

Are Commodities A Sensitive Barometer Or A Broken Clock?

This being the time of year when truths are held to be self-evident, let's move in the opposite direction and challenge some of the more common ones linking the prices of industrial commodities with macroeconomic activity. The first straw dog easily set ablaze by the torch of liberty is that real commodity prices rise over time. Quite the opposite: The inflation-adjusted price of all manner of physical commodities is lower, and often significantly so (see "Next Civilization, No Commodities," July 2001). Moreover, and of great importance to global terms of trade, the economic welfare of primary commodity producers always declines relative to the welfare of their industrial and post-industrial customers.

The second and third myths ripe for grilling on holiday barbecues are that exchange-traded commodities represent the universe of economically sensitive commodities, and that their greatest systemic risk can be represented by an index created therefrom much in the same way the S&P 500 can proxy for the systemic risk of equities. In reality, none of the three commodity indexes supporting a family of derivative securities match each other very well in composition or behavior, (see "The Money's Got To Go Somewhere," April 2002) so it is difficult to ascertain exactly what commodities' systemic risk is.

The linkages between physical commodities, financial markets and the economy in general lack the simple causalities craved by traders (see "It's Not The Economy, Stupid," March 2004). For example, stronger economic growth should increase demand for many goods and therefore lead to higher commodity prices, but history is ambiguous about the next step, an increased supply response and corresponding price pressure. In fairness, the opposite often is true whenever a short-term disruption in the economic outlook, such as September 11, 2001 or the October 1987 stock market crash, puts downward pressure on commodity prices.

The Measuring Stick

A reliable metric – a word often bandied about during the 1990s tech stock bubble – of the relationship between the economy and the prices of industrial commodities would be useful. One of the more interesting derivations from both chaos theory and quantum mechanics is the observed measurement of something is in turn a function of the measuring device used. Heisenberg's Uncertainty Principle holds you cannot know both the location and the velocity of a particle exactly because the act of observing one aspect changes the other.

Chaos theory has the Seacoast Paradox. If you set out to measure the length of the West Coast, for example, with a mile-long ruler you will arrive at a given answer. Cut the ruler in half, and you will get a longer answer, as the shorter ruler will be able to measure smaller deformations in the coastline. Each successively shorter measuring stick will produce a longer coastline until you reach the quantum level, at which point your answer will be at an indeterminate limit.

As an aside, both of these phenomena condemn market forecasting, regardless of technique, to ultimate failure: The act of observing a price requires the interaction of a buyer and seller to produce that price, which in turn changes the relationship between the market's price and its underlying economic value. The granularity of price observation, the tick size, determines the precision with which we can measure a market, but it also determines the bid/ask spread and other aspects of trading cost.

A Better Mousetrap?

Let's compare two indexes with vastly different construction and purpose, the Journal of Commerce-Economic Cycle Research Institute's Industrial Commodity Price Index (JOC-ECRI) with the more-familiar Commodity Research Bureau's futures price index (CRB). The CRB is used for purposes of comparison instead of either the Goldman Sachs Commodity Index (GSCI) or the Dow Jones-AIG index (DJ-AIG) by virtue of its longer history; the latter two indexes do not have histories longer than the early 1990s, while the CRB extends back to 1956. As a general comment, the GSCI is weighted heavily toward energy, the CRB more toward agricultural commodities, and the DJ-AIG is more equally weighted.

