
Achieving Price Stability: A 1993 Report Card

By George A. Kahn

The primary goal of Federal Reserve monetary policy is to foster maximum sustainable growth in the U.S. economy by achieving price stability over time. Although considerable progress toward price stability has been made since the early 1980s, inflation remains above the level most analysts would associate with price stability. Because price stability is the key contribution the Federal Reserve can make toward maximizing long-run growth and living standards in the United States, it is important for the Federal Reserve to remain vigilant in its efforts to keep inflation in check.

This article examines the behavior of inflation over the past year in relation to the Federal Reserve's goal of achieving price stability over time. The first section discusses why price stability is important and how the Federal Reserve has made significant progress toward price stability since the early 1980s. The second section describes the behavior of inflation in 1993, showing that inflation declined for the year as a whole. The third section shows that inflation expectations also declined in 1993, suggesting the public believes the inflation outlook has improved. Together, these findings suggest the

Federal Reserve made progress in 1993 toward achieving price stability.

PRICE STABILITY AS A GOAL OF MONETARY POLICY

The Federal Reserve Act, as amended by the Employment Act of 1946 and the Full Employment and Balanced Growth Act of 1978, spells out the goals of monetary policy. They are stability and growth in the economy, a high level of employment, stability in the purchasing power of the dollar, and reasonable balance in transactions with foreign countries. Though there may be tradeoffs among these goals in the short run, there are no necessary tradeoffs in the long run. In fact, stability in the purchasing power of the dollar—or price stability—is a prerequisite for maximum growth in the economy in the long run. While the Federal Reserve has made considerable progress in reducing inflation over the past 15 years, inflation remains above the level most analysts would consider consistent with price stability.

What is price stability?

Price stability is achieved, according to some definitions, when inflation is not a factor in the

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decisionmaking processes of households and businesses. Because of difficulties in measuring the aggregate price level, however, price stability does not necessarily imply achieving a constant level for a specific price index. All statistical measures of inflation are flawed. And there is no consensus on which of many imperfect measures to “stabilize.” As a result, policymakers look at a variety of inflation indicators in gauging progress toward price stability.

The most widely monitored inflation indicator, and the one the Federal Reserve highlights in reports to Congress, is the consumer price index (CPI). Like all measures of inflation, the CPI is imperfect. One problem associated with the construction of the CPI is adjusting prices to reflect changes in the quality of goods and services. When innovation allows manufacturers to improve their products, consumers get more product for their dollars. For example, consumers can buy appliances and automobiles that are safer to use and more energy-efficient, televisions with higher quality pictures and sound, and personal computers with greater computing power. On a quality-adjusted basis, the price of these products has fallen. Statisticians try to adjust for such quality changes in computing the CPI but, to the extent quality improvements are understated, the CPI exaggerates inflation.

Another problem with the CPI is that it does not capture changes in the “market basket” of goods and services purchased by consumers. Rather, the CPI measures changes over time in the price of a fixed market basket.¹ To the extent consumers respond to individual price increases by switching to comparable items that cost less, the CPI may overstate inflation. For example, if consumers consider beer to be a close substitute for wine, they will buy more beer when the price of wine increases. For these consumers, an increase in the price of wine will be of little or no consequence.

These problems suggest that price stability may be consistent with positive CPI inflation.

While there is considerable uncertainty about the size of the upward bias to the CPI, most estimates suggest it is small. One study, based on a survey of the literature, estimates the bias to fall within a range of zero to two percentage points (Wynne and Sigalla). Another study estimates an upper bound of 1.8 percent and a “more reasonable” bias of about one percentage point (Lebow, Roberts, and Stockton, pp. 32-33). According to this estimate, price stability would be achieved with a CPI inflation rate of 1 percent. Thus, although there is considerable uncertainty about what CPI inflation rate corresponds with price stability, most estimates suggest a fairly low rate.

In addition to the CPI, policymakers look at a variety of other inflation indicators in assessing progress toward price stability. None is perfect. Some of the most important alternative indicators to the CPI are the CPI excluding food and energy prices, the producer price index (PPI) with and without food and energy prices, the implicit GDP deflator, and the fixed-weight GDP deflator. As discussed in the accompanying box, these indicators differ from the CPI and each other in many important respects. While most of the discussion in this article focuses on CPI inflation, the article also describes movements in the other indicators of inflation.

Why is price stability important?

Reducing inflation is important because inflation is costly. Inflation discourages saving and investment by creating uncertainty about future prices. It forces businesses and individuals to spend time and money predicting future prices and hedging against unanticipated inflation. And, through its interaction with the tax system, it can increase tax burdens by artificially raising incomes and profits. All of these factors cause the economy to operate less efficiently, hampering economic growth and ultimately reducing standards of living (Fischer).

BOX

ALTERNATIVE INDICATORS OF INFLATION

Because no single price index perfectly measures inflation, analysts look at a variety of indexes in assessing the behavior of inflation over time. These indexes differ according to how they are calculated and according to the goods and services they cover.

The *consumer price index* (CPI) measures the average change in the price of a fixed market basket of goods and services purchased by consumers. The market basket is composed of seven major categories of expenditures—food, housing, apparel, transportation, medical care, entertainment, and other goods and services. Goods and services included in the index may be domestically produced or imported.

