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RULES VERSUS DISCRETION

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ABSTRACT

Under a discretionary regime the monetary authority makes no commitments about future money and prices. Then, if surprise inflation conveys economic benefits and if people form expectations rationally, it turns out that the equilibrium involves high and variable monetary growth and inflation. Moreover, since the high rate of inflation is anticipated, there are no benefits from inflation surprises. The implementation of an enforced rule can lower the mean rate of inflation while delivering the same average amount of inflation surprises, namely zero. Using these results as a background, the paper discusses alternative monetary rules, including quantity versus price rules and a prescription for stablilizing nominal GNP. This discussion touches on the distinction between positive and normative economics, which leads to a pessimistic appraisal of the role for economists' policy advice.

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General Features of Rules and Discretion

The traditional debate over rules versus discretion focused on the capability and objectives of the policymaker. Advocates of rules referred to imperfect knowledge about the economy and to policymakers' propensities to further inappropriate ends, possibly motivated by special interests.[1] But, if the policymaker were intelligent and well-meaning, then there was no obivous defense for a rule that tied his hands in advance. Discretion seemed to be synonomous with flexibility, which one had no reason to deny to a smart, benevolent policymaker.

This perspective on rules versus discretion was changed by Kydland and Prescott (1977), who looked at rules as a form of commitment. A commitment amounts to a binding contract, which specifies in advance the actions that someone will take, possibly contingent on a variety of exogenous circumstances. In contrast, under discretion, a person promises only to take those future actions that will best further his objectives later on. (Such promises are easy to enforce!) Thus, discretion is the special case of a rule or contract in which none of today's provisions restrict a persons's future actions. In the area of private business dealings, we tend to think about optimal forms of contracts, and would regard pure discretion as unusual. Similarily, in the context of public policy, the perspective becomes the optimal form of rules or prior restrictions--even the smart, benevolent policymaker is likely to desire and use an ability to make binding promises.

Kydland and Prescott discuss various areas of public policy in which commitments are important. One example is patents, which encourage inventions, but which also restrict the supply of goods ex post. Under pure discretion, a policymaker who has no past commitments and who cares about "social welfare" would ("once and for all") invalidate all old patents, but continue to issue new

ones. However, the perception of this form of policy by potential inventors has adverse effects on new inventions, which soon become old inventions. Hence, the optimal policy contains a mechanism to preclude or at least inhibit the abolition of old patents. Then the details of the policy involve the standard tradeoff between the incentive to invent and the ex post restriction of supply.

The manner of committing future actions varies with the area of public policy. In some cases, such as the duration and scope of patents, the rules are set out in formal law. Then the costs of changing laws (possibly coming under the constitutional restrictions against ex post facto laws) enforces the government's commitments. However, in the case of the Gold Standard Act, the existence of a law proved in 1933 to be inadequate protection for those who held gold or made contracts denominated in gold.[2]

More often a government's commitments rely on the force of reputation, whereby people's expectations of future policy are tied in some fashion to past behavior. For instance, if a government defaults on its debts, then potential bondholders are deterred by the perception that future defaults are more likely. Presumably, this consideration is the main deterrent to default by numerous "sovereign" debtor countries today. (Sovereign must mean lacking in formal collateral.) But, as a general matter, the precise connection between past actions and expectations of future behavior is difficult to formalize in a model.

Monetary Policy under Discretion

A major contribution of Kydland and Prescott was the recognition that monetary policy involves the same issues about commitments as do such areas as patents, default on government debt, and imposition of levies on previously accumulated capital (via changes in property taxes or in other taxes that fall on

capital). In the case of patents it is obvious that a policymaker must worry about the link between current actions--such as eliminating past patents or changing the form of patent law--and people's perceptions about the value of presently issued patents (which motivate inventions). Similarly, the monetary authority must consider the interplay between today's choices--whether to engineer a monetary expansion or to change the "law" governing monetary policy--and people's beliefs about future money and prices.

