Commitment Versus Discretion In Monetary Policy*

BY MICHAEL DOTSEY

Whether policymakers should commit to a certain course of action or have the flexibility to approach each situation as it arises continues to be a central question in the design of monetary policy. A seminal article written by two prominent economists in 1977 analyzed the benefits of carrying out plans based on commitment rather than discretion. Since then, others have joined the debate. In this article, Mike Dotsey elaborates on the merits of commitment versus discretion in setting monetary policy.

The debate over whether it is better for a policymaker to commit to a particular course of action or to approach each situation with perfect flexibility has been and continues to be a central question in the design of monetary policy. In 1977, economists Finn Kydland and Edward Prescott wrote the seminal article analyzing the benefits of carrying out plans based on commitment as opposed to discretion. Since then, the benefits of commitment have been analyzed in many settings and in many economic models. Indeed, in a 2007 speech to the New York Association for Business Economics, Philadelphia Fed President Charles Plosser explained his views on credibility and commitment in monetary policymaking. This article elaborates and expands on some of these ideas.

To start with, let me first define what we mean by commitment versus discretion. Commitment is the ability to deliver on past promises no matter what the particular current situation is. I should stress that, under commitment, promised behavior is generally contingent on future events. Promises are not typically blanket commitments to be fulfilled irrespective of future situations. The key aspect of commitment is that the policymaker keeps his promise to act in a certain way when a particular future event comes to pass. The absence of this ability is called discretion. Under discretion, a policymaker is allowed to change policy depending on current circumstances and to disregard any past promises. Because the discretionary planner does not make any binding commitments, it would appear that discretion offers more flexibility and it would seem to be preferable to a policy whereby the policymaker must honor past promises.

The idea that it is better for a central bank to follow through on policies promised in the past, rather than being free to respond to conditions as they evolve, is a subtle and perhaps surprising one. Not only are better long-run outcomes achieved under commitment, but monetary policy is also better able to respond to shocks if the central bank is constrained to honor past promises concerning its future behavior. As I'll discuss below, lower inflation, with no adverse effects to economic activity, is obtained under a policy of commitment, and such a policy can achieve less volatility in both inflation and output as well. Indeed, the inability to commit often leads to problems for policymakers.

Comparing policymaking under discretion and under commitment is an analysis of two polar cases. It sidesteps the question of how a central bank can act in a committed fashion even if it desires to do so. Also, how could a central bank convince the public that it is operating in a manner consistent with commitment when the institutional setting places little restriction on future policies? For instance, the members of the policy-

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making boards change over time as do the legislators that monitor the behavior of monetary policy. Commitment requires tying the hands of future policymakers, and in reality, we don't even know who they will be.

Research analyzing ways that policy can come close to the ideal of full commitment has generally proceeded along two lines. One is institutional design. How does one set up institutions that will improve on discretionary outcomes? The other is the role of reputation and the credibility an institution can achieve by behaving like a committed planner over time. While of tremendous interest, investigations into these areas are beyond the scope of this article. But we cannot hope to understand these more advanced investigations without first understanding the different nature of policy under commitment and under discretion.

Economists refer to the desire to alter previously made plans as the time-consistency problem because, at each date, an individual or policymaker finds it tempting to deviate from what an earlier plan dictated. The temptation to alter strategies affects how others view your proposed plan, and it is the interaction between the public's expectations and the policymaker's decisions that leads to problems for a policymaker who cannot commit. Economics has many examples of the time-consistency problem, and although I will primarily focus on monetary policy, I will start with a simpler setting that lays out the basic issues in a fairly transparent way.

THE EXAMPLE OF THE FLOOD PLAIN

Before we delve into monetary policy, it will be helpful to look at the difference between commitment and discretion in a simpler setting. One of the more famous examples used by Kydland and Prescott to illustrate the benefits of commitment over discretion is that of the flood plain. Recently, Robert King provided a detailed description of this example, which highlights the importance of expectations and the role they play in economic outcomes.[1] The role of expectations will also be a central aspect in the analysis of monetary policy.