The *producer price index* (PPI) measures average changes in selling prices received by domestic producers of goods. The index is classified by stage of processing, with separate measures for finished goods, intermediate goods, and crude materials. Of all the PPI indexes, the PPI for finished goods is the most closely watched and the one that is cited in this article. The PPI measures prices at the first level of commercial transaction. Therefore, the PPI can sometimes serve as an indicator of future changes in broader measures of the general price level, such as the CPI.

But because the PPI excludes services, its use as an indicator of consumer price inflation is limited.

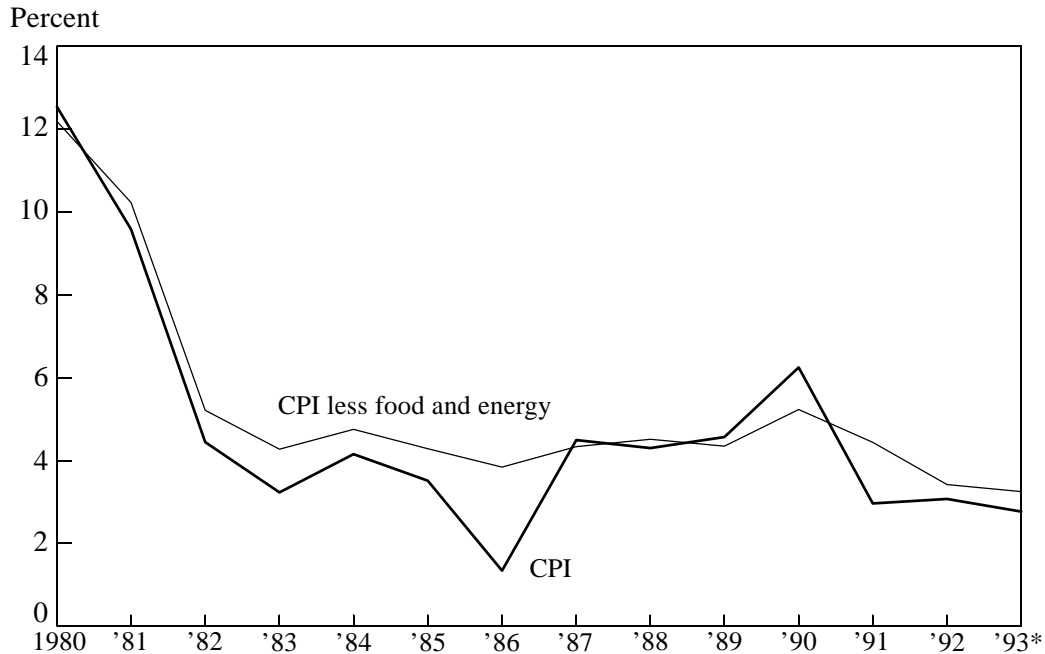
Removing the food and energy components from the CPI and PPI sometimes gives a better indication of the underlying or *core inflation* rate. Food and energy prices are volatile and not always representative of economywide fundamentals. For example, when a drought raises food prices or OPEC raises oil prices, the effect on inflation is temporary. Looking at the CPI or PPI net of food and energy prices in such a situation can give a better indication of underlying inflationary pressure.

The GDP-based indicators of inflation measure average price changes for all goods and services produced in the United States, including investment goods and exports, but excluding imports. While the *implicit GDP deflator* allows changes in consumer and business spending patterns from one quarter to the next, the *fixed-weight GDP deflator*—like the CPI and PPI—holds spending patterns constant. The GDP-based inflation measures are derived from the same raw data CPI and PPI. Therefore, they potentially suffer the same quality-adjustment biases as the CPI and PPI.

Because in the long run inflation is a monetary phenomenon, monetary policy is the only tool available for keeping inflation under control. As the nation's central bank, the Federal Reserve makes monetary policy and holds sole responsibility

for maintaining the purchasing power of the dollar. Because inflation is inherently costly, the Federal Reserve has in recent years pursued a policy of working toward price stability over time. By achieving this goal, the Federal Reserve minimizes

Chart 1

CPI Inflation Since 1980

Note: Data are Q4/Q4 percent changes.

*1993:Q3/1992:Q3

Source: Bureau of Labor Statistics.

the costs of inflation and contributes to maximizing the economy's long-run growth potential.

How far have we come toward price stability?

Substantial progress has been made in the last 15 years toward price stability. In the late 1970s and early 1980s, inflation as measured by the CPI reached double digits. The high and rising inflation rates of this period led the Federal Reserve to adopt a policy of gradually reducing monetary growth to gradually reduce inflation. This policy has been largely successful. CPI infla-

tion has fallen from over 12 percent in 1980 to under 3 percent in 1993 (Chart 1). Inflation is thus significantly lower now than 15 years ago, but still higher than most estimates of price stability.

CPI inflation has not declined steadily, however, largely because of factors unrelated to monetary policy. Chief among these factors have been changes in the price of imported oil. For example, a drop in the price of imported oil led to sharply lower inflation in 1986. In addition, an increase in oil prices associated with Iraq's invasion of Kuwait led to a burst of inflation in 1990. As shown in Chart 1, when the influence of energy prices and food prices—another volatile sector—is removed from the CPI, the pattern of

Table 1

FOMC Inflation Projections for 1993

(Percent)

	February	July
Range	2½ to 3	3 to 3½
Central tendency	2½ to 2¾	3 to 3¼

Note: Data are Q4/Q4 percent changes for the CPI.
 Source: Board of Governors of the Federal Reserve System

inflation since 1980 has been somewhat smoother. Data on the CPI, less food and energy, also show that progress against inflation stalled in the mid-to-late 1980s. Only recently has inflation again begun to fall.

