

## Due Process For Commodities

*“...Clowns to left of me, jokers to the right  
Here am I stuck in the middle with you ...”*

- Stealer's Wheel

In the last two months, we have taken a look at the stocks of commodity producers (see “The Producers,” *Futures*, June 2002) and of commodity consumers (see “A Consuming Passion,” *Futures*, July 2002). But most economic activity involves facilitation, a fancy term for what used to be called either middlemen or (shudder) brokers. This function was going to be reduced drastically or even eliminated by the Internet and e-commerce, remember? But it is still here and is still vital, and always will be: People do business with people, not with Web sites, and woe to those who forget this simple reality. However, a cruise through the countryside in search of the town with a statue of a broker in the square is likely to be a fruitless venture.

The emerging world of single stock futures will create opportunities for individual investors to engage in commodity-linked equity trades, but along with opportunity comes responsibility: Stocks and commodities serve different economic and financial purposes, (see “Two Sides of Different Coins,” *Futures*, May 2002) and that means we have to understand the microeconomics of the industries linked to our beloved commodity futures.

The commodity-in / commodity-out corporate model – with a commodity defined as a non-differentiated product as well as the underlying for an exchange-traded instrument - characterizes a fairly wide number of firms. Many of these firms are privately held traders, such as Cargill, Koch Industries or Glencore. Others, such as Archer Daniels Midland, are publicly traded but with a substantial percentage of the equity held by partners/managers/employees. Why is this? The volatility of earnings and the operating risks associated with commodity prices and processing margins frequently are in excess of public investors' parameters. The late, great Enron was an example of management trying to disguise the risk of their business from the public. Bankers Trust, since absorbed into Deutsche Bank, offered a similar stomach churn for its investors.

This leaves us with a few small segments, such as petroleum refiners and livestock feeders, to investigate for the links between commodity processors' stocks and related commodity prices. Even here, it is hard to find a pure processing play as many of these operations are integrated vertically into a larger and more diversified entity, preferably with a concatenated name such as ExxonMobil, ChevronTexaco or TotalFinaElf in the petroleum refining business or Tyson Foods in the livestock business.

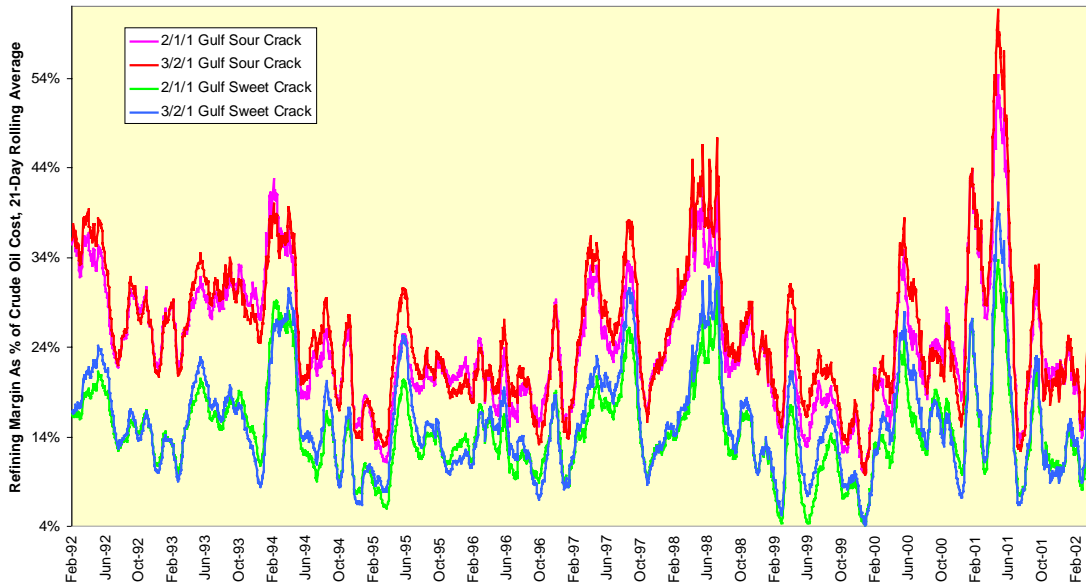
### **A Refined Approach**

Futures traders can be forgiven for thinking the world revolves around their contracts, but the cash market often has different ideas. The crack spread, or refining margin, derived from a combination of a mid-continent contract for West Texas Intermediate crude oil to be delivered ratably through a pipeline over the next month with two New York harbor contracts for heating oil and gasoline does a poor job of representing the complexities of the refining industry.

