

MUSINGS FROM THE OIL PATCH

January 22, 2008

Allen Brooks
Managing Director

Note: *Musings from the Oil Patch* reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating oilfield service companies. The newsletter currently anticipates a semi-monthly publishing schedule, but periodically the event and news flow may dictate a more frequent schedule. As always, I welcome your comments and observations. Allen Brooks

Is There A Catalyst For Energy Stocks in 2008?

Investor focus has shifted to protecting portfolios and de-emphasizing stock market sectors exposed to weaker global economic activity - energy

After a spectacular year in 2007, energy stocks continued their positive run into early January before turning lower. The downturn started when Wall Street shifted from believing in a continuation of the economic and commodity bull market that has dominated the past few years to emphasizing a growing fear for an economic slowdown, possibly turning into a full-blown recession. As the odds of a U.S., and possibly a global recession, have increased in recent days – fed by gloomy economic statistics and a dramatic reversal of fortunes for some of the globe’s leading financial institutions – investor focus has shifted to protecting portfolios while de-emphasizing stock market sectors exposed to weak global economic activity, which means shunning industrial commodities including crude oil. Falling demand will not be good news for commodity prices, and crude oil’s recent price retreat reflects that belief.

Exhibit 1. Energy Stocks and Market Drop Sharply in Jan.



Source: Big Charts, PPHB

Will a lack of demand be the undoing of oil prices in this decade, too?

As the bull market in energy stocks roared ahead in the early days of January, crude oil futures breached the \$100 per barrel barrier with predictions that there was little to stop the rise until \$150 or even \$200 per barrel levels had been reached. What the bulls seemed to miss was evaporating demand - a condition associated with \$9 per barrel oil prices in the mid 1980s, but more importantly, also associated with the oil price collapse in the late 1990s. Will a lack of demand be the undoing of oil prices in this decade, too? If so, then the bright outlook for energy and oil service stocks forecast only weeks ago by Wall Street analysts, strategists and investors could be tarnishing, and at a rapid rate. The tarnish expanded rapidly when Schlumberger (SLB-NYSE) missed analyst estimates of its 2007 fourth quarter results and gave a downbeat assessment of activity for 2008 compared to Wall Street's expectations.

With a financially-healthy industry heading into this downturn, the dire cost cuttings, restructurings and mergers that characterized management actions in past downturns will largely be avoided

Amidst all this doom and gloom, there are some bright spots for energy investors. Energy companies are very strong financially, having largely avoided the pattern of leveraging their assets at a peak in the market. For oil and gas producers, the lack of oilfield equipment and human talent over the past few years, combined with limited access to exploration acreage globally, restricted their ability to spend all their cash flows. While some companies have spent surplus funds to repurchase shares, as a way of returning money to investors, largely the companies have been forced to de-lever balance sheets and build cash balances. Thus, with a financially-healthy industry heading into this downturn, the dire cost cuttings, restructurings and mergers that characterized management actions in past downturns will largely be avoided – strategies that deepened and lengthened troubled times in the past.

The pain and gain of the fleet realignment will not be shared equally

Equally important for the industry is the surge of newly constructed offshore drilling rigs entering the fleet – the preponderance under long-term financial commitments from financially strong operators. These rigs are programmed to go immediately to work seeking new oil and gas reserves around the world, which will generate important and profitable business opportunities for the oilfield service industry. At the other end of the spectrum there remains a substantial number of old, less capable drilling units – both on and offshore – that should be retired and that will restore profitability to the industry quickly. Unfortunately, the pain and gain of the fleet realignment will not be shared equally among oilfield service company participants, but on balance, the outcome should be beneficial for the future health of the industry.