INFLATION IN 1993

The Federal Reserve expected to make further progress toward price stability in 1993. This expectation was realized. Although inflation rose early in the year, it fell over the year as a whole.

What were the Federal Reserve's projections?

At the beginning of 1993, the Federal Reserve projected that inflation would decline. On a fourth quarter over fourth quarter basis, CPI inflation in 1992 came in at 3.1 percent, while on a December over December basis CPI inflation came in at 3.0 percent. With this experience as background, the Federal Open Market Committee (FOMC)—the Federal Reserve's principal policymaking body—believed there was scope for a modest decline in CPI inflation in 1993. The

projections of CPI inflation for 1993 made in February by the Federal Reserve Board Governors and Bank Presidents ranged from 2 1/2 percent to 3 percent. A large majority of the forecasts fell within a narrower range of 2 1/2 to 2 3/4 percent (Table 1). Thus, with economic growth expected to be moderate and unemployment declining only gradually, the FOMC expected inflation to fall slightly in 1993.

Later in 1993, after inflation came in somewhat higher than expected, the FOMC revised upward its projections for inflation (Table 1). In July, the FOMC raised its range of projections of CPI inflation to 3 to 3 1/2 percent, with a majority of FOMC members expecting inflation in a narrower range of 3 to 3 1/4 percent.

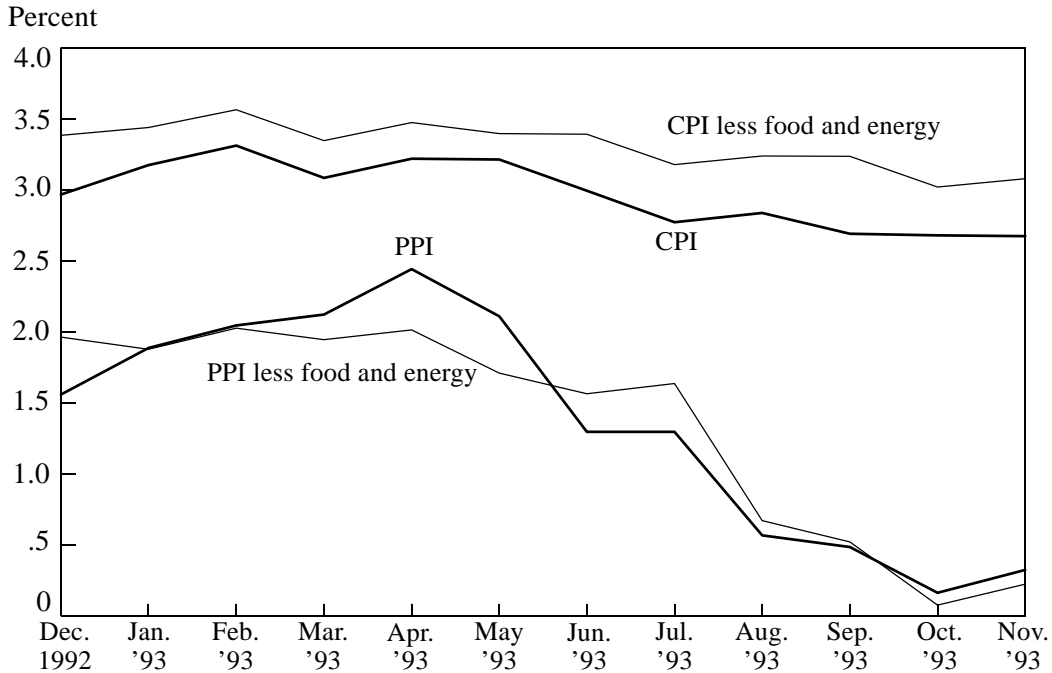
What was the reality?

All major measures of inflation behaved similarly in 1993. All measures increased in the first several months of the year but declined slightly for the year as a whole. While economic fundamentals, such as slack in the economy, contributed to the decline for the year as a whole, a number of special factors contributed to the pattern of inflation throughout the year.

Statistical profile. Inflation indicators, released monthly and quarterly, all showed reductions in inflation for the year as a whole after moving higher early in the year. For the year through November, CPI inflation—with and without food and energy prices—declined slightly, while PPI inflation—with and without food and energy prices—declined more sharply (Chart 2). In the first four months of the year, all four of these inflation indicators either remained steady or rose. Likewise, the GDP-based measures of inflation declined from the fourth quarter of 1992 to the third quarter of 1993—the latest quarter for which data are available (Chart 3). And, like the CPI and PPI, they registered increases in the first quarter.

Chart 2

Monthly Inflation Indicators



Note: Data are 12-month rates of change.
 Source: Bureau of Labor Statistics.

