



# Gold and Commodity Prices as Leading Indicators of Inflation: Tests of Long-Run Relationship and Predictive Performance

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We compared the performance of gold and commodity prices as leading indicators of the inflation rate (INFR) and explored the possibility of improving INFR forecast by specifying error-correction models (ECM). We found some evidence of cointegration between commodity prices and the consumer price index (CPI). Comparisons of out-of-sample forecast errors indicate that an ECM of the CPI including commodity prices significantly outperforms a CPI model including the price of gold, but the marginal contribution of an EC term to predictive performance was statistically insignificant. We conclude that the recent emphasis on the price of gold as a guide to monetary policy is perhaps misplaced. © 1997 Temple University

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## I. Introduction

The historical relationship between the M2 measure of money supply and the price level largely broke down in the 1980s. As a consequence, the rate of growth of M2 is not presently considered by monetary authorities as a useful leading indicator of inflation, or as a variable which can communicate the stance of monetary policy to the economy [Greenspan (1993)]. The diminished role of M2 has led to a search for a new compass to guide monetary policy. Among potential leading indicators which are being monitored, gold and commodity prices have received considerable

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attention by monetary authorities and some business economists. Speaking before Congress on February 22, 1994, Alan Greenspan noted that the price of gold tends to rise as people switch from currency to gold as a hedge against expected inflation. He cited gold as a "store of value measure which has shown a fairly consistent lead on inflation expectations and has been over the years a reasonably good indicator." Quoted in "Greenspan Takes the Gold," (*The Wall Street Journal*, Feb. 28, 1994) The gold price-inflation linkage has long been stressed by Wayne Angell, a former Fed governor, who is known as an inflation hawk for his advocacy of a zero-inflation target.<sup>1</sup> However, as noted by many business economists including Angell (1992), broader indexes of commodity prices may be better harbingers of inflation relative to the price of gold or macro indicators.<sup>2</sup> cursory examinations of data over certain time intervals seem to be consistent with the position of advocates of using gold and commodity prices as leading indicators of inflation.<sup>3</sup> Perhaps it was against this backdrop that several run-ups in gold and commodity prices since 1992 have been interpreted by financial markets as changes signaling a subsequent rise in the inflation rate.

Evidence from more formal analyses of data over longer periods leads to a less optimistic assessment of the leading indicator role of gold and commodity prices. Several of these studies have employed the standard Granger-causality test and/or an autoregressive model of inflation rate, augmented by various commodity price indexes and, in some cases, other relevant variables [see, for example, Webb (1988); Roth (1986, 1991); Boughton and Branson (1991); Eugeni and Krueger (1994); Laurent (1994); Garner (1995)]. The combined findings of these studies suggest that, generally: 1) commodity price indexes Granger-caused the CPI (i.e., changes in commodity prices preceded changes in the CPI) and not the opposite; 2) the incremental predictive contribution of commodity price indexes (if any) were found to be rather small based on comparisons of post-estimation period forecast errors, and 3) commodity price indexes performed better in predicting the *turning points* of CPI-based inflation rate than in predicting its *magnitudes*. A few studies have also included the price of gold in their analysis [Laurent (1994); Garner (1995)]. In most cases, they found the price of gold to be of low explanatory and predictive power in relation to the inflation rate.

In light of the renewed attention to the role of gold and commodity prices in the conduct of monetary policy, this paper re-examines their predictive performances using an approach based on *cointegration* and *error-correction* (EC) modeling. This

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<sup>1</sup>See, for example, "Angell, Citing Gold, Sees Rising Prices." (*The Wall Street Journal*, Sept. 19, 1994) in which Angell suggests that "Every lasting \$10-an ounce rise in the gold's price foretells a 0.2% rise in prices to be played out over the subsequent 12 months." Also see "Golden Warning" (*The Wall Street Journal*, Feb. 6, 1996).

<sup>2</sup>Some of the reasons for this emphasis are as follows: 1) broad commodity price indexes are less sensitive to shocks which may affect the price of a single commodity such as gold; 2) compared with other key quantitative variables such as GDP growth rate, broad indexes are more precisely measured; 3) commodity prices are more flexible than industrial goods prices; moreover, similar to prices of stocks and foreign currencies, they are forward looking, and 4) commodity prices enter the production process at early stages of production [Angell (1992)].

<sup>3</sup>For example, the price of gold peaked at \$825 per ounce over the period 1979–1980, and was soon followed by a 14.7% inflation rate. In mid-1980s, gold briefly topped \$500 with the inflation rate reaching 5%.

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