From a Random-Walk Monetary Standard to a Monetary Constitution

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She tells them of Evil and Sin, and other unpleasant facts,
They constantly try to escape
From the darkness outside and within
By dreaming of systems so perfect that no one will need to be good.
—T. S. Eliot

A Random-Walk Monetary Standard

What is meant by a "random-walk monetary standard?" Does it mean that monetary policy is a random choice? Or that the central bank acts randomly? Of course not. Certainly it does not imply that the Federal Open Market Committee (FOMC), when it meets every month for policy decisions, randomly chooses a policy. Neither monetary policy nor the monetary action by the Federal Reserve is random in that sense.

I believe that when the FOMC meets, it examines thoughtfully *and thoroughly the economic outlook and the current problems; then* it acts in a careful and responsible way. Unfortunately, the FOMC—the policymaking arm of the Federal Reserve—does not have a monetary policy. We do not know whether the FOMC is committed to stabilizing the price level, focusing on a particular rate of employment growth, maintaining a band for some exchange rates, pushing for a certain level of real output growth, seeking to avoid a rise in the unemployment rate, or some other seemingly appropriate short-term goal. Indeed, the facts suggest that the FOMC meets each month,

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considers a range of monetary and credit issues and, after some discussion, arrives at a set of decisions.

The public, therefore, is always kept in the dark concerning the Federal Reserve's monetary policy. Indeed, it can be said that even Federal Reserve governors and the other members of the FOMC do not know the precise contours of monetary policy. What they are doing, in effect, is responding to the fires that rage each month. The FOMC members may have an idea of how they would respond to a typical fire, but they do not know which fires will be burning next month, three months from now, or nine months from now. Thus, even the FOMC members may not know what monetary policy will be a year from now, let alone two years from now. It is even conceivable that the manner in which an individual FOMC member will respond to a fire is not known to the member: Individual members may be under such great pressure at a particular point in time that they may not vote the way they would like to vote. As such, FOMC members do not know which fires will be burning, and they do not know with certainty how they will vote when a particular fire does erupt. It is in this sense, then, that our present fiat money regime can properly be called a "random-walk monetary standard," an expression coined by Axel Leijonhufvud (1984, p. 23).

Under this standard, the uncertainty about monetary policy grows rapidly as we look to the future. We are less in the dark concerning the thrust of monetary policy this month or next month. We are more in the dark concerning policy six months from now. And when we focus on what policy will be nine months from now, it becomes darker still. Certainly, there is not a ray of light when we consider what policy may be a year from now, or two years from now. For these reasons, some observers conclude that the uncertainty of monetary policy grows exponentially as we look to the future.

To summarize, by a random-walk monetary standard we mean that we do not know the content of the FOMC's monetary policy; we do not know the FOMC's commitment to that policy; and we do not know the longer-term policy goals of the FOMC. What we do know is that the FOMC is a committee of informed, hardworking, civic-minded, and well-intentioned officials who are trying to arrive at the best (short-term) solutions to the current problems without unambiguous long-term monetary objectives or a clearly articulated monetary policy.

The Random-Walk Monetary Standard Elaborated

In the present environment, monetary authorities decide one period at a time whether to accelerate monetary growth, whether to

keep it relatively flat, or whether to decelerate money stock growth. Policymakers focus primarily on current economic conditions and immediate political pressures. Future money growth rates are left unspecified, and the monetary officials who will be in charge when the time comes will either accelerate or decelerate as they see fit. The only rule governing this process is that, at each point in time, those who are responsible for monetary policy choose the convenient and expedient thing to do.

There is no scientific or rational way to forecast future inflation rates or the price level in this kind of monetary regime. The uncertainty attaching to any forecast of future prices will tend to grow exponentially as the number of months or years increases. In other words, a forecast of 12 months will be more variable than a forecast of 3 months, and a forecast 10 years away is a lot more uncertain than one 5 years away. Different transactors in the market guess differently as to the state of expectations, and the market is apt to be somewhat incoherent. Thus, in this kind of environment the value of the dollar—10 years from now—is not really a fit subject for economic analysis. It will depend on the course of big government, mercantilist and protectionist pressures within the country, international geopolitics, and turf battles between the Treasury and the Fed. Yet in an economy such as ours, people constantly are forced to make decisions involving the future price level.

A random-walk monetary standard has several notable consequences for the economic system. Long-term bond markets will tend to thin out, and markets for some kinds of instruments may even disappear. The raggedness of price adjustment in an inflation puts noise into the relative price mechanism and makes it more difficult to allocate or coordinate resources efficiently. Frequent changes in monetary policy will probably cause more frequent and perhaps more costly mistakes in output decisions. Output mistakes adversely affect current profits, and the expectation of their continuance under a random-walk monetary regime reduces the incentive to invest in long-term capital. In this kind of monetary regime, long-term nominal financing may subject an entrepreneur to great risks. Under these conditions, both productivity and capital accumulation will be negatively affected. Moreover, a random-walk monetary standard is likely to give rise to stagflation.