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In this example, people make a single decision: whether they wish to live near the water. Unfortunately, areas near the water are subject to flooding. The government can prevent flooding by building dams, but doing so is expensive. The government also has a single decision: whether to build a dam. Furthermore, the government wants its policies to conform to individual preferences. It wants to do what makes society as a whole better off. There is no conflict between what individuals think is best and what the government thinks is best. The problem is determining what the best outcome will be, given that people prefer living near the water and the fact that building dams is costly. Of course, the best outcome will depend on how costly dams are relative to the pleasures of living near the water.

The problem is interesting only if we assume that, all things considered, dams are prohibitively expensive, and therefore, the best outcome is for people to live away from water and in areas not subject to flooding. Thus, the best outcome is for people to decide not to build houses in areas subject to floods and for the government to choose not to build dams. If the government can commit to never building a dam, this will be the outcome. Everyone will believe that the government will not build a dam and no one wants a flooded house. As a result, no one chooses to build near the water. The individual's decision about where to build a house is a relatively simple one and does not depend on where other individuals decide to build their houses. If you want to avoid flooding, stay away from the water.

Under discretion the government cannot commit to not building a dam. As King explains, this inability complicates the problem considerably. The government's decision is now based on how many people live near the water. If a sufficient number decide to live near the water, it is now better to build a dam than to subject many people to floods. Now, an individual's decision about where to build is complicated. If he thinks a lot of people will build houses near the water, he should too because a dam will be built, and he will have to pay his share of the dam's cost. If he anticipates that only a few people may build houses near the water, he should not follow their example because he will be subject to the risk of floods. In either instance, if he anticipates correctly, he either lives near the water

[1] See the article by Robert King.

protected by a dam or he lives in safety away from the water. If incorrect, he lives near the water and his house is periodically flooded, or he pays for a dam and lives in a less desirable location.

If we focus on situations where everyone behaves in a similar fashion, there are two potential outcomes. Everyone believes that no one else will build near the water; no one does; and no dam is built. That is the optimal outcome and the one obtained under commitment. If, however, everyone believes that others will build near the water, everyone does build near the water, and a dam is built — a less than desirable outcome. An important thing to note is how complicated an individual's decision-making process is. He must factor in not only what he believes the government will do but what everyone else will do as well. It is precisely this feature of how expectations affect an individual's decision that leads to the less desirable results under discretion. I will return to this aspect of behavior when I discuss monetary policy.

THE LONG-RUN BENEFITS OF COMMITMENT IN MONETARY POLICY

Now let's analyze the benefits that commitment confers on average inflation and average output. As in the example just considered, a key ingredient in the analysis is the forward-looking behavior of individuals. It is people's ability to plan ahead and anticipate the policymaker's actions that makes outcomes under discretion sub-optimal.

In particular, we will analyze the issue using a classical framework in which prices and wages are perfectly flexible. In such a setting, anticipated changes to the money supply have no effect on output. In this environment, if firms believe the central bank is going to increase the money supply, they respond by increasing prices. To be concrete, consider the case where individuals anticipate a doubling of the money supply. In this case firms respond by doubling their prices and workers similarly respond by doubling their wage demands. Workers would like to be able to purchase the same number of goods for a given number of hours worked and firms are willing to pay the higher wages because, in the end, they are paying workers the same amount in terms of goods produced. Thus, a doubling of money and a doubling of prices and wages leaves everyone in the same position as before. Therefore, anticipated changes in money affect only prices, and this is a long-run attribute of every established model in monetary economics.

However, unanticipated changes in money do affect output. For example, if the central bank adopts an expansionary policy by unexpectedly increasing the money stock, output expands and inflation increases. Firms and workers are both surprised by the increase in money and initially do not demand higher prices or higher wages. The increased money stock, which is held by the public, can now be used to purchase more goods and aggregate demand subsequently increases. As firms and workers catch on to what has happened, prices and wages increase, resulting in inflation. Symmetrically, unexpectedly tight monetary policy lowers inflation and causes output to contract.

