

ARTHUR M. OKUN\*

*Brookings Institution*

# *Fiscal-Monetary Activism: Some Analytical Issues*

IN RECENT YEARS, ECONOMISTS have intensely debated the appropriate degree of activism in fiscal-monetary policy making. The “new economics” of the 1960s emphasized activism, particularly in fiscal policy, relying “less on the automatic stabilizers and more on discretionary action responding to observed and forecast changes in the economy—less on rules and more on men.”<sup>1</sup> When the economy’s performance deteriorated after 1965, the activism of the policy strategy came under attack. In particular, the dissatisfaction led to a renewed espousal of rules for policy such as had long been advocated by Milton Friedman for monetary policy and by Herbert Stein for fiscal policy.<sup>2</sup>

The critics of activism argue that changes in fiscal and monetary instruments designed to narrow deviations of the economy from a target path are likely to widen them instead, whereas the maintenance of appropriate fixed instrument settings would achieve greater economic stability. Specifically, the critics question the contribution of fiscal activism to the success story of the early sixties and emphasize that economic performance was

\* I am indebted to Robert E. Litan for assistance in the research, and to George Jaszi and several of the senior advisers and members of the Brookings Panel on Economic Activity for helpful comments.

1. Walter W. Heller, *New Dimensions of Political Economy* (Harvard University Press, 1966; W. W. Norton, 1967), pp. 68–69.

2. Milton Friedman, “A Monetary and Fiscal Framework for Economic Stability,” *American Economic Review*, Vol. 38 (June 1948), pp. 245–64; Committee for Economic Development, *Taxes and the Budget: A Program for Prosperity in a Free Economy* (CED, November 1947). Herbert Stein was research economist for the CED at that time.

unsatisfactory during the late sixties in the face of major shifts in fiscal and monetary policy.<sup>3</sup> I have participated in this dialogue, arguing that the lessons of 1965–68 have been misread by the critics of activism. During this period, actual fiscal policy diverged from the policies recommended by activist economists inside and outside the government. Uncertainty and political unrest over the war overrode the activist prescriptions and would equally have overridden prescriptions for maintaining fixed fiscal-monetary settings.<sup>4</sup>

This paper covers the same basic issue of activism versus rules, but it seeks to identify the analytical issues in the debate and to relate them to an important theoretical literature on decision strategy in policy making. I shall appraise the case against activism, which is a set of several related, and yet separate, charges. A selection of quotes from the critics may illustrate these charges. Milton Friedman points out the limitations in our “ability to predict both the behavior of the system in the absence of action and the effect of action” and the time-consuming process of correcting deviations which involves three types of lags: “(1) the lag between the need for action and the recognition of this need; (2) the lag between recognition of the need for action and the taking of action; and (3) the lag between the action and its effects.”<sup>5</sup>

Beryl Sprinkel stresses the inherent stability of the private economy: “An activist monetary-fiscal policy is quite likely to destabilize an inherently stable economy . . .”<sup>6</sup> One way it could do so is by disrupting private economic planning, as President Nixon has noted: “Business and labor cannot plan, and consumers and homebuyers cannot effectively

3. See, for example, Milton Friedman and Walter W. Heller, *Monetary vs. Fiscal Policy* (W. W. Norton, 1969).

4. See Arthur M. Okun, *The Political Economy of Prosperity* (Brookings Institution, 1970), pp. 37–44, 53–59, 62–99, and 109–18; Okun, “Rules and Roles for Fiscal and Monetary Policy,” in James J. Diamond (ed.), *Issues in Fiscal and Monetary Policy: The Eclectic Economist Views the Controversy* (DePaul University, 1971) (Brookings Reprint 222), pp. 51–74; Okun, “Political Economy: Some Lessons of Recent Experience,” *Journal of Money, Credit and Banking*, Vol. 4 (February 1972), pp. 23–39.

5. Milton Friedman, “The Effects of a Full-Employment Policy on Economic Stability: A Formal Analysis,” in *Essays in Positive Economics* (University of Chicago Press, 1953), p. 129.

6. Testimony of Beryl W. Sprinkel on February 17, 1967, in *The 1967 Economic Report of the President*, Hearings before the Joint Economic Committee, 90 Cong. 1 sess. (1967), Pt. 3, p. 660.

manage their affairs, when Government alternates between keeping first the accelerator and then the brake pedal to the floor.”<sup>7</sup>

According to another strand of the argument, the political process is irrational or inefficient. The Council of Economic Advisers contends: “A policy of ad hoc decisions about deficits or surplus is exposed to the political bias in favor of spending and deficits.”<sup>8</sup> Similarly, Friedman posits a “propensity to overreact” by the monetary authorities stemming from their “failure . . . to allow for the delay between their actions and the subsequent effects on the economy.”<sup>9</sup>

In surveying the issues of stabilization strategy, I shall highlight the question of *how much* to vary fiscal-monetary instruments for stabilization, rather than how to select instruments or to combine them. In particular, I shall not engage in invidious comparisons of fiscal and monetary policy. Whether good fiscal policy is more or less effective than good monetary policy for stabilization purposes is like the question of whether good headlights are more or less important than good brakes for night driving. Fortunately, neither the stabilization policy maker nor the driver has to make such a choice.

Many of the statements below are best interpreted as though stabilization policy relied on a single instrument, which is aimed at a single target, some real or nominal level of gross national product (GNP). I assume that an ideal level of GNP has been selected and handed to the fiscal-monetary policy maker because I want to finesse “Phillips curve” issues, simply to keep this paper’s scope within manageable bounds. In effect, I am distinguishing conceptually (and artificially) between two branches of macroeconomic policy: The first is concerned with ways to alter, or to compromise on, the inflation-unemployment tradeoff; while the second is charged with achieving the optimum path of economic activity given the prior choices on the tradeoff. In restricting this paper to the second branch, I shall obviously sacrifice coverage of many important interrelationships between the tradeoff and fiscal-monetary choices.

7. *Economic Report of the President together with the Annual Report of the Council of Economic Advisers, February 1970*, p. 10. Hereafter, this document will be referred to as either the *Economic Report of the President* or the *Annual Report of the CEA*, followed by the year.

8. *Annual Report of the CEA, January 1972*, p. 112.

9. Milton Friedman, “The Role of Monetary Policy,” in *The Optimum Quantity of Money and Other Essays* (Aldine, 1969), p. 109.

The area covered by this paper is mined with loaded semantics. People who dislike activism often call it “fine tuning,” a term with a pretentious ring. The Ackley Council of Economic Advisers used the obviously laudatory phrase “sensible steering” to describe its strategy, contrasting it with the clearly inferior alternative of “aimless drifting.”<sup>10</sup> I shall use the neutral (if inelegant) term “activism” to denote a fiscal-monetary strategy of pursuing some target path of national output by adjusting instruments in light of recent and expected changes in economic activity.

I shall contrast activism with reliance on nondiscretionary rules that would fix fiscal and monetary settings with *no* feedback from changes in economic activity. To be sure, the proponents of rules welcome the benefits of certain automatic shifts induced by changes in economic activity, such as the rise in the actual budget surplus and in interest rates that a rapid expansion creates when the high employment budget surplus and money growth are fixed. But they want to focus on indicators that could be and would be held constant in the face of economic fluctuations. Obviously, nondiscretionary rules could include feedback; for example, the growth rate of money might be set equal to the unemployment rate. I concentrate below on rules that do not involve feedback simply because those are the rules espoused by the critics of activism. In that sense, the key issue in the debate is not the exercise of judgment, but rather the appropriate magnitude of fiscal and monetary swings. Again, in the spirit of the recent discussion, I shall suppose that any fixed rules for monetary policy would focus on some monetary aggregate rather than on interest rates.

### **Assumptions for Prototype Worlds**

#### THE ACTIVIST'S PARADISE

It may help to convey the limitations that the real world imposes on an activist strategy to specify first a set of sufficient conditions under which it would not be subject to any limitation and the policy maker could be sure of hitting his target precisely. First, the policy maker must be endowed with perfect foresight of private demand and supply and of the impact of

10. Testimony of Gardner Ackley on June 27, 1967, in *Economic Outlook and Its Policy Implications*, Hearings before the Joint Economic Committee, 90 Cong. 1 sess. (1967), p. 13.

any fiscal-monetary actions. The perfect foresight should extend over the period during which the instruments would exert their effects on the economy; but such dynamic issues can be conveniently assumed away by pretending either that the world is static in the sense of being timeless or else that it contains only a single time period with no relevant horizon beyond. Second, achieving an ideal level of GNP should be the only concern of the policy maker. Third, he must be able to control his instruments precisely, with no costs imposed in setting or changing them. Finally, the instruments must be sufficiently potent to keep GNP on target regardless of the past and present strength of private demand.

Under such conditions, the right amount of action could always be calculated and implemented. If some initial setting of the fiscal-monetary instrument would produce a GNP differing from the target level, the policy maker would divide the deviation or "gap" ( $D$ ) by the known multiplier ( $k$ ) on his tax, expenditure, money, or interest rate instrument, in order to determine the correct change in the policy instrument ( $\Delta P$ ):  $\Delta P = -D/k$ . Such is the activist's paradise, and like any paradise, it is distant from reality.

#### THE RULE PROPONENT'S MODEL WORLD

No proponent of rules has specified the assumptions that would make fixed settings optimal. Of course, the rules proponent emphasizes that paradise does not exist and that we will be worse off if we act as though it did. But fixed fiscal-monetary settings are not the only alternative to the strategy of the activist's paradise. Indeed, the world in which they would be optimal is not really the polar opposite of the activist's paradise. For example, under conditions of complete ignorance, as contrasted with the perfect foresight of the activist's paradise, the instruments would appear to be unrelated to economic activity and no presumption would be created in favor of keeping them steady.

The optimality of fixed settings depends on a set of assumptions that might run along the following lines: First, private demand is inherently stable. In the absence of shifts in policy, it would tend toward some equilibrium path; that path would be optimal, at least for some settings of the fiscal-monetary instruments; and deviations from that path would disappear promptly. Second, long-run relationships between fiscal-monetary

policies and private demand must be known reliably so that proper settings can be determined. Third, the short-run impacts of the instruments must be subject to substantial uncertainty so that it will not pay to change the settings temporarily. Finally, the policy maker is able to maintain the fixed settings without cost. Under such a set of assumptions, changing policies could produce only trivial stabilization benefits and might impose large costs.

The central portion of this paper relaxes, one at a time, the key assumptions of the activist's paradise, and thus introduces a number of complexities of the real world that are emphasized by the proponents of rules. I then examine the resulting implications for the optimum conduct of fiscal-monetary policy and in particular the extent to which they point in the direction of fixed settings. Although at times I focus the analysis on the assumptions of the rule proponent's model world, I carry out that exercise much less thoroughly, simply because I have not found a neat package of sufficient conditions for that world. The resulting asymmetry troubles me on esthetic grounds, but I believe it reflects the spirit of the recent debate rather than my personal judgments. The rules proponents have stressed the pitfalls of activism rather than the glories of fixed settings; their case for rules is, by and large, the case against departing from them.

### **Instrument Costs**

#### **INSTRUMENTS AND MULTIPLE TARGETS**

In stating sufficient conditions for the activist's paradise, I assumed that the policy maker is concerned only with the stabilization goal. Obviously, many other goals of economic policy are important. But paradise could, in principle, exist with multiple goals, so long as the available instruments were sufficient in number and in potency to achieve them all. Consider, for example, the social goal of income distribution: Society might have both the income distribution it wants and the aggregate activity it wants, providing the structure of taxes, transfer payments, and subsidies could be adjusted to alter income distribution without affecting aggregate demand and supply.

As Tinbergen has shown, a necessary condition for the reliable achievement of multiple goals is that the number of instruments be equal to the

number of targets.<sup>11</sup> When, however, the number of instruments is smaller than the number of targets, paradise is supplanted by a world of tough compromises, which have been discussed analytically by Henri Theil.<sup>12</sup> If a stabilization instrument had no significant effect on any other social target, that instrument could be devoted singlemindedly to the stabilization effort. And if it were sufficiently potent, the activist's paradise for stabilization policy might still be salvaged. Obviously, however, every stabilization instrument does have significant side effects on such social goal variables as resource allocation, the composition of output, the balance of payments, the growth of productive capacity, and wealth. So long as society cannot hit the bull's eye on all its targets, and so long as some departure from any fiscal-monetary policy that is ideal for the stabilization goal would permit closer approaches to other targets, stabilization must be compromised, in general. For example, if the only available ways to restrain excess demand would involve either a level of government expenditures below the social target for the public sector or a level of real interest rates too high for the ideal composition of output, the optimal compromise would typically involve some undesired inflation, as well as a level of public spending below its ideal and a level of real interest rates above the ideal.<sup>13</sup>

The division of output between the public and the private sectors embodies controversial social preferences that often constrain or shape the course of stabilization policy. If government expenditures are the key instrument of demand management, the level of public spending ideal for achieving target GNP may not be ideal for providing the desired flow of public goods and services. Indeed, political controversy about stabilization policy often combines or confuses stabilization and compositional objectives. Proponents of a larger public sector sometimes seize the opportunities presented by economic slack to promote their compositional objective, while advocates of cutbacks in government spending may enthusiastically embrace an anti-inflation rationale to serve their cause.