The ability to forecast inflation and to hedge against it (since it cannot be forecast with any accuracy in a random-walk regime) becomes more important to the success and survival of firms than efficiency and competitiveness in the production and distribution of goods and services. The selection of individuals for fame and fortune

will change. Merger and acquisition experts and LBO specialists will be at a premium relative to marketing people, lawyers will see their incomes rise relative to product designers, and MBAs and accountants will be favored over production managers. Ambitious people will, therefore, reallocate their efforts and ingenuity.

Since the late 1960s, guessing correctly about inflation has been the way for many ambitious Americans to achieve great wealth. But all individuals cannot improve their living standards by playing the inflation game. Who will focus on productivity enhancing investment if real estate deals and inflationary tax shelters appear more profitable? Again, this is a recipe for stagflation.

In this monetary environment, the real outcome of private contractual agreements becomes very uncertain. Private agreements arranged through contracts become a less-effective, less-reliable method for reducing the risks, particularly of long-term ventures, to manageable proportions. And when contracting increasingly fails, many groups resort to political lobbying as a substitute strategy. Random-walk monetary mismanagement will bring general conditions in which all sorts of groups seek to obtain, by public compulsion, what private cooperation failed to achieve. Legislators will be swamped by demands to control prices and rents, to regulate ways of doing business, and to tax and subsidize. The nation becomes less efficient, just as the economy has become less efficient, in carrying out ordinary business; the political system loses legitimacy. This trend can continue until the public demands new constitutional constraints on government.

From Random-Walk Monetary Permissiveness to Fiscal Chaos

Our current random-walk monetary standard does not have any long-term anchor and is not based on any clearly articulated long-term policy. The standard leads inevitably to monetary permissiveness—a monetary no man's land based on irredeemable, inconvertible, anchorless, fiat money issued by a politically accommodating central bank that may inadvertently be undermining the foundations of the market economy and a stable society.

Fiscal chaos—persistent budget hemorrhage and continuing large deficits—will ultimately lead to a monetary acceleration designed to monetize the public debt. It is also true that monetary permissiveness—a politically accommodating fiat money—will generate a climate in which unsustainable budgetary deficits and fiscal chaos emerge. Unfortunately, the contribution of the monetary permissive-

ness to the developing fiscal chaos is neither widely perceived nor generally recognized.

We cannot succeed in reducing our budget deficit if we continue with our random-walk fiat money system. There is a widespread concern that our monetary officials will be pressured to accommodate and ratify the fiscal demands of politicians. Many observers fear that our current $100–$150 billion budget deficits will lead to a monetary explosion and an acceleration of inflation.

Monetary institutions that politicians can manage for short-term political objectives undermine the integrity and the fiscal discipline necessary to achieve and maintain a balanced budget. We will not solve our budgetary hemorrhage—widely perceived as dangerous—without simultaneously changing our politicized, accommodating, discretionary, managerial, random-walk fiat money standard. In brief, existing U.S. monetary institutions—characterized by the lack of any long-term policy rule—are incompatible with the fiscal integrity and discipline required and necessary to balance the budget.[1]

The random-walk monetary standard and the absence of a long-term anchor and long-term policy are breaking down the extraordinary consensus regarding price-level stability that prevailed just a decade ago. Many forces in the economy are now *privately* supporting more inflationary policies and *publicly* advocating more expansionary policies. They argue that much of the Third World's foreign exchange earnings are needed to pay the interest on their debt and that their export earnings would rise, following more expansionary policies in the United States. Another argument is that many banks with Third World debt in their portfolios would have fewer nonperforming loans if we had a stronger economy.

Further arguments for monetary ease are (1) that debtors who have borrowed heavily in the 1970s, expecting a continuation of high inflation and high interest rates, would find it less costly to repay these loans if we had a more vigorous economy; and (2) that many manufacturing industries that have been losing market share would find it easier to increase their sales, revenues, and profits if we had a stronger economy, more demand, and more inflation.

[1]*Throughout the 1980s, the influential elites in this country have apparently believed* that the monetary system is being properly managed and is in reasonably good condition and that it is the fiscal mechanism that is out of control. Our contention is that this view is 180 degrees wrong. It is only because we have a politically accommodating monetary system that the politicians can spend and not worry about the fact that their proposed expenditures have no immediate relation to their likely revenue sources. It is precisely the monetary permissiveness—a politically accommodating monetary system—that creates the environment in which budgetary hemorrhages and fiscal chaos emerge.

Finally, and perhaps most important, is that many "realists" do believe that the easiest and more efficacious way of dealing with our budget deficit is to monetize it through inflation. Thus, some people even view a rise in inflation in positive terms. These expansionists believe that a higher inflation rate would ameliorate our budgetary and fiscal problems and, to the extent that there is some bracket creep still left in the tax code, the revenue increase from inflation may exceed the inflation rate.

