

Mr. Meyer remarks on the strategy of monetary policy in the United States Text of the Alan R. Holmes Lecture by Mr. Laurence H. Meyer, a member of the Board of Governors of the US Federal Reserve System, held at Middlebury College, Middlebury, Vermont on 16/3/98.

When I was asked to deliver the Alan R. Holmes Lecture, it seemed appropriate to focus on a topic directly related to the interests and contributions of Alan Holmes. It was not hard to find such a topic, because Alan Holmes served with distinction in a position that was at the very core of monetary policymaking.

Monetary policy begins with a set of objectives, which identify where policymakers want the economy to be, a preferred or ideal state of macroeconomic performance. The heart of monetary policy is about designing and implementing a strategy to guide policymakers in decisions about the setting of open market operations, the principal instrument of monetary policy, so as to contribute to achieving the objectives. This is the subject of my lecture today and it was very much the subject of Alan Holmes' career. He was an economist for 31 years at the Federal Reserve Bank of New York, and for many years served as Executive Vice President of the Federal Reserve Bank of New York and as Manager of the System Open Market Account. In that position he was directly responsible for implementing policies of the Federal Open Market Committee, the FOMC, specifically the day-to-day decisions about open market operations.

The FOMC consists of the seven members of the Board of Governors and five presidents of the regional Federal Reserve banks. There is no official operating manual for members of the committee that identifies the guiding principles, no "official doctrine". While the views I present here are my own perspectives on strategy, my purpose in this lecture is not to articulate a singular view of the strategy of monetary policy, but rather to shed light on some of the mystery about monetary policy.

A former Alan Holmes Professor of Economics at Middlebury College and good friend, Dewey Daane, co-edited a book in honor of Alan Holmes, entitled *The Art of Monetary Policy*. In his forward to the book, William Simon called Alan Holmes a "monetary policy artist". As I develop my perspective on monetary policy, I will try to blend the role of art and science, of economic theory and practical judgments that Alan Holmes so well understood.

Objectives

Monetary policymaking naturally begins with an understanding of the objectives of policy, because that is what good policy should deliver. It is widely accepted that there are three fundamental norms of macroeconomic performance, which I summarize as full employment, growth, and price stability, and these norms are a useful point of departure to thinking about the objectives for monetary policy.

Full employment can be interpreted as achieving the maximum sustainable level of employment and production. It basically means avoiding waste, in the sense of failing to use all the available productive resources. By sustainable, I mean the highest level of output that can be sustained without imposing unacceptable costs, a consideration I will return to shortly.

By growth, I am referring to the desire to achieve both a high average level and rate of growth in living standards, on average, over time. We usually measure living standards in terms of real income per capita. We can be at full employment and yet be poor. We want to be at full employment and be rich. And we want our living standards to be improving over time. I'll refer to the average rate of growth in output in the long run as the economy's trend rate of growth.

Price stability refers to the stability of the overall price level, measured, for example, by the price index for overall output (the chain-weighted price index of GDP) or for consumer goods and services (the Consumer Price Index). We often satisfy ourselves with the norm of low and stable

inflation. At any rate, price stability is really more an intermediate goal than an ultimate objective. The reason we care about price stability is that we believe that it contributes to a high and rising level of living standards. Indeed, it is viewed as so important in this regard that we identify it as a separate and free-standing norm. And we will soon see we have particular reason to do so from the perspective of monetary policy.

Implications of Economic Theory

I am going to assert some conclusions based on economic theory that help to understand the potential for monetary policy to achieve these objectives and the consistency among them. These conclusions are widely though not universally shared, but they do guide my views of what monetary policy can and should do.

First, monetary policy cannot influence real variables -- such as output and employment -- in the long run (except via the contribution of price stability to living standards). This is often referred to as the principle of the neutrality of money. This proposition removes "growth" as an objective for monetary policy and also means that monetary policy cannot materially affect the level of output or employment corresponding to "full employment".

