

Why Are Oil and Metal Prices High? Don't Forget Low Interest Rates

published as "Real Interest Rates Cast a Shadow Over Oil," *Financial Times*, 4/15/05

Jeffrey A. Frankel

There is no shortage of explanations for the high real price of oil over the last few years. Production in the Persian Gulf may be running into new limits; some other oil producers have experienced political uncertainty; and demand from some countries has risen faster than anticipated (particularly China and the United States). But these factors are unlikely to be the complete explanation. Prices of other mineral products such as aluminum, copper and zinc are also very high. In fact some indices have hit 25-year highs recently. This is probably not a pure coincidence. Furthermore one might think that if an unexpected surge in final demand were the explanation, firms would be holding levels of inventories lower than they are currently holding.

A factor that has not received enough attention is low real interest rates, arising from easy U.S. monetary policy over the last few years. Everyone saw in the 1970s that excessively expansionary monetary policy raises *nominal* prices of commodities. But here we are talking about *real* prices of mineral commodities, that is, prices of mineral commodities *relative* to the general price level.

What is the mechanism through which monetary policy influences real commodity prices? An increase in real interest rates reduces the demand for storable commodities, or increases the supply, through a variety of channels:

- by increasing the incentive for extraction today rather than tomorrow (think of the rate at which oil is pumped);
- by decreasing firms' desire to carry inventories relative to what they would otherwise be (think of oil inventories held in tanks)
- by encouraging speculators to shift out of spot commodity contracts, and into treasury bills.

All three mechanisms work to reduce the market prices of mineral commodities, as happened when real interest rates were high in the early 1980s. A decrease in real interest rates, as happened during 2001-2004, has the opposite effects -- raising commodity prices by decreasing the incentive for extraction, lowering the cost of carrying inventories, and encouraging speculators to shift into commodity contracts.

This approach can be supported both by theory and by historical statistics. The theoretical model is the same as Rudiger Dornbusch's famous theory of exchange rate overshooting, with the price of commodities substituted for the price of foreign exchange. The deep reason for the overshooting phenomenon is that prices for mineral and agricultural products adjust rapidly, while most other prices adjust slowly. The process can be summarized as follows. A monetary contraction temporarily raises the real

interest rate (whether via a rise in the nominal interest rate, a fall in expected inflation, or both). Real commodity prices fall. How far? Until commodities are widely considered “undervalued” -- so undervalued that there is an expectation of future appreciation (together with other advantages of holding inventories, namely the “convenience yield”) that is sufficient to offset the higher interest rate (and other costs of carrying inventories: storage costs plus any risk premium). Only then are firms willing to hold the inventories despite the high carrying cost. In the long run, the general price level adjusts to the change in the money supply. As a result, the real money supply, real interest rate, and real commodity price eventually return to where they were originally.

The simplest way of demonstrating statistical support for the theory is to show the historical correlation between the short-term real interest rate and a real index of commodity prices. The correlation is statistically significant over the period 1970-2003, regardless whose commodity price index one looks at: Goldman Sachs, Moody’s, or Reuters. (See <http://ksghome.harvard.edu/~jfrankel/CP.htm>. Or the accompanying graph.)

[GRAPH HERE]

The Federal Reserve Board disagrees with the view that commodity prices reflect monetary policy. For example, Governor Ben Bernanke, in an October 31 speech rejected the overshooting model, pointing out that prices of oil and other commodities are notoriously poor predictors of the general inflation rate.

The Fed’s sensitivity is in a sense understandable. It is worried that if the overshooting interpretation of current high commodity prices is right, it might imply that expectations of inflation have been rising. But the sensitivity is probably not necessary. The decline in real interest rates relative to 2001 has consisted primarily of a fall in nominal interest rates, rather than a rise in expected inflation.

It bears repeating that lots of other things beyond real interest rates influence commodity prices. One reason that oil prices have been high recently may be that producers in the Persian Gulf have reached a limit on how fast they can or will exploit their resources. (There is an intriguing claim that world production may finally be peaking in this decade, due to finite reserves, in the same manner that oil geologist M.King Hubbert correctly predicted that US oil production would peak in 1970. But premature claims of a global peak have been made many times.) In any case, oil capacity is now constrained because infrastructure investments have lagged behind. And political instability contributes to feared supply disruptions in the Middle East, Russia, and Venezuela. Other individual commodities are influenced by other factors of their own (political disturbances in other countries, weather, new technologies, etc.). Such effects in individual commodity markets partially average out when looking at a basket average of commodity prices, which is one reason to look at aggregate indices.

One implication of the overshooting view is that, as the Federal Reserve continues in 2005 to raise short-term interest rates, moving them back toward a neutral setting, this could eventually dampen real commodity prices. Call it part of the unwinding of the “carry trade.” So it is not just real estate, junk bonds, and emerging market debt that are vulnerable. Commodities are too.

Jeffrey Frankel is James W. Harpel Professor at Harvard University's Kennedy School of Government. He is also a member of the NBER Business Cycle Dating Committee, which declared the start and end of the 2001 U.S. recession.