Consider the example about the Phillips curve, as discussed in Kydland and Prescott (1977) and in Barro and Gordon (1983a, b). These models involve the following main ingredients. First, monetary policy works by affecting the general price level. Second, unexpected increases in the price level (but not expected changes in prices) expand real economic activity. Thus, there is an "expectational Phillips Curve." Third, the "representative person," and hence the benevolent policymaker, value these expansions of activity at least over some range (which means that existing distortions make the "natural" level of output too small). Fourth, inflation is itself a bad--people value it only as a device to create unexpected inflation and thereby higher levels of economic activity.[3]

This model is structually similar to the example about patents. At any point in time the policymaker is motivated to generate unexpected inflation in order to stimulate the economy. (The analogue is the expansion of supply via the abolition of past patents.) But people understand these incentives in advance and therefore form high expectations of inflation. Hence, the policymaker must choose a high rate of inflation just to stay even--that is, in order for unexpected inflation to be zero. Finally, this high inflation imposes costs on the economy. (The parallel is the decrease in inventions because of the expectation

economy. (The parallel is the decrease in inventions because of the expectation that current patents will not be honored later.)

Barro and Gordon (1983a, b) analyze the equilibria for monetary policy and inflation for the Phillips-curve model. In the case of pure discretion, the policymaker has no mechanisms for committing the future behavior of money and prices. Rather, the policymaker has a free hand to maximize social welfare at each point in time, while treating past events as givens. In this situation there is an incentive in each period to create surprise inflation in order to generate an economic boom. But individuals understand this motivation and formulate their expectations accordingly. Thus, actual inflation cannot end up being systematically higher or lower than expected inflation.

Overall, two conditions must be satisfied in equilibrium. First, people's expectations of inflation are correct on average (that is, expectations are rational). Second, although the policymaker retains the power in each period to fool people via inflation surprises, he is not motivated to exercise this power. In order for this second condition to hold, the policymaker's drive to create unexpected inflation must, in equilibrium, be balanced by the cost of inflation itself. In other words, inflation must be high enough so that the marginal cost of inflation equals the marginal benefit from inflation surprises. Only then will the chosen rates of inflation and monetary growth be consistent with the policymaker's desire to maximize social welfare at each point in time. The important point is that this equilibrium involves inflation that is high, but not surprisingly high. Therefore, the economy bears the costs of high inflation, but does not receive the rewards that would arise from unexpected inflation.

The solution just described depends on the presence of benefits from surprise inflation, but does not rest on the existence of the (expectational)

Phillips curve, per se. In particular, surprise inflation amounts to a capital levy on assets, such as money and government bonds, that are denominated in nominal terms. Hence, at a point in time, unexpected inflation works like a lump-sum tax as a device to generate government revenue. Given that other taxes are distorting, the policymaker (and the representative person in the economoy) would value the use of this lump-sum tax. Accordingly, the model parallels the previous one with the Phillips curve, even though the source of benefit from unexpected inflation is different. There is an analogous discretionary equilibrium with high inflation, but with no tendency for unexpected inflation to be positive or negative.[4]

In the example of the Phillips curve, the incentive to create surprise inflation hinges on the desire to expand economic activity. But this incentive depends in turn on some distortions that make the natural rate of output too low. The disincentive effects from income taxes and transfer programs are possible sources of these distortions.[5] Similarly, in the example where the government values surprise inflation as a lump-sum tax, there must be an underlying environment in which alternative taxes are distorting. Thus, in both cases, the existence of initial distortions underlies the prediction of high inflation. Calvo (1978) discusses the general role of existing distortions in these types of models. Notably, the bad outcomes under discretion depend on the presence of these distortions.