The Age of Hydrocarbons is not about to end anytime soon

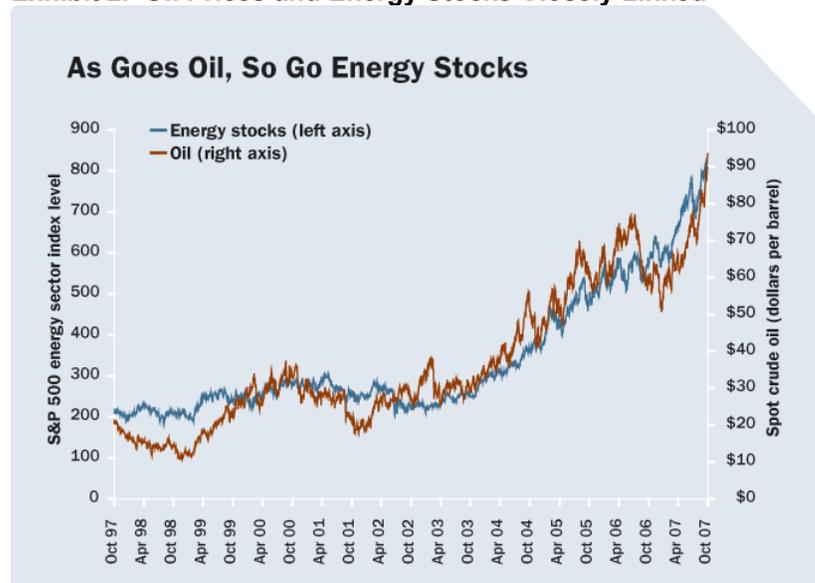
In the broader sense for energy globally, the unrelenting pressure of an expanding population, the desire for increased living standards and depleting producing reservoirs will act to restore balance to the business. Despite concerns about global warming and an avalanche of energy demand-destroying actions by overly-sensitized politicians, and the fears of Peak Oil proponents about a lack of new oil supplies, the Age of Hydrocarbons is not about to end anytime soon. That is not to say that the drivers for energy demand may not be curbed in the future, and that energy costs may not go higher

The challenges of successfully navigating the maze in order to generate profits in energy stocks will become more difficult

with demand erosion implications or that finding new supplies of Black Gold will be any less expensive in the future, but the general workings of this industry are not about to be turned on their head.

For investors in 2008, however, the challenges of successfully navigating the maze in order to generate profits in energy stocks will become more difficult, or maybe the better term is more nuanced. Not every geographical area will perform equally well this year. Not every business sector within a geographic market will generate similar financial returns. Not all companies will be able to increase their backlogs, and possibly a number will experience shrinkage. But these conditions do not condemn all investments in this sector. As stock market professionals like to remind investors, it is a market of stocks and not a stock market. Selectivity, i.e., stock selection, in investing is important, and in the market environment we are experiencing currently and likely will experience throughout 2008, it becomes highly important!

Exhibit 2. Oil Prices and Energy Stocks Closely Linked



Source: FactSet, from October 29, 1997, to October 29, 2007. Sector index level includes reinvestment of dividends.

Source: WhiskeyandGunpowder.com

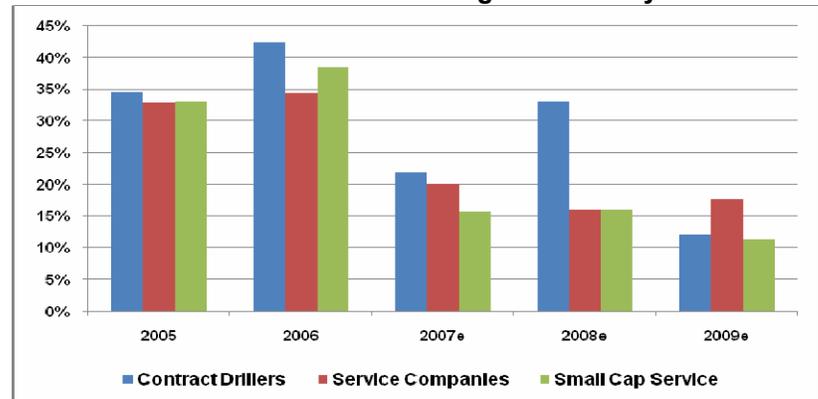
Earnings and revenue growth rates are slowing with few prospects for them to reaccelerate in the near term