11. J. Tinbergen, *On the Theory of Economic Policy* (Amsterdam: North-Holland, 1963). As the Phillips curve dilemma reminds us, the condition is not sufficient. For a given initial real GNP and unemployment rate, the amount of inflation created per unit of extra real GNP generated by stimulative fiscal-monetary policy is not significantly different for different instruments.

12. H. Theil, *Economic Forecasts and Policy* (Amsterdam: North-Holland, 1958), pp. 379-94.

13. Some mathematical illustrations of such cases can be found in Charles C. Holt, "Linear Decision Rules for Economic Stabilization and Growth," *Quarterly Journal of Economics*, Vol. 76 (February 1962), pp. 20-45.

Because they avoid this problem and controversy, general, across-the-board changes in income tax rates were a particularly appealing countercyclical tool in the eyes of the Commission on Money and Credit<sup>14</sup> and the economists of the Kennedy administration. In my judgment they continue to be appealing. Most recently, the efficacy of temporary changes in income tax rates has been challenged on the basis of the permanent income hypothesis, but, as I have argued previously, this charge is inconsistent with a substantial body of empirical evidence.<sup>15</sup> Of course, both permanent and temporary changes in income tax rates impinge on other social goals, such as the market valuation of wealth, the efficiency of resource allocation, and (typically) income distribution and output composition. Still, these impacts seem less significant than those generally associated with other instruments of stabilization policy.

Several types of serious conflicts with other goals may arise from monetary policy actions that could help stabilize economic activity. These issues become especially important in periods of tight money because losses in the market valuation of wealth impose a welfare cost, because rises in nominal interest rates redistribute income, and because tight money has a severe impact on the share of output devoted to homebuilding. These side effects of tight money explain why the 1966 performance of the Federal Reserve—which was magnificent in terms of overall stabilization—is held in such ill repute and why the Federal Reserve refused to give an encore in late 1967 and early 1968.<sup>16</sup>

The side effects thus argue against an activist reliance on tight money to curb excess demand. But they also argue against quantity-oriented rules. Even if monetary policy affects GNP solely through the quantity of money, it clearly affects nonstabilization targets through both nominal and real interest rates and through the availability of credit. Obviously, steady money growth does not prevent rising interest rates if liquidity preference strengthens or if aggregate demand spurts because of a highly stimulative fiscal policy or an ebullient private economy.

The proponent of monetary rules can argue that, with steady growth of money, interest rate variations would be smaller than those recently ex-

14. *Money and Credit—Their Influence on Jobs, Prices, and Growth*, The Report of the Commission on Money and Credit (Prentice-Hall, 1961), pp. 133–37.

15. Arthur M. Okun, “The Personal Tax Surcharge and Consumer Demand, 1968–70,” *Brookings Papers on Economic Activity* (1:1971), pp. 167–204.

16. See my comments in “Rules and Roles for Fiscal and Monetary Policy,” pp. 54–58.



perienched with a monetary policy oriented toward rates. As Fand points out, when the monetary authorities initially accommodate an excess demand inflation because they dislike high interest rates, they may subsequently have to resort to especially high nominal interest rates (reflecting inflation premiums) in order to achieve the stabilization task.<sup>17</sup> Such an argument charges the policy makers with myopia. It cannot deny that an optimal rational strategy aimed at stabilizing interest rates should pay some attention to the course of interest rates as one of the proximate targets even if a quantity-oriented strategy is best for stabilizing GNP. How much weight should be given to interest stability as a social target<sup>18</sup> and how variable money growth would have to be for that reason are issues that deserve greater attention and more sharply focused discussion. But it should be clear that quantity-oriented monetary rules conflict with non-stabilization targets.

In summary, the effects of stabilization instruments on other social targets generally imply deviations from the activist's paradise. These considerations should have a major influence on the selection and mixture of instruments, and they can also affect the desirable magnitude of restraint or stimulus. Probably, a fiscal policy geared to long-run considerations about tax structure and demands for collective services can satisfy nonstabilization targets reasonably well; hence, any major departure from the rules proponent's fiscal strategy imposes *some* costs in compromising those other goals.<sup>19</sup> But if the choice of fiscal instruments for stabilization use is adjusted to reflect these considerations, the costs should not be onerous. In the case of monetary policy, the costs of compromising nonstabilization targets may be especially large if an activist strategy were to rely mainly on tight money to restrain excess demand. But they may also be sizable when monetary policy follows a rule that ignores the social preference for interest rate stability.

In short, because of the multiple targets of the real world, the policy maker may be led to trim his fiscal actions somewhat at times in the direc-

17. See David Fand, "Keynesian Monetary Theories, Stabilization Policy, and the Recent Inflation," *Journal of Money, Credit and Banking*, Vol. 1 (August 1969), pp. 556-61.

18. See the views of Alvin H. Hansen, *The American Economy* (McGraw-Hill, 1957), pp. 53-55.

19. See, however, the qualifications in Paul A. Samuelson, "Principles and Rules in Modern Fiscal Policy: A Neo-Classical Reformulation," in *Money, Trade, and Economic Growth: In Honor of John Henry Williams* (Macmillan, 1951), pp. 157-76.

tion of the fiscal rules. But the presence of multiple goals suggests a mix of fiscal and monetary policy that would stabilize financial conditions as well as GNP, and points away from quantity-oriented monetary rules.

#### COSTS OF CHANGING POLICIES

In addition to the possible costs of operating stabilization instruments at *levels* that compromise other goals, certain costs may be associated with *changing* the settings of the instruments.

The costs of change have a number of dimensions. Shifts in fiscal policies may impair the efficiency of the public sector. For example, a stabilization strategy that turns on and off federal programs involving purchases of goods and services may create inefficiencies or impose extra costs in carrying out the objectives of the programs.

Since time on the congressional calendar is a scarce resource, the legislative process to implement fiscal measures imposes some cost. That cost will be most significant for tax and transfer changes, since Congress reviews most federal purchases and grants as a matter of routine each year in the appropriations process, but reconsiders the laws for taxes and transfer payments only in the event of proposals for alterations. Moreover, the legislative cost of enactment of a tax or transfer change has little to do with its size and is primarily a fixed or "set-up" cost. In the case of a small program that would otherwise be desirable, legislative cost may tip the balance from a "go" to a "no-go" decision.

Tax changes can also impose costs on private decision makers.<sup>20</sup> A major change in the tax *base* will surely cause reappraisals of business policies and may require considerable efforts to learn the new rules of the game. Moreover, if taxes are restructured frequently for stabilization purposes, uncertainty about the tax laws will regularly cast a shadow on private decision making.

These considerations seem most serious in the case of tax changes that introduce incentives for the intertemporal shifting of outlays, like countercyclical variations in the investment tax credit or in excise taxes. Such measures are appealing because of their presumably enlarged multiplier impact, with substitution effects reinforcing the normal income effects of

20. In order to cover all aspects of changing settings, the next several paragraphs allow uncertainty to creep in, even though the perfect foresight assumption of activist's paradise has not been explicitly abandoned.

a tax rate change; the required dollar change in the instrument settings for any given stimulus or restraint is thereby made smaller. But the anticipatory effects of such practices are destabilizing—for example, a slowdown in investment outlays is exacerbated if a weakening of the economy makes a temporary rise in the tax credit seem likely. A commitment to retroactivity can ameliorate the problem for a tax reduction, but, for a tax rise, retroactivity is universally rejected as inequitable.<sup>21</sup>

Changes in income tax rates seem less subject to such problems. Anticipatory effects on spending decisions tend to be stabilizing: The expectation of a cut in rates will, if anything, spur outlays. Of course, the enactment of changes in tax rates will alter spending and hiring decisions; that cost is inevitable for any policy that successfully influences private demand. Some distortion of year-end accounting decisions is another adverse, but basically negligible, cost of changing tax rates.

In general, guessing what the government will do next involves expensive effort on the part of executives throughout the private sector, and this fact imposes costs on shifts in fiscal policies. But guessing where GNP is going absorbs even more private resources and creates even more serious anxieties. If the government can help to stabilize markets and incomes, it can reduce uncertainties rather than exacerbate them. Indeed, the statement of President Nixon quoted above can be reversed: If the government reliably alternates between pressing on the accelerator when the economy is going uphill and applying the brake pedal going downhill, it will aid private decision making.

In summary, the maintenance of a fiscal rule (combined with a stable composition of expenditures and taxes) would avoid certain costs of changing instrument settings that may be created by an activist fiscal policy. In particular, the set-up costs of legislation may swing the verdict in favor of inaction when a small tax or transfer change would be desirable on stabilization grounds alone. More generally, the costs of change have important implications for the choice of fiscal instruments, cautioning against great reliance on variations in government purchases and on those tax changes that generate intertemporal substitution. But if these implications

21. The recent recommendation of the Federal Reserve Board for a cyclically variable investment tax credit raises these concerns in my mind—at least pending further study and analysis. See “Report of the Board of Governors of the Federal Reserve System on Ways to Moderate Fluctuations in the Construction of Housing,” staff paper sent to the Congress in the fall of 1971 (FRB, 1971; processed).

are recognized and if an activist strategy can help stabilize economic activity, the favorable impact on private planning may turn the issue of instrument changes in favor of fiscal activism.

So far as I can see, the costs of changing instruments have little relevance—either way—for monetary policy. The Federal Reserve can take a great many small steps, if it so chooses, without significant set-up costs. It can thereby avoid any major anticipatory problems. To be sure, because private lenders and borrowers have to guess the future of interest rates and availability (but not the future course of the money stock directly), a monetary policy that creates predictable cyclical swings of interest rates may generate anticipatory distortions in the timing of financing. But it would probably create much less distortion in the timing of real investment activity.

### **Uncertainty**

The recognition of uncertainty in stabilization policy making marks another step away from the activist's paradise and toward reality. In place of perfect foresight, assume that the policy maker can make an unbiased forecast of GNP given his policy choices—his average error will be zero in the long run, but the average will consist of offsetting pluses and minuses.

Two types of uncertainty about the private economy can be distinguished: First, the policy maker cannot predict precisely the inherent strength of private demand (quite apart from his choice of fiscal-monetary policy); second, he cannot be certain of the response of GNP to the stabilization instruments. The interesting result is that the first type barely influences the optimal fiscal-monetary strategy, while the second imposes a major amendment. Still a third type of uncertainty reflects the imperfect ability of the policy maker to control the settings of his own fiscal-monetary instruments. These three types of uncertainty will be discussed in turn.

In a world of uncertainty, it becomes necessary to specify just how much the society (and presumably the policy maker) is hurt by deviations of actual GNP ( $Y$ ) from the target ( $Y^*$ ). It is usual to assume that society is "risk averse," which means that, for example, doubling the deviation from the target more than doubles the pain or "welfare loss" ( $L$ ):  $L[2(Y - Y^*)] > 2L(Y - Y^*)$  for  $Y \neq Y^*$ . It is particularly convenient to assume<sup>22</sup> that  $L$

22. This assumption goes back at least to Friedman's pioneer analytical article, "Effects of a Full-Employment Policy on Economic Stability." The quadratic makes the marginal welfare loss a linear function of the GNP gap.

is equal to (or proportional to) the squared deviation between actual GNP and the target:  $L = (Y - Y^*)^2$ .

#### CERTAINTY EQUIVALENCE

For the present, assume that the reliability of the policy maker's forecast is independent of the setting of the instruments; in other words, the forecast is subject to the same additive or subtractive error in GNP, regardless of the policy chosen. This type of uncertainty may still leave the policy maker well advised to act as though his best forecast were a certain forecast, even though it is not.<sup>23</sup>

Given the simple quadratic loss function specified above, the optimum strategy to minimize expected welfare loss is to set policy instruments such that the predicted GNP ( $Y^p$ ) for those settings equals the target GNP ( $Y^p = Y^*$ ). The squared deviations are minimized when the expected or mean distance from the target is made zero, in the sense that pluses and minuses cancel out.<sup>24</sup> Since the policy maker should act as though he were certain of his forecast, his optimum strategy is one of "certainty equivalence." The existence of this type of uncertainty will make the outcome less satisfactory than in the activist's paradise ( $L$  cannot be kept down to zero); but the optimum strategy is still the one appropriate to the paradise situation. The more help the policy maker can get from accurate forecasting, the closer to his target he can expect to get. But greater uncertainty about the outlook does not diminish the premium on corrective action: Although it reduces the likelihood that policy action will keep the economy close to target, it increases the danger that inaction may result in a very large deviation from target.

