Inflation: Measurement and Policy Issues

by Richard G. Davis

Inflation poses problems for the functioning of any economy. This article seeks to examine several broad topics relating to inflation. In particular, it looks at (1) problems of measuring inflation, (2) the costs imposed by inflation, and (3) the problems of anti-inflation policy.[1]

Measurement of inflation

The main price series used to measure and analyze inflation are the consumer price index (CPI), the producer price index (PPI), and the "implicit" (or floating-weight) and fixed-weight GNP deflators. Some of the principal features of these measures are summarized in Table 1, and they are discussed in more detail in the following two articles. While all these measures have important analytical uses, the CPI can reasonably be regarded as "the" measure of inflation since it is the only one specifically designed to measure the purchasing power of money for the average final consumer of goods and services. Thus the following brief discussion of measurement issues focuses on the CPI.

The CPI is probably one of the best pieces of economic data we have. It is drawn from a very large monthly sample of actual prices that takes account of discounts, rebates, and other factors affecting actual transactions prices. Unlike most other series, it is not subject to revision, except for minor periodic revisions of seasonal adjustment factors. Nevertheless, the CPI does have some significant problems and limitations.

First, it is a *base*-weighted measure, that is, the weights attached to its individual components are derived from expenditure weights in a base period that is updated only about every ten years. This means that the index reflects changes in prices only. Consumers can and do adjust their expenditure patterns to reduce consumption of items whose prices are rising relative to the prices of other items. Consequently, the CPI as a measure of the resulting decline in the "satisfaction" that can be purchased with a given number of dollars is overstated.

A floating- or current-weighted index such as the implicit GNP deflator has an opposite bias. It implicitly assumes that a shift in spending patterns induced by rises in prices imposes *no* loss of "satisfaction." This is obviously an overstatement. To that extent, floating-weight deflators *understate* the decline in "satisfaction" that can be purchased with a given amount of money as a result of rising prices. There is no objective solution to this problem of (opposite) biases in base- and current-weighted price measures since what is fundamentally at issue is the change in the "satisfaction" a given number of dollars will buy when prices change. In any case, it should be noted that the bias of a base-weighted measure such as the CPI tends to become larger over time, especially given imperfect adjustment for the introduction of new products not included in the original base period weighing.

A second measurement issue concerns the need to allow for quality changes in the items being priced. The Bureau of Labor Statistics (BLS) in principle adjusts the CPI for quality improvements, but the adequacy of such

[1]This article and the first two "In Brief" Economic Capsules that follow were originally prepared as background material to stimulate discussion on inflation issues at a meeting of the Federal Reserve Bank of New York's Board of Directors The views expressed are those of the author and do not necessarily reflect the views of the New York Federal Reserve Bank

adjustments varies Fairly elaborate procedures are used to adjust for quality changes in such items as new cars, but the most serious problems probably are located in the services sector, as indicated in the article on service prices It appears likely, for example, that inability to account for quality changes is a significant factor in the rapid rise reported in the price of health services. Overall, specialists who have studied the quality problem have tended to argue that inadequate quality adjustments do impart some upward bias to the CPI, but probably one that amounts to no more than about 1 percent.

Probably the most serious quality issue of recent years has been created by the rapid improvement and growing importance of computers. But this problem is much more serious in regard to the GNP deflator (and hence in measuring the growth of "real" GNP and productivity) than it is for the CPI.

One of the most important measurement problems relating to the CPI is its treatment of the "implicit rent" costs of owner-occupied homes, an item with a large 18 percent weight in the total index. In 1983, the BLS repaired a major defect in the index when it switched from an asset price approach to housing costs (which tended to be dominated by movements in mortgage rates and hence in long-term interest rates) to a current services approach. The problem is that the conceptually correct "implicit rental cost" of owner-occupied houses is hard to measure because the rental market for single family homes is thin Recently, this component has been suspected of contributing to upward bias in the CPI because the recorded inflation rate of the component remained in a 4 to 5 percent range despite the well-known weakness in a number of sections of the housing market Unfortunately, there seems to be no good way to quantify the extent of the upward bias, if any

Finally, a word should be said about inflation in "asset" prices—that is, prices of the stock of existing residential and nonresidential real estate, land, mineral deposits, equities, fine art, and the like None of the major price series includes prices of such assets since the series are all intended to measure consumption items (CPI) or currently produced items (the PPI and GNP deflators). In common usage, "inflation" by and large refers to prices of currently consumed and produced items rather than to asset prices But there are no hard and fast rules on this, and the same processes that generate inflation in current goods and services may also generate inflation in asset prices Broad movements in most asset prices show some tendency to parallel broad movements in CPI inflation, but these inflation rates may differ quite substantially for long periods.

Overall, it is clear that the CPI has some significant technical problems. Nevertheless, it is basically a well-designed and well-maintained measure of inflation, and the technical problems it poses are not important relative to the much larger issues of how to deal with inflation. The existence of these problems does support the wisdom of defining price stability in somewhat flexible language rather than equating it with a pseudo-precise "zero" inflation rate as measured by some particular series.

Real effects and costs of inflation

It has proved far easier to describe the costs of inflation qualitatively than to measure them quantitatively. The effects of inflation seem to be of five general kinds: (1) increased costs of repricing more frequently and more

Table 1

Inflation Measures

	Consumer Price Index	Producer Price Index	Implicit GNP Deflator	Fixed-Weight GNP Deflator
Weighting scheme	Fixed-weight based on 1982-84 consumer spending	Fixed-weight based on 1982 shipments	Current-weight based on component share of GNP	Fixed-weight based on 1982 component share of GNP
Services included?	Yes	No	Yes	Yes
Imports included?	Yes	No	No	No
Asset prices included?	No	No	No	No
Effort made to adjust for quality changes?	Yes	Yes	Yes	Yes

frequent "trips to the bank," (2) effects on the allocation of output, (3) effects on the efficiency of the pricing system as a signaling device, (4) effects on income distribution, and (5) effects on social and political stability. In examining these effects, economists make a useful analytical distinction between anticipated and unanticipated inflation. A further distinction between the expected amount of inflation and the level of *uncertainty* surrounding inflation expectations also seems useful.