Traditionally, what drives stock prices higher is growing earnings. More importantly, investors like to see earnings growing at an accelerating pace. That reflects not only rising revenues, but expanding operating margins, which translates into rising financial measures – return on assets, return on investment and return on equity. Rising financial returns have characterized the energy industry during the past several years. But earnings and revenue growth rates are slowing with few prospects for them to reaccelerate in the near term. Given the explosion in oil prices last year that drove oilfield service stocks to a 50+% gain as many new investors

During the second half of last year, drilling activity in North America slowed considerably, and in Canada it came unglued

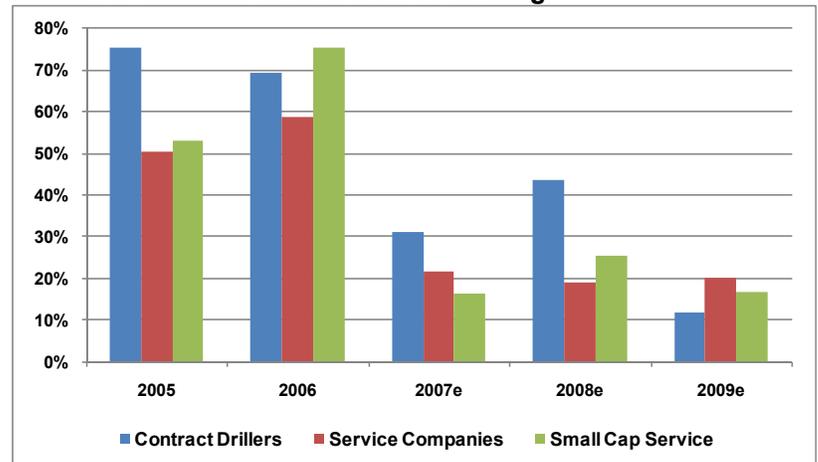
to the sector equated oil prices with industry profitability. Highlighted within that record performance, however, was the fact that during the second half of last year, drilling activity in North America slowed considerably, and in Canada it came unglued due to political actions, as natural gas prices slumped and a surge in newly constructed equipment arrived just in time to face a softening in demand. This drilling slump came despite soaring crude oil prices.

Exhibit 3. Revenue Growth Is Slowing Dramatically



Source: Lehman Bros., PPHB

Exhibit 4. EBITDA Growth Rate Is Slowing



Source: Lehman Bros., PPHB

Annual growth of revenues and EBITDA has slowed significantly

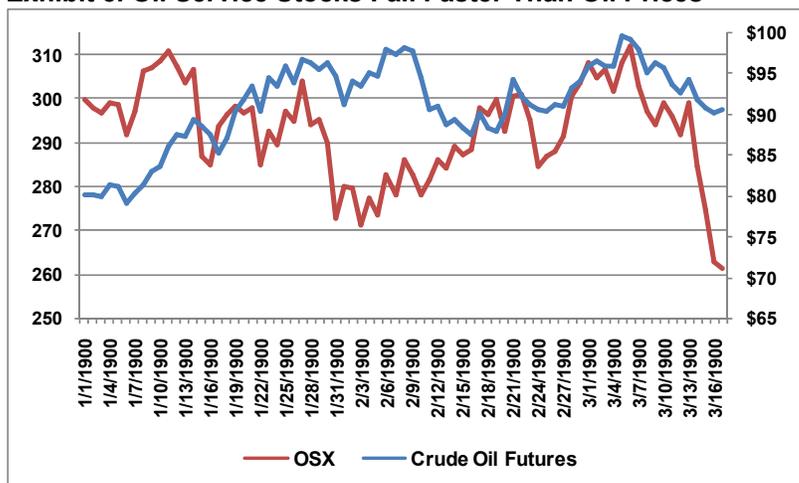
The slowing in the growth rate for the oilfield service industry can be seen by the charts in Exhibits 3 and 4. These charts show the year over year growth in revenues and earnings before interest, taxes, depreciation and amortization (EBITDA) for three groups of oilfield service and contract drilling companies followed by the analysts for the investment banking firm, Lehman Brothers (LEH-NYSE). We are not endorsing the analysts' earnings estimates, but we believe they are fairly representative of the consensus view for revenue and earnings growth over the next several years. As clearly evident in the charts, the annual growth has slowed significantly and is

A week ago Schlumberger announced it was cutting employment in North America; something considered a virtual impossibility merely 9-12 months ago

projected to slow further in the next couple of years. To a certain degree, this is to be expected following the most recent period of strong activity growth and revenue and profit margin expansion. As incremental margins shrink because revenue growth slows, EBITDA growth slows dramatically.

