

Tempest in a Teapot?

This Sigma Summary is Part 1 of a two part series on Energy. This report will focus on energy as a macro-economic subject with particular commentary on crude oil and natural gas. Part 2 will drill down (pardon the pun) on investment opportunities within the various energy segments.

As we pass through Labor Day Weekend and reflect on the summer of 2004, it is appropriate that we stop for a moment and consider the importance and recent headlines of near \$50 a barrel crude oil. What does it mean? Should we be concerned? What are the implications to our lives and portfolios?

We see energy and its many benefits and costs as a major piece of the economic mosaic of both individual and corporate life. Today, it is nearly impossible to pick up a newspaper or listen to a news program without the subject of higher oil prices being mentioned in some capacity. It is certainly associated with the war in Iraq, the war on terrorism and gasoline prices moving through \$2.00 a gallon. But it is now being mentioned in the context of slowing automotive, retail and personal spending reports. No doubt, higher oil prices have a dampening psychological effect on the stock market and consumer spending habits. Therefore, we must ask

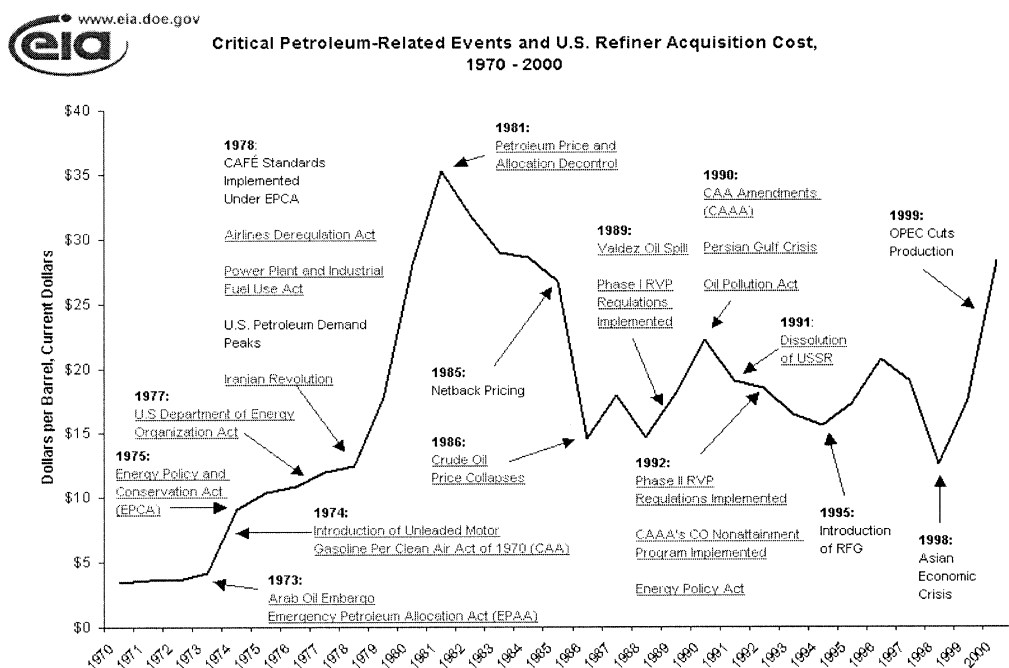
ourselves if this sharp increase in the price of crude oil is the beginning of a long-term troubling trend or a tempest in a teapot.

Before we rush out to trade in our gas guzzling SUV for a Ford Focus or Honda Priva, some perspective on oil prices is worth considering. First, we have seen oil shocks before. Figure 1 is a Department of Energy time line that traces the important energy events from 1970 through 2000. The major point is that we have lived through major oil shocks before and survived and we will likely survive this one.

Second, inflation has greatly eroded the real price of oil and energy. As you can see from figures 2 and 3, although it is correct that oil and gasoline prices are now at high nominal prices, they are nowhere close to the peaks of the late 1970's and 1980's in inflation adjusted terms. In 2004 dollars, crude prices hit a peak of nearly \$80 a barrel in 1981 and gasoline crested at \$3.10 a gallon in 1980.

