INTRODUCTION

MONEY, MACROECONOMICS, AND FORECASTING

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> We suffer neither under total ignorance nor do we enjoy full knowledge. Our life moves in a grey zone of partial knowledge and partial ignorance. Most particularly, the products emerging from our professional work reveal a wide range of diffuse uncertainty about the detailed response structure of the economy. . . . A nonactivist regime emerges under the circumstances . . . as the safest strategy. It does not assure us that economic fluctuations will be avoided. But it will assure us that monetary policymaking does not impose additional uncertainties . . . on the market place.
>
> —Karl Brunner[1]

Some Unsettled Questions

Monetary stability is crucial to economic stability. The smooth coordination of economic activity depends on freely determined market prices and stable money. Erratic variations in the value of money disrupt the market price system by distorting the signaling/information function of relative prices. Individual plans about investment, employment, production, and consumption, in turn, are affected by monetary disequilibrium.

The question arises, therefore, of how monetary equilibrium can best be achieved—by discretionary central banking, by nondiscretionary central banking, or by free banking and currency competition? What are the information and forecasting requirements under alternative monetary regimes? Should we pursue the holy grail of better forecasting or search for better rules?

This issue of the *Cato Journal* discusses those and other questions that bear on the role of money and monetary policy in a free society. In addition, the papers and comments in this issue reassess the

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[1]Brunner (1980, p. 61).

fundamental changes that have occurred in macroeconomics, examine the record of macroeconomic forecasting, and consider the case for forecast-free monetary institutions.[2]

Monetary Disequilibrium and Monetary Policy

Erratic changes in the quantity of money are the predominant cause of business fluctuations (Warburton [1950] 1966, chap. 1). An excess supply of money, in a world with ragged market-price adjustments, leads to an overheated economy and inflation. Actual shrinkage of the money supply or insufficient money growth, in a world of sticky prices, leads to a business downturn and deflation or disinflation. Monetary surprises affect real economic variables in the short run. However, once individuals adjust to the new quantity of money and nominal values are indexed, changes in the quantity of money will chiefly affect the long-run value of money and have little or no affect on real values or on output and employment. As Kevin Hoover (1992, p. 84) writes, "Only the pathologies of money. . .matter."[3]

The primary task of monetary policy is to maintain a stable growth of money and nominal income consistent with long-run price stability so that markets will not be disrupted by monetary disequilibrium. The history of central banking, however, reveals a failure to maintain monetary equilibrium (see Parkin and Bade 1978). Our current government fiat money regime is fully discretionary: central bankers pursue multiple targets and face no binding rule to constrain money growth to achieve either stable nominal-income growth or a stable price level. As such, the future value of money is uncertain, and "uncertainty emerges as a crucial property of this policy regime" (Brunner 1985, p. 4).

In a discretionary monetary regime, there is greater reliance on macroeconomic forecasting than in a nondiscretionary or rules-based regime. In a private free-banking system, there would be no need for centralized macro-forecasting to guide monetary policy, because there would be no central bank and no monetary policy. Thus, macro-forecasting requirements vary with the type of monetary regime—declining as one moves from government-driven to market-driven monetary regimes.

[2]The papers and comments in this issue of the *Cato Journal* were first presented at the Cato Institute's Ninth Annual Monetary Conference—"Money, Macroeconomics, and Forecasting"—which was held February 21–22, 1991, in Washington, D.C. The conference was supported, in part, by grants from The George Edward Durell Foundation and Ellis L. Phillips, Jr.

[3]For a summary discussion of monetary disequilibrium theory, see Yeager (1986, pp. 369-78).

The following sections discuss: (1) the state of macroeconomic forecasting, (2) the question of whether monetary stability is more likely to be achieved by improved forecasting or better rules within the framework of central banking and government fiat money, and (3) the implications for monetary stability of moving toward a forecast-free monetary regime without a central monetary authority.