Barro and Gordon (1983b) view the discretionary equilibrium as a positive theory of monetary policy and inflation under present-day monetary arrangements. Aside from predicting "high" average inflation and monetary growth, the model indicates the reactions to changes in the benefits from unexpected inflation or in the costs of actual inflation. For example, a rise in the natural rate of

unemployment can raise the benefits from lowering unemployment through surprise inflation. It follows that a secular rise in the natural unemployment rate will lead to a secular rise in the mean rates of monetary growth and inflation. Similarly, the policymaker would particularly value reductions of unemployment during recessions. The implication is that monetary growth will be counter-cyclical, although such a policy can end up with no effect on the amplitude of business cycles.

A higher stock of nominally-denominated public debt raises the benefits from capital levies via surprise inflation. Thus, the model implies that more public debt will lead to higher values of monetary growth, inflation and nominal interest rates (although not to higher unexpected inflation). In other words, the prediction is that deficits will be partly monetized. A similar analysis suggests that indexation of the public debt for inflation--which removes some of the benefits from surprise inflation--will lead to lower rates of inflation and monetary growth. Finally, a higher level of government spending tends to raise the benefits from lump-sum taxation (because the deadweight losses from other taxes would be higher). This change leads again to higher rates of inflation and monetary growth. That is, the endogenous response of monetary growth implies that government expenditures are inflationary.

The model assumes that actual inflation is costly, but does not explain the source of these costs. (Two frequently mentioned possiblities are the administrative expenses for changing prices and the transaction costs associated with economizing on cash holdings.) In any case, the positive analysis of monetary policy does imply that a downward shift in the costs of inflation will lead to more inflation. Thus, if people think that inflation is not a serious problem, then the economy will end up with a lot of inflation!

The analysis implies also that each flicker in the benefits from inflation surprises or in the costs of inflation will be reflected in variations in inflation. Hence, in contrast to an environment in which the government stabilizes prices, there will be substantial random fluctuations of inflation and monetary growth. Further, the variances of prices and money will be larger the greater the random fluctuations in the variables that influence the benefits from inflation shocks. For example, if there are frequent supply shocks (which alter the natural rate of output), then inflation and monetary growth will be volatile.

Monetary Rules

The results under discretion contrast with those under rules--that is, under regimes where the policymaker can and does make commitments about future monetary growth and inflation. Under discretion, the equilibrium involved high inflation, but no tendency toward surprisingly high inflation. Hence, the economy suffered the costs from high inflation, but secured none of the benefits from inflation surprises. Clearly, the policymaker can improve on this outcome by committing himself ex ante to low inflation. If this commitment is credible--that is, if it is adequately enforced--then people also anticipate low inflation. Therefore, the equilibrium would exhibit low and stable inflation,[6] with the same average amount of surprise inflation (zero) as before. These results support a form of "constant-growth-rate rule," although applied to prices rather than to the quantity of money, per se.

There is a tension in this type of rules equilibrium because the policymaker may retain the capacity to produce large social gains at any point in time by "cheating"--that is, by generating surprisingly high iflation. Then there may be a temporary economic boom or at least a substantial amount of government revenue

obtained via a distortion-free tax. But, if such cheating were feasible and desirable, then people would understand the situation beforehand. In this case the low-inflation equilibrium would not be tenable. (Sometimes people say that this equilibrium is "time inconsistent", although it is actually not an equilibrium at all.) Rather, there would be a high-inflation, discretionary equilibrium, as described earlier. That is why the enforcement power behind the low-inflation rule is crucial. There must be a mechanism for binding the policymaker's hands in advance, so that (surprisingly) high inflation cannot be chosen later, even if such an outcome looks good to everyone ex post. Note that the rationale for this "binding of hands" applies even though (or actually especially if) the policymaker is well-meaning. This type of commitment is necessary in order for low inflation to be credible and hence for the economy to achieve the equilibrium with low inflation.