Let's take two different types of crude oil delivered to the U.S. Gulf Coast, West Texas Sour (WTS) and West Texas Intermediate (WTI), and two different refinery output configurations, a 2/1/1 and a 3/2/1. The term “sour” refers to the higher sulfur content of this class of crude oil; more than 85% of the world's crude oil is sour even though the principal marker crudes, WTI and North Sea Brent, are sweet, or low-sulfur. The NYMEX launched a sour crude oil contract in 1991, and it turned out to be a rousing non-success, the exchange's memorable Sour Power T-shirts notwithstanding.

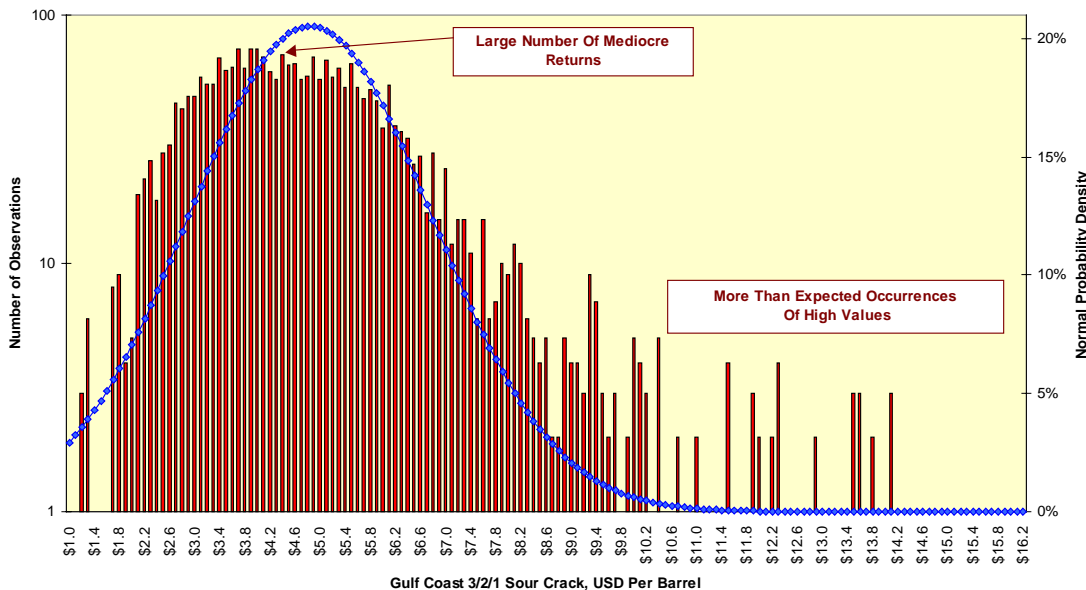
The 2/1/1 turns two barrels of crude oil into one each of heating oil and gasoline, while the 3/2/1 turns three barrels of crude oil into two of gasoline and one of heating oil. The more sophisticated the refinery, the more likely it will run the cheaper to buy, but more expensive to refine, sour crude oil and produce a greater gasoline output. These are the most profitable refining configurations, as seen in “Step On A Crack.”

### Step On A Crack



The 3/2/1 crack spread based on the lower-cost sour crude oil and more exposed to the highly volatile price of gasoline is, unsurprisingly, the widest crack spread and the one most likely to spike higher in price. The bounded floor value and jagged upwards price path of this spread implies an embedded call option within this process spread (see “Think Before You Spread,” *Futures*, April 2001). Any embedded call option within a process stream increases the variability of earnings, which should diminish the price-earnings multiple investors are willing to pay. As option traders are aware, owning any option, whether a put or a call, can be a hit or miss affair.