The Dismal State of Macro-Forecasting

The implicit assumption and "fatal conceit" underlying central banking and a government-driven, discretionary fiat money regime is that it is possible to devise macro-forecasting models that are structurally sound and produce forecasts that policymakers can use to fine-tune the economy.[4] According to Martin Feldstein, former chairman of the president's Council of Economic Advisers, "One of the great mistakes of the past 30 years of economic policy has been an excessive belief in the ability to forecast."[5]

The impossibility of knowing the structure of the economy, the difficulty of aggregating economic data and measuring macroeconomic variables, and the fact that every change in policy changes expectations and necessitates a new set of structural parameters and a new macroeconomic model—the so-called Lucas critique[6]—put severe limits on the use of macro-forecasting to guide monetary policy.

The dismal record of macro-forecasting stems from the above-mentioned problems and reveals that macro-forecasting is more an art than a science (see McCloskey 1992). Practitioners of this art have been unable to forecast either short-run swings in real GNP or long-run changes in the price level. As Victor Zarnowitz (1992, p. 158) notes, "The main defects of macro-forecasts from the point of view of policy are the errors of missing cyclical turns and shifts in the average rates of inflation."

Michael Bryan and William Gavin (1991) use the fact that "near-term real GNP forecasts are unlikely to show whether the economy will be strong or weak" to argue that "forecast errors are still too large to justify basing monetary policy on the near-term real GNP outlook alone." They also point to "the fact that inflation has not followed a predictable trend" and suggest that "the FOMC [Federal

[4]On the "fatal conceit" as applied to the government's monopoly of money, see Hayek (1989, pp. 101-4). And on the "fatal conceit" as applied to macroeconomic policy, see Jordan (1992).

[5]Cited in Greenwald (1984, p. 32).

[6]For Robert Lucas's critique of macro-forecasting, see Lucas (1972, 1976).

Open Market Committee] has often judged that the need to stimulate the real economy in the near term has outweighed the benefits of a stable inflation rate." Indeed, the Federal Reserve has not limited itself to the pursuit of long-run price stability. Instead, the Fed has used its discretion, subject to the prevailing political climate, to select from a broad menu of policy objectives—such as promoting full employment, lowering interest rates, and stabilizing exchange rates—to try to fine-tune the real economy.

Macro-forecasting models of inflation perform about equally well; none are very accurate. In a study for the Federal Reserve Bank of Minneapolis, Lawrence Christiano (1989, p. 3) found that even the new P-Star (P*) model is "not the inflation forecaster's holy grail." The forecast record for the P* model does not differ significantly from the T-bill model and other macro-models.

The poor performance of macro-forecasting calls for a reassessment of the conduct of monetary policy. The Fed basically has two choices: (1) it can continue on its discretionary path and hope to find the holy grail—an accurate macro-forecasting model that provides policymakers with a reliable tool for hitting their selected targets[7]—or (2) it can abandon its attempt to fine-tune the economy—and therefore its activism—and adopt a nondiscretionary rule to guide monetary policy.

The question is: Can macro-forecasting be sufficiently improved to allow the Fed to operate in a discretionary regime or is a better strategy to bind central bankers by a nondiscretionary rule aimed at achieving stable money? Should we aim at better forecasting models within a discretionary regime or work toward improved policy rules?

Better Forecasts or Better Rules?

If the Fed cannot accurately forecast inflation and nominal GNP growth, it cannot hope to achieve its desired target range for both money growth and the federal funds rate (Baird 1981, pp. 250–52). When political pressure pushes the Fed toward lowering interest rates, the Fed will lose control of the money supply—inflation will accelerate and nominal interest rates will rise.

The Fed's macro-forecasting and policymaking may be improved by using "forward-looking market price indicators" such as commodity prices, short-term nominal interest rates, and exchange rates (Angell 1992). However, as Bruce Kovner (1992, p. 195) cautions,

[7]*The Economist* (1989, p. 65) portrayed this challenge by noting, "Economists have long been searching for the holy grail—an accurate thermometer with which to forecast inflation."

"market expectations can simply be wrong," and "forward prices" may not reflect "the market's 'true' expectations." So while private entrepreneurs may look to supply-side models to forecast the future path of the economy (see Ranson 1992), and policymakers may look to commodity prices and other market price indicators to judge the effectiveness of monetary policy (see Angell 1992), there is no surefire way to elevate macro-forecasting to a science.

