

THE PERFORMANCE OF CURRENT MONETARY POLICY INDICATORS



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Executive Summary

Price stability is currently a central focus of U.S. monetary policy. Because of well-known policy lags and the need for preemptive policy action, the Federal Reserve necessarily uses intermediate indicators to help attain its inflation goals. Currently, there is disagreement among economists as well as Federal Reserve policy makers as to the proper set of intermediate indicators to use in conducting a price stabilizing monetary policy.

Some analysts, for example, use models that typically embody a “Phillips curve” relationship relating inflation positively to an “output gap,” typically using the gap between actual unemployment and NAIRU or the gap between actual GDP and potential GDP as inflation guides. In recent years, however, these models have not performed well; their inflation forecasts have persistently been higher than actual inflation. There are a number of problems associated with the use of NAIRU or potential GDP as policy guides in a price stabilizing monetary policy strategy. These problems, together with the recent poor inflation forecasting record of these variables, suggest that alternative policy guides should be considered.

Market price indicators are such an alternative useful set of guides to a price stabilizing monetary policy. These indicators -- commodity price indices, the foreign exchange value of the dollar, and long-term bond yields -- have a number of advantages as policy guides, especially when they are jointly assessed in conjunction with one another. Recently, these indicators consistently provided reliable signals as to the direction of and to future movements in core general prices. The inflation signals of these indicators were consistent with the actual benign core inflation that characterized the period. In this sense, these indicators provided more reliable inflationary signals than the above-described “gap” models that consistently predicted higher than actual inflation.

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INTRODUCTION

The Federal Reserve necessarily uses intermediate indicators in implementing a price-stabilizing monetary policy because of the well-known lags involved as well as the need for occasional pre-emptive action. With a quasi (informal) inflation targeting approach in place, the Fed's intermediate indicators must provide reliable signals of future changes in inflation. In recent years, however, mainstream economists (and their favored indicators) have done a relatively poor job of forecasting inflation. Inflation has been routinely overestimated: i.e., forecasted inflation has been higher than actual inflation. "Standard tools" or conventional indicators commonly used for forecasting inflation in many of these models involve the gap between actual unemployment and NAIRU¹ or between actual and potential GDP. In recent years, these policy guides (and models making use of such guides) have fared poorly, persistently overestimating inflation.

This paper briefly reviews the poor performance of these indicators in recent years and describes important problems of using real economic variables to forecast inflation. An alternative approach using market price indicators is briefly described, its advantages outlined, and its performance reviewed. These market price indicators consistently provided accurate signals as to future movements in core inflation and, accordingly, appear to have outperformed the conventional indicators.

The Policy Framework

A great deal of agreement has emerged in recent years as to the proper goal of monetary policy. In particular, under current exchange rate arrangements, the credible maintenance of price stability or a stable value of money has come to be viewed as the proper ultimate objective of monetary policy.² The obvious nature of this monetary policy goal was perhaps best summarized by Swedish economist Knut Wicksell more than a century ago:

There is no need to waste words proving how important it is that the exchange value of money or, what is the same thing seen from the opposite angle, the general level of ...prices, remains as stable and constant as possible. Money is the standard of all values, the basis of all property transactions, and daily becomes more and more so. All commodities are exchanged for money, and moreover, we produce only in order to exchange, and to exchange for money. What then can be more important

¹ NAIRU is an acronym for non-accelerating inflation rate of unemployment. If actual unemployment falls below NAIRU, inflation is projected to increase (and vice versa).

² The case for and advantages of price stability have been made elsewhere and will not be repeated here. See, for example, Robert Keleher, "Establishing Federal Reserve Inflation Goals," a Joint Economic Committee study, April 1997.

than that what constitutes the standard of everything else, should itself remain a constant magnitude.³

In pursuit of price stability, the Federal Reserve in recent years has in effect adopted a quasi (informal) inflation targeting procedure, which has succeeded in lowering and containing inflation.⁴ With price stability the central focus of monetary policy, the policy apparatus chosen should be that which best contributes to achieving this goal. Key elements of this policy apparatus are the intermediate indicators or guides used to achieve price stability. Such intermediate indicators are essential to this effort because of well-known policy lags, the frequent need for pre-emptive policy action, and other well-known problems with direct price targeting.⁵ Appropriate intermediate indicators should be reliable forerunners or proxies for inflation or inflationary expectations: indicators or guides that reliably signal future changes in inflation or changes in inflationary expectations.

