

The Rationale for Inflation Targeting

IN GENERAL, macroeconomic policy has many goals besides low inflation, including high real growth, low unemployment, financial stability, a not-too-excessive trade deficit, and so on. Yet a central tenet of inflation targeting is that price stability must be the primary long-run goal of monetary policy. This emphasis on price stability to the seeming exclusion of other objectives demands some explanation. The inflation targeter's case for stressing long-run price stability in formulating monetary policy, and in communicating policy intentions to the public, rests on three arguments.

First, the increased emphasis on controlling inflation arises not because unemployment and related problems have become less urgent concerns, but because economists and policy-makers are considerably less confident today than they were thirty years ago that monetary policy can be used effectively to moderate short-run fluctuations in the economy, except perhaps fluctuations that are particularly severe or protracted. Further, most macroeconomists agree that, *in the long run*, the inflation rate is the only macroeconomic variable that monetary policy can affect. When monetary policy-makers set a low rate of inflation as their primary long-run goal, to some significant extent they are simply accepting the reality of what monetary policy can and cannot do.

Second, there is by now something of a consensus that even moderate rates of inflation are harmful to economic efficiency and growth, and that the maintenance of a low and stable inflation rate is important, perhaps necessary, for achieving other macroeconomic goals.

Third, and in our view most essentially, the establishment of price stability as the primary long-run goal of monetary policy provides a key conceptual element in the overall framework of policy-making. That framework helps policy-makers to communicate their intentions to the public and to impose some degree of accountability and discipline on the central bank and on the government itself. For example, on those occasions when monetary policy is used to address short-run stabilization objectives, the constraint that long-run inflation goals must not be compromised forces policy-makers to consider the longer-term consequences of

those short-run measures, imposing a consistency and rationality on their policy choices that they might not otherwise exhibit. In the jargon of monetary economics, explained further below, an inflation target serves as a *nominal anchor* for monetary policy. In doing so, it provides a focus for the expectations of financial markets and the general public, as well as a reference point against which central bankers can judge the desirability of short-run policies.

We now develop these three arguments in greater detail.

What Monetary Policy Can and Cannot Do

Thirty years ago, policy-makers and most economists supported "activist" monetary policies, which were defined as policies whose purpose was to keep output and unemployment close to their "full employment" levels at all times. Supporters of activism believed that there was a long-run tradeoff between inflation and unemployment, known as the Phillips curve (Phillips, 1958; Samuelson and Solow, 1960). According to this view, the monetary authorities could maintain a *permanently* lower rate of unemployment by accepting some degree of inflation, and vice versa. At about the same time, large econometric models of the U.S. economy became available that promised to give policy-makers the quantitative information they needed to implement economic stabilization policies. To many economists and policy-makers, it seemed possible that actively managed monetary (and fiscal) policies could be used to maintain maximum employment pretty much all the time.

That happy outcome was not to be. The business cycle did not die a quiet death in the 1960s, as had been predicted by the more optimistic proponents of activist policies. Indeed, the recessions of 1973-74 and 1981-82 were the most severe of the postwar period. Nor did inflation vanish: The late 1960s and the decade of the 1970s were plagued with rising and variable rates of inflation, in the United States and in many other countries as well. Further, in the view of most economists, the severe 1981-82 recession was largely the *result* of restrictive monetary policy, which in turn had been made necessary by surging inflation. In short, the activist monetary policies of the 1960s and 1970s not only failed to deliver their promised benefits, they helped to generate inflationary pressures that could be subdued only at high economic cost.

Intellectual developments, too, have contributed to the fading reputation of strongly activist policies. Three such developments have been particularly influential: (1) Milton Friedman's monetarist critique, par-

ticularly his observation that monetary policy works only with "long and variable lags"; (2) the conclusion, reached first by Friedman and Edmund Phelps, that there is no long-run tradeoff between inflation and unemployment; and (3) increased understanding of the potential importance of central bank credibility to the effectiveness of monetary policy.