The Limits of Macro-Forecasting

Better computers and large-scale macro-models have not much improved the art of forecasting. And we should not expect any quantum jump in macro-forecasting accuracy in the future. Rational expectations cannot easily be built into macro-models, so new models become suspect as soon as they are constructed (see *The Economist* 1990, p. 91). The complexity of the economic system, the uncertainty of the exact links among economic variables, and the difficulty of modeling the process by which monetary disturbances affect real and nominal variables narrowly limit the role of macro-forecasting in determining the future state of the economy and in guiding activist monetary policy.

Forecast errors and "an uncertain and probably variable lag between policy action and its impact on the economy . . . make it impossible to be certain that policy based on near-term forecasts will not aggravate the business cycle" (Bryan and Gavin 1991). Moreover, as W. Lee Hoskins (1992, p. 50) argues, "The key to effective policy is not the accuracy of economic forecasts but rather the credibility and predictability of policy actions." That is why Allan Meltzer—who calls macro-forecasting "a weak foundation for policy actions" (Meltzer 1991, p. 31)—and other monetarists have opposed policy activism and recommended a rules-based monetary regime.

The Case for Better Rules

Activist monetary policy has increased uncertainty by making it more difficult to predict the trend in the price level. Moving toward nondiscretionary monetary rules would increase the accuracy of private macro-forecasts and allow the self-regulating market system to function more efficiently.[8] The challenge is to compare alternative monetary rules to discover the rule that would best stabilize the monetary system and allow markets to operate smoothly.

Three commonly proposed rules are (1) a price-level rule, (2) a money-growth rule, and (3) a nominal GNP rule. The first rule would

[8]On the case for a nonactivist monetary regime, see Friedman (1953) and Brunner (1980, 1985).

target a broad price index to achieve long-run price-level stability; the second rule would target one of the monetary aggregates to stabilize the growth of money and avoid monetary disequilibrium; and the third rule would use the monetary base as an instrumental variable to target nominal GNP so that it grows at a rate consistent with full employment and, perhaps, price stability.[9]

Those who favor a price-level rule argue that since the Fed can only affect nominal variables in the long run, the objective of monetary policy should be to stabilize the price level over time by controlling the monetary base. W. Lee Hoskins (1992, p. 49), for example, favors "a target path for a general price index." He argues, "The Fed cannot eliminate the business cycle; the best it can do is minimize the instability coming from monetary policy by stabilizing the price level." In his opinion, Rep. Stephen Neal's proposal for "zero inflation" (Neal 1992), which would aim at an anticipated inflation rate of zero, would improve the monetary order by abandoning the types of ad hoc "rules" that now prevail, such as targeting the federal funds rate or allowing sharp swings in the monetary base to accommodate political pressures to fine-tune the real economy.

Proponents of a money-growth rule argue that constant growth of a selected monetary aggregate would be a simple rule that would produce long-run price stability. If the Fed had to precommit to a money-growth rule, policymakers could no longer engage in stop/go monetary policy. Monetary uncertainty would be reduced, and the more predictable path of money growth would help the Fed avoid the errors of monetary excess and monetary deficiency that have characterized past Fed behavior. This line of argument assumes, of course, that the long-run velocity of money is stable, so that the changes in money growth translate into predictable changes in nominal GNP and the price level. Milton Friedman, who has long advocated a constant money-growth rule, now believes a zero-growth rule for the monetary base would be the best rule (Friedman 1987).

Those who favor a nominal GNP rule contend that targeting nominal GNP or final demand by an adaptive monetary rule, such as that proposed by Bennett McCallum (1984, 1989), would be superior to either a price-level rule or a constant money-growth rule. Targeting nominal GNP or domestic final sales (DFS) would avoid the problem of adverse supply shocks that increase the variability of output under

[9]A nominal GNP rule, which sets a target path for aggregate demand, "is consistent with any desired price-level path, including a stable price level" (Niskanen 1992, p. 283).

a price-level rule.[10] A nominal GNP or DFS rule would also avoid the problem of unexpected changes in the demand for money that weaken the link between money and prices and decrease the effectiveness of a constant money-growth rule (see Niskanen 1992).

