For release on delivery

10:00 A.M. E.S.T.
December 10, 1987

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for

The Lehrman Institute

December 10, 1987
New York, New York

A COMMODITY PRICE GUIDE TO MONETARY AGGREGATE TARGETING

"Few realize . . . that the money price of any commodity has to do not only with that commodity but also with money, and that, therefore, a monetary element enters into every price." (Irving Fisher, Why the Dollar is Shrinking, p. vii, MacMillan, NY 1914)

The ultimate goal of the Federal Reserve must be to stabilize the general price level. The success of monetary aggregate targeting in achieving that goal depends on a predictable income velocity of money and reliable inflation indicators. During most of the postwar era, the income velocity of money has remained fairly predictable, even during periods of high inflation. However, since the mid 1970s, income velocity has become much more volatile. Both financial market deregulation and unexpectedly large portfolio shifts from real to financial assets during transition from inflation to disinflation have contributed to velocity uncertainty. Given the possible slippage introduced by shifting velocity, it becomes crucial to have timely and accurate **indicators** of inflation to guide monetary policy.

The Fed has always tracked the movements in all reliable measures of economic activity, and will continue to do so. However, I am suggesting an expanded role for commodity prices. I am proposing a commodity price guide to adjust short run money growth target ranges. I believe that commodity prices

can provide a reliable early signal of inflationary (or deflationary) pressures. There are two straightforward reasons for using commodity prices as inflation indicators.

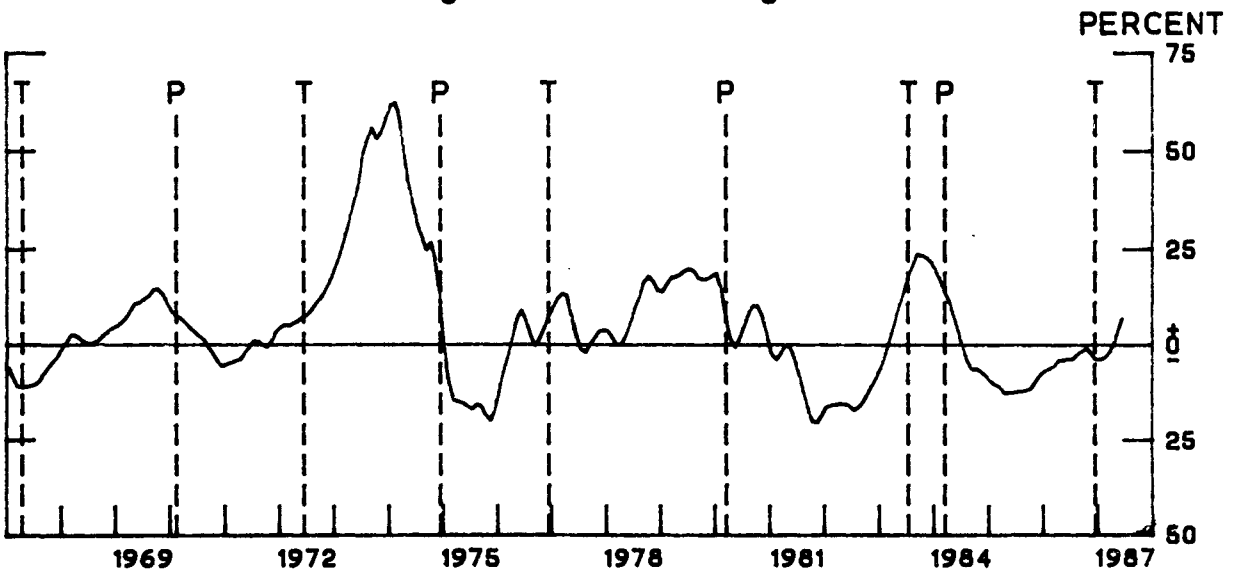
The first is data availability. Commodity prices are reported on a daily basis. Even if inflation pressures affect measures of the general price level and commodity prices at the same time, the statistics measuring the impact on the general price level would not be available until three to four weeks later.

Second, the prices of many commodities fluctuate freely in response to changing current and expected supply and demand conditions, including the effect of changed perceptions as to the scarcity of money. Measures of the general price level such as the CPI also reflect production costs -- wages, for example -- which adjust only slowly . Hence, we would expect current and anticipated inflation pressures to show up more quickly in commodity prices.

