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The Federal Reserve: Should Its Mandated Goal Be Price Stability? The Issues and Technical Problems

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Summary

Some economists have long criticized the American model of central banking for featuring multiple policy goals, discretion on the part of the central bankers as to which goal or goals to emphasize, freedom in the choice of instruments to achieve the policy goals, and rather vague accountability for policy failures if, indeed, these can even be identified. Recently, the critics have urged that the multiple policy goals of the Federal Reserve be replaced by a single goal of price stability. Critics believe that central bankers tend to use their discretionary powers to achieve political as well as economic objectives, notably to create "good times" through monetary expansion. Since these "good times" do not last long, such a policy imparts a costly inflationary bias to an economy and, hence, is not economically optimal over time. Among other virtues, it is argued that a single goal would provide an explicit anchor for the American monetary system. The proponents of a price stability goal are supported by an array of economic theories and empirical studies.

The current model has strong support as well. Since an economy faces many unforseen contingencies, supporters argue that giving central bankers multiple goals and a high degree of discretion is optimal. They question whether a price stability goal would be flexible enough to allow the Federal Reserve to remain the lender of last resort to the U.S. financial system and to cope with short run stabilization problems that beset the country at times. They note that the Fed has successfully delivered price stability for over two decades under the current multi-goal regime. Their position is also supported by empirical studies and theoretical arguments.

To formally replace the current multi-goal mandate of "maximum employment, stable prices, and moderate long-term interest rates" with a single goal to maintain stable prices would require an act of Congress. Members from both parties have introduced such legislation in past Congresses. A number of countries have recently made price stability the sole goal of their monetary policy. In practice, these countries have not focused their monetary policy solely on price stability, but have responded to changes in output as long as it did not undermine long-term price stability. This arrangement has been coined "constrained discretion," since it has left central banks with significant freedom to set policy as they see fit.

The price stability goal, while simple and straightforward, raises a number of technical questions about definition, in terms of a goal of inflation or constant prices, whether a point or band target should be used, and the appropriate price index to measure price stability. The goal may also place constraints on fiscal, debt management, and exchange rate policies — policies not delegated to the Federal Reserve. Accountability should be greater than under the current regime, but the degree of accountability depends on how the goal is defined. Since it is infeasible to expect the central bank to keep inflation right on target at all times, consideration should be given to the exceptions granted to the goal and the permissible time interval over which the targets must be met. But these exceptions in turn make accountability more difficult. This report will be updated as events warrant.

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The 1970s stand out in the post-World War II era as the inflation decade. This is evident from the data in **Table 1** for the leading industrial countries. Inflation served to motivate public policy in a number of countries. A major impetus of these initiatives was to focus central banks on one major policy goal: the achievement of price stability. In some cases this has taken the form of legislation specifying this goal to the exclusion of all others. In other cases, the central bank was granted greater autonomy in the expectation that this would lead to the desired outcome. During recent years, Canada, the United Kingdom, New Zealand, Sweden, Australia, and Israel, among others have adopted inflation targeting as the major goal of monetary policy. And since the European Central Bank's inception, price stability has been its main objective.

These developments have not gone unnoticed in the United States. The ultimate objectives of Federal Reserve (Fed) policy are currently specified in the Federal Reserve Reform Act of 1977 as maintaining the "long run growth of monetary and credit aggregates commensurate with the economy's long run potential production, so as to promote the goals of maximum employment, stable prices, and moderate long-term interest rates."[1]

Both Democratic and Republican Members of Congress have introduced legislation that would replace the current multigoal mandate of "maximum employment, stable prices, and moderate long-term interest rates" with a single goal to maintain "stable prices." In some proposals, "stable prices" is defined as a low inflation rate. In others, the overall price level would remain constant.

An early example of Democratic efforts along these lines was the "Zero Inflation Resolution" introduced by Congressman Stephen Neal of North Carolina in 1989. In the 109th Congress, Representative Jim Saxton, Republican of New Jersey, introduced the "Price Stability Act of 2005," H.R. 498, "To mandate price stability as the primary goal of ... monetary policy ...."

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[1] For more information, see CRS Report RL30354, *Monetary Policy: Current Policy and Conditions*, by Marc Labonte and Gail Makinen; and CRS Report RS20949, *Federal Reserve: Recurrent Public Policy Issues*, by Marc Labonte.

Table 1. Average Annual Inflation Rate in the Industrial Countries, 1950-2004

(data in percentages)

	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2004
United States	1.8	2.3	7.1	5.6	3.0	2.6
United Kingdom	3.5	3.6	12.6	7.4	3.7	2.4
Austria	6.8	3.3	6.1	4.0	2.4	1.9
Belgium	1.9	2.7	7.1	5.1	2.2	2.1
Denmark	3.8	5.3	9.3	7.1	2.1	2.2
France	6.2	3.8	8.9	7.8	1.9	1.9
Germany	1.1	2.4	4.9	2.9	2.3	1.5
Italy	2.9	3.4	12.5	11.8	4.1	2.5
Netherlands	3.8	4.2	7.1	3.1	2.5	2.8
Switzerland	1.1	3.1	5.0	3.3	2.4	0.9
Canada	2.4	2.5	7.4	6.7	2.2	2.4
Japan	3.1	5.4	9.1	2.5	1.2	-0.5
Greece	6.5	2.0	12.3	20.1	11.1	3.4
Ireland	3.9	4.0	12.7	9.9	2.3	4.2
Portugal	0.7	4.0	17.1	18.2	6.0	3.3
Spain	6.2	5.8	14.1	10.6	4.2	3.2
Australia	6.5	2.5	9.8	7.6	2.5	3.3
New Zealand	5.0	3.2	11.4	12.5	2.0	2.3
Mean	3.7	3.5	9.7	8.1	3.2	2.4
Standard Deviation	1.99	1.08	3.28	5.04	2.17	1.02

Source: For 1950-1989: Consumer prices compiled by the International Monetary Fund and reported in Grilli, Masciandaro, and Tabellini. Political and Monetary Institutions and Public Financial Policies in the Industrial Countries. *Economic Policy*. October 1991, p. 344. For 1990-2004: Consumer Prices compiled by International Monetary Fund. Statistical computations made by authors of this report.

Governors and Regional Bank Presidents of the Federal Reserve are perceived to have mixed views on making inflation the sole goal of monetary policy, with Chairman Alan Greenspan perceived to be opposed to a Congressionally mandated

inflation target.[2] William J. McDonough, former president of the New York Federal Reserve Bank, said:

> "It is often said that there is a worldwide community of central bankers. I certainly feel that way. Central bankers in all countries share a number of concerns. Perhaps the most important of these is the desire for price stability. While central bankers may differ in the way they seek price stability — differences grounded in our respective histories, customs, and institutions — the goal we all strive for is no less important."[3]

While the purpose of this proposal is straightforward, it raises many technical issues which this report will consider. As a preface to this discussion, the report will begin with pro and con cases given by economists who either favor or oppose the legislation focusing the Federal Reserve on an exclusive goal of achieving price stability.

The Case for Refocusing the Federal Reserve

The ultimate purpose of refocusing the Federal Reserve on a price stability goal is to increase the amount of real goods and services available to the nation, *not*, as the late Prof. James Tobin reminded us, because "Price or inflation stability is . . . an ultimate social good."[4] Thus, it must be shown that inflation has a pernicious effect on economic growth, the efficiency with which the economy works, the choices available to Americans to satisfy their needs and wants, or on employment. Such a case can be made.[5] But should price stability be the sole goal of monetary policy? Proponents make that case based on five powerful strands of economic theory and empiricism, as well as one political argument.

(1) The Neutrality of Money

The basic case made by economists for refocusing the Federal Reserve is built on a very old economic doctrine known as the "Neutrality of Money." This is the view that the influence of money and changes in the money supply are neutral with respect to changes in the real economy where economic growth, employment, real

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[2] Vivien Lou Chen, "Fed's Debate on Inflation Targets May Shape Post-Greenspan Era," *Bloomberg News*, Mar. 22, 2005.