Although a nominal GNP rule is consistent with any path for the price level, McCallum's adaptive rule would provide for a steady 3 percent growth of nominal income and long-run price stability. Changes in the demand for money would be accommodated by changes in the growth of the monetary base, which also would be adjusted for deviations in the growth of nominal income from its predetermined target path.[11] Thus, although McCallum's nominal income rule would be nondiscretionary, it would be "weakly activist" (McCallum 1989, p. 341) and contingent on the state of the economy (Bradley and Jansen 1989).

The theoretical superiority of the nominal GNP rule could disappear under alternative assumptions, and practical problems could undermine its implementation compared to a *noncontingent* monetary rule, such as Friedman's constant money-growth rule. As Bradley and Jansen (1989, p. 40) point out, changes in the assumptions about the labor market can make a price-level rule theoretically superior to a nominal GNP rule, and "ignorance of the correct equations, parameter values and lag structure that characterize the U.S. economy reduces the appeal of nominal GNP targeting."

It is important to recognize that although adaptive feedback rules like McCallum's are forecast-invariant—in the sense that adjustments are automatic and do not depend on "episodic forecasting"—there is still the need to predict the rule's "operating properties" and to make "a forecast about the economic environment and its interaction with features of the proposed institution" (Yeager 1992, p. 64).[12]

It should be emphasized that all of the above rules, with the exception of Friedman's zero-growth rule for the monetary base, would be engineered by a central bank operating within a government fiat

[10]William Haraf (1986) and Niskanen (1992) advocate adopting an adaptive monetary rule to target domestic final sales.

[11]Allan Meltzer (1989, p. 426) offers a similar adaptive monetary rule that would "keep the anticipated price level constant." He argues that such a rule "would do a substantially better job of stabilizing the economy and avoiding inflation than policies based on short-term forecasts" (Meltzer 1991, p. 32).

[12]McCallum, for example, must make an assumption about "the speed with which deviations of nominal GNP from target are corrected." If the adjustment speed is overstated, the adaptive rule may lead to "dynamic instability" (Bradley and Jansen 1989, p. 38).

money regime.[13] At a more fundamental level, therefore, the choice is between government-driven monetary institutions, which depend on macro-forecasting, and market-driven monetary regimes, which are forecast-free (see Yeager 1992).

Toward a Forecast-Free Monetary Regime

Nondiscretionary monetary rules, operating within a government fiat money regime, would undoubtedly improve the conduct of monetary policy and reduce the need for macro-forecasting relative to a government fiat money regime with a discretionary central bank. However, further movement to a *nongovernment* monetary regime would eliminate monetary policy, central bank discretion, and centralized macro-forecasting. Private, market-based forecasting would still exist and there would be "macroeconomic entrepreneurs," but there would be no requirement for the type of macro-models now in existence (see Yeager 1992, pp. 70–71).

In contemplating the move toward a forecast-free monetary regime, Leland Yeager (1992) favors a stable price-level regime rather than a stable money-income regime. His proposal for a laissez-faire payments system—formulated with Robert Greenfield (Greenfield and Yeager 1983, Yeager and Greenfield 1989)—would provide for the following: (1) an independent unit of account "defined by a comprehensive bundle of goods and services," so that the value of the unit would not be determined by the demand for and supply of money; and (2) a competitively determined supply of money that would respond to the demand for money at the unchanged price level, because market competition would force private money producers to keep the value of their money stable in terms of the independently defined unit of account (Yeager 1992, pp. 70–71).

Since there would be no high-powered money in the Yeager-Greenfield scheme, there would be no "problem of injection effects" and no "need for central forecasting" (Yeager 1992, p. 70). Monetary equilibrium would prevail and "any forecasting functions that did remain would be healthily decentralized under free banking" (p. 71). Hence, for Yeager, "privatization of money" is "an attractive route toward forecast-free monetary institutions."

George Selgin (1992) also favors a nongovernment monetary regime, but he prefers a "productivity norm" or "stable money-income regime," which he thinks will have even lower private-forecasting requirements than the Yeager-Greenfield stable

[13]Friedman (1987, p. 377) would allow free banking and parallel private currencies to compete with the fixed supply of government fiat money.

price-level regime. In addition, his final demand rule would avoid the problem of adverse supply shocks associated with a price-level rule.