Although the low-inflation, rules equilibrium is superior to the high-inflation, discretionary equilibrium, the rules equilibrium is still not "first best." The benefits from inflation surprises--for example, from lower unemployment or from the generation of distortion-free government revenue--reflect some external effects that have not been eliminated. In fact, it is the desire to approach the first-best solution via inflation surprises ex post that threatens the viability of the low-inflation equilibrium. The pursuit of the first best tends to push the economy away from the second best of a rule with low inflation, and toward the third best of discretionary policy with high inflation. Again, this perspective highlights the importance of the enforcement power that makes a rule sustainable.

More generally, the optimal rule may set prices contingent on exogenous events, rather than being non-contingent. For example, wartime can be

accompanied by high inflation, which constitutes surprisingly high inflation from the standpoint of earlier times at which the war was not anticipated. In an equilibrium, the counterpart must be surprisingly low inflation during peacetime. This type of contingent rule may be desirable because it generates lots of easy renenue via the capital levy from unexpected inflation during emergencies. In particular, it is possible to hold down distortions from the income tax at the most important times, such as wars.[7] Although the necessary accompaniment is a loss of revenue during the non-emergencies, the net effect of this contingent policy is likely to be beneficial.[8] Under the gold standard, governments did in fact tend to go off gold during wars. This procedure enables a government to pursue the type of contingent policy for inflation that I sketched above. In this sense the movement off gold during wars was not necessarily a violation of the "rules." However the subsequent return to gold at the previous parity was probably an important part of the enforcement process.

One difficulty with contigent rules is that they may be difficult to verify. In particular, it is easy to confuse contingencies with the type of cheating that I described earlier.[9] Further, the policymaker would be inclined to explain away high inflation as the consequence of some emergency, rather than as a failure to conform with the rules. Hence, these considerations favor a rule that is relatively simple, such as a constant-growth-rate rule for prices or money. In any case the contingencies should be limited to well-defined events, such as major wars. Although this limitation may miss some gains from contingent action, the greater ease of enforcement makes it less likely that the situation will degenerate into a high-inflation, discretionary equilibrium.

The Policymaker's Reputation

Barro and Gordon (1983a) examine some possibilities for substituting the policmaker's reputation for formal rules. In this setting people's expectations of future inflation depend on past performance. Hence, unlike the case of pure discretion, the policymaker's choice of today's inflation rate assigns some weight to the effect on future inflationary expectations. Such considerations motivate the policymaker to hold down the rates of inflation and monetary growth.

The example considered in Barro and Gordon (1983a) involves a reputational equilibrium in which the outcome for inflation is a weighted average of that under discretion and that under a constant-growth-rate rule. Notably, the higher the policymaker's discount rate, the greater the weight attached to the discretionary result. From a positive standpoint, the findings are qualitatively in line with those under discretion. The main difference is that the reactions of inflation to various shocks--such as shifts in the natural rate of unemployment or in the size of government--are now smaller in magnitude. Hence, the variances (as well as the means) of inflation and monetary growth are smaller than those under discretion.

One difficulty is the potential for multiple equilibria. There is a bootstrap character to the reputational equilibria, whereby if people base future beliefs on the policymaker's actions in some fashion, then the policymaker may be motivated (in a range of cases) to validate these beliefs. Hence, various equilibria conform with rational expectations as well as with period-by-period optimization by the policymaker. Although one of the reputational equilibria tends to generate the best results overall, it is unclear how the economy (perhaps guided by the policymaker) would settle on this solution.

A unique reputational equilibrium may obtain in cases where past performance conveys information about the policymaker's own preferences (as in the model of Backus and Driffill (1984), who build on the work of Kreps and Wilson (1982)). However, this analysis relies on differences in personal characteristics of potential policymakers, which probably leaves little scope for systematic theoretical analysis.

On the one hand, it seems that the equilibria supported by reputation are uncertain approximations to the outcomes delivered by formal rules when supported by appropriate enforcement mechanisms. But, on the other hand, it appears that reputation, rather than a formal rule, prevails in many areas of public policy. Possibly the costs of establishing and enforcing formal rules are often too great to ignore.