Thus, inflation may reemerge because of the many forces conspiring for more aggressive expansionist policies, while monetary policy is primarily reactive and not based on long-term price stability. Should we again confront double-digit inflation, many more citizens will recognize that our random-walk monetary standard is deeply flawed and conducive to monetary permissiveness. I hope they will also realize that our irredeemable, anchorless, fiat money—the random-walk monetary standard—is a precondition for the continuing budgetary hemorrhage and fiscal chaos that undermines the foundations of a market economy and a stable society.

We suffered through a terrible bout of double-digit inflation and double-digit interest rates in the 1970s; and in order to disinflate the economy, we struggled with double-digit unemployment in the 1980s. But all this suffering will be in vain if we again confront double-digit inflation in several years as a direct consequence of a politically accommodating random-walk monetary policy.

Should double-digit inflation reappear, there will be an almost undeniable realization that we have to take the fiat money system away from the bureaucrats and politicians, that we have to introduce constitutional constraints in order to depoliticize monetary policy, and that we need to tamper-proof our money politically so that politicians will not be able to manage and manipulate monetary policy for short-term political ends.

Is the Current Inflation Rate an Adequate Measure of the Underlying Inflation?

Concern about the longer-term consequences of the random-walk monetary standard may seem unwarranted in light of the current consensus view that monetary policy in recent years has been conducted in a relatively proper way. The present inflation rate of 4 to 4.5 percent is viewed as relatively low, the unemployment rate of 5.3 percent is at the lowest level in 14 years, and the labor force participation rate of 66.0 percent and employment rate of 62.6 percent are at their highest levels in our history. Not surprisingly, most peo-

ple regard the current economic situation as favorable. The Federal Reserve gets a good grade for its conduct of monetary policy.

This favorable image, however, has more to do with appearance than reality. In fact, our random-walk monetary standard is generating a high inflation rate and great fluctuations in real output, but these effects are being offset, and masked, by several independent exogenous and relatively fortuitous developments.[2]

The most important of these favorable exogenous factors is the emergence in the 1980s of a relatively elastic supply function. The aggregate supply of output has become relatively more price elastic because it is possible to produce additional output overseas (i.e., in Korea, Mexico, Singapore, and Taiwan) at relatively constant costs. Consequently, an increase in aggregate demand in the United States does not cause bottlenecks, shortages, and price jumps but results instead in a larger trade deficit. The trade deficit serves, in part, as a balancing mechanism. Rapid growth in U.S. demand is associated with a larger trade deficit, and restrained U.S. demand growth is associated with a smaller trade deficit. Fluctuations in the trade deficit take the place of what would otherwise show up as jumps in the inflation rate and fluctuations in real output. The Fed is getting a very good grade for its conduct of monetary policy because of the "apparent" price stability.

The Federal Reserve receives high marks on monetary policy because people are looking at a thermometer that is not adequately gauging the full impact of the inflationary pressures and output fluctuations that its policy produces. If our hypothesis is valid and the favorable exogenous factors, which we detail below, have increased aggregate supply and its elasticity, yet we still have a 4.0 to 4.5 percent inflation, monetary policy must certainly be viewed in a far more critical manner.

Aggregate Supply Changes Suppress the Inflation Rate

There may be a significant wedge between the appearance of relatively stable non-inflationary growth in the economy and the underlying reality of fluctuations and volatility in monetary growth and aggregate demand. More precisely, several exogenous factors enhance aggregate supply and increase its elasticity and, therefore, do not allow the price level to rise as much as it would without these factors. These relatively exogenous factors are independent of the Fed policy and, more importantly, may not last forever.

[2]Independent of monetary policy, they may be related to our defense and foreign policy.

One factor that has helped increase aggregate supply and lower the inflation rate is the crack in the oil cartel and the resulting enormous reduction in the price of oil. Oil is selling now for less than half of what it was several years ago. This factor has had a direct effect in lowering the inflation rate. The oil price decontrol and the weakening in the OPEC cartel hold down and suppress pressures that would otherwise be reflected in a rising inflation rate.

A second factor that has been helpful in holding down the inflation rate is the commodity supply revolution. There has been a significant revolution—increasing supply—throughout the world. Some have called it the green revolution, but it also has an impact on industrial products. Whether we have taught other people the newer technology, or the new technology has spread on its own, the fact remains that many commodities are currently available at much lower prices than they were, or were expected to be. And to the extent that commodity prices fall, they help suppress increases in the inflation rate.

The third, and perhaps the most important, factor in suppressing jumps in the inflation rate is the fact that the supply of aggregate output may have become much more elastic. There appear to be large quantities of resources available elsewhere in the world—that is, underutilized resources of labor and capital—and furthermore, the owners of those resources are apparently willing to hold dollars.[3] And so long as there are unused resources whose owners are willing to hold dollars, we can increase output somewhere in the world at relatively constant costs. In effect, we have an elastic (augmented) aggregate supply of output.