Furthermore, there is a rate of inflation that everyone prefers, which, for the purposes of this article, need not be specified. I will refer to this rate as pi-star.[2] Inflation above or below this rate is viewed as undesirable. A second feature of the economy is that the central bank and the public desire output to be somewhat greater than potential.[3] The justification for this assumption is that other features of the economy, such as the lack of perfect competition or the presence of distortionary taxes, prevent the economy from operating efficiently, and to some extent, it is desirable for the monetary authority to offset these features.

Under these assumptions the central bank can move output above potential only if it surprises individuals by inflating at a rate greater than pi-star. Under commitment, the central bank would inform the public that it will keep inflation at pi-star. Knowing that the central bank is capable of honoring its promises, the public will believe the central bank and expect the inflation rate to be pi-star. With no surprises, inflation will be pi-star, and output will attain its potential level, which is somewhat below its desired level.

The question then is: Can a policymaker who cannot commit to achieving an inflation rate of pi-star do better? Can that policymaker increase output enough at the expense of some surprise inflation to make everyone better off? Perhaps surprisingly, the answer is no. Suppose the public initially thought that the central bank would target inflation at the rate of pi-star. Knowing this, the central bank is now faced with the opportunity to increase the level of output by creating a bit of surprise inflation through expansionary policy. In other words,

[2] Depending on one's view of the structure of the economy, the optimal rate could be slightly negative, zero, or even perhaps slightly positive.

[3] An economy's potential output is the level that would occur in the absence of any economic distortions. Basically, it is the level that would obtain if prices were free to vary, markets were competitive, and there were no distortionary taxes.

a discretionary policymaker has an incentive to deviate from the policy that would occur under commitment. A small increase in the inflation rate would not be very costly, and the benefit would entail more output. Facing this tradeoff, the central bank will generally find it desirable to initiate additional inflation.

For concreteness, assume it is desirable to generate a 1 percent surprise increase in inflation. In this case, it would be foolish for the public to expect the inflation rate to be pi-star. They should expect it to be pi-star plus 1 percent. If the central bank does not revise its strategy, the outcome will be no surprise: Inflation will be pi-star plus 1 percent, and output will be at its potential level. At this stage we can repeat the reasoning in the previous paragraph. A further attempt to surprise the public, with say 0.5 percent additional inflation, will generate increased output that, in the end, may be worthwhile. If that is the case, the public should anticipate an inflation rate of pi-star plus 1.5 percent.

Again, all that occurs in the end is more inflation and no additional output. At some point additional inflation will be too costly, and the central bank will no longer try to fool the public. The public will expect the higher inflation rate, and output will remain at potential. Forward-looking individuals will not be fooled, but under discretion, there is a temptation to try to fool them. The result is just more inflation. So, under both commitment and discretion, output remains at potential, but commitment achieves this result with lower inflation.

The example above makes clear the long-run benefits of commitment and of devising institutional arrangements that prevent the central bank from using discretionary policy. Some economists have argued that the gold standard was such an arrangement or that currency boards help achieve commitment. Others, such as Kenneth Rogoff, have argued for the benefits of appointing central bankers who have a strong aversion to inflation. Carl Walsh has suggested contracts that penalize central bankers if inflation deviates too much from its target. Currently, there is a good deal of interest in whether explicit forms of inflation targeting help to achieve the better outcomes associated with commitment.[4]

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THE RESPONSE TO SHOCKS UNDER COMMITMENT AND DISCRETION

The ability to respond to economic shocks, such as oil-price shocks or changes in productivity, so as to limit their effects on economic volatility is one of the supreme challenges confronting central banks. It is this aspect of monetary policy that most often elicits arguments touting the benefits of discretion. It is argued by those in favor of discretion that monetary policymakers must be allowed a free hand to respond to each situation as it arises and not be constrained, for example, by promises to keep inflation at some targeted rate. Discretion is needed to adequately guide the economy through turbulent times.