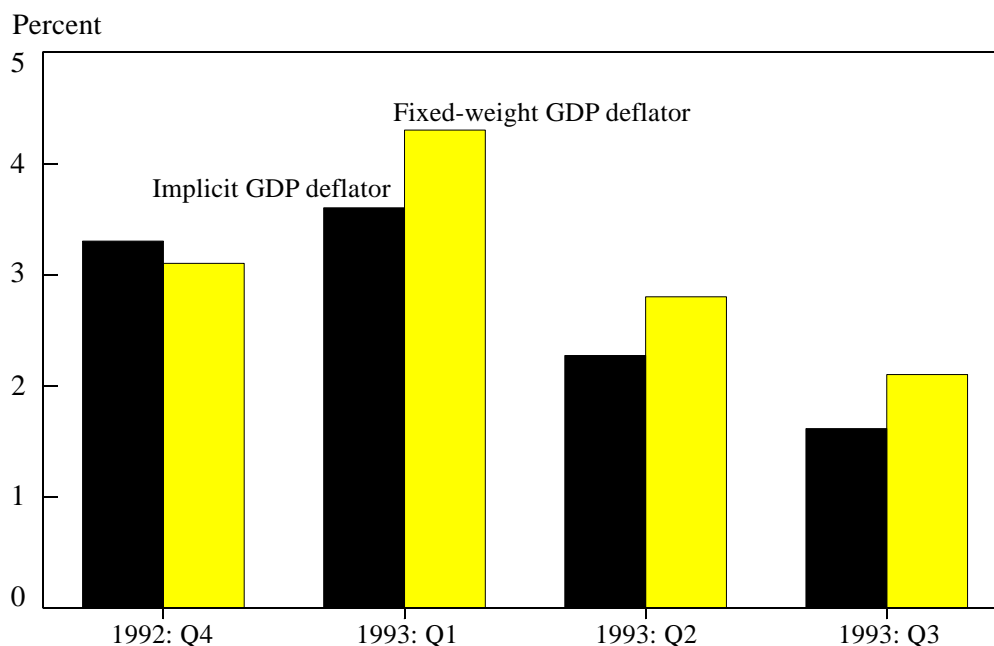
Fundamental factors. Most fundamental factors pointed to a decline in inflation for the year as a whole. The most important fundamental factor was slack in the economy in the form of excess industrial capacity and unemployment.² For example, capacity utilization rates in manufacturing averaged 80.9 percent in the first 11 months of 1993, well below the 82-83 percent rate that is sometimes suggested as a threshold for higher inflation. Not until November did manufacturing capacity cross the lower end of the inflation threshold, hitting a high for the year (through November) of 82.2 percent. As a result, for the year as a whole, excess industrial capacity put downward pressure on inflation.

Unemployment also put downward pressure

on inflation. Unemployment remained above most estimates of the unemployment rate associated with stable inflation. These estimates of the “natural rate” of unemployment range from 5.5 percent to 6.5 percent.³ Averaging 6.9 percent in the first 11 months of 1993, unemployment therefore exceeded the range of most estimates of the natural rate. As a result, downward pressure was exerted on inflation throughout the year.⁴

With unemployment remaining above the natural rate and declining only gradually through the year, labor cost increases remained moderate in 1993. Growth in labor costs have important implications for inflation because labor costs are roughly two-thirds of total production costs. While total labor costs rose somewhat faster than

Chart 3

Quarterly Inflation Indicators

Note: Data are quarterly rates of change at annual rates.
Source: Department of Commerce.

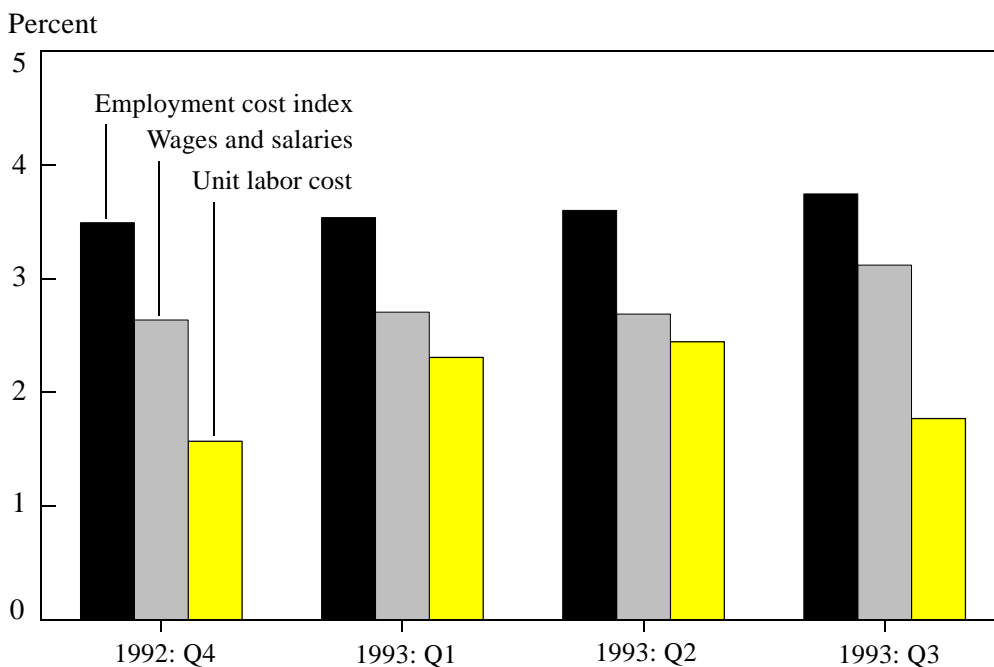
prices in 1993, productivity growth has been strong.⁵ As a result, unit labor costs—the labor cost incurred in producing one unit of output—increased only modestly.

One of the best measures of labor costs, the employment cost index (ECI), shows these trends clearly (Chart 4). The ECI is a measure of total labor costs including benefits.⁶ According to the ECI, total labor costs rose less than 4 percent in the first three quarters of 1993. The wage and salary component of the ECI rose less than 3 percent. And, because of rapid productivity growth, growth in unit labor costs ranged from 1.8 to 2.4 percent in the first three quarters of 1993—a rate less than the rate of inflation.