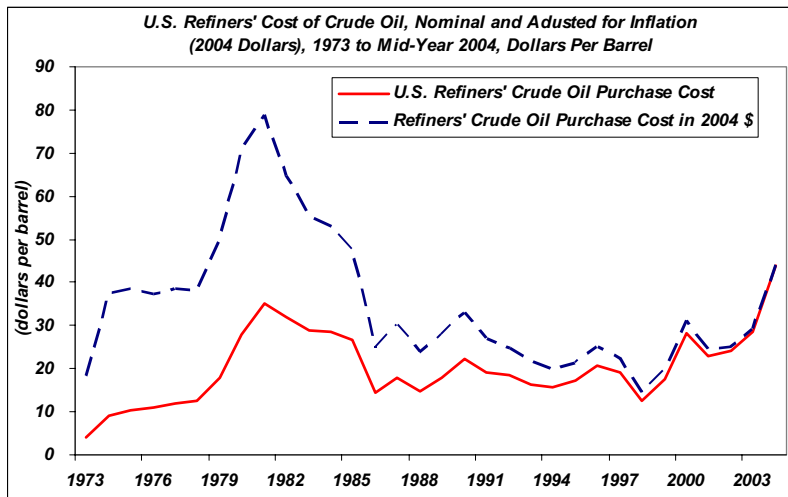
Third, if oil prices do surge higher toward their old inflation adjusted highs, they will sting less than in the early 1980's because the U.S. economy is far less energy intensive than a quarter century ago. In

Figure 1. Chronology of Energy Events and Crude Oil Prices Over Three Turbulent Decades



Source: U.S. Department of Energy, Energy Information Administration

Figure 2. U.S. Crude Oil in Nominal and Real Terms (2004 Purchasing Power), 1973-2004



Source: Energy Information Agency, U.S. Department of Labor, and Foresight Research.

1980, according to Foresight Research, about 19,000 BTU's of primary energy (the energy equivalent of a pint of gasoline) were required to produce a dollar of GDP; today, that ratio is down to 10,000 BTUs per dollar of GDP, a reduction of 50%. **'Put another way, gasoline would have to rise to \$5.75 a gallon today to have the same inflation-adjusted and general economic impact of \$1.22 a gallon back in 1980 (the old purchasing power-adjusted high).**

Another important comment worth remembering is that the gasoline shortages of the late 1970's and early 1980's were caused by the U.S. government, not OPEC. No other industrialized country had gasoline shortages at that time. Through price control efforts from several administrations, the government made a bad situation worse by creating a complex system of gasoline supply allocation, which succeeded in creating shortages, infuriating the public, and driving the national misery index off the charts. Today, thank goodness, no politician is talking about reestablishing energy price controls. The absence of relieving those years also makes the oil price spike of 2004 far less painful versus those of the 1970's and 1980's.

Over the last year, a new phenomenon has significantly affected oil prices. **Surging crude oil prices have attracted a horde of speculative investors feverishly betting on rising prices.** As the action has picked up in the past year, those profiting include large, well-known hedge funds, Wall Street banks and brokerage houses. This activity has even caught the eye of Federal Reserve Chairman, Alan Greenspan. In June, Greenspan commented that "the market rise in net long positions of noncommercial (speculative) investors in oil futures and options since May 2003 has increased

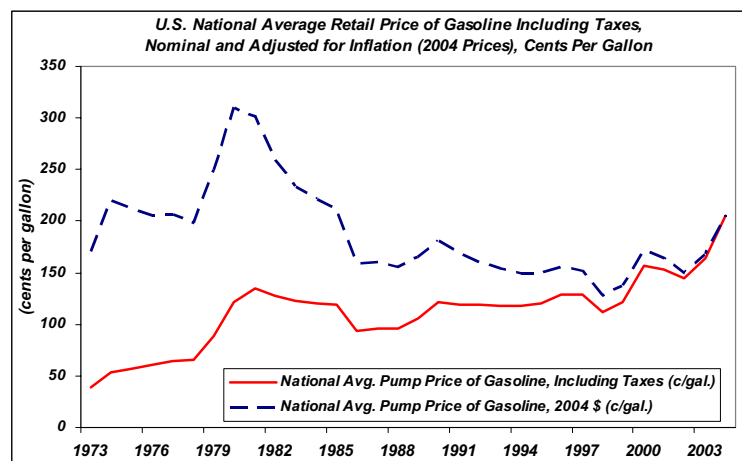
net claims on an already diminished global level of commercial crude and product inventories."

The strategies in this oil-investment surge range from simply buying oil futures to sophisticated derivative plays. Hedge funds increasingly have been going to brokerage companies to buy complex combinations of options and other derivatives. Hedge funds often find that trading via the brokerage firms provides greater liquidity than at the Nymex (New York Mercantile Exchange) where futures are traded and there is no danger they will find themselves accidentally taking delivery of actual crude oil.