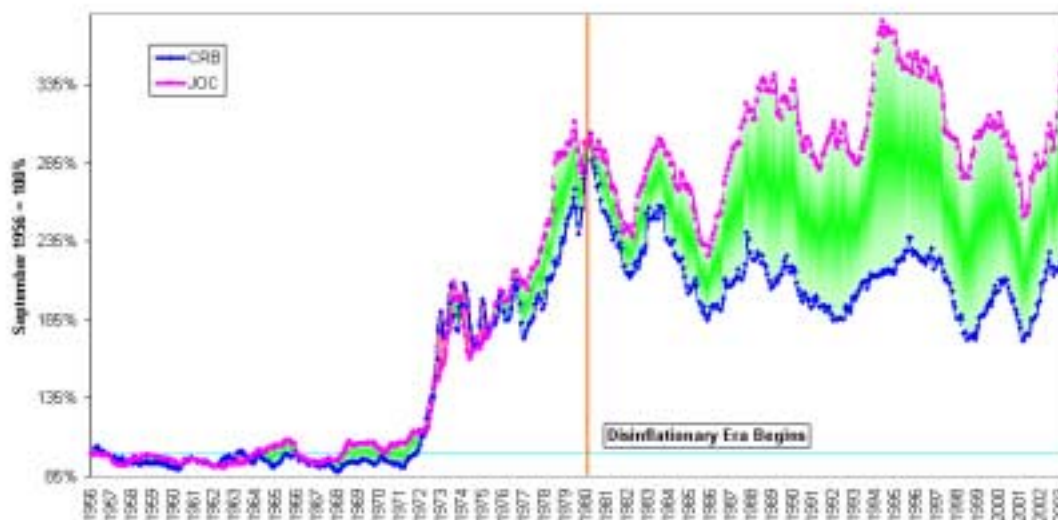
For the sake of completeness, the composition of all four indexes is depicted below, with the three overlapping commodities of copper, cotton and crude oil broken out separately.

JOC-ECRI	CRB	GSCI	DJ-AIG
Copper	Copper	Copper	Copper
Cotton	Cotton	Cotton	Cotton
Crude oil	Crude oil	Crude oil	Crude oil

Aluminum	Cocoa	Aluminum	Aluminum
Benzene	Coffee	Brent	Cocoa
Burlap	Corn	Cocoa	Coffee
Ethylene	Gold	Corn	Corn
Hides	Heating oil	Feeder cattle	Gold
Lead	Lean Hogs	Gasoil	Heating Oil
Nickel	Live cattle	Gold	Lean Hogs
Plywood	Natural gas	Heating oil	Live Cattle
Polyester	Orange juice	K.C. wheat	Natural Gas
Red Oak	Platinum	Lead	Nickel
Rubber	Silver	Lean hogs	Silver
Steel	Soybeans	Live cattle	Soybean Oil
Tallow	Sugar	Natural gas	Soybeans
Tin	Wheat	Nickel	Sugar
Zinc		Orange juice	Unleaded gasoline
		Platinum	Wheat
		Silver	Zinc
		Soybeans	
		Sugar	
		Unleaded gasoline	
		Wheat	
		Zinc	

The two indexes matched each other closely between September 1956, the CRB's start, and December 1980. Paul Volcker's restrictive monetary policies and the expectation of tax cuts under the incoming Reagan administration began the disinflationary era we have been living in since. At that point, the CRB index broke, and despite a few attempts to move higher since, it has never regained or even approached its early 1980s levels.

We Were Young Once, And Comparable



However, the JOC-ECRI index continued to move higher, albeit erratically. Its eventual peak, in September 1996, came well before either the Asian crisis of 1997-1998 so disruptive to world trade or the post-bubble recession of 2001. No serious claim can be made the JOC-ECRI index somehow anticipated either event. However, with its rebound between the official end of the recession in November 2001 and the December 2003 has been a spectacular 41.8%; a claim here of commodity prices anticipating either recovery or at least no deeper recession is credible.

Markets Matter

The divergence of the two indexes at the onset of disinflation is no accident. Many of the commodities in the CRB index are produced in countries heavily dependent on commodity exports for their national revenue and export earning streams. Producers cannot add value to these commodities; incremental revenue in the absence of a supply or demand shock comes simply from increased supply. In such an environment, the nominal price can rise only if expected inflation exceeds the carrying cost of the commodity. More important, producers often are more anxious to hedge the downside risk of these commodities as buyers are to hedge the upside risk. This makes them a natural for futures markets - and for inclusion in the CRB index.