[3] William McDonough, "A Framework for the Pursuit of Price Stability," *Economic Policy Review*, vol. 3, no. 3 (Aug. 1997), p. 1.

[4] Prof. Tobin's full quote is "As Jacob Marschak gently reminded Henry Wallich in a memorable Yale seminar years ago, prices are not in anybody's utility function. Price or inflation stability is not an ultimate social good, but must be justified as an instrument that will deliver more utility-laden goodies to the society." See James Tobin, Panel Discussion in J. C. Fuhrer, ed., *Goals, Guidelines, and Constraints Facing Monetary Policymakers*, Federal Reserve Bank of Boston, June 1994, pp. 232-236.

[5] The case is made in CRS Report RL30344, *Inflation: Causes, Costs and Current Status*, by Mark Labonte and Gail E. Makinen.

interest rates, and relative prices are determined. These depend on such factors as the choices individuals make between leisure and work, the technical means by which labor and capital are combined, and the saving/investment decisions by economic agents. Money, on the other hand, influences only money things such as the price level, money wages, the money value of output, and the nominal or market rate of interest. Since this is money's primary economic effect and a changing price level can have harmful effects on an economy, the doctrine of the neutrality of money can serve as a powerful rationale for focusing monetary policy on achieving price stability.[6] [7]

(2) Long and Variable Lags

A second element supporting refocus on price stability is based on the empirical finding that changes in the money supply can affect the pace of economic activity and prices with a lag that is both long and of a variable length (i.e., a given change in the rate at which the money supply grows does not always affect the pace of economic activity and prices within the same length of time). This may be due to changes in the underlying structure of the economy as well as to changes in policy regimes, as might be expected to occur when a country moves from a system of fixed to a system of flexible exchange rates.

Because of the long and variable lag of monetary policy, changes in policy undertaken today can have their effect on the economy after the underlying cause of the original disturbance may already have corrected itself. If so, countercyclical monetary policy could be destabilizing. For that reason, some economists argued against using monetary policy to promote such goals as full employment. Rather, they argued, it should be geared to producing stable prices, since money's lasting effect on the economy is on nominal magnitudes.

(3) Rational Expectations

Third, there were developments in specifying how economic agents formed their expectations. Expectations, especially of inflation, are important in many forward looking price-setting activities in market economies, such as wages, the prices of individual goods and services, and interest rates. The revolution in this area occurred with the introduction of so-called theory of **rational** expectations.

Rational expectations is the theory that economic agents make use of all relevant information, including information about monetary policy, in formulating their expectations about the future. Wage earners, for example, would strike a wage

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[6] The neutrality of money was viewed by early economists and some of their later followers as a long run proposition. In the shorter run, variations in the growth rate of the money supply could affect the growth rate of real output and employment.

[7] The classic work exploring money's effect on the economy is Milton Friedman and Anna Schwartz, *A Monetary History of the United States 1867-1960* (Princeton University Press, 1963). See also, Christina D. Romer and David H. Romer, "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz," in O.J. Blanchard and S. Fischer, eds., *NBER Macroeconomic Annual 1989* (Cambridge, MA: MIT Press, 1989), pp. 121-170.

bargain with an employer only after considering what monetary conditions would likely prevail over the period of the employment contract.[8] Rational expectations do not mean that individuals are always right. It only means that they do not make systematic mistakes.

This method of forming expectations has a powerful implication. It implies that **systematic** monetary policy, or that expected by economic agents, can have no effect on the real sector of the economy since it would have been anticipated by economic agents and become a part of their market behavior. Thus, systematic monetary policy is also neutral in the short run (as well as in the more general case of long run neutrality). If monetary policy does affect the pace of economic activity in the short run, it must be because it comes as a surprise — it is unanticipated and nonsystematic. Its nonneutral effects will last only until economic agents incorporate it into their wage, price, and interest rate decisions (this leads to the so-called **misperceptions** theory of business cycles).

The question might arise why the Federal Reserve would want to spring monetary surprises on the economy. A major reason given in the literature is that it yields to political pressures to boost economic activity — create good times — prior to presidential elections. This notion of a political business cycle enjoys some support among economists. It should also be noted that a surprise based monetary policy is not an optimal policy since ultimately the cost of avoiding inflation reduces welfare and output is no higher than it would have been in the absence of the surprise inflation. In the jargon-rich language of economists, this is also known as the "time inconsistency problem."

The notion of rational expectations supports focusing Federal Reserve policy on the single goal of price stability. This is because, according to rational expectations, the only way the Federal Reserve can alter employment is by engineering a surprise. Surprise changes in monetary policy can, at best, have only a short run effect on employment. The longer run effect is only on the inflation rate and inflation has harmful side effects on the economy.

(4) Precommitment and Credibility

The discussion above stresses the importance of misperceptions by economic agents as a cause of business cycles. If errors of predictability and errors of understanding are an important part of misperceptions, then making monetary policy more predictable, consistent, and understandable should reduce errors and misperceptions. Furthermore, this theory suggests that over time surprises will

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[8] While this may seem to the reader as the natural thing for individuals to do, in empirical approaches to expectation formation, economists often reasoned that economic agents would merely extrapolate the past in forming notions about the future. Thus, expectations about the future rate of inflation were taken to be some weighted average of past inflation. In this formulation, economic agents would neglect some available relevant information about the forces theory suggested caused inflation (e.g. the rate of growth of the money supply) and, instead, form their notions about the future by looking only at the past actual rate of inflation. This was regarded as irrational.

become less and less effective at stimulating the economy, until they ultimately become counterproductive. Conversely, the theory suggests that monetary policy changes, such as disinflations, could be faster and less costly if credibility were greater. It is thought that under a credible central bank individuals might change their inflationary expectations more quickly, making the economy more flexible as a result. Thus, a monetary policy based on precommitment and credibility should be conducive to economic stability. A single goal such as price stability, it is argued, can increase the clarity and understandability of monetary policy by "anchoring" expectations and, thus, contribute to this end.[9]

Figure 1: Phillips Curve, 1961-1969

Source: Bureau of Labor Statistics

(5) The Natural Rate of Unemployment (the NAIRU)

In the 1960s, there was a broad consensus in macroeconomics that a relationship existed between inflation and unemployment known as the "Phillips Curve." This theory posited that a rise in inflation would lead to a predictable fall in unemployment, and vice versa.[10] There was, as shown in **Figure 1**, considerable empirical support for this notion.

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[9] For example, see Ben Bernanke, et al., *Inflation Targeting* (New Jersey: Princeton University Press, 1999), p. 20.

[10] It should be noted that a long run trade-off of unemployment for inflation violates the neutrality of money for it suggests that inflation (a monetary phenomenon) can have a permanent effect on employment (a phenomenon that according to the neutrality doctrine is determined exclusively in the real sector of the economy). Thus, the notion of the NAIRU is embodied in the concept of the neutrality of money.

In the late 1960s, two economists, Professors Edmund Phelps of Columbia University and Milton Friedman of the University of Chicago, independently rejected the Phillips Curve framework and in its place put forth the notion of the non-accelerating inflation rate of unemployment or NAIRU as a definition of the unemployment rate consistent with the full employment of labor.[11] [12] This refers to an unemployment rate consistent with a stable rate of inflation. In the long run, the economy will return to the NAIRU with any inflation rate, be it zero or any positive number, and so there is no permanent tradeoff between inflation and unemployment.