Types of Monetary Rules

In this section I assume that the choice is amoung types of monetary rules, rather than between rules or no rules (that is, rules versus discretion). The choices are often divided between quantity rules and price rules. In the former category the policymaker aims for a target path of a monetary aggregate, such as the monetary base, or M1, or a still broader concept of money. Friedman's (1960, Chapter 4) proposal for a constant-growth-rate rule for M2 falls into this class. From October 1979 until late 1982, the Fed claimed to be following a policy of this general type, which was framed in terms of monetary targets. But it is hard to see from the data that the growth of monetary aggregates became notably more stable, say from quarter to quarter. (On the other hand, interest rates did show unprecedented volatility, which many people think related to the Fed's new policy.)

Under a price rule the monetary authority uses its direct instruments--which might be open-market operations, the discount rate, a pegged exchange rate, or a set price of gold--in order to achieve a desired path for some target price. The target might be a general index of prices, the prices of specified commodities, an interest rate, or the exchange rate itself. Examples of price rules are the gold standard, other commodity standards, a regime with a fixed exchange rate, and Irving Fisher's (1920) "stable-money" proposal for varying the price of gold in order to stabilize the overall cost of living. A policy of pegging a nominal interest rate is also a price rule, but an incomplete one. Namely, this type of rule requires some additional specifications in order to pin down the levels of prices and other nominal variables (see, for example, Sargent and Wallace, 1975, and McCallum, 1984). Therfore, an interest-rate rule is not really a substitute for a rule that specifies the quantity of some monetary aggregate or the level of some price.

Generally, people are concerned with a variety of current and future prices, rather than with the quantities of monetary aggregates, per se. For example, people care about the mean and variance of inflation and nominal interest rates, but not particularly about how much M1 is outstanding. Hence, the case for a quantity rule must rely on ease of implementation and verification.[10] Even this argument is compromised by the monetary authority's tendency to shift from one target aggregate to another as it finds convenient on other grounds (see Hetzel, 1984). Such a regime involves feedback from unspecified ultimate targets to money, rather than actually being a quantity (of money) rule.

Similarly, the reason for focusing on a narrow band of prices, such as gold or an exchange rate, is that such regimes are relatively easy to operate and monitor. Otherwise, it would be preferable to stabilize a broad index of prices,

possibly using the price of gold (as in Fisher) or some other price instrument in order to attain the desired behavior of prices in general.

At the risk of engaging in normative economics (see below), I would advocate a modified Fisherian regime in which open-market operations (rather than the price of gold) were used in order to achieve a target path of a general price index, such as the deflator for the GNP.[11] This type of regime involves a form of feedback, whereby a price level above target triggers lower growth of the monetary base, and vice versa for a price level below target. The objective might involve a moving path of prices, which allows for nonzero inflation. However, the ease of monitoring the system (and prevention of "once-and-for-all" discretionary adjustments to the level of prices) argues for specifying the target as a constant price level. This setup would also produce the most convenient monetary unit--namely one that maintains a nearly constant purchasing power.[12] However, the government's seigniorage is severely limited in this context. Finally, it would be possible to permit deviations from the target price level during major wars. This kind of provision parallels the tendency under previous monetary regimes for governments to depart from gold in wartime.

A credible rule of this type works to stabilize prices even if there are lags in observations of price indices or in the effects of (exogenous changes in) money on the price level. In particular, if prices rise above target, then people know that future monetary actions will bring prices back down to target. This expectation of deflation raises the current real demand for money, which lowers today's price level. In other words, there is a form of stabilizing speculation that improves the functioning of the system. (The Swiss may have been relatively successful in controlling inflation for these reasons and not because of a constant-growth-rate rule for money--see Grossman, 1984).

Overall, the proposed rule would generate a near zero mean inflation rate and a small forecast variance of future price levels. In such a regime the prices of individual commodities would be accurate guides for the allocation of resources. Hence, as in Hayek (1945), monetary policy provides for a stable economic background that enhances the flow of information and thereby promotes efficiency.