Currently, there is a good deal of disagreement among economists as well as Federal Reserve policymakers as to the best set of intermediate indicators to use in obtaining the Fed's goal. Conventional analysts, for example, use models that typically embody a "Phillips curve" relationship relating inflation positively to an "output gap." That is, these analysts employ the gap between actual unemployment and NAIRU or the gap between actual GDP and potential GDP as key inflation indicators or guides.⁶ These are among their standard tools for forecasting inflation.⁷

Forecast Errors of Mainstream Models

In recent years, however, the inflation forecasts of mainstream economists (and their models) have been inaccurate and off the mark. Analysts generally agree that, for the most part, economists have done a poor job forecasting inflation. In particular, inflation has generally been overestimated; inflation forecasts have been persistently higher than actual inflation. An evaluation of inflation forecasts by the Congressional Budget Office (CBO), for example, indicates that the Blue Chip consensus persistently overestimated (two-year average) inflation rates from 1991-1992 to 1998-1999.⁸

³ Wicksell, Knut, "The Influence of the Rate of Interest on Commodity Prices," in Knud Wicksell: Selected Papers on Economic Theory, edited by Erik Lindahl, Harvard University Press, Cambridge, Mass., 1958, p. 67 (originally published in 1898).

⁴ See, for example, the testimony of Federal Reserve Chairman Alan Greenspan: *The Economic Outlook and Monetary Policy*, Hearing before the Joint Economic Committee, Congress of the United States, One Hundred Fifth Congress, First Session, October 29, 1997. See especially page 14.

⁵ See, for example, Manuel Johnson and Robert Keleher, Monetary Policy: A Market Price Approach, Quorum Books, Westport, Conn., 1996, p. 23.

⁶ If actual unemployment falls below NAIRU, inflation is projected to increase (and vice versa). If actual GDP growth exceeds potential GDP growth, inflation is projected to increase (and vice versa).

⁷ Relationships similar or analogous to these are ingredients in approaches used by the Congressional Budget Office and by the staff at the Federal Reserve Board. See, for example, Douglas Hamilton, "Description of Economic Models," CBO Paper, November 1998, p. 7; and David Reifschneider, Robert Tetlow, and John Williams, "Aggregate Disturbances, Monetary Policy, and the Macroeconomy: The FRB/US Perspective," Federal Reserve Bulletin, January 1999, p. 7.

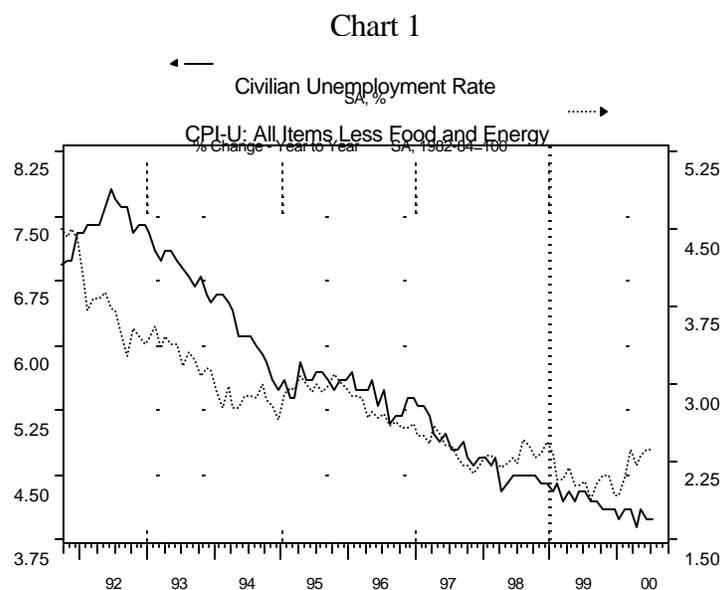
⁸ See Matthew Solomon, "Appendix B: Evaluating CBO's Record of Economic Forecasts," The Budget and Economic Outlook: Update, CBO, July 2000, Table B-4, p. 61. Analysis of forecasts by St. Louis Federal Reserve

Part of the reason for these inaccurate forecasts relates to unreliable indicators used in forecast formulation. In particular, models using the actual unemployment rate relative to NAIRU (or actual GDP relative to potential GDP growth) as key ingredients in their inflation forecasts were inaccurate; these models persistently overestimated inflation. For example, CBO -- which employs such variables as important ingredients in its inflation forecasts -- assessed its recent forecasts and established that CBO has persistently overestimated inflation since the early 1990s.⁹ Similarly, staff at the Federal Reserve Board (FRB) recognized inadequacies of inflation forecasts based on Phillips Curve or NAIRU concepts. A recent FRB study of such relationships, for example, found that actual inflation consistently fell short of their model's predictions of inflation over a recent five-year period.¹⁰ This led them to remark that:

The tendency of our baseline equations to significantly overpredict inflation since the mid-1990s... is an indication of structural change... or of misspecification.¹¹

Some Simple Observations

It is not necessary, however, to engage in sophisticated forecast assessment to recognize the inadequacies of these Phillips curve-type guides as indicators of inflation. These inadequacies can readily be observed with a few simple graphs. For most of the past eight years, for example, the unemployment rate and core inflation have fallen together (see Chart 1¹²). During this lengthy period, there is little sign of an inverse relation between these two variables as is sometimes suggested by Phillips curve proponents.