Phelps and Friedman suggested that the empirical finding shown in **Figure 1** occurred because individuals during the 1960s had not anticipated the inflation that had occurred because they based their expectations upon the 1950s when inflation was low. Once they built into their expectations the inflation that had occurred (both Phelps and Friedman wrote before the rational expectations revolution), Phelps and Friedman predicted the stability of the Phillips curve would vanish. The curve would shift up and to the right. The only way monetary policy could then keep the unemployment rate below the natural rate would be to engineer continual surprises — keep accelerating the inflation rate.

The contribution of Phelps and Friedman was important and prescient; what these economists predicted seemed to come to pass. As the data plotted in figure 2 show, the tradeoff that is apparent in Figure 1 vanishes after the 1960s. The large amount of dispersion in the data suggests that there is no stable tradeoff between the two variables. If anything the relationship becomes slightly positive — as the unemployment rate fell, so did the inflation rate.

The NAIRU cannot be influenced by monetary policy because it is determined in the real sector of the economy by such things as the work/leisure choices of individuals. Thus, the function of monetary policy, it is argued, should be to keep aggregate demand growing at a rate consistent with price stability.[13] If aggregate demand grows at a rate consistent with price stability, then the NAIRU (or full employment) will prevail, making the NAIRU concept consistent with making price stability the sole goal of monetary policy.[14]

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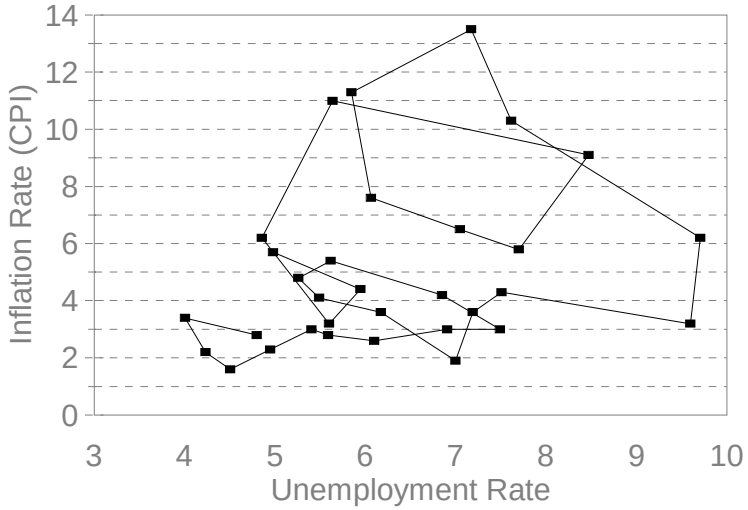
[11] See Edmund Phelps, "Phillips Curves, Expectations of Inflation, and Optimal Inflation Over Time," *Economica*, NS, vol. 135 (1967), pp. 254-281, and Milton Friedman, "The Role of Monetary Policy," *American Economic Review*, vol. 58 (Mar. 1968), pp. 1-17.

[12] Economists have always been both uneasy about and somewhat vague in defining what is meant by "full employment." Clearly, it has never meant a zero unemployment rate. For some economists who believed in a permanent trade-off between inflation and unemployment, full employment had, at best, an ambiguous definition. Other economists were content with accepting an arbitrary rate of 4%, such as embodied in the Humphrey-Hawkins Act (also known as The Full Employment and Balanced Growth Act of 1978).

[13] This, however, does not by itself support a monetary policy geared to producing a zero rate of inflation since the economy can be at its NAIRU at any constant rate of change of prices. Other factors, such as the losses to an economy from a positive rate of inflation must be invoked to support a monetary policy pledged to justify price stability.

[14] It should be noted that the NAIRU was not expected to be constant across time. (continued...)

Figure 2: Phillips Curve, 1970-2001



Source: Bureau of Labor Statistics

(6) The Desire for Greater Accountability

In addition to the economic arguments presented above, there is a closely related political argument for making price stability the sole goal of monetary policy. There has long been dissatisfaction voiced with the accountability of the Federal Reserve for the macroeconomic performance of the economy. The political independence granted to the Fed combined with the imprecise and oftentimes conflicting goals it is mandated to achieve means that there is little chance for congressional criticism of its performance to have a concrete effect on future policy decisions.[15]

Twice a year, the Federal Reserve reports to the Congress on the state of the economy and monetary policy. At these hearings, the Chairman of the Federal Reserve Board presents a review of the current state of the economy and *projections* for the future course the economy is expected to take over the coming 18- to 24-months. This has prompted the Nobel Prize winning economist, James Tobin to declare: "It is disingenuous for the FOMC [Federal Open Market Committee] to

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[14] (...continued)
Changing labor market conditions, changing demographics of the labor force, changes in labor legislation, and changes in institutions governing labor, among other changes, it was argued, should be expected to change NAIRU. See CRS Report RL32774, *A Changing Natural Rate of Unemployment:Policy Issues*, by Marc Labonte.

[15] For more information, see CRS Report RL31056, *The Economics of Federal Reserve Independence*, by Marc Labonte.

forecast or 'project' the economy, pretending that they have no control over it."[16] When the economy behaves differently from these projections, little effort is exerted in the reports to explain why. When the effort is made, the explanation frequently attributes it to unexpected events. Federal Reserve policy is seldom, if ever, the culprit.

Formal accountability is weak in this system. No governor of the Federal Reserve has ever been removed from office for any reason, although removal is statutorily permissible "for cause." Some have not been reappointed, however, and during hearings the Members of Congress have not been hesitant in voicing displeasure with the performance of the economy, especially during economic downswings and periods of inflation.

Proponents of a price target argue that a target would make the Fed more accountable. The Fed would no longer be able to justify its decisions by pointing arbitrarily to the achievement of one of its goals, while disregarding its failure to meet other goals. The target could be crafted in such way that failure to reach the target led to explicit remedial actions, as discussed below. Yet a target would not undermine the Fed's independence, they argue, because it would not lead to political interference in the day-to-day decision-making of the Fed.

Summary

Proponents of a single price-stability goal base their case on several basic tenets of economic theory. First, money is "neutral" in the long run, meaning it cannot affect real economic activity. It can only affect inflation, which in excess is harmful to the efficient market allocation of resources; this makes price stability the natural goal of monetary policy in their eyes. Second, unemployment tends to a "natural rate," which is dictated by labor market conditions and policies. Since monetary policy cannot affect this natural rate of unemployment, the Federal Reserve cannot be held responsible for achieving a goal of full employment. Third, people have rational expectations and cannot be systematically fooled by monetary "surprises." This implies that the economy will function most smoothly if the monetary policy is given a predictable "anchor" such as price stability so people can make decisions with some degree of certainty about the future path of policy. It is claimed that this anchor will make the Fed more accountable for its actions and will make its decisions more credible, which, in turn, will make policy more effective.

For some proponents, a price-stability goal is desirable because they believe discretionary monetary policy has done more to destabilize than stabilize the business

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[16] James Tobin, "Panel Discussion," in J. C. Fuhrer, ed., *Goals, Guidelines, and Constraints Facing Monetary Policymakers*, Federal Reserve Bank of Boston, June 1994, p. 235. Tobin goes on to declare: "I would like to see the report contain the consensus of the FOMC as to the macroeconomic path they will use their powers to achieve over coming quarters and years." Some suggest this would add accountability to the present regime. The Federal Open Market Committee is the principal policy committee of the Federal Reserve. Its' voting members consist of the Board of Governors and five of the presidents of the regional Federal Reserve Banks.

cycle in the past. They base their case on the temptation for monetary surprises and the long and variable lags in policy effectiveness that make successful discretionary policy unlikely. Other proponents acknowledge that the responsible application of monetary policy is helpful in the reduction of economic instability, but would not see responsible stabilization policy as inimical to a price stability goal in most cases. They would be likely to agree with Bernanke and Mishkin's characterization of monetary policy under a price-stability goal as "constrained discretion" in practice. In this characterization, central banks would be free to stabilize the business cycle as long as long-run price stability is not placed at risk in the process.

