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# *Commentary*

Market Opinions and Topics of Interest


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## Is Crude Oil In A New Bubble Or A New Reality?

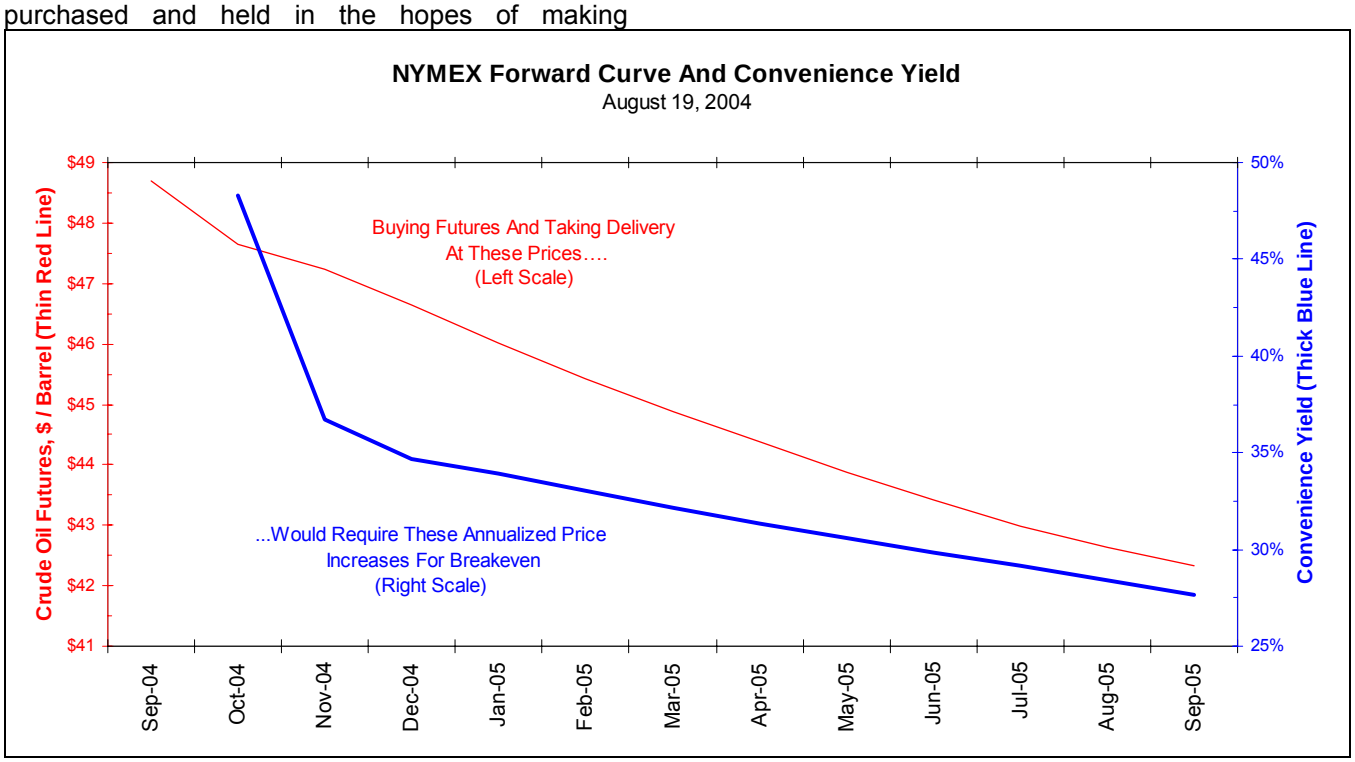
*"We at the Federal Reserve considered a number of issues related to asset bubbles – that is, surges in prices of assets to unsustainable levels. As events evolved, we recognized that, despite our suspicions, it was very difficult to identify a bubble until after the fact – that is, when its bursting confirmed its existence."* -- Alan Greenspan, 8/30/02

The lyrics to "I'm Forever Blowing Bubbles" may have been penned in 1919, but for financial markets that might as well have been yesterday. The experience of the 1990s technology market and its demise was so searing it could not be otherwise. Is an entire generation condemned to Bubble Vigilantism, defined herein as an uncontrollable suspicion of every upwards move in price?