Friedman, the founder of the school of macroeconomic thought known as *monetarism*, never doubted that monetary policy can have powerful effects on the economy. He documented this claim extensively in his path-breaking book, *A Monetary History of the United States, 1867-1960*, co-authored with Anna J. Schwartz. But Friedman also argued that those effects set in only with lags that are both long and variable (that is, varying from episode to episode in essentially unpredictable ways). Consequently Friedman argued that monetary policy, though powerful, is not a tool that can be used with precision.

Friedman's critics pointed out that policy lags, even if they are as long and variable as Friedman claimed, do not rule out the possibility of successful activism; they only make control of the economy technically more difficult. For example, they suggested, the techniques of "optimal control" (the mathematical and engineering methods used in guiding rockets) could be used to compensate for lags between a given policy action and its effect. Policy may be less effective under these conditions, Friedman's critics observed, but the active pursuit of short-run economic stability would still be preferable to passive, non-reactive policy-making.

In turn, various arguments against the optimal control paradigm for monetary policy have been put forward. Notably, 1995 Nobel Prize winner Robert E. Lucas, Jr., pointed out (Lucas, 1976) that there is an important difference between rockets and the people who make up an economy, which is that people try to understand and predict the actions of their "controllers" (the policy-makers), while rockets do not. More specifically, Lucas showed that optimal control methods may be useless for guiding policy if they do not take into account the possibility that the public's expectations about the future will change when policies change. The public's expectations about the future, including expectations about future policy actions, are important because they affect current economic behavior. Consequently, Lucas argued, policy-making takes on elements of a strategic game between the policy-makers and the public. Analyzing such a game is a considerably more difficult problem than guiding a rocket. Moreover, given the difficulty of anticipating changes in public expectations, Lucas's argument implies, it is doubtful that policy-makers will be able to control the economy with any degree of precision.

Lucas's argument has had a major impact in thinking about macroeconomic policy, though there is still some disagreement about its empirical relevance. There is, in any case, another explanation of why long and variable lags make activist policy counterproductive—an explanation that, in our view, is possibly more relevant than the more technical explanations (such as Lucas's). This alternative explanation rests on the tendency of the public and politicians in modern democracies to take a myopic view of public policy issues. Given the pressures of frequent elections and the almost instantaneous reporting of poll results, it is difficult for politicians to appreciate that watchful waiting is sometimes the best policy.

Instead, in practice, politicians (and politically influenced central bankers) tend to over-manipulate the levers of monetary policy in attempts to control the economy. They may react to a rise in unemployment, for example, by cutting interest rates sharply, ignoring the possibility that the situation might have righted itself by the time the effects of their action are felt. As a result, the economy may overheat, leading either to a bout of inflation or to another sharp policy shift, which generates more, rather than less, economic instability. Thus, because of the interaction of long policy lags and short political horizons, activist policies may lead to worse results than would a policy of restraint.

The second blow to policy activism also was struck by Friedman, in his 1967 presidential address to the American Economic Association (Friedman, 1968). (Arguments similar to Friedman's were made at about the same time by Edmund Phelps [Phelps, 1968]). In his address, Friedman criticized the assumption that *permanent* reductions in unemployment could be achieved by accepting a higher level of inflation (the Phillips curve tradeoff).¹ He agreed that higher inflation might stimulate the economy and lower unemployment for short periods: For example, if wage rates are fixed by contract and prices unexpectedly rise, then the profit margins of firms will increase, giving them an incentive to produce more goods and services. (This is just one of many stories that have been told to explain why inflation may stimulate the economy.) In effect, firms choose to produce more because unexpected inflation implies an unexpected decline in the real cost of production.

However, Friedman pointed out, workers are no more likely than firms to ignore their own economic interests. Once they realize that inflation has risen, they will demand more rapid wage increases to compensate for their lost buying power. As the rate of increase in wages begins to match the rate of increase in prices, the profit margins of firms, and hence their rate of production, will return to normal. The net result is

that, in the long run, only the inflation rate has been affected by the expansionary monetary policy, output and unemployment have returned to their normal, or "natural," rates. Hence, Friedman concluded, the notion that by accepting a rise in inflation the country can buy a long-term decrease in unemployment is wrong: *There is no long-run tradeoff between inflation and unemployment.* Or, if there is such a relationship, Friedman added in his 1977 Nobel lecture (Friedman, 1977), it goes the "wrong" way: Because inflation inhibits economic growth and efficiency, an increase in inflation may in fact lead to slightly higher (rather than lower) unemployment in the long run.