The Case Against A Single Goal for Federal Reserve Policy

It is, perhaps, best to begin the case against a single goal for the Federal Reserve with the proposition that while the current monetary system does not have an explicit anchor such as would be provided by a fixed exchange rate or a legislated inflation target, it does have an implicit anchor. The Federal Reserve has been extremely reluctant over the past two decades to let the U.S. inflation rate rise above 4% without intervention. Rates above 4% seem to bring on monetary tightening of the type that often leads to a cyclical downturn. Thus, in practice, the adoption of an inflation target cannot be supported on the grounds that the Fed has neglected to pursue the goal of price stability. The burden of proof should be on proponents to show that the Fed's past performance could have been improved — or there is reason to believe that future performance could be improved — if a price stability regime had been in place.

The case against an exclusive price stability goal can be subdivided into six parts:[17]

(1) Is Money Neutral in the Long Run? Are Expectations Rational?

While most economists believe in theory in the neutrality of money as a long run proposition, some also agree that for all practical purposes, over any reasonable time horizon, money is not neutral. Changes in the growth rate of the supply of money can, over such a time horizon, according to this view, have significant and lasting effects on the growth of real output and employment.

This perspective was well stated by Prof. Richard N. Cooper:

> ...the strong and sometimes helpful working hypothesis of the economics profession [is] that in the medium to long run, money supplies affect only price levels, not the real side of economies, so that central bank action can only

[17] As will be explained below, these six parts of the case against a price stability focus are not mutually exclusive. For example, an opponent of the view that money is neutral could hardly believe in NAIRU.

> influence prices in the long run. This working hypothesis through repetition and use has come to be accepted as fact, as a structural characteristic of actual economies. It is a dangerous assumption, largely because it is rarely questioned. The evidence is ample that it is false in the short run that runs for several years. The best that can be said about the empirical evidence over longer periods is that with sufficient imagination by the estimators, the hypothesis cannot be rejected — a very weak test on which to base important policy decisions.[18]

Those rejecting the neutrality thesis believe that a stable Phillips curve does exist over reasonable time periods and ought to be exploited, for they argue that the costs to an economy from unemployment far exceed the costs due to inflation (for the rates of inflation experienced by the United States in the post World War II period).[19] From the above, this can be seen as an assault on views such as those that business cycles are due to misperceptions of the actual course taken by inflation and on the concept of the NAIRU.

Other economists question outright the practical significance of rational expectations. They point out that there is really little evidence that American business cycles are due to misperceptions of inflation (see page 5) and there is equally little evidence to support the view that the Federal Reserve somehow yields to political pressure to create booming economic conditions just before presidential elections (the so-called political business cycle or that the Federal Reserve engages in policies that are "time inconsistent.").[20] Former Presidents such as Gerald Ford, Jimmy Carter, and George H.W. Bush might agree since they did not have the best of economic conditions when they faced re-election. There is something quite fundamental in this criticism that should not be overlooked. The proponents of refocusing the Federal Reserve on a single goal of price stability do so because of their view that the continuation of inflation is due largely, if not entirely, to the self-interested short-term focus of politicians aided and abetted by the discretionary choices made at the Federal Reserve. This criticism is aimed both at this explanation for inflation and its goal for reform, the conduct of monetary policy to achieve a single goal.

(2) Does NAIRU Exist?

Some question the entire concept of NAIRU. They point out that the behavior of the U.S. economy in the late 1990s is at variance with the widely held view that for the United States NAIRU is about 6.0%. If this estimate is correct, the United States should have experienced a rising rate of inflation since the unemployment rate

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[18] See Richard N. Cooper, "Panel Discussion," in J. C. Fuhrer, ed., *Goals, Guidelines, and Constraints Facing Monetary Policymakers*, Federal Reserve Bank of Boston, June 1994, p. 192.

[19] For a statement of this view, see James Tobin, "Inflation and Unemployment," *American Economic Review*, vol. 62, no. 1 (Mar. 1972), pp. 1-18. For a more recent exposition, see James Galbraith, "Time to Ditch the NAIRU," *Journal of Economic Perspectives*, vol. 11, no. 1 (Winter 1997), pp. 93-108.

[20] See, for example, Alberto Alesina, "Politics and Business Cycles in Industrial Democracies," *Economic Policy*, vol. 1 (Spring 1989), pp. 58-98.

was below 6.0% from August 1994 through 2001. But the inflation rate followed no trend during those years, fluctuating between 1.6% and 3.4%.[21] These critics are also likely to claim that monetary (and fiscal) policy may in fact influence the long run unemployment rate, contrary to the assertions of the neutrality of money and the NAIRU. They argue that the future employability of people is, in part, determined by their experience with unemployment. Thus, severe short term downturns may affect the longer term unemployment rates of some countries.[22]

Nevertheless, those economists who are critical of NAIRU must explain the data patterns observed in **Figure 2**. An oil price shock (or supply shock in general) will cause both unemployment and the rate of inflation to rise. Thus, some of the observations can be explained in this way. Others can be explained by the efforts of the Federal Reserve to reduce the unemployment caused by the supply shock (which should reduce unemployment while accelerating the ongoing inflation rate).

(3) Long and Variable Lags (Again)

As it happens, one of the arguments used in favor of a price stability goal can also be used against it. The technical difficulties in implementing monetary policy may be as problematic for a price stability goal as for countercyclical policy.

The Federal Reserve does not directly control the price level. Rather, it controls only the monetary and credit conditions of the country that influence changes in aggregate demand. And it is the interaction of changes in demand with changes in supply that affect the price level and the rate of inflation. To the extent that monetary policy operates with lags that are long and of variable length, maintaining price stability can be a difficult task. Were a shock to the economy to move inflation away from the target, policy lags would prevent the Fed from returning inflation to the target immediately. As explained below, the lack of direct control is not a fatal problem. Much would depend on how a law would be written, that is, how price stability is defined and the time horizon over which stability is to be achieved. It may be that the lags pose no fundamental problem.

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[21] This is true for the CPI or a stripped down version of the CPI know as the "core" index. The two price indexes from the GDP accounts fluctuated between 1.2% and 2.3% during that period.

[22] As noted above, those who believe in NAIRU recognize that it is subject to shifts over time as conditions in labor markets change. These shifts, however, are supposed to be independent of changes in monetary policy. There is a major development in some of the European countries that the critics of NAIRU cite as evidence against the concept. Supporters of NAIRU estimate that for the countries in the Euro Area, the NAIRU has risen from about 2.5% in the 1950s to perhaps in excess of 8.0% in the 1990s. They do not have an adequate explanation why this has happened, but some economists hold out the possibility that it may be related in part to the longer run employment consequences of the monetary and fiscal policies followed in these countries with an excess emphasis on price stability. See C.A.E. Goodhart, "Central Bank Independence," *The Central Bank and the Financial System* (MIT Press, 1995), pp. 60-71. See also a symposium entitled "The Natural Rate of Unemployment," in *The Journal of Economic Perspectives*, vol. 11, no. 1 (Winter 1997), pp. 3-108.