This result does not depend critically on the quadratic function. For example, if welfare loss is proportional to the absolute deviation of GNP from its target ( $L = |Y - Y^*|$ ), the policy maker should simply use the median (rather than the mean) forecast of GNP as his certainty equivalent. Of course, if forecast errors are viewed as symmetrically distributed, the median and the mean will coincide and no modification at all is implied. If,

23. See Theil, *Economic Forecasts and Policy*, pp. 411-31, and Henri Theil, "Linear Decision Rules for Macrodynamical Policy Problems," in Bert G. Hickman (ed.), *Quantitative Planning of Economic Policy*, A Conference of the Social Science Research Council Committee on Economic Stability (Brookings Institution, 1965), pp. 18-37.

24. This reflects the fact that the sum of squared deviations of all observations in a frequency distribution from any point is minimized when that point is the mean of the distribution.

unlike these examples, society dislikes upward deviations from  $Y^*$  more (or less) than downward deviations of equal size, the asymmetry will further modify the choice of the certainty equivalent, but it will not push the optimum strategy in the direction of rules. These results do depend on the availability of some unbiased forecast to the policy maker. The records of individual forecasters would not suggest that all are unbiased. Moreover, with an unbiased fiscal-monetary rule, a perennial forecast of no gap would be unbiased in the sense that it was as often too high as too low. But, whatever their limitations, professional forecasters can outperform the naïve forecast that, regardless of  $(Y - Y^*)$  this year, it will be zero next year.

With these few qualifications, imperfection in the ability to forecast economic activity in the absence of policy action has virtually no effect on the desirability of taking policy action.

#### MULTIPLIER UNCERTAINTIES

Uncertainties concerning the impacts of changes in policy instruments introduce far more important amendments. Contrary to the assumptions of the certainty equivalence case, the forecaster cannot predict GNP equally well (or equally badly) regardless of the settings of the instruments. Forecasters would be terribly uncertain if asked to estimate next year's GNP on the assumption of a radical alteration in fiscal or monetary policy, such as a repeal of all income taxes or the doubling of the money supply.

William Brainard developed the analysis of multiplier uncertainties, which had been previously mentioned by Friedman.<sup>25</sup> If the policy maker cannot be sure of the size of the multiplier associated with his policy instrument, then the greater the departure of that instrument from its average or customary setting, the greater will be the uncertainty about GNP. This formulation assumes that some particular setting of the instrument minimizes uncertainty about GNP.

In a static world, the minimum uncertainty position would be the average setting of the instrument during the historical sample period from which

25. William Brainard, "Uncertainty and the Effectiveness of Policy," in American Economic Association, *Papers and Proceedings of the Seventy-ninth Annual Meeting, 1966* (*American Economic Review*, Vol. 57, May 1967), pp. 411–25; Friedman, "Effects of a Full-Employment Policy on Economic Stability."

the multiplier was estimated, and would not necessarily be close to the most recent setting. In a world of growth, however, some estimates of the multiplier effects of instruments are derived from *changes* in settings over time. In such cases, the average historical change represents minimum uncertainty. Thus, the nature of the statistical evidence underlying the multiplier estimate determines whether minimum uncertainty is obtained at the average historical *level* or the average historical *change*. The issue can be important: Suppose the average full employment surplus through relevant history has been 1 percent of GNP and the average change has been zero; if the surplus is currently *minus* 1 percent of GNP, it is critical whether minimum uncertainty would be attained by staying at minus 1 percent or by moving to plus 1 percent.

Presumably the proponent of rules would recommend a full employment surplus that was not vastly different from the historical average; furthermore, his recommendation for no change in that surplus would closely correspond with the historical record which shows erratic ups and downs but little trend. Similarly, the proponent of monetary rules typically espouses a rate of growth of money and liquidity that is quite close to the historical average, as well as levels that are fairly customary in relation to GNP. In that sense, obedience to the rules would keep the instruments close to minimum uncertainty and finesse the problem of multiplier uncertainty.

In the case of an activist strategy, if a policy action to make  $Y^p$  equal to  $Y^*$  required a major departure of the instrument from its setting of minimum uncertainty, that action would make the prediction of GNP less reliable. Compared with keeping the instrument at minimum uncertainty, the activist strategy will gain (or reduce loss) by closing the expected gap between  $Y$  and  $Y^*$ , but will lose from the multiplier uncertainty, which is applied to the distance of the instrument setting from its minimum uncertainty position. The added risk associated with multiplier uncertainty is costly whenever society is risk averse. If the policy maker starts with instruments at settings of minimum uncertainty, he is advised to exercise conservatism in his use of the instruments, always taking some action but a smaller action than would equate expected and target GNP. As Brainard shows, in the case of a quadratic loss function, one instrument, and independence of the uncertainty concerning the multiplier from that associated with the basic state of private demand, the optimum prescription is to close the fraction of the expected gap equal to  $1/(1 + V^2)$  where  $V$  is the

ratio of the standard deviation of the estimate of the multiplier to the expected value of the multiplier.<sup>26</sup> For example, if the standard error is half the estimated multiplier, closing four-fifths of the gap is optimal.

*Diversification.* One interesting implication of multiplier uncertainty is that it encourages the use of a diversified kit of instruments. The individual instruments are generally put to work in the same direction of stimulus or restraint:<sup>27</sup> Because variance increases with the *square* of the instrument move, two smaller moves that operate in the same direction economize on variance, so long as the errors in the two multiplier estimates are not strongly positively correlated. To the extent that errors in the estimated impacts of tax, expenditure, and monetary changes are not perfectly correlated, optimum use of a diversified kit of instruments yields two kinds of benefits: a reduction in risk, and a reduction in the expected gap between  $Y$  and  $Y^*$ . When the policy maker chooses combined packages of restrictive (or stimulative) tools, the benefits and costs of any policy should be viewed as a characteristic of the package rather than of its individual components. That implication should be recognized in analytical efforts to appraise the fiscal and monetary impacts of combined actions, such as the tax cut and monetary accommodation of 1964–65.

With respect to monetary policy, the interpretation of multiplier uncertainty depends on whether the money supply or interest rates is designated the instrument. The criteria for this choice, which have been spelled out by Poole,<sup>28</sup> can be described in terms of multiplier uncertainty. Presumably, the same expected GNP can be obtained by picking an interest rate or picking a money supply. The reason that one of these choices can be preferable

26. If  $D$  is the expected gap between  $Y$  and  $Y^*$  for the minimum uncertainty setting,  $E$  is the expected value operator, and  $u$  is an additive disturbance,

$$E(L) = E(Y - Y^*)^2 = E(D + k\Delta P + u)^2.$$

Expected loss can be minimized by differentiating with respect to  $\Delta P$  and setting the derivative equal to zero:

$$E(kD + k^2\Delta P + ku) = 0.$$

If  $k$  and  $u$  are independent, optimality requires that

$$\Delta P = \frac{-kD}{k^2 + \sigma_k^2} = \frac{-D/k}{1 + \frac{\sigma_k^2}{k^2}} = \frac{-D}{k} \left( \frac{1}{1 + V^2} \right).$$

27. Brainard, "Uncertainty and the Effectiveness of Policy," pp. 418–21.

28. See William Poole, "Optimal Choice of Monetary Policy Instruments in a Simple Stochastic Macro Model," *Quarterly Journal of Economics*, Vol. 84 (May 1970), pp. 197–216.



to the other on stabilization grounds is that the variance of GNP around that expected value will be smaller with the money instrument if the liquidity preference function is highly stable, or smaller with the interest rate instrument if the consumption and investment demand functions are very stable. The choice of the "superior" instrument promotes greater activism, leading the policy maker to aim at closing more of any expected GNP gap.

In summary, a rule for steady money growth could avoid multiplier uncertainty if it aimed to maintain the historical average. Similarly, a fiscal rule that specified constancy of the high employment budget surplus could also escape multiplier uncertainty.<sup>29</sup> Multiplier uncertainty upsets the pleasant and appealing solution of the certainty-equivalence world. It typically reduces the appropriate degree of activism, urging the policy maker to take a step in the direction of the proponent of rules. But the step is generally a small one; the policy maker will generally wish to take action when any expected deviation between actual and target GNP is in prospect, and usually enough action to close the greater part of any expected gap. Moreover, as I shall show below, if the uncertainty about GNP stemming from policy actions can be made to neutralize uncertainties about the course of private demand, policy action can reduce total uncertainty as well as improve the expected outcome. Indeed, the major import of multiplier uncertainty may be its encouragement to the policy maker to design, select, and combine instruments in ways that permit the pursuit of target GNP without major vulnerability to variance.

Finally, the important amendments imposed by multiplier uncertainty do not disturb one part of the certainty-equivalence solution: The optimal strategy depends only on the policy maker's ability to forecast the incremental impacts of policy actions, and not on the accuracy of his forecast of demand for a given fiscal-monetary policy.<sup>30</sup>

*Dynamic multipliers.* Multiplier impacts and uncertainties have impor-

29. To do so, fiscal policy must also stabilize the composition of outlays and the structure of tax revenues in order to avoid multiplier uncertainties that are attached to the movement of various types of expenditures and taxes.

30. In "Adaptive Decision Rules for Macroeconomic Planning," *Western Economic Journal*, Vol. 9 (December 1971), pp. 369-78, Edward C. Prescott introduces a "learning by doing" consideration into policy formulation. He points out that a large shift of the instrument from its historical average movement provides substantial additional information about its multiplier. The value of that extra information for future policy making should encourage larger actions than the Brainard model would imply, although typically not as large as would be appropriate in the activist's paradise.

tant dynamic aspects, because the effect of a policy action on aggregate demand is spread out over time. A federal expenditure or an increment in money supply occurring in one quarter is likely to raise aggregate demand then and in several subsequent quarters. In particular, the profile of period multipliers, as statistically estimated, is often humped, starting small, rising to a peak, then declining, and perhaps ultimately becoming negative:  $k_1 < \dots < k_m > k_{m+1} > \dots$ .

A humped profile of dynamic multipliers raises the possibility of "instrument instability," which has been analyzed by William Poole and Robert Holbrook.<sup>31</sup> Suppose the policy maker anticipates a temporary, one-period shift in private demand that threatens to pull the economy above target by an amount  $D$ . If he uses an instrument with a humped dynamic multiplier to neutralize the shift in private demand occurring in period one ( $-k_1\Delta P_1 = D$ ) and thus hold the economy on target, the economy could threaten to move *below* target in period two by  $-k_2\Delta P_1$ . With  $k_2 > k_1$ , a stimulative  $\Delta P_2$  greater in absolute value than  $\Delta P_1$  would be required to hold the economy on target. It is conceivable that ever larger oscillations of the instrument—such that  $|\Delta P_t| > |\Delta P_{t-1}|$ —would be required simply to offset the previous policy actions touched off by a single wiggle in private demand.

Instrument instability raises a new threat to the activist's paradise. It suggests that, even with no multiplier uncertainties and no instrument costs, a policy of eliminating all gaps might not be sustainable over the long run because the required instrument settings might diverge toward plus or minus infinity. This analysis makes an important contribution; but, because it is framed in a deterministic way and in the context of an infinite horizon, its real relevance may be obscured. The analysis draws a mathematical boundary line between stability (damped oscillations) and instability (antidamped oscillations), seeming to imply that the former region is perfectly safe and the latter necessarily perilous. In fact, if shifts of the instruments had no costs or constraints, instrument instability and the specter of infinity would not frighten the policy maker. After all, the instruments would take on infinite values only after an infinite length of time.

31. William Poole, "Alternative Paths to a Stable Full Employment Economy," *Brookings Papers on Economic Activity* (3:1971), pp. 579–614; Robert S. Holbrook, "Optimal Economic Policy and the Problem of Instrument Instability," *American Economic Review*, Vol. 62 (March 1972), pp. 57–65.

Secondly, the analysis focuses on “blips” or wiggles in economic activity— one-period deviations that are self-correcting. As discussed below, these are not the typical movements that challenge the policy maker. Moreover, the humped pattern of dynamic multipliers reflects the quarterly time periods of the available data. The policy maker can remove the danger of instrument instability simply by selecting a somewhat longer planning period—for any empirical example I know, nine-month periods would make  $k_1$  the peak value of the period multiplier.