Some have nominated the crude oil market for bubbledom. The cash market price of West Texas Intermediate, the benchmark for the NYMEX contract, has risen more than 45% since the start of the year. **We disagree.** While crude oil can be purchased and held in the hopes of making speculative returns, its economics are dominated by actual supply/demand balances. This Commentary details some forward-looking indicators and what they suggest for market levels.

### Cost of Speculation

As well-developed as crude oil futures markets are, their actual size relative to the cash market is still quite small. The open interest on the NYMEX, where contracts extend out to a December 2010 maturity, represents 729 million barrels. A sizable sum, to be sure, but it represents a mere nine days of global petroleum demand.



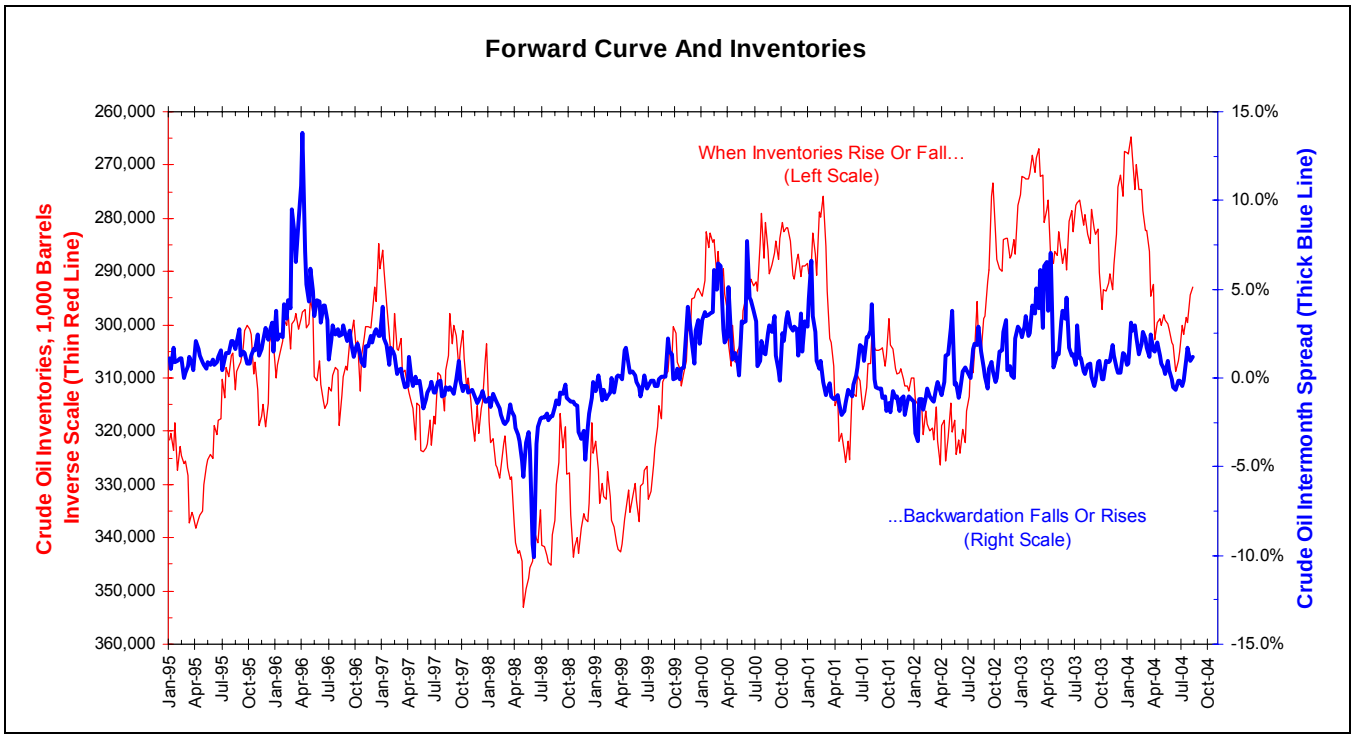
More importantly, the forward curve of petroleum futures makes speculation expensive. The rate at which prices would have to rise to make buying the future, taking delivery of the crude oil and holding inventory hedged with the next month's future economics is termed the convenience yield. It is exactly equal to the hedging cost faced by a producer who sells the next month's future. The term "convenience" derives from the need for commodity processors to maintain a stock of inventories conveniently on hand to avoid the high costs associated with shutting down a processing unit. It is calculated as:

$$\left[1+\frac{Month_1 * e^{rt} + Storage - Month_2}{Month_1}\right]^{365/d} - 1$$

Where $Month_1$ is the future for immediate delivery, $Month_2$ is the next month's futures contract, $e^{rt}$ is the future value operator and Storage is the physical costs of storing the commodity. Convenience yields can take on surprisingly high values during supply shorts and demand surges. As the premium of $Month_1$ to $Month_2$, referred to as backwardation in the energy markets, grows, the convenience yield grows apace.

Backwardation and convenience yield in crude oil are limited by the ability of refiners to buy crude oil and refine it profitably. If a refiner finds it more profitable to reduce throughput, sell crude oil back to the market and buy refined products on the spot market for subsequent resale, backwardation will break. This is the equilibrium point speculators must respect; if they push spot prices for crude oil too high they will find refiners willing to sell to them, and this is always a mismatch.

For those who take a futures-centric view of the world, the link between crude oil inventory movements and backwardation should be instructive. If we invert the scale of U.S. crude oil inventories (thin red line) and compare them to intermonth spread levels as defined by [$Month_1$ – $Month_2$]/$Month_2$, we can see how the futures market reacts to refiners' actions, and not vice-versa. **Refiners are drawing inventories down at present, a move often consistent with higher prices in future months.**

