

6. Monetary Base IV
Part C

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solutions to the determination problem; and whether the latter is to be preferred to the former cannot, I believe, be decided independently of the characteristics of the environment in which the policymaker operates. Brunner and Meltzer, and Saving, however, attach considerable emphasis on a construct which, notwithstanding the competing hypotheses, "...yields reliable information about the monetary thrust transmitted to economic activity".¹⁰⁴ Thus in discussions of policy under uncertainty, besides the target variable, there does appear another magnitude: the policy indicator. It is as though the diverse scenery of competing hypotheses requires more than one filter in tracing (in assessing, in appreciating) its contours so as to traverse to one's objective. But this has caused no small measure of confusion.

In Saving's discussion of the policy problem the policymaker, lacking complete knowledge of the structure and of the values of the non-policy determined arguments, is supposed to have enough information to determine the direction of the effect of policies on particular endogenous (including goal) variables.¹⁰⁵ If in addition, it is reasoned, he is "...reasonably certain of the relationship between some observable endogenous variable and the goal variables — even if he is very uncertain about the exact effect of his instrument on the goal variables — he may ... base this observable endogenous variable as a target variable and adjust his instruments until this variable reaches its desired target level".¹⁰⁶

Such a procedure, Saving claims, has two merits. First, the "...approach circumvents some of the uncertainties in the effect of policy on the goal variables [In that] if policy can be adjusted instantly to account for any random change between the policy and the target, then this part of the uncertainty can be removed". Secondly, "the use of the target variable can remove some of the uncertainty resulting from unobservable goal variables" in that, while, granted lags in observation of the goal variable, "the effect of policy will only be seen after policy has been pursued for some time, [and] during this period exogenous changes may occur, making the effect of the policy chosen larger, or smaller, than it otherwise would have been, if a target variable is used then these exogenous changes may simply affect the magnitude of the operation necessary to make the target variable reach the level desired".¹⁰⁷

In this context the policymaker does not, in order to adjust his instruments of policy, appear to require an index of the effect that changes in policy will have on the target and goal variables. On the other hand, it is recognized that

the possibility that changes in the economy will occur during the implementation of policy raises the need for an indicator of the effect of the policy being pursued. That is if the policymaker is to adjust his policy to changes in his government occurring during the implementation of a particular policy, he must have an index of the effect of current policy.

Essentially the policymaker requires a separation of the change in his target variable into policy effect and an exogenous effect. Since observation of the changes in the target variable yields only the total effect, some other variable or combination of variables is required to reflect the policy effect. This other variable or combination of variables, usually called "a temporary policy indicator", must be distinct from the target variable in the sense of being mathematically independent; that is, the indicator must not be a scalar multiple of the target variable. In addition, since the purpose of the indicator is to measure the policy effect, it must be chosen so that (1) exogenous changes that affect the target variable do not affect the indicator, or (2) if these exogenous variables do affect the indicator, their effect must be swamped by the policy effect.¹⁰⁸

Thus for Saving, the policy indicator serves to establish whether the specific value, or path, of the target variable pursued at any particular time is consistent with the goal, or whether changes in exogenous factors "...resulting in changes in the target variable"¹⁰⁹ call for revision in the target value in order to secure the attainment of the goal. Notice that this implies that, notwithstanding the competing hypotheses about the structure, the policymaker is assumed to be able to construct "an index of the effect or current policy". But a process in which the policymaker pursues a particular value (or path) of a "target variable" so long as the "policy indicator" takes a value (or sequence of values) deemed previously consistent with the attainment of the target and the goal, can equally well be described as a process in which the policymaker pursues a particular value or path of the "indicator" so long as the "target variable" takes a value or sequence of values deemed previously consistent with this value or path of the indicator and the attainment of the goal. From this viewpoint, the assignment of the term "target" to one or other of these two variables is a matter of semantics. Yet though this may perhaps account for a large part of the stupendous confusion that exists in the literature on the distinction between targets and policy indicators¹¹⁰, we should not allow it to detract from the fact that the strategy advocated requires two variables or indices for its execution.

