

## The Myth of “Commodities”

Most of us would describe ourselves as skeptical of self-fulfilling prophecies. If true, they imply a lack of free will. Who wants to be flotsam being swept in on the tide of life?

Many people, apparently: How else can we explain the manic desire by institutional investors - to the tune of \$40-50 billion or so - to gain “exposure” to commodities not by actually doing their homework on individual commodity markets but by falling headlong into an index? The temptation to join them and buy a long-only commodity index fund is extreme, but it should be resisted.

We have come a long way in our attitudes toward indexation since Burton Malkiel published the now-classic *A Random Walk Down Wall Street* in 1973. At first, a willingness to accept just the market’s return was seen as a celebration of mediocrity and somewhat un-American. We now have reached the point where all investment managers are benchmarked to indices and must prove their worth not so much by making money for their investors - that is called “absolute return investing;” thanks for asking - but by beating some arbitrarily chosen index.

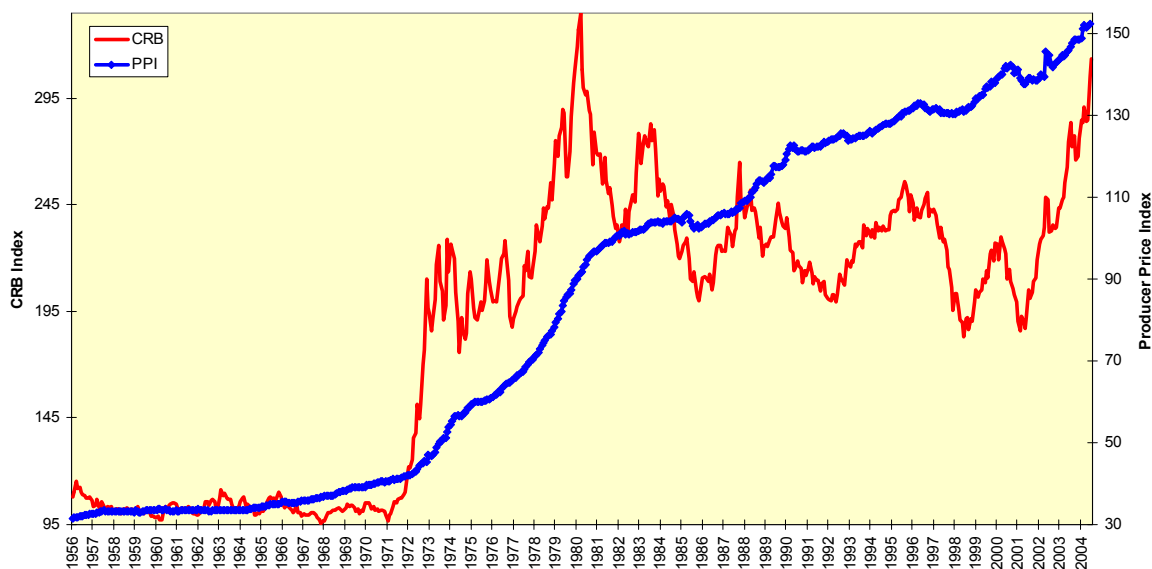
This may be fine for stocks and to a far lesser extent for bonds. Truckloads of academic research have been diverted from better use as landfill to demonstrate how as much as 80-85% of the return from stocks derives not from the stock-picker’s skill but simply from movements in the index. And in the realm of self-fulfillment, the mechanics of index arbitrage make this so: The stocks included in index futures and exchange-traded funds rise and fall as part of the index when these instruments are bought and sold irrespective of company fundamentals.

### Primal Scream

But what may be so for stocks is manifestly untrue for commodities. Do commodities exhibit the properties of an asset class such as identifiable primal factors such as interest rates, the yield curve, expected earnings or rental values capable of exerting a statistically significant effect on prices each and every time? No, commodities lack consistent and common responses to any and all of these factors including, surprisingly, inflation.

The long-term relationship depicted in Chart 1 confirms inflation to be a fact of life; the only question is how fast it will rise. No such statement can be made about the long-term behavior of commodities, and with good reason. Commodities are used as factor inputs into processes such as manufacturing. If their real prices do not decline over time, processors will reduce their consumption and seek substitutes. This simple dynamic mandates a long-term decline in real commodity prices.