This alleged absence of any long-run relationship between inflation and unemployment has important implications for activist monetary policy. Contrary to what was believed thirty years ago, it appears that the benefits of expansionary policies (such as lower unemployment) are largely transitory, whereas the costs of expansionary policies (primarily the inefficiencies associated with higher inflation) tend to be permanent, absent any countervailing policies.² Thus, long after the benefits of the expansionary policies have disappeared, policy-makers will have to choose between accepting a higher permanent level of inflation (with its negative impact on the economy) and reining in the economy by restrictive policies. Restraining the economy with tight monetary and fiscal policies curtails inflation but may also "give back" much of the employment gains, so that often all that has been accomplished in the long run is to increase the instability of the economy. To put Friedman's point another way, in the long run the only macroeconomic variable that the central bank can affect systematically is the inflation rate. It is unlikely that monetary policy can be used to reduce the unemployment rate *on average* over any substantial period of time.

The third challenge to activist policy arose from the *policy credibility problem* (known also in the technical literature as the "time inconsistency problem"), analyzed in important work by Kydland and Prescott (1977), Calvo (1978), Barro and Gordon (1983), and many subsequent authors. The policy credibility problem has to do with the likelihood that, even if it wants to keep inflation low, an activist central bank will often have a strong incentive to increase the rate of inflation above the level expected by the public. The reason is that in the short run wages and many other input costs are fixed by contract or by informal agreement; hence, by creating more inflation than expected, the central bank can stimulate production, employment, and profits, at least temporarily. Since high rates of employment and profits are popular, the central bank will be tempted to boost inflation.

But will the central bank in fact be able to achieve these short-run gains? Kydland and Prescott and the authors that followed, in an argument reminiscent of Friedman's earlier critique, pointed out that it was unlikely that the central bank could consistently fool workers and firms into expecting inflation lower than what subsequently occurred. Eventually, workers and firms would come to understand the central bank's incentives, leading them to adjust their inflation expectations (and hence their wage- and price-setting behavior) accordingly.³ The outcome, once the public understands the central bank's behavior, is that output and employment are, on average, no higher than they otherwise would be; but inflation is higher than it otherwise would be, with no benefits to compensate.

The policy credibility argument suggests that activist central banks, no matter how much they declare their intention to keep inflation low, will be over-expansionist and hence inflation-prone in practice. As the public comes to understand and anticipate this behavior, higher inflation will become ingrained in the system, without any compensating increase in output or employment. This "inflation bias" is another possible drawback of an activist monetary policy.

Thus a number of developments have acted to dim the optimistic view of the capabilities of monetary policy that was dominant in the 1960s. We do not want to take this point too far: Despite all we have said, we do not deny that monetary policy can have powerful effects on output and employment, or even that there are times when monetary policy can be used constructively to stabilize output and employment. Moreover, it is unrealistic to think that politicians and policy-makers can ever be induced to abstain completely from activist policies, given the political pressures to "do something" about slowdowns in the economy. Indeed, we will see in this book that even the most avid inflation-targeting central banks can and do use monetary policy to address short-term policy objectives, within a framework of maintaining long-run price stability.

Still, to reiterate, activist policy oriented to keeping the economy continuously at full employment comes with important caveats: First, because of long and variable lags between monetary policy actions and effects, the effectiveness of activist policies may be seriously curtailed; indeed, if these policies are controlled by myopic politicians, they may be destabilizing, rather than stabilizing. Second, the apparent absence of any long-run tradeoff between unemployment and inflation reduces the attractiveness of activist policies, since the benefits of such policies (higher output and employment) are largely transitory, while their costs

(higher inflation) are permanent. Indeed, in the long run, the central bank can affect only inflation, and not real variables such as output. Finally, there are reasons to believe that central banks that engage in activist policies may be prone to opportunistic behavior, which leads (once the public has come to understand it) to higher inflation but no higher output or employment (the policy credibility problem). This awareness of what monetary policy can and cannot do has moved many monetary policymakers toward a greater focus on price stability, particularly in the long run.