On the other hand, the analysis of instrument instability points to the general problems of dealing with dynamic multiplier profiles, even if they satisfy the mathematical stability conditions. Wide swings in the instruments may still entail large costs as a result of the considerations discussed above: the effects on nonstabilization targets, the costs of changing settings, and, most significantly, the Brainard multiplier uncertainties.<sup>32</sup> Indeed, the policy maker conscious of multiplier uncertainties will avoid strategies that would permit instrument instability to become a serious threat. In the first place, any strategy that relies on wide swings of instruments will be charged heavily for creating additional variance. (The strategy of expected full adjustment in the appendix illustrates the costs of superfine tuning.) Second, statistical estimates will remind the alert policy maker of the major uncertainties he faces with respect to the time pattern of dynamic multipliers. The estimated standard error of the multiplier on an instrument is smaller for, say, four quarters, than for a single quarter. In light of these facts of economic life, the policy maker will plan over a horizon of several quarters and will be reluctant to chase transitory gaps. Only if he has confidence that the economy needs a major push initially will he adopt a stimulative policy today recognizing that it will probably require a neutralizing restraining action on some tomorrow. Such a strategy—which has been derisively called “oversteering”—generally imposes some instrument costs and some added multiplier uncertainty; but it can be worth those costs at times if it helps significantly to keep  $Y$  close to  $Y^*$ .

32. Nor are the mathematical stability conditions sufficient reassurance when instruments have “natural” floors or ceilings, such as the constraints that government purchases must lie between zero and total GNP and that the money supply and the rate of interest are intrinsically nonnegative. Furthermore, nonlinearities may limit the effectiveness of the instruments; for example, in vertical or horizontal stretches of liquidity preference or marginal efficiency schedules, either fiscal or monetary tools would be incapable of affecting the economy, at least in one direction.

## INSTRUMENT UNCERTAINTY

The policy maker of the real world does not have perfect control over his fiscal and monetary instruments. The existence of instrument uncertainties imposes important modifications on both the activist's paradise and the rule proponent's model world.<sup>33</sup>

*Monetary policy.* Its susceptibility to control has sometimes been suggested as a criterion for the selection of a particular monetary instrument, reflecting Milton Friedman's dictum "that the monetary authority should guide itself by magnitudes that it can control, not by ones that it cannot control."<sup>34</sup> Some have criticized, as inconsistent with his own dictum, Friedman's preference for  $M$  as the instrument, contending that the Federal Reserve lacks good control over the money stock, and should use as its instrument some monetary aggregate subject to more precise control, such as the monetary base or unborrowed reserves. But that argument does not rest on firm grounds, because Friedman's dictum is not reliable. The preferable instrument strategy is the one that exercises greater control on economic activity, and an instrument subject to better control by the policy maker does not necessarily exert better control over  $Y$ .<sup>35</sup> Suppose, for example, that  $Y$  is affected by  $M$  (directly or through interest rates) but is not independently affected by the monetary base or unborrowed reserves. Under those conditions, errors in  $M$  would be important and the absence of errors in the other aggregates would be irrelevant. Unless the errors in  $M$  emerging when  $M$  is the instrument were by some peculiarity associated with especially large errors in  $Y$ , controlling  $M$  imperfectly would be superior to controlling perfectly the base or unborrowed reserves.<sup>36</sup>

33. By Tinbergen's definition, an instrument variable must be subject to "the command of the government," which implies perfect control. I find this definition inconveniently restrictive and hence use the term instrument to apply to anything the policy maker seeks to control directly. See Tinbergen, *On the Theory of Economic Policy*, p. 7.

34. Friedman, "The Role of Monetary Policy," p. 108.

35. Friedman himself concludes that interest rates should not be the instrument, in part because ". . . monetary policy cannot peg interest rates. . . ." (*Ibid.*, p. 101.) Insofar as it pertains to nominal (rather than real) rates, that proposition simply cannot stand empirical inspection: The Federal Reserve did peg the interest rates of short-term Treasury securities for most of the decade of the forties and for a briefer time in the early sixties.

36. As I understand existing open market operations, they include procedures to limit the variability of money market conditions and do not aim singlemindedly at a target  $M$ . I see good reasons for cushioning short-run fluctuations of interest rates, which

Thus, in principle as well as in practice, monetary rules are bound to be framed in terms of an instrument subject to only imperfect control. For that reason, the rules proponent is obliged to instruct the policy maker how to respond to errors or deviations in the instrument. If last month's money stock departed from its target, what adjustment is required for the target money stock this month? Surely, it cannot be optimal to maintain the initially intended target *growth* rate and thus to permit the *level* of the money stock to be permanently off track, as the emphasis solely on the rate of growth seems to imply.

*Fiscal policy.* Instrument uncertainty poses a different set of problems for the proponent of fiscal rules. The fiscal policy maker in the executive branch is exposed to many risks that may derail the budget, including unanticipated changes in military spending and other uncontrollable outlays, or congressional action inconsistent with the administration program. When the fiscal policy maker who espouses rules is thus surprised or thwarted, he must take some new action in order to live by his own rules. Maintaining a given high employment surplus or a fixed position of any other fiscal indicator does not afford the policy maker a quiet life of inaction, but rather obliges him to take neutralizing action whenever the budget wanders off its track.

Obviously, in practice, the rules proponent will not chase every small deviation in the budget; but his own principles require him to respond to major instrument deviations, when he would not respond to surprises of the same magnitude in private demand. If this asymmetry has a justification, I have yet to discover it. The neutralizing action in response to an instrument surprise involves the same types of instrument costs and the same degree of multiplier uncertainty that apply to fiscal actions intended to offset shortfalls or excesses of private demand.

Instrument uncertainty is also a serious problem for the fiscal activist, who may often require prompt legislative approval of proposals. In view of the legislative uncertainties in fiscal policy, any monetary instrument is probably subject to greater short-run control and predictability than are fiscal variables. Hence, instrument uncertainty is one consideration that encourages the activist to alter monetary policy.

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may reflect very temporary shifts in liquidity preference, but these procedures make it impossible to judge how well the Federal Reserve *could* control money, if that were its only objective.

Some activists have faced up to the problems of instrument uncertainty—for example, by proposing mechanisms that would increase the speed of congressional verdicts on tax proposals. The rules proponents, on the other hand, have ducked these important issues, in my judgment. No advocate of fiscal rules has explained how the commitment to respond to instrument deviations can be consistent with a uniform nonresponse to demand deviations. And no proponent of monetary rules has suggested procedures for dealing with situations when money goes off its track.

### The Issue of Self-correction

Although the rules proponent recognizes that private demand will fluctuate to some extent even if the monetary and fiscal rules are carefully obeyed, he views the economy as inherently stable in two senses: First, departures from a reasonable target path are likely to be small unless policy is disruptive; second, GNP will tend to return promptly to its ideal path if it should wander somewhat off course. So far as I can see, the first of these propositions is not relevant to the formulation of a strategy by the policy maker on how he should respond to departures, when and if they occur. By analogy, the fireman must know what to do when the alarm rings, whether that happens frequently or hardly ever.

The second proposition is, however, very important. It urges the policy maker not to respond to deviations, but rather to rely on snapback or self-corrective tendencies that prevail if monetary policy sticks to its fixed setting ( $M^*$ ) and fiscal policy to its rule ( $F^*$ ). A strong self-correction hypothesis might contend that, given  $M^*$  and  $F^*$ , the expected value of real GNP for any period beyond some horizon  $h$  is equal to  $Y^*$  regardless of  $Y$  in the last observed period, where  $h$  is small relative to the time period of dynamic multipliers on fiscal-monetary instruments. This can be stated as follows:

$$E(Y_{t+h} | M^*, F^*, Y_{t-1}) = Y_{t+h}^*$$

and

$$\sum_{i=1}^h k_i \ll k,$$

where  $k_i$  are period multipliers and  $k$  the total multiplier.

If these conditions are met, the possible benefits of any corrective shift in policy are slight, because the economy would return to track without any

help. And the costs of a shift can be large because any steering is oversteering in the sense that an activist restrictive policy would exert much of its influence after excess demand had disappeared, thus creating a future deflationary backlash that would require costly neutralizing stimulative actions.

The premise of self-correction could rest on price flexibility. If excessive or deficient demand triggers off prompt changes in the price level, while the nominal supply of money (or of net private financial wealth, so-called Patinkin money) remains unchanged, the real stock may be sufficiently altered to restore real aggregate equilibrium. This traditional case for self-correction, however, gets no empirical support from either the grossest observations or the most refined analyses of price behavior in the modern American economy. Econometric studies of price responsiveness find that the period of price adjustment far exceeds multiplier periods for fiscal-monetary instruments.<sup>37</sup>

Alternatively, the thesis of self-correction might rest on the contention that the income velocity of money is highly stable, at least after allowing for the effects of interest rates, lags in the response of spending to money creation, and any secular trend. In that case, any departure of  $Y$  from  $Y^*$  should be interpreted as transitory: So long as  $M$  is kept equal to  $M^*$ ,  $Y$  would return to  $Y^*$  as the transitory deviation in velocity disappears.

Such a hypothesis about the stability of velocity has clear empirical implications: If, given the past and current history of  $M$ ,  $\Delta Y$  is unusually large this quarter, signifying that velocity has departed upward from its usual track, then  $\Delta Y$  in subsequent quarters should be unusually small, given  $M$ , as velocity drops back to normal. This translates statistically into the hypothesis that the relationship of  $\Delta Y$  to  $\Delta M$  should generate errors with strongly negative serial correlation.

The equations that I know relating  $\Delta Y$  to  $\Delta M$  are inconsistent with that hypothesis. The St. Louis Federal Reserve model explains the change in GNP for a given quarter primarily through the changes in money in that quarter and several previous ones. Its pattern of errors is essentially random

37. Robert J. Gordon, "Inflation in Recession and Recovery," *Brookings Papers on Economic Activity* (1:1971), pp. 136-42; Leonall C. Andersen and Keith M. Carlson, "A Monetarist Model for Economic Stabilization," *Federal Reserve Bank of St. Louis Review*, Vol. 52 (April 1970), pp. 12-13. See also papers by Lawrence Klein, Albert Hirsch, George de Menil and Jared Enzler, and Saul Hymans, in Otto Eckstein (ed.), *The Econometrics of Price Determination Conference* (Board of Governors of the Federal Reserve Systems, 1972).

through time. Once a shortfall (overshoot) of GNP is experienced along a given money path, expected *changes* of GNP in subsequent quarters are unaffected by the surprise in the initial quarter; hence, the *levels* of GNP estimated for subsequent quarters remain permanently lower (higher) by the amount of the initial deviation. No snapback in velocity is found.<sup>38</sup>

The same finding emerges even more dramatically in the Laffer-Ranson model. Its explanation of the quarterly proportional change in nominal GNP relies on the concurrent proportional change in *M* as a key variable; lagged changes in *M* are found to be unimportant and do not appear. Errors in consecutive quarters are independent. Accordingly, the message is that this quarter's incremental money normally adds substantially to this quarter's GNP; but, if it does not show up in GNP this quarter, it probably never will.<sup>39</sup>

The evidence of Keynesian econometric models is also relevant to the self-correction hypothesis. They suggest that deviations from an expected path of *Y* typically persist for a long time, given an unchanged stabilization policy. To be sure, they identify certain types of deviations—basically on the supply side—that have little or no lasting effect on *Y*: A strike of substantial size and duration is the outstanding example of a situation in which the conditions for self-correction are likely to be met.

Deviations in the strength of final demand, however, are found to be persistent and even cumulative. Suppose an econometric model had been used to forecast *Y* for several years into the future. Then suppose that, in the initial quarter, some component of final demand turned out considerably stronger than expected. The new information provided by the actual values of that quarter would generate a new forecast that would lie above the initial forecast for a considerable period of time.

One reason for the persistence of deviations is that time series regression equations explaining levels of demand display positive serial correlation of errors. In general, when consumer demand or investment demand is surprisingly strong (weak) given the explanatory variables, unusual strength

38. Andersen and Carlson, "Monetarist Model," p. 11, and Keith M. Carlson, "Projecting with the St. Louis Model: A Progress Report," *Federal Reserve Bank of St. Louis Review*, Vol. 54 (February 1972), p. 26. The Durbin-Watson statistic is 1.80 for the sample period 1953:1 to 1969:4, and 2.12 for the period 1953:1 to 1971:2, both extremely close to the 2.00 value of perfect randomness.

39. Arthur B. Laffer and R. David Ranson, "A Formal Model of the Economy," *Journal of Business*, Vol. 44 (July 1971), pp. 251–52. The Durbin-Watson statistic for the  $\Delta Y$  equation is 2.15.



(weakness) is also observed in the next quarter. Some econometric models build in explicit correcting mechanisms, using the errors of recent quarters as explanatory variables; others do so less explicitly by using lagged consumption (for example) as an explanatory variable for current consumption. In either case, an initial overshoot of demand leads automatically to an upward adjustment of predictions.