### Call On The Crack

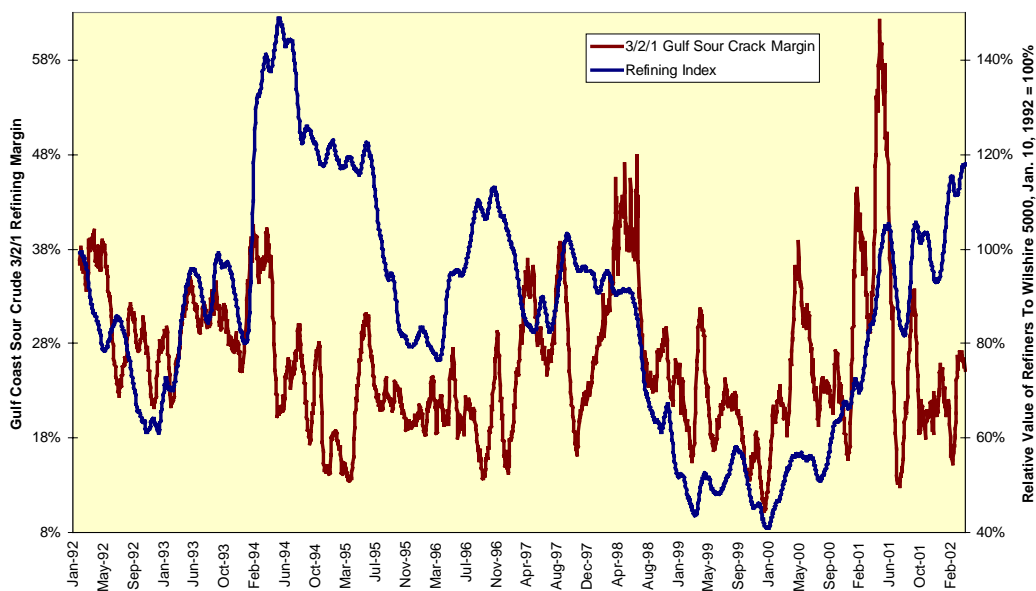


### Pay At The Pump

Any troubles within the energy industry in general and the refining segment in particular are likely to be greeted with mock sympathy – the pantomime sawing away at a violin accompanied by an “awww,” for example - but this behavior is uncalled for on all levels. Anyone who thinks refiners are abusing them has the opportunity to become part of the oppressing class simply by buying the stock. Has this been a winning strategy?

If we take a look at the relative performance of a group of refiners, here Valero, Tesoro, Holly and Frontier, to the Wilshire 5000, we can see a solid trend of underperformance from early 1994 into 2000, a period that witnessed both rising and falling refining margins and rising and falling absolute prices for both crude oil and refined products. Indeed, the refiners' index did not start to outperform the broad market until the broad market itself peaked in September 2000. The large jump in refining profitability in early 2001, the embedded call supposed to make owning any commodity-linked equity worthwhile, was not anticipated by the stocks' collective performance. And, these stocks did not resume their underperformance once refining margins came back down to normal levels in mid-2001.