Another fundamental factor affecting infla-

tion—prices of materials used at the earliest stages of production—gave mixed signals in 1993. These materials prices, also known as commodity prices, fluctuate minute by minute in auction-type markets and sometimes provide an early warning signal of future movements in the prices of finished goods and services. In 1993, two closely watched indexes of commodity prices both rose early in the year, then diverged (Chart 5). The Journal of Commerce (JOC) index of commodity prices, which is weighted toward industrial materials, rose sharply in January, February, and March. Similarly, the Commodity Research Bureau (CRB) Futures Index, which is weighted toward agricultural products, rose sharply in February, March, and April. Although

Chart 4

Wage Inflation

Note: Data are 4-quarter rates of change.
Source: Bureau of Labor Statistics.

the CRB index continued to trend up, the JOC index crested in April and fell steadily through the rest of the year. On the whole, commodity prices had little long-term influence on inflation in 1993.

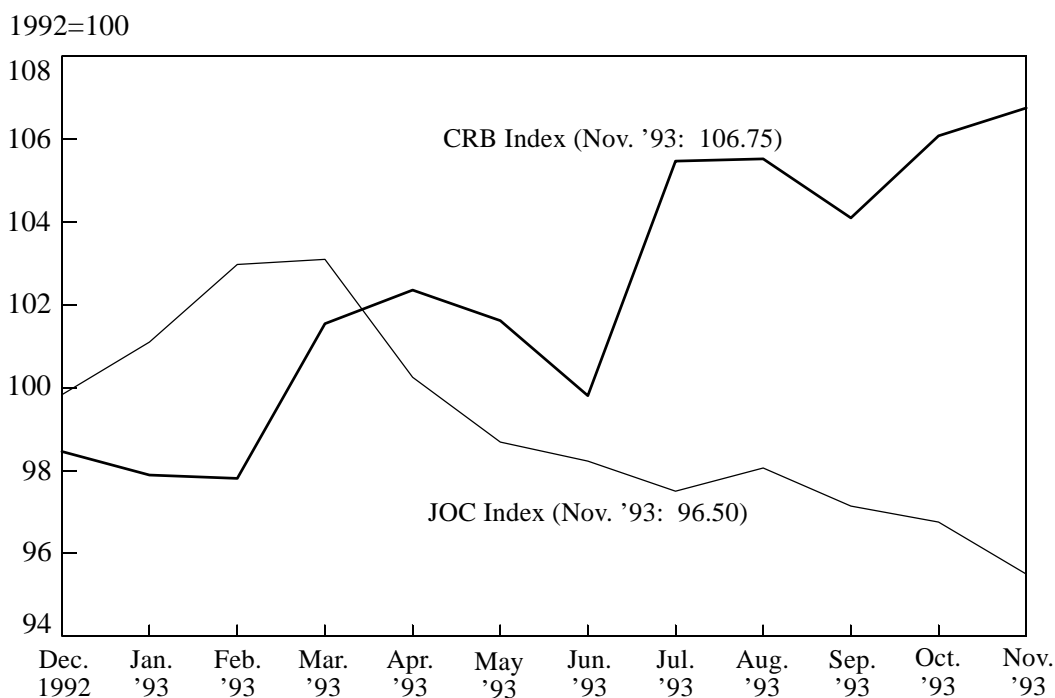
Special factors. While fundamental factors underlie the decline in inflation for the year as a whole, fluctuations in the inflation rate from month to month are largely explained by a number of special factors.

Several special factors help explain the rise in inflation early in the year. *Incomplete seasonal adjustment* of price indices has been offered as one explanation for the temporary increase. Under current methodology, several of the components of the CPI are not seasonally adjusted even

though they have shown seasonal price increases early in the year. Had these components been seasonally adjusted, the overall CPI would have shown less of an increase early in the year.⁷ In addition, changing retail practices may have affected the pattern of price changes among components of the CPI that *are* seasonally adjusted. For example, in recent years, retailers have been introducing new, higher priced spring merchandise earlier in the year. Using seasonal adjustment factors based on historic retailing practices has thereby caused inflation to be overstated in January and February in the last few years.⁸

Another factor contributing to higher inflation early in the year was a 2.6 percent jump in

Chart 5

Commodity Price Indexes

Source: CRB Commodity Index Report, *Journal of Commerce*.

tobacco prices caused by higher federal excise taxes in January. Finally, *bad weather* early in the year contributed to inflation by boosting fresh fruit and vegetable prices.

Other special factors, on net, contributed to lower inflation in the remainder of the year. *Energy prices* began to fall in May, putting downward pressure on inflation. The gasoline price increases that usually go into effect in May and June apparently did not stick in 1993.⁹ In addition, a 4.3 cents per gallon increase in the federal excise tax on gasoline went into effect in October and temporarily boosted consumer price inflation, but a November oil glut put downward pressure on inflation. Finally, *tobacco prices* temporarily dampened inflation as producers of

tobacco products cut prices 25.6 percent in August.

While these and other special factors help explain the month-to-month fluctuations in inflation, they largely reflect temporary influences on inflation. Over the longer run, inflation is determined by monetary policy and its influence on such economic fundamentals as slack in the economy. Accordingly, in judging inflation trends and the long-run outlook for inflation, the focus must remain on fundamentals.