Another possible way to deal with the difficulties posed by the long and variable lags is to use a system of intermediate targets such as the monetary aggregates. Intermediate targets can provide much useful information about the thrust of Federal Reserve policy since they are the link between Federal Reserve action and the ultimate goals of policy. In the case of the monetary aggregates, however, the value of the information they provide about Federal Reserve intentions has decreased considerably in the 1980s and 1990s.[23] Nevertheless, the case for using an intermediate target and what is required to make it work is well stated by Bernanke and Mishkin:

> If credibility building is an important objective of the central bank, and if there exists an intermediate target variable — such as a monetary aggregate — that is well controlled by the central bank, observed and understood by the public and the financial markets, and strongly and reliably related to the ultimate goal variable, then targeting the intermediate variable may be the preferred strategy.[24]

(4) A Little Inflation Can Make Important Adjustments Easier

Economic systems are subject to a variety of shocks, some of which require changes in real magnitudes as the system returns to equilibrium. Supply shocks can pose particularly serious problems. When they involve a reduction in aggregate supply (such as the OPEC cut-off of oil supplies in 1973), they often require a fall in real wages in order to restore full employment. Because of the pervasiveness of contractual arrangements in the U.S. market economy, it is argued that the fall in real wages can be accomplished with less loss of output and increase in unemployment if the Federal Reserve allows the price level to rise rather than force an increase in unemployment to bring about a fall in money wages. In this case, a little inflation is thought to ease the return to full employment.[25] For example, Akerlof, Dickenson, and Perry derive a model based on the assumption of some downward nominal wage rigidity and show with U.S. data that below a certain inflation rate a permanent tradeoff exists with unemployment.[26] In this paper nominal wage rigidity holds even though expectations are assumed rational. Of course, an inflation target could avoid this problem if the numerical target were set high enough.

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[23] For a discussion, see CRS Report RL31416, *The Monetary Aggregates: Their Use in the Conduct of Monetary Policy*, by Marc Labonte and Gail Makinen.

[24] See Ben S. Bernanke and Federick Mishkin, "Inflation Targeting," op. cit., p. 112.

[25] Interestingly, this case can also be made by those who believe in the neutrality of money, the NAIRU, and rational expectations. They also realize that supply shocks often imply reductions in real wages and one-time increases in the price level may be the least cost way to accomplish this even within the confines of their model.

[26] The notion of downward nominal wage rigidity is popular among many economists. An early statement of this proposition and the reasons for it can be found in J.M. Keynes, *The General Theory of Employment, Interest, and Money* (Harcourt, Brace and Co. 1936), pp. 12-15. See George Akerlof, William Dickens, and George Perry, "The Macroeconomics of Low Inflation," *Brookings Papers on Economic Activity*, vol. 1, 1996, pp. 1-76. In the first section of this paper, the authors provide a great deal of evidence for a belief in the downward rigidity of nominal wages.

(5) The Importance of Other Goals

Those who reject changing the ultimate goal of Federal Reserve policy point out that a central bank has a number of responsibilities that are not necessarily encompassed in a price stability goal, even if it were to give up its counter-cyclical role. In particular, a central bank is responsible for the integrity and solvency of the payments system which includes its role as a lender of last resort to the financial system. An important reason for establishing the Federal Reserve was to deal with financial panics that had periodically gripped the United States.[27] Our central bank was to serve as a "lender of last resort" to the financial system in time of trouble to avert a serious destabilization or even collapse. This important role for the Federal Reserve might be precluded by a narrowly written law mandating a single goal of price stability. Similarly, a literal and narrow interpretation of a price stability goal could needlessly increase the volatility of output and unemployment. Critics would argue that if this outcome is not desirable, then the goal of full employment should not be eliminated. They add that most central banks that have made price stability their sole goal have continued to employ some counter-cyclical policy when they deem it consistent with long-run price stability. Thus, these foreign central banks do not practice the pure price stability goal that they are mandated to follow.

Second, monetary policy is not the only policy a nation has. Most governments have fiscal policies, debt management policies, and even exchange rate policies. In the United States, responsibility for these policies has not been delegated to the Federal Reserve. There is no doubt that a goal of price stability for monetary policy can constrain these other policies. It may make it impossible to achieve certain fiscal positions, to intervene in the foreign exchange market should this prove necessary,[28] or to deal with any attempt by creditors to refuse to renew their holdings of maturing federal debt or to purchase new debt to finance an existing federal budget deficit.[29]

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[27] It was the financial panic of 1907 that set in motion the serious effort to reestablish a central bank in the United States. The Federal Reserve failed to adequately handle the financial panic of 1929-1933 that brought about a collapse of the U.S. banking system. In recent years, Fed watchers have generally applauded its efforts to deal with the failure of the Continental Illinois Bank in Chicago, the Mexican debt crisis of 1982, and the terrorist attacks of Sept. 11, 2001, all of which, it was feared, could have had serious destabilizing consequences for the U.S. financial system and economy.

[28] The issue of a permissible range of exchange rate variation becomes less relevant in a system of flexible exchange rates. Nevertheless, the Federal Reserve could, under its current mandate, intervene in the foreign exchange market should the dollar come under extreme selling pressure (or should disorderly markets develop). The possibility of this happening has been heightened over the years as the United States has moved from the position of an international creditor to international debtor.

[29] There have been historical episodes when the Federal Reserve has had to enter financial markets to support the price of U.S. government securities when customers could not be found for the issues that were offered. A price stability goal could compromise this type of support by the Federal Reserve should it be required.

(6) The Need for Flexibility and Discretion

There has been a long and continuing debate in monetary economics over whether monetary policy should be conducted by rules that limit Fed decision-making or by allowing the Fed to exercise discretion.[30] The debate over the desirability of refocusing the Federal Reserve on a price stability goal is often cast in the terms of this discussion with the new goal being seen as a rule.

Critics argue that all macroeconomic contingencies cannot be spelled out in advance. Unforeseen circumstances can arise that cannot be accommodated within the framework of a simple target. For example, would a target have limited the Fed's reaction to September 11?[31] Since targets cannot accommodate all contingencies, the judgment of central bankers arguably should prevail in deciding how to conduct monetary policy. Individuals with this view likely believe that the judgment of Paul Volcker and Alan Greenspan has produced a better performing economy over the past two decades than could have been achieved if their hands had been tied by a goal mandating price stability.[32]

Critics would also argue that the empirical evidence has been unable to corroborate the prediction that more discretionary power leads to poorer economic performance, and has even found the opposite to be true. Several studies have compared the response of the German economy and the U.S. economy to shocks. Since the German central bank was presumed to "inspire greater confidence" than the Federal Reserve because of its history of low inflation, Germany should have experienced a smaller loss in real output relative to the United States in response to a given reduction in the inflation rate. Yet the evidence seems to suggest that the United States has experienced smaller losses.[33]

Bernanke and Mishkin have argued that in practice the price stability goal does not impose a rigid rule on central bankers. Rather, the legislation that has been enacted in foreign countries is more appropriately viewed as a case of "constrained discretion," in which central banks are given a goal but have wide latitude in determining how the goal is met. The central bank in this arrangement is referred to as having "operational independence." Bernanke and Mishkin argue that inflation targeting has many of the advantages of rules and discretion, with few of the drawbacks. If they are correct, a target may not limit the Fed from acting on its best

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[30] See CRS Report RL31050, *Formulation of Monetary Policy: Rules vs. Discretion*, by Marc Labonte.

[31] The Federal Reserve responded to the terrorist attacks of Sept. 11, 2001, by immediately flooding the financial markets with liquidity with the goal of averting a possible financial panic.

[32] There are those who point out that under the leadership of both Volcker and Greenspan, the Federal Reserve has pursued a policy of low inflation.

[33] See Guy Debelle and Stanley Fischer, "How Independent Should a Central Bank Be?" op. cit., pp. 202-204; and Adam Posen, "Central Bank Independence and Disinflationary Credibility : A Missing Link?" *Federal Reserve Bank of New York Staff Report*, No. 1. May 1995.

judgment as much as some critics fear.[34] But this, then, raises the question of what purpose a price stability goal would serve if broad discretion is still allowed to subjugate it to other goals.

Summary

Critics of proposals to make price stability the sole goal of monetary policy argue that there are other important goals that monetary policy can and should accomplish. At the extreme, critics argue that money is not neutral and can affect unemployment over relevant time horizons, and a little inflation makes adjustments easier. While few economists may agree with these views today, there are many who would nevertheless agree that the short-term stabilization of the business cycle is a meaningful goal of monetary policy that should not be sacrificed in the pursuit of price stability. They would also argue that the Fed's lender of last resort function is essential for maintaining a sound and stable financial system. These critics believe that the economy is too complex for monetary policy to be committed to one simple goal. It is impossible to foresee every contingency, so discretion is necessary to allow experts to use their best judgment. They might agree with certain price stability proponents that "constrained discretion" is the optimal form of monetary policy, but they would argue that multiple goals are the best way to make certain it is achieved.

