

A Lethargic Look At Energy

Energy market forecasters fall into two categories, those who have proven they know not whereof they speak, and those who will prove it in due course. Consider the author’s experience in a former life as an economist for a large integrated oil company that no longer exists: The corporation’s 1980 forecast for crude oil prices in the year 2000 was \$256 per barrel. If this forecast appears ludicrous in hindsight, consider it was well within the consensus of the best business, government and academic projections of the time.

Consider as well this forecast was produced concurrently with forecasts showing both declining growth in energy demand and increases in supply, both in response to higher prices. Suffice to say we got both the supply growth and the reduced demand, and by the late winter of 1985-1986, crude oil futures crashed below \$10 per barrel. They came close to breaking back into single digits again in December 1998.

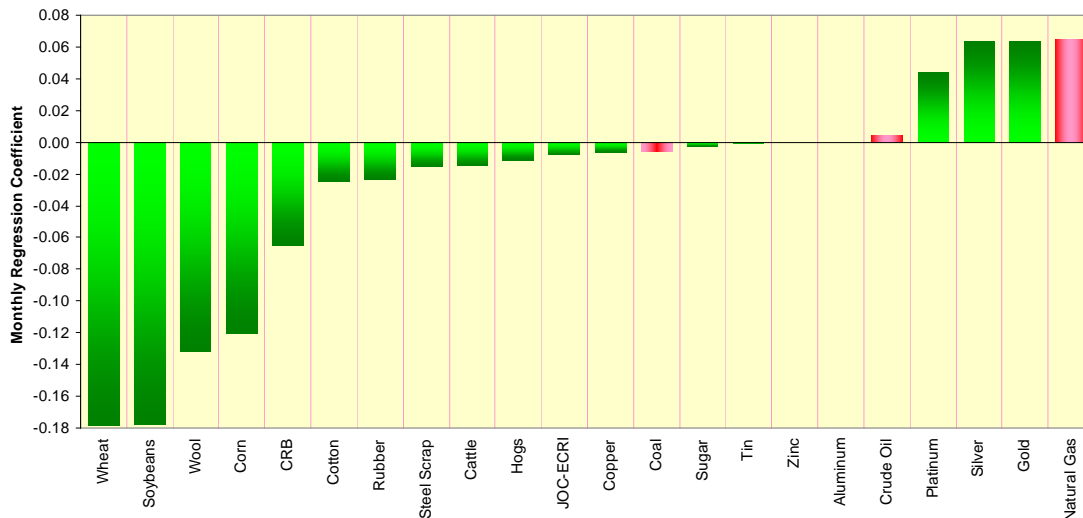
Overall, the trading outlook for 2006 is for more of the same we have seen since the “Mission Accomplished” banner was unfurled in May 2003. Global demand growth, particularly from China and India, will press production capacity to the limit – unless there is an economic collapse on the order of the 1997-1998 Asian crisis. A global scarcity of refining capacity will keep the prices of heating oil and gasoline high relative to crude oil. The lack of slack production and refining capacity will make market susceptible to price and refining margin surges, proclivities that have been and will continue to be exacerbated by the activities of both traditional long-and-short commodity trading advisors and long-only commodity index funds.

What is it about energy prices in general, crude oil prices in particular, that makes forecasting them so difficult, and what lessons can we learn, or relearn, as we move forward into the 2006 trading year? Let’s tick down a list:

- *Over the long-term, energy markets are very different from those of other physical commodities.* As experienced traders recoil instinctively from the word, “different,” as in “it’s different this time,” let’s elaborate. We can deflate the histories of various cash commodities by the Producer Price Index. Monthly averages of the cash market prices are used both to avoid single-day outliers and the contract roll problems associated with futures markets. All data presented in Chart 1 go back to 1946 except for coal (1984), aluminum (1951) and natural gas (1976).

The chart depicts the coefficients of each commodity against time; energy markets are noted with red coloration. Negative values, such as those seen for wheat and soybeans, mean the constant-dollar prices for these commodities have failed to keep pace with inflation. Positive values mean the constant-dollar prices for these commodities can outpace inflation; please note how only the precious metals and both crude oil and natural gas have done so over time. Even here, special situations abound; gold did not trade in a free market until the mid-1970s, crude oil did not trade in a free market until the early 1980s and natural gas remained under price controls and into the early 1990s.