Under these conditions, even a substantial increase in aggregate demand may have very little impact on the inflation rate, but will lead to more output whether produced here or abroad. But if the increased output is produced abroad at relatively constant costs, it results in a larger trade deficit, with perhaps no change in the inflation rate.

Changes in the trade deficit, and especially of imports, may provide a more faithful measure of the underlying volatility in aggregate demand. In the past, these fluctuations in aggregate demand would be reflected in price level jumps, in shortages and bottlenecks, and in the inflation rate. At the present time, they are more likely to show up as fluctuations either in the deficit and, more specifically, in the volume of imports.

[3]If the owners of these unused resources are not willing to hold dollars, the dollar exchange rate will decline, and this effect on aggregate supply will no longer be operative.

Another factor that has weakened the link between changes in monetary policy—money growth—and changes in aggregate demand has to do with velocity. To the extent that velocity declines, for whatever reason, whether it is because of declining inflation and/or declining interest rates, the link between money growth and changes in aggregate demand is weakened. And to the extent that this first link is weakened, the complete chain from Fed policy decisions on money growth to inflation is further weakened.

Finally, and most importantly, we now pretend that a 4.0 to 4.5 percent inflation is the equivalent of either low, or zero, inflation. This pretense is partly because we are comparing the 4.5 percent to the double-digit inflation of the early 1980s, and partly because the inflation of the 1980s has been associated with sharply declining unemployment and an astounding increase in employment. But the fact remains that 4.5 percent inflation leads to a doubling of the price level in about 15 years. This change is a far cry from either low, or zero, inflation and, if our hypothesis is correct, the current inflation would have been much higher were it not for the offsetting and fortuitous effects of the exogenous factors.

Monetarism I versus Monetarism II

The factors that we suggest as weakening the chain between money growth and the inflation rate involve two sets of links: One link is between changes in money growth and changes in aggregate demand; and a second link is between changes in aggregate demand and changes in the inflation rate.

The weakening of these two links is also responsible for the divergence between Monetarism I and Monetarism II, and dramatically highlights the difference between these two versions of monetarism. The older Monetarism I asserted that there were long and variable lags and that one could not readily use changes in money growth to forecast changes in economic activity. Monetarism I, the original monetarism of the 1950s, is the monetarism of the long and variable lag.

Monetarism II emerged in the 1970s, as many observers noticed that the growth of velocity in the postwar world was fairly steady, rising at about a 3 percent annual rate. Naturally, if one can safely assume that velocity is growing at a 3 percent rate, one may seek to use velocity behavior as a basis for either determining the proper policies with respect to changes in money growth or for making forecasts. Thus, if velocity is growing at a 3 percent rate, and real output, or capacity, is growing by 4 percent, then money cannot grow by more than 1 percent if we want zero inflation. And if we are willing

to accept a 2 percent inflation rate, then money can grow by 3 percent. If velocity is indeed growing at a 3 percent annual rate, there is a basis either for determining policy concerning the proper growth rate of money or for making forecasts. In other words, the velocity growth postulated in Monetarism II lends itself to econometric forecasting. It also lends itself to a kind of fine tuning.

The four factors that have weakened the two sets of links between money growth and inflation mean that Monetarism II is at an end. Velocity declined abruptly and sharply in the early 1980s, and has been extremely variable over the last decade. Those who would have based either their recommended monetary policies or their econometric forecasts on a velocity growth of 3 percent would have been very wrong, as velocity declined by as much as 10 percent in some recent years. Imagine a monetary official basing policy on the assumption that velocity is growing at 3 percent when it is, in fact, declining by 10 percent. This mistake could make a difference in GNP of about 16 percent—a potential disaster. The decline of Monetarism II illustrates the factors that we have summarized in our analysis of inflation. These factors have weakened the links connecting money growth, aggregate demand changes, aggregate supply changes, and changes in the inflation rate.

In sum, there is a general feeling that the monetary authority has done a pretty good job in managing the economy over the last several years. But we must not overlook the fact that the economy benefited from a set of external factors that tended to lower and suppress the inflation rate.

Further Reasons for Abandoning the Random-Walk Monetary Standard

Several other considerations suggest that we move away from the present random-walk monetary standard toward a constitutional monetary system: (1) The behavior of prices in the 200 years before 1940 and in the period since 1940; (2) the two great monetary disasters experienced in the last 60 years, that is, the Great Depression (1929–33) and the double-digit inflation of the 1970s; (3) the political monetary cycle and the Heisenberg uncertainty principle; and (4) the public choice revolution and the rational expectations revolution.