Many of the JOC-ECRI index members, on the other hand, can rise in both price and economic value along with economic growth. The base metals, steel, benzene, ethylene, burlap and plywood all have obvious industrial uses, as does polyester. A more important consideration for this group is the multiplicity of grades in products such as steel and the concentration of hedge demand on the buy side. They have not been, as a rule, good underlying assets for exchange-traded futures.

It should be noted in fairness, however, that certain elements of the JOC-ECRI index are exchange-traded. Aluminum, lead, nickel, tin and zinc all are traded on the London Metals Exchange, and the LME has discussed a contract on hot rolled steel coil. Rubber is listed on the Tokyo Commodity Exchange, and the Chicago Mercantile Exchange tried listing an oriented strand board (plywood) contract. Hides, burlap, benzene, ethylene, tallow, polyester and red oak all lack futures contracts anywhere.

Intermarket Linkage

Do familiar long-term intermarket relationships (see "Trade A Sympathetic Market, Get Sympathy," February 2003) still apply if the JOC-ECRI index is used as the proxy for commodity prices? And, more important, do any of these intermarket relationships represent economic phenomena of underlying constancy, or are they simply fleeting artifacts of market fashion?

Consider the markets' behavior throughout the second half of 2003. We had simultaneous rallies in gold, stocks, bonds, physical commodities and foreign currencies. Such a constellation would have been unthinkable in the late 1980s, when bonds and commodities were assumed to have an inverse relationship, or during much of the 1990s, when stocks and bonds were assumed to move opposite one another.

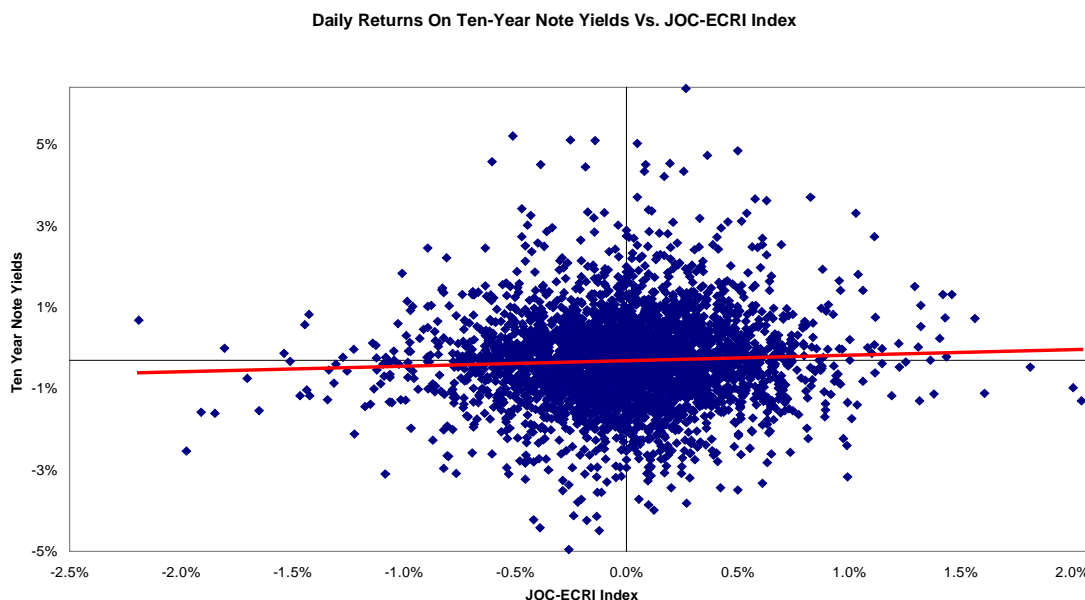
Are we to conclude from these divergences there are no laws behind intermarket relationships? Hardly: A law may exist and be operating even though its effects are being overwhelmed at the moment by something else. For example, the law of gravity continues to operate on you while you are in an airplane.

The same holds true in markets. You have certain primary colors, irreducible factors as unrelated to one another as you can get in an economy, such as monetary policy, credit demands and energy prices, which can be mixed together to give us the color blends of the moment in both market and the economy. Sometimes certain of these primary colors are overwhelmed by the weight of the others in the mix, but they and their effects have not disappeared.