Chart 1: Energy Commodities Can Outpace Inflation



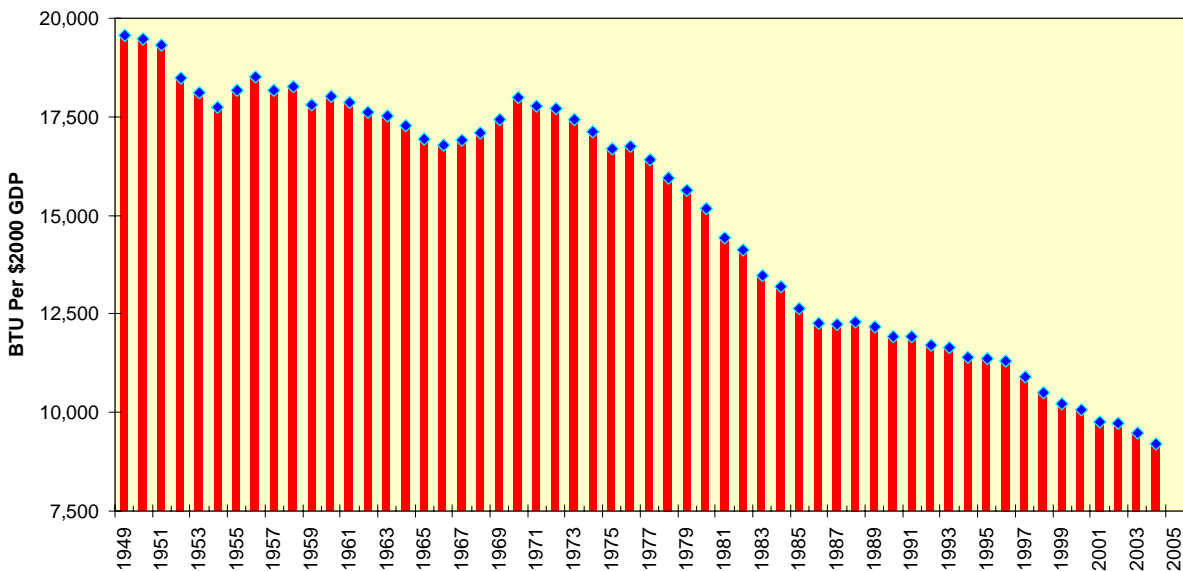
Energy commodities, unlike grains, livestock and soft commodities, cannot be renewed. They are extracted with the cheapest resources being pulled out of the ground first. Each subsequent unit of production costs more to find, develop and bring to market, and the return on each incremental dollar invested is less. In some ways, civilization is coming to end of the greatest free lunch of all time, conventional hydrocarbon resources. This “peak oil” argument is presented without any value judgment; it is simply a tyrannical law of nature.

Energy commodities also differ from both the physical and base metals markets in that they cannot be recycled. The energy content of virgin aluminum is such that it is always profitable to recycle beer cans, and nearly all of the gold ever mined is still above ground. Platinum is so rare it would be an act of idiocy not to recover it. How can we recycle energy commodities economically or without violating the laws of thermodynamics? We cannot.

This gives the energy markets a shared property with equity markets: Both can be described mathematically as geometric Brownian motion process with positive drift terms. This means their day-to-day vacillations are not purely random; they are biased to the upside. The cumulative effect of this process is considerable. It is why the long-term buy-and-hold strategy for a diversified stock portfolio works; here the drift term is produced by the tendency of the economy to grow over time.

- *Improved energy efficiency is a law of economics. The cheapest BTU is the one you did not use.* Conservation, like mass transit, may seem as if it is the perennial favorite of scolds to be fobbed off on the rest of us, but in reality it is part of our lives. The energy cost of producing a constant dollar of GDP declined from more than 19,500 in 1949 to approximately 9,200 in 2004, an average annual decline of 1.35%. This trend continued even during the flat-to-declining price environment of the 1990s.