To emphasize the latter and also the confusion that has surrounded the issue, consider the following statement (echoing and echoed in a number of learned and/or official documents, I should add) from a paper "...mainly addressed to the problem of targets and indicators":

In the real world, where knowledge is seriously incomplete and the effects of policy on ultimate goal variables are not precisely known in advance and cannot be continuously monitored owing to delays in the collection of data and lags in the effectiveness of policy, it is usually thought useful to have an indicator of policy which would also serve as the target for policy.

To some extent the confusion stems, I believe, from too close identification with the same framework defined by Poole. In which no feedbacks are afforded and where both

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 also we are thrown back to the issue of knowledge or ignorance of the structure for

Since the task of the policy indicator (Savings 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

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

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 about the structure'. And this confusion is further fostered by the Brunner-Waltzer ambiguities regarding the role of probabilities. For in presenting '...a formal analysis of the problem of choosing an indicator', they acknowledge as one possible procedure that '...postulates that our information can be expressed as probability statements about hypotheses and classes of hypotheses', a 'procedure', which they not '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 our 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 scale 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 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 structure 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 interpretation (which, incidentally, is that characteristic of Ben Friedman's work on the indicator problem¹²¹), and suggests that policy indicators are at best superfluous¹²² is inappropriate. That this is so one suspects not only because this interpretation detracts from that perception of ignorance, of uncertainty disjunct from risk¹²³, 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, and 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 some¹²⁵ 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 rank-in 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 Meltzer¹²⁷ as a means by which to select 'an optimal scale from those offered for systematic examination [that] assures us that [the] ordering of

.../alternative

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 problem¹³⁰ arising from the need for continuous adjustment to changes in the environment occurring 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 command, 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 maintained) 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 circumstances 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 or 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 changes in X 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 caused by the goal variable.

This view of proximate targets emanating from Don 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 closer 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 132 which 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 instrument itself be chosen that it can control

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-normal-terms-realizable-at-short notice assets', FRRS. 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 FRRS, 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 - 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 expenditure; 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 are needed 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-maker'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 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 variable¹⁴³, both cases can be described as denoting a circumstance in which an intermediate target (such as MRS 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 Saving from the policy indicator need not (and in general would not) reflect those rendered 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-term target (by which I mean an intermediate target reversible 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 heart, 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 Keynes¹⁴⁹ 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 happening 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 sense, 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 cautious adjustment of the policymaker's control variables, the feedback rules, are then conditional on a prior perception of the environment in 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 laws, nor what role must be assigned to '...uncertainty itself which must surely flow from any experience of fallibility 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 'hovelty'.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 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 schemas 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'.¹ 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 schema of ascertainable, reliable and permanent parameter estimates'.¹⁵⁶

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 eclecticism 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, controllability, tightness of association with nominal income, stability and other characteristics of demand for money are offered to 'explain' the preferred policies and the choice of one aggregate over another.

Leaving aside the query that our preceding 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 adherence to, preferred policies cannot be said to have tested, or to verify, in 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 efficient effects on expenditure, output and prices, our knowledge is not such as to command 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 move 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 term 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 interpreted to imply a process running from money market conditions to monetary and/or credit aggregates, and therefore (perhaps through changes in relative yields) to ultimate 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-VIT-Pan and other, smaller, models) combined with judgemental projections. Furthermore, a serious effort to examine questions relating to controllability 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 predictions 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 GNP)

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 in 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 fairly 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 conjuncture 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 interpreted 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 absence 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 simplification 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 equivalence 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' directives 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 M₁ and M₂ are approaching or moving outside the limits of their ranges',¹⁸¹ but 'if growth rates for M₁ and M₂ 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 aggregate from their 'desired' path are no 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 aberrations 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. 'abandon 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 as 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 pre-ter control of Domestic Credit Expansion was still subdued by long-standing doubts¹⁹⁶ 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 1965 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 activities 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 such 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 research²⁰³ that such correlation as there was between money and income ran 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 confessed 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 establish 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 rugged appearance, resembling more in some respects the 1960's and the view of the US described above, than 'the brave new world' that came upon 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 quantities through variation in prices seemed a detour, 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 straightforward 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 mechanisms would be impractical', is on the evidence very doubtful. But the experience also renders aware 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 IVb 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. Economic 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, so this day no demand for money function for M_2 or M_3 has been traced that exhibits even 'sensible' let alone 'stable' responses 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 IVa 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_2 , or for M_3 , for the period beyond 1973. But even its recent excursion into M_1 (clutching at whatever reed seems less slippery, one may say) rendering as it does²¹² 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 0.548 for the short-term rate, suggests that the evidence available to the UK authorities from their attempts at 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 'people's contribution to the policy problems. To be sure, predictions of behaviour of the real sector have much to be desired. But bearing in mind also the rather infant stage of incorporation of monetary variables into the authorities' econometric models²¹⁴ 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