How did reality match the FOMC's projections?

Assuming prices increase in December at a rate similar to November, overall CPI inflation will fall a few tenths of a percent in 1993 from its 1992 rate of 3.1 percent (fourth quarter over fourth quarter).¹⁰ As a result, CPI inflation will come in near the high end of the narrow range projected by the FOMC in February and slightly below the low end of the narrow range projected by the FOMC in July (Table 1). Excluding food and energy prices, CPI inflation is also likely to decline slightly. Thus, in line with the expectations of the FOMC, further progress was made in 1993 toward price stability. This progress is particularly noteworthy because the economic recovery is well over two years old, a point in many previous recoveries when inflation rose.

INFLATION EXPECTATIONS IN 1993

Has the modest decline in inflation in 1993 led to a reduction in inflation expectations? Inflation expectations are important because a decline in expectations is an essential ingredient in making progress toward price stability. Unfortunately, most measures of inflation expectations show that inflation is expected to rise in the future. However, the extent of the expected increase declined in 1993, in both the short run and the long run. Though the public apparently remained skeptical that inflation would fall further, the public lowered its estimate of the expected future rise in inflation.

Importance of expectations

Inflation expectations are important for two main reasons. First, inflation expectations are a key determinant of inflation. For example, if inflation is expected to fall, businesses will be

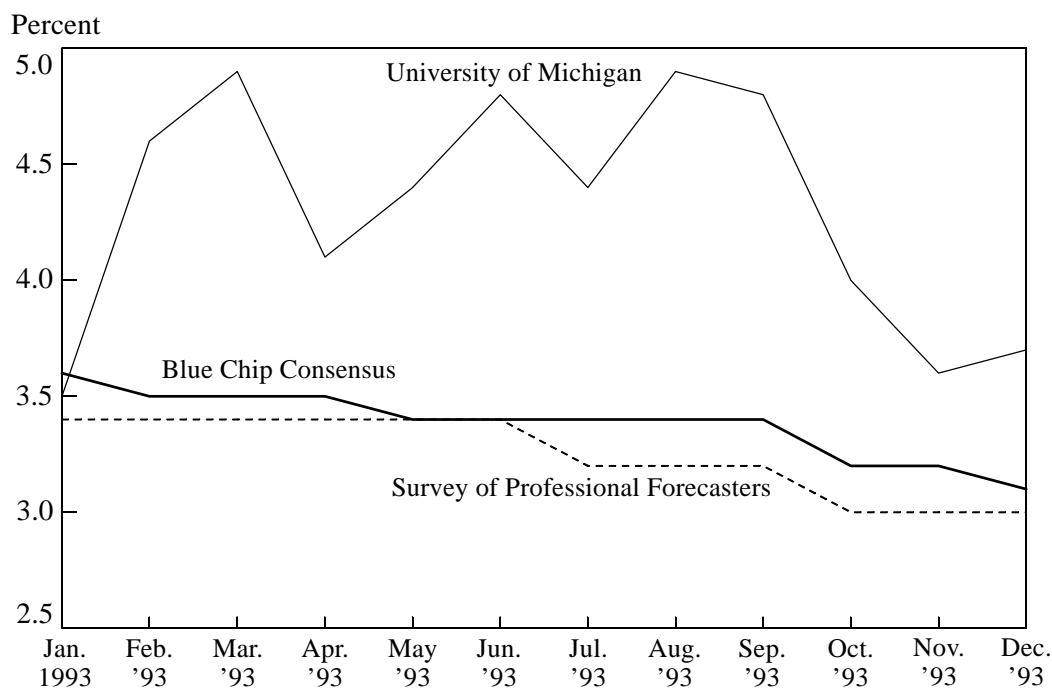
more willing to reduce the rate of increase of product prices, and workers will be more willing to moderate their wage demands. Both businesses and workers will realize, in an environment of lower inflation, they can maintain their real prices and wages with lower nominal price and wage growth. As a result, actual wage and price inflation will fall. A decline in inflation expectations will therefore lead to a decline in inflation.¹¹

A second reason that inflation expectations are important is that they signal how workers and businesses view future monetary policy. For example, a central bank that plans to reduce inflation over time, but fails to generate falling inflation expectations, lacks credibility. Businesses and workers will continue to plan on an unchanged inflation rate when setting prices and wages and, as a result, inflation will persist. Reducing inflation under these conditions becomes more difficult and more costly (Kahn and Weiner). It is therefore important for expectations to adjust downward when monetary policy acts to lower inflation. Knowing how expectations are changing gives an indication of the credibility of monetary policy and thereby an indication of the speed with which inflation will fall.

Short-term expectations

Short-term inflation expectations were lower at the end of 1993 than at the beginning of that year. For example, inflation expectations for 1994 fell in 1993. Although private forecasters do not expect the decline in inflation that occurred in 1993 to be sustained in 1994, most forecasters adjusted downward their expectations of the likely increase in inflation (Chart 6). One measure of inflation expectations is the Blue Chip consensus forecast of CPI inflation. According to this indicator, expected CPI inflation from 1993:Q4 to 1994:Q4 fell steadily through 1993, reaching a low of 3.1 percent in December

Chart 6

Short-Term Inflation Expectations

Note: The Blue Chip Consensus and the Survey of Professional Forecasters data are forecasts of CPI inflation from 1993:Q4 to 1994:Q4. The University of Michigan data are expected CPI inflation over the next 12 months.