Second, monetary policy is the principal determinant of inflation in the long run. This proposition immediately makes price stability (in some shape or form) the direct, unequivocal, and singular long-term objective of monetary policy. No central bank around the world would argue otherwise. When it comes to price stability, the buck, literally, stops at the central bank.

Third, because prices in many markets may be slow to adjust to equate supply and demand, shocks to the economy can lead to persistent departures of the economy from full employment -- in both directions. This proposition offers at least the potential for monetary policy to play a role in smoothing out business cycles.

Fourth, full employment and price stability are compatible. Now, by full employment I do not mean literally zero unemployment. Instead full employment is better thought of as the lowest possible rate of unemployment that can be sustained without rising inflation. If unemployment remains, on average, at this level, inflation tends to remain constant. This rate -- which is often called the non-accelerating inflation rate of unemployment (or NAIRU) -- is a fact of life outside the control of the FOMC. This definition of full employment insures that the two objectives left for monetary policy -- full employment and price stability -- are compatible in the long run.

Fifth, inflation pressures arise, in large part, in response to departures of the economy from full employment. If the economy moves below full employment, for example, the resulting slack results in disinflation, that is, downward pressure on inflation. When the economy moves above this threshold there is continuing upward pressure on inflation. This implies that the two objectives of price stability and full employment can conflict in the short run.

This leaves us with dual objectives for monetary policy: short-run stabilization of output relative to potential and long-run price stability. Fortunately, this is also the legislative mandate Congress has set for monetary policy in the Full Employment and Balanced Growth Act of 1978, often referred to as the Humphrey-Hawkins Act, at least by my interpretation.

There are many interesting issues and controversies related to the choice and definition of objectives. These include the definition of an inflation target that corresponds to price stability and the estimate of the unemployment threshold that corresponds to full employment. I'll assume that the inflation target is set to reflect the expected bias in inflation measurement or to be slightly above this estimate. Many commentators view a 2% inflation rate as a reasonable inflation objective and many countries with explicit inflation targets use a 1% - 3% range. As for the definition of full employment, I'll use a consensus estimate of the unemployment threshold, which is currently around 5½%. I might add that there is considerable uncertainty about this estimate, particularly in light of the consistent

surprise of declining inflation even as the unemployment rate has fallen well below this threshold. I have focused a number of my speeches on this very topic, but, for today, it is mainly a reminder of the uncertainty that monetary policymakers face about the structure of the economy, especially when the structure changes over time.

Instruments

The next step is to identify the instruments through which monetary policy influences the economy. While there are, in principle, three instruments through which monetary policy affects the macroeconomy -- open market operations, the discount rate, and the reserve requirement ratio -- as Alan Holmes certainly appreciated, open market operations are the principal instrument of monetary policy, and so I will focus on open market operations.

The Federal Reserve holds a portfolio of government securities. It injects or withdraws reserves by buying for or selling from this portfolio. When it purchases securities from the private sector, it injects reserves and normally puts downward pressure on short-term market interest rates. So open market operations can be viewed as implementing either a path of reserves or achieving a level of short-term interest rates. In practice, nearly all central banks target a short-term interest rate rather than reserves with their open market operations. This is because reserves are most useful for close control of the money supply and money supplies have proven to have only a loose, long-term relationship to the objectives of monetary policy.

Natural Hurdles

If we knew precisely where we were, understood precisely the relationship between our instruments and macroeconomic performance, had a single objective, and could instantly affect the variable or variables associated with our target(s), implementing policy would be easy. Indeed, this lecture would be nearly over, because we would not have to worry about a strategy for monetary policy. It is precisely because none of these preconditions hold that monetary policy is so difficult and principles are needed to guide its implementation.

First, it is clearly important to know where you are in relation to where you want to be. But we do not have timely and accurate information about where we are. The data trickles in with a lag, often involves considerable noise, and is subject to revision, even after which it may remain less precise than we would prefer. Because of the noise in economic measures, considerable effort is needed to extract the meaningful signal from the data.