the 'short-run financial markets are notably volatile' characterised (as Bank of England commentaries sometimes stress) by sharp swings in confidence, is conducive to emphasis being placed on stabilizing interest rates. External considerations and other sectoral effects, such as those pertaining to the behaviour of building societies and the housing market also play a role in this context.²¹⁶ In addition however the failure of the UK authorities to secure any reliable information regarding the parameters of the demand for money function implies that the confidence placed on any forecast rate of growth of the chosen aggregate is severely circumscribed,²¹⁷ and hence also the failure to attain any such target strongly discounted (as 'in the United Kingdom, the Governor of the Bank of England remarked, 'we have not recently been able to observe a continuing stable relationship between money and incomes',²¹⁸ except insofar as the model employed by other economic units in interpreting such deviations is not subject to the same uncertainty. With policy makers perusing (after the hopes of the turn of the decade) an environment that brings to mind passages from the Radcliffe Report 219 the pursuit of a proximate target is both half-hearted 220 and also subject to no obvious strategy in which to commit such instruments of policy as are available.²²¹ Besides, one may add, policy makers now know that even if the demand functions for monetary aggregates were better behaved delays in statistical information make it difficult to react to offset... divergences from forecast'.²²² While there is also the caveat that '...stable and steady monetary growth carries with it the risk of instrument instability in that interest rates will need to fluctuate increasingly widely',²²³

West Germany

At first sight at least the situation in Germany appears to have been rather different. From a longer run perspective, the high priority accorded to price stability throughout the postwar period, and the relative emphasis on monetary, rather than fiscal, policy for much of this period, were features that distinguish West Germany from the other two countries considered. Unlike the US and the UK the role ascribed to monetary policy was never deemed to be that of accommodating fiscal policy.²²⁴ Indeed until 1967 the Bundesbank's actions (revealing marked differences in objective functions between it and the various tiers of government regarding the pursuit of price stability, employment and growth) invariably aimed to counteract not only the influence of purely exogenous factors but also the pro-cyclical responses of the various tiers of government. And when in 1967 a move towards limiting discretion occurred, it was to constrain fiscal freedom, as the Stability and Growth Act sought to ensure greater co-ordination

of federal and Lander government policies and defined precisely the adjustments in government budgets (through so-called 'cyclical reserve funds') deemed to constitute the appropriate fiscal counter-cyclical action in the face of fluctuations in economic activity.

Yet the significance that has traditionally attached to Central Bank Policy should not, I believe, be interpreted to have implied in the 1950's at least, emphasis on control of the money supply (however defined) as a means by which ultimate objectives could be achieved. References to the money stock are in fact rather scarce before the turn of the 1970's. Instruments of policy are deployed to effect 'bank-free liquidity' (i.e. bank holdings of central bank money and other short-term assets that can be used to increase such holdings, minus compulsory reserves) and thereby interest rates, credit and the demand for money. The influence of policy on ultimate goal variables is not perceived to operate through changes in the stock of money balance, but rather through changes in the asset composition of bank portfolios that cause changes in expenditures through changes in availability and cost of credit. In this respect the emphasis is on flows rather than stocks, and the money stock is conceived as a consequence of the effect of policy on other intermediate targets and of their effect on the goal variables.