To forestall confusion: Our criticisms of "policy activism" does not imply that policymakers should be reluctant to move the policy levers, but rather that doing so in an attempt to maintain continuous full employment is likely to be counterproductive. Indeed, a focus on price stability, as implied by the inflation-targeting approach, may require active manipulation of monetary policy instruments. Policy activism, in the broader sense of policy reacting sensitively to new information as it arrives, is not ruled out by these arguments.

The Benefits of Low Inflation

Another reason for setting price stability as the primary goal of monetary policy is a growing belief among economists and central bankers that low inflation helps to promote economic efficiency and growth in the long run.

That high inflation is detrimental to the economy has long been recognized. Countries experiencing high inflation (or, in extreme cases, "hyperinflation" of 500% to 1000% or more per year) usually exhibit poor economic performance. Among the costs of high inflation are: over-expansion of the financial system, as individuals and businesses devote more and more of their resources to avoiding the effects of inflation on their cash holdings; an increased susceptibility to financial crisis, as difficulties in adjusting to high inflation make the financial system more fragile; poor functioning of product and labor markets, as prices become noisy measures of the relative economic values of goods and services; the costs of frequent re-pricing, along with the costs of monitoring the prices of suppliers and competitors; and distributional effects, often including the destruction of the middle class (much of whose savings become worthless), with the associated social consequences. Fischer (1993) and others have provided evidence that macroeconomic stability, including control of inflation, is an important precondition for economic growth.

Periods of very rapid inflation are clearly destructive. But whether more moderate inflation (below, say, 10% per year) is harmful, is more controversial. Some economists have argued that the public's consistent antipathy toward inflation (as evidenced by opinion polls, for example) is primarily the result of confusion about what inflation really is. Strictly speaking, inflation is a general rise in all prices, wages, and incomes. As such, it should have little or no effect on real purchasing power or the economic incentives of individuals, since a general rise in prices leaves relative prices unaffected. When members of the public talk about inflation, however, they often stress the effects of changes in relative prices (of food or energy, for example) on their standard of living. These are legitimate concerns, of course, but they are largely independent of the rate of inflation *per se*. Moreover, they are beyond the power of monetary policy to correct. "True" inflation, economists have sometimes suggested, should be no more harmful to the economy than a decision to price all goods and services in terms of dimes instead of dollars.

Yet in recent years economists and central bankers have tended to treat even relatively low rates of inflation as a problem, as evidenced by the aggressive disinflations that policy-makers have undertaken in almost every industrialized country in the past two decades. Somewhat paradoxically, to a degree inflation has become perceived as a serious economic problem precisely because of the public's confusion over what inflation is and about how to make adjustments for it. For example, because people find it difficult to adjust for inflation in their calculations, many of their decisions—particularly long-term decisions, such as how much to save for retirement and how to invest their capital—are less appropriate than they might otherwise be. And it is true, given compound interest, that over a thirty- or forty-year period, even slight differences in annual inflation rates have a large effect on the purchasing power of the dollar. Making it difficult to assess both current relative prices and the future price level, inflation can also distort the decisions of firms about production and investment.

More sophisticated savers, investors, and managers, of course, find ways to insulate themselves from the effects of inflation. But that effort is not without its own economic costs, including costs of attention and calculation as well as the cost of resources devoted to (for example) the development of alternative financial instruments. Less sophisticated individuals are less likely to insulate their income and savings from inflation; their inability to do so represents one of several channels by which inflation induces redistribution of wealth among groups.

below 8% or so; and Bruno and Easterly (1998) argue that only "inflation crises," when inflation reaches very high levels, have significant negative effects on growth. However, some recent studies suggest that the greater unpredictability of price changes associated with inflation may significantly retard economic growth, even at low levels of inflation (Judson and Orphanides, 1996; Hess and Morris, 1996). The greater the long-term effects of inflation on economic growth, the more reason monetary authorities have to focus on long-run price stability as a policy goal.