However, the notion that commitment unduly constrains the policymaker from reacting optimally to economic shocks is actually mistaken. The ability to keep promises allows a central bank operating under a policy of commitment to influence expectations in a way that the discretionary planner cannot. In a sense, this gives the policymaker who can commit another tool to work with. In fact, a policy under commitment can achieve all of the outcomes of a policy under discretion and can also achieve outcomes unobtainable under discretion. The committed policymaker cannot do worse than the discretionary planner.

It is precisely because a policymaker who can commit has the ability to follow through on promised actions that he can influence expectations in a desirable way. The discretionary planner, because he makes decisions period by period, makes no promises and, as a result, does not have a similar ability to influence expectations. A planner who can commit to future actions in various situations can affect what people expect will happen in these situations, and these expectations influence current behavior. By making well-designed promises, policymakers can influence expectations in ways that elicit better economic outcomes. However, along with these promises comes the constraint to honor them. Thus, actions today, which affect the future, also affect future policy, and this in turn implies that the history of actions taken will affect current policy. In this sense, the committed policymaker is not free to base today's

[4] For a survey of inflation targeting and its effects, see my 2006 *Business Review* article.

policy only on current economic conditions.

But having policy constrained in this way should not be viewed as a negative attribute of commitment. These constraints, if designed appropriately, can actually lead to better outcomes through their influence on expectations that allow for better economic decisions. These last points have been persuasively illustrated by economists Richard Clarida, Jordi Gali, and Mark Gertler and by economist Michael Woodford.

To make these points more concretely, I will use a simple benchmark New Keynesian model of the economy.[5] That model has two basic components. One is a description of aggregate demand, commonly referred to as an IS curve, that essentially relates current output demand to the level of the real interest rate (the interest rate adjusted for inflation) and to future levels of output.[6] Basically, high real interest rates imply lower demand for consumption and investment. A high real interest rate implies a greater return to saving and induces people to consume less and save more. It also means that firms must earn a higher rate of return on each project in order for those projects to be cost effective. Thus, only relatively profitable projects will be undertaken, and consequently, there will be less investment.

Alternatively, greater future economic activity implies both an increase in current consumption through a wealth effect and more investment because future economic prospects appear rosy. The important feature to note is that higher interest rates reduce aggregate demand and lower output.

The model's other component is a Phillips curve that relates current inflation to future expected inflation and to the level of output. This is the supply part of the model. If future inflation is expected to be high, firms will want to raise prices more aggressively today so that their prices do not get too far out of line with the behavior of prices in general. This leads to greater inflation today. Thus, higher expected future inflation leads to higher inflation today. Also, when the level of output is high, firms' costs of production rise, and as a result, firms pass on some of these additional costs to consumers. The result is higher inflation. The economy will be in equilibrium when the level of the real interest rate and inflation implies that output demand is equal to output supply.

Importantly, in the model, monetary policy can affect the level of output. Underpinning this model of the economy is the feature that prices and wages are costly to adjust. These costs may involve the resources used in acquiring information, the resources employed in figuring out exactly what the correct price or wage is, and the resources needed to change prices. These costs imply that firms and workers will not immediately and fully react to changes in monetary policy. As in our previous example, in which unanticipated changes in policy affected the economy, here anticipated changes in policy affect the economy as well. They do so because it takes time for the price system to fully respond to changes in policy. Thus, the central bank can move output and inflation around in response to an economic shock.

The question I now address is: Who does it better — a discretionary policymaker or a committed policymaker?

To answer this question, I examine how both types of policymakers and the economy respond to an aggregate supply shock. Figure 1 displays the model economic responses to a 1 percent shock to the inflation rate.[7] Because the public does not like inflation above target and the central bank is trying to maximize the public's welfare, policy responds by tightening: The central bank raises the nominal interest rate (panel a). Note that, under discretion, the interest rate must be raised by approximately 50 basis points more than under commitment. As a result, output declines by more under discretionary policy (panel b), but the effect of this more aggressive tightening under discretion has less of an effect on inflation (panel c). Inflation moves up more in response to the shock to inflation and declines more slowly. Policy under commitment experiences a smaller rise in inflation and a more rapid return of inflation to target, with less loss of output. Policy also does not need to be as aggressive because inflation doesn't rise as much.