By the beginning of the 1970's there are sounds of regard for money as a determinant of expenditures. Changes in bank credit are referred to as factors on which '...the Bundesbank... pays special attention, not only because, simply in quantitative terms, bank loans are normally the most important factor affecting monetary conditions, but also because this is a field in which the Bundesbank can exercise the strongest influence, by means of its instruments of monetary policy, on changes in the money stock'.²²⁵ Yet, significantly, it is noted that the fact that its '...instruments have not enabled the Bundesbank to exercise strict control over the money creation of the banking system, despite the great effectiveness of liquidity policy in many respects... need not be considered a disadvantage insofar as control of money creation as such is not the sole important factor in the control of aggregate demand in the economy; equally essential, and perhaps more so, is control of interest rates for this influences the calculations of borrowers /who, it is explained, compare the nominal interest rate with the expected yield and with expectations as to the future course of the value of money, and hence the demand for credit'.²²⁶ Indeed, although some homage is paid to money stock control, at least until 1973, one feels it to be incidental. 'Monetary policy in Germany', we are told in 1972, 'is guided by the basic concept of controlling the bank's supply of credit

and the resultant increase in the money stock via bank liquidity, and in addition, of influencing non-banks demand for credit by changing the interest rate level.²²⁷ But the analysis that follows such statements focuses entirely on free liquid reserves, and credit conditions, while the impression that, with regard to expenditures and hence ultimate goal variable, the time lag between policy action and effect is that perceived to attach to changes in free liquid reserves and effect on bank credit to the private sector (without further ado) continues.²²⁸

Interestingly the latter is so notwithstanding awareness '...that the size of the money stock, [equal to private-resident-non-bank holdings of currency and sight deposits], is closely related to the course of economic activity as reflected by, say, the gross national product'²²⁹ and the finding '...that divergences in the movement of the two aggregates, that is, fluctuations in the velocity of circulation, follow a regular pattern that may be linked both with the level of interest rates and with the cyclical situation'.²³⁰

For while noting that regressions '...suggest that fluctuations observed in the velocity of circulation are more a symptom of cyclical movements than a reaction to interest rates'²³¹ (notice the similarity to more recent uncertainties regarding the cyclical behaviour of GDM), it was stressed that 'By their very nature regression computations do not indicate the cause of the statistical correlation between the aggregates mentioned - whether, that is, monetary movements determine economic movements or whether the course of economic activity, dictated by other influences results in fluctuations in the monetary sphere'.²³² Nor is there any evidence later invoked to resolve this quandary. Rather the increasing emphasis on monetary aggregates in official statements coincides (and is often referred to in connection) with the advent of floating rates and with a break in the stylised facts previously invoked to describe the empirical relationship between free liquid reserves and credit expansion.²³³ Insofar as floating rates do permit greater freedom in adjusting short-term rates to domestic conditions a shift in emphasis from bank liquidity to the monetary liabilities of the Government/Central bank seems consistent. But the shift was induced no less by the fact that 'From Spring 1970 onwards [the] basic premise of liquidity policy became increasingly questionable...[as] even when the free liquid reserves had been reduced to a level which previous experience had shown to be 'critical' credit expansion continued unabated or even accelerated. It [thus] became evident that the basic condition for liquidity policy, [namely that] there is a general typical time lag of about a year observed in every phase of the cycle between the change in the liquidity position of banks and hence their credit creation potential on the one hand and the actual use of this potential on the other'²³⁴, in the form hitherto pursued was no longer assured.²³⁵ It is in this context that the stock of

central bank money emerged as a policy indicator,²³⁶ as the index performing the task of '...measure of the expansive or restrictive effect of monetary policy'²³⁷ that free liquid reserves were previously deemed to perform. And yet a year later, without relinquishing it seems in the eyes of the authorities its role as a policy indicator,²³⁸ it came to serve as the correct.

In the latter context although no allusions to the variance approach²³⁹ are (to my knowledge) to be found in any official statements certain aspects of the Bundesbank's policy conception and design seem more consistent with proximate (intermediate) targets than policy in either of the two countries so far examined. In particular, the choice of single value yearly targets may suggest that the degree of error attaching in the Bundesbank's opinion to the function describing the demand for GDM was at least initially thought to be small. And though in first announcing a monetary target the Bundesbank pointed out 'that in the short-run there is no close relationship between the movement of the national product and that of central bank money',²⁴⁰ the extent to which such remarks referred even to random fluctuations in demand for this aggregate is somewhat unclear granted the tendency to augment such statements by referring to a systematic pattern of behaviour, that is that 'the relationship of central bank money...to the nominal gross national product is subject to procyclical fluctuations [so that]...during an upswing the national product rises faster than the money stock and the opposite occurs in the downswing'.²⁴¹

Otherwise the central bank money stock it was claimed shows a course which is substantially free from special influences.²⁴² Thus, insofar as the relationship of this aggregate to nominal GDP was thought to be not responsive to changes in interest rates, this being a major reason for the choice of this aggregate in preference to M_1 or M_2 in the first place,²⁴³ the behaviour of GDM could be said to possess by 'divine ordinance' or careful selection, the characteristics traced above as necessary in the context of the variance approach for the treatment of a monetary aggregate as a proximate target to be efficient.