In principle, a fully anticipated rate of inflation would have only a few, quantitatively minor real effects. To be fully anticipated, an expected (and realized) rate of inflation would have to be built into all long-term contracts, all institutional arrangements for making payments, and interest rates. Even if all these adjustments were made, a fully anticipated inflation would still have important real effects unless the tax system were fully indexed, which of course it is not. But if *all* these various conditions were met, the real effects of inflation would in theory be very minor. Repricing would have to be done more often in the presence of inflation ("menu costs"), people would hold smaller amounts of zero interest cash and so would have to go to the bank more often ("shoe leather costs"), and the government would benefit through a reduction in its real interest burden via the effects of inflation on its zero interest liabilities. But this is about all.

Obviously, fully anticipated inflation is nothing more than a theoretical construct. It is doubtful whether all the institutions of any economy have ever been fully adjusted to inflation, and in very high-inflation economies with elaborate indexation schemes, these schemes are invariably less than perfect. The distinction does emphasize, however, that there are important differences between the effects of unexpected inflation and the effects of an inflation that is at least partly anticipated and incorporated into institutional arrangements and economic decisions. As discussed further below, there is at least indirect evidence that the fairly steady and low inflation of recent years is largely, though certainly not fully, built into expectations and arrangements.

Unanticipated inflation has all the effects of anticipated inflation, the first item in the above list, plus most or all of the other effects cited. Effects on the allocation of output and on the general efficiency of the economic system undoubtedly vary with the precise circumstances. Interaction of inflation with the tax system, for example, is likely to discourage output of long-lived business capital assets but may favor investment in housing, thus hurting longer run potential growth. More resources will be devoted to speculative activity and to production of commodities whose prices are likely to respond to inflationary pressures most rapidly. The overall efficiency of the pricing mechanism may be hurt as unanticipated inflation raises the noise-to-signal ratio given out by prices.

Unanticipated inflation obviously has widespread and complex income distribution effects. Clearly creditors and all recipients of payments fixed by long-term contracts in nominal terms (including multiyear wage contracts) are hurt. In general, wages and profits will be hurt in industries that, for whatever reason, tend to have relatively slow responses to changes in market conditions. The government is "helped" by increases in the real tax rate on such items as capital gains and interest income, while the real value of its outstanding debt is reduced. Financial intermediaries are hurt by inflation that is unanticipated (and thus not built into nominal interest rates) as net interest margins fail to offset declines in real net worth. Obviously the list of such effects could be elaborated.

An increase in the degree of *uncertainty* surrounding any mean expected rate of inflation probably has additional effects. In particular, the persistently high nominal long-term rates relative to the reported long-term inflation expectations of financial market participants in the 1980s (that is, an implied high level of "real" long-term rates) seem plausibly explained in part by an increased uncertainty premium demanded by lenders in the face of the widely varying inflation experience of the past two decades. Any increased uncertainty surrounding the mean expectation of a variable so pervasively important as the expected inflation rate is likely to pose problems for a wide range of economic decisions and will discourage long-term contracts generally. Although the limited number of statistical studies on the subject have produced somewhat mixed results, it seems quite plausible to argue that the degree of inflation uncertainty is positively related to the *level* of inflation. If this is so, inflation uncertainty represents a significant further cost that must be attributed to the effects of an increase in the average rate of inflation.

At a more subtle level, all unanticipated inflation puts a strain on the social compact since it undercuts the perceived fairness and predictability of economic outcomes. In effect, inflation rewards and punishes individuals in a random way (or at least "random" from the individual's point of view) and distorts the real consequences of all kinds of contracts and agreements, explicit and implicit. At some point, inflation is likely to begin to weaken social and political stability. The classic example is of course the German hyperinflation of 1922-23. But in general, high rates of inflation tend to be associated with social and political strains, both as cause and effect. Obviously the level of inflation and inflation uncertainty at which such interactions begin to become significant will vary with circumstances.

The short- to intermediate-term costs of reducing inflation

The record clearly suggests that significant reductions of ongoing inflation rates have almost invariably entailed short- to intermediate-term costs. To see why this should be so requires at least a brief consideration of the cause of inflations. The proximate cost of continuing inflation is a level of aggregate demand (read nominal GNP) exceeding the economy's sustainable capacity to generate real output as determined in part by demographic, technological, and capital stock factors. The monetarist view of inflation goes on to say that continuing excess growth in aggregate demand can only occur in the presence of a correspondingly excessive monetary growth. This proposition can probably be accepted in a suitably long-run context and with some additional qualifications, but it is, in any case, a separate issue for present purposes.

The idea that continuing inflations are caused by "excess" aggregate demand is almost, but not quite, a truism. Supply shocks can also produce one-shot jolts to the price level that are experienced as a (temporary) rise in the inflation rate. Obvious examples are increases in taxes on commodities and wages (such as social security taxes), increases in commodity prices caused by cartels or other supply factors, and developments such as capital flight that depress the exchange rate and thus raise import prices. It has also been argued that significant changes in industry and labor market structure (such as may have been produced by the National Recovery Act and the Wagner Act of the 1930s) can have at least a one-shot upward effect on the price level. But these various kinds of supply side shocks will not have permanent effects on the inflation rate unless they get built into price expectations in a process that must ultimately be ratified by policies affecting aggregate demand.

In classic cases of very rapid demand inflation, one often finds a situation in which a government, in pursuit of income redistribution or other objectives, runs very large deficits associated with subsidies to consumers and/or to state-owned enterprises, deficits that are financed by borrowing from the central bank. This borrowing, in turn, results in a corresponding increase in bank reserves and generates a correspondingly rapid growth in the money supply. In such cases, the interrelationship between fiscal policy (the politically determined deficit) and monetary policy (the associated expansion of reserves and money) constitutes a single process whose component effects on inflation are impossible to disentangle. At a more fundamental level, of course, the real cause of such inflations is the failure of the political system to achieve whatever distributional or other objectives it may have through taxation rather than inflation. South America has offered many examples of this process and Eastern Europe may well offer more.