In Selgin's free-banking system, there is no need for private bankers to forecast movements in future commodity prices, as in the Yeager-Greenfield scheme, because no commodity price index is being held constant. Rather, "stability of income" would occur "automatically as an unintended consequence of . . . free bankers' profit-maximizing behavior" (Selgin 1992, p. 80).[14]

The tendency toward monetary equilibrium under Selgin's free-banking scheme is attractive, as is the independently defined unit of account and monetary equilibrium under the Yeager-Greenfield proposal for a laissez-faire payments system. But neither of these nondiscretionary, essentially forecast-free monetary regimes has seen the light of day; they are theoretical constructs yet to be tested in the marketplace. Nevertheless, historical episodes of free banking in Scotland, the United States (especially the Suffolk system in New England), and Canada indicate that a free-banking system is not inherently unstable.[15]

In contrast, the experience with central banking indicates that monetary disequilibrium has been the rule more than the exception. And there has been little movement in the direction of nondiscretionary central banking. Any connection to gold has long been abandoned, so that today's government money is a pure fiat currency.

Making the Federal Reserve subject to a monetary rule, such as McCallum's adaptive monetary-base rule or a constant money-growth rule, would help discipline the money-supply process, but there would still be no independently defined unit of account. The Fed would continue to exercise some discretion, because, as Yeager (1992, pp. 69–70) writes, "the unit is nothing more definite than a unit of government fiat money managed, one hopes, in some satisfactory way."

Yeager (1992, pp. 70–71) criticizes Selgin's stable money-income regime by asking, "How would you define the unit of account?" For Yeager, "Persons who reject a unit of stable purchasing power and

[14]Other requirements for a free-banking system to "automatically tend to stabilize nominal income" include the following: (1) high-powered money, so-called outside money, must be frozen or grow at a slow rate; and (2) bank money—notes and deposit liabilities, so-called inside money—must be used as the sole payments medium, except for bank clearings (Selgin 1992, pp. 78–79; also Selgin 1988, chap. 5).

[15]For representative studies of the experience with free banking, see White (1989, p. 369, n. 3). On the question of stability, see Rockoff (1974), Rolnick and Weber (1986), and White (1986).

dream up cases in which change in the price level would be preferable should have their noses rubbed in that question."

No monetary system is perfect, including free banking.[16] It is an illusion to think that a money of perfectly stable value is possible; it may not even be desirable—for example, a gently falling price level would increase the real value of money and, if expected, would not disrupt market exchange or interfere with individual planning. (Downward price rigidity, however, is an argument in favor of long-run price stability.) A well-defined unit of account, meanwhile, is both possible and desirable. The objective should be to search for a monetary regime that (1) reflects freedom of choice, (2) provides self-regulating market forces to discipline the money-supply process, and (3) allows changes in the quantity of money to respond to changes in the demand for money without disrupting economic life.

The classical gold standard had a well-defined unit of account and operated to provide long-run price stability, but that system did not prevent monetary disequilibrium, and convertibility was suspended whenever politically expedient. A broad-based commodity regime would improve on the gold standard, as would a nondiscretionary monetary rule that was effectively enforced. The problem is that one has little confidence in the enforcers and even less in central bankers who have an incentive to increase their power and prestige by reverting to discretion. That is why F. A. Hayek (1976, 1978) came to the conclusion that the only way to get sound money would be to abolish the government's monopoly of money and make the transition to a system of competing private currencies—a monetary order that would be forecast-free and discretion-free.

Conclusion

Under central banking and discretionary monetary policy, the information requirements for monetary stability are impossible to meet, and there is little incentive for central bankers to subject themselves to binding monetary rules (see Brunner 1985, esp. pp. 20–21). Better macro-forecasting is unlikely to evolve or to solve the information problem, and the incentive problem would remain. A move to nondiscretionary monetary rules—such as a "zero inflation" rule, a constant money-growth rule, or a nominal GNP rule—would improve monetary policy, but such schemes would retain an arbitrarily defined unit of account in the form of government fiat money. Only a move from a government to a nongovernment monetary regime

[16]For a discussion of the shortcomings of free banking, see Selgin (1988, p. 174).

would anchor the real value of money to market forces, provide a tendency toward monetary equilibrium, and eliminate the need for macro-forecasting and government-driven monetary policy.