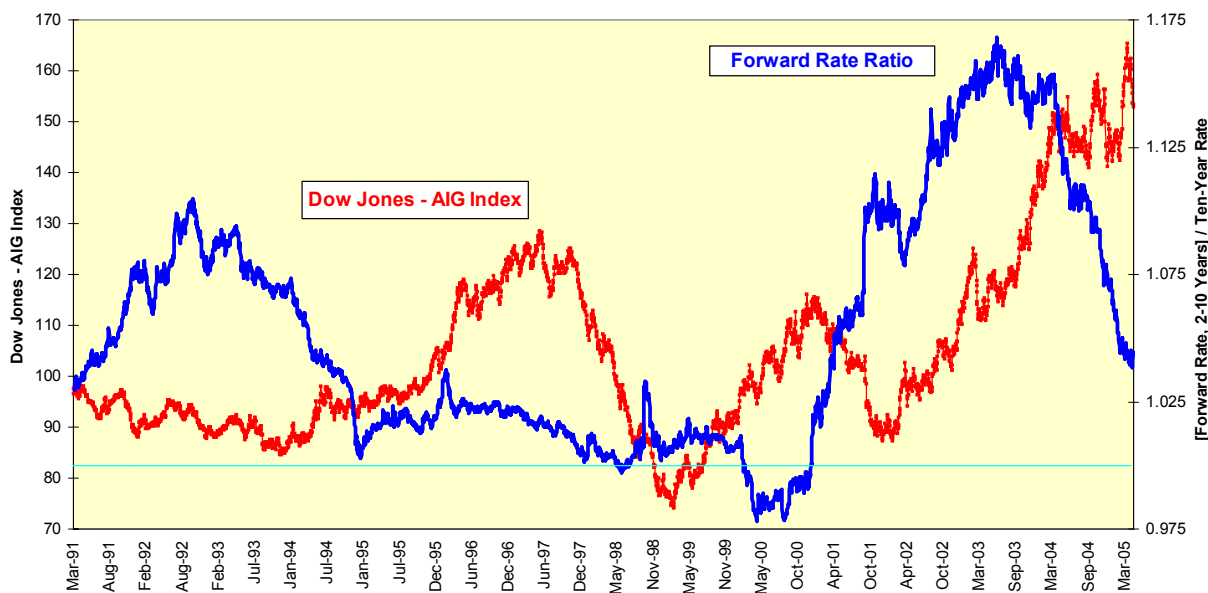
Chart 1: Is The CRB An Inflation Hedge?



We could extend the exercise regarding inflation to the expectations for growth and inflation embedded in the yield curve. We can measure the shape of the yield curve by taking the ratio of the forward rate between two and

ten years - the rate at which we can lock in borrowing for eight years starting two years from now - to the ten-year rate itself. The more this forward rate ratio (FRR, seen in Chart 2) exceeds 1.00, the steeper the yield curve and thus the greater the expectations for both future economic growth and inflation.

Chart 2: Yield Curve And Commodities



If commodity prices responded consistently to inflationary and growth expectations, we could see a clear and quantifiable relationship between commodity prices, here measured by the Dow Jones-AIG index, and the FRR. There is none prior to the Federal Reserve’s historic rate-cutting campaign between 2001 and 2004. This grand social experiment pushed the FRR to its highest reading ever, but it took more than a year and one-half for commodity prices to accelerate in response. The FRR has been declining at a rapid pace since the spring of 2004, but commodity prices have yet to respond.

A relationship must be consistent in its effects to be classified as a primary factor; it cannot work just under the conditions and time segments supportive of your argument. If, for example, the prices of Treasury bonds rose along with yields, we would be quick to question whether interest rates were part of a law about bonds’ behavior. As any scientist would note, results must be reproducible to be valid.