With fears growing for a recession-induced reduction in energy demand this year, prospects for a reacceleration in energy stock earnings growth are slipping away quickly. That prospect was driven home by the announcement a week ago that Schlumberger was cutting employment in North America; something considered a virtual impossibility merely 9-12 months ago, and last Friday's report of weaker than expected fourth quarter earnings and management's cautionary outlook for 2008. With respect to the employment retrenchment, we suspect Schlumberger's management would say the problem with these surplus workers is that they aren't Russians, a region of the world where the company's growth has been, and remains, explosive. In response to a question on its earnings call with analysts about Russian oil company capital expenditure plans, Schlumberger Chairman and CEO Andrew Gould said that for Russia to achieve 2% per year production growth, the oil companies' 17% annual spending increases are insufficient.

Exhibit 5. Oil Service Stocks Fall Faster Than Oil Prices



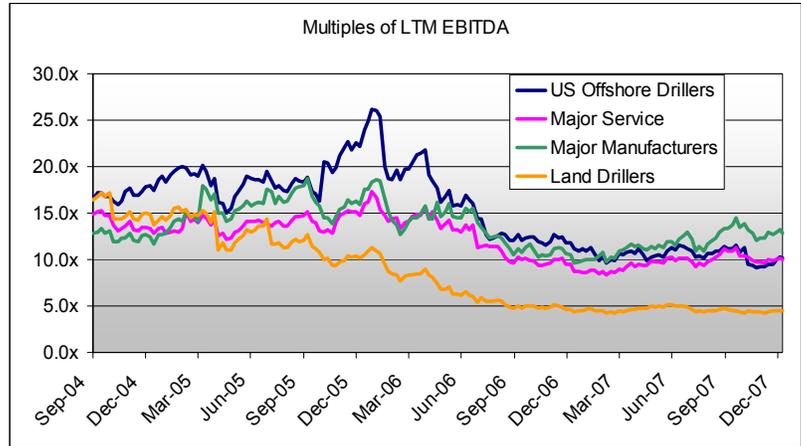
Source: EIA, PPHB

Mr. Gould sees 2008 financial results reflecting mid-teens international growth and he sees North American activity remaining lethargic

Mr. Gould called 2008 a year of "transition" for Schlumberger, and for the industry in general. He pointed out that the demand-led industry pricing improvement of recent years had peaked and for the foreseeable future pricing would depend more upon technology and regional market activity. He sees 2008 financial results reflecting mid-teens international growth and he sees North American activity remaining lethargic. He believes with only 14 new offshore drilling rigs being delivered this year and the existing offshore fleet essentially fully employed, it is hard to expect substantial incremental business from offshore growth. However, he anticipates that by 2009 the industry's growth will be associated with the

growing new offshore drilling rig deliveries as 160 new rigs are under construction for delivery through 2011.

Exhibit 6. Oil Service Valuation Compression Obvious



Source: PPHB

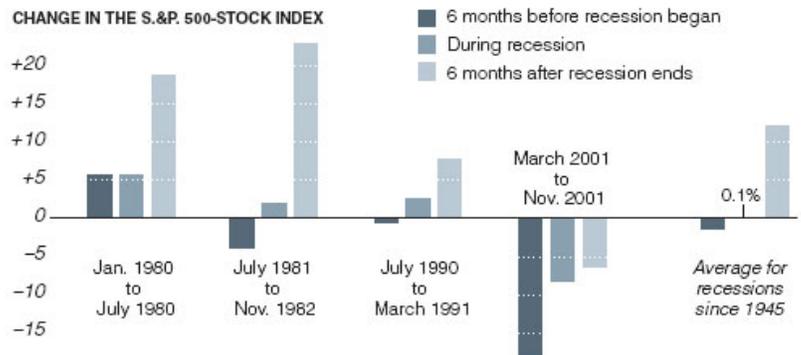
The performance of the oil service stocks so far this month has certainly gone a long way to correcting Mr. Gould's over-valuation belief