Chart 2: Energy Efficiency Pays



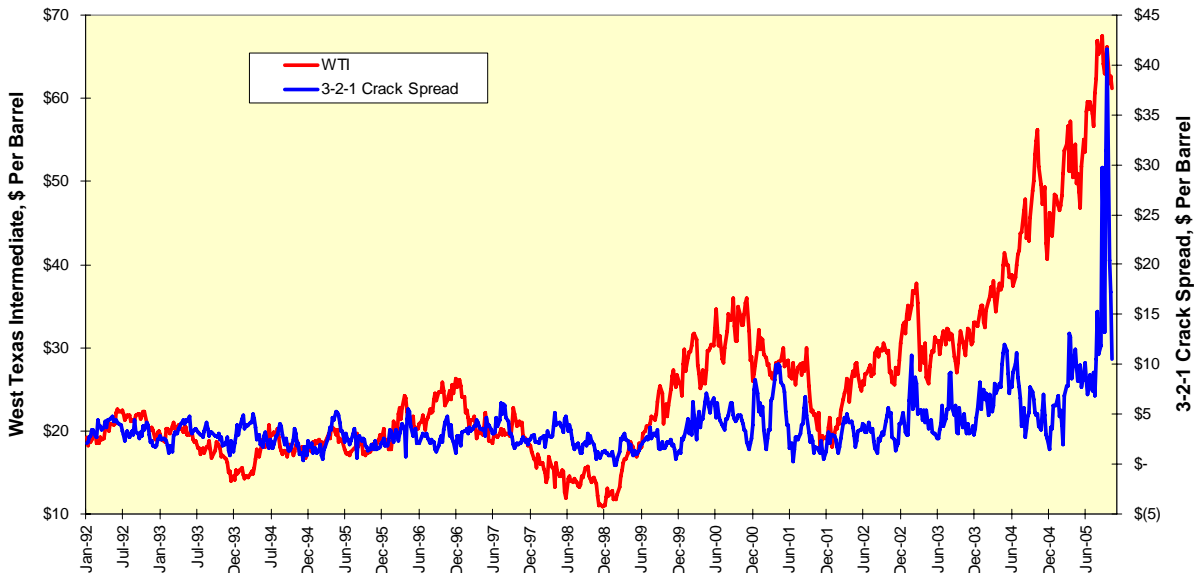
The Energy Information Administration October 2005 forecast was for home heating costs to rise 32% and 48% from winter 2004-2005 levels for heating oil and natural gas, respectively. If so, we should see even greater emphasis in 2006 on hybrid cars, insulation, high-efficiency appliances, etc. All we need to do is look at the 1974-1985 experience, wherein the BTU cost of producing a constant dollar of GDP fell at an average annual rate of 2.54% to get a feel for how higher prices will work.

- *The accidents only happen one way.* You will never see a headline telling you how 300,000 barrels per day materialized out of nowhere. The combined effects of war, terrorism, refinery fines, pipeline outages, freezes, hurricanes and every other event in humanity’s and nature’s bags of tricks are considerable and must be anticipated to continue. As the bumper stickers note, things happen.

Event risk is particularly acute for refined products. Let’s take a look at the 3-2-1 crack spread at the U.S. Gulf Coast and the price of West Texas Intermediate crude oil, the basis for NYMEX futures. The 3-2-1 crack is three barrels of crude oil, two of gasoline and one of heating oil. While crude oil can put in some pretty decent spikes, it is also subject to sharp price declines. Refining margins tend to spike even more spectacularly to the upside, but are

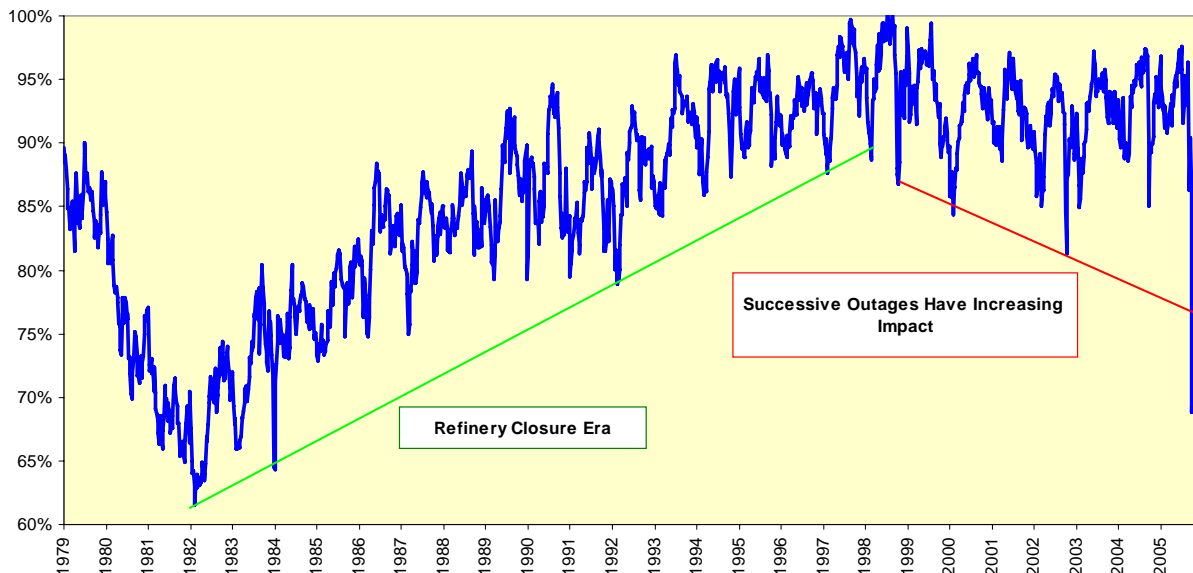
floored on the downside: As operations become less profitable, refiners simply close their higher-cost and less-efficient units.