Even if an initial deviation in the strength of demand was only a transitory “blip,” the multiplier-accelerator process would produce persistent deviations from the initially expected path. An upward deviation would generate extra income and output that would, in turn, increase aggregate demand in subsequent periods. A higher GNP means a higher disposable income, and hence adds to next period’s consumption; extra final demands also add to next period’s demand for inventory and fixed investment.

This multiplier-accelerator process is the reason for the lagged impact of fiscal actions on GNP as well as the persisting impact of deviations in private demand. The time periods of the two dynamic processes are bound to be essentially the same. The dynamic multiplier on fiscally generated disposable income and that on privately generated income to the same recipients will have the same time profile. Recognition of this dual nature of lags changes the basic view of the dynamics of stabilization policy. Lags in the effects of fiscal-monetary tools are often cursed for hampering the effectiveness of policy. But these are the same lags that apply to the effects of shifts in private demand and generate the cumulative character of economic fluctuations. From that point of view, the lags are blessings that permit the policy maker to take the stitch in time.

Thus the evidence of both Keynesian and monetarist models of economic activity suggests that we live in an economy of persistence, rather than self-correction.<sup>40</sup> If GNP moves either above or below its target path, it tends to stay on that side of the path long enough to permit corrective assistance from prompt policy action.

40. In addition to self-correction and persistence, “cyclical overcorrection” is a third possible pattern of economic movement. If the economy has a sufficiently strong and reliable accelerator, a current shortfall below the expected path could actually increase the expected level of economic activity in some specified future period, given fiscal and monetary policy. The paradoxes that arise under such circumstances have been explored by William J. Baumol, “Pitfalls in Contracyclical Policies: Some Tools and Results,” *Review of Economics and Statistics*, Vol. 43 (1961), pp. 21–26. So far as I can see, deterministic cyclical overcorrection is not of great empirical importance.

## Responses to Demand Deviations

### FISCAL NEUTRALIZATION

The persistence of deviations in private demand and the multiplier-accelerator effects open up the important possibility that some shifting of fiscal instruments will reduce uncertainty about economic activity as well as improve the expected outcome.

To appreciate the way activism may reduce risk, consider an initially blissful situation in which expected GNP ( $Y^p$ ) is equal to  $Y^*$  at the minimum uncertainty settings of the instruments, which happen to be precisely the settings espoused by rule proponents. Then the activist and the rules proponent have no disagreement, and no sacrifice is needed to hold down multiplier uncertainty. Suppose further that, in this world, business investment outlays and government purchases have an identical—although not reliably known—dynamic multiplier effect on  $Y$ . Finally, suppose that a survey of business investment plans provides an excellent forecast of that component for at least one quarter in advance.

On these assumptions, any downward surprise in business investment plans should be offset dollar for dollar by an increase in government purchases over and above the path called for by fiscal rules. Given reliable information that investment is below the initial forecast, inaction would not only leave  $Y^p$  below  $Y^*$  but would also permit increased multiplier uncertainty on the impact of the shortfall in investment. Because the same unknown multiplier will go to work in an upward direction on the additional government purchases and in a downward direction on the shortfall in business investment, it is possible, in this case, to hedge perfectly and neutralize the surprise in private demand.

Obviously, these assumptions are extreme; but the point remains qualitatively valid even if the multipliers are not identical, if the forecast of private spending is not perfect, and if the government action cannot be perfectly synchronized in time. For one example of an imperfect offset, suppose that tax cuts are the only available fiscal instrument. If, as a result of a shortfall of private investment equal to  $S$ , private disposable income would be cut by, say,  $0.6S$ , a general tax cut of  $0.6S$  would eliminate the income effects of the shortfall. The initial drop in output could have continuing accelerator effects, but that part of the multiplier process stemming from induced income losses would be neutralized effectively. Again, as compared

with inaction, the outcome would mean a smaller expected gap and less variance around the expected GNP.

In the partial neutralization provided by such a tax cut, discretionary policy reinforces the automatic fiscal stabilizers. Automatic changes in tax revenues and transfer benefits offset 0.4 of the potential income loss; a cut in taxes that neutralizes the remaining 0.6 ratio per dollar deviation in GNP brings the expected net impact on private disposable income down to zero, just as though the automatic stabilizers provided a full offset.<sup>41</sup>

From the point of view of stabilization policy, it could be highly desirable for automatic stabilizers to provide the entire offset to the private income loss (or gain) stemming from an initial deviation in demand. But they cannot be designed to approach that magnitude for nonstabilization reasons: Neither marginal tax rates nor income replacement ratios under transfer programs are ever near 100 percent, because such rates would have extremely adverse effects on incentives.

If the policy maker can respond to surprises in demand only after they have occurred, he still has considerable opportunity to hedge as well as improve the expected outcome. Suppose the shortfall in private investment takes place without a policy offset, and makes  $Y_0 = Y_0^* - u_0$ . Then, with the initially intended policy,  $Y_1$  will be below  $Y_1^*$  by an amount  $(k_1 u_0 - u_1)$ , where the expected value of  $u_1$  equals zero. If the policy maker can take a stimulative action  $\Delta P$  with a first period multiplier  $k'_1$ ,  $k'_1 \Delta P$  gets subtracted from the expression above, leaving a shortfall of  $(k_1 u_0 - u_1 - k'_1 \Delta P)$ . If  $k_1$  and  $k'_1$  are random variables subject to errors  $v_1$  and  $v'_1$ , respectively, the expected squared deviation of  $Y_1$  from  $Y_1^*$  will be  $E(v_1 u_0 - u_1 - v'_1 \Delta P)^2$ . So long as  $v'_1$  is positively correlated with  $v_1$  and not positively correlated with  $u_1$ , that is sufficient to ensure that some amount of stimulus will reduce variance as well as cut the expected gap.

The income neutralization argument conveys a weak, but nonetheless revealing, message to the fiscal policy maker: If you can apply a prompt and temporary policy that would offset some of the probable consequences of initial deviations in demand, you can simultaneously improve the expected outcome and reduce uncertainty about the path of income. For the

41. These issues are related to A. W. Phillips' important discussion and classification of stabilization strategies in "Stabilisation Policy in a Closed Economy," *Economic Journal*, Vol. 64 (June 1954), pp. 290-323. As Phillips makes clear, the elimination of the induced income change, or any type of full proportionate correction, provides only partial stabilization.

uncertain multiplier pattern associated with that policy will work to offset, at least in part, the similarly uncertain multiplier effects of the initial deviation in demand.<sup>42</sup>

#### IMPLICATIONS OF MONETARISM

The most ardent and articulate exponents of monetary rules—led by Milton Friedman—are also “monetarists,” believing that changes in the money supply are the key force determining changes in nominal GNP. Although the personalities advocating them may be identical, the propositions are distinct.<sup>43</sup> As David Fand has pointed out, a monetarist tradition that prevailed in the 1920s was quite activist in its thrust.<sup>44</sup> As should be clear from the discussion above concerning persistence versus self-correction in the income velocity of money, a monetarist who believes that velocity surprises persist would wish to deviate from a path of steady monetary growth when  $Y$  departs from  $Y^*$ .

I should like to illustrate the activist implications of one monetarist view by reference to econometric studies of money-income relations made by the St. Louis Federal Reserve Bank, focusing on them because they represent the most thorough and carefully articulated quantification of the monetarist view.<sup>45</sup> According to the St. Louis model, price flexibility works very slowly to restore equilibrium, with a process of adjustment that lasts for many years. On the other hand, the dynamic multiplier effect of money on nominal GNP is estimated to be complete over a period of four quarters. Moreover, the standard errors on the estimated multiplier coefficients are consistently fairly small. Finally, as noted above, the GNP equation implies that any observed deviation of the income velocity of money from its expected level should be viewed as permanent.

42. The same argument reveals that responding to deviations in fiscal instruments need not add significantly to multiplier uncertainty; if, for example, a rejected tax hike is replaced by a proposed transfer cut, the multiplier pattern can be counted on to be similar. But this sauce for the instrument-surprise goose is also sauce for the demand-surprise gander.

43. That point is made in some detail by Paul A. Samuelson, in “Reflections on the Merits and Demerits of Monetarism,” in Diamond (ed.), *Issues in Fiscal and Monetary Policy*, pp. 7–12.

44. David I. Fand, “Monetarism and Fiscalism,” *Banca Nazionale del Lavoro Quarterly Review*, No. 94 (Rome: September 1970), pp. 298–99.

45. The Laffer-Ranson model, with no lagged effects, gives a clear mandate for activist monetary policy.

In the appendix, employing several simplifying assumptions (which favor inaction, if anything), I derive some policy implications of the St. Louis model. The exercise shows how a policy maker who has a quadratic loss function, and who believes my simplified version of the St. Louis model, should respond to deviations in GNP. The results demonstrate that he should *not* keep monetary growth steady, but rather should step it up when GNP falls below the target path and reduce it when GNP exceeds the target. This finding also illustrates a general principle: Any claim of reliable knowledge about the effect of a policy instrument on economic activity is likely to imply some prescription for the use of that instrument. For all but the most strained assumptions, anyone who believes that a dollar of extra money reliably produces, say, five dollars of extra GNP is obliged to favor the creation of additional money when more GNP is desired.

The approximate optimization of the St. Louis model suggests that monetary policy should create a *negative* feedback of the recent strength of GNP (relative to target) on the money supply rather than the independence sought by the rule. It is, however, often contended that actual Federal Reserve policy tends to produce *positive* feedback by accommodating, at least in part, changes in the demand for money stemming from changes in economic activity.

It is obviously beyond the scope of this paper to determine the nature of the feedback in past or current Federal Reserve policy. Supporting the charge of positive feedback is circumstantial evidence that the growth of money has been especially slow during recession periods. On the other hand, it has been particularly rapid during the initial phase of cyclical expansions, when the desired growth of real GNP was presumably large. In any case, the analytical conclusion that a monetary policy that produced positive feedback from  $(Y - Y^*)$  onto  $M$  might be on the "wrong side" of the rule is not solely monetarist. On a Keynesian view of the causal process running from  $M$  to  $Y$ , a monetary policy that accommodates increases in the demand for money stemming from shifts in liquidity preference helps to stabilize income and interest rates. On the other hand, if it accommodates increases in the demand for money stemming from higher levels of economic activity (and consequently increased transactions requirements), it thereby weakens the automatically stabilizing impact of higher economic activity in raising interest rates.<sup>46</sup> Hence, a positive feedback from  $(Y - Y^*)$

46. These distinctions are spelled out in Poole, "Optimal Choice of Monetary Policy Instruments."

onto  $M$  would give presumptive evidence of a defect in monetary policy;<sup>47</sup> while a positive feedback from shifts in liquidity preference onto  $M$  would be a sign of effectiveness.

Any evaluative comparison of a policy that varies money growth with one of fixed money growth should take both types of feedback into account. It should also recognize the impacts on nonstabilization targets associated with variability of interest rates and endeavor to explain why central banks in fact place a heavy weight on the stability of financial markets and interest rates. As noted above, there are many important—and rarely discussed—issues in this area: What weight should society place on the stability of (nominal and real) interest rates? Will constraints on very short-run variations of rates tend to produce larger swings in the long run? Answers to these questions should be part of any full assessment of monetary strategy.

#### BREAKING RULES FOR LARGE DEVIATIONS

Some proponents of fixed fiscal-monetary settings have recommended departure from their rules in the event of a sufficiently large (or sufficiently persistent) deviation in aggregate demand.<sup>48</sup> In effect, a mixed strategy is proposed that generally would rely on fixed settings, but would depart from them when the economy moved outside some band around the target path.

None of the proponents of the mixed strategy has offered much analytical justification for it. I can see a number of conceivable justifications, but no persuasive ones. In the case of fiscal policy, set-up costs would argue against shifts unless the potential stabilization benefits reached some threshold magnitude. But this issue is relevant primarily to shifts within a calendar year. Altering the amount of expenditure stimulus in the annual budget program imposes no set-up costs since the formulation of that program is an overhead cost. Nor do set-up costs have any significant relevance to monetary policy.

47. However, this result does not hold in a dynamic process involving cyclical over-correction rather than persistence. Michael C. Lovell and Edward Prescott demonstrate that analytical result in "Money, Multiplier Accelerator Interaction, and the Business Cycle," *Southern Economic Journal*, Vol. 35 (July 1968), pp. 60–72. As noted above in the reference to Baumol's article (note 40), I do not regard the deterministic cycle as an empirically relevant view of the economy.

48. See, for example, Committee for Economic Development, *Taxes and the Budget*. Friedman speaks of using monetary policy to offset "major disturbances" in "Role of Monetary Policy," p. 107.