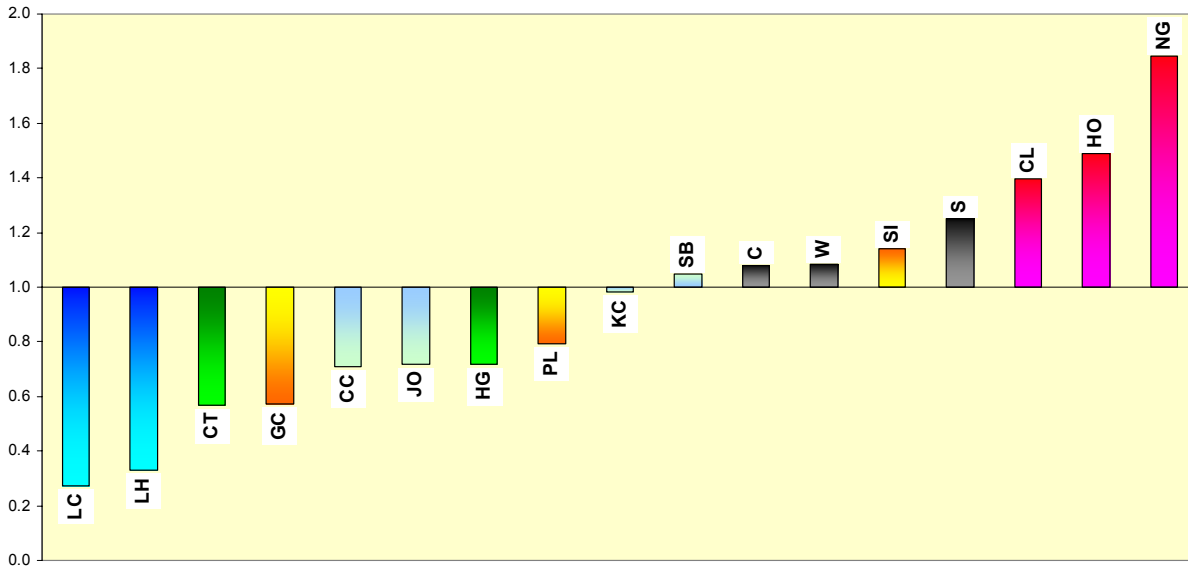
**Common Behavior**

If commodities were indeed a true asset class, we should expect to find positive and stable covariance, or related movement, of returns amongst members of an index: A rising tide should lift all boats, not just some boats, and the degree to which the various boats rise and fall together should be constant over time. In addition, we should expect the relationship between various commodities in an index to have “betas,” or volatilities relative to the index, near 1.00. Think of these betas as classes of competition such as weight classes for wrestlers. If some members of an index are consistently more or less volatile than the index, then it is a mistake to group them together.

The betas of the 17 components of the CRB index calculated over the 1983-2005 period, data permitting, and presented in Chart 3, indicate a wide divergence in commodity volatility. The commodities are grouped into six sub-indices by CRB. They are color-coded here for ease of group identification. The groups and their members are:

<u>Sft</u>	<u>Grn</u>	<u>Eng</u>	<u>Liv</u>	<u>Pre</u>	<u>Ind</u>
Coffee (KC)	Corn (C )	Crude Oil (CL)	Live Cattle (LC)	Gold (GC)	Cotton (CT)
Sugar (SB)	Soybeans (S )	Heating Oil (HO)	Lean Hogs (LH)	Silver (SI)	Copper (HG)
Cocoa (CC)	Wheat (W )	Natural Gas (NG)		Platinum (PL)	
Orange Juice (JO)					

**Chart 3: Betas of CRB Components  
1983-2005**



Please note how the 3 energy commodities, crude oil, heating oil and natural gas, all have betas of 1.40 or higher, which is to say they are 40% more volatile than the index as a whole. At the other extreme are the two livestock contracts, live cattle and lean hogs. Their betas both a less than .33, meaning they have only one-third of the CRB index' volatility.

At a more basic level, the question why anyone should wish to trade livestock and energy together is unanswerable. They have little in common: The energy commodities are extracted from the ground and are non-renewable; livestock is wholly renewable once the animals' consent has been obtained. They have no commonality of production cycles, of demand, of seasonality or of anything else recognizable to an economist. No plausible argument for a price relationship between the two groups can be made. And yet they are lumped together as "commodities."

The degree to which how little commodities are related to one another can be illustrated with a correlation matrix of returns going back to January 1983; the data were obtained from the CRB-Infotech CD-ROM. A correlation matrix of weekly average cash market returns for the current members of the Reuters-CRB index from 1983 onwards where data are available is presented below. Cash markets are used to avoid the discontinuities associated with futures markets. Negative correlations are highlighted in red font on a yellow background; positive correlations in blue font on a green background. The bottom row presents the same beta of each commodity against the CRB as seen in Chart 3; betas less than one are red-on-yellow, while betas greater than one are blue-on-green.

Correlation of Weekly Average Cash Market Returns, Jan. 1983 - Apr. 2005

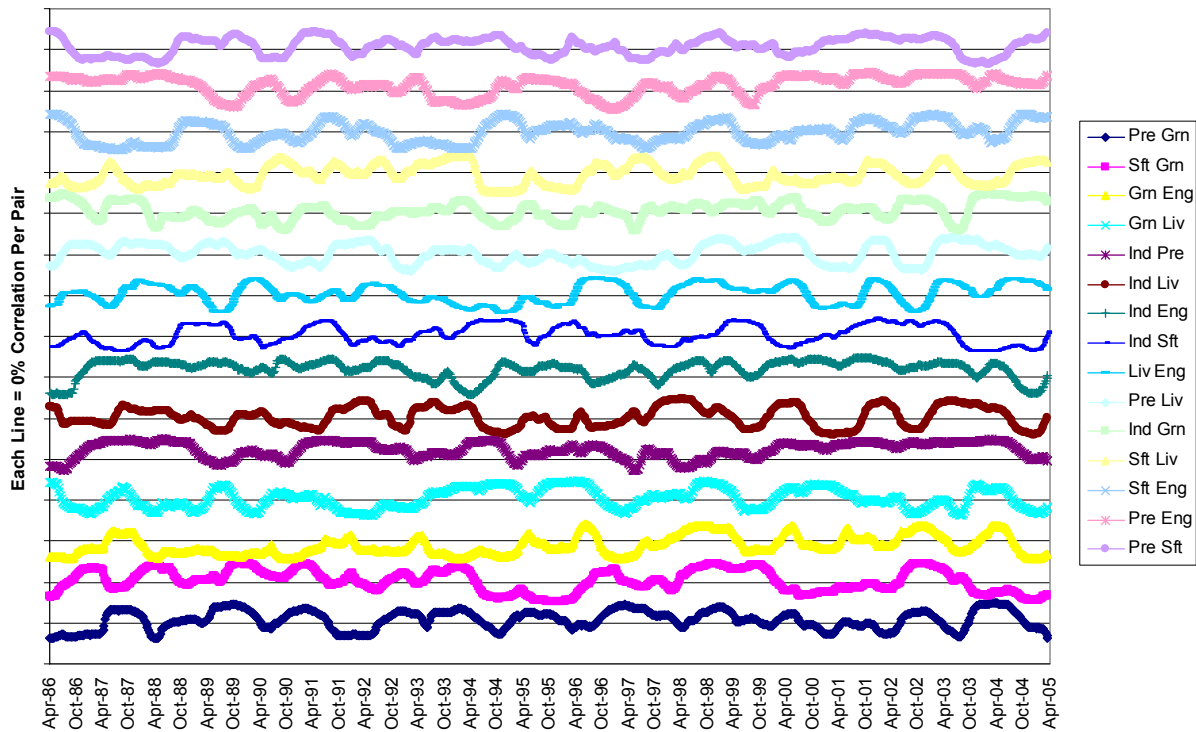
	C	CC	CL	CT	GC	HG	HO	JO	KC	LC	LH	NG	PL	S	SB	SI	W
Corn	1.000																
Cocoa	0.059	1.000															
Crude	-0.003	-0.011	1.000														
Cotton	0.155	0.088	-0.100	1.000													
Gold	0.030	0.119	0.154	-0.025	1.000												
Copper	0.023	0.067	0.055	0.101	0.194	1.000											
Htg. Oil	-0.021	-0.004	0.655	-0.045	0.123	0.040	1.000										
Or. Juice	0.110	0.017	0.045	0.038	0.041	0.022	0.022	1.000									
Coffee	0.083	0.102	0.004	0.038	0.048	0.067	-0.011	0.024	1.000								
Cattle	0.025	-0.018	0.047	-0.010	0.016	0.027	0.085	0.013	-0.011	1.000							
Hogs	0.023	0.011	0.033	0.009	0.032	0.006	0.009	0.015	-0.032	0.129	1.000						
Nat. Gas	0.054	-0.069	0.129	0.016	0.091	0.008	0.206	-0.008	0.080	0.025	0.018	1.000					
Platinum	0.044	0.051	0.132	-0.029	0.490	0.144	0.100	0.044	0.108	0.052	0.007	0.080	1.000				
Soybeans	0.571	0.084	-0.012	0.166	0.132	0.110	0.018	0.095	0.078	0.046	0.016	0.028	0.060	1.000			
Sugar	0.100	0.090	-0.011	0.032	0.079	0.088	0.027	0.031	0.049	0.006	-0.016	0.013	0.083	0.100	1.000		
Silver	0.048	0.136	0.134	-0.003	0.677	0.198	0.098	0.030	0.082	-0.013	0.017	0.081	0.409	0.138	0.118	1.000	
Wheat	0.399	0.085	0.003	0.046	0.102	0.084	0.015	0.077	0.046	0.056	-0.031	0.025	0.121	0.323	0.120	0.093	1.000
CRB Beta	1.078	0.711	1.394	0.569	0.571	0.717	1.489	0.716	0.982	0.273	0.329	1.845	0.794	1.253	1.046	1.142	1.083