The Need for a Nominal Anchor

We have discussed two broad reasons for an increased emphasis on price stability in monetary policy-making; namely, reduced confidence in activist policies and increased concern about the adverse effects of even moderate rates of inflation. While these developments have increased the receptivity of central bankers to inflation targeting as a strategy for policy, we would argue that neither of these two reasons is absolutely essential for justifying this policy approach. The strongest argument for inflation targeting is, instead, that it can help to provide monetary policy with what economists call a "nominal anchor."

The price of any good—bread, for example—is measured in units of whatever it is that serves as money in the society. For example, under a gold standard, as with any other commodity money standard, the price of bread is measured in ounces of gold.⁴ Under a gold standard, it is not difficult to see how the price of bread is determined: Because bread and gold are both intrinsically useful commodities, the price of bread in terms of gold cannot differ by too much from the relative marginal values of the two commodities to their users. If there is a famine, for example, bread will become relatively more valued, and its price in terms of gold will rise; but if gold jewelry becomes more fashionable, the demand for gold will rise, and the price of bread in terms of gold will fall.

How prices are determined under an unbacked paper-money standard, which is the nearly universal type of monetary system at present, is far less obvious. With paper money intrinsically almost worthless, what then determines whether a loaf of bread is worth one dollar or three dollars? The short answer, sweeping a lot of complications under the rug, is that in a paper-money system there is a need for some additional constraint on monetary policy, called a *nominal anchor*, to tie down the price level to a specific value at a given time. A nominal anchor can take

Shiller's (1996) opinion surveys of public attitudes toward inflation, while confirming the suspicions of economists that the public is confused about what inflation is, show that people believe inflation to be highly uneven in its distributional impacts and hence corrosive of the social compact.

The absence of complete indexation (automatic adjustments for inflation) in virtually all legal and contractual arrangements (which in turn reflects the many technical difficulties with indexation in the real world) also allows inflation, even at relatively low levels, to have adverse economic effects. The most important costs of inflation at low to moderate levels seem to come from the interaction of inflation with the tax system, which is rarely if ever fully indexed to inflation. For example, the common practice of basing capital depreciation allowances on the historical costs of investments, rather than on current values, implies that inflation erodes a key tax benefit of capital formation, reducing the incentive to invest and perhaps (because of sectoral differences in capital life-times and depreciation methods) leading to a misallocation of investment among sectors. Fischer (1994) calculates the social costs of tax-related distortions to be about 2% to 3% of GDP at an inflation rate of 10%, and Feldstein (1997) argues that there would be social gains from reducing inflation even when initial inflation is very low. Even moderate inflation can also produce serious distortions in accounting systems, in labor contracts, and in the risks and returns of financial instruments.

To be sure, obtaining direct empirical confirmation of a link between inflation and the overall economic performance of the economy is very difficult. Inflation is, after all, determined by the interaction of many forces. We rarely see variations in inflation that are not associated with factors such as supply shocks or political instability. Consequently, it is probably impossible to conduct completely "clean" tests of the direct effects of inflation on real economic performance.

Still, a number of econometric studies are available that associate higher inflation with lower productivity and with lower rates of growth (see Andersen and Gruen [1995] for a survey). In one of the most cited articles involving cross-national comparisons of growth rates, Fischer (1993) finds that, on average, a 1-percentage-point rise in the rate of inflation can cost an economy more than one-tenth of a percentage point in its growth rate. The effect on the growth rate often varies significantly with the rate of inflation, according to empirical studies. For instance, Sarel (1996) found that the negative effects of inflation increase sharply at higher rates of inflation but are not important at rates of inflation

the form of a quantity constraint, such as a limit on the amount of paper money that can be put into circulation; or of a price constraint, which legally fixes the value of the paper money in terms of some good or asset (such as gold or a foreign currency). Both types have been used, and both can ensure that the economy's price level takes a well-determined, specific value, despite the fact that paper money itself is intrinsically nearly worthless.