A second type of justification might distinguish disturbances that compelled the policy maker to alter his beliefs about the structure of the economy from disturbances that seemed to be merely random. However, structural changes come in many sizes and are accompanied by varying amounts of evidence on their occurrence. A band could not provide a good basis for quality control on whether to scrap one's model of the economy. Nor should random deviations always be ignored.

Still a third type of justification might be based on the shape of the loss function. The policy maker may not have strong preferences on the target for economic activity—for example, unemployment rates between 4.0 and 5.0 percent may seem equally acceptable, or different public officials may have varying preferences among them. Under some assumptions about the distribution of forecast errors, such a set of preferences could justify inaction in response to small disturbances. But such a preference function is likely to reflect an administration's aversion to headaches rather than the society's true indifference among widely ranging possible levels of GNP.

Similarly, an inappropriate incentive system might make the mixed strategy optimal for the policy maker when it was not optimal for the country. A high penalty on officials for errors of commission and a low one for errors of omission would bias choices toward a mixed strategy. If, for example, the policy maker waits until GNP is far below target (or below target for a long time) before taking stimulative action, he can be confident that his ultimate action is better than continued inaction. He will have reduced the chance of being penalized for an error of commission. Of course, by the time he acts, the nation would have paid heavily for the error of omission. Moreover, too late probably means too much: The shift in the instruments will probably have to be large, involving considerable multiplier uncertainty and substantial disturbance to private decision making. On many counts, a strategy that yields large and infrequent shifts seems inferior to a more continuous policy with small and frequent changes in the settings.

Actual policy making has resembled the mixed strategy at times in the past decade. At the start of the year in 1962 and again in 1971, the private economy was given a "last chance" to attain strong recovery momentum on its own, with little assistance from stimulative policy. Strikingly, in August of both years, when the shortfall persisted and it became clear that nature was not taking a curative course, President Kennedy and President Nixon, respectively, announced major stimulative shifts in policy. These incidents

offer particularly eloquent testimony in favor of smaller and prompt adjustments of fiscal-monetary instruments.<sup>49</sup>

### **Rules and Political Discipline**

After surveying the various economic arguments that might support fixed fiscal-monetary settings, I have become increasingly convinced that the rules proponent must rest his case on political and essentially noneconomic grounds. And he does have a *prima facie* case along those lines. Many of the major economic fluctuations in the past generation<sup>50</sup>—the 1950–51 Korean inflation, the 1953–54 post-Korean recession, the 1960–61 recession, and the 1965–66 Vietnam inflation—were directly government-created through swings in the budget, with accompanying swings in money growth, that departed from any and all professional prescriptions for stabilization. The planners of economic policy were blocked by political barriers associated with military decisions in three of these cases, and with attachment to actual budgetary balance in the fourth.

A budgetary rule or procedure that prevented the government's own fiscal actions from destabilizing the economy would have helped in these cases. With these instances averaged in, a fixed, moderate full employment surplus—accompanied by steady money growth—in peace and war, even years and odd years, quite likely would have yielded better results on balance during the past generation than those obtained from the actual fiscal-monetary process. Moreover, a monetary rule might have introduced discipline against the big fiscal swings; if monetary policy had not accommodated them to a major degree, the disruptive side effects of tight money might have forced a shift away from a reckless fiscal course. Just as in other areas of government activity constitutional safeguards may be inefficient on occasion and would clearly be too inflexible for a world of completely rational and honest men, a “constitutional” limitation on the flexibility of fiscal and monetary policy might conceivably be desirable, on balance, even though it is not economically optimal.

It would be a major step forward in the professional dialogue if the

49. See my detailed comments in “Political Economy: Some Lessons of Recent Experience.” In addition to these instances, the mixed strategy has some limited relevance to the errors of 1965–66.

50. See Paul W. McCracken, “Economic Policy and the Lessons of Experience,” in Melvin R. Laird (ed.), *Republican Papers* (Doubleday, 1968), pp. 372–90.



macroeconomic and the political aspects of the issues were carefully distinguished. The historical record surely demonstrates that we need better political procedures to safeguard economic stabilization objectives, but it does not reveal whether a set of rules would surmount political barriers any better than (or even as well as) an activist strategy.

The proponents of rules have not made clear how they are supposed to operate as constraints on the political process. No one suggests that fixed fiscal and monetary settings could or should be written into the Constitution, or even into statute, with penalties for violators. Rather, the Federal Reserve is being urged to impose on itself a constraint that would remove its subsequent opportunity to influence the key decision variables under its control. Similarly, the President and his agents are urged to impose the same self-restraint and self-denial by obeying a fiscal rule. One reason people impose rules on themselves is that they do not trust their own rationality. But this reason seems particularly inappropriate in the case at hand: If the nation's top public officials are irrational about their area of professional expertise, then the nation needs better officials rather than a confession of irrationality by the existing ones.<sup>51</sup>

In general, people also may impose rules on themselves to strengthen their bargaining positions against possible adversaries by delimiting their own options. The rules proposal may contain some elements of this strategy. Perhaps the Federal Reserve is being asked to announce unmistakably to the President and to the Congress that it will not help finance a reckless fiscal policy. Perhaps administration economic officials are being asked to draw a line that the Congress (and even the President) cannot cross.

In another sense, the economics profession and other informed observers of the economy are being asked to form a consensus in favor of rules that would impose discipline on federal policy making. If economists have power to persuade and mobilize public opinion, then they should use it to promote rational and timely policy adjustments instead of nonoptimal rules. Like the mice, we all wish to bell the cat; but is the promulgation of nondiscretionary rules really the way to put a resounding bell on him?

51. I find it puzzling and amusing that economists who rely most heavily on the rationality of consumers, workers, and businesses (for example, in denying the need for statutory information and safety requirements) attribute the most unsophisticated irrationality and myopia to federal policy makers. A related puzzle: Why are government decision makers often urged to "satisfice"—that is, aim for a satisfactory outcome and avoid perfectionist ambitions—by economists who insist that private decision makers universally do and should maximize?

A general search for safeguards uncovers many possible alternatives to rules. One small forward step might be an agreement by the executive branch, the Federal Reserve, and the Congress on a regular annual dialogue focusing on a set of fiscal and monetary indicators that would describe the stance of stabilization policy. Such a discussion might help to highlight the relevant issue: What deviations of those indicators from their historical average positions are appropriate in light of the state of private demand and the target for prospective economic activity?

The indicators of fiscal and monetary settings would serve as guides in judging the appropriateness of policy. As Warren Smith pointed out, indicators are only a way to characterize policy, and the basic need is to formulate and carry it out properly rather than merely to characterize it properly.<sup>52</sup> Nevertheless, I believe that accepted indicators can serve a useful function in providing a context in which to evaluate—defend and criticize—a set of policy choices.

I have previously suggested, as a political safeguard, the creation of a bipartisan board of economic experts, separate from the administration, and authorized to speak out on policy issues involving technical results or widespread professional agreement.<sup>53</sup> A body with some official designation could have more authority and impact whenever it could muster an overwhelming agreement than does the troupe of unorganized, however distinguished, members of the profession who testify individually to congressional committees. I have no illusions about the range and frequency with which bipartisan agreement would be obtained within the profession. But I believe that the majority of disinterested private economists, representing a wide range of methodology and ideology, would have been appropriately critical of administration policies and programs both in early 1966 and early 1971. Moreover, the very existence of such a board in those periods might have exerted a disciplinary influence on the internal discussions and debates that led to the inappropriate fiscal programs.

Even more important, reforms of legislative procedures could help to ensure greater responsiveness of fiscal policy to the right signals and greater insulation from the wrong pressures. Such reforms would include establishing a reliable mechanism for prompt congressional verdicts on presi-

52. See Warren L. Smith, "A Neo-Keynesian View of Monetary Policy," in *Controlling Monetary Aggregates*, Proceedings of the Monetary Conference, Nantucket Island, June 8–10, 1969 (Federal Reserve Bank of Boston, 1969), p. 119.

53. Okun, *Political Economy of Prosperity*, pp. 28–29.

dential tax proposals; extending the scope of formula flexibility recently initiated in extended unemployment insurance benefits and the public service jobs program (some important experiments in rules with feedback); and creating more opportunities for reliance on temporary, self-limiting, and self-terminating provisions.<sup>54</sup>

In summary, the best strategy for stabilization policy, and for political procedures to safeguard stabilization objectives, remains a major challenge that takes us beyond our present knowledge. But rules for fixed instrument settings would not achieve our objectives. On the contrary, it would be a rare coincidence for the same full employment surplus or the same rate of monetary growth (or the same interest rates) to be appropriate two years in a row. The proponents of rules have raised important issues; they have provided good questions and bad answers. In this paper, I have tried to highlight and interpret their good questions and to sort out the issues they raise in both the economic and political areas, in an effort to facilitate the search for the good answers.

54. The importance of temporary measures is developed by Frank W. Schiff, "Control of Inflation and Recession," *Annals of the American Academy of Political and Social Science*, Vol. 396 (July 1971), pp. 97-101.

## APPENDIX

### *Responses to Demand Deviations with the St. Louis Model*

#### Assumptions

1. The policy maker believes the St. Louis model, and he controls the money stock exactly.
2. His loss function is quadratic and symmetrical, and his horizon is four quarters long with no discounting. Thus

$$E(L) = \sum_{i=1}^4 E(Y_i - Y_i^*)^2,$$

where

$E$  = expected value operator

$L$  = loss

$Y_i$  = GNP in the  $i$ th quarter

$Y_i^*$  = target GNP in the  $i$ th quarter.

3. He always plans a money path over the next four quarters. He does not use federal expenditures as a policy tool, but he knows them in advance.

4. Initially, the target path of GNP calls for increments of money ( $M$ ) that happen to coincide with minimum variance, thus equaling the average increment of  $M$  in the sample period. Hence, the standard error of forecast one quarter ahead is simply the standard error of estimate of the GNP equation—\$3.84 billion, as shown in Table A-1.

**Table A-1. Total Spending Equation of the St. Louis Model, 1953:1–1969:4<sup>a</sup>**

$$\Delta Y_t = 2.67 + \sum_{i=0}^4 m_i \Delta M_{t-i} + \sum_{i=0}^4 e_i \Delta E_{t-i}$$

(3.46)

$\bar{R}^2 = 0.66$ ; standard error of estimate = 3.84; Durbin-Watson statistic = 1.75

Variable	Coefficient <sup>b</sup>	Variable	Coefficient
$m_0$	1.22 (0.45)	$e_0$	0.56
$m_1$	1.80 (0.25)	$e_1$	0.45
$m_2$	1.62 (0.38)	$e_2$	0.01
$m_3$	0.87 (0.24)	$e_3$	-0.43
$m_4$	0.06 (0.50)	$e_4$	-0.54
$\sum m_i$	5.57 (0.69)	$\sum e_i$	0.05

Source: *Federal Reserve Bank of St. Louis Review*, Vol. 52 (April 1970), p. 11.

a. The symbols used in this table are defined as follows:

$\Delta Y_t$  = dollar change in total spending (GNP in current prices) in quarter  $t$ .

$\Delta M_{t-i}$  = dollar change in money stock in quarter  $t - i$ .

$\Delta E_{t-i}$  = dollar change in high employment federal expenditures in quarter  $t - i$ .

b. The numbers in parentheses are standard errors of the estimated coefficients.

5. Since the equation generates only a slight positive serial correlation of residuals (the Durbin-Watson statistic is 1.75), the policy maker treats them as uncorrelated. Thus, the standard error of forecast of the *level* of  $Y$   $n$  quarters in the future (that is, of  $n$  changes in  $Y$ ) is 3.84 ( $\sqrt{n}$ ).

6. Given assumptions 2, 4, and 5, expected loss can be expressed as

$$E(L) = (3.84)^2 (1 + 2 + 3 + 4) = 147.50.$$

7. In deciding on adjustments in his intended money path, the policy maker acts as though the covariance among the coefficients on money

$(m_0 \dots m_4)$  is zero.<sup>1</sup> Also, he views the  $m$  and  $e$  coefficients on federal expenditures as uncorrelated.

### Exercise

After charting his course for a year ahead, the policy maker waits a quarter, observes GNP for that quarter zero, and then looks ahead four more quarters. Suppose that, in quarter zero, the price equation worked with no error, but GNP deviated from its expected and target value by some amount,  $u$ .

Just to illustrate, suppose  $Y_0$  was below  $Y_0^*$  by \$5 billion;  $u = -5$ . (All the instrument calculations that follow are proportional to  $u$  and all incremental loss calculations are proportional to  $u^2$ . The choice of this particular illustration does not influence the nature of the results; a  $u$  of  $+5$  would simply reverse the direction, while the absolutely smaller negative  $u$  of  $-2.5$  would cut the instrument moves in half and the incremental losses by three-fourths.)