Recently some people have suggested that monetary policy aim at stabilizing nominal GNP, rather than the general price level (see, for example, Hall, 1980, and Taylor, 1984). Since nominal GNP is the product of real GNP and the GNP deflator, this rule prescribes inverse feedback of money to two things: first, excesses of real GNP over target, and second, excesses of the deflator over target. By contrast, the price-stabilization rule dictates feedback only to the second item--given the price level, fluctuations in real GNP do not induce any reactions of monetary instruments.

In order to evaluate proposals for stabilizing nominal GNP, it is necessary to ask why feedback from real GNP to money is desirable. In particular, this reaction must mean that the monetary authority does less good a job of stabilizing the overall price level. That is, there are occasions when the policymaker accepts greater departures of the price level from target in order to effect the desired response of money to fluctuations in output. But then there must be some gain from these monetary reactions to output that justifies the accompanying increase in fluctuations of the general price level.

In many theories associated with the "new classical macroeconomics," such as Sargent and Wallace (1975), the regular reaction of money to real activity does not smooth out the business cycle.[13] Since people know that recessions inspire monetary accelerations, there are no systematic surprises. Then, if only the

surprise movements in money matter for real variables, there would be no implications for the business cycle. It follows that it would be preferable to limit monetary policy to the objective of stabilizing the general price level. Any broadening of this objective threatens people's accurate perceptions of prices (which has adverse real effects), but provides no offsetting benefits.

On the other hand, Keynesian theories with sticky prices suggest that regular feedback from output to money can (usefully) smooth out fluctuations in real economic activity. Hence, although it means an increase in the volatility of prices, it is nevertheless worthwhile for money to react systematically to variations in real GNP.

In effect, the proposal to stabilize nominal GNP is an attempt to unite the principal warring factions of macroeconomists. The new classicists are supposed to be happy because monetary policy is governed by a rule, and that rule does entail stabilization of some nominal magnitude. Then the feedback response of money to real GNP is to be regarded as a minor nuisance, most of which the private sector can hopefully filter out.

Keynesians are supposed to be happy with the scheme because it allows for an active response of money to recessions and booms. Presumably most Keynesians would also accept the feedback from prices to money, although they many not opt for the equal weighting attached to fluctuations in real GNP vesus fluctuations in the general price level. Apparently, the main thing that Keynesians have to give up is their "commitment" to discretionary monetary policy, which seems little to ask.

The choice between the two objectives--stabilizing the general price level versus stabliizing nominal GNP--corresponds to the weights one attaches to the validity of the two competing viewpoints about macroeconomics. (Surely one of

validity of the two competing viewpoints about macroeconomics. (Surely one of these views must be correct!) Notably, if one attaches little weight to Keynesian theories with sticky prices, then the policymaker's preferred objective would be stabilization of the general price level.

Positive versus Normative Theories of Government Policy

I have been vague in this paper about whether I am engaging in positive or normative econoomics (which doubtless reflects my uncertainties, rather than a desire to conceal truth). In Barro and Gordon (1983a) we intended to carry out a positive analysis of monetary policy, given that the existing institutions dictated an environment of discretion. That is, the policymaker could not opt for a rule, under which there would be meaningful commitments about future money and prices. Then, given these institutional constraints, we analyzed the day-to-day operating characteristics of the monetary authority. In particular, it did not seem that the advice of economists would be especially relevant at this level.

Gordon and I also contrasted the results under discretion with those generated under rules--that is, under an alternative institution where the policymaker could and did make some commitments about future money and prices. In order for this comparison between discretion and rules to be interesting, it must be that both setups are feasible under some circumstances. That is, there must at some level be a choice of whether (at a cost) to erect institutions that do or do not permit commitments about future money and prices. But this choice should be as much subject to positive analysis as are those about day-to-day operations under a given institutional mode. Further, if an economist labels the actual institutional selection as inferior to the non-chosen option, then what

does that labeling mean? Possibly the economist has unearthed new knowledge, but other possibiities are more likely. Although Buchanan and Tullock (1962) and Buchanan (1962) argue the opposite, it is unclear why the advice of economists is more pertinent at the level of institutional choice than it is at the level of day-to-day operations.