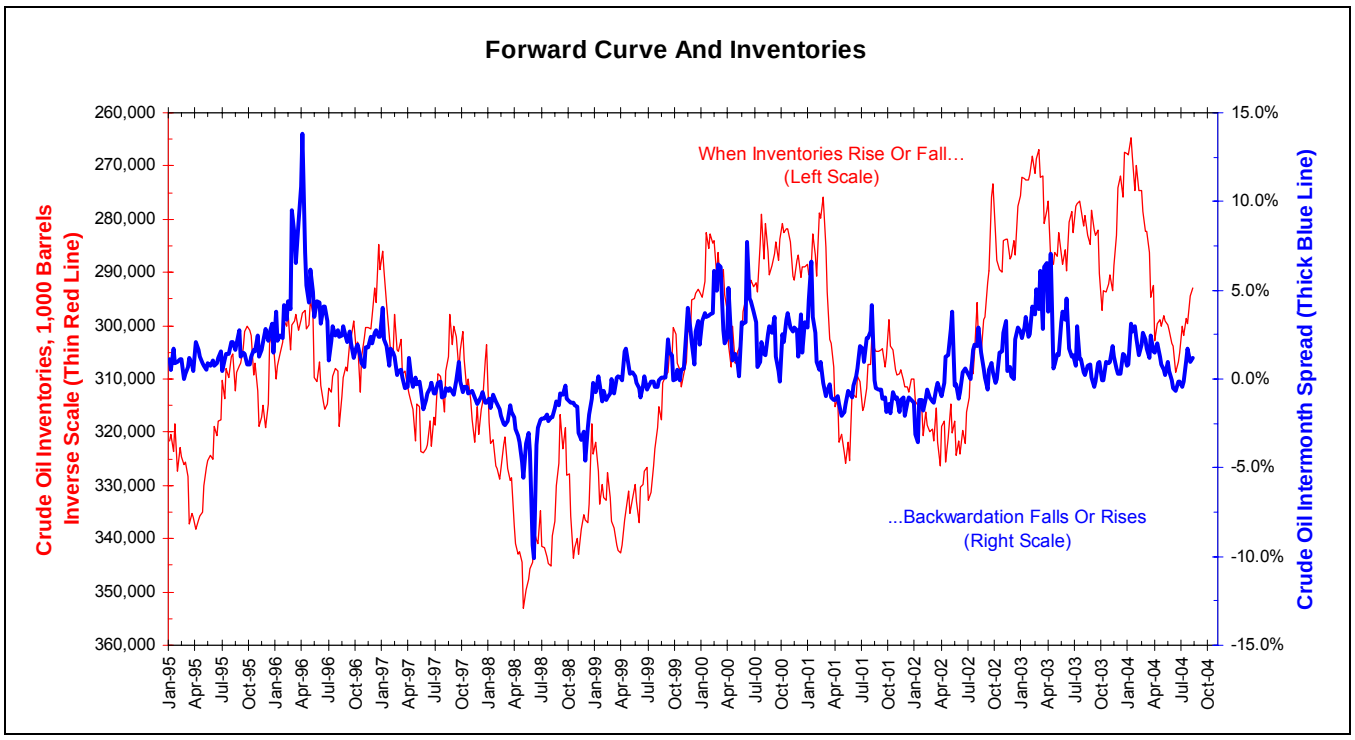


**Floating Inventory**

Financial market traders used to instantaneous execution of vast sums need to adjust their time horizons to accommodate the transit lags involved with ocean freight. It takes two weeks for a cargo of crude oil from West Africa to reach the U.S. Gulf Coast and nearly two months for a tanker to arrive from the Persian Gulf. Before these vessels are loaded, they must be nominated from a shipper. These freight rates, expressed as Worldscale, or percentage of the expected tariff, are as rich in information as the Baltic Dry Freight indices are for bulk cargoes. A rise in tanker rates today is a sign that more crude oil − floating inventory − is on the way.

**Tanker rates on these two key routes into U.S. refining centers have risen, but not to the extent seen during the late winter of 2003-2004.** Indeed, they have retreated over the past week at a time when crude oil prices have surged the most. **Nothing in these data suggest an impending build of inventories from imports, and that is supportive of high prices.**

Given the role of growing Chinese oil demand in the world market, it may be logical to ask whether Worldscale rates from the Persian Gulf to China have risen. The answer here is "not really." The tariff is presently at 95, well below the 145 readings seen in late January on this route.