The policy maker is about to rechart his course for the next four quarters. The target path is unaltered, and the expected *changes* in  $Y$  for a given money path are unaltered, but the expected *level* of  $Y$  is lower by \$5 billion for each subsequent quarter, assuming that  $M$  is kept on its initially planned path.

With *no response* in altering  $M$ , the expected loss for the subsequent four quarters is

$$E(L) = 4(5)^2 + 147.50 = 247.50.$$

The *incremental* loss associated with the deviation in quarter zero is 100 (see Tables A-2 and A-3 and Figure A-1).

With *expected full adjustment*, the policy maker acts as though he were in the activist's paradise, resetting  $M$  relative to its intended path to make  $Y$  equal to  $Y^*$  for each subsequent quarter. This is better than no response; it cuts the incremental loss to 59.23. The full 100 of loss from expected deviations is saved, but the policy maker pays heavily for the added Brainard-type variance created by the large swings in  $M$  from its initial path, which was assumed to minimize variance.

1. In fact, the prevailing covariance is negative; the square of the standard error of  $\sum m_i$  is less than the sum of squares of the standard errors of  $(m_0 \dots m_4)$ .

**Table A-2. Money and GNP Paths over Four Quarters Following a \$5 Billion Deviation in GNP, under Alternative Stabilization Strategies**

Billions of dollars

Stabilization strategy and money supply or GNP item	Quarter			
	I	II	III	IV
<i>No response</i>				
$\Delta M$	0.00	0.00	0.00	0.00
$Y - Y^*$	-5.00	-5.00	-5.00	-5.00
<i>Expected full adjustment</i>				
$\Delta M$	4.10	-6.05	3.48	-0.02
$Y - Y^*$	0.00	0.00	0.00	0.00
<i>"Horizon" adjustment</i>				
$\Delta M$	0.91	0.00	0.00	0.00
$Y - Y^*$	-3.89	-2.25	-0.78	0.00
<i>Optimal adjustment</i>				
$\Delta M$	1.87	-0.78	-0.74	0.42
$Y - Y^*$	-2.72	-0.31	0.41	-0.04

Source: Derived by author. See discussion in text.

Another option for the policy maker is adjustment back to the target path over the four-quarter horizon. He would then add enough  $M$  in quarter one to raise  $Y$  in quarter *four* by an expected \$5 billion; he would plan to maintain the previously intended  $M$  growth in quarters two, three, and four. This strategy leaves expected  $Y$  below target in quarters one, two, and three; but very little extra variance is incurred by multiplier uncertainty on the instrument adjustment. The incremental loss is cut to 21.90. (See *horizon adjustment* in tables and figure.)

**Table A-3. Loss over Four Quarters Following a \$5 Billion Deviation in GNP, under Alternative Stabilization Strategies**

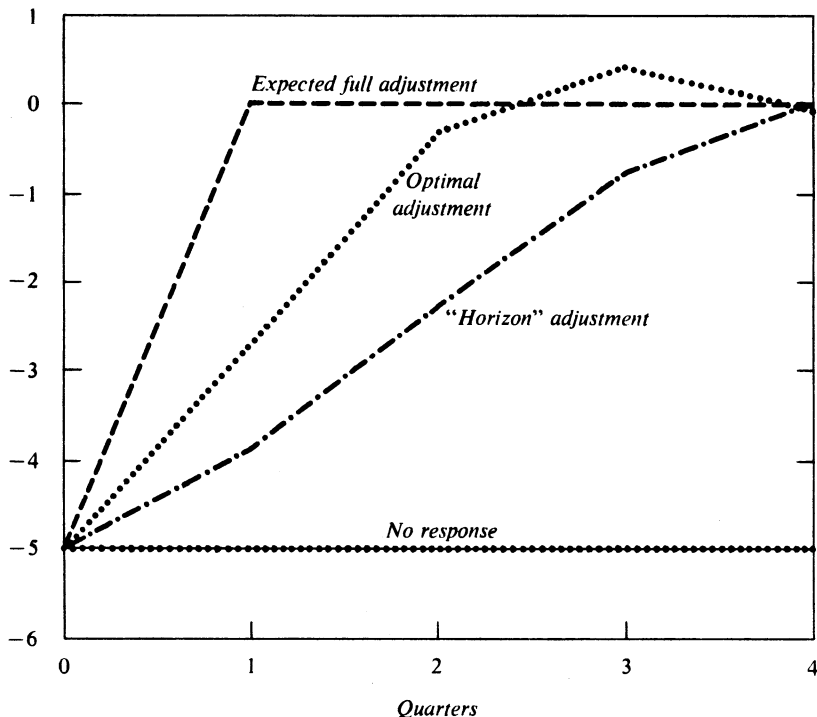
Billions of dollars

Stabilization strategy	Utility loss	Incremental loss
Expected loss with no deviation	147.50	...
No response	247.50	100.00
Expected full adjustment	206.73	59.23
"Horizon" adjustment	169.40	21.90
Optimal adjustment	160.59	13.09

Source: Same as Table A-2.

**Figure A-1. GNP Paths over Four Quarters Following a \$5 Billion Deviation, under Alternative Stabilization Strategies**

$(Y - Y^*)$  Billions of dollars



Source: Table A-2.

Note:  $Y$  is gross national product;  $Y^*$  is target GNP.

Finally, the policy maker can solve for and apply the *optimal adjustment*. The solution sets forth  $E(L)$  as a function of unspecified amounts of  $\Delta M_1$ ,  $\Delta M_2$ ,  $\Delta M_3$ ,  $\Delta M_4$ ; it then minimizes by differentiating partially with respect to each and setting each derivative equal to zero. The resulting system of four linear equations in four unknowns yields the entries shown in the tables and figure.

The optimal adjustment is much less activist than expected full adjustment, but more so than the horizon adjustment. It cuts the incremental loss to 13.09; about half of that loss stems from expected deviations in  $Y$  from  $Y^*$  and about half from multiplier uncertainty on the incremental money.

In my judgment, the simplifying assumptions specified at the outset lean over backwards, on balance, in favor of inaction. First, ignoring the small amount of positive serial correlation of residuals makes the no-response pattern look somewhat better; it does not penalize inaction for the probability that a downward deviation in  $\Delta Y$  in one quarter will be followed by a downward deviation in  $\Delta Y$  in the subsequent quarter. Second, ignoring the negative covariance among the money multipliers makes a small shift (like horizon adjustment) seem more risky than it really is; on the other hand, it underestimates the variance associated with policy strategies (like expected full adjustment) that adjust  $M$  in opposite directions during successive quarters. Third, omitting any possibility of using federal expenditures as a policy tool cuts down the optimal activism. Most important, ignoring the opportunity to shift the money path subsequently in light of any deviations in  $Y$  observed in quarters one, two, and three overstates the expected loss for any activist strategy. Finally, cutting off the horizon after four quarters underestimates the cost of inaction; it could also understate the cost of instrument changes if a major overhang of added (or reduced) money remained at the end of the four quarters, requiring a neutralizing action in the fifth quarter; but none of the activist strategies leaves a significant overhang.

To be sure, the choice of nominal GNP as the unchanging target has a slight tendency to overstate the cost of inaction. It would be more realistic to take an unchanged target path of real GNP. But since price flexibility works very slowly in the price equations of the St. Louis model, the simplification has only a minor distorting effect. Inaction would leave expected real GNP at the end of four quarters down by about \$4.8 billion of the total \$5 billion drop in expected nominal GNP. In addition, the calculations above are true to the spirit of St. Louis by ignoring social costs of instability in interest rates.

Horizon adjustment is obviously an overly conservative policy strategy; it avoids any expected reversal of policy or "oversteering." Yet it does come reasonably close to optimality in the exercise. The result suggests that, if a St. Louis man wants to live by a simple rule, he can improve substantially on the rule of steady money growth by adopting the following feedback rule: Always deviate from a steady growth money path by creating enough additional money in this quarter to make up ultimately for last quarter's deviation between the actual and desired growth of GNP.

Or he can frame the rule in terms of growth rates. According to horizon



adjustment, the initially intended growth rate of money for this quarter should be adjusted by adding it to any shortfall (or subtracting from it any overshoot) in last quarter's GNP below (or above) its desired rate. Thus if the annual growth of GNP last quarter was, in fact, 5 percent when the target growth was 8 percent, the annual rate of money growth for the current quarter should be marked up by 3 percent from the previously intended rate.

## *Comments and Discussion*

**David I. Fand:** Arthur Okun's "Fiscal-Monetary Activism: Some Analytical Issues" probes and clarifies some of the analytical differences between those who favor an activist macroeconomic policy and those who favor rules or guidelines.

Several dimensions of the activism-guidelines discussion in the past four decades are reviewed in this paper. The first is the rules versus authorities issue, which was first raised by Henry Simons during the depths of the Great Depression in the 1930s and which focuses on the relative merits of automatic and discretionary policies. The second concerns the independence of the central bank and the relative powers of the monetary and the political authorities—an aspect of the activism issue that emerged from the studies of the Joint Economic Committee in the late 1950s and early 1960s. The third is the fine-tuning issue that emerged in the 1960s and that centered on the reliability of the forecasts derived from the large-scale econometric models. Fourth and finally, there is the issue surrounding the decision theory approach to optimal policy, which has been receiving increasing attention in the last decade. Okun's analysis of these aspects is perceptive and his stimulating discussion directs attention to the important issues.

Okun argues persuasively that the discussion of activism versus guidelines (or rules) centers on the strategy and tactics of stabilization policy, while the discussion of monetarism versus fiscalism focuses on the content of stabilization policy. The fact that activist fiscalism was challenged by guideline monetarism in the 1960s was, in my opinion, something of a historical happenstance. The heyday of monetary fine tuning was in the 1920s, and the stabilization dialogue in the last decade was, in effect, between middle-aged monetarism and youthful fiscalism. Ultimately the implementation strategies associated with monetarism and fiscalism will, I believe,

tend to converge more and more, so that a monetarist-fiscalist substantive dichotomy will coincide less and less with an activist-guideline tactical dichotomy.

Okun develops the arguments in favor of activism, and his thoughtful analysis will find acceptance by many who do not share his policy views. The emphasis and language in his paper inevitably reflect his partiality to activism. Those who favor a guideline approach would presumably emphasize different matters. To illustrate, consider Okun's section on "The Issue of Self-correction." Advocates of rules or guidelines would emphasize the relative stability of private demand rather than the self-correcting feature of the system. They assume that the private economy is reasonably stable, and would remain so in the absence of severe policy shocks. Another example is the term "activist's paradise"; a proponent of rules or guidelines would probably stress the need to avoid purgatory.

Guidelines should be defended not on the grounds that they incorporate all the necessary knowledge, but rather that they will, in our current state of knowledge (or ignorance), give us a reasonably good result on the average. Rules or guidelines are therefore to be thought of as a temporary solution, since the possibility always exists that someone may find a better one. Activism, on the other hand, suggests a license to innovate, depending on the circumstances. Guidelines are therefore a conservative strategy, relying on relatively well-defined procedures, while activism is more open-ended, relying on the policy maker's ability to develop effective measures for particular disturbances.

Rules or guidelines are rationalized on the grounds that the best is often the enemy of the good: Rules are not viewed as a means to achieve the best result, but rather as a procedure that will give a reasonably good result on the average. This view is related to Okun's analogy of guidelines with a "constitutional" limitation on the flexibility of fiscal and monetary policy.

The stability or instability of the private economy is an important issue separating those who favor guidelines from those who favor activism. Guideline supporters assume that the need for policy to stabilize the government may be greater than the need for government to stabilize private demand. They do not deny that private demand may at times fluctuate. What they fear is that activism in pursuit of the best outcome may produce inferior results. There may be a genuine difference here in the interpretation of history between those who favor guidelines and those who favor activism.

A second important difference reflects their respective aspiration levels,

and follows the distinction between the *best* and the *good*. Those who favor guidelines may be willing to settle for a system that will give a relatively good result on the average because they have somewhat lower aspirations than those who favor activism. Alternatively, some may choose activism precisely because they have higher aspirations; they aim for a result that is considered outside the attainable range by those who favor rules.

The idea that the private economy is reasonably stable and the acceptance of lower aspirations appear to be characteristic of those who support guidelines. Yet one may ask why, if the private economy is reasonably stable, should a guideline orientation necessarily be associated with lower aspirations? To explain this apparent paradox it may be useful to distinguish three kinds of macroeconomic problems: those that result from bad aggregate demand policy, those that are frictional in nature, and those that reflect chronic tendencies. Unemployment or inflation due to bad monetary-fiscal policy is an example of the first case; unemployment or inflation due to rapid changes in demand, in technology, and in resource allocation—such as Charles Schultze's sectoral inflation case—represent the frictional problem; and a tendency for money wages to rise faster than productivity, characterized by high rates of unemployment and inflation such as we now associate with a sloping Phillips curve, may be an example of the chronic problem. Those who favor rules or guidelines believe they will achieve a better result with respect to the first problem, but are pessimistic and therefore willing to accept imperfect results for the second two cases. They believe that an activist policy will not help the Phillips curve problem in the long run and may not help very much with respect to the frictional problem.