Having presented both the case for and against the proposal to refocus the ultimate goal of Federal Reserve policy, this report now explores a number of the technical issues that would likely be raised should Congress decide to adopt a singular goal of price stability for the Federal Reserve.

Technical Problems With Implementing a Price Stability Goal[35]

Beginning in the late 1980s, a number of countries imposed a goal of price stability on their central banks. Their experience will be used in the exposition to follow because it demonstrates that the manner in which the legislation is written in those countries has either compounded or simplified the technical problems noted

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[34] See Ben S. Bernanke and Frederic S. Mishkin, "Inflation Targeting: A New Framework for Monetary Policy?" *Journal of Economic Perspectives*, vol. 11, no. 2 (Spring 1997), pp. 97-116.

[35] The following discussion draws heavily from C.A.E. Goodhart, and Jose Vinals, "Strategy and Tactics of Monetary Policy: Monetary Examples from Europe and the Antipodes" in *Goals, Guidelines, and Constraints Facing Policymakers*, op. cit, pp. 139-187; Guy Debelle and Stanley Fischer, "How Independent Should a Central Bank Be?," ibid, pp. 195-221; and Richard Dennis, "Bandwidth, Bandlength, and Inflation Targeting: Some Observations," *Reserve Bank of New Zealand Bulletin*, vol. 60, no. 1, 1997, pp. 22-26.

below. Mishkin and Schmidt-Hebbel identify 17 countries that currently use a goal of price stability; in addition, the European Central Bank has such a goal.[36]

The Definition of Price Stability

The Chairman of the Board of Governors of the Federal Reserve, Alan Greenspan, once said that "price stability exists when inflation is not considered in household and business decisions." Although the utility of this definition for policy formulation can be challenged, it does raise the question of whether price stability should be defined in general terms or in terms of a quantified numerical target. Should the former be pursued legislatively, some would suggest using terms "of reasonable price stability." Congress might amend the Federal Reserve Reform Act of 1977 to require the long term growth of monetary and credit aggregates commensurate with stable prices, thereby dropping goals of potential production, maximum employment and moderate long term interest rates. However, some would argue that, in practice, the goal of maintaining stable prices has already dominated Fed policy under Paul Volcker and Alan Greenspan. If that were the case, making price stability the sole goal of monetary policy would lead to no changes in policy unless a numerical target was set.

For those preferring numerical targets, discussions about the definition of price stability usually center on whether the goal should be defined in terms of keeping the value of a price index stable or keeping an inflation rate stable. The advantage of the former, it is claimed, is that economic agents would know with certainty the long run value of the price level and it would be an immense aid in planning a variety of economic activities. The disadvantage is that every deviation of the price level from its legislated value would have to be corrected and this, it is conceded, could lead to bouts of deflation and introduce a great deal of volatility into the pace of economic activity and employment.[37]

Alternatively, Congress could define price stability as a rate of inflation. And the rate could be a given amount (a so-called point target) or a permissible range, for example, between zero and 2.5%. The advantage claimed for this alternative is that bygones would be bygones in the sense that rates of inflation that deviated either from the point target or the permissible range would not have to be corrected in subsequent periods. While this would reduce the volatility of economic activity and

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[36] The experience of some of these countries is examined in detail in CRS Report RL31702, *Price Stability as the Sole Goal of Monetary Policy: The International Experience*, by Marc Labonte and Gail Makinen. See also Frederic Mishkin and Klaus Schmidt-Hebbel, One Decade of Inflation Targeting in the World: What Do We Know and What Do We Need to Know?" National Bureau of Economic Research, Working Paper 8397, July 2001.

[37] Although this is typically assumed, it need not be the case. A price level target could be allowed to rise over time, so that prices did not remain constant, but past deviations from the target would have to be corrected. This would result in a positive rate of inflation in most years, but years of higher than average inflation would need to be offset by years of lower than average inflation. However, some of the random price shocks that affect the overall price level would be likely to cancel each other out over time.

employment over time, it would make uncertain the longer run value of the price index and this may undermine the putative beneficial effects from this legislation.[38]

How price stability is defined would appear to be quite crucial to any legislative effort in this area. All countries that currently impose a price stability goal on their central banks do so in terms of an inflation range (e.g., Canada 1-3%, New Zealand 0-2%) rather than a price level target.[39]

Choice of Price Index

An ideal index should, at a minimum, be timely, accurate, not subject to revisions, and readily understood by the public. These characteristics largely exclude the two price indexes that come from the series on Gross Domestic Product because they are subject to numerous revisions. This leaves the CPI which is published monthly, widely reported in the news media, understood by the public, and not subject to revisions. As presently formulated, however, it (as well as many other prices indexes) is subject to a number of problems or biases which may make it a poor candidate to accurately measure the true price level or the true rate of inflation. In particular, some economists believe the CPI overstates inflation, so an inflation target of 0% as measured by the CPI might result in forcing the Federal Reserve to deflate the economy. Many economists believe this would be harmful to the goal of maintaining full employment in the presence of sticky prices.[40]

Some have argued that the use of a target that included volatile commodities such as food and energy would make monetary policy destabilizing. They argue that the Fed should instead target a "core inflation" measure which excludes these commodities. This argument is buttressed by the fact that energy shocks have often destabilized growth in the past, and making monetary policy react to their effect on "headline" inflation could compound the destabilization, as discussed below. Occasionally, the core and headline rates diverge for long periods of time, so a focus on core could diverge from the price stability goal. For example, headline inflation exceeded core in five out of six years between 1999 and 2004. Another issue would be whether to use a price index that includes imported goods or goods and services, the supply of which are more vulnerable to disruptions and whose price is more sensitive to changes in the exchange rate than goods and services in general.

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[38] Dittmar, Gavin, and Kydland demonstrate that uncertainty about the future path of prices becomes much greater if the central bank continues to respond output volatility under an inflation target, a possibility that will be discussed below. Robert Dittmar, William Gavin, Finn Kydland, "Price-Level Uncertainty and Inflation Targeting," *Federal Reserve Bank of St. Louis Review*, July 1999, pp. 23-33.

[39] See Mishkin and Schmidt-Hebbel, op. cit.

[40] It would be possible to draft legislation in terms of a price index that would be allowed to trend upward by a given percent per year or an inflation rate per period fixed in terms of a range whose value would be determined by the upper bound of the estimated bias. For a discussion of these biases, see Mark Wynne and Frank Sigalla, "A Survey of Measurement Biases in Price Indexes," *Journal of Economic Surveys*, vol. 10, no. 1, 1996, pp. 55-89.

All countries that impose a numerical price stability goal on their central banks use a CPI index. Most use the full CPI. The remainder use a CPI less a number of items such as food, energy, excise taxes, and home mortgage costs.

Should There Be a Fixed Band Around the Target, and If So, How Wide Should It Be?

All agree that any target set should be both demanding and credible. Two approaches have been taken to achieve these ends. One has focused on the selection of a point target (for either a price level or a rate of inflation). This target is specified in law with the understanding that some deviations about the point are unavoidable. However, the precise range of these deviations is left unspecified. A second approach has involved the specification in law of the permissible range or band in which the price level or rate of inflation may fluctuate, such as 0% to 2% per year. It is understood that such a law does not impose on the central bank any obligation to keep the rate at the mid-point of the range. Any point within the range or band is equally good from a policy perspective. It is possible to view these two approaches in the following way. A point target can be thought of as the mean value of an unspecified range while a fixed range or band can be thought of as a specified range without a mean value.