Source: Blue Chip indicators; Survey Research Center, University of Michigan; and the Survey of Professional Forecasters, Federal Reserve Bank of Philadelphia.

1993. Another indicator of short-term inflation expectations is the survey of professional forecasters compiled by the Federal Reserve Bank of Philadelphia. This survey, conducted on a quarterly basis, shows expected CPI inflation for 1994 declining steadily through 1993 and reaching a low of 3.0 percent in December.

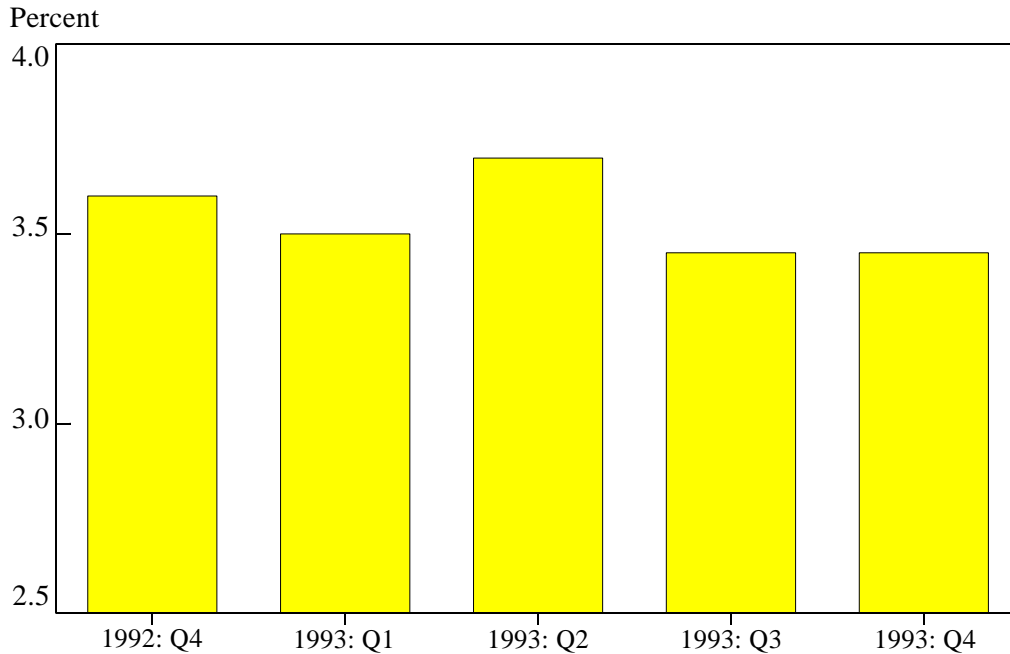
In addition, the University of Michigan's consumer survey of inflation expectations for 12 months ahead, after rising sharply in February, trended down through the remainder of 1993. In comparison to the inflation outlook of professional forecasters represented in the Blue Chip

consensus and the Philadelphia Fed survey, consumers' outlook on inflation was more volatile and more pessimistic. Nevertheless, through most of 1993 the short-term outlook for inflation appeared to improve.

Long-term expectations

The long-run outlook for inflation also improved in 1993. This improved outlook is apparent in surveys of long-term inflation expectations and in developments in the U.S.

Chart 7

Long-Term Inflation Expectations

Note: Long-term expectations are the median of forecasts for CPI inflation over the next 10 years.
 Source: Survey of Professional Forecasters, Federal Reserve Bank of Philadelphia.

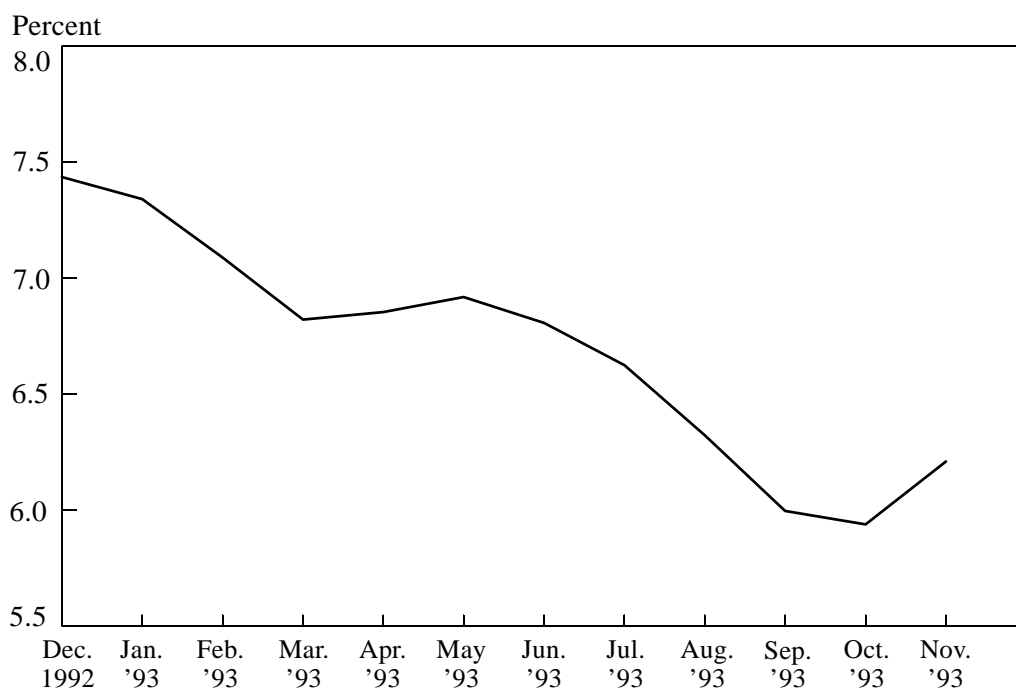
Treasury bond market. While forecasters expect inflation to rise over long time horizons, they have adjusted down their expectation of the extent of the rise. For example, long-term inflation expectations, as measured by the Philadelphia Fed's survey of professional forecasters, declined through the year (Chart 7). Although increasing in the second quarter, expected CPI inflation over the next ten years declined from just over 3.5 percent in the fourth quarter of 1992 to just under 3.5 percent in the fourth quarter of 1993.