Conducting monetary policy without a firmly established nominal anchor is possible but risky. Suppose, for example, that there is no quantity or price constraint on monetary policy, and that for some reason there is a sharp increase in the rate of inflation expected by the public. (Goodfriend [1993] has called such episodes "inflation scares" and argues that they have occurred frequently in postwar U.S. monetary history.) Such shifts in inflation expectations pose a dilemma for the monetary authorities: Say they accommodate the shift by conducting monetary policy in such a way that the expectations prove correct. By doing so they have not only permitted a rise in inflation, but they have also communicated to the public that there is nothing to prevent inflation from rising still further. If, on the other hand, they resist the rise in inflation expectations by keeping monetary policy tight, they risk putting the economy into a recession. In the absence of a nominal anchor, shifts in inflation expectations could be induced by any number of different factors, making macroeconomic prediction and control exceptionally difficult.

Clearly, then, monetary policy is most effective in the presence of a firmly established nominal anchor, and the more understandable that anchor is to the public the better. An effective commitment to long-run price stability is just such a nominal anchor, since (given the current level of prices), a target rate of inflation communicates to the public the price level the central bank is aiming to achieve at specified dates in the future. We will discuss other possible ways to establish a nominal anchor in a later chapter, when we consider alternatives to inflation targeting. We will see, though, that each of these alternatives has important problems.

As we have emphasized, the fact that inflation targeting may be an effective means of providing a nominal anchor for monetary policy is, we believe, a sufficient reason in itself to consider this approach seriously. In particular, inflation targeting would remain a useful framework for policy even if the inflation targets were set at moderate rather than low levels, perhaps because it may be determined that very low inflation is not beneficial to the economy. And, as we will see repeatedly in this

book, inflation targeting does not preclude some degree of policy activism; rather, it provides a framework which allows for the pursuit of objectives other than price stability in a more disciplined and consistent manner. Of the three arguments we have discussed for making the control of inflation the primary long-run goal of monetary policy, the ability of inflation targets to help establish a nominal anchor for the price level seems to us the most essential.

Inflation Targeting: A Framework, Not a Rule

The classification of monetary policy strategies as "rules" or "discretion" (see Chapter 1) has been a major theme in the history of monetary economics, and the current debate over inflation targeting reflects that tradition. Recent critiques have tended to place inflation targeting on the "rule" side of the dichotomy (see, for example, [Benjamin] Friedman and Kuttner [1996]).⁵ As we have already noted, we believe that this is not the best way to think about inflation targeting.

If inflation targeting were to be treated as a policy rule in the classical sense (which, again, we do not think it should be), it would indeed be open to some serious criticisms. First, the idea that monetary policy literally has no goals other than to control inflation would find little support from the public, from central bankers, or from monetary economists. Second, given that governments and central banks do care about production, employment, exchange rates, and other variables besides inflation, treating inflation targeting as an ironclad policy rule could lead to very poor economic outcomes. For example, Friedman and Kuttner (1996) emphasize that an exclusive focus of policy on inflation could lead to a highly unstable economy in the event of large supply-side shocks, such as the sharp increases in oil prices that have buffeted the world economy from time to time.

Finally, critics of inflation targeting that characterize this approach as a rule might well ask what would be gained by precommitting monetary policy in such a way. The academic literature argues that "tying the hands" of monetary policy-makers should reduce opportunism and hence the inflation bias associated with the policy credibility problem. It also argues that rules-based policies should diminish the costs of disinflation, since increased credibility leads the public to moderate its inflation expectations more quickly. However, critics point out (and our own analysis will confirm) that, although inflation-targeting countries have generally achieved and maintained low rates of inflation, there is little evi-

unpredictable swells and currents. Less fancifully, we see the inflation-targeting framework as serving two important functions: (1) improving communication between policy-makers and the public, and, not unrelatedly, (2) providing discipline and accountability in the making of monetary policy.