Regardless of what approach is taken, a question arises about the width of the band within which prices might fluctuate. If it were quite wide, the public might perceive it as not very demanding and this could undermine credibility. But if it were too narrow, the regime could suffer credibility problems because the band might frequently be inadvertently breached.[41] Achieving the proper balance could be problematic — estimates of how wide a band would have to be for the central bank to stay within the band 95% of the time range from 3 to 14 percentage points.[42] At the bottom of this selection is the type of shocks likely to be faced by an economy, the type of price index that should be used, the lags inherent in monetary policy that hamper control, and the need to maintain credibility.[43] In practice, the widths have been set to about 2 to 3 percentage points.

There is something more substantial in selecting the width of the band that is frequently absent from the discussion on the desirability of focusing a central bank on a single goal of price stability. Most economists currently hold the view that the harm inflicted on an economy from inflation comes not so much from inflation itself

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[41] If inflation targeting is interpreted as targeting the forecast of *future* inflation, it may make more sense to use a point target than a band. In this case, when the forecast of future inflation exceeded the point target monetary policy would be tightened and when it was below the target policy would eased.

[42] Richard Dennis, "Bandwith, Bandlength, and Inflation Targeting: Some Observations,"*Reserve Bank of New Zealand Bulletin*, vol. 60, no. 1, 1997.

[43] Svensson argues that a band is necessary if the central bank wishes to pursue any output stabilization and still achieve its target. Lars Svensson, *Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets*, National Bureau of Economic Research, Working Paper 5797, Oct. 1996.

as from a variable rate of inflation. If inflation could be fixed at some moderate but constant percent per year and held there, it might do little damage. Economic calculations, on the other hand, can be severely handicapped by an inflation rate that is highly variable. For that reason, the width of the band of permissible variations of the price level or rate of inflation becomes much more important for it constrains the possible variations in the price level or rate of inflation and, thus, the damage inflicted on the efficient operations of the economy.

Would Exceptions Be Allowed?

It is often said that inflation is a monetary phenomenon caused by too many dollars chasing too few goods. While this is true in the longer run, in the short run movements in a price index can be due to more than just movements in the supply of money. Shocks to the turnover rate of money and the supply of goods and services available to a nation can have an influence on prices and the rate of inflation. Shocks to supply can come about through changes in such factors as domestic productivity, unusual weather conditions, and international flows of both trade and capital.

Some of these shocks are random, meaning that their average value over extended periods of time is zero. The other shocks can be longer lasting in nature and nonrandom in character. Both types of shocks would bear on the width of a band that would either be specified if a fixed band were legislated or tolerated if a point target were legislated.

Demand shocks do not pose a serious problem for a single goal regime focused on price stability, or, for that matter, a multi-goal regime focused on price stability and output stabilization. In a demand shock, prices and output move together so monetary policy can be used to offset both problems at once. For example, after a fall in consumer confidence, both output and inflation would be expected to fall. In this situation, expansionary monetary policy would be consistent with both maintaining price stability and stabilizing output.

It is the supply type shocks that have been highlighted in the literature as imposing the greatest difficulty to achieving a price stability objective because output and inflation move in opposite directions in a supply shock. Supply shocks are of several types. The most commonly mentioned are the OPEC-type oil price shocks. These are often called terms-of-trade shocks. With a singular goal of price stability, an OPEC-type shock could force the Federal Reserve to deflate all other prices in order to keep to the goal. This would lead to a rise in unemployment, especially in the short run.

Terms-of-trade shocks can also occur for other reasons, especially in response to international movement of capital. When a country is the recipient of a net inflow of foreign capital, its exchange rate will appreciate and the price of foreign goods will fall relative to domestic goods so that a trade deficit will occur. If imported goods are in the price index, other things constant, the index will decline. Under a constant price level target the Federal Reserve could be required to inflate the value of domestic prices (its policy actions could depend on the time period over which it was required to meet its goal). It might be required to do the same thing to prevent a

negative rate of inflation (i.e., a deflation), if the target were specified in terms of an inflation band.

Another type of supply shock could occur if the United States decided to add or substitute a consumption-based tax such as a VAT for the current income-based tax. This is an option for the fundamental tax reform that the President has proposed. In some of the countries that impose a numerical price goal on their central bank, such a tax substitution or an increase in the VAT rate is allowed as an exception to the goal.

The above discussion raises a general issue about exceptions to the goal. If too many events that cause prices to change were made exceptions to a price stability goal, confidence could be undermined and the directive to the central bank would be significantly diluted. While some exceptions might be desirable, too many might make the goal of price stability indistinguishable from current practice. One way to get around the issue of exceptions is to set a fairly wide range or band in which prices fluctuations are permitted or tolerated. As the width of the band is increased, the setting of exceptions becomes less important. However, this is done with the knowledge that if the band is too wide, credibility in the regime is undermined.

Most countries have chosen not to make a list of formal exceptions. In the other countries, exceptions are made for shocks originating in terms-of-trade changes, supply disruptions, and changes in excise taxes and interest rates. That such exceptions are allowed is testimony to the importance of supply shocks to the general ability of central banks to reach numerical targets.

How Long Would the Central Bank Have to Achieve Its Goal?

To answer this question, one should have some appreciation for what is involved. The Federal Reserve cannot now rely on a direct and stable relationship of a monetary aggregate to aggregate demand and the price level or rate of inflation. Because of this, it manipulates short term market interest rates in an effort to shift aggregate demand and, ultimately, the price level and rate of inflation. Success requires technical expertise, good models of the economy (models that capture the structure of how monetary variables interact with the real economy), some degree of patience, and, because policy operates with a lag that is long and of variable length, a long time horizon. Also hampering the success of the operation is that the relevant interest rates that matter for aggregate demand are the unobservable **real** or inflation adjusted rates. Thus, success in meeting a goal of price stability would likely depend on the time horizon over which the goal would need to be met. The technical considerations involved seem to support a time horizon longer than one or two quarters. Among the eight countries specifying a numerical price goal, six specify a time horizon of at least one year.

Were a numerical target selected that was significantly different from the inflation rate prevailing at the time, there might also need to be a transition period between the implementation of the new regime and the realization of the new target. Otherwise, the sharp shift from the prevailing inflation rate to the targeted rate could temporarily destabilize the economy.

The nature of the lags inherent in monetary policy and the uncontrollable shocks to inflation and output raise the question of how literally the Fed should pursue its goal under an inflation target. Because inflation and output do not always move in opposite directions — notably in the case of oil shocks — a single-minded concentration on stabilizing inflation over short periods of time could potentially lead to a significant degree of volatility in output and unemployment. Arguably, countries with inflation targets have interpreted the target as an intermediate goal in practice for that reason. As a result, they try to minimize short-run fluctuations in output because of its medium-run effect on inflation, even though this may move inflation further from its target in the short run. But critics could argue that this behavior begs two questions. First, are the gains in accountability of an inflation target regime lost if the central bank can always claim to be aiming for the medium run? And more importantly, what is the purpose of claiming to have a "sole goal" to monetary policy if, in practice, central banks continue to pursue an unemployment goal in the short run?

If a Target Were Changed or Missed, What Would Be the Optimal Time Over Which to Return to the Target?

If the target were missed, it might have no consequences if the amount of overshooting or undershooting were small and unlikely to persist. There are other misses, however, that the monetary authorities could decide required corrective action. If corrective action is required, then the goal should be a smooth transition back to the target. Sudden and possibly large changes in monetary variables can have large and disruptive changes to output, employment, interest rates, and the international exchange value of the dollar. The purpose of a price stability goal should be to increase the amount of goods and services available to the public, not cause extreme volatility to real income, employment, and financial markets.

Alternatively, the time period to re-establish the goal should not be so long as to be meaningless. This would undermine confidence in the new regime. Thus, any legislation refocusing the Federal Reserve would be expected to pay particular attention to this issue.