Policies to reduce or eliminate an ongoing inflation have basically been of two kinds: wage and price controls and restraint on the growth of aggregate demand. There is ample evidence that the first of these approaches, at least when used by itself, produces only economic distortions with accompanying social and political pressures and, worse yet, inevitable failure to achieve its objective. One need only think back on the various phases of the Nixon programs of the 1970s or the numerous control plans introduced in Latin America in recent years. The best that can be said for the controls approach is that under the right conditions, controls *may* reduce the time and pain that would otherwise have to be endured as a side effect of the aggregate demand policies needed, with or without controls, to end inflation. Still, it is at least an open question whether controls are worth the problems they create even when used in conjunction with appropriately restrictive demand policies. In some cases, the controls appear to have been used mainly to provide political cover for demand policies that were in fact insufficiently restrictive to do the job. In any event, when controls do prove to be a beneficial adjunct to aggregate demand policies, their effect probably comes from reducing inflationary expectations more quickly than would otherwise be the case. This, in turn, would lower the short-term real output costs of reducing inflation through demand policies alone.

While restraint on aggregate demand can successfully be used (a) to halt an ongoing *acceleration* in the rate of inflation, (b) to lower an ongoing *level* in the rate of inflation, or (c) to eliminate inflation altogether (abstracting from supply shocks), history suggests that such successes almost inevitably entail short- to medium-term costs in real output and employment. These costs may be felt as a *permanent* slowing of the real growth rate (if the pre-existing growth rate was above the sustainable long-term rate), as a *temporary* slowing of the real growth rate, or as a temporary outright decline in real output. In the United States at least, major reductions in the ongoing rate of inflation have generally been associated with temporary outright declines—that is, with recessions.

An obvious question is why restraint on aggregate demand seems necessarily to involve short- to intermediate-term restraint on real output. Although the issue is much puzzled over by some theorists, the real-world explanation seems obvious enough. If prices, wages, and rents were to adjust immediately to slowdowns in the growth of aggregate demand, real output would not be affected and control of inflation would be

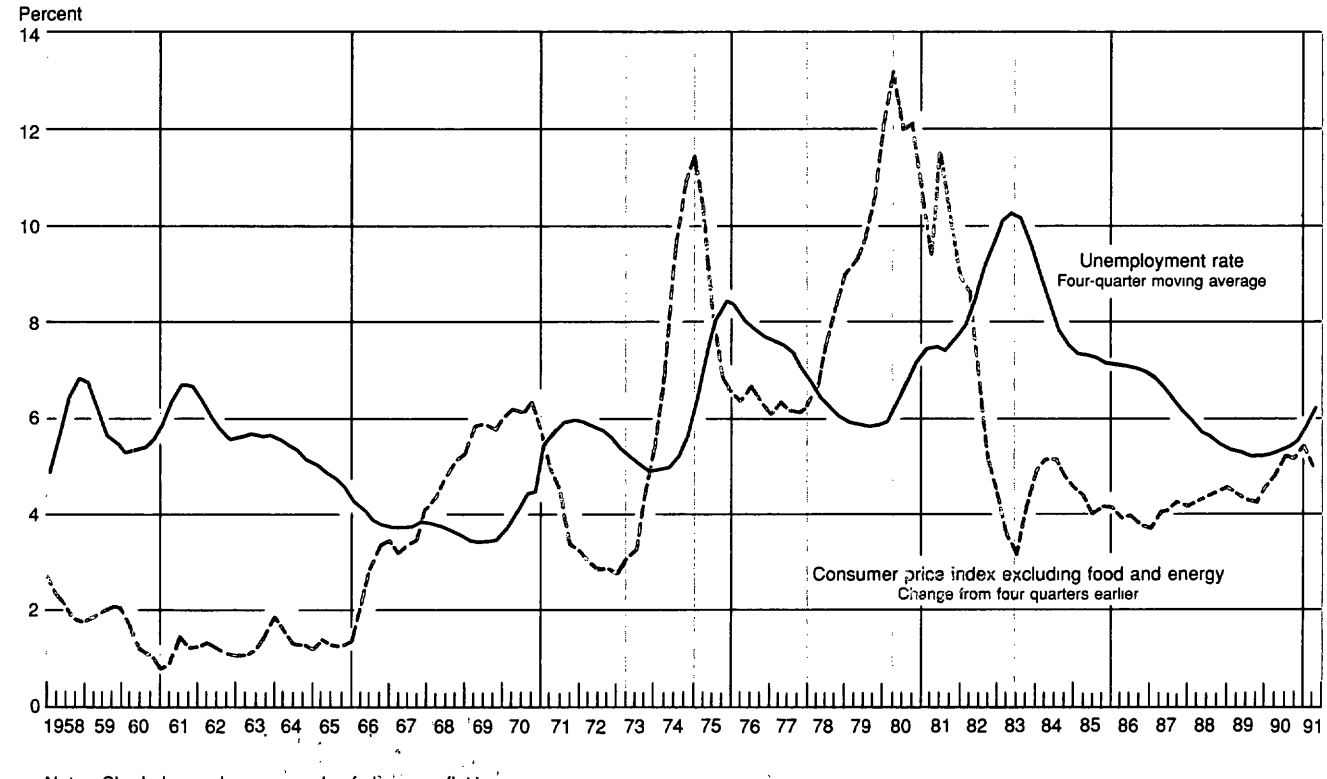
essentially painless. But the fact is that most prices, wages, and rents are sticky, and many are very sticky As a result, if aggregate demand policy slows the ongoing rate of growth of nominal GNP by x percentage points, most of the short-run impact will be on the real component of GNP Only gradually will prices slow in line with slower aggregate demand growth Real output can ultimately resume its original growth rate, but this time with slower growth in both nominal demand and prices