How does the committed policymaker achieve the best of both worlds: less inflation as a result of the shock and less loss of output while at the same time acting less aggressively? The answer is that expectations of future inflation affect current inflation. Under commitment, individuals take into account the policymaker's promise to bring inflation down and not exploit the output gains arising from inflation. As a result, expectations of inflation do not increase as much under commitment (panel d), implying

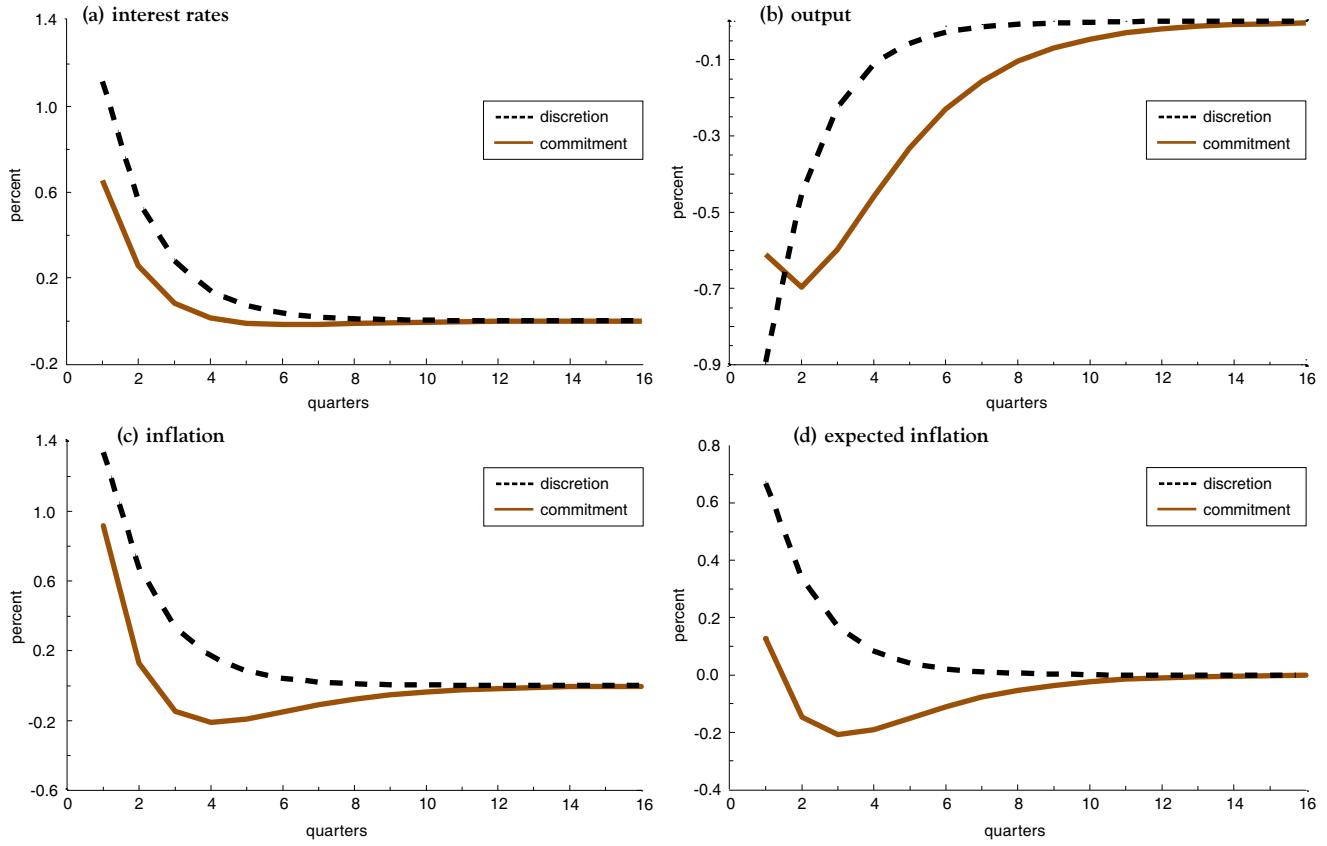
[5] For a more detailed description of the model economy used in this section, see the article by Richard Clarida, Jordi Gali, and Mark Gertler.