What Incentives Are There, or Should There Be, for the Federal Reserve to Achieve Its Announced Target? Or, What Type of Accountability Should There Be?

The adoption of a single goal of price stability defined with some arithmetic precision would likely increase accountability compared to the current system, where success is evaluated in subjective terms. But that raises the question of what appropriate recourse should be taken if the Fed were to miss its target. Failure to do anything would undermine public confidence in the new regime. Alternatively, to penalize the governing board for missing a legislative requirement might be self-defeating if the failure was unavoidable.

The nature of unavoidable shocks to the economy argues for a medium run target, yet accountability is further weakened if the central bank aims to meet a target

only over the medium run.[44] For example, if the Fed is mandated to target inflation one year in the future, it is difficult to evaluate whether or not it is pursuing a policy today that will meet the goal.[45] It can be punished retroactively for missing the goal today that it set last year, but it can always claim that it missed its goal for "reasons beyond its control" and "it will do better next year." Acknowledging the nature of unavoidable economic shocks, some inflation target proponents argue that central banks should be able to change inflation targets on a regular basis. This would reduce accountability further since missed targets could then be revised away in the future.

Formal accountability for meeting price stability targets varies considerably among those countries that have imposed such a goal on their central bankers. In a few countries, the central bank is required to write an open letter to the finance minister explaining why the target was missed and what measure have been taken to rectify the situation. Only New Zealand links the tenure of the head of its central bank to achieving the inflation target. In most other countries, no explicit sanctions for missing the target are given. Some have proposed that the salaries and, possibly, bonuses of the governors might be linked to achieving the price stability goal.

Who Would Set a Target for Price Stability?

In many parliamentary systems of government, this is presented as an important but unsettled issue. It is important because if the government alone sets the target, it is thought to underscore the dependent position of the central bank and, it is argued, may undermine central bank credibility. This may be less important in a country such as the United States where central bank independence is well established. The joint setting of the goal is thought to enhance credibility for it would commit the government to the goal and make it more difficult to be critical of the central bank in achieving the goal. In practice, most countries have set the goal jointly.

In the United States, the Constitution vests monetary policy in Congress. Congress, in turn has granted the Federal Reserve broad operational independence, but maintained responsibility for oversight and determining the goals of monetary policy. If Congress chose to set a target for price stability, it would have two general options. First, it could specify the target in general terms such as directing the

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[44] A price level target may result in greater accountability than an inflation target because under the former, policy decisions made today would be strongly influenced by whether the target was missed in the past, information that is unambiguous and transparent. This is in contrast to an inflation target, where policy decisions are strongly influenced by forecasts of the future, which are harder for outsiders to evaluate. See Charles Carlstrom and Timothy Fuerst, "Monetary Policy Rules and Stability: Inflation Targeting versus Price-Level Targeting," *Federal Reserve Bank of Cleveland Economic Commentary*, Feb. 2002.

[45] Lars Svensson argues that if the Fed made its forecasting model public, over time outsiders could infer from the forecasting errors whether departures from the target were unavoidable or due to a shortcoming on the Fed's behalf. See Lars Svensson, *Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets*, National Bureau of Economic Research, Working Paper 5797, Oct. 1996, p. 12.

Federal Reserve to achieve reasonable price stability. This would allow the Federal Reserve discretion in implementing the law (e.g., choosing the specific numerical inflation target). (Of course, Fed implementation could be done in consultation with relevant congressional committees as is now the case in the semi-annual monetary policy hearings). Second, Congress could set the target range and direct the Federal Reserve to achieve the goal.

How Could the Government Set a Permanent Target?

This question bears on the credibility of a monetary policy focused on a single price stability goal. Many writers on this subject have expressed the concern that if the government could override any prior decision on the target, it would undermine the confidence of economic agents that price stability would remain the central goal of monetary policy. For example, there could be opportunistic changes in the numerical target in order to "pump up" the economy to meet short-term political objectives.

While it is clear that credibility would be enhanced if it could be ensured that changes to prior legislation would not take place, this is not possible in the American political system. The possibility of change is always present. That government has the power to change laws is, of course, the essence of democracy. It may also be the essence of good economic policy.

Conclusion

The American model of central banking has distinctive attributes. The U.S. Congress delegates to a central bank its power to "coin money and regulate the value thereof." In doing so, it specifies a variety of goals that monetary policy should achieve that can be viewed as mutually inconsistent. This lack of goal independence is, however, arguably superficial since the Federal Reserve has long been allowed to pick and choose the one or ones on which it will place the greatest emphasis during any given time period. The Federal Reserve has also been given complete instrument independence in the sense that no constraints are placed on the monetary powers available to it to achieve its ends. The exercise of monetary policy is completely at the discretion of the Federal Reserve.

A growing number of economists argue that a more desirable regime would be one in which the central bank is directed to achieve a single goal, price stability. While this regime would restrict the goal independence of the Federal Reserve, instrument independence would continue as it is now.

Most economists would agree that monetary policy has been highly successful in the past 20 years. Proponents of a single price stability goal for monetary policy must contend with the time-honored adage "if it ain't broke, don't fix it." While proponents are likely to agree that monetary policy has been a success in the last two decades, they would attribute that success to the Fed's decision to focus single-mindedly on price stability. Making price stability the sole goal of monetary policy would institutionalize this success, preventing any potential departure from this

philosophy under future Fed chairmen and insulating current policy from political pressure. With the current regime of broad discretion, there is always the potential for the Fed to spring opportunistic monetary surprises which would lead to an inflationary bias that would create long-term harm for short-term gain. Furthermore, they would argue that the Fed pays lip service to goals that are contradictory and unattainable — thereby avoiding criticism — while focusing on only one goal. This, they argue further, is a potential threat to the credibility, transparency, and accountability of monetary policy. In proponents' eyes, a price stability goal would lead to an improvement on all three of these fronts, whereas the current multi-goal regime leads to uncertainty, opacity, and subjectivity. Some proponents are motivated by a desire to end discretionary policy, while others view a price stability goal as "constrained discretion." The latter believe that monetary policy can play a useful role in reducing the volatility of the business cycle, as long as constraints are present in the form of a price stability goal to prevent high inflation and monetary surprises.

Critics would contend that price stability proponents underestimate the complexity of monetary policy and the broad and varied effects it has on the economy. While most would acknowledge the salutary effects the Fed's pursuit of price stability has produced, they would disagree that this is the only policy goal the Fed can and should pursue. Instead, they would argue that the Fed has proven in the last two decades that price stability can go hand-in-hand with a monetary policy that minimizes the excesses of the business cycle and maintains the soundness of the financial sector. If a price stability goal is interpreted as precluding the Fed from pursuing these other two goals, then they would argue that the economy would suffer as a result. For example, a price stability goal could have limited the Fed's ability to ease policy in response to recent oil shocks and the attacks of September 11. Alternatively, if the price stability goal is interpreted as a regime of "constrained discretion" which still allows for the stabilization of output, then critics would view the current multi-goal mandate as more appropriate. Furthermore, they would argue that the complexity of the economy means that policy must rely on expert judgment, and the Fed has proven in the past two decades that discretion can be pursued responsibly.

In conclusion, the price stability goal, while simple, is deceptively so. The long and variable lags in policy effectiveness and unpredictable nature of shocks to the economy mean that the Fed's control over inflation is imprecise and delayed. For that reason, the Fed could not reasonably be expected to keep inflation on a point target at all times, should a price stability goal be adopted. This implies accountability would not be as straightforward as proponents might hope. Legislation can address this problem explicitly. Possible remedies for the problem include allowing inflation to stay within a range, targeting core rather than headline inflation, permitting exceptions when inflation would be allowed to miss its target under pre-determined circumstances, and targeting forecasted rather than contemporaneous inflation. But critics would argue that none of these solutions really solves the inherent complications that makes the price stability goal impractical.