Much work remains to be done in evaluating alternative monetary regimes. Recent work by McCallum (1988, 1989, 1990) has shown that his adaptive monetary rule is robust when tested against alternative monetary rules, and is more robust than a stable price-level rule. But his simulations do not capture the practical problems with implementing alternative monetary rules, and he has no way of testing the robustness of free-banking systems.

Since McCallum is uncertain how to specify a quantitative model for testing the robustness of free-banking schemes and since he does not think such schemes are politically feasible at present, he offers his stable nominal-income scheme as a "modest strategy" to improve on the current fiat money regime. Nevertheless, he emphasizes that it is important to consider more radical reforms such as those envisioned by proponents of free banking, because "they stimulate us—indeed, force us—to think about some critical issues in monetary theory that tend to be neglected in more mundane discussions" (McCallum 1989, pp. 343–44).

The fact that it is not possible "to formulate a relevant quantitative model" for free-market monetary regimes, such as the Yeager-Greenfield proposal, "or to estimate the associated shock variances" (as pointed out by McCallum 1989, p. 343), may be a red herring. The possibility of modeling a monetary regime may be less important than the consistency of the regime with the self-regulating forces of the market and with individual freedom, and the likelihood that the free-market monetary order will tend to bring about monetary equilibrium. The market's feedback mechanism of profit and loss, which would discipline private money producers, and the depoliticization of monetary institutions, which would occur if free-market money replaced central banking, are important institutional considerations in selecting alternative monetary regimes—whether or not they can be "modeled."

Unlike central banking, a free-banking system would evolve spontaneously in response to new technology and changes in consumers' preferences. Although the exact nature of institutional innovation within a free-banking system is unpredictable, one can predict the system's operating principles and its plausible outcomes.[17] If the

[17]For a discussion of the types of monetary institutions that might evolve in a free-market environment and for references to the relevant literature on free-market monetary institutions, see White (1989).

key feature of free banking is that "economic forces reward bankers who make decisions consistent with the maintenance of monetary equilibrium (and minimization of costs) and punish bankers who make decisions inconsistent with these goals," then "the consequences of free banking are predictable" (Selgin 1988, pp. 174–75; cf. Hayek 1987, p. 383).

Thus, although it may not be possible to formulate a quantitative model for a free-market monetary regime, one can derive some implications about the behavioral changes that could be expected in moving from government fiat money to nongovernment money. As Selgin (1988, p. 175) notes,

> The environment it [free banking] produces is favorable to entrepreneurial decision-making and to the undertaking of ventures expected to yield their fruits through long periods. Nothing of the sort can be said of regulated, centralized systems of money supply. This is true not only because those in charge of a centralized system cannot have the information necessary for stability . . . but also because stability is simply not in the interest of those in charge.

The upheaval in macroeconomics in the past several decades, the dismal record of macro-forecasting, and the failure of discretionary monetary policy to achieve long-run price stability provide a challenge and an opportunity to explore alternative monetary regimes and to move toward forecast-free monetary institutions. It is important to consider the implications of making the transition from a centrally planned monetary order to a free-market monetary order—even if free banking and competing private currencies may not yet be politically feasible—because we gain a better understanding of the probable consequences of alternative monetary regimes.

A move toward a nondiscretionary monetary rule, which is largely independent of the macro-forecasting requirements of the present discretionary regime, should be considered as a serious alternative. Friedman's proposal for freezing the monetary base and allowing parallel competing private currencies, for example, would open the door for further evolution of the monetary system. Without such an evolution, we will be stuck with the status quo of central banking and government fiat money. And without the freedom of choice in currency, we will lose the opportunity of having good private money drive out depreciating government money.[18] Indeed, both theory and experience seem to support Hayek's contention that "if we ever

[18]On the process by which good money (money of stable value) would drive out bad money under free banking and flexible exchange rates, see Hayek (1978, pp. 39, 118); also Hayek (1987, p. 387). And on the benefits of "choice in currency," see Hayek (1976, pp. 19-22).

again are going to have sound money, it will not come from government; it will be issued by private enterprise" (Hayek 1987, p. 383).

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