Second, we are working with a caricature of the economy in the form of our empirical models that guide both forecasting and policy decisions. The models reflect our imperfect state of knowledge about how the economy works. In addition, as I just noted, the relationships among the variables in the economy shift over time and we only gradually learn and adjust to such structural changes.

Third, monetary policy affects aggregate demand and inflation with a lag. The major effect of a policy action today is not felt until about a year from now. Therefore, when we are thinking about affecting inflation, we better be thinking about affecting inflation next year, rather than tomorrow. One implication of lags is that policy has to be forward looking. If we want to affect inflation next year, we have to act today. We therefore have to try to anticipate problems rather than simply react to them. That means that forecasting is an inherent part of the policy process and policy has to have a pre-emptive quality.

Fourth, we have multiple objectives, but only a single instrument. Simple models of policy normally imply that to achieve two objectives simultaneously, you need two instruments. How can we therefore juggle our dual targets? Fortunately, theory and evidence suggest, as I noted earlier, that the objectives of full employment and price stability are consistent in the long run. Short-run conflicts

between the targets arise in one of two circumstances. A conflict arises if we begin with inflation above our objective. Unfortunately, monetary policy can reduce inflation only by temporarily imposing some slack in the economy. In this case, lowering inflation would mean departing for a while from full employment. Once inflation had fallen to its target level, the economy could return to full employment and enjoy the consistency of the two objectives. A second source of conflict arises in response to a supply shock, such as an increase in oil prices. Assume we begin with full employment and price stability and there is a sharp rise in oil prices. This will tend to both raise inflation in the short run and depress output. What should monetary policy do? Tighten to unwind the increase in inflation? Or loosen to counter the increase in unemployment?

The natural hurdles make monetary policy a challenging task, requiring the application of both good judgment and appropriate models, art and science.

Operating Strategies and the FOMC Meeting

Now that we appreciate the challenging nature of monetary policy, we are ready to develop a strategy for implementing open market operations. The first question we ask is whether policy should be carried out according to some well-defined and precise formula, or rule, or whether it should be implemented judgmentally. My point here is not to recall the longstanding debate about rules vs. discretion, but to emphasize that good policy should be systematic or rule-like, even when it is not formally tied to a specific rule. In addition, we can learn a lot about principles for guiding discretionary policy by examining rules that can be shown to have effective stabilizing properties in our models.

As I noted earlier, monetary policy is implemented in the United States, as in most central banks, through the control of interest rates. At each meeting, the FOMC sets an intended federal funds rate target. The federal funds rate is the interest rate on overnight loans in the inter-bank market. It is therefore the rate paid when reserves are borrowed and lent among banks. And it is a natural target to achieve via open market operations since these operations in effect inject or withdraw reserves.

The federal funds rate is currently 5.5%. The FOMC announces any change in this target immediately following the conclusion of its meetings. It also explicitly incorporates this target funds rate in a “directive” to the Manager of the System Open Market Account, the position Alan Holmes held at the Federal Reserve Bank of New York. This directive instructs the Manager to implement open market operations during the period between this and the next FOMC meeting so as to maintain the federal funds rate as close as possible to the intended rate.

Point of Departure: Constant Money Growth Rule

Given that the Federal Reserve, like most other central bank today, operates by setting a near-term interest rate target, my focus is on developing some guiding principles for setting the interest rate target, more precisely, for adjusting the interest rate target in response to changing economic conditions. I have found it useful to begin this search, perhaps surprisingly, by developing the properties of a constant money supply growth rule. This both helps to identify some of the essential properties of a monetary policy strategy, which will apply to interest rate targeting as well, and highlights the practical difficulties in carrying out monetary policy using money supply targets.