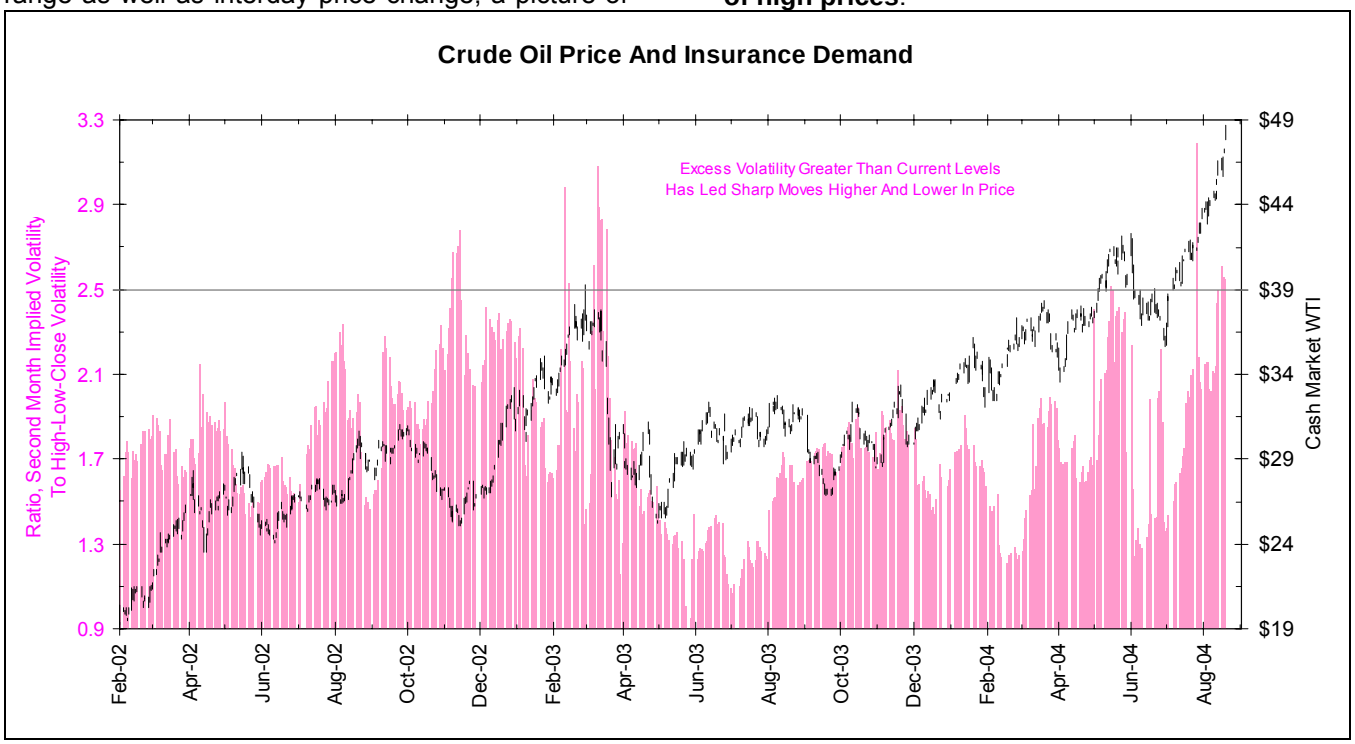


**The Insurance Factor**

Markets trade in dimensions other than price; the intermonth spread discussed above reflects storage, deliverability and risk transference. An additional measure of risk transference and price insurance can be found in the options market. Simply stating that implied volatility is high or low is meaningless without a comparison point to either its own history or to underlying cash market volatility.

If we compare implied volatility from the option market to a cash market high-low-close volatility, one that incorporates the effects of intraday price range as well as interday price change, a picture of the demand for price insurance in excess of actual volatility emerges.