Bank Economists draws similar conclusions. See William T. Gavin and Rachel J. Mandal, "Mixed Signals?" *National Economic Trends*, Federal Reserve Bank of St. Louis, July 2000.

⁹ See Solomon, *op. cit.*, p. 61.

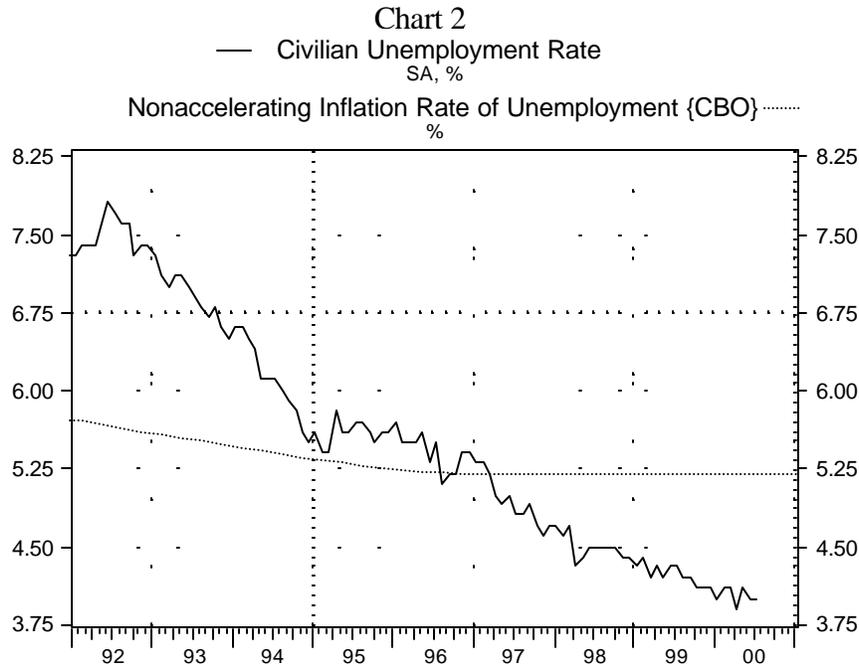
¹⁰ Flint Brayton, John M. Roberts, and John C. Williams, "What's Happened to the Phillips Curve?" Division of Research and Statistics, Federal Reserve Board, Washington, DC, September 1999.

¹¹ *Ibid.*, p. 4.

¹² The source for all graphs is Haver Analytics.

As Chart 2 reveals, the civilian unemployment rate has fallen for eight years, has remained below 6 percent for more than six years, below 5 percent for more than three years, and has vacillated in the neighborhood of 4 percent during the past year. As late as the mid-1990s, estimates of NAIRU were typically in the neighborhood of 6 percent.¹³ As Robert Gordon noted in 1998:

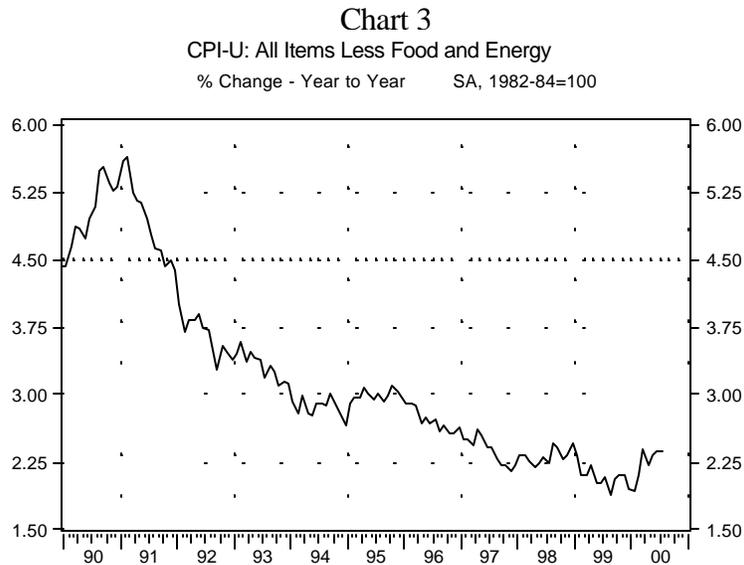
In contrast to the near universal forecasts of accelerating inflation that would accompany a dip in the unemployment rate below 6 percent, inflation actually decelerated significantly between 1994 and 1998.¹⁴