Updating Commodities' Effects

The analysis offered in February 2003 used the CRB index as the proxy for commodity prices, which may have explained why the observed statistical effects of commodity prices were so weak. Now let us replace the CRB with the JOC-ECRI index. A long data sample, daily observations back to September 1988, is used in all charts below.

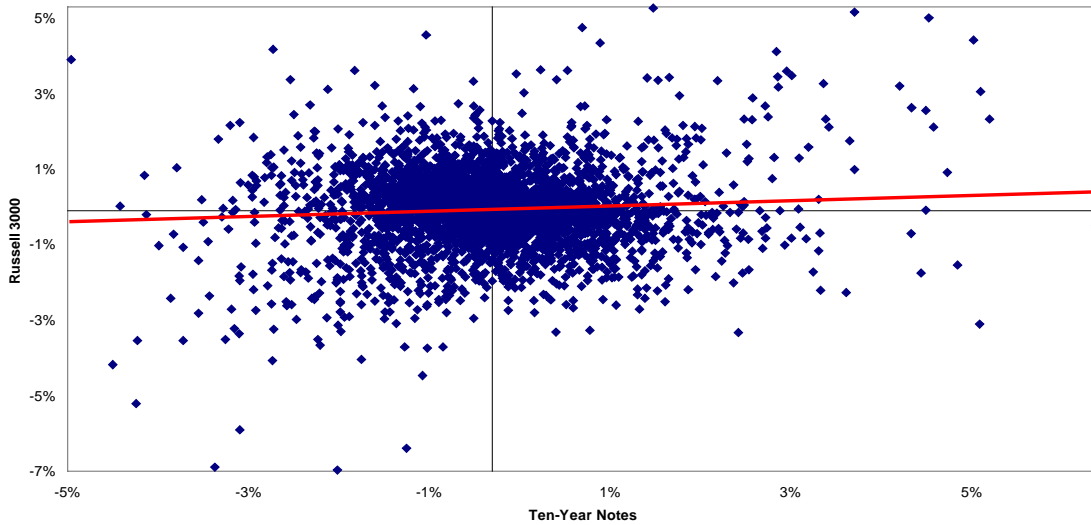
The inverse relationship between commodities and bond prices, does in fact appear to exist, albeit weakly. Returns on ten-year note yields, which move inversely to prices, have a positive and statistically significant (T-statistic of 2.96 on the beta coefficient; a T-statistic of 1.96 is a 95% confidence interval) relationship with daily returns on the JOC-ECRI index.



The second relationship, that of bonds and the stock market, is completely inverted from the positive one familiar to all who traded during the 1980s. Returns on the broad-based Russell 3000 index have a positive and statistically significant (T-statistic of 4.63 on the beta coefficient) relationship to returns on ten-year note yields.

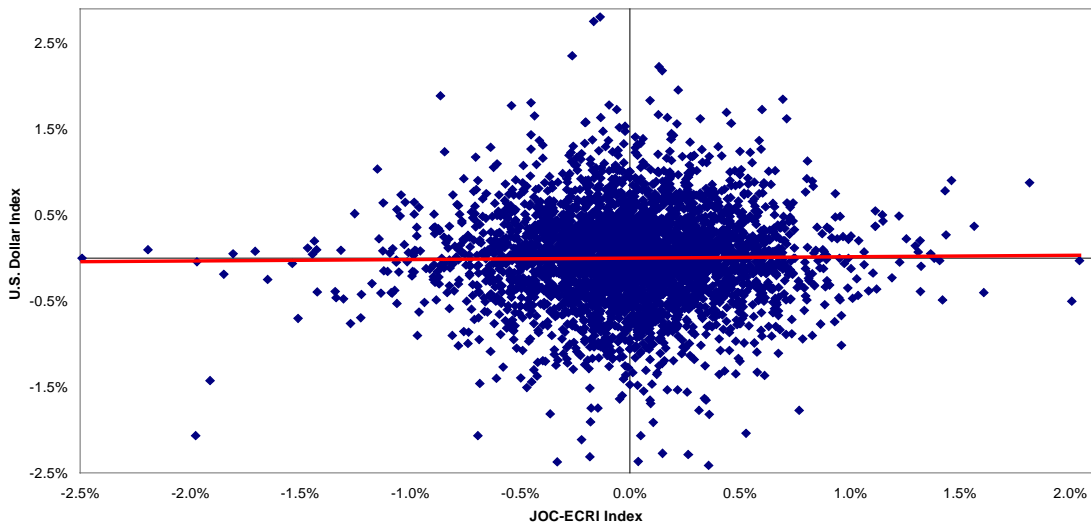
This relationship has been in force since the early 1990s, but it is not elemental: Stocks are discounted earnings, and this observed relationship should not be construed as stocks benefiting from higher interest rates. It can be construed as expected earnings have grown faster than interest rates over this observation sample.