Another reason for starting with a monetary aggregate strategy is that monetary aggregates played a more significant role in the implementation of monetary policy during Holmes’ service as Manager of the System Open Market Account. The directive to the Manager from the FOMC during this period was often specified in terms of maintaining or changing “money market conditions” (a code for the federal funds rate), unless growth in the monetary aggregates departed significantly from the midpoints of their specified ranges. Sometimes the directive was specified directly in terms of the desired course of the monetary aggregates, in this case typically subject to an acceptable range for the federal funds rate. This gave money growth a more direct role in the conduct of policy than it has today.

Let's now see why money growth might be a useful target for implementing monetary policy. Economic theory suggests that, if the demand for money is stable, the rate of money growth will pin down the rate of growth in nominal income. Under reasonable assumptions, a constant rate of money growth will yield growth of nominal income, on average, at the same rate. The rate of money growth should be set to achieve a rate of nominal income growth that just equals the rate of trend growth in real output and the rate of inflation consistent with the policy objective. On average and in the long run, this rate of money growth will achieve the Fed's inflation objective.

So the first proposition is that a money growth target provides a nominal anchor which pins down the long-run inflation rate. This strategy immediately allows a translation of the long-run price stability objective into a more near-term money supply growth target. And, by implication, any monetary policy strategy must mimic the nominal anchor property of a money supply target, if it is to be consistent with the Federal Reserve's mandate for price stability.

Next, let's ask what would happen if the economy was subject to a shock that moved it away from price stability and full employment. If real output increases faster than trend and/or inflation increases relative to the Fed's objective, the resulting higher nominal income growth, relative to the constant rate of money growth, would result in an increase in interest rates. The second property of a money supply target is that it builds stability into the economy by insuring pro-cyclical movements in the interest rate in response to demand shocks. Another way of saying this is that it insures that monetary policy automatically leans against the cyclical winds to stabilize the economy.

The Taylor Rule as a Strategy for an Interest Rate Operating Procedure

Despite the desirable properties of a constant money growth rule, in principle, most central banks implement policy by setting short-term interest rates in practice. This choice reflects at least two considerations. First, instability in money demand reduces the usefulness of money supply targets. Second, interest rate targets allow the central bank to smooth out the effects of transitory shocks to financial markets.

But how should the Fed vary its interest rate "instrument" to achieve its ultimate objectives? The simplest answer is that interest rates should vary to imitate qualitatively the way they would behave if the Fed were implementing a money supply target. In other words, interest rates need to be varied systematically to effectively impose a nominal anchor and to insure that policy leans against the cyclical winds. Setting monetary policy in this manner via an interest rate target, in principle, allows the Fed to achieve the best of both worlds. It can impose the same nominal anchor and short-run stabilization properties as would be the case with a money growth rule, but, at the same time, smooth out shorter-run volatility in interest rates. In addition, by careful choice of the degree of response of interest rates to changing economic conditions, the rule can, in principle, improve upon the stabilization properties of a money supply rule.

A simple specification of a strategy for varying the federal funds rate in response to changing economic conditions is provided by the Taylor Rule, a rule developed by John Taylor, a professor at Stanford University.

The appeal of the Taylor Rule is that it is simple and specifies how the federal funds rate (effectively the Fed's instrument) should be varied directly in response to inflation and to deviations of output and inflation from the Fed's ultimate targets of full employment and price stability. My point here is not to extol the virtues of the precise specification in the Taylor Rule, but to use it to highlight some of the central principles that should guide decisions about the setting of the funds rate.

It is useful to appreciate how Taylor derived his rule and how he views its role in monetary policy. The rule emerged from Taylor's analysis of simulations of a variety of rules in a variety of models. He concluded that the simple form embodied in the Taylor Rule had, based on this work, excellent stabilizing properties. The rule was therefore initially developed as a normative guide, meaning

a set of principles to guide policy that, if followed, would result in relatively good economic performance, at least compared to other rules and perhaps relative to historic US economic performance. Subsequently, Taylor found the rule described reasonably well the way policy was indeed carried out over the last decade. That is, the rule was also descriptive of recent policymaking.