Chart 3: Energy Markets Only Spike Higher



The volatility of prices is related directly to the entire issue of refinery capacity. Prior to the devastation wrought by Hurricane Katrina, the cause of 2005's massive jump in the 3-2-1 crack spread, refinery utilization in the U.S. was running well over 90% over capacity for months on end. For those of you who have not visited a refinery, see if you can do so; you will marvel that an industrial complex which can be described as "hot hydrocarbons under pressure," and which is loaded with goodies like hydrofluoric acid, can stay in operation for twenty minutes. Refineries require maintenance, and each unit taken off stream has an impact on the market.

Chart 4: U. S. Refinery Capacity Utilization



Prior to the decontrol of petroleum markets in the first Reagan administration, refineries were protected by a pastiche of subsidies, regulations, mandatory allocations of crude oil, etc. Once that corporate welfare ended, and especially once environmental statutes such as the Clean Air Act started to bite, uneconomic refineries started to disappear and capacity utilization started to rise. By the late 1990s, effective utilization rates of 100% were seen. The stress in the system can be seen by the impact of successive outage episodes; Katrina was a unique event, but it was a unique event whose impact was made disproportionate by a system stretched to capacity. Will we see the situations of global crude oil production and refining capacity alleviated anytime soon?

- *This is not your father's oil industry.* No industry is fair-game politically like the oil industry. People will fly or drive thousands of miles to express their dislike of the industry that made the trip possible. This is just life, but it has consequences. The harebrained tax and regulatory regimes suffered domestically and the wholesale expropriations of production internationally – let's set aside any sort of discussion about how the oil industry operated in many places and just note the locals were living in tents before the Texans got there and are doing better now – have reduced the number of integrated oil companies. Corporate giants such as Gulf, Mobil, Texaco, Arco and Amoco have departed the scene in recent years. The oilfield service industry underwent a similar consolidation during the early 1980s.

Everyone running an oil company today is a survivor of those massacres, and it affects their behavior profoundly. They saw how a bull market can have the same effect as liquid courage on a Saturday night. They will not over-expand again. Why build a refinery that can become as unprofitable as the ones you had to close in the 1980s, or why go drill some wasteland in Central Asia when if you should find something they will take it away from you? No reason at all.

The few remaining large integrated oil companies have to make a profit for their shareholders, and they will have to do it in competition with state oil firms whose incentives are providing employment, total revenue instead of profits and a fountain of emoluments to various local satraps. The private firms eventually will lose this game as an ever-greater share of global oil production and eventually refining and marketing will devolve to the state oil companies. If experience with the various entities in Putin's Russia, in Chavez' Venezuela, in various Middle Eastern suzerainties or in Mexico is any guide, do not expect Western efficiencies. The historic record is grim in this regard.

Conclusion

The most volatile markets are those with inelastic supply-and-demand curves, those in which a small change in supply can produce a wide swing in price. This condition is present in the energy markets, as are capacity shortages, political interferences, events and long-term geological and investment realities that make solving prospective problems problematic.

Can we extrapolate from this we will have a permanent bull market, a parallel to Dow 36,000? Of course not; this mistake was made a quarter-century ago by those who lived to regret it. We do know there are massive incentives for everyone to use less energy and to produce more of it, and there are demand-events, such as a recession, that can cause a price collapse. In 1989, someone who should have known better commented on the Japanese real estate boom then extant, "well, they can make more Japanese, but they can't make more Japan." While both parts of that statement were and are true, Japanese real estate scarcely has had an uptick since.

Look for 2006 to be exceptionally volatile for both prices and margins as the economy wrestles with the impact of higher energy prices. Keep your positions small, your stops tight and your ripcord at hand: Chances are we will see prices both in the \$70s and in the \$40s at various points in the year.