1740–1940 versus 1940–88

Since 1940 the price level in the United States has shot up by a factor of approximately eight. Thus, if we set the 1940 price level as 100, it is now 800. On average, prices have escalated by a factor of

eight in a period of less than 50 years. This eight-fold increase in prices is in sharp contrast to the prior 200 years. When we examine price-level behavior in the period 1740–1940, we find that there were substantial movements. There were periods when the price level went up more than 50 percent over a 10-year period, and there were other times when it declined. We certainly did not experience price stability in the sense of year-to-year stability; but, and this is crucial, over the entire 200-year period we did have price stability—that is, prices in 1940 were approximately at the same level that they were in 1740.

The relative stability of prices over the entire prior 200-year period, contrasted to the eight-fold escalation of prices in the recent 50-year period, provides a very good measure of failures of discretionary central bank management of monetary policy. Clearly this extraordinary escalation of prices that we have experienced in the last 50 years poses a severe threat to the long-term stability of the economy.

In addition, the Federal Reserve may have been guilty of perhaps a more serious misdemeanor, if not a felony, in the last 15 years. The Federal Reserve, following Concurrent Resolution 135, has followed extremely variable and volatile monetary policies (see Fand 1985). This concurrent resolution requires the Federal Reserve to announce its monetary targets twice each year before the House and Senate Banking Committees. Unfortunately, since the enactment of this resolution, the Fed has been extremely agile in defining new monetary aggregates, in redefining aggregates, in shifting from one aggregate to another, and in producing considerable and extensive monetary variables. But the bottom line verdict is that Federal Reserve policy has never been more volatile or more variable than since the introduction of Resolution 135. This erratic behavior since 1975 was ironically the response of the central bank to a resolution that was generally viewed as an attempt to introduce greater stability in Federal Reserve policy.

The Great Monetary Disasters

The Federal Reserve was initially set up to avert the monetary policy and banking failures that we periodically experienced under the National Banking System, as well as to achieve monetary stability. In time, the central bank came to be viewed as an institution to help maintain a stable economy, to maintain a stable price level, and to promote economic activity. It is, therefore, interesting to note that the two greatest monetary and financial disasters in our history are both attributable to Federal Reserve policy. There is general agreement that perhaps the single most important factor that produced

the Great Depression of 1929–33 was Federal Reserve policy that allowed the money stock to decline by a third. Such a monetary deflation is simply unimaginable, considering that unemployment was approaching 35 percent and that the economy was literally hit by an economic atom bomb. Yet this is precisely the deflation that the Federal Reserve permitted to occur. Even the Fed itself will acknowledge that it bears a major responsibility for the Great Depression and the terrible consequences resulting therefrom.

We are still paying a price today for the suffering and pain of the Great Depression. We still have many "brain-workers"—to use a Marxist phrase— who believe that the Great Depression signified an economy dying from an advanced state of arteriosclerosis. These thinkers believe that free-market capitalism based on private enterprise does not work and is not viable—as evidenced by the Great Depression. There are many such thinkers today, especially in fields such as history, political science, sociology, and especially literature, who literally believe that the Great Depression clearly marked the death knell of free-market capitalism. And they further believe that somehow, because of wars and rearmament, or perhaps because of both hot wars and cold wars, we have kept this dying corpus of a market economy alive through what they would regard as socially inappropriate expenditures by the military-industrial complex. In their view, defense spending is primarily necessary to keep a sclerotic and moribund patient alive.

These thinkers continue to believe this analysis of the Great Depression even though it is clear today that almost every socialist economy is a failure and, further, that the only viable, productive, and functioning economies are those that rely heavily on markets and private enterprise rather than on bureaucracies. That these "brain-workers" can continue to believe in a "Marxist analysis" of the Great Depression is but partial evidence of the terrible price that we are still paying for the ravages of that disaster.

The other great disaster was the double-digit inflation of the 1970s. Here, many Fed officials would admit that they played a role in contributing to the breakdown of the international monetary system, and that the Fed must bear some of the responsibility for the extraordinary escalation in inflation.

The Political Monetary Cycle and the Heisenberg Uncertainty Principle

It is often suggested that we have had a political monetary cycle in U.S. history (see, e.g., Fand 1986, Poole 1986, Meiselman 1986a, 1986b). Put briefly, this theory hypothesizes that a politicized mone-

tary authority, given a two-year lag between money growth and inflation and a six- to nine-month lag between money growth and output, would operate as follows: Approximately two years before the presidential election, the monetary authority would slow monetary growth; and six to nine months before a presidential election, the central bank would speed up monetary growth. The two policies working together would achieve a declining rate of inflation and a rising rate of real output growth and employment. This environment is ideal for the incumbent to run for reelection.

There is some evidence that such a political monetary cycle may have been operative in policy formation in earlier elections. However, as the market begins to observe these tendencies on the part of the central bank, it will react and tend to offset them. More precisely, in time, this political monetary cycle in policy will not really work very well as the market begins to recognize and understand the mechanism that is based on the lag between money growth and output and between money growth and inflation. This observation brings us to the "Heisenberg uncertainty principle" as it applies to monetary policy (see Fand 1986; Meiselman 1986a, pp. 701–2).