The Taylor Rule begins by assuming that there is some level of real federal funds rate consistent with full employment and stable inflation. The real interest rate is the nominal interest rate less some measure of inflation expectations (measured by Taylor as actual inflation over the last year) -- a measure of the increase in purchasing power (rather than in dollars) associated with holding an asset. Taylor calls this the equilibrium real interest rate and assumed it was 2%. Let's assume that the economy is initially at full employment and price stability. Then the level of real and nominal interest rates would be set at 2%. I am not going to quibble with this choice, because I am focusing on general principles rather than precise details.

The economy is, of course, not always at full employment and price stability and the purpose of the Taylor Rule is to specify how the federal funds rate should respond to shocks that push the economy away from price stability and/or full employment. Because both objectives are explicitly incorporated into the rule, it provides a disciplined approach to juggling the dual mandate for monetary policy.

The real equilibrium interest rate is viewed as consistent with full employment and any stable rate of inflation. So the first implication of this rule is that, in order to be consistent with full employment, nominal interest rates should be adjusted in response to inflation to maintain the equilibrium real interest rate.

The next message of the rule concerns how the real federal funds rate should be adjusted in response to deviations of output and inflation from full employment and price stability. According to the rule, when output rises relative to potential output, real interest rates should rise. When inflation rises relative to the inflation target, real interest rates should also rise. These movements of real interest rates in response to departures of inflation and output from their target levels can be shown to stabilize output and inflation relative to their targets.

The Dangers of an Interest Rate Strategy

There are natural dangers inherent in interest rate targeting, at least in the absence of a rule that guides its adjustment to changing economic conditions. If cyclical movements in output are dominated by demand shocks, the failure to move interest rates aggressively enough in response to the shocks can result in monetary policy destabilizing rather than stabilizing the economy. For example, if there is a demand shock resulting in higher income and/or prices, the demand for money will increase, putting upward pressure on interest rates. If the Fed maintains an unchanged nominal interest rate target, it will have to add reserves to support a higher money supply at the initial interest rate. This means that, under a constant interest rate target, a demand shock would lead to perverse monetary policy, specifically to stimulative open market operations, reinforcing rather than damping the demand shock.

The inherent danger in interest rate targeting is reinforced by the preference for central bankers for smoothing interest rates. This preference takes two forms. First, there is a preference for implementing a rise in rates in a series of small changes in the same direction. Second, there is a reluctance to change the direction of policy, without particularly strong rationale. Nevertheless, interest rate targets can, in principle, be implemented in a way that avoids this pitfall, and one of the values of rules is to remind policymakers of the importance of adjusting interest rates in response to changing economic conditions, thereby preventing policy from becoming destabilizing.

Principles to Guide the Setting of Interest Rates

We are now ready to identify a set of principles to guide decisions about the setting of the federal funds rate at FOMC meetings. Underlying these principles are the lessons gleaned from both the constant money growth rule and from the Taylor Rule. Both rules highlight the importance of imposing a nominal anchor to pin down the long-run inflation rate and of varying real interest rates pro-cyclically to lean against the cyclical winds. The Taylor Rule also highlights the critical importance of real interest rates in the conduct of monetary policy.

There is one very important difference between the constant money growth and Taylor rules that deserves comment. While a constant rate of money growth will not always be optimal, if money demand is sufficiently stable, and not particularly interest sensitive, it will pin down inflation in the long run and help smooth the business cycle in the short run. That is, under a money growth target, doing nothing (that is, maintaining an unchanged rate of money growth) may not always be the best choice, but, for the most part, it won't get you into serious trouble and will in fact do some considerable good, although it would likely involve a considerable variation in interest rates on a day-to-day basis. Under an interest rate targeting regime, on the other hand, doing nothing can potentially get you into great difficulty -- sometimes quite quickly. In this case, policy must constantly be prepared to adjust to changing economic conditions, to avoid the potential for becoming a destabilizing influence on the economy.