Reflecting in part a decline in inflation expectations, the yield on long-term Treasury bonds fell sharply in 1993 (Chart 8). This evidence supports the view that investors believe progress has been made toward price stability. Inflation

erodes the value of assets that yield a fixed nominal rate of return such as Treasury bonds. As a result, investors demand an "inflation premium" when they invest in these fixed-rate assets. If investors revise down their expectations of future inflation, they will be more willing to accept a lower nominal rate of return on Treasury bonds. Although many factors may have contributed to the fall in bond yields, including a more sluggish recovery than expected and the passage of the deficit reduction package, the decline in Treasury yields is yet another piece of evidence consistent with the view that inflation expectations fell in 1993.

The decline in both short-term and long-term inflation expectations should help reduce inflationary pressures in the economy. Lower infla-

Chart 8

30-Year Treasury Bond Yield

Source: Board of Governors of the Federal Reserve System.

tion expectations will be built into future prices and wages, reducing actual inflation. In addition, lower inflation expectations may signal greater public confidence in the Federal Reserve's ability to keep inflation under control. This increased confidence in Federal Reserve policy could make further reductions in inflation easier.

CONCLUSIONS

Inflation and inflation expectations fell in 1993. The Federal Reserve therefore made progress in 1993 toward its objective of achieving price stability over time.

The outlook for inflation in 1994 is less clear. Although expectations of inflation for 1994 fell

throughout 1993, they remain above the actual rate of inflation for 1993. Thus, most forecasters continue to expect inflation to increase. The December Blue Chip consensus forecast for CPI inflation from the fourth quarter of 1993 to the fourth quarter of 1994, for example, is 3.1 percent, slightly higher than inflation in 1993. This expectation is likely based on a view that the elimination of slack in the economy next year will exert modest upward pressure on inflation. For example, as of November, capacity use rates are within the 82-83 percent inflation threshold, unemployment has fallen to 6.5 percent, and the yield on the 30-year Treasury bond has risen a bit.

An increase in inflation in 1994, however, is by no means inevitable. Some slack still remains

in labor markets. Businesses are aggressively acting to cut costs. Productivity is growing at a faster rate than in the past. Energy prices have dropped. And fiscal policy remains restrictive. If Federal Reserve monetary policy can ensure the

economy does not overshoot the level of economic activity associated with nonaccelerating inflation, some further progress toward price stability will be possible.

ENDNOTES

¹ The market basket is revised roughly every ten years.

² In addition, the economy grew at a moderate rate in the first three quarters. Because the speed of expansion is positively related to inflation, the relatively slow pace of economic growth in 1993 also helped to moderate inflation.

³ For a discussion of the natural rate of unemployment and evidence that the natural rate has risen recently to about 6.3 percent, see Weiner.

⁴ A simple rule of thumb can be used to estimate how much downward pressure unemployment has exerted on inflation. The rule of thumb, which has been reliable in the past in relating inflation to unemployment, says that one point-year of unemployment is associated with a 0.5 percentage-point reduction in inflation. A point-year of unemployment is one year of unemployment one percentage point above the natural rate (Kahn and Weiner). With an average unemployment rate of 6.9 percent in 1993 and an assumed natural rate of 6.0 percent—the midpoint of the range of estimates—the economy has experienced almost a full point-year of unemployment. Therefore, the expected decline in inflation would be 0.45 percentage point (0.9×0.5). With an actual decline in CPI inflation of only 0.3 percentage point (from 1992:Q4 to 1993:Q3), the rule of thumb suggests that unemployment exerted somewhat less downward pressure on inflation than in the past. However, taking lagged effects of unemployment on inflation into account or choosing slightly different time

frames might lead to an estimate closer to historical experience.

⁵ For a discussion of productivity growth in the current expansion and its implications for output and employment growth, see Kahn.

⁶ The employment cost index provides a measure of labor costs for a fixed set of jobs. Thus, it is similar to a fixed-weight price index because it does not allow for shifts in workers across jobs and industries.

⁷ The December CPI and the historical data released with it will have new, more extensive seasonals.

⁸ In addition, the Bureau of Labor Statistics, which compiles the CPI, has recently begun incorporating price increases associated with new fashions more rapidly into the CPI. Therefore, even if retail practices have not changed, the CPI might still show higher inflation early in the year.

⁹ Patrick Jackman, as quoted in the *Daily Report for Executives*, 1993.

¹⁰ The precise figure depends on CPI data for December, which were not available at the time the article was written.

¹¹ The decline in inflation will be permanent only if the expectations of lower inflation are realized (Kahn and Weiner).

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