I suppose the answer is that economists' advice does have some role, but one that is measured in the same way as the contribution of other factors of production. Namely, economists' market wages--rather than claims to save the economy billions of dollars through policy advice--tell us something about the group's productivity. Although the wages of economists are fairly high, they still represent a negligible proportion of the GNP.[14]

Footnotes

[1]See, for example, Friedman (1960, Chapter 4).

[2]For a discussion of the abrogation of gold clauses in public and private contracts, see Yeager (1966, p. 305). Additional discussions are in Nussbaum (1950, pp. 283-91) and McCulloch (1980).

[3]The analysis can be extended to incorporate the standard inflation tax or other real effects from anticipated inflation. Then the best rate of inflation need not be zero.

[4]See Barro (1983) for an elaboration of this model.

[5]These taxes and transfers may themselves be warranted as necessary counterparts of (valuable) government expenditures. Hence, there is no implication that the government is failing to optimize on the fiscal side.

[6]More generally, one can choose the average inflation rate that is optimal from the standpoint of the usual inflation tax.

[7]The government's ability to run deficits lessens this incentive, but does not eliminate it. Contingent on a bad draw, such as a war, it tends to be desirable to trigger the distortion-free capital levy.

[8]Such an outcome obtains in the model of Lucas and Stokey (1983). They consider a form of contingent public debt, which ends up paying off well during peacetime and badly in wartime. If government bonds are nominally denominated and non-contingent (for reasons that escape me), the contingent behavior of inflation achieves the same end.

[9]Fischer (1980) argues that governments may find it advantageous to preserve some possibilities for cheating, rather than committing themselves fully not to cheat (even if such commitments were feasible). One interpretation of Fischer is that contingent rules are preferred to noncontingent ones, as in the previous example where governments inflate during wars or other national emergencies. A second possible interpretation is that randomization of policy may sometimes be useful. Randomized policies were non-optimal in the models of monetary policy that I have considered (Barro and Gordon, 1983a), but Weiss (1976) offers an example in which a randomized income tax would be desirable. However, Skinner (1984) argues empirically that randomization of the income tax is, in fact, harmful on net.

[10]I do not mean to argue that a constant-growth-rate rule for money, if implemented say 30 years ago, would have been inferior to actual monetary policy. A quantity rule is likely to be better than discretion. Also, the difference between a quantity rule, say for M1, and a rule for stabilizing the general level of prices derives from movements in the real demand for M1. But shifts in this demand--especially the changes in velocity that are induced by shifting nominal interest rates—would probably have been mild if the monetary authority had adhered for a long time to a constant-growth-rate rule. However,

10, continued

when starting from a state of high and volatile nominal interest rates, there are serious problems in the implementation of a quantity rule. Namely, there is the possibility of severe deflation during the transition to lower inflation, since real cash balances must rise dramatically. The advantage of a price rule is that it allows for large infusions of nominal money during the transition. Further, since this monetary expansion arises only in response to the actual behavior of prices, there is no threat to the credibility of the system.

[11]Simons (1936), who was concerned mostly with the superiority of rules over authorities, also favored a price rule rather than a quantity rule.

[12]See Hall (1982) for a related discussion.

[13]This conclusion also obtains in purely real theories of business cycles. In other models monetary activism can affect the character of the business cycle, but not in a desirable manner. In these cases it follows immediately that feedback from output to money should be avoided.

[14]Perhaps economists are like the water of the water-diamond paradox. If there were only a few economists, then their overall wage income might be enormous. But economists are in such abundant supply (being cheap to produce) that their wage rate is driven down to a meagre level.

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