And while it is difficult to get an exact figure on how big a role financial investors are playing in the energy markets, it is clear that it is growing. There are currently approximately 450 commodity-trading advisers, or CTAs, many of which trade energy actively, managing almost \$70 billion in assets, according to Tremont TASS Research. That is up from 136 funds managing about \$20 billion just four years ago.

In addition, at least 50 hedge funds emphasize energy trading, while a group of large so-called macro funds, which make money from global

Figure 3. Retail Gasoline Prices in Nominal and Real Terms (2004 Purchasing Power), 1973-2004



Source: Energy Information Agency, U.S. Department of Labor, and Foresight Research

economic trends, have shifted into the energy market over the past year or two. Importantly, all these firms tend to use leverage, or borrowed money, to amplify their bets. Many CTAs borrow \$10 for every \$1 of money they invest in their trades.

While it is likely that many new energy traders base their faith in oil prices' continuing to rise primarily on market concerns about sufficient supply, there are also a large number of investors who are drawn to energy simply because it is one of the few markets that has been rising.

Are these new investors in energy seeing a structural shift in the price of crude from what has been experienced over the previous 15 years? Or are they just playing the only available market that is moving. A report from the Federal Reserve Bank of St. Louis, dated August 2004, helps to provide some guidance. The chart below shows the monthly average price of a barrel of West Texas intermediate crude oil from 1988 through June 2004, deflated by the U.S. consumer price index (CPI) to obtain the price in constant 2004-dollar terms. The mean, plus and minus two raw standard deviations of these prices, calculated from 1988-2002, are indicated in the chart. The two standard deviation rule of thumb is one simple way to separate unusually large movements from ordinary fluctuations. Prices consistently outside the two standard deviation band might indicate some type of structural shift and that the inflation adjusted mean price might be substantially higher in the future.

The chart shows that, as a first approximation, this market displayed a constant mean price of about \$27 per barrel in 2004 dollars through the period 1988 to 2002. Since 2002, the real price has increased, recently moving outside the two standard deviation band. This price is higher than any observed since 1988, except for the period of \$50-per-

barrel oil during the run-up to the first Gulf War. So even taking normal volatility into account, today's prices are high. Therefore, the major question is, should we expect this price level to be sustained?

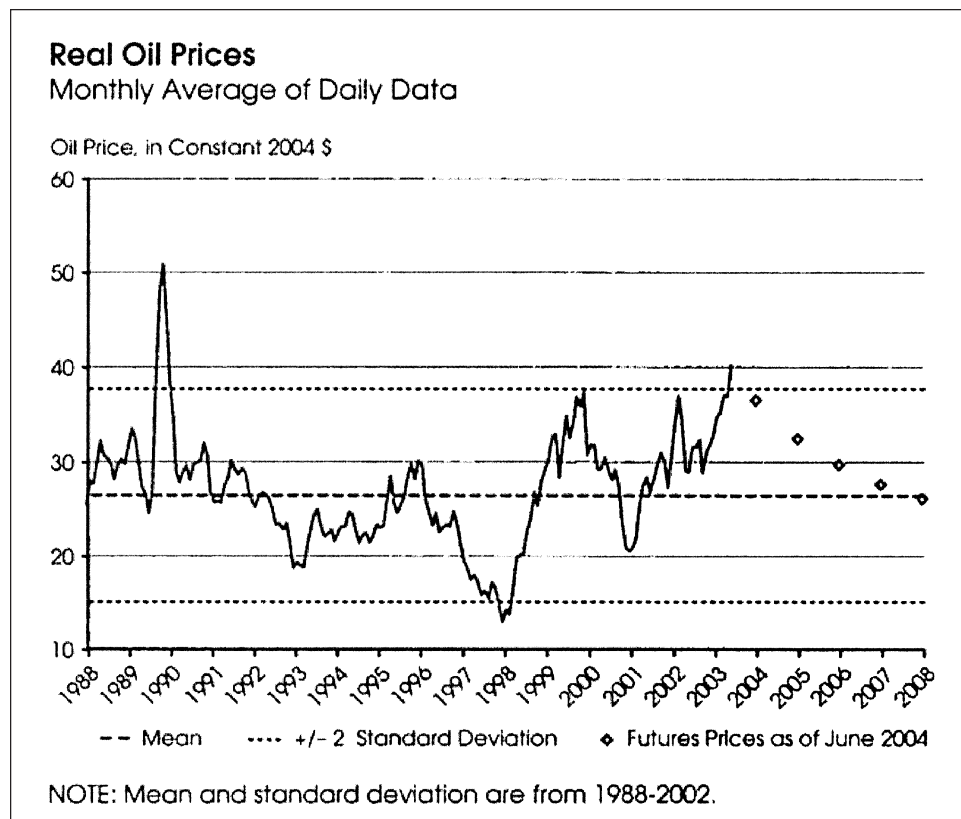
One way to answer the question is to consider the futures market prices for crude oil. The December contracts for 2004 through 2008 stipulate an expected future price, which we can then convert into 2004 dollars by guessing an expected rate of CPI inflation in the U.S. over the life of the contract. The University of Michigan monthly survey of household expectations suggest this longer-run expected inflation rate is currently 3.0 percent, and they assume it is constant through December 2008. The diamonds in the chart indicate the real price of crude oil expected in the futures markets according to this measure. The calculation suggests that the price of crude oil will return to its 1988-2002 mean gradually over the next several years. By this measure, the market does