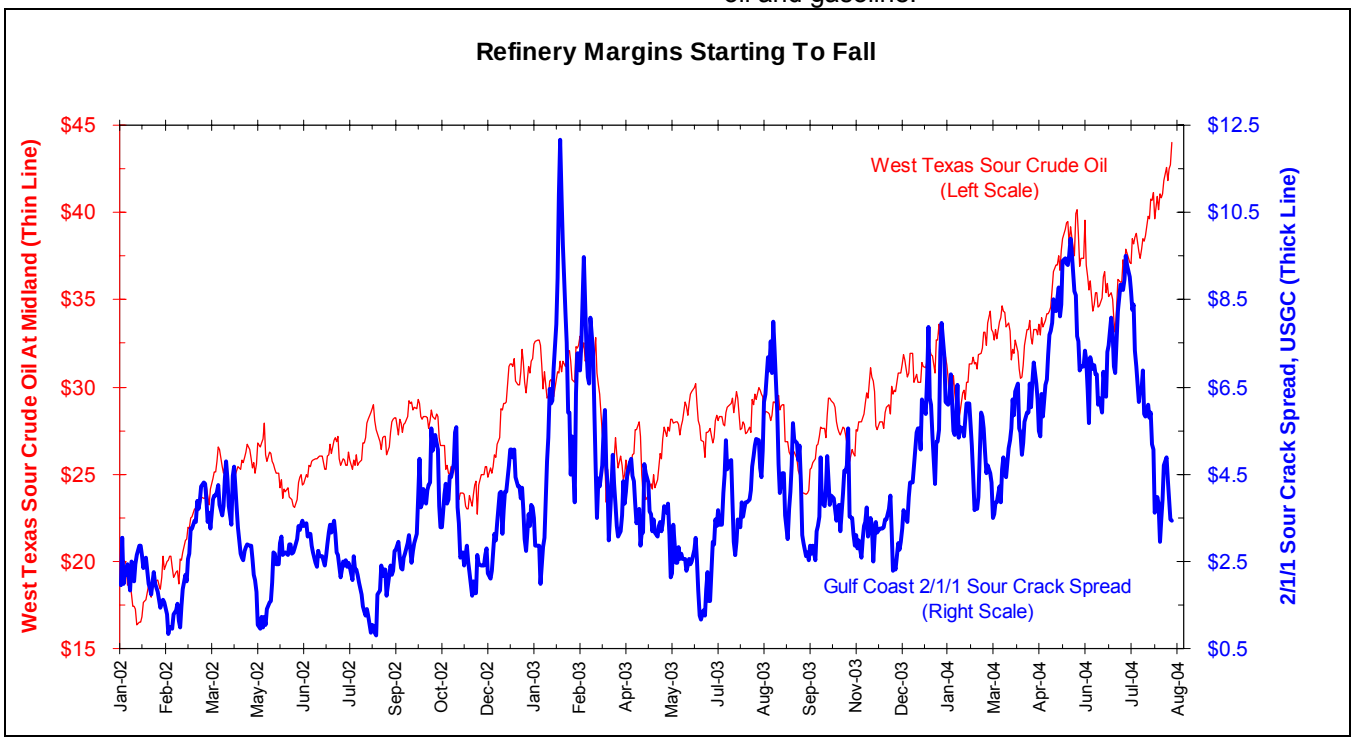
**The demand for price insurance is near the high end of the range seen since early 2002**; each time the ratio of implied volatility to high-low-close volatility has exceeded 2.5 (line below), a sharp move in cash crude oil has ensued. The ratio is nowhere near as high as it was in the six months prior to the start of the Iraq War, and its ascent certainly has not matched the huge move higher in crude oil since Yukos' tax troubles began in July 2004. **This lower-than-warranted ratio indicates a certain measure of acceptance for a new level of high prices**.



**A Refined View**

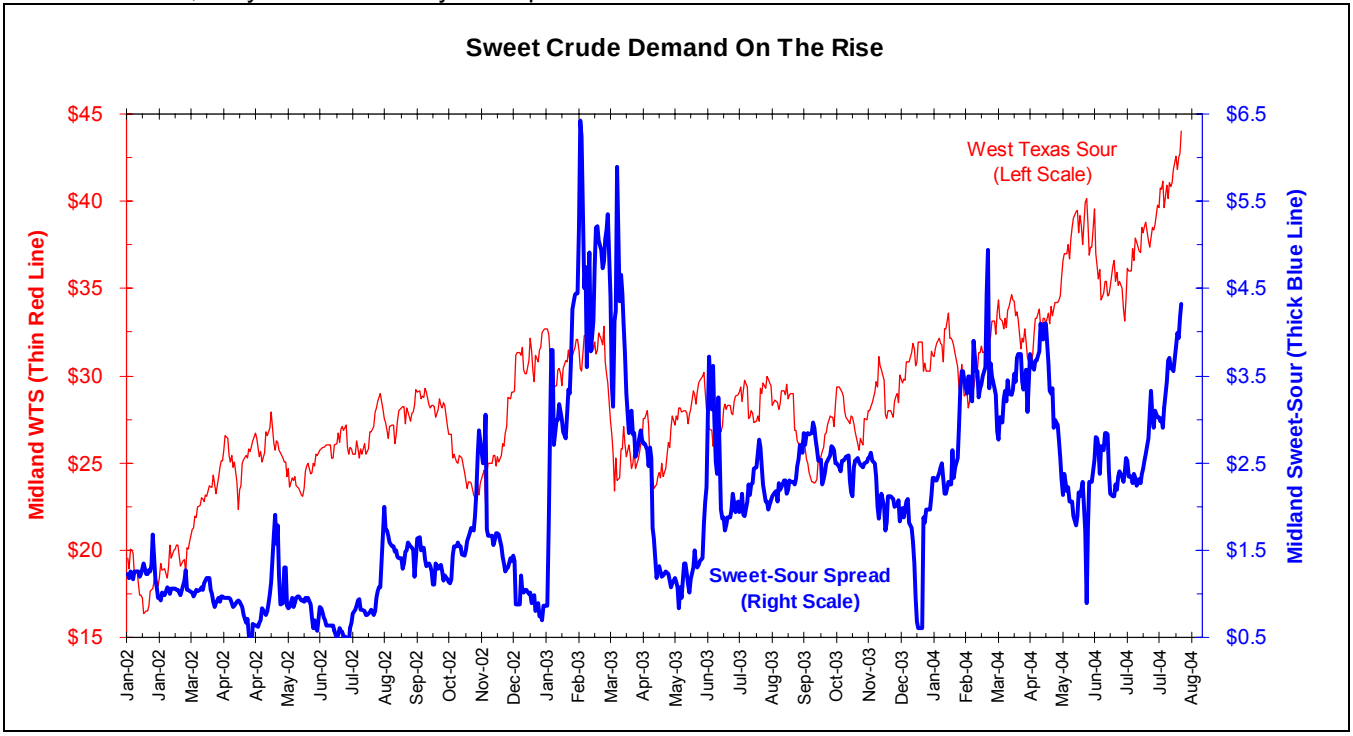
One of the more interesting aspects of the crude oil bull market has been the ability of refining margins, also known as crack spreads, to withstand higher crude oil costs. Two factors contributing to this resilience are the 96.2% capacity utilization rate of American refiners in the most recent American Petroleum Institute report and, more important, the inability of American energy users to throttle back on their demand in the short run. So long as refiners can turn a profit, they can continue to bid the price of crude oil higher.