The announcement of inflation targets communicates the central bank's intentions to the financial markets and to the public, and in so doing helps to reduce uncertainty about the future course of inflation. Many of the costs of inflation arise from its uncertainty or variability rather than from its level; for example, uncertainty about inflation exacerbates the volatility of relative prices (reducing the information content of prices) and increases the riskiness of non-indexed financial instruments and contracts set in nominal terms. In addition, uncertainty about the intentions of the central bank creates volatility in financial markets—a common phenomenon in the United States, where stock-market analysts parse every sentence uttered by the Federal Reserve chairman in search of hidden meanings. By making explicit the central bank's medium-term policy intentions, inflation targets improve planning in the private sector, enhance the public debate about the direction of monetary policy, and increase the accountability of the central bank. Transparency—clarity and ease of understanding by the public—has been claimed for other policy strategies as well, but the public is far more likely to understand what is meant by the predicted rate of change of consumer prices than, for instance, the growth rate of the M1 money stock.

Consider the familiar scenario in which an upcoming election or a slow economic recovery prompts the government to pressure the central bank to apply some short-run stimulus to the economy. In an inflation-targeting regime, the central bank would be able—indeed, would be required—to make it clear that the short-run benefits of that action (faster real growth) may have to be purchased at the cost of higher inflation in the medium and long terms. The accuracy of the central bank's inflation projections, and the willingness of the government to accept the higher inflation, could then be debated in public. The issue of long-run inflation would be on the table, where it could be seen as a counterweight to the projected short-run benefits of an economic stimulus. Making visible the connection between short-term adjustments of monetary policy and their long-term consequences would clarify for the public and for policy-makers what it is that monetary policy can and cannot do. At the very least, the need to consider long-term consequences might help overcome the myopia of policy-makers and dampen their readiness to over-manipulate the levers of policy in a destabilizing way.

dence that inflation targeting has significantly reduced the real costs of bringing inflation down. Even the Deutsche Bundesbank and the Swiss National Bank, whose dogged pursuit of low inflation over the past two decades has presumably given them maximum credibility, have managed to achieve reductions in inflation only at high costs in lost output and employment (DeBelle and Fischer, 1994; Posen, 1995a). Nor is there evidence that the introduction of inflation targets *per se* materially affects expectations of inflation, as revealed either by surveys or by the level of long-term nominal interest rates. Inflation expectations have come down, in most cases, only as inflation-targeting central banks have demonstrated that they can achieve, and will maintain, low inflation (as we will discuss in Chapter 10; see also Laubach and Posen [1997a]).

These objections are valid, as far as they go. However, we have already expressed skepticism (in Chapter 1) that any monetary-policy strategy that has actually been used has met the classical criteria for a policy rule. As we will see, that skepticism applies particularly to inflation targeting, at least as it is actually practiced by contemporary central banks. Inflation targeting is not a policy rule in the classical sense, and analyzing it as if it were a strict policy rule leads to important misconceptions.

Why do we believe that it is wrong to think of inflation targeting as a policy rule? First, at a technical level, inflation targeting does not provide simple, mechanical operating instructions to the central bank. Rather, inflation targeting requires the central bank to use structural and judgmental models of the economy, in conjunction with whatever information it deems relevant, to pursue its price-stability objective. In other words, inflation targeting is very much a "look at everything" strategy, albeit one with a focused goal.

Second, and more importantly, inflation targeting as it is actually practiced confers a considerable degree of discretion on policy-makers. As the case studies in this book will document in detail, inflation-targeting central bankers, within the constraints imposed by their medium-to long-term inflation targets, have left themselves considerable scope to respond to unemployment conditions, exchange rate fluctuations, and other short-run phenomena.