The phenomenon of sticky prices is a source of perplexity to academic theorists who start from the classical premises of pervasively competitive markets peopled by maximizing buyers and sellers with "rational" expectations and characterized by prices that adjust continuously to market clearing levels Thus to such theorists, it is not obvious why "rational" buyers and sellers should persist in agreeing to trade at non-market clearing prices and wages for long periods of time—a situation that clearly exists in the state of rising unemployment and excess capacity associated with restrictions on aggregate demand in the short to intermediate run. Prices in organized commodity exchanges and financial markets fluctuate hourly in response to seasonal, cyclical, and erratic changes in demand By contrast, the demand for the morning paper shows clear intraweekly, seasonal, and other variations, yet its price may remain unchanged for years Many more prices, wages, and rents in the real economy look like the price of the morning paper than look like prices in the Chicago commodity pits. In any case, the phenomenon of sticky prices is pervasive and appears to be fundamental to the nature of the inflation problem.

As noted, the historical record is clear in showing that major slowdowns in the rate of inflation have been associated with increased slack in real activity as indexed by the unemployment rate. Chart 1 shows the postwar experience in the United States and Charts 2 to 5 suggest a similar relationship over the past fifteen years in other major industrial countries. Table 2 shows the cumulative excess of unemployment over the estimated "normal" or "natural" rate of unemployment that

Chart 1

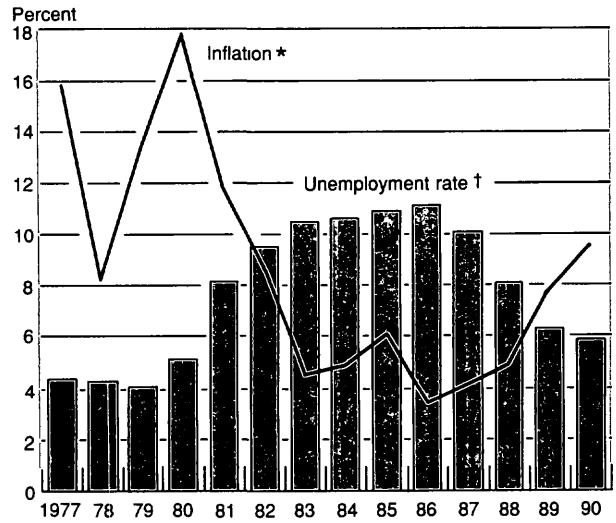
Inflation and Unemployment Rates in the United States, 1958-90



Note Shaded periods are periods of slowing inflation

Chart 2

Inflation and Unemployment Rates in the United Kingdom, 1977-90

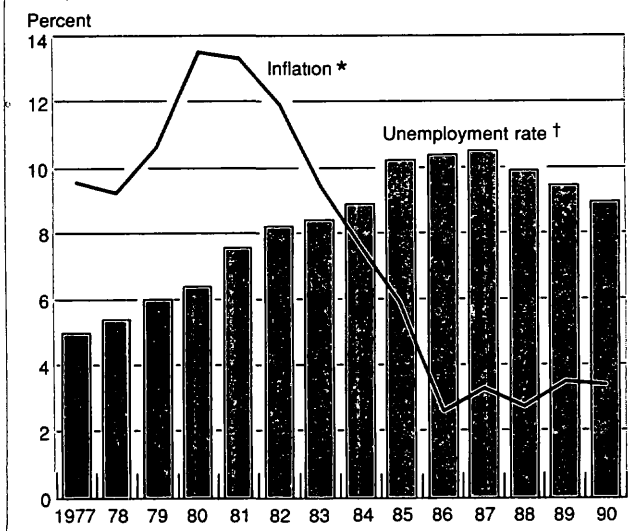


* Annual percent change in consumer price index

† Annual average level

Chart 3

Inflation and Unemployment Rates in France, 1977-90

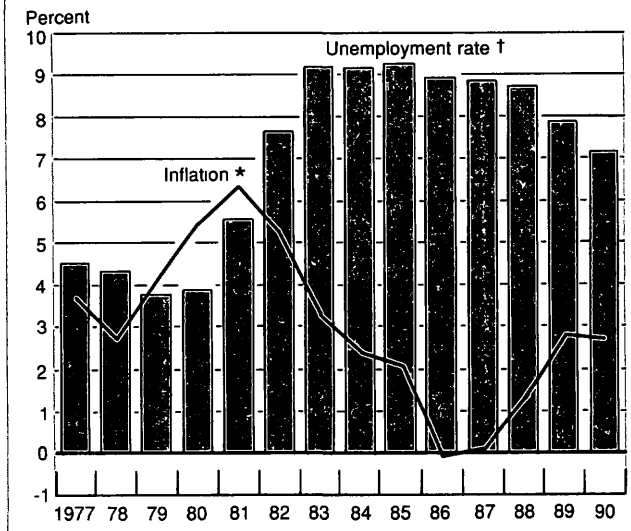


* Annual percent change in consumer price index

† Annual average level

Chart 4

Inflation and Unemployment Rates in Germany, 1977-90

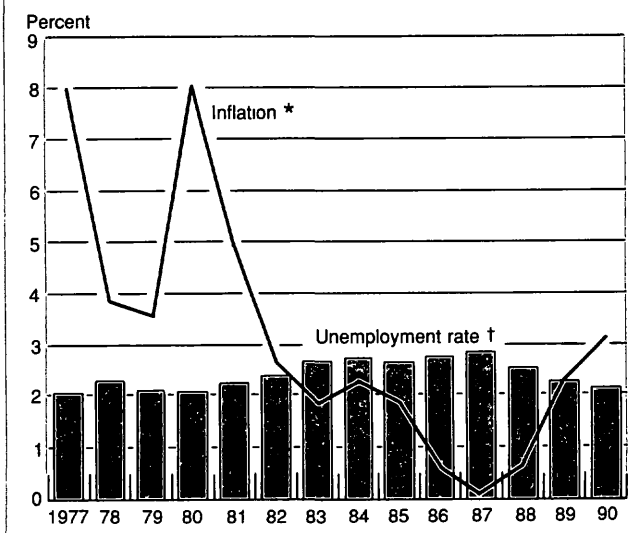


* Annual percent change in consumer price index

† Annual average level

Chart 5

Inflation and Unemployment Rates in Japan, 1977-90



* Annual percent change in consumer price index

† Annual average level

has been associated with major slowdowns in inflation in the United States and in foreign economies While no two of these episodes are exactly alike, experience in both the United States and abroad suggests that on average, a 1 percentage point reduction in the rate of inflation has been associated with about a 2 percentage point excess of unemployment over the "natural" rate—an excess that could represent either a 1 point excess for two years or a 2 point excess for a single year.