The following chart displays the level and percentage changes in an arithmetic average of constructions of nine commodity price indexes (Commodity Research Bureau Spot and Futures, The Economist, Journal of Commerce, World Bank developing country export weighted index, IMF world trade weighted index, and three experimental Federal Reserve Board indexes) from 1967 to September 1987. Peaks and troughs in the consumer price index (CPI) inflation cycle are identified in the middle panel of the chart. As the top panel of the chart shows, commodity price changes precede both peaks and troughs in the inflation

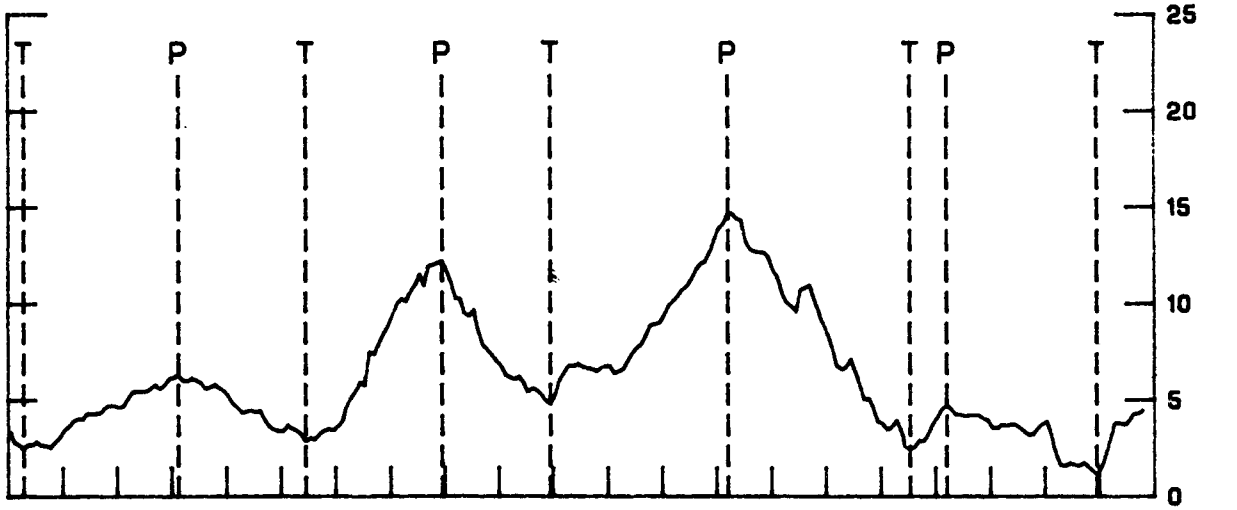
Average of all Indexes vs. CPI Turning Points

(3-month average of 12-month growth rates)

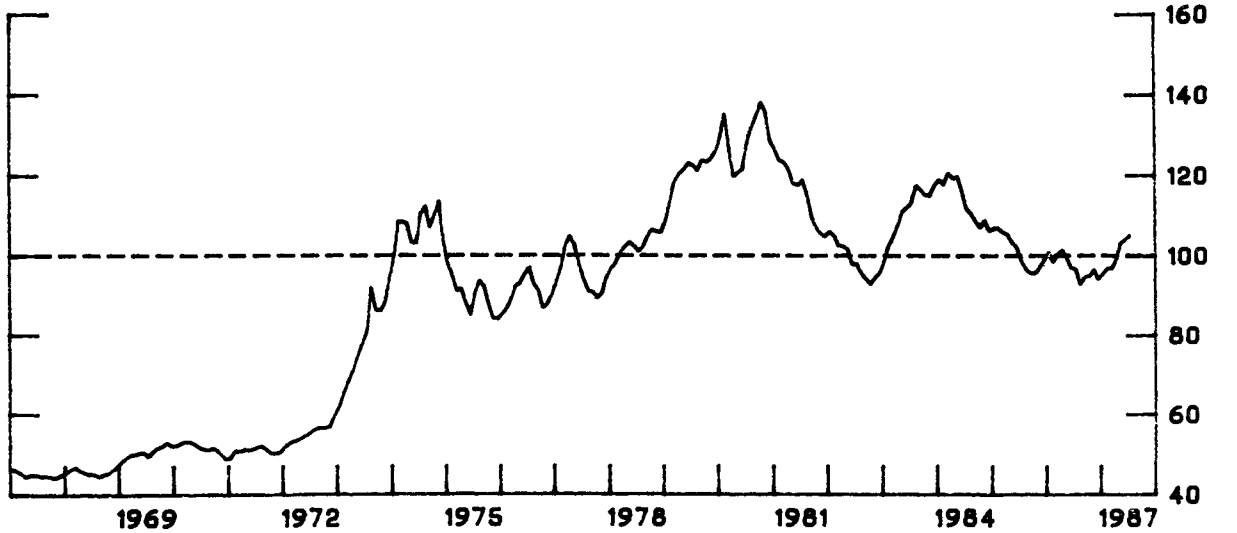


CPI Turning Points

(3-month average of 12-month growth rates)