The Market Turns Skeptical

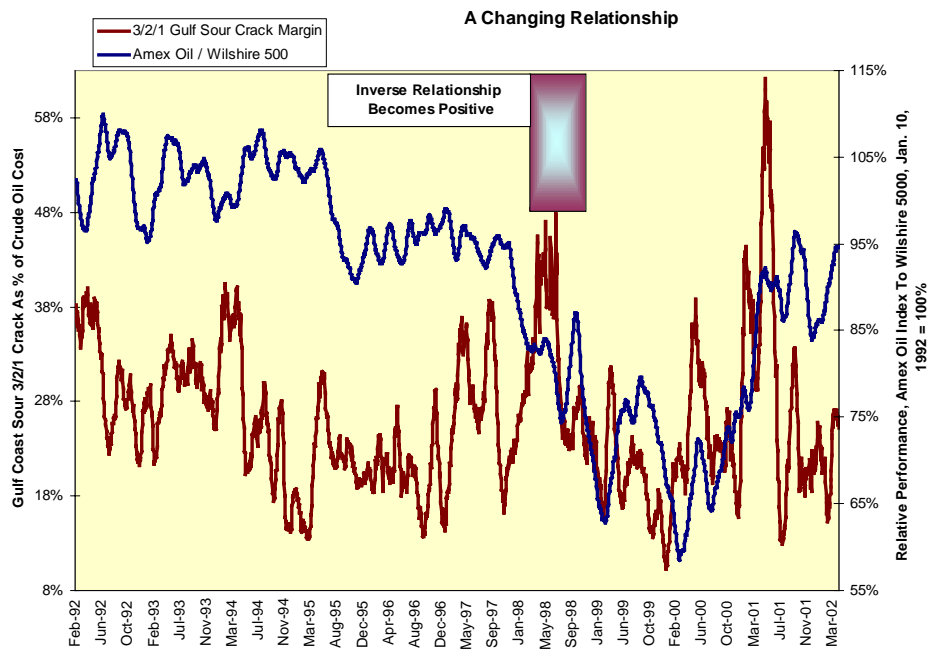


Who, if not the refiners, is capturing the economic rent of stronger margins? We can compare the relative performance of the major integrated oil companies, those who both produce as well as refine crude oil, to the same measure of refining profitability used above. The 14-member AMEX Oil Index, which is price-weighted as opposed to capitalization-weighted, is used as a proxy for the major integrated oil companies.

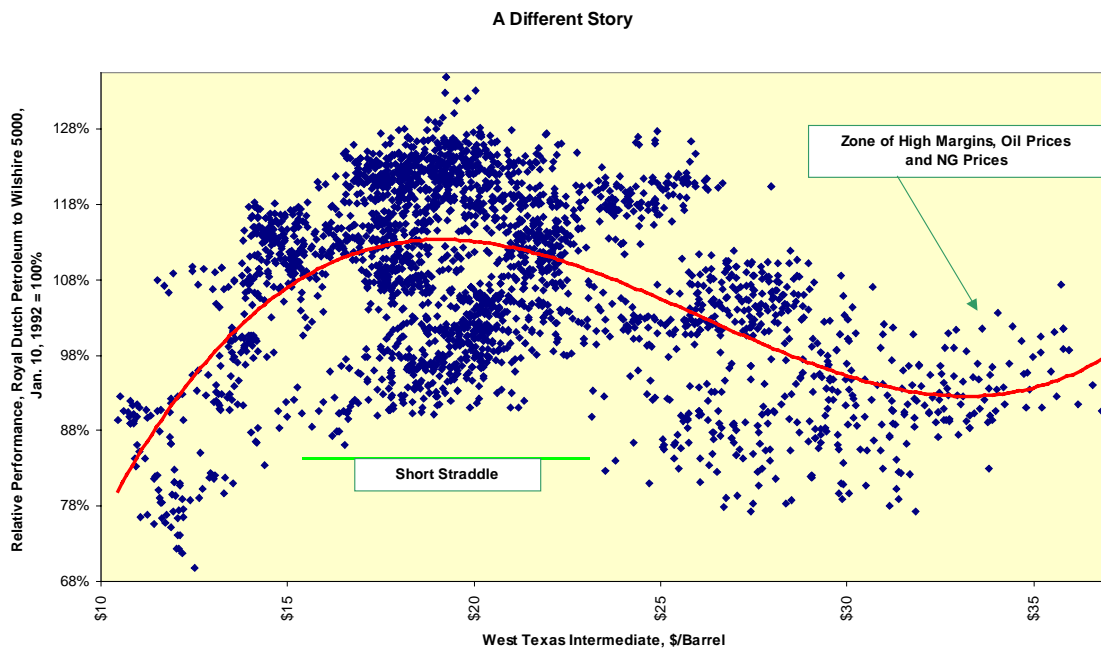
Amex Oil Index	
Members	Weight
ChevronTexaco Corp	13.0%
Amerada Hess Corp	11.4%
TotalFinaElf SA	11.2%
Phillips Petroleum Co	8.9%
Kerr-McGee Corp	8.8%
Royal Dutch Petroleum Co	7.9%
BP PLC	7.5%
Exxon Mobil Corp	6.0%
Unocal Corp	5.6%
Sunoco Inc	5.1%
Occidental Petroleum Corp	4.3%
Marathon Oil Corp	4.3%
Conoco Inc	4.2%
Repsol YPF SA	1.8%