It is important to make clear that experience cited in the charts and table is *not* evidence of a long-run or permanent "trade-off" between the level of the inflation rate and the level of unemployment such as was widely believed to exist in the late 1950s and early 1960s Subsequent experience decisively refuted the existence of any such relationship, at least in the United States, and more probing theoretical analysis has argued that there has never been any reason to expect, *a priori*, that such a trade-off would exist. Actually, the post-1960 data for the industrial countries as a group has suggested a rise in the average levels of *both* inflation and unemployment. The conclusion supported by the evidence presented in the charts and tables is simply the point already made: Slowing the rate of inflation is likely to be associated with a temporary increase in economic slack.

To be a little more specific, the old, so-called Phillips curve posited an inverse relationship between the sustained level of inflation and the sustained rate of unemployment. Data for the postwar United States show no correlation between these two measures. Few now believe that we can "buy" a permanent reduction in the unemployment rate by a step-up in the ongoing inflation rate or that, conversely, a permanent slowing in the inflation rate need be paid for by a permanently higher level of unemployment What the data do show is that the *rate of change* in the inflation rate is inversely related to the level of unemployment. The most widely accepted view, discussed in a later section, is that below some "natural" rate of unemployment (also called the "nonaccelerating inflation rate of unemployment" or NAIRU), inflation tends to accelerate. At levels of slack above this natural rate, inflation tends to slow. Thus an ongoing inflation rate can be slowed by a temporary rise in unemployment above its natural rate. Once inflation has been moderated by the resulting slack in resource utilization, unemployment can revert to its natural rate and, as long as it stays close to that level, the improvement in inflation can be permanently sustained

The general conclusions about the relation of inflation to real growth over sustained periods—that, in the long run, higher inflation can't buy lower unemployment and more rapid growth and that, indeed, for reasons suggested in the previous section, inflation may sap an economy's potential for longer term growth—are consistent with data covering a cross-section of countries over the decade of the 1980s (Table 3). For a group of twenty-four countries with average annual inflation rates of less than 11 percent (mostly industrialized countries), there was essentially no significant correlation between average inflation and average real growth. For another group of nineteen countries with average annual infla-

Table 2

"Excess" Unemployment Associated with a 1 Percentage Point Slowing of Inflation

		(1) Reduction in Inflation Rate (Percentage Points)	(2) Cumulative Excess Unemployment (Percentage Points)	(3) Excess Unemployment per 1 Point Cut in Inflation (2)/(1)
U S experience†				
1 1957-61		2 6	7 1	2 6
2 1970-72		0 8	0 8	1 0
3 1975-77		3 1	6 8	2 2
4 1981-85		6 7	11 8	1 8
Foreign experience‡				
5 Germany	(1980-85)	2 6	12 8	4 9
6 France	(1982-87)	8 8	18 6	2 1
7 Japan	(1980-85)	2 4	2 0	0 8
8 United Kingdom	(1980-85)	13 7	29 4	2 1

† Based on staff estimates of natural rates of unemployment

‡ Based on Office for Economic Cooperation and Development estimates of natural rates of unemployment

tion of more than 17 percent, there was a significant *negative* correlation between inflation rates and growth rates—that is, inflation seems to have been bad for growth over the longer run. The combined group of forty-three countries also showed a statistically significant negative correlation between inflation and real growth for the decade

To repeat, the moral that is supported by experience is that slowing inflation is likely to imply a temporary drag on real output and employment, a drag that in turn reflects the fact that prices and wages react to lower aggregate nominal demand only with a lag. Over the longer run, however, there seems to be no permanent trade-off between inflation, on the one hand, and employment and real growth, on the other—except to the extent that chronic high inflation may hurt real growth over the longer run.

The short-run costs of lowering inflation in terms of temporarily reduced output and employment obviously depend on all the factors that determine the degree of price and wage stickiness in the face of changing demand One such factor appears to be the speed with which *expected* inflation adjusts in the face of aggregate demand restraint. Expected inflation is clearly important to parties negotiating prices for all kinds of longer term implicit and explicit wage, rent, and price contracts. Moreover, firms presumably make decisions on price announcements in part by considering the general price environment expected to prevail before the pricing decision must again come up for reconsideration. So if inflation expectations fall rapidly in response to weaker aggregate demand, actual inflation will also tend to fall more rapidly, and the costs in terms of temporarily reduced real output will be correspondingly reduced.