One final point: A factor often cited in support of rules or guidelines—indeed, sometimes viewed as one of the strongest arguments—is their hypothesized effect on expectations. Lloyd Mints, in discussing alternative stabilization policies, would rank them on the extent to which they would tend to stabilize private expectations.<sup>1</sup> On this view, a crucial argument for a guideline policy is that it would generate such stabilizing expectations in the private economy.

Okun's excellent paper focuses attention on the activist-guideline approaches to macroeconomic policy. His analysis will motivate and help the reader to analyze these alternative postures and will stimulate further discussion of this important policy issue. The ensuing dialogue should help il-

1. L. W. Mints, *Monetary Policy for a Competitive Society* (McGraw-Hill, 1950).

illuminate one factor responsible for fundamental differences in stabilization policy.

**William Brainard:** This paper serves a very useful purpose in clarifying the various analytical considerations involved in debates about stabilization strategy and in illuminating the relevance to those debates of lags, uncertainty, and costs of adjustment. Okun focuses much of his discussion on rules versus discretion. The relevant question, of course, is, what is optimal policy—not, if we had to choose, whether we would prefer doing nothing to attempting to stay continuously on target by adjusting our instruments second by second in response to each new bit of information about the economy. Okun does an excellent job of identifying and analyzing the various considerations that tend to make optimal policy, in a particular situation, more or less activist. The debate about how much discretion is optimal can never be settled in the abstract. I found it both surprising and informative to see how activist optimal policy turns out to be in the St. Louis model, even taking into account the lags in response and the uncertainty about the estimated coefficients in its regression equations. I would tend to be more conservative; I would want to double the estimated standard errors in anybody's model, even my own. The spirit of many of Okun's remarks is less activist than the calculated optimum in the exercise shown in his appendix.

Some critics seem to assume that the only objective of the Federal Reserve is the stabilization of GNP. They see the Federal Reserve as behaving like the monkey in the psychology experiment who always gets the round pegs in the square holes, even though randomness and ignorance would lead to the correct action half the time. I would like to reinforce Okun's insistence that the actual historical behavior of the Federal Reserve should not be regarded simply as systematically perverse. If the Federal Reserve appears perverse, it is not because it takes or rejects the advice of certain economists, but because it has a particular perception of the economy's workings and because it is concerned with a variety of objectives. Many economists felt that the Federal Reserve was overly concerned in 1966 about the health of savings and loan associations and of the homebuilding industry at the expense of the GNP target. Okun makes an important point in stressing the need to be explicit about nonstabilization objectives in establishing or evaluating stabilization policies.

I wish Okun had given more time and more attention to the possibilities

of designing new instruments or altering existing ones so that policy could be more effective. How can we design instruments with shorter lags that would make us less dependent on long-run forecasts of the economy? How can we design instruments with reliable effects and with low costs of adjustment? A particularly challenging problem is to design instruments that provide strong incentives and yet avoid the adverse anticipatory effects that, as Okun points out, can be associated with enacting and removing such fiscal devices as the investment tax credit. One interesting question is whether the Scandinavian scheme of storing up pools of liquidity during booms and activating them during recessions safeguards against such effects.

Okun correctly points out that, so long as instruments are not perfectly correlated, it is optimal to use a combination of instruments, or "policy packages," even if we are pursuing a single objective. In any reduced form equation, sample estimates of the response coefficients of fiscal and monetary policies are likely to show a negative correlation of errors, since the policies have most often been used in the same direction to accomplish either stimulus or restraint. Such sample correlations warn us that we cannot be sure how to allocate stimulative or restrictive effects between fiscal and monetary policy, and it suggests that anyone who overestimates the impact of one tool is likely to be underestimating the impact of the other. In this connection, it would have been interesting if Okun had put government expenditures to work in his calculations on the St. Louis model. Even though the cumulative impact of changing federal expenditures is small in that model, substantial reductions in expected loss might be obtained by using the fiscal tool as well as the monetary one.

On the other hand, there are a priori reasons for believing that the actual impacts are positively correlated—that when private demand is likely to be very sensitive to fiscal action, it will also be sensitive to monetary action. If the world does have that characteristic, the packaging of fiscal and monetary instruments buys less insurance than appears to be the case. Although it is possible to estimate the mean and variance of the impact multipliers in a random coefficients model, I do not know how one would go about estimating the correlation between multipliers in such a model.

Other considerations, moreover, modify the case for packaging policy instruments. When the impact of a particular policy instrument is likely to be correlated with the impact of the shock that policy is trying to offset, use of the instrument may be especially desirable. Such a situation emerges in Okun's example of a decrease in plant and equipment spending that has a negative, but uncertain, effect on consumption. A fiscal stimulus that has

a similar initial effect on aggregate demand will be subject to the same consumption uncertainties, but they will be offsetting. Similar considerations apply to shocks in the financial markets. An activist monetary policy is particularly desirable to offset shifts in liquidity preference because the impact of the policy is likely to be similar to that from the disturbance, even though, as in the investment example, both effects may be unknown. In this sense, there are asymmetries between fiscal and monetary policy.

I agree with Okun that the instrument for monetary policy does not have to be perfectly controlled by the monetary authority. What is important is that it should not bounce around in response to systematic feedbacks from the real sector; that, of course, is the objection to the use of interest rates as an instrument. But I would go further than Okun and argue that a precise definition of the monetary instrument is not crucial in an activist strategy. Obviously, a precise definition of the instrument is important to a rules proponent. The interest rate that is going to be fixed must be specified if the Federal Reserve is operating as it did prior to the accord of 1951, and the money concept must be explicitly defined if some fixed growth of "money" is intended. But for an activist, it is not important to decide precisely what handle is to be turned as long as decisions on policy are frequently reviewed. The key decision is how to respond in light of new information about the strength of demand for goods and for financial assets. It is extremely difficult in the very short run to interpret errors in the forecast of interest rates or monetary aggregates. That difficulty creates serious problems, but none of them is solved by an attachment to one indicator rather than another as the direct handle for managing monetary policy.

### **General Discussion**

Leonall Andersen commented on Okun's application of the St. Louis model. He stated that the appropriate course of action in response to any shortfall or overshoot in GNP depended on the type of shock accounting for the deviation. Andersen noted three kinds of shocks: (1) purely random over time; (2) a structural change; and (3) a single shock with effects that could last a long time. Andersen suggested that everyone would agree that policy should not be altered in response to the first type of shock, and should be changed in response to the second type. The third case remained doubtful, with the desirability of action depending on the time horizon of the impact and the urgency of returning to the target path. He concluded

that further discussion and investigation of these three types of shocks could be fruitful.

Robert Solow, however, underlined Okun's point that on average the disturbances in the St. Louis model were random in first differences. They represent a random walk that starts off from wherever the economy happens to be. The first type of shock that Andersen mentioned would imply randomness in levels, and the model did not reveal such a process.

Several participants commented on the interrelationship between forecasting accuracy and policy strategy. Lawrence Klein felt that the analysis by Theil that Okun developed tended to downplay forecasting accuracy to an extreme degree. Klein stressed that nothing helps the policy maker as much as being right. In some situations, the ability to diagnose the true state of the economy has a major impact on the kind of policy action that can be recommended and, indeed, on whether any action can be reasonably recommended at all. Such a situation prevailed in the fourth quarter of 1970, when the General Motors work stoppage created a quandary as to the true state of the economy. Martin Bailey urged that serious attention be given to the issue of whether forecasts are biased. At turning points in economic fluctuations, forecasters tend to lag behind, showing a systematic bias that would impair an activist strategy. Bailey felt that the treatment of forecast accuracy was one of the very few instances in which the paper did not do justice to the case in favor of rules.

Saul Hymans and James Duesenberry also felt that uncertainty about the direction of the economy's movement was more serious than uncertainties about the speed of movement. In Duesenberry's view, reversing the direction of instruments imposed a particularly high cost, and this cost would interact with forecast uncertainty to call for a little less activism than Okun had indicated. For example, if GNP was below target and policy was expansionary, forecast errors that required additional boosts by policy probably would have less serious consequences than errors that overshot the mark and forced a reversal of policy toward restraint. Under such circumstances, increased confidence in the forecast of the level of activity would encourage the policy maker to make larger shifts in the instruments.

Duesenberry felt that Okun's paper was valuable in identifying issues that could be productively discussed and debated, so that economists could disagree on specifics rather than by drawing pictures of totally different worlds. He saw the possibility of a convergence of views, presenting the choice of more or less reliance on activism rather than all or none. A proponent of rules who conceded some uncertainty about the appropriate level



of the full employment surplus or the appropriate growth of money, and who was willing to learn from experience, might often agree with an activist who was particularly pessimistic about his accuracy in estimating private demand and multipliers, and who was particularly concerned about instrument costs. William Poole also urged that the issues be viewed as matters of degree. He felt that the proper questions were what rules, how much discretion, and who should have the authority for discretionary decisions. Poole noted, for example, that Congress had granted far more discretion to the Federal Reserve over monetary policy than it had to the executive branch with respect to fiscal policy. Some reorientation in both of these areas might make good sense, Poole concluded.

In the context of locating middle ground between activists and rule proponents, Fand felt that strategies of rules-within-bands—like the initial formulation of the Committee for Economic Development—were more promising than the paper indicated. Rules proponents feared that, with no constraints, activists would be trigger-happy, whereas activists feared that rules proponents would fall asleep at the switch. An agreement to use discretion outside of some band might be a feasible compromise, according to Fand. Okun, however, expressed greater willingness to compromise by scaling down the size of instrument movements rather than by reducing their frequency. He reiterated his concern that the strategy of rules-within-bands might produce the worst of both worlds.

Martin Bailey argued that the irrationality of government was a larger problem than Okun had conceded. On some occasions, an administration may forgo opportunities to improve existing legislation because it fears that Congress would add undesirable provisions, bringing on the so-called “Christmas tree effect.” Similarly, even though rational professional policy makers could, on occasions, improve fiscal and monetary settings, their programs may be distorted by a Christmas tree effect from others pursuing different objectives, contrary to the public interest. The federal decision-making process is separated and spread across a conglomerate that is not subject to the rationality assumptions that economists attribute to individuals or firms. Solow felt, however, that the very irrational elements that Bailey stressed made rules a “nonstarter.” Because of its decision-making processes, the government would be most unlikely to stick with any rule.

Indeed, Solow wondered whether, in criticizing the rules position, Okun had taken it too seriously as a genuine contender for stabilization strategy. Robert Hall shared this misgiving; he viewed the position of rules proponents as basically a philosophical stance that all social action is likely to

be perverse and hence that it should be minimized and, ideally, eliminated. Okun insisted, nonetheless, that the rules proponents had had a significant influence on policy in 1969–71 and could not be dismissed. In Okun's judgment, they had contributed to an undue delay in the adoption of expansionary fiscal measures and to a distorted focus of monetary policy on the setting of instruments rather than the state of the economy.

John Kareken regarded as the key characteristic of the strategy of rules without feedback the contention that current observations of the economy contained no information that would help to guide policy. Any alternative strategy makes use of information about the current economic situation in some systematic way. If that way is fully systematized, the alternative to rules without feedback can always be interpreted as a strategy of rules with feedback. Kareken urged that the issue of stabilization policy be posed in terms of these alternative types of rules strategy rather than in terms of rules versus discretion. He felt that the political issues came into perspective more readily, given his formulation: Would policy makers be able to implement rules without feedback more effectively than rules with feedback?

Charles Holt and William Nordhaus were concerned that the strategy of rules without feedback had been contrasted by Okun with an alternative strategy that appeared to be entirely judgmental. Holt stressed the need to develop formal tools for implementing an activist policy, combining and complementing them with judgmental devices. Formalizing the decision problem requires an objective statement of the various targets and the relative weight placed on them and of the penalties associated with various instruments. Delving into those issues would help distinguish the areas in which we can deal with the various problems by formal decision rules from those in which we have an intuitive grasp of problems that we cannot quantify precisely. William Nordhaus saw the issue of action versus inaction as the heart of the paper and urged that it be kept distinct from the issue of rules versus discretion. In principle, action could be predicated as readily on rules with feedback, such as those developed by A. W. Phillips, as on judgment and discretion. Okun agreed with Holt and Nordhaus that the appropriate mixture of judgmental and formal elements in an activist strategy should be explored; he expressed interest in the development of decision rules—or at least decision guidelines—that involve feedback; and considered such development part of the agenda for future research, following up on the critique he now offered of the strategy that would rely on rules without feedback.