Daily Returns On Russell 3000 Vs. Ten-Year Notes



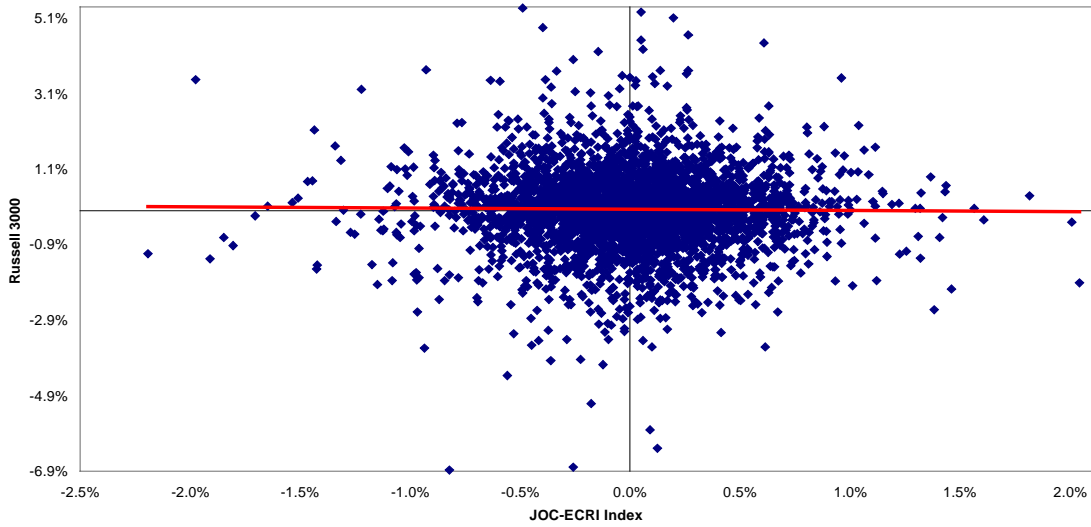
A third relationship, that of the JOC-ECRI index to the dollar, does not have a statistically significant (T-statistic of 0.69 on the beta coefficient) relationship. This does not mean that there are not individual commodities, such as gold, with a notably inverse relationship to the dollar, but that industrial commodities as a group are not driven by dollar strength or weakness.

Daily Returns On Dollar Index Vs. JOC-ECRI Index



Finally, are stock returns a function of industrial commodity prices? The mind aches to say yes; after all, you might assume that a strong economy would push both stocks and commodities higher, or you might assume that higher commodity prices squeeze profit margins and would push stocks lower. No one wins this tug-of-war: The beta coefficient of (0.91) is statistically insignificant.

Daily Returns On Russell 3000 Vs. JOC-ECRI Index



At the end of all this, we are left with the conclusion that industrial commodity prices have a weak and inverse relationship with bond prices. That is it. While it might be fun or interesting to draw broader conclusions, they simply are not supported by the data in the same way we had to conclude in March that the relationship between the economy and the financial markets was surprisingly non-existent. Will this stop anyone, anywhere, from using any of these relationships in a daily commentary? Not a chance.