Much is made in the inflation literature of the "credibility" of the monetary authorities in their anti-inflation stance as a factor influencing the speed with which inflation expectations adjust. Optimists in this matter believe that if anti-inflation policy could be made more "credible," by one means or another, the temporary costs of reducing inflation suggested by the historical experience could be substantially reduced. Perhaps somewhat discouraging in this respect, however, is the fact that despite the presumably high anti-inflationary credibility of the Volcker years, the temporary costs in terms of "excess unemployment" of reducing inflation in the early 1980s seem to have been about average (Table 2). In a recent study of the relationship of "policy credibility" to the costs of disinflation in the *Quarterly Review*, the author concluded that

> credible disinflationary policies . . should carry a lower output cost than less credible disinflationary policies. Yet efforts to distinguish credible from non-credible disinflations have not met with great success. Most empirical work has not found any significant decline in the output costs of disinflation either in the United States or in the rest of the OECD throughout the early 1980s . . despite the view of many that anti-inflationary policies became more "credible" in the early 1980s.[2]

The credibility issue aside, another factor likely to affect the temporary output costs of lowering inflation is the micro structure of individual labor and product markets. In particular, price and wage stickiness seems to

[2] A. Stephen Englander, "Optimal Monetary Policy Design Rules versus Discretion Again," this *Quarterly Review*, Winter 1991, p 78

Table 3

Inflation and Output Growth in the 1980s

	Descriptive Statistics						
	GNP Growth			Consumer Price Inflation			Correlation between Growth and Inflation
	Median	Mean	Standard Deviation	Median	Mean	Standard Deviation	
Low-inflation countries†	2 8	3 6	2 2	7 1	6 4	2 5	+ 09
High-inflation countries‡	2 2	1 9	1 6	32 7	76 8	87 4	− 60
All countries	2 6	2 9	2 1	9 2	37 5	67 3	− 46

† Group consists of twenty-four countries whose average annual inflation rate during the 1980s was below 11 percent The low-inflation countries are the Group of Seven, Austria, Australia, Belgium, China, Denmark, Finland, Ireland, India, Korea, Luxembourg, the Netherlands, Norway, Spain, Sweden, Switzerland, Singapore, and Thailand

‡ Group consists of nineteen countries whose average annual inflation rate during the 1980s exceeded 17 percent The high-inflation countries are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Egypt, Greece, Ireland, Israel, Mexico, Paraguay, Peru, Portugal, Turkey, Uruguay, and Venezuela

be increased by the presence of monopoly or oligopoly elements in commodity and labor markets. Thus the commodity and financial markets with highly responsive prices all have characteristics that approximate the economist's model of "pure" competition.

A number of proposals have been made over the years designed to increase the sensitivity of wages and prices to changes in demand in less than perfectly competitive markets. These proposals have included making a significant fraction of annual wages take the form of profit sharing, a process that would tend to make the effective wage rate respond much more quickly to aggregate demand restraint. Another idea was the so-called TIPs proposals (tax-based incomes policies) of the 1970s that would have used the corporate income tax to penalize firms granting wage increases in excess of national productivity gains.

An inherent bias toward rising inflation

While the idea of a permanent trade-off allowing policy makers to "buy" permanent reductions in unemployment at the expense of higher inflation has been dead for some time in this country, the existence of a short-run trade-off is a fact of life, for reasons already given. A more expansive policy will accelerate the growth of output in the short run even if the longer run result is only more rapid inflation. Conversely, policies that reduce an embedded inflation are likely to slow output and employment temporarily.

Given the short-run benefits of stimulative policies, given inflation costs that come only later and that are likely to be invisible at the outset, and given, further, the short time horizon of most governments (running to the next election), governments have every incentive to favor expansionist policies even when they come at the expense of future inflation and have no long-run beneficial effects on output. At the same time, absent a real sense of crisis about inflation (such as developed in the United States in the late 1970s and early 1980s), there will be little or no political motive to encourage policies to restrain, let alone reduce, inflation.

These facts of political economy seem to be quite independent of any distinction between "liberal" and "conservative" or Republican and Democrat, but stem, rather, from the seemingly universal urge to win elections. For this reason, there seems to be in most countries a kind of built-in tension in the relationship between the central bank, charged with maintaining stability in the value of money, and the government of the day. It is hard to recall any postwar U.S. administration that did not at some point lean on the central bank to produce an easier monetary policy. On the other hand, it is hard to recall a single instance in which an administration urged the central bank to tighten policy more than the bank itself had intended. Whatever the complex reasons, the more than fivefold rise in the price level between 1953 (the first Post-Korea and post-Treasury Accord year) and the present at least suggests the thought that monetary policy may have erred on the side of ease over the past four decades as a whole.

The political economy of the inflation problem makes it particularly difficult to get support for anti-inflation objectives in a period such as the present when core inflation has moved in a narrow range of perhaps 4 to 5 percent for several years. Such limited survey evidence as we have about longer run inflationary expectations suggests that long-term expectations are basically for a continuation of roughly this range. The evidence thus suggests that to a large degree, recent actual inflation has roughly equaled expected inflation and consequently has largely been adjusted to. The result is that current inflation is probably causing little tangible pain.

Perhaps the most convincing way to demonstrate the extent to which the economy has adjusted to recent inflation is simply to note that in 1971, a 4.0 percent inflation was thought sufficient reason to impose the truly draconian and disruptive control policies of August of that year. Yet this inflation rate was actually somewhat lower than the average inflation rate of recent experience. In stark contrast to 1971, the most recent 4 to 5 percent rate has left the problem almost invisible as a current public policy issue, at least outside of the Federal Reserve. Indeed, it is now almost impossible to believe that there was once a time when a 4 percent inflation rate could drive an administration to adopt such drastic measures as were undertaken by President Nixon in 1971.

The difficulty with a period such as the present is that, given the chronic inflationary bias of the political economy system, the longer run likelihood is that inflation will be allowed to drift up unless it is actively combated at a time when public support for such an effort is absolutely minimal.