[6] It is also common to describe the IS and Phillips curves in terms of output relative to its potential level, which is referred to as an output gap.

[7] In these simulations the monetary authority places only half as much weight on output fluctuations as it does on inflation fluctuations.

FIGURE 1

Economic Responses Under Commitment and Discretion



that firms do not raise their current prices as aggressively as they would in an environment characterized by discretion. The stability of inflation expectations under commitment implies that policy does not have to be as aggressive in order to bring down inflation, and as a result, output does not have to decline by as much. Contrary to intuition, the constraint of having to abide by past promises actually allows the committed policymaker to achieve superior economic outcomes in response to economic disturbances.[8]

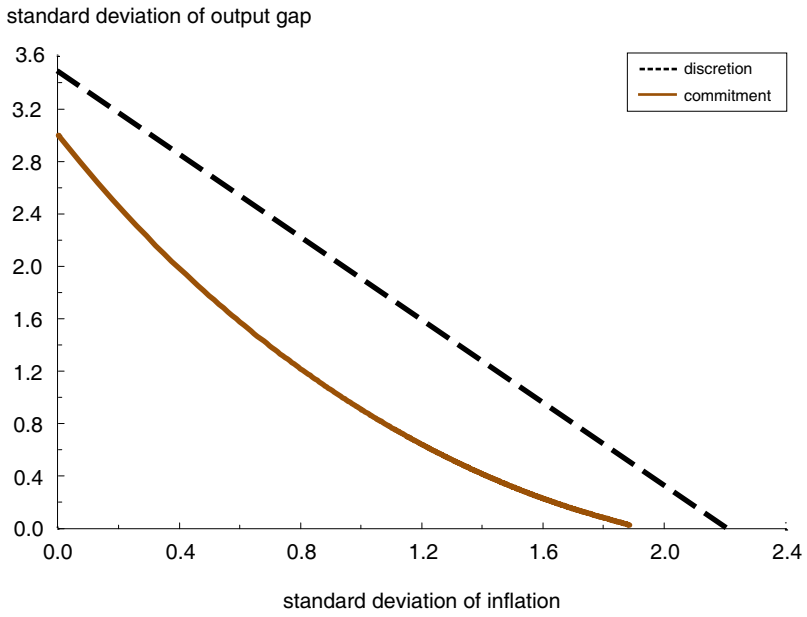
Commitment's superiority to discretion can be further characterized by investigating what kind of inflation and output tradeoffs confront the economy under the two different types of policy. In this model of the economy, decreasing the variability of inflation can be achieved only by allowing output to be more variable. If, in order to combat inflation or disinflation, the policymaker responds more aggressively to inflationary shocks, output will end up varying more because of the more aggressive policy response. Therefore, the more the policymaker tries to limit the volatility of inflation, the greater the volatility of output will be. Symmetrically, the policymaker can lower the volatility of output only by accepting more volatility in inflation. Thus, the policymaker will have a whole menu of attainable combinations of output variability and inflation variability to choose from. The particular choice will depend on the public's preferences.

Figure 2 graphs the choices available to each type of policymaker. Because people dislike volatility in both output and inflation, points that lie closer to the origin are preferred. It is obvious that under commitment the economy can achieve better outcomes than under discretion because the curve depicting the tradeoff under

[8] In this simple model, the committed and discretionary policymakers achieve the same outcomes in response to a shock to aggregate demand. However, this is not generally true in more sophisticated models.