Table IVa to IVd, do reveal a contrast between experience in West Germany and the other two countries considered. As in the case of the United States and the United Kingdom the precise parameters recorded do depend on the nature of the estimated relationships. On the other hand, unlike the other two countries, the temporal stability of the functions purporting to describe demand for GDM seems more satisfactory. In this respect the question of selection '...the best available demand for money function'²⁴⁴ and of a particular prior belief about the structure seems for Germany more

compatible with experience. But the results also reveal that from a variance approach standpoint a proximate target strategy in GEM is by the Karcken et al - Ben Friedman reasoning, likely to have been inferior to a feedback rule that allows for a comparatively strong and certainly significant (see also X⁴ and X³ in Tables IVB and IVD) interest elasticity of demand for GEM.

Yet it is doubtful whether the Bundesbank's strategy was (and/or is) perceived from a variance approach perspective. Certainly appeals to intellectual antecedents reveal closer kinship to our discussion of policy under uncertainty.

The relationship between what monetary policy does and what it ultimately causes to happen, H. Hockelmann notes, is so hard to fathom, according to a widely accepted view that the actions of a central bank cannot be directly guided by it. Hence the Bundesbank, like other central banks is following a two-stage procedure. The real objectives of economic policy, as set out, for example, in the German 'Act to Promote Economic Stability and Growth' of 1967 which regard to price stability, employment, external equilibrium and steady and appropriate economic growth, are transformed into a monetary growth target. Monetary policy uses its instruments to come as closely as it can to this target. He fully realises that in theory serious objections can be raised against this two-stage procedure of monetary policy: "...the two stages of the monetary policy process are in fact not totally independent in the presence of 'uncertainty'". In the case of the intermediate target 'money stock' for instance, interest rates play a part at both stages, not only in the relationship between instruments and money stock but also in the relationship between the money stock and the real objectives of monetary policy.²⁴⁶ In spite of these difficulties a target that covers the effects of policy in the financial field, in principle the central bank is in a strong position here because the banks' money creation cannot function without its support. On the other hand it cannot achieve very much on its own; the banks and their customers must go along with it. Even limiting monetary expansion is not as easy as may be supposed on the basis of the dictum that nothing can be done without the central bank. It costs the central bank a great deal of effort to make the relationships approximate to its ideas, and hence it is important to know how far it has been successful in so doing. An intermediate target appears to be the best means to this end.²⁴⁷

And in discussing 'which variable best reflects the impact of monetary policy in the financial field?' he continues

.../In the debate

In the debate on monetary theory during the last few years central banks who have chosen an interest rate target have often been charged in trusting a highly unreliable compass. It is argued that a fall or a rise in interest rates on the credit market cannot be interpreted as indicating an easing or tightening of monetary policy as they may only be due to changes in demand for credit. A central bank which is guided by monetary developments it is claimed cannot be guilty of such misinterpretation. If interest rates rise in an economic upswing, the argument runs, the central bank will not be able to construe this as implying a restrictive policy if monetary growth increases further at the same time. Conversely, falling interest rates are not indicative of a successful expansionary policy as long as the growth rates of the money stock continue to decline.²⁴⁸

One can hardly fail to be struck by the similarity to F. Savings' approach to the policy problem in a world characterized by lack of complete knowledge of the structure and information lags discussed on pages 250-251. The emphasis on intermediate target and two-stage procedure springing from ignorance of the precise effects of policy on ultimate goal variables is unmistakable. Monetary reflection however also unveils the statement as one that conflates intermediate targets and policy indicators. In-die First half the discussion focuses firmly on intermediate targets; but when we come to 'In spite of...' we are moving to policy indicators, and in the quotation that follows we are clearly there.