Over the 1992- 1997 period, this index' performance relative to the Wilshire 5000 was somewhat inverse to refining profitability. Then as a wave of consolidation swept the oil industry - BP bought Amoco and Arco, Exxon and Mobil merged, Chevron and Texaco merged - and as crude oil prices fell amidst the Asian crisis and the aftermath, the integrated oils' stocks started to mimic the refining margin more than the wellhead price of crude oil. This

pattern suggests that crude oil producers and vertically integrated companies were able to capitalize a stronger refining sector better than pure refiners alone.



It is important to remember that the relationship is between refining margins, and not crude oil prices, and integrated oil companies. The relative performance of these stocks is a more complex, cubic polynomial function of crude oil prices that suggests an interesting combination of embedded options. As WTI prices, the basis of the main NYMEX contract, fall below \$17 per barrel, the stocks of integrated oil companies, here represented by the U.S. shares of Royal Dutch Petroleum but just as easily by the precursors of today's merged behemoths, underperform. The shares also underperform as WTI prices rise over \$19 per barrel. This suggests that owning an integrated oil company involves owning a short straddle - a short call and a short put - on crude oil near the \$18 level that acted as a swing point for crude oil prices in the 1990s.

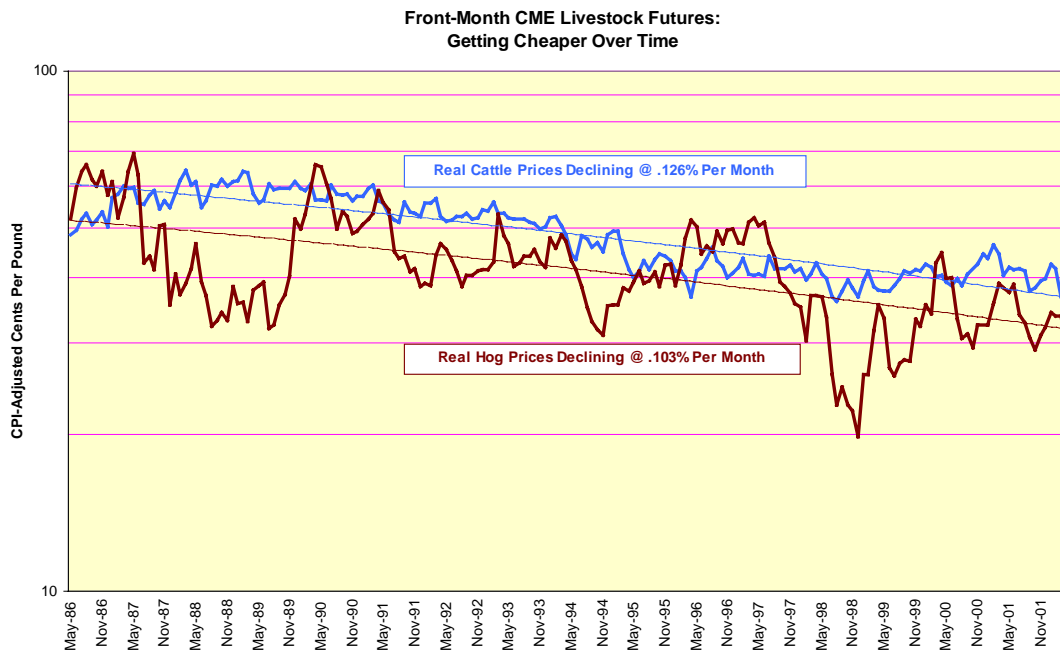


Only at very high prices, those prevailing in 2000 and 2001, during which time both refining margins and natural gas prices were themselves strong, did a positive relationship between Royal Dutch's relative performance and crude oil prices resume.

How should you trade the futures of these firms? With a view toward oil prices: Buy puts on crude oil below \$17, buy calls on crude oil above \$19, and just own the security future outright if prices surge above the \$35 level. Yes, this is a lot to keep in mind, but whoever promised you that trading would be easy?