As the public begins to understand the lag mechanism in which the central bank may favor the incumbent, the Fed loses the ability to accomplish these political objectives. In order for the Fed to influence and move markets, it must surprise markets. Only monetary surprises have powerful effects on the economy. Monetary actions that are anticipated by the public do not have such powerful effects. But this means that *if the Fed is going to maintain its power, it must be able to surprise the market.* The conclusion is that the Fed cannot afford to follow a monetary rule. For the Fed to follow a monetary rule is to give up its tremendous powers, and it is hardly likely that an institution with the extraordinary powers and influence of the Fed will voluntarily commit suicide. Those who were advocating a monetary rule now have serious doubts as to whether the central bank bureaucracy would ever accept such a rule. The random-walk monetary standard is likely to continue unless we find a constitutional mechanism that would commit the monetary authority to an anchor and an articulated monetary policy.

The Public Choice Revolution and the Rational Expectations Revolution

The *coup de grace* to many approaches to monetary policy that sought to achieve monetary stability by incorporating rules was probably delivered by the public choice revolution. There are many public choice studies that convincingly demonstrate that central

bank bureaucrats are not likely to follow monetary rules and policies that have negative consequences for either themselves or their organizations. Public choice research raises serious questions as to the feasibility of monetary policies that are based on monetary rules within the existing bureaucratic framework.

The power and significance of the public choice revolution is illustrated further by the FDIC. Here is an organization that at one time was hailed by almost everybody as a tremendous reform that would guarantee the safety and security of our monetary system. Yet, it and FSLIC were set up in a manner that is internally inconsistent and gives rise to moral hazard. And surely when one looks at FSLIC today and sees a $100 billion bailout that presumably will be borne by the taxpayers, one wonders whether socialism will come to the United States via agencies such as FSLIC. The fact that the FDIC could be hailed as a great reform by dedicated free enterprisers when it was initally set up, and today may be seen as a potentially dangerous threat to a market economy, is itself a tribute to the sophistication brought into policy discussions by the public choice studies.

Another example of sea-change in public sophistication following the public choice revolution is evidenced by the recent concern about the social security surplus. Hardly anyone worried about this surplus five to six years ago when the social security compromise was brought into being. Yet today, almost all elements in the political spectrum are concerned about this surplus. Many conservatives worry that the non–social security expenditures will be increased as a result of this temporary surplus in social security. Many liberals are concerned that the social security surplus will make the deficit look smaller and hence weaken the case for a tax increase which they view as necessary in order to finance new initiatives and social programs entailing increasing expenditures.

The rational expectations revolution also suggests there is little constructive scope for discretionary activist monetary policy. It argues for a clearly enunciated and articulated policy. It tends to reinforce the policy conclusions of the public choice studies in supporting a monetary constitution.

Adoption of a Monetary Constitution

A move toward monetary stability involves a significant amount of redistribution. For example, at the present time we are experiencing an inflation rate that is between 4.0 and 4.5 percent. Should the Fed seek to move toward a zero inflation rate, or even to maintain the present inflation rate, there will be a substantial redistribution. There

will be winners and losers. But the Federal Reserve cannot be expected to decide which price expectations are legitimate and should be validated, or who shall win and who shall lose.

How can one rationalize and justify a situation in which the nonelected members of the FOMC should make and enforce decisions with significant redistributive consequences. Thus, in order to have an independent central bank staffed by professional economists and bankers, and one that is truly independent of politics, we must first have prior political agreement on a monetary constitution. Professional central bankers could be held responsible for managing a well-defined gold standard or price rule. And given such a monetary constitution, the independence of a credible central bank may be desirable. In the absence of prior political agreement on a monetary constitution, a nonpolitical central bank is impossible. A fiat money system without a monetary constitution will inevitably be forced to bend with the shifting political pressures.

We do not question that the central bank may be staffed with people of unquestioned courage, integrity, and competence; but they have no legitimate mandate without a monetary constitution to resist the shifting of short-term political pressures. One may seek to blame the Fed for the erratic consequences of monetary policy over the last 25 years, or the last 60 years. But the responsibility for monetary stability lies with the Congress; and unless we can agree on a monetary constitution, we will continue to have politicized central banking operating in a random-walk monetary standard.