The policy dilemma

In dealing with the ultimately severe costs of letting inflation get out of control, a society realistically has only two choices. First, given the relatively moderate *initial* costs of accelerating inflation and the political difficulties of stopping it, a society can simply allow inflation to accelerate to a level where the perceived costs (which, indeed, because of money illusion are likely to be even greater than the true costs)[3] are great

[3]Casual observation suggests that the public does not make a clear connection between rising prices and rapidly rising money wages They understand that rising prices cut into their purchasing power but attribute their rising wages mainly to their own real economic value Thus they look on inflation as a pure loss of real purchasing

enough to generate political support for policies that would arrest and at least partly reverse the acceleration These policies will always, as argued, have short-run costs In any case, this is the approach that we, and most other advanced countries, have in fact followed The result has been periods of accelerating inflation punctuated by recessions, with a long-run significantly positive average rate of inflation and one that, despite the better performance of the 1980s, could yet prove to be accelerating viewed over still broader sweeps of time

The second alternative approach is to use aggregate demand policies to run the economy consistently at a level of resource utilization compatible with nonaccelerating inflation—leaving aside for the moment whether that inflation rate should be zero or some other steady rate

Formulating the solution to the inflation problem in this way clearly raises a number of questions: Just what is the level of resource utilization "compatible with nonaccelerating inflation," (the NAIRU)? How do you measure it? What determines it? Does it change over time? What is the steady "potential" rate of economic growth that will hold resource utilization rates to sustainable levels?

These questions clearly raise difficult and complex technical problems. It does seem quite likely, for example, that the NAIRU varies over time, depending in part on demographic factors. Thus it is often argued that the rising proportion of young people and women in the labor force raised the NAIRU in the 1970s and that it has declined somewhat more recently as the female participation rate has leveled off and the baby boomers have matured. Public policies, such as the unemployment insurance systems, almost certainly also have some effect on the level of the NAIRU. It is also possible that, for reasons not well sorted out, the longer run price implications of any given rate of resource utilization (as indexed by the unemployment rate) may depend on the rate's own past history—that is, a "hysteresis" effect in which, for example, a history of high unemployment rates may somehow raise the minimum rate compatible with stable inflation rates. Some believe it is necessary to posit such a hysteresis effect to explain the roughly stable-to-rising price level of the late 1930s in the United States This price performance was quite similar to that of the late 1920s but occurred at a time when the unemployment rate averaged over 15 percent, compared with an average closer to 3 percent in the late 1920s (Chart 6). And similar questions have been raised by the modest acceleration of European inflation over the last three years at a time when unemployment rates, though falling, nevertheless remained dramatically higher than they had been in the 1970s, when European inflation was much lower (Chart 7).

Only somewhat less difficult problems arise in estimating a "sustainable" growth rate To do this requires projecting population factors, labor force participation rates, the trend rate of productivity gains, and other factors.

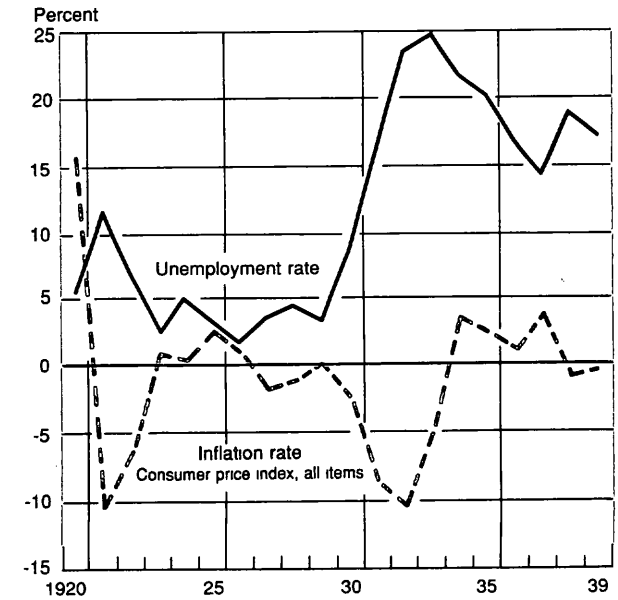
Despite these various technical difficulties, it seems clearly better to try to move the economy steadily along a sustainable growth path than to accept the historical experience of accelerating inflation punctuated by recession The problem is that there is no political "invisible hand" to produce such an optimal approach to policy—quite the contrary for reasons already given

The zero inflation objective

If you start with a built-in, relatively low, and largely anticipated positive rate of inflation such as we presently have, the task of actually reducing inflation over time by perhaps 3 percentage points—from, say, roughly a 4 percent current core rate to effective price

Chart 6

Unemployment and Inflation in the United States, 1920-39



Source U S Department of Commerce, Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1970, Bicentennial Edition, Part 1 (1975)

Footnote 3 continued
power rather than one that is at least partly compensated for by rising nominal wages

stability at, say, 1 percent inflation on the CPI—is clearly more difficult than merely stabilizing the current ongoing rate.

The 1990-91 recession may have somewhat reduced the dimensions of the problem. Given the slack that the recession opened up, it is quite possible that core inflation could, for the first time in many years, drop below 4 percent next year even as economic expansion resumes Nevertheless, the past record suggests that real growth in the first year or two of recovery would have to be moderate enough to leave some margin of slack in the economy (that is, an unemployment rate somewhat in excess of the NAIRU) to eliminate the remaining gap between prospective 1992 inflation and effective price stability The question arises whether, given the current rather low cost of an inflation rate to which the economy may have already largely adjusted, the objective of reducing inflation further to essentially zero would be worth the cost, albeit temporary, it would likely entail [4]

In answering this question, it should be recognized that the costs of the present ongoing inflation rate, while perhaps not large, are probably not negligible either. Adjustment to inflation is not universal. For one thing, most private pensions are fixed in nominal terms so that inflation is still having significant redistribution effects Second, important parts of the tax code still interact with inflation to produce allocative effects, including the capital gains tax and the tax on interest income Very likely, for the reasons suggested earlier, the economy would run at least somewhat more efficiently at rates of inflation so low that "nobody needs to take inflation into account" in making decisions.

In assessments of the zero inflation objective, however, the efficiency gains of going from a largely adjusted-to 4 percent core rate to effective stability are not the most important consideration. The much more fundamental question is whether a society that does not have price stability as a goal can be expected to have the will even to *stabilize* an ongoing moderate inflation rate Obviously no certain answer can be given to this question, but serious doubts are clearly justified. A governmental position that 4 percent inflation is "not a problem" suggests a government unwilling to *hold* inflation to 4 percent. At some level, the public probably understands this. And to the extent that such understanding makes inflationary expectations of 4 percent fragile and highly vulnerable to upward shocks, the stabilization problem becomes objectively more difficult to manage. Countries with low-inflation records such as Germany and Switzerland have tended to be countries with a policy of price *stability*, not merely a policy of stabilizing some moderate ongoing rate Thus there is a real question whether absent an agreed-upon public policy to seek outright price stability, inflation rates are not likely to creep up again at irregular intervals under the pressure of the political economy forces already described.

