as straightfo...d an exercise as had seemed only shortly before.

Whether by 1976 anything remained that could still be said 'to dissipate the previous pessimism that financial markets are so fickle and susceptible in the short-term to the wayward play of extrapolative expectations, that control of the monetary aggregates through normal market mecha...sms would be impractical', is on the evidence very doubtful. But the experience also rendered awareness that the choice between quantity and price is conditional on the time interval considered, and hence the compromise: 'In the short-run financial markets can be notably volatile while expenditures and output roll forward with stolid inertia...; so during short intervals, e.g. day by day and week by week, the random variance in money markets will probably be large relative to that in the goods markets with the implication that the shorter the time period the greater the emphasis the monetary authority should place on stabilizing interest rates in the money market'.[209]

Equally to the point however, even over longer intervals of, say, a quarter or more the confidence that could be placed on any prior beliefs and consequently the information to be had from movements of monetary aggregates was increasingly (and, as the results in Tables IVa and I/b suggest,

justifiably) questioned. The bitter disappointment of this experience is eloquently conveyed in Charles Goodhart's conclusion on post-1970 evidence:

> 'The monetarist edifice' he commented, 'rests largely on the stability and predictability of the demand for money function. Econometric study of the data in the 1960's had suggested that in the UK we too could build part of our monetary policy on this basis. Subsequent experience has revealed weaknesses in this foundation.' 210

In fact, to this day no demand for money function for M_3 or £M_3 has been traced that exhibits even 'sensible' let alone 'stable' reponses and which may therefore be said to provide 'a reliable foundation for policy design.' Reflecting on the estimates presented above and on those of Table IVe of this paper one may suggest that it is hardly a coincidence that the Bank of England has been reluctant to present anything regarding the performance of demand for £M_3, or for M_3, for the period beyond 1973.[211] But even its recent excursion into M_1 (clutching at whatever reed seems less slippery, one may say) rendering as it does[212] a range of long-run elasticities of − 0.045 to 1.741 for real income, 0.098 to 1.791 for the price level and − 0.096 to 0.543 for the short-term rate, suggests that the evidence available to the UK authorities from their attempts estimation of demand for money functions presents a serious challenge to the contention that adherence to 'quantity' oriented targets can be justified or explained (as official appeals to intellectual antecedents encourage us to believe)[213] by reference to Poole's contribution to the policy problems. To be sure, predictions of behaviour of the real sector leave much to be desired. But bearing in mind also the rather infant stage of incorporation of monetary variables into the authorities econometric models[214] it seems pertinent to conclude that a justification for intermediate targets in terms of the variance approach must provoke as a minimal comment that made by Lionel Price, namely that: 'At present instability - in the sense of economists' failure to predict events, or even to explain them satisfactorily with the benefit of hindsight - is rife both in goods markets and financial markets... It is, therefore, difficult to judge the strength of Poole-type arguments in the UK at the present time.'[215]

Granted this it is not surprising that the UK monetary authorities, like their US counterparts, neither regard any monetary aggregate as the (short-run?) intermediate target nor as a unique source of information on the basis of which to judge the adjustment to their policy instruments required to minimize implicit deviations of the goal variables from their desired values. Indeed the view that i: