

Trading Strategies in the Current Commodity Market Environment
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When I recently co-edited the book, “Intelligent Commodity Investing” (Risk Books, 2007), a risk-management professional asked me if the title of the book is an oxymoron. This question was posed soon after the Amaranth debacle so perhaps the question is an appropriate one.

This article will argue that one can indeed intelligently invest in the commodity markets and will briefly touch on three approaches, which in turn are drawn from the “Intelligent Commodity Investing” book.

The first two sections of this article will discuss two historically profitable approaches that take into consideration the largely mean-reverting properties of commodity prices. The final section of the article will argue that we are in the midst of a rare trend shift in prices for some commodity markets and will provide some ideas on how to benefit from this shift.

Term Structure as the Primary Driver of Return

Over *very* long timeframes, a number of authors have shown how the term structure of a commodity futures curve has been the dominant driver of returns for individual futures contracts.

In the past, even if *spot* commodity prices declined, there was an additional way that a commodity investor could have a positive statistical expectation of profit, and that was through the “roll yield.”

In order to understand “roll yield,” one must discuss the nature of commodity futures curves first. When a near-month contract is trading at a premium to more distant contracts, we say that a commodity futures curve is in “backwardation.” Conversely, when a near-month contract is trading at a discount to more distant contracts, we say that the curve is in “contango.”

Typically, when there are low inventories for a commodity, its commodity futures curve trades in backwardation. This demonstrates that consumers are willing to pay a premium for the immediately deliverable contract relative to deferred-delivery-month contracts.

When a commodity futures contract is in backwardation, an investor has two potential sources of return. Since backwardation typically indicates scarcity, one source of return is being on the correct side of a potential price spike in the commodity by being long at that time.

The other source of return is roll yield. In a backwardated futures market, a futures contract converges (or rolls up) to the spot price. This is the “roll yield” that a futures investor captures. A bond investor might liken this situation to one of earning “positive carry.”

Nash and Shrayer (2005) empirically demonstrate how over *long* periods of time, the accumulation of roll yields, rather than trends in spot prices, has determined the returns from investing in individual commodity futures contracts.

Figure 1 illustrates how, over a 20-year-plus history, the annualized (total) returns (including interest income) from investing in 21 individual commodities have been very linearly related to the average percentage-of-backwardation for each commodity. The average percentage-of-backwardation, in turn, is mathematically related to the average roll yield, as covered in Till (2007a).

Since the expectation (in the main) is that spot commodity prices mean-revert to the commodity’s cost-of-production over the long-run, spot commodity prices cannot be the driver of return. Instead, the roll yield *has* to be the driver of individual commodity futures returns over a long enough horizon.

Note that the Nash and Shrayer results require a 20-year-plus timeframe in order for their results to hold. Most investors may not be this patient. In Feldman and Till (2006) and in Till (2007b), we examine how long the time horizon needs to be before roll yields (and backwardation) become the dominant explanatory variable for commodity investment returns. This study is confined to the agricultural futures markets since these markets have *continuous* data since the late 1940’s.

We specifically examine the crop futures markets over the period, 1950 to 2004.

We found that roll yield only explains 25% of the variation in futures returns over 1-year time horizons and 40% of the variation over 2-year time horizons. One must extend the evaluation period to five years, and then at that time horizon, roll yield explains 67% of the variation in futures returns, which is illustrated in Figure 2. The significance of these results is that at least under the timeframe and markets studied, if one were to rely on the cumulative effects of roll yield for one’s investment returns, then that investor’s time horizon would have needed to be at least 5 years.

Even a five-year time horizon seems like quite a long time for even the most patient of investors. Are there other opportunities in the commodity markets that rely on mean-reversion and have more reasonable (and shorter) time horizons? The short answer is yes, and the longer answer to this question will be covered in the next section.

Relative-Value Trading Opportunities in Energy and Agriculture

The yearly inventory cycles for most commodities follow a sine-wave-like seasonal pattern. In the agricultural markets, the build-ups and draw-downs of inventory follow the harvest calendar. In the energy markets, the build-ups and draw-downs of inventory follow seasonal demand cycles due to weather.

Figure 3 from Eagleeye (2007), for example, illustrates the seasonal inventory cycle for gasoline.

The mean-reverting nature of inventory patterns tends to be mirrored, on average, by mean-reversion in related commodity futures spreads, which can potentially be exploited by relative-value trading strategies, as covered in Pringle and Fernandes (2007), and which we excerpt from below.

Pringle and Fernandes

Relative-value strategies are basically spread positions that are taken in the expectation that the spread will change due to some fundamental relationship(s) that govern supply and/or demand of one or both spread legs.

Calendar spreads are the simplest and most common of the spreads and involve taking opposing positions in futures contracts for the same commodity such as July heating oil versus December heating oil. Other types of spreads are processing spreads (for example, crude vs. its products), substitution spreads (for example, corn vs. wheat), quality spreads (for example, #2 oil vs. jet fuel), and location spreads (for example, Brent crude vs. WTI crude).

Propane vs. Crude Example

A trader observes that the propane price is on average about 70% of the price of crude oil, but has ranged from 55% to 130%. See Figure 4. Low ratios usually came in the summer and high ratios in the winter. In October, a trader looks at prices 15 months out and sees that propane is trading at 60% of crude in the October/November/December deliveries. He thinks 60% is a good entry point, especially for 4Q, and that it's likely that the ratio will return to 70% at some time during the next year. When this trade is put on, he will buy propane (via swaps or physicals: futures are not tradable) and sell crude futures in the current ratio, that is, 60%. Thus, it will be an equal dollar spread. For every million gallons of propane, he'll sell 600,000 gallons of crude. When the trade is structured this way, the only risk is that the percentage ratio will change, and the amount of gain or loss will be equal to the percentage change applied to the crude price on exit.

Being short crude (or natural gas) is a wild card these days, so, to avoid event risk, one would add a costless collar to the crude leg, buying an out-of-the-money (OTM) call and selling an OTM put. The rationale is that a shock to the crude market could send it skyrocketing, while propane, a small and much more domestic market, would languish. The result could be a collapse in the ratio to an extraordinary low, such as 50%. The long crude call will protect against that.

There is the short crude put, though. This risk should be inherently manageable because the cheaper crude is, the higher the ratio of propane to crude tends to be. Thus, one would expect that a weak crude market would push the ratio in their favor, and that the resultant gains would more than offset any losses that were caused by the short crude put.

Hogs vs. Corn Example

Of the 220 million acres of row crops planted in the US annually, more than 170 million acres are devoted to growing corn, soybeans and wheat. A majority of these crops will be used or processed for the feeding of livestock. Therefore, the price and profitability of protein has a direct correlation with the price of grains.

When comparing corn (C), which is a major feed component of lean hogs (LH), it can be seen that hogs have rallied in the late fourth quarter/first quarter regardless the direction of corn, although their price trends are correlated over a six-month horizon.

An LH/C ratio below 20 signifies lower forward pork production due to compressed profit margins. See Figure 5. Taking the view that protein and pork consumption are fundamentally strong, one potentially good relative-value trade would be to spread LH/C. One would consider timing this trade in combination with the seasonal out-performance of LH to C, scaling into the trade if the ratio remains below 20 in the late fourth quarter.

Investing for the New World Commodity Order

The previous two sections of this article briefly discussed long-horizon and short-horizon strategies that take into consideration the largely mean-reverting nature of commodity prices and relationships.

This is understandable given that the history of inflation-adjusted commodity prices has largely been one of secular decline with a great deal of cyclicalities around this trend.

Over the long sweep of history, though, there have been exceptions. Perhaps the current era will provide another exception to this long historical trend.

For example, the arrival of China on the world economic scene has contributed to the current agri-commodity boom, as covered in Waugh (2007), and which we also excerpt from below.

Waugh

Waugh writes that global-macro commodity investors need to rotate their assets selectively to ensure maximum yield over time. The synthesis of this view for the years to come is that the marked over-performance of crude oil and energy products has more than drained the figurative investment soil of potential, and that industrial and precious metals will give way to a realignment, if not a reversal of fortunes, in favor of agriculture's instruments.

This will be due to the changing terms of world trade, which is inexorably beginning to favor countries and regions formerly characterized as underdeveloped or at best developing. Some of these countries have now become the low-cost highly competitive darlings of outsourcing and 21st century manufacturing; others are becoming the new Olympians of vital foodstuff production. It is only a matter of time before the key commodity inputs that are these countries' essential exports experience the same secular re-pricing that manufactured goods and industrial commodities have undergone for decades, if not generations.

For Waugh (2007), the implication of this global macro view is not only to selectively favor agricultural positions over other commodity markets, but this view also has beneficial implications on the relative currency values of commodity exporters versus importers.

Conclusion

This brief article suggested three approaches for how to benefit from structural opportunities in the commodity markets, drawing from the recently published book, “Intelligent Commodity Investing.”

We noted how over long time horizons, the term structure of a commodity futures curve becomes the dominant driver of return for individual futures contracts. For shorter time horizon opportunities, we discussed mean-reverting commodity spread trades that have approximately seasonal frequencies. The last section of the article noted that history does provide some rare examples of trend-shifts upwards in spot commodity prices, and that perhaps the current era will be another such rare example for agricultural prices.

In future issues of *Commodity Risk*, we will cover the flip side of these return opportunities, namely how to manage the risk inherent in these dynamic markets.

Author’s Note:

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References

Eagleeye, Joseph, 2007, "Risk Management, Strategy Development, and Portfolio Construction in a Commodity Futures Programme," in H. Till and J. Eagleeye (ed) *Intelligent Commodity Investing* (London: Risk Books), pp. 491-497.

Feldman, Barry and Hilary Till, 2006, "Backwardation and Commodity Futures Performance: Evidence from Evolving Agricultural Markets," *Journal of Alternative Investments*, Winter, pp. 24-39.

Nash, Daniel, and Boris Shrayner, 2005, "Investing in Commodities," Morgan Stanley Presentation, IQPC Conference on Portfolio Diversification with Commodities, London, 24 May.

Pringle, Ashmead and Tom Fernandes, 2007, "Relative-Value Opportunities in Energy and Agriculture," in H. Till and J. Eagleeye (ed) *Intelligent Commodity Investing* (London: Risk Books), pp. 313-339.

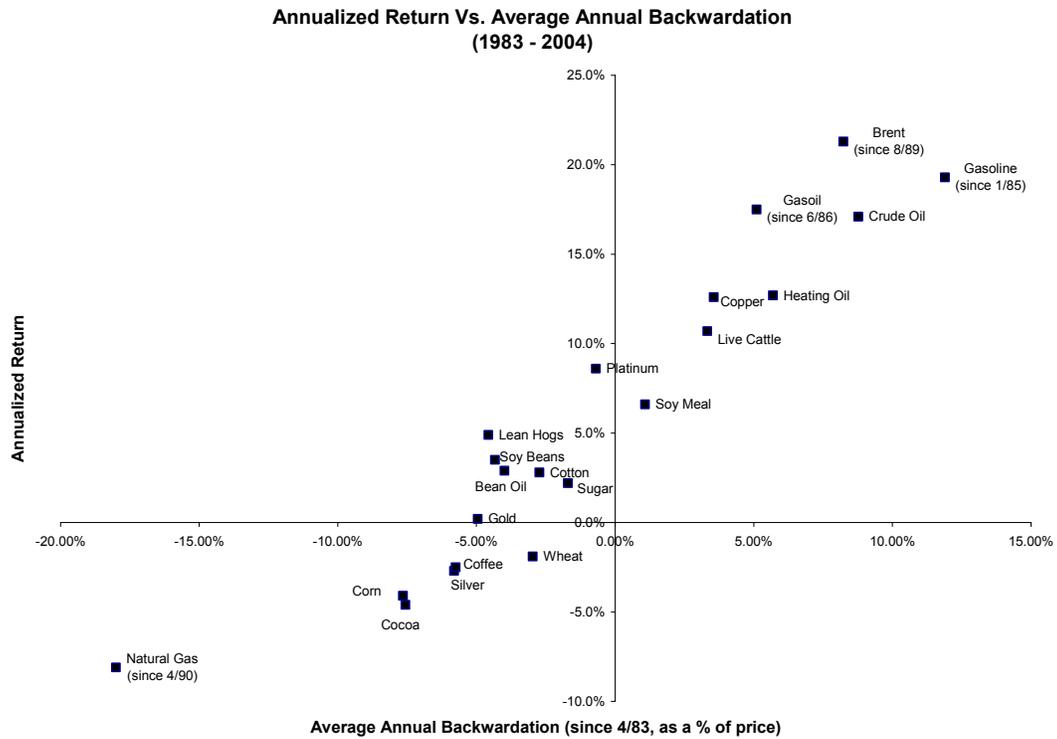
Till, Hilary, 2007a, "Part I of a Long-Term Perspective on Commodity Futures Returns: Review of the Historical Literature," in H. Till and J. Eagleeye (ed) *Intelligent Commodity Investing* (London: Risk Books), pp. 39-82.