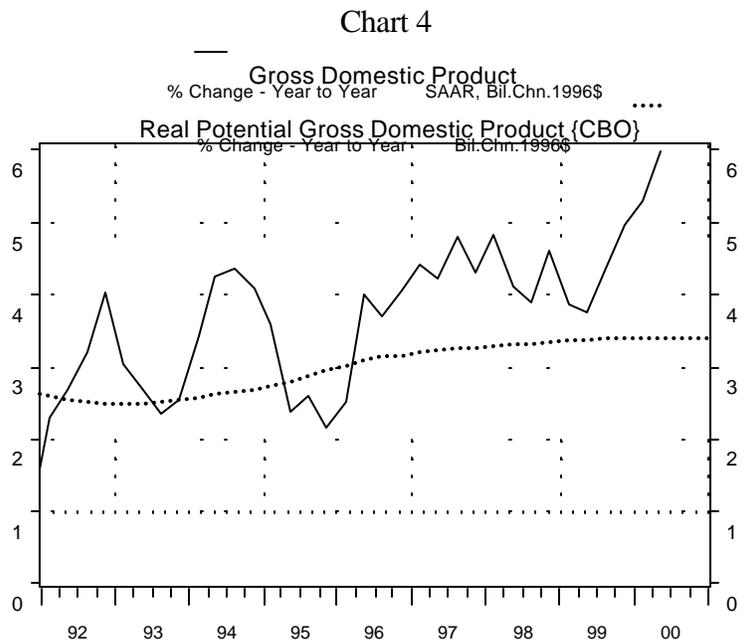
Accordingly, as unemployment continued to fall with no signs of accelerating inflation, erroneous estimates of NAIRU were downward-revised. Current (downward-revised) CBO estimates of NAIRU are also shown in Chart 2. Even with a downward-revised estimate of NAIRU, the unemployment rate has remained below NAIRU for almost 3 1/2 years. Yet the core rate of inflation, as measured, for example, by the core CPI, has remained relatively well behaved, as Chart 3 illustrates. In short, these charts suggest that in recent years the unemployment rate, either alone or relative to NAIRU, has not been a reliable guide or indicator of future inflation.

¹³ See, for example, Arturo Estrella and Frederic S. Mishkin, "Rethinking the Role of NAIRU in Monetary Policy: Implications of Model Formulation and Uncertainty," NBER Working Paper No. 6518, April 1998, p. 1.

¹⁴ Robert J. Gordon, "Foundations of the Goldilocks Economy: Supply Shocks and the Time-Varying NAIRU," February 3, 1999. Revision of paper presented at the Brookings Panel on Economic Activity, September 4, 1998, p. 1.



As Chart 4 indicates, similar observations about the inadequacies of inflation guides can be made with respect to the growth of actual GDP relative to estimates of potential GDP growth. Real GDP growth has consistently exceeded estimates of potential GDP growth (on a year-over-year basis) since the mid-1990s: i.e., for almost five years. Yet for the most part core inflation decelerated over this period. And analogous to NAIRU, as this gap persisted while core inflation continued to decelerate, (erroneous) estimates of potential GDP have repeatedly been revised upward, from the neighborhood of 2 1/2 percent to about 3 1/2 percent. Nonetheless, the conclusion remains inescapable: this actual GDP-potential GDP gap has been an unreliable guide to future movements of inflation.



The charts depicted here lead to a number of observations. In particular, in recent years:

- Low unemployment, even when it is low relative to downward revised estimates of NAIRU, has not been reliably associated with increased inflation.
- Economic growth persistently in excess of (upward-revised) estimates of potential GDP growth has not meaningfully stimulated core inflation or inflationary expectations.
- The gap between actual unemployment and NAIRU as well as the gap between actual GDP growth and potential GDP growth have been inaccurate guides to or indicators of inflation. These variables have contributed to inaccurate inflation forecasts. Indeed, for much of the late 1990s, these variables sometimes have not even predicted the correct direction of core inflation movements; core inflation has often continued to decelerate when these gaps have widened.

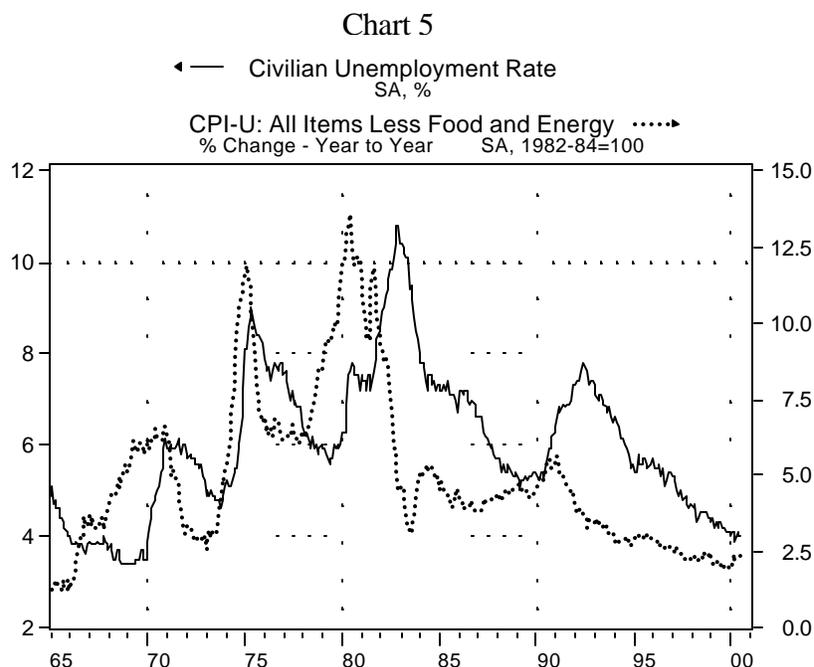
Problems with using conventional “gap” models to forecast inflation.