If we mask out the obvious correlations, such as those between crude oil and heating oil or between soybeans and corn, we find very few statistically significant correlations. Even pairs posited as correlated by those allergic to due diligence, such as crude oil and gold, have a near-insignificant correlation of .154.

**A Brief History of Time**

Would we see the same low and negative correlations if we used futures-based indices instead of cash markets and rolled the correlation windows forward over time? No: The problem becomes far worse. If we take the fifteen pairs of sub-indices and run the correlations between them over rolling one-year time frames going back to 1985, we see a remarkable story. As correlations range from -1 to 1 and center on zero, we can shift each pair vertically across its own zero line, as is done in Chart 4.

Chart 4: Correlation Histories Of CRB Sub-Indices  
One-Year Rolling Timeframes



If there were any constancy between these pair relationships, a requirement for inclusion together in an index, we never should see any of the pairs oscillate around their zero lines. This would be equivalent to saying that energy stocks and technology stocks sometimes move together and sometimes move opposite each other, but they both are stocks, so we will go ahead and lump them together and declare the whole project good enough for government work.

Why should investors run the other way when they see such a set of patterns? The answer is simple: Negative correlation implies you are trading against yourself. If you want exposure to a hypothetical entity, say commodities, then you should not own assets within that category expected to decline when other members rise. Worse, the data suggest you are not only creating a set of conflicting positions, but that you are creating them in a random fashion. Diversification is a laudable goal for investors, but the literature is notably silent, and with good reason, on whether an index should be internally diversified.

A question any of us should be able to answer without hesitation is, "Do you want to be long/short or don't you?" For the average small trader, this is a simple question to answer. One suspects this is not the case to the institutional investors arriving late to the commodity party; they hated crude oil at \$12, but they love it at \$55. All of their training in conventional assets has been in indexation, and they know they do not want to trade commodity futures in large quantities on a daily basis.

The institutions are guilty of assuming commodities, like stocks and bonds, have natural sources of return capable of generating profits over time. That is why the long-term trend-following strategy in stocks called buy-and-hold works. It does not work in an asset class that does not produce a natural dividend or coupon stream. Institutions also fear short positions in anything. Commodities, as many of you may have noticed, require trading, long and short positions, tender loving care and an occasional verbal threat directed at the screen. Institutions want no part of this.

The institutions also have been told, virtually promised, that they are buying an index uncorrelated to conventional assets, one that offers inflation protection, and one that offers a return on the monthly roll of futures contracts in backwardation (inversion). The uncorrelated part is demonstrable, but so what: Investors and bill collectors want returns, not lack of correlation.

Even the part about harvesting returns effortlessly out of the monthly contract roll, has been disappearing of late as various wolves wait for the institutional lambs to wander by. Patterns, especially those promoted by academics

never observed trading a futures contract in anger in their lives, work until they are recognized. This topic will be addressed next month.

Given these considerations and the absence of index characteristics for commodities, we recommend that anyone wishing to partake in a bullish - or bearish - move in any commodity simply trade that commodity and be done with it. If you want to be long gold or natural gas, then do so. Why bring cocoa and cotton into the equation under the pretense they are somehow related to the topic at hand?