From a narrow standpoint one may lend more emphasis to the former (that is intermediate targets rather than policy indicators) by noting the concern expressed in Bundesbank statements regarding the need to distinguish GEM from the concept of the monetary base.²⁵¹ Yet acknowledging the fact that (as our discussion of policy indicators reveals) one is not bound to accept for all institutional structures the Brunner-Meltzer identification of 'the base' with 'the ideal policy indicator' this is clearly not sufficient to resolve the issue. More revealing perhaps are utterances regarding 'the second stage' of the 'two stage procedure'. Here statements stress a close connection between GEM and ultimate goal variables (or more precisely the gross national product²⁵²) and invariably even permit the inference of a causal sequence from the former to the latter; the choice of 'GEM as a target' being on several occasions presented as an attempt to identify not only an aggregate the demand for which, unlike M₁ and M₂, is not subject to shifts induced by interest rate movements (a feature for which M₁, i.e. the simple summation of currency plus sight plus time plus saving deposits

.../could have served

could have served just as well), but also an aggregate so structured as to reflect the 'moneyness' of different kinds of deposits. ²⁵²

Since no detailed account exists of what the expected configuration of output and price developments during the year has been at the point of each yearly policy review, the extent to which the authorities have sought to pursue a proximate or intermediate target strategy cannot be ascertained simply by looking at the actual path of GDM. On the other hand the descriptive accounts of the conduct of policy since 1975, the tendency to overshoot the target in the light of errors in prediction regarding velocity or output, the periodic emphasis on external considerations, and the occasional concern with stabilizing bond rates and securities orderliness conditions in security markets, ²⁵⁴ do reveal that the announced objectives for GDM have not comprised a target to be pursued in oblivion of other objectives or of the information forthcoming in the course of the year.

Acknowledging such features of behaviour in the years since the introduction of GDM targets, one cannot dismiss the possibility that this reflects the challenge to prior beliefs which expansion since 1974 has posed. For not only have short-run deviations from the targeted rate of growth of GDM been stressed not to bear any relationship to movements in nominal income (and further 'that the trend of a few months must not be overrated', ²⁵⁵) but also even over longer intervals (over the cycle) experience has not conformed to the relationship originally perceived by the Bundesbank to hold between real and nominal income and the stock of GDM. As the President of the Bundesbank remarked in late 1977, 'what has proved difficult is to correctly forecast the velocity of money or its rate of turnover. Our present economic recovery is not following a normal cyclical pattern and this probably explains why the velocity of money has not quite conformed to historic cyclical patterns'. ²⁵⁶

As the results presented above suggest the lack of conformity to 'historic cyclical' patterns must, to some extent, be due to lack of conformity of nominal interest rates to historic cyclical patterns and the tendency of the Bundesbank to underplay the influence of such variables on the relationship of money to income. ²⁵⁷ Yet besides such systematic influences there have also been, it appears, other factors affecting the relationship in specific periods. Certainly in deciding on policy at any given point the Bundesbank has continuously sought to establish the nature of the disturbance thus listing over the years a wide menu of factors accounting for unanticipated decreases (or more precisely, for the failure of anticipated increases to materialise) in the ratio of central GDM to GNY;

explanations that have ranged from 'errors in seasonal adjustments', ²⁵⁸ to 'precautionary motives' increasing the currency component, ²⁵⁹ to 'growing holdings of Deutsche Mark notes outside the Federal Republic /plus/ the disproportionately steep increase in income of pensioners who traditionally hold more cash, and the increase in cash payments in the 'grey areas' of business activity', ²⁶⁰ to lags in response of expansionary policy. ²⁶¹ Correspondingly one notes increasing emphasis on 'explaining the reasons for divergences from the target', a feature that reflects a flexibility in operating procedures analogous to that traced de facto for the US and the UK, as well as the abandonment in December 1978 of the single valued, year on year average target in favour of average of last quarter to last quarter target range of 6-9 per cent for the growth of GDM, launched with acknowledgements both to the effect that '...when setting the target it proved particularly difficult to gauge the extent to which the available money stock could be used', ²⁶² and that '...the target range attests that policy has to adapt itself to changing conditions both at home ... and via a via the rest of the world'. ²⁶³