There are a number of theoretical and empirical problems with using real economic variables -- such as the gap between actual and “non-inflationary” unemployment or the gap between actual and potential GDP growth -- to forecast inflation. These problems, for example, include the following:

- The relationship between real economic activity and inflation is ambiguous. For decades it was generally believed that prices were pro-cyclical: i.e., that output and prices were positively correlated. Often, some form of Phillips curve relationship (associated with demand-side disturbances) was used to rationalize such correlation.¹⁵ Recent evidence, however, indicates that properly assessed, this correlation is negative over the post-war period.¹⁶ And from a long-term trend perspective, unemployment and inflation move together i.e., they are positively correlated as indicated in Chart 5. This suggests that robust real economic activity does not necessarily lead to higher inflation.

¹⁵ See, for example, Wouter J. den Haan, “The Comovement Between Output and Prices,” *Journal of Monetary Economics*, 46 (2000), p. 4.

¹⁶ See, for example, Michael Pakko, “The Cyclical Relationship between Output and Prices: An Analysis of the Frequency Domain” *Journal of Money, Credit, and Banking*, Vol. 32, No. 3, August 2000, part 1, p. 382 and the evidence cited therein.



Part of the reason for this ambiguity is that using real economic activity to forecast inflation often does not adequately distinguish between demand-side and supply-side disturbances. These respective disturbances, however, can have very differing impacts on the output-price relationship. Demand-side stimulus, for example, can produce short-term output gains with increases in inflation. On the other hand, supply-side stimulus such as productivity advances can produce output gains with falling inflation. Furthermore, stable, decelerating inflation can serve to promote economic growth. The unreliability of this output/inflation relationship suggests that real economic variables may be misleading policy guides for the Federal Reserve in an inflation-targeting monetary policy strategy.

- Potential GDP and NAIRU are unobservable and the latter cannot be estimated with precision: Since both potential GDP and NAIRU are unobservable, there is an inherent problem of estimating or measuring these variables. The only truly foolproof way to determine or verify whether actual GDP is meaningfully above or below potential is to observe aggregate price movements. Similarly, the only foolproof way to truly verify whether actual unemployment is in the vicinity of NAIRU is to observe price or wage movements.

Furthermore, recent research has demonstrated that NAIRU cannot be estimated with much precision; there is significant uncertainty in the empirical estimates of NAIRU. Empirical analysis by Staiger et. al., demonstrates that estimates of NAIRU are quite imprecise with large, wide confidence bands.¹⁷ This suggests a

¹⁷ Staiger, Douglas, James H. Stock and Mark Watson, "How Precise are Estimates of the Natural Rate of Unemployment?" in Reducing Inflation: Motivation and Strategy, edited by Christina D. Romer and David H.

lack of confidence as to the actual estimates. In assessing the Staiger et. al., analysis, for example, one commenter stated:

...The data are incapable of distinguishing between a wide range of estimates of the natural rate... a variety of plausible models yield widely differing estimates of the natural rate at a point in time... The standard errors of the estimated natural rates are quite large -- a typical 95% confidence interval runs from 5 to 8 percent... Even with forty-two years of monthly time-series observations, the data just do not provide precise estimates.¹⁸

For all practical purposes, the size of this imprecision and uncertainty precludes the use of NAIRU as a reliable guide for a price-stabilizing monetary policy.

- Potential GDP (or NAIRU) is constantly changing in unpredictable ways: In a dynamic economy, potential GDP and NAIRU are constantly changing in unpredictable ways. NAIRU, for example, was estimated to be around 5% in the 1960s, 7% in the 1970s, and 6% in the early to mid-1990s. More recently (and following NAIRU's poor inflation forecasting record) estimates of NAIRU have been revised down again. These changes in NAIRU are related to a number of factors including changing labor force demographics, government unemployment programs, or regional economic disturbances among other factors.¹⁹ In practice, these unpredictable changes contribute to forecasting error and make NAIRU an unreliable policy guide in a price stabilizing monetary policy regime.

In short, there are a number of theoretical, empirical, and practical problems associated with the use NAIRU or potential GDP as policy guides in a price-stabilizing monetary policy strategy. These problems, together with the recent poor forecasting record of these variables, suggest that alternative policy guides should be considered.