Average of all Indexes (level)



cycle with remarkable reliability. The average lead time of this index is about seven and one-half months. Work done at the Federal Reserve Board shows that this leading indicator property depends little on the precise composition of the index. The average time lag from a change in M1 to a change in the CPI is between 15 and 24 months, falling closer to 15 months in the recent past. Thus commodity prices can provide some of the advance warning needed to adjust money growth rates in **anticipation** of general price-destabilizing forces, rather than **after** observing the effects on the CPI.

In addition to accurately leading inflation turning points, we would like the magnitude of changes in the index to bear a consistent relationship to the magnitude of subsequent changes in the CPI. The commodity price index increases on average by four times the subsequent change in the CPI. As the chart indicates, the variation in that ratio can be quite large. Its volatility could change if the private sector's expectations react to the Fed's monitoring the index more closely.

Since June of 1986, individuals at the Federal Reserve Board have monitored the indexes summarized in chart one. I have been particularly interested in (1) whether a commodity price index would serve as a useful indicator for monetary policy; (2) whether monetary policy adjustments which were signaled early by this index would prove to be appropriate ex post in terms of stabilizing movements in general price level measurements such as the CPI or the GNP fixed-weight deflator; and (3) whether the monetary policy actions suggested by this proposal would eliminate trends in commodity prices.

Monetary policy which successfully uses commodity price signals to remove trends from the general price level will simultaneously remove monetary trends from commodity prices. The flexibility of commodity prices suggests that we would observe such changes first in commodity prices. However, these propositions and questions have not been fully answered and warrant further examination.

I believe that both the rate of change of commodity prices and the general level of commodity prices are important guides to policy adjustment. The reason is simply that a greater money growth rate adjustment may be necessary if commodity prices are both high in level and rising, as opposed to rising from an acceptable base level. In order to illustrate how both the rate of change and the general level of commodity prices interrelate in choosing a policy adjustment, the following matrix of M1 target ranges is suggested.

		Commodity Price Index Level		
		Below Lower Limit	Inside "Normal" Range	Above Upper Limit
% Δ in Commod. Price Index	Rapid Decrease	Above Top of M1 Target Range	Top of M1 Target Range	Midpoint of M1 Target Range
	Moderate Change	Top of M1 Target Range	Midpoint of M1 Target Range	Bottom of M1 Target Range
	Rapid Increase	Midpoint of M1 Target Range	Bottom of M1 Target Range	Below Bottom of M1 Target Range

This policy adjustment matrix serves as a means of illustrating the indicator role commodity prices could play in monetary policy. The actual implementation of such a plan requires sorting out a good many details. For

example, we must recognize uncertainty as to the scale at which we make adjustments. While we do not wish to "fine-tune," it is important to be prepared to "lean against the wind" so as to prevent significant upward or downward trends in the general price level. We need also to develop methods to discredit "false signals" in the commodity price index -- episodes in which the index shows a pronounced change which does not appear in subsequent CPI movements. The average index shown in the chart gave false signals in only three episodes in the sixty-seven years from 1920 through 1987, and only once in the last twenty years.

In addition, constructing an appropriate commodity price index requires some care. Ideally, an index to be used as an inflation indicator should comprise components with the following characteristics:

1. Each component of the index should reliably anticipate general price level movements.
2. Each component of the index should be storable and thus a potential store of value. This allows the commodity price to provide signals of anticipated inflation over a moderate time horizon.
3. The price of each component should be flexible, responding quickly to changes in both general price level influences and their specific supply and demand changes.
4. Components in the index should be free from frequent and severe supply disruptions.
5. The price of each component should be determined and quoted on a continuous auction market.

6. The price of each component should be determined in markets with large numbers of buyers and sellers, unlikely to be influenced by cartels.
7. The weights of each component in the composite index should correspond to performance based on the above criteria.

In practice, it is difficult to construct one index which satisfies all these criteria. However, as mentioned above, inflation indicator performance seems robust to fairly wide variations in the commodity composition and weighting method. For this reason I use the average index to illustrate the indicator properties of commodity prices.