Rule No. 1: Vary real interest rates in response to departures of inflation from its target. For example, if inflation increases, relative to its target, the real interest rate should be increased. This is perhaps the single most important discipline for monetary policy under an interest rate regime. When inflation increases, nominal interest rates must first be increased just to avoid a decline in the real rate. But to counter the rise in inflation relative to its target, the real interest rate has to rise. That means that nominal rates have to rise by more than the increase in inflation. In the Taylor Rule, for example, the nominal federal funds rate rises by 1.5 percentage points for every one percentage-point increase in inflation.

Rule No. 2: Vary (nominal and real) interest rates in response to changes in resource utilization rates. Under a money supply growth rule, interest rates rise whenever growth in real GDP exceeds the trend GDP growth assumption embedded in the money growth target. Whenever growth is above trend, the unemployment rate falls and the capacity utilization rate rises. By adjusting real interest rates in response to such changes in utilization rates, for a given inflation rate, an interest rate regime insures the same qualitative stabilization property that a constant money growth rule automatically yields.

In implementing this principle, real interest rates would rise gradually but systematically during expansions, fall when growth slows to below trend, and decline sharply when the actual level of output declines, at least for those cyclical episodes where supply shocks (see below) are not very important. Just following this simple principle will help stabilize output relative to full employment and inflation relative to the inflation target. It is a reminder that there ought to be nothing startling or dramatic in FOMC decisions to adjust the federal funds rate. Indeed, the question that might be asked when nominal rates are constant for long periods is how does the FOMC justify such stability in the face of changing economic conditions!

You might, therefore, ask whether or not the near constancy of the nominal funds rate over the most recent episode has been appropriate. I believe monetary policy has, in fact, been excellent over this period. But this has been a very unusual period with remarkable crosscurrents that balanced out to allow such stable short-term rates. It should not lull us into believing that stable interest rates and good monetary policy naturally go together.

Rule No. 3: In setting rates, be forward looking. I noted earlier that, because of lags, monetary policy has to be forward looking. There are, however, different degrees of forward lookingness that we could incorporate into policymaking. For example, because higher utilization rates today raise the

risk of higher inflation in the future, raising interest rates today in response to observed increases in utilization rates is a forward-looking policy relative to simply responding to current inflation.

Forward-looking policy is sometimes said to be pre-emptive. A movement in interest rates in response to rising utilization rates would be said to be a pre-emptive move against inflation. The Taylor Rule thus allows for a combination of pre-emptive policy, changes in interest rates in response to changes in utilization rates, and reactive policy, changes in interest rates in response to movements in inflation itself. So good policy can be both pre-emptive and reactive.

A still more forward-looking approach would be for policymakers to respond not to actual inflation and utilization rates, as in the Taylor Rule, but to forecasts of projected inflation and utilization rates, assuming an unchanged nominal federal funds rate. A good reason for responding to forecasts of inflation is that the effects of monetary policy on the economy mostly occur about a year from now. There is a considerable amount of work under way to assess the usefulness of using forecasts as opposed to past information on unemployment and inflation in the specification of interest rate rules.

There are clear historical examples when a forward-looking policy would be an improvement. These episodes illustrate that simple rules are only guides and that good policy sometimes means following the rule and sometimes means using judgment to improve upon the rule. Judgement is especially called for in situations where special events point to future changes in output and inflation that would ordinarily be viewed as unlikely. The current episode provides a good example of such a situation in which there is much to be gained from forward-looking policy. The economy entered 1998 with considerable forward momentum, already operating at very high utilization rates. This momentum reflected persistent strength in domestic demand, particularly consumer spending and business fixed investment. However, the financial and currency crises in Asia are projected to result in a sharper decline in net exports than would otherwise have occurred and this promises to slow the expansion in the absence of any policy action, perhaps substituting for monetary tightening that otherwise might have been justified. In this environment, a backward-looking policy that ignored the potential drag on future demand from Asia could risk magnifying the effect of the shift in aggregate demand.