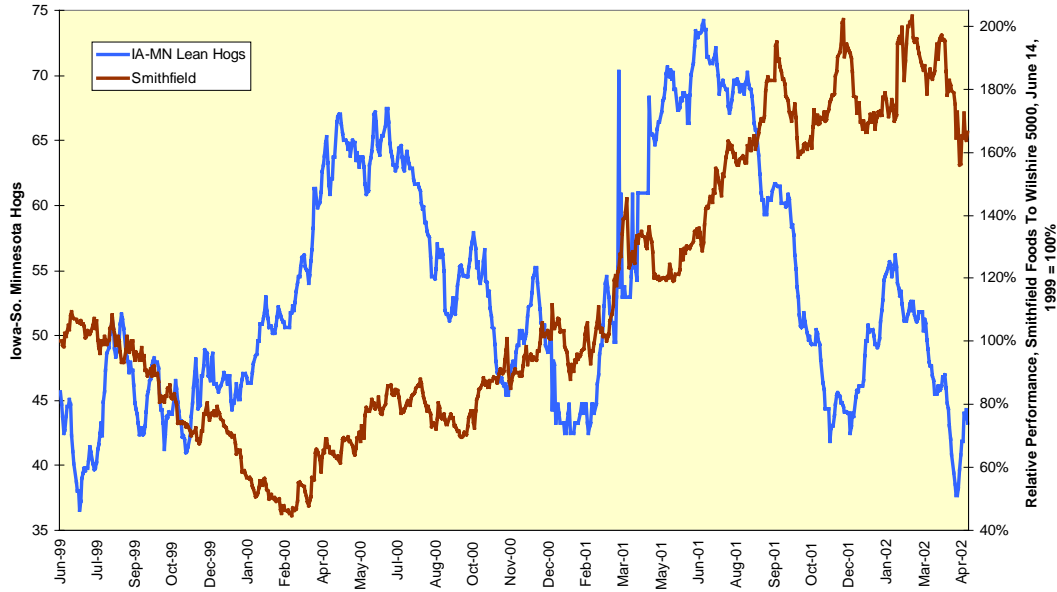
### Packing Pork

The food processing industry is a vertical series of process spreads. Livestock feeders combine corn and young animals to produce market-ready hogs, cattle and chickens, and they are doing so with rapidly increasing efficiencies that have been driving the real price of livestock lower (see "Crushing Miss Elsie," *Futures*, November 2000, and "Let Us Now Praise Famous Hogs," *Futures*, July 1999). The commodity margins continue from the feedlot to the table; packers, especially those firms such as Perdue Farms able to create brand cachet for their products, are in a position to capture the rent of the feeders' efficiencies.



Have packers such as Smithfield Foods or Hormel been able to take advantage of these lower costs to expand their margins and reward their investors? Once again, there is no simple answer. Smithfield Foods was able to outperform the broad market handily in 2000 and 2001 regardless of the cash price for Iowa-Southern Minnesota hogs. However, the stock stalled on a relative basis as cash hog prices fell from late 2001 into 2002.

### Too Much Of A Good Thing?



This pattern suggests that competition among various foodstuffs for the consumer's dollar precludes capture of lower raw material prices by pork packers. These stocks may do well or poorly, but we need to examine more than hog prices.

### Moving Forward

Financial engineering is often simpler than its practitioners will allow. The key, borrowing from value-at-risk terminology, is shredding cash flows into constituent and independent streams. This process can be done over time, as is common in collateralized mortgage obligations that allow an investor to buy a stream of income over a fixed number of years, or it can be done by diversifying investments across a portfolio of non-correlated assets.

Here and in the previous two articles in this series, we have looked at decomposing a stock into its commodity-related cash flows and those remaining. Obviously, the process can be carried further by parsing out the effects of interest rates, foreign exchange rates and other variables; the frequent comparisons here of a stock's performance relative to the broad market suggests a number of trades that can be made on an "alpha," or return relative to the market, basis. We'll take a look at these alpha trades in October, after the opportunities for matched pair trading are examined next month.