Some Alternative Monetary Policy Indicators: Market Price Guides to Monetary Policy

An alternative set of monetary policy indicators appropriate for price stability goals has recently been proposed. A detailed description of the approach using these indicators has been given elsewhere and will only be briefly summarized here.²⁰ This approach uses certain market price indicators -- broad indices of commodity prices, various measures of the foreign exchange value of the dollar, and long-term bond yields -- as guides for a price-stabilizing monetary policy. All of these sensitive market prices yield early warning signals pertaining to changes in the value of, or price of money: i.e., relevant to movements in the general price level. Being

Romer, University of Chicago Press, Chicago, 1997(a); Staiger, Douglas, James H. Stock and Mark Watson, "The NAIRU, Unemployment, and Monetary Policy," *Journal of Economic Perspectives* 11:33-49, 1997(b).

¹⁸ Alan B. Krueger, "Comment," in *Reducing Inflation: Motivation and Strategy*, edited by Christina D. Romer and David H. Romer, University of Chicago Press, Chicago, 1997, pp. 242-3.

¹⁹ John Judd, "NAIRU: Is it Useful for Monetary Policy?" Federal Reserve Bank of San Francisco, *Economic Letter* No. 97-35; November 21, 1997, p. 2.

²⁰ For a through description of this approach see Manuel Johnson and Robert Keleher, *Monetary Policy, A Market Price Approach*, Quorum books, Westport, Connecticut, 1996.

prices, these indicators signal movements in demand relative to supply and accordingly potentially can be more useful than the above-described “gap” models. These market prices are intended to serve as informational indicators, not policy targets. Other things equal, each indicator can signal the relative “ease” or “tightness” of monetary policy.

These market prices have a number of distinct advantages over competing intermediate indicators of monetary policy. Such market price data, for example, are observable, easy-to-understand, timely, and readily available, literally minute-by-minute. They are accurate, less subject to sampling error, and unaffected by revision, rebenchmarks, seasonal adjustments, or shift-adjustments that sometimes plague quantity data. Several formal studies investigating the usefulness of various forms of economic statistics conclude that market price data are superior to other forms of data.²¹ Furthermore, they are forward-looking and can signal future changes in inflation and inflationary expectations. If these market price indicators are carefully assessed in conjunction with one another, they can be useful forerunners of inflation and helpful guides for a price-stabilizing monetary policy.

Recent Performance

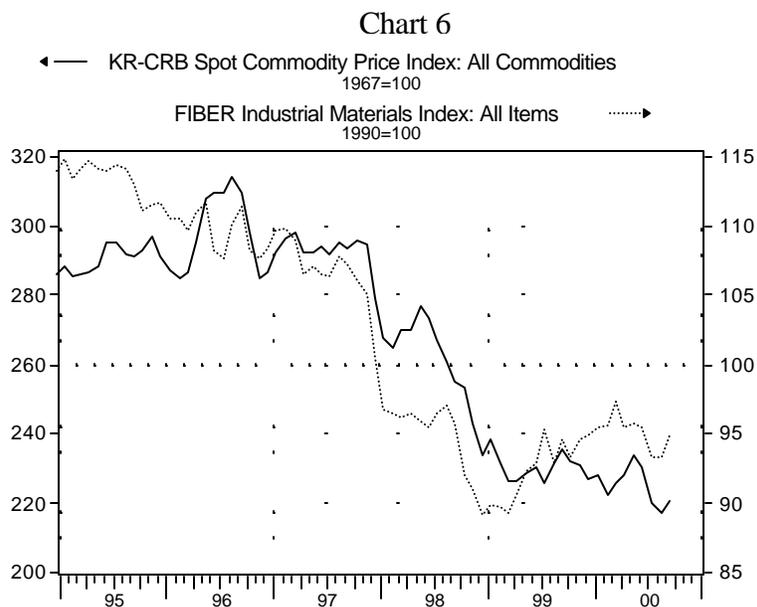
Recently, while conventional models were overestimating actual inflation, market price indicators provided relatively reliable signals as to future movements of general prices. In particular, these indicators accurately foretold the persistent disinflation of core CPI prices, for example, and have accurately suggested that no important resurgence of inflation was imminent. These guides indicated that monetary policy generally remained in an anti-inflation mode rather than “easy” as suggested by the above-cited conventional “gap” models.

Each major market price indicator contributed to this interpretation as follows:

- Commodity prices: Since the mid-1990s, broad indices of commodity prices have generally signaled that monetary policy remained in an anti-inflation mode. Broad indices of core commodity prices have generally remained stable or persistently trended down since 1995 with some commodity prices indices remaining below commodity price levels registered in the early 1980s. The KR-CRB spot index (which does not include energy prices), for example, has persistently trended down since the mid-1990s and remains at levels below those registered in the early 1980s²² (see Chart 6). This commodity price measure, therefore, served as a reliable forerunner of persistent downward trends of core CPI inflation during the latter half of the 1990s.

²¹ See, for example, Oskar Morgenstern, *On the Accuracy of Economic Observations*, Princeton University Press, Princeton, N.J., 1963; and Victor Zarnowitz, “On Functions, Quality, and Timeliness of Economic Information,” NBER Working Paper Series, No. 608, December 1980.

²² The source for the Commodity Research Bureau Commodity (KR-CRB) price indices is Knight-Ridder financial.