But if inflation targeting is not a rule in the classical sense, then what is it, and what good is it? As we have suggested, we find it fruitful to think of inflation targeting not as a policy rule, but as a framework for policy within which "constrained discretion" can be exercised. It is here that the nominal anchor function of inflation targets is central: Like a real-life anchor, inflation targets keep the economic ship in the desired area in the long term, while permitting it to respond in the short run to

Aggregate supply shocks, such as oil-price shocks, present a thornier problem for inflation targeters (as stressed by Friedman and Kuttner [1996]). Once a severe supply shock hits the economy, keeping inflation close to the target may prove very costly in terms of lost output and employment. As the case studies in this book will show, however, a well-designed inflation-targeting regime can cope with supply shocks fairly well. For example, the inflation target in most countries is designed to exclude at least the first-round effects of certain supply shocks, such as rises in the prices of food or energy, or in value-added taxes. Escape clauses that permit the central bank to change its medium-term targets in response to unexpected developments are another way of coping with supply shocks. As we will see in Chapter 4, following the 1979 oil-supply shock, the Bundesbank raised its one-year inflation goal in order to define a new transition path for inflation. The Bundesbank set its short-term inflation goals so that, over time, the inflation induced by the supply shock was gradually eliminated, until the long-run inflation objective was once again reached. In contrast to a purely discretionary approach, in which the central bankers deal with supply shocks by the seat of their pants, the inflation-targeting framework gives the central bank a better chance of convincing the public that the effects of a supply shock will be limited to a one-time rise in the price level, rather than creating a permanent rise in the inflation rate.

The idea that inflation targeting requires an accounting to the public of the projected long-run implications of its short-run policy actions is also central to the argument that inflation targeting can help to discipline monetary policy. Just who needs "disciplining" may differ from country to country (and from period to period), depending on politics, institutional arrangements, and personalities. In the academic literature on central bank credibility, it is generally assumed that it is the central bank that needs to be disciplined, because it desires an unemployment rate lower than the natural rate. This desire creates an incentive for the central bank to try to engineer "surprise" inflations in order to stimulate production and employment. As we discussed when describing the policy credibility problem, however, since the public cannot be fooled repeatedly, the long-run outcome of such policies is higher-than-necessary inflation, without sustained gains in output and employment.⁶

If this theoretical story is applicable, then an inflation-targeting framework will not *directly* prevent the counterproductive attempts of the central bank to apply short-run stimulus. In this respect, inflation targeting is inferior to an ironclad rule, assuming that such a rule could ever be implemented. However, in contrast to a purely discretionary situation

with no explicit targets, under an inflation-targeting regime the central bank would be forced to calculate and publicize the long-run implications of its short-run actions, thus ensuring that they would be subject to public scrutiny and debate. To the extent that the central bank governors dislike admitting publicly that they may miss their long-run inflation targets (or, alternatively, to the extent that they dislike having their inflation projections criticized as biased or manipulated), the existence of an inflation-targeting framework provides an incentive for the central bank to limit its short-run opportunism.

Although economic theorists have typically assumed the central bank is the entity that chooses to inflate opportunistically, the executive and legislative branches of government are more likely in practice to have the greater incentive to engage in (or induce) such behavior. In fact, central bankers tend to view themselves as defenders of the currency. That view may be the result of the appointment of "tough" central bankers (for reasons described by Rogoff [1985]), or it may just be that their professional backgrounds and socialization tend to make central bankers relatively hawkish on inflation. In either case, the existence of inflation targets can help the central bank to protect itself from inflationist pressures exerted by the government. In particular, by pointing out the long-run, as well as the short-run, implications of over-expansionist policies, the central bank may be able to win support from the general public and from the financial community in resisting such policies. Again, the case studies in this book will illustrate this scenario.

To summarize, we see a close relationship between the roles of inflation targeting as a nominal anchor and as the linchpin in a framework for making monetary policy. By linking policy to medium- and long-term horizons, but without crippling the central bank's ability to respond to short-run developments, inflation targeting creates a rough compromise between the discipline and accountability of rigid rules and the flexibility of the discretionary approach. Of course, this claim, whatever its superficial plausibility, needs to be supported by evidence from the field. Moreover, it is important to know a great deal more about the actual design and implementation of successful inflation-targeting regimes. Much of the rest of this book is devoted to addressing these issues.