I think of this proposal as a means of re-establishing a stable price level which would be followed by a more stable money-price level relationship. I think that many of us still feel that money, if properly measured, must have a reliable link to the price level in the long run. The "quantity equation" of Irving Fisher reflects that view. For the moment, we are in an unusual period of financial deregulation and inflation uncertainty, both of which make the definition of money and the predictability of money growth difficult. Since our primary goal remains price stabilization, I would hope that using these commodity price indexes to adjust our money targets would help us to better achieve that goal. In so doing, we will stabilize the value of money. Once we have stabilized money's value, and once the financial deregulation has run its course, I would hope to see again a more stable relationship between money and the price level, one which the Fed can and will exploit to maintain price stability.

Questions and Answers

Are you proposing a commodity price standard?

No. I am proposing to use the information contained in commodity price movements as an indicator of inflationary and deflationary pressures, to aid the Fed in implementing monetary aggregate targeting. With this information, it can more appropriately adjust its monetary growth targets to ward off inflation in its early stages.

How will monitoring a general level of commodity prices work to control inflation?

The answer is simply this: I believe that monetarism is correct in insisting that controlling inflation requires monetary restraint. This proposal helps us to implement the stable money-price level relationship which underlies the monetarist prescription. The proposal is designed to make monetary targeting more effective.

Can monetary policy control the general level of commodity prices?

The chart displayed above seems to indicate that commodity price movements reflect inflationary and deflationary pressures. To the extent that these pressures are due to changes in the scarcity of money, commodity prices are already affected by monetary policy. The question of how that relationship might change as agents become aware that the Fed more closely monitors commodity prices is the subject of ongoing research at the Board.

Can inflation continue without a general rise in commodity prices?

I don't believe so. Since general price level inflation is fundamentally a monetary phenomenon, and part of any commodity price is determined by monetary forces, commodity prices will rise or fall along with, or prior to, all prices in a monetary inflation. As the preceding chart shows, the period of near-zero trend in commodity prices in the 1980s has been followed by a zero trend in producer and consumer goods prices. I believe that inflation in the service sector cannot persist if we continue to avoid inflation in the goods producing sector.

Why would we expect commodity prices to reflect anticipatory inflation information?

First, since commodities are used as inputs to final manufactured goods, the price paid for them today will subsequently be reflected in the final goods price. I should note that the magnitude of the contribution of commodity prices to the final price level is small as compared with the contribution of other production costs. More important is the reflective, or indirect inflation signal provided by commodity prices. Firms purchase commodities in part as reservoir for input to production, and in part as a good investment when commodity prices are expected to rise. If they are to hold inventories in excess of normal production needs, they must on average earn an inflation-adjusted, after-tax return which compares well with their alternative investments. When investors expect inflation or deflation over the investment period for a commodity, their demand for commodities will change commodity prices today in order to maintain a competitive real return on the

investment. An appreciation in commodity prices can therefore be expected to precede general price inflation.

Aren't there other auction market prices which might serve the function that you propose for commodity prices?

Yes, there are. Both foreign exchange and treasury security auction markets can play such a role, and of course do to a certain extent now. These auction markets can provide us with information which will either confirm or contradict the information in commodity prices. When we observe reinforcing signals in all auction markets, we can be fairly sure that a significant price level change will occur, and adjust money growth accordingly.

How do you distinguish between monetary and non-monetary shocks in the commodity price index?

In essence, monitoring an index, rather than specific components, aids greatly in making the distinction. If the general level of commodity prices is rising, this is far more likely due to a monetary shock than to a set of coinciding, reinforcing shocks to the specific commodity markets in the index.

Some claim that any attempt to stabilize commodity prices would increase the volatility of real activity. Do you believe this?

I believe just the opposite. I feel that excess inventory accumulation in anticipation of inventory profits magnifies the amplitude of the normal recession cycle. If the Federal Reserve is successful in curtailing inflation

at its early stages, much of the incentive for building up speculative inventory stocks will be removed. This may help to reduce the magnitude of inventory related business cycles.

Exchange rates also indicate the relative scarcity of U.S. money. Why should commodity prices be a more appropriate guide to monetary policy than exchange rates?

Exchange rates move as a result of both U.S. and foreign policy actions. For example, an appreciation in the dollar-yen exchange rate may reflect perceived tight U.S. monetary policy or loose Japanese monetary policy. Certain commodities that are not readily transportable will primarily reflect effects of current and expected U.S. monetary policy. Their prices may be better indicators of the appropriateness of current U.S. monetary policy independent of foreign policy actions.

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