Various other indices of commodity prices provide some variation of this general picture but generally corroborate the central theme. The KR-CRB futures index (which includes energy prices) has trended down from 1995, but ticked up with energy prices early in 1999 before cooling in mid-2000. Similarly, as shown in Chart 6, popular indices of industrial materials prices (which also include energy prices) generally trended down after 1994 but ticked up with energy prices in 1999 and early 2000 before cooling in mid-2000²³. Apparently, the recent energy price increase generated some heightened inflationary expectations during 1999. Abstracting from the effects of energy prices, therefore, for the most part these commodity price indices signaled that from the mid-1990s, core inflationary pressures were benign with no significant resurgence of inflation expected. These indicators, therefore, suggested that monetary policy remained in an anti-inflation mode during the second half of the 1990s. They served as accurate forerunners of the persistent lower trends in core inflation as measured, for example, by core CPI (as depicted in Chart 3).

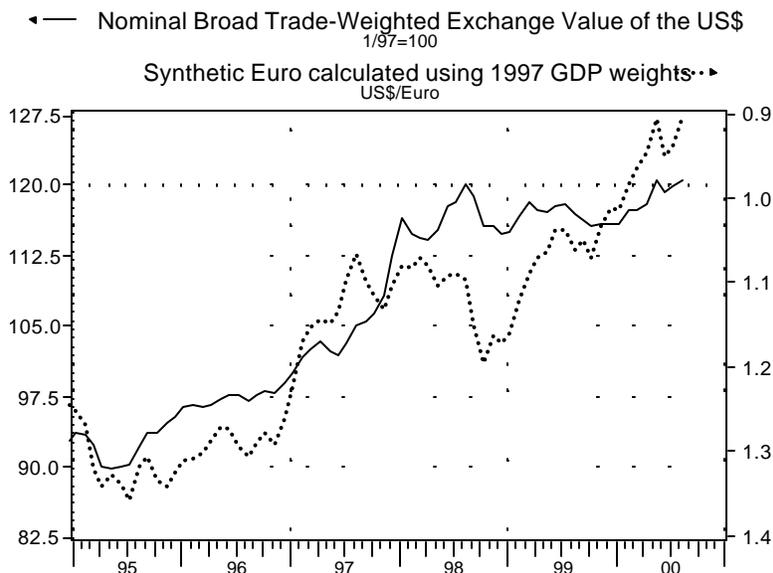
- **Foreign Exchange Rates:** Various measures of the foreign exchange rate of the dollar also yield potentially important information about future inflation and inflationary expectations (relative to other countries). In recent years, and especially since 1995, certain bilateral and most multilateral measures of the dollar's value have steadily appreciated, thereby persistently signaling (other things equal) that U.S. monetary policy has been firm relative to that in other countries.²⁴ In particular, as Chart 7 indicates, the dollar has firmed on (various measures of) a trade-weighted basis, against the yen until 1998, and especially against (synthetic measures of) the Euro. Notably, this persistent

²³ Popular indices of industrial materials prices include the FIBER (Foundation for International Business and Economic Research) industrial materials price index or the JOC-ECRI (Journal of Commerce-Economic Cycle Research Institute) industrial price index.

²⁴ Exchange rate movements measure changes in the value of money relative to other monies.

appreciation occurred during a period when core CPI continued to decelerate (as depicted in Chart 3 above), suggesting that (other things equal) these dollar movements accurately signaled a continuing disinflationary environment despite unemployment falling below NAIRU and robust (above potential) GDP growth. In short, during the period after the mid-1990s, this market price indicator continued to yield accurate signals as to the inflationary environment while “gap” models persistently overestimated inflation.