FIGURE 2

Output and Inflation Tradeoffs



commitment lies everywhere below the curve under discretion. This means that for any given level of variability in inflation, the committed policymaker can obtain less variability in output than the discretionary planner. Similarly, for any degree of volatility in output, the committed planner can generate less volatility in inflation. Thus, not only will the economy achieve a lower average rate of inflation under commitment, it will also experience less volatile inflation. This depiction along with the discussion in the previous section highlights the observation made earlier: Under commitment, policy can achieve outcomes that cannot be achieved under discretion.

AN EXAMPLE: OIL-PRICE SHOCKS

There are many examples of the benefits of commitment — or, in U.S. monetary policy, at least examples in which the Federal Reserve has had sufficient credibility that the public believed that monetary policy would behave in a manner that approximates commitment. I will contrast two episodes, both involving oil-price shocks.

Although I cannot give definitive proof for the following argument, one can view the differential economic impact of oil-price shocks in the 1970s and 2000s through the lens of commitment.[9] In one instance, the Fed lacked credibility for maintaining low inflation and in the other the Fed had that credibility. The theoretical material covered suggests that the effects of the oil shocks on economic activity and inflation could be different under these two different settings. In actuality, they were quite different.

The two episodes are the oil-price shock of the late 1970s and a more recent oil-price shock in the early 2000s.[10] By the time the oil-price shock of 1979 hit, more than doubling oil prices over the course of the year, inflation had already reached 9 percent. These historically high inflation rates were caused by overly easy monetary policy. It is fair to say the Federal Reserve had, by the time of the oil shock, lost credibility for maintaining low inflation. The rise in oil prices further ignited inflationary pressures, and without credibility for maintaining low inflation, the Fed was put in the situation of ratifying the higher expected inflation or trying to contain inflation with a large subsequent loss of output. It chose the first option, and by the first quarter of 1980, inflation had increased to more than 15 percent.

In contrast, from the end of 2003 to the end of 2005 oil prices more than doubled, yet inflation remained contained without any significant adverse effect on output. The main difference between these two episodes is the credibility that the Federal Reserve now enjoys for maintaining low and stable inflation. This credibility is portrayed by the stability of various measures of inflation expectations over this period. For example, the 10-year expected

[9] Recent evidence outlined in the article by Sylvain Leduc, Keith Sill, and Tom Stark is consistent with the interpretation of events described here.

[10] There are many other documented episodes. Some are discussed in President Plosser's speech, and the history of inflation scares is documented in the article by Marvin Goodfriend. Also, for a more detailed analysis of appropriate monetary policy in the face of shocks to oil prices, see the article by Sylvain Leduc and Keith Sill.

inflation rate in the Philadelphia Fed's Survey of Professional Forecasters hardly moves over this period, and expected inflation as represented by the difference between the yield on 10-year nominal and indexed Treasury bonds is quite stable. Therefore, as in Figure 1, the more recent oil-price shock had very little impact on inflation expectations, and as a result, there has been no need for exceedingly aggressive policy. In turn, there has been very little impact on output. The current FOMC is committed to low and stable inflation and is perceived in that light. Acting as a committed policymaker has its benefits both in theory and in practice.

SUMMARY

This article has explored the benefits of policy under commitment versus discretion. In particular, it has discussed the added benefits policymakers derive from fulfilling past promises. Rather than constraining policy, adhering to honoring policy promises enables monetary policy to attain outcomes that cannot be attained by a policy arrived at anew at each point in time. Committed policy generates lower long-run inflation without any adverse effects on economic activity and ameliorates the effects of economic disturbances.

In practice, achieving and maintaining the credibility that allows a central bank to follow policies consistent with the assumption of full commitment is not easy or straightforward. The credibility the Fed has achieved is due, in no small part, to the leadership of the two previous Fed Chairmen, Paul Volcker and Alan Greenspan. The current Chairman, Ben Bernanke, is maintaining their example of commitment to low and stable inflation. The benefits of following a committed plan are now so entrenched in policy-making circles that most central banks aggressively strive to maintain their credibility. The loss of credibility presents grave problems for monetary policymakers, problems that have been highlighted in this article.

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