While futures traders are comfortable with the NYMEX crack spread, this is a very imperfect measure of refinery economics. The crude oil contract's geographic basis is Cushing, Oklahoma, while both the heating oil and gasoline contracts are based in New York Harbor. Moreover, the NYMEX contract is for sweet, or low-sulfur, crude oil, while most sophisticated refineries on the U.S. Gulf Coast are capable of running the cheaper high-sulfur or sour crude oil. A better measure of baseload refinery economics is a 2/1/1 sour crude oil crack at the U.S. Gulf Coast, one wherein two barrels of crude oil are turned into one barrel each of heating oil and gasoline.




**This measure has fallen during the most recent run higher by crude oil. Such downturns generally are followed by a downturn in crude oil prices one to two months later**. The lag is a function of the refinery planning cycle. While this downturn is a warning that higher crude oil prices may be starting to pinch both consumers and refiners, **it is a yellow light, not a red one. The refining margin has not yet fallen to a level where refiners will reduce operations**.

Moreover, the always-popular U.S. oil industry is unlikely to reduce refinery runs during an election season when their own profits are still healthy. We can demonstrate this with the spread between sweet and sour crude oil; as refiners bring their marginal units on-stream, they are more likely to require the more expensive but easier to process sweet crude. The sweet-sour spread has risen along with the price of sour crude oil during the recent price surge, which is evidence that refiners are running near maximum levels.




**Conclusion**

Trading by hope remains a common tactic despite years of evidence suggesting it to be an ineffective one. **While we can see some flashing warning lights from market-derived indicators like high backwardation, excess volatility levels and narrowing crack spreads, these are yellow lights, not red ones, at the moment. Inventory levels are falling, refiners still find it profitable to add their least efficient processing units, and tanker rates indicate no impending glut of imports.**

Until such time as we can see refiners backing away from sweet crude oil and we can see backwardation levels falling, **crude oil is best played from the long side.** This is not to say that we will not get a few spectacular air pockets in this market over the next few months. The sharpest declines always occur within the context of a bull market, and vice-versa. Further, the market is unbalanced technically with a preponderance of new and, by definition, weaker longs. **But in the final analysis, crude oil prices have yet to change final demand enough to constitute a fundamental top. That will occur eventually, as surely as it did in the early 1980s. The time between "now" and "eventually" can be an unpleasant interlude.**

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