Till, Hilary, 2007b, "Part II of a Long-Term Perspective on Commodity Futures Returns: Term Structure as the Primary Driver of Returns," in H. Till and J. Eagleeye (ed) *Intelligent Commodity Investing* (London: Risk Books), pp. 83-93.

Waugh, Colin, 2007, "Collision: Investing for the New World Commodity Order," in H. Till and J. Eagleeye (ed) *Intelligent Commodity Investing* (London: Risk Books), pp. 341-373.

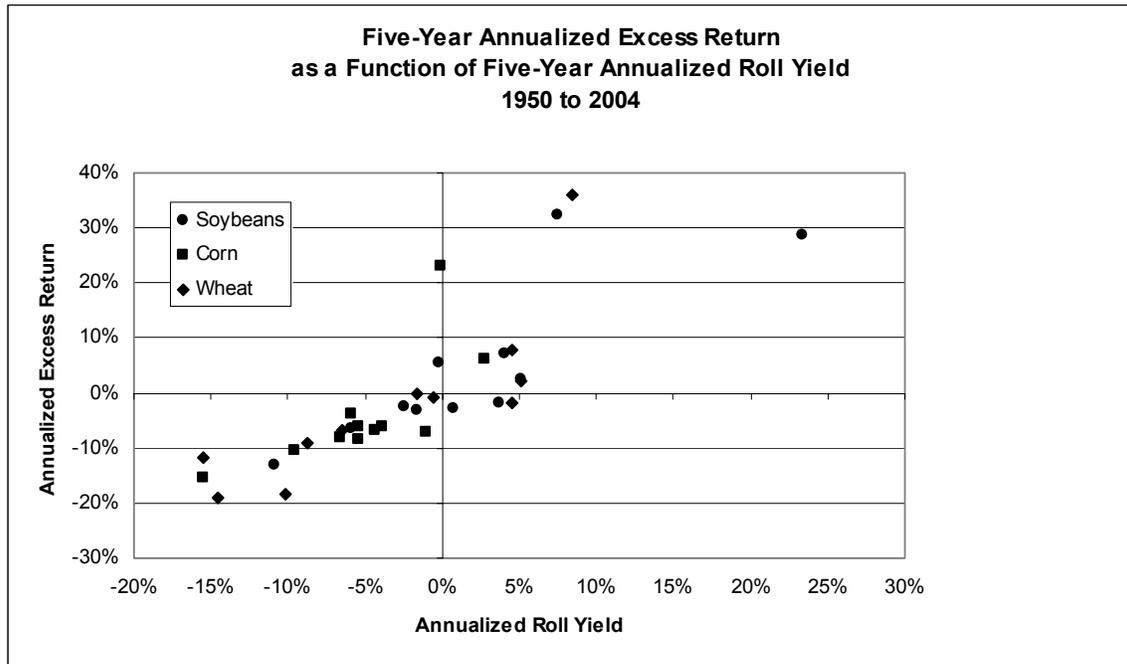
Figures

Figure 1



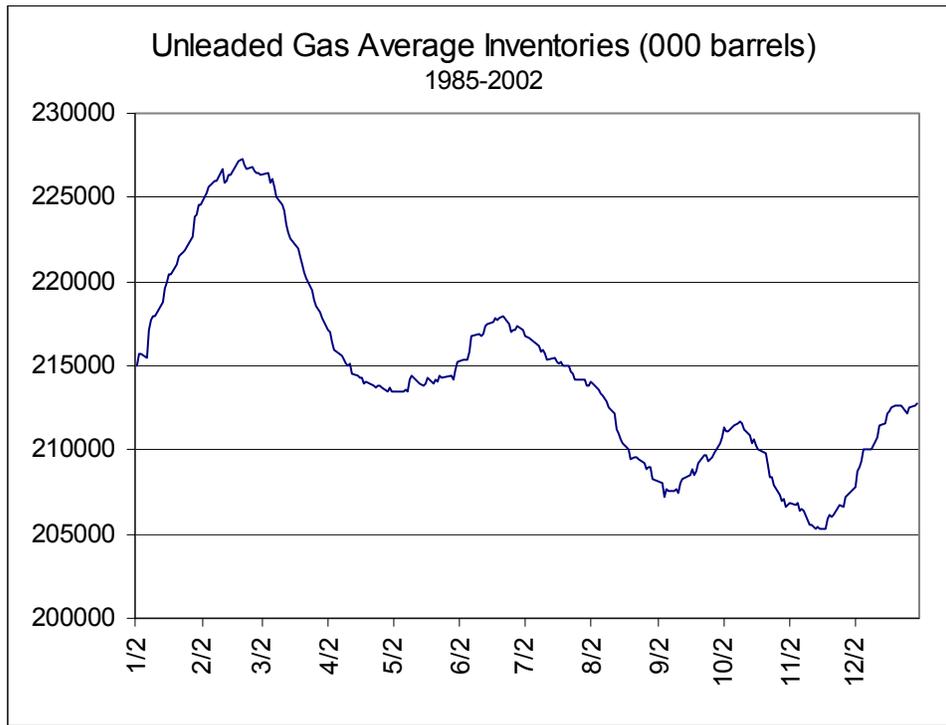
Source: Nash and Shryer (2005).