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Inflation Prevention by a Monetary Rule

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Price-Level Predictability

As it happens, I share several of David Fand's sentiments, but I am, nevertheless, uneasy with some of his analysis. To begin with, the term "random walk" is a very poor one to use, if one's purpose is to distinguish the post–World War II monetary regime from regimes of previous historical eras. The term is especially inappropriate to use in distinguishing recent price-level experience from that of the classic gold standard era that preceded World War I, because the time series properties of the log of the price level—whether represented by the CPI or the WPI or the GNP deflator—is much closer to a random walk in the technical sense for 1891–1913 than it is for 1950–85.[1]

The foregoing might strike some readers as quibbling over the use of words, so let us switch to the substantive content of this aspect of Fand's discussion, which concerns price-level predictability. In that regard, it has recently been suggested by Meltzer and Robinson (1989) that "long run" uncertainty about the price level was *greater* in the gold standard era than it has been in the post–World War II period. Rather than relying on the Meltzer-Robinson analysis, which uses an unorthodox statistical technique known as multistate Kalman filter analysis, let us consider the issue in the context of simple ARIMA models. For the gold standard period 1891–1913, ARIMA

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[1]A comparison can be made, for example, in terms of the Box-Pierce Q statistic (based on 10 autocorrelations) that indicates departures from white noise of the demeaned inflation rate. Using annual observations on the GNP deflator, the value is only 7.8 for 1891–1913 as compared with 81.9 for 1950–85.

modeling of p_t—the log of the GNP deflator—leads to the following representation for annual observations:[2]

$$\begin{aligned} \Delta p_t &= \underset{(0.0051)}{0.0130} + \epsilon_t + \underset{(0.214)}{0.622}\,\epsilon_{t-2} \\ \hat{\sigma} &= 0.0245 \qquad DW = 2.00 \end{aligned}$$

By comparison, an appropriate representation for 1948–85 is

$$\begin{aligned} \Delta p_t &= \underset{(0.0045)}{0.0098} + \underset{(0.091)}{0.793}\,\Delta p_{t-1} + \epsilon_t \\ \hat{\sigma} &= 0.0140 \qquad DW = 1.74 \end{aligned}$$

From these results it will be noted that the estimated variance σ^2 of the disturbance process is smaller for the postwar period, implying that price-level forecasts one year ahead will on average be more accurate than under the gold standard. At longer horizons the forecast variance also depends on the moving average and (especially) the autoregressive parameters, and in the present case it turns out that forecast accuracy is greater for the gold standard period for horizons of four years or more. But this conclusion regarding price-level predictability is not nearly as one-sided as Fand's discussion implies.

Now, what has indeed been considerably worse about postwar price-level behavior is that the *average* inflation rate has been clearly positive. There is, in other words, a significant positive trend (possibly stochastic) in the postwar observations on the price level. For the whole postwar period the average inflation rate has been about 4.5 percent per annum. At this rate the effects on the price level cumulate rather rapidly, as is exemplified by the fact that CPI for the United States is now about six times its 1946 level or (as Fand says) about eight times its 1940 level. This type of arithmetic truism is apparently unfamiliar, however, to some individuals. It is something that economic journalists—and perhaps central bankers—should be tested on every week or so.

The Costs of Inflation

While a six-fold increase in the price level since 1946 may seem rather shocking, it is relevant to ask whether there is any firm analytical basis for viewing a 4.5 percent inflation rate as disastrous or even terribly costly to an economy. In response I would, on the one hand, tend to agree with Fand that the usual "shoe-leather cost" calculation probably misses some important misallocations that arise as a conse-

[2]Here ϵ_t is a white-noise disturbance, $\hat{\sigma}$ is the estimated standard deviation of ϵ_t, DW is the Durbin-Watson statistic, and the figures in parentheses are parameter-estimator standard errors.

quence of inflation in actual economies, since they do not feature perfect indexation of tax schedules. But, on the other hand, if one looks back at the postwar era, it is extremely difficult to argue that the 4.5 percent average inflation rate in the United States has been disastrous. All in all, the fiat money era has not been a bad one by historical standards,[3] in terms of tangible economic progress for ordinary individuals and households. Nevertheless, there are non-negligible costs imposed by an ongoing inflation rate of 4.5 percent—even if it is a steady rate—and *no benefits whatsoever* generated in return.[4] A significantly positive average inflation rate is quite unnecessary and could be avoided without undesirable side effects.

A Nondiscretionary Monetary Rule

The last statement is based on some studies of mine concerning the performance of a specific, quantitative policy rule that dictates the behavior of the monetary base.[5] If the Fed adopted this rule, it would create base money each quarter at a rate equal to 3 percent per annum *minus* the average rate of base velocity growth over the past four years *plus* an amount given by a feedback term that is positive when nominal GNP is below a predetermined 3 percent growth path (and negative when above that path).[6] This is a weakly activist, but entirely nondiscretionary, rule for management of the monetary base, which is a potential instrumental variable that could be accurately controlled by the Fed. The proposal is related to other schemes for "nominal GNP targeting" but differs from most in that it is operationally specified and entirely nondiscretionary.

The studies conducted thus far indicate that this rule would have been highly effective over the 1954–85 period in keeping nominal

[3]These statements implicitly identify the fiat money era with the postwar period, which is perhaps debatable since the main official actions were taken in 1933 (nationalization of gold holdings) and 1971 (revocation of the U.S. commitment to sell gold to central banks at $35 per ounce). But the gold standard could have been maintained despite gold nationalization if the United States had been willing to manage its monetary affairs so as to maintain the $35 price of gold. That willingness had clearly disappeared long before 1971, however, and was, in my judgment, gone by the time of the enactment of the Employment Act of 1946. For more discussion of this point, see McCallum (1989, pp. 330–33).