not foresee a substantially higher long-run price of oil.

A calming quote came from the recent ExxonMobil annual meeting for investors. One analyst asked Exxon if it has revised its long-term price forecast because of the commodity's recent multi-year strength. Lee Raymond, Exxon CEO, answered in effect, "We don't chase the spot market, and we don't believe people who tell us that the structural price of oil has changed just because it has moved up or down a little."

We concur with Mr. Raymond that we shouldn't get overly excited about oil prices permanently trading above \$30 per barrel because many new production and conservation targets such as Canadian oil sands and gas-to-liquids (GTL) conversion schemes become attractive at that price level.

However, while we believe we are in the midst of some sort of speculative bubble for oil, it is also becoming



difficult to expect oil prices to return to its old trading range of \$15 to \$20. The key reason is global demand for oil is growing at above expected rates. This is due largely to increased demand from China, India and Russia.

Chinese consumption of oil products grew by 11% last year and by 6-7% per year over the last decade. World Bank data show that the economies of Russia, Ukraine and some other FSU (Former Soviet Union) countries expanded last year and in 2002. Oil consumption in Russia also turned up. Russia is extremely interesting because, if it hadn't suffered a decade-long economic contraction and collapse of oil consumption in the 1990's, we could reasonably say that the effects of rising crude oil would have been more intense over the last ten years.

Natural gas is a different story. Natural gas today is largely a space heating and chemical process fuel in North America. The U.S. natural gas industry has been running down its reserve base for years. U.S gas production has plateaued for the better part of the last decade. And, even though higher natural gas prices are driving up drilling activity, production has barely improved in over a decade from 18-19 trillion cubic feet per year.

Over the last ten years, U.S. consumption grew by 2.7 trillion cubic feet per year. The major driver of this

demand growth has been high-efficiency combined cycle gas turbines for utility and industrial companies. Most of the increased demand was met by increased pipeline gas deliveries from Canada. LNG (Liquefied Natural Gas) export deliveries in the U.S. have tripled from a low base over the last five years. LNG will continue to increase in importance over the next decade.

LNG is the only major new supply to the U.S. market. LNG is relatively expensive versus conventional gas because it must be liquefied through refrigeration, transported long distances in purpose built tankers, and re-gasified at the market. LNG producers and developers need delivered prices of at least \$4 per mcf, to make these investments profitable. Without a significant change in natural gas production or some type of demand destruction, LNG prices could set a new floor price for natural gas around \$4 per mcf.

Another important element to the natural gas market is weather. Because natural gas is largely a North American fuel, weather patterns do have a major influence over price in a given year. A mild summer and some modest production growth may be part of the reason natural gas prices have not come close to keeping up with oil prices this year.

The Texas RR Commission recently reported that Texas production, representing one-third of total U.S production, is currently up 0.4 bcf year-over-year, with total production at the highest level in five years. This growth, combined with mild weather and current ample supplies, may allow gas prices to stay relatively calm compared to oil. Longer term we remain positive on natural gas fundamentals and believe it will take an extraordinary event or severe recession to see the old floor price of \$1 to \$2 per mcf.

As we contemplate the effects of rising oil prices on our lives and portfolios we are reminded that we have seen this movie before and lived through it. Speculative bubbles, whether oil or Internet stocks can certainly move to extremes but we also realize that there is no reward for reacting irrationally to these events.

However, being pragmatists, we also realize we must stay flexible to changes in demand and supply of energy products and adapt our behavior and investments to longer- term trends.

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