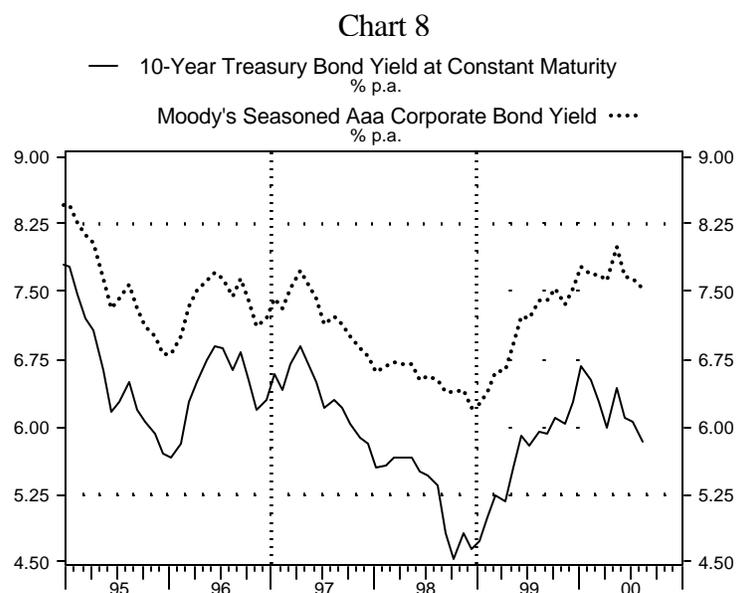
Chart 7



- Long-Term Interest Rates:** Another market price indicator that provides useful information in assessing the prospects for inflation and expected inflation is long-term interest rates. From early 1995 to early 1999, for example, bond market yields trended down, thereby presaging a benign inflationary environment. Early in 1999, however, changes in several factors impacted the bond market. Sharp increases in energy prices influenced most general inflation indices even though core measures of inflation remained relatively well-behaved. This generated an increase in inflationary expectations as measured, for example, by some survey and market-based gauges.²⁵ Partly because of these altered expectations, anticipations about Federal Reserve policy began to change; the market began to expect tighter Fed policy in the future. The Fed did raise the fed funds rate six times beginning in June 1999, hiking the rate 175 basis points to 6.50 percent by May, 2000. These factors worked to increase long-term interest rates during 1999, before these rates cooled in 2000 as Chart 8 indicates. But while long-term rates advanced during this period, short-term rates increased even more, inducing the yield spread to narrow and by some measures to invert, signaling a more restrictive monetary

²⁵ For example, year-ahead household inflation expectations as measured by the University of Michigan’s Survey of Consumers as well as market-based measures based on inflation indexed Treasury securities both indicated that inflationary expectations increased beginning in early 1999.

policy.²⁶ By mid-2000, therefore, long-term rates had fallen from their peak and expectations of inflation had again moderated; the inflationary environment had regained a tamer demeanor.



- **A Joint Assessment of Market Price Indicators:** The market price indicators discussed here all provide useful information as to the inflationary environment and therefore to monetary policymakers. While useful, these market price indicators are not infallible; each has drawbacks. These indicators, therefore, should be assessed jointly or in conjunction with one another in order to minimize misinterpretation. Such joint assessments provide superior information than indicators analyzed in isolation.²⁷

Generally, during most of the post-1995 period, these guides consistently indicated that a resurgence of core inflation was not a serious concern. More specifically, for most of the post-1995 period, broad indices of “core” (ex-energy) commodity prices remained weak, various bilateral and multilateral measures of the foreign exchange value of the dollar remained strong, and except for the early 1999-Spring 2000 period, bond yields remained benign. For the most part, these indicators suggested that a resurgence of inflation was not likely and that significant inflationary pressures were not an important concern. The inflation message of these indicators was consistent with the actual benign core inflation that characterized the period. In this sense, these market price indicators provided more accurate inflationary signals than the above-described “gap” models that consistently predicted higher than actual inflation.

²⁶ Some moderation of long-term U.S. government security rates during the later portion of this period reflected diminished issuance and the debt paydown program. Nonetheless, spreads between the fed funds rate and quality corporate bond yields showed a similar pattern during this period.

²⁷ For a discussion of the rationale for such joint assessments, see Johnson and Keleher, *op. cit.*, especially pp. 39-40 and Chapter 11 (pp. 183-216).

SUMMARY AND CONCLUSIONS

Price stability is currently a central focus of U.S. monetary policy. Because of well-known policy lags and the need for preemptive policy action, the Federal Reserve necessarily uses intermediate indicators to help attain its inflation goals. Currently, there is a good deal of disagreement among economists as well as Federal Reserve policy makers as to the proper set of intermediate indicators to use in conducting a price stabilizing monetary policy.

Some analysts, for example, use models that typically embody a “Phillips curve” relationship relating inflation positively to an “output gap” typically using the gap between actual unemployment and NAIRU or the gap between actual GDP and potential GDP as inflation guides. In recent years, however, these models have not performed well; their inflation forecasts have persistently been higher than actual inflation. There are a number of problems associated with the use of NAIRU or potential GDP as policy guides in a price stabilizing monetary policy strategy. These problems, together with the recent poor inflation forecasting record of these variables, suggest that alternative policy guides should be considered.

Market price indicators are such an alternative useful set of guides to a price stabilizing monetary policy. These indicators -- commodity price indices, the foreign exchange value of the dollar, and long-term bond yields -- have a number of advantages as policy guides, especially when they are jointly assessed in conjunction with one another. Recently, these indicators consistently provided reliable signals as to the direction of, and to future movements in, core general prices. The inflation signals of these indicators were consistent with the actual benign core inflation that characterized the period. In this sense, these indicators provided more reliable inflationary signals than the above-described “gap” models that consistently predicted higher than actual inflation.

Assessments of this period add further empirical support to a market price approach to monetary policy and suggest that when jointly assessed in conjunction, these market price indicators are viable, useful intermediate guides to monetary policy, particularly in a (quasi) inflation targeting regime.²⁸

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²⁸ Empirical support for these market price indicators is presented in Johnson and Keleher, *op. cit.* (see chapters 8-10, 12, 13).