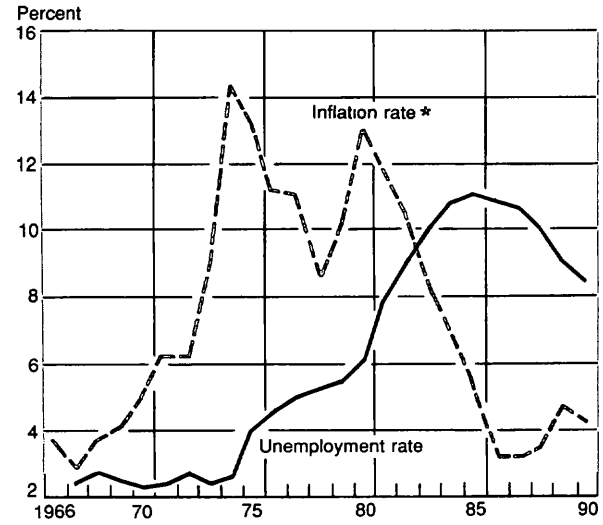
So there is something of a paradox here. The best inflation policy is probably one that is aimed at effectively eliminating inflation, and this policy should be publicly stated as such At the same time, however, in the implementation of this policy it has to be recognized that there are likely to be short-run costs of reducing even a low, ongoing inflation rate to near zero and that the immediate gains will be relatively modest. An overly blunt effort to eliminate such an inflation could therefore simply cause public support to evaporate and thus prove self-defeating.

Policy rules and the central bank

The paradoxical aspects of inflation as a public policy

Chart 7

Unemployment and Inflation in the European Community, 1966-90



Source Organization for Economic Cooperation and Development

Note The European Community comprises Germany, France, the United Kingdom, Italy, Belgium, Luxembourg, the Netherlands, Ireland, Greece, Spain, Portugal, and Denmark

*Inflation is measured by the change in the personal consumption deflator

[4]Price stability is the goal proposed in the resolution introduced by Representative Neal of North Carolina in 1989

problem explain the perennial appeal of some kind of monetary policy "rule" that would tie the hands of the policy makers and thus insulate them from the political economy pressures that make price stability so hard to achieve in practice. Classic examples of such rules are gold or commodity standards in which the central bank is committed to buy and sell the commodity at fixed prices. Another classic example of a rule would be commitment to a fixed rate of growth in some suitably defined measure of the money stock. In recent years various academics have proposed more complex rules that incorporate "feedback" provisions allowing for some automatic but temporary accommodation of short-run shocks such as an oil price increase or "autonomous" shocks (up or down) to aggregate demand.

Debate and analysis of such policy rules have spawned a huge literature over the years but have attracted little or no public support for them. There are, in fact, some obvious problems with such rules. Rules that are relatively simple to understand and adhere to, such as the fixed money growth proposal, tie the government's hands in coping with short-run problems—problems that may in fact last long enough to have significant political repercussions. The more complex rules with feedback provisions could, in principle, provide more flexibility to deal with such problems but run the risk of being too complex both in theory and practice to generate public understanding, support, and confidence.

Moreover, most if not all of these rules have serious technical problems. Thus a fixed money growth rule will work well only if the demand for money is reasonably stable and reasonably insensitive to changes in the average level of interest rates and to changes in interest rate differentials. But the financial innovation and deregulation of the 1970s and 1980s produced major changes in the nature of the instruments counted in the money stock measures and seem to have produced significant shifts in money demand while leaving it quite sensitive to volatile shifts in the public's demand for different kinds of financial assets, to short- to medium-term movements in the average level of interest rates, and to shifts in relative rates. Perhaps most fundamental, the same political economy pressures that produce the paradoxes of the inflation policy problem in the first place might ultimately lead to erosion or outright abrogation of any policy rule that bound monetary policy to some fixed course of action.

The second consequence of the inflation policy paradox is that it makes the case for a strongly independent central bank. The reasoning requires no great elaboration. To the extent that the central bank can be insulated from the government of the day, it can be insulated from the political economy pressures that make economies inflation prone. Needless to say, it is impossible to imagine any system in which the independence of the central bank could or should be absolute or in which it could or should pursue policies fundamentally at variance with prevailing public opinion. But insulation of the bank from immediate political pressures seems likely to be a necessary condition for a reasonably noninflationary environment in most countries.

Conclusion

Inflation poses real costs, and even dangers, to a stable economy and society. When inflation is low and the economy has largely adjusted to it, these costs do not loom large relative to many other public policy issues. But ultimately, at some level, inflation becomes not merely an economic cost but a threat to stability. Therefore, inflation *must* be contained, and the only real questions are, at what level and by what means? Because the costs of low and largely anticipated inflation are relatively small, and because the temptation to exploit short-term trade-offs is strong, an effort is needed merely to *keep* inflation at low levels and thus to avoid the pattern of accelerating inflation punctuated by recession that we have experienced in the postwar period.

It is at least questionable whether a policy of simply *containing* inflation at a low level is ultimately credible. If it is not, there is a strong case for stating and working toward a policy of outright price stability. But such an objective must be pursued cautiously, lest short-run costs prove unacceptably large.

There is no "permanent" solution to the inflation problem. Instead, inflation is likely to have to be attacked anew through each turn of the political wheel. The most favorable environment for dealing with the problem can be created by maximizing the independence of the central bank and by stating as forcefully and clearly in law as possible that the bank's primary objective is effective price stability. These are in no sense magic solutions. They are merely the best way to improve the odds for success.