[4]This statement presumes that superneutrality prevails or that effects of steady inflation on the steady state value of capital per person are positive.

[5]These studies include McCallum (1987, 1988, 1990).

[6]In algebraic terms the rule is expressed as follows, where b_t = logarithm of base money in period t, x_t = log of nominal GNP, and x_t^* = target path for nominal GNP:

$$\Delta b_t = 0.00739 - (1/16)\,(x_{t-1} - b_{t-1} - x_{t-17} + b_{t-17}) + \lambda\,(x_{t-1}^* - x_{t-1}).$$

The feedback parameter λ should be in the range of 0.1 to 0.25.

GNP close to a steady 3 percent growth target, despite all the stochastic shocks that have buffeted the economy in general and the financial sector in particular. The studies do so by means of counterfactual historical simulations in which the policy rule is combined with a small quantitative model of nominal GNP determination, with estimates of the various nonpolicy shocks fed into the system each period. Since nominal GNP is kept close to the smooth 3 percent target path, these results imply that average inflation would have been close to zero since the average rate of *real* GNP growth would have remained about 3 percent per annum if this policy had been followed.[7]

The objection that some analysts would raise at this point is that the results of a policy simulation study make sense only if the quantitative model is of the structural type and well specified (Lucas 1976). "How do you know," a critic would ask, "that you have a correctly specified structural model?" In fact, I am confident that I do *not* know the correct specification, but I suspect that no one else does either. Consequently, in light of this unfortunate state of affairs, my research strategy is not to try to specify "the" correct model, but rather to conduct simulation experiments in *a wide variety of different models*. What these experiments have shown is that the simple rule described above is highly robust—that is, it gives good results in all of the various models studied, some of which reflect very different competing theories of the nature and mechanism of business cycle generation.[8]

Another question that arises naturally is why this scheme uses a target path for nominal GNP, rather than some other variable. In fact, while nominal GNP has been used in the simulations, I would be perfectly happy to restate the rule in terms of some alternative variable (e.g., final sales or personal income) so long as it is a measure of nominal aggregate spending. But why not aim at a constant price level directly, rather than indirectly by means of a smooth noninflationary target path for nominal spending? One reason is a guess, impossible to firmly substantiate given current knowledge, that a smooth path for nominal GNP would have preferable implications for the cyclical behavior of real GNP and employment magnitudes.

[7]This conclusion follows from the natural-rate hypothesis (Lucas 1972), which is one of the few important substantive propositions that commands wide support from macroeconomists of all persuasions.

[8]In McCallum (1988), simulations are conducted with eight different VAR specifications and three different models with "structural" ambitions, these models representing theories of the real business cycle, monetary misperceptions, and Keynesian/Phillips-curve varieties.

But in addition it has been found that a price-level target is somewhat less robust in performance—the target works well in some models but poorly in others (see McCallum 1990). Indeed, in a model designed to reflect the existence of sluggish adjustment of nominal wages and prices, the price-level target leads to explosive oscillations even with a λ-coefficient value of 0.25.

Considerations for Modifying the Fiat Money Regime

From the perspective of alternative monetary regimes, one important question is why one would support a scheme that retains the Fed and other current U.S. institutions, rather than a radical new plan such as that of Greenfield and Yeager (1983) or the "basic constitutional reform" promoted by Fand. One reason is that evolutionary modification seems safer than revolutionary overhauls. The simulation studies mentioned in footnote 8 leave many questions unanswered, but nevertheless give some indications of how the economy would perform with the base-growth rule in effect. For the Greenfield-Yeager scheme, by contrast, there is no comparable study. I would not know how to formulate a relevant quantitative model for the Greenfield-Yeager scheme or to estimate the associated shock variances. But these considerations are of critical importance. A second reason is that it seems more likely that the Fed would decide to behave in a manner approximating that defined by my base rule than that the U.S. political system would generate entirely new institutions with desirable properties. I would not expect the Fed to announce publicly that it had adopted a mechanistic rule, since that would sharply reduce its prestige and the broadly defined wealth of Fed officials and staff members, but it could quietly begin to behave in the indicated manner. As a matter of fact, it has been behaving so as to generate a very smooth path for nominal GNP over the past five years, but at a rate that is closer to 7.5 percent than 3 percent.

Conclusion

In any event, while I am myself attracted to a more modest strategy for monetary reform, I consider it extremely healthy that other workers are developing and discussing schemes that would entail more fundamental reconstruction of the monetary system. Even if actual adoption is unlikely, proposals such as that of Greenfield-Yeager (1983) and those discussed by White (1989) are valuable. They stimulate us—indeed, force us—to think about some critical issues in

monetary theory that tend to be neglected in more mundane discussions.

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