Figure 2



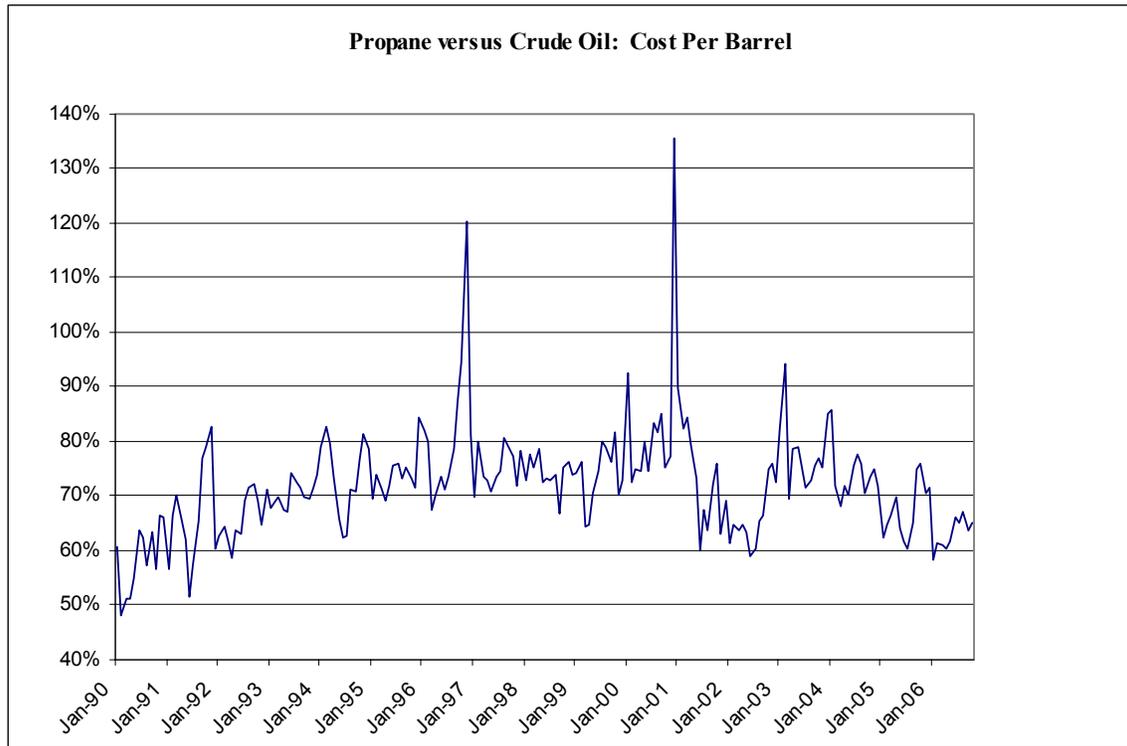
Source: (Till, 2007b).

Figure 3



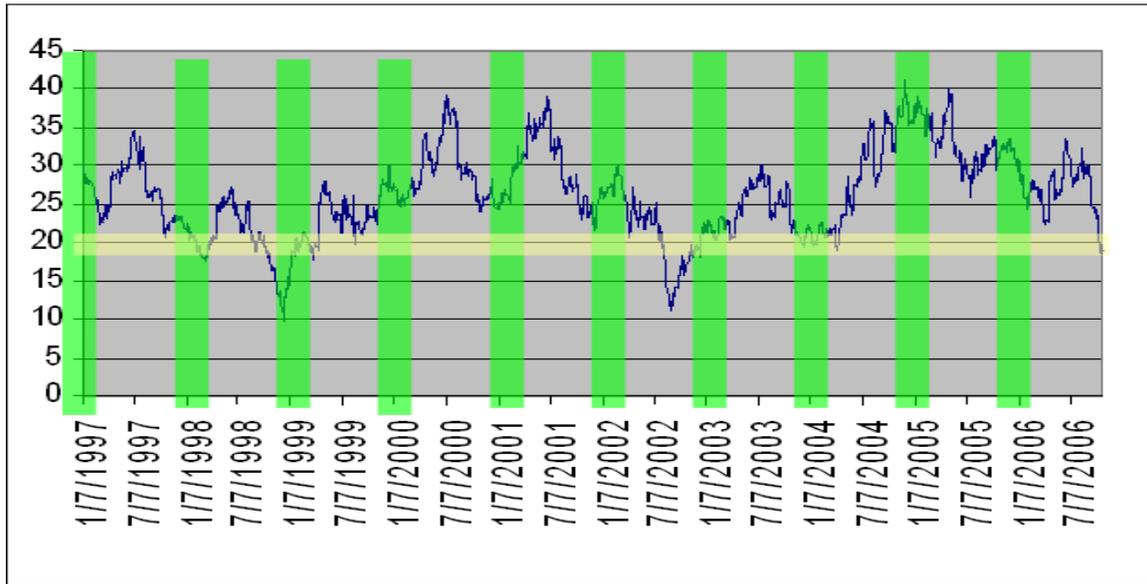
Source: Eagleeye (2007).

Figure 4



Source: Pringle and Fernandes (2007).

Figure 5



Corn to Hogs Ratio (LH/C) Ratio below 20 signifies lower production

Source: Pringle and Fernandes (2007).