Rule No. 4: The appropriate policy response may depend on the source and persistence of the shock. Let me distinguish two types of shocks to the economy. The first is a persistent demand shock -- for example, an increase in aggregate demand that results in a persistent departure from trend growth and persistent changes in utilization rates. This will have symmetric effects, raising both output and inflation, and presents a relatively straightforward monetary policy problem that is well handled by the first set of rules.

A second source of shock is a supply shock, an example of which would be a one-time, permanent increase in oil prices. We have had several examples of very sharp increases in oil prices, especially in the 1970s, and, more recently, oil prices have been declining since the end of 1996. When there is a sharp rise in oil prices, there will be a temporary burst of inflation. In addition, an adverse supply shock will typically result in a decline in aggregate demand and hence in output and employment. This is thus an example of a situation in which there can be a conflict between the dual objectives of full employment and price stability, and, as such, this represents one of the greatest challenges for monetary policy. The surge in inflation appears to demand a rise in real interest rates, and hence a particularly sharp increase in nominal rates; while the decline in output and employment appears to call for a decline in real interest rates.

Experience suggests that supply shocks yield a sharp transitory increase in inflation, often followed by a smaller, more permanent effect, though the longer-run effect on inflation will obviously be importantly dictated by the response of monetary policy. Given the transitory nature of the initial inflation surge, policy does well to look through it and instead focus on the more persistent (and modest) inflation consequences of the shock. By doing so policymakers respond expeditiously to the bad news, but avoid the mistake of overreacting.

One reason for this cautious approach is that policy cannot much affect inflation in the near term, but instead has its primary effect over the coming year or two. Hence policy today should focus on inflation next year. Policy should tighten, that is real interest rates should rise, to the extent that inflation is expected to be higher next year on account of the supply shock. This might reflect the effect of a supply shock as today's oil prices raise overall inflation, and, through the effect of inflation on wage bargaining, impact on broader measures of price change in subsequent quarters.

One way to handle that within the Taylor Rule is to specify the rule using a measure of core inflation, meaning one that excludes oil and food prices, the price components most subject to supply shocks. This will help policy to "look through" the initial burst of inflation, but it may fail to produce an appropriate immediate adjustment to counter the more permanent effect of the shock on inflation in subsequent quarters. Another and perhaps better way to respond to supply shocks is to be forward looking and respond to forecasts of future inflation, rather than to the current inflation. This avoids both an overly aggressive response to the initial burst of overall inflation and an insufficient immediate response because of an inappropriate focus on a measure of inflation that ignores the current rise in oil prices.

Art and Science

Work on policy rules and experience with implementing policy in an interest rate regime have, I believe, helped to define the set of principles I have just discussed. They are, I would remind you, only my perspective on the strategy of monetary policy, not official doctrine of the FOMC. We have much to learn, both about the structure of the economy and about the best way to implement policy.

The role of rules is best viewed in my judgment as informing the monetary policy decision, not dictating it. No single rule will be the best policy in all circumstances, as I hope I have demonstrated with my discussion. Sometimes responding to recent trends in the data will work well, but sometimes a forward-looking policy will be critical, as might be the case in the current environment. Sometimes an unusual circumstance will dictate a departure from what the rule might have suggested. An example here would be maintaining a very stimulative policy -- effectively a zero real federal funds rate -- during 1992 and 1993, a period well into the current expansion. This turned out, in my judgment, to be very excellent policy, though a departure from the Taylor Rule, because it took account of the unusual structural drags that were restraining the expansion and justified maintaining monetary stimulus longer than normal into an expansion. And, finally, monetary policy has to be sensitive to the potential for structural changes to alter fundamental relationships.

Science in the form of economic theory, econometric models, and carefully designed rules can improve the conduct of monetary policy. But good policy will always be, as Alan Holmes understood so well, a blend of art and science. Each of us on the FOMC strive to become the monetary policy artist that Alan Holmes was as he participated in the FOMC during his distinguished career.