Without a near-term catalyst for earnings acceleration, it is virtually impossible for energy stocks to support high and expanding valuations. And if, as Mr. Gould believes, Wall Street has become too optimistic about the activity drivers behind oil service company earnings projections, then their stock prices have to be adjusted to more reasonable valuations. The performance of the oil service stocks so far this month has certainly gone a long way to correcting Mr. Gould's over-valuation belief.

Exhibit 7. A Recessionary Market May Lift Energy Stocks

Before, During and After a Downturn

Though stocks often drop in anticipation of recessions, they don't always lose ground during the actual period of contraction. Since 1945, the Standard & Poor's 500-stock index has gained 0.1 percent, on average, during official recessions. And once a recession ends, stocks usually rebound quickly.



Four most recent recessions, as defined by the National Bureau of Economic Research

Source: Standard & Poor's

Source: The New York Times

THE NEW YORK TIMES

Upside this year will probably be related to an improvement in the North American natural gas market, and there we do see the potential for a turnaround on the horizon

Stock markets always tend to surprise investors – both on the upside and downside. If there is a downside to 2008, it will probably be due to a sharper than anticipated correction in global oil prices caused by reduced demand and potentially a shrinking of the risk premium in oil prices. On the other hand, any upside this year will probably be related to an improvement in the North American natural gas market, and there we do see the potential for a turnaround on the horizon. (See “Natural Gas Markets About to Recover”, page 17.) If that recovery scenario becomes more probable, watch for energy stocks to rebound, led by the North American-centric companies that have lagged the performance of energy stocks in general for better than a year. With a possible recession, a U.S. election, a post-Olympics China and constant geopolitical turmoil on the horizon, 2008 is guaranteed to be an interesting year for energy and energy investors.

Big Brother California Wants To Control Thermostats

The State of California is proposing an updating of its state-mandated standards for building efficiency, known as Title 24. These rules cover all aspects of building new homes and commercial buildings such as the sizes of windows, the capacities of air conditioners and heaters and the thickness of insulation in walls and attics. One of the proposed revisions mandates larger diameter pipes between new swimming pools and their filter and pump. This will reduce the fluid friction losses that the pump must overcome and hence the pump’s consumption of electricity.

Each PCT will be fitted with a “non-removable” FM receiver that will allow the power authorities to change thermostat settings

A controversial regulatory change will mandate the installation of a “programmable communicating thermostat” or PCT, for every new home and whenever an existing home’s central heating and air conditioning system is changed. Each PCT will be fitted with a “non-removable” FM receiver that will allow the power authorities to increase the air conditioning temperature setpoint or decrease the heater temperature setpoint to any value they choose. During “price events” those changes are limited to +/- four degrees F and homeowners can override the change. However, during “emergency events” the new setpoints can be whatever the power authority desires and homeowners would not be able to alter them.

People are incensed that the government will step deeply into their homes to control power consumption rather than working to increase power generating facilities

The “emergency events” are actually Stage II and Stage III events as described by the California Independent System Operator, which manages the state’s electrical grid. A Stage II event occurs when electricity reserves (surplus of supply over demand) falls below 5%. A Stage III event takes place when reserves drop below 1.5%, and customer power may be shut down involuntarily. The possible governmental control over thermostats has generated outrage among many citizens. They are incensed that the government will step deeply into their homes to control power consumption rather than working to increase power generating facilities in the state.

The critics of the PCT mandate argue that the state should see to

The rationale for the PCT is that it may eliminate the traditional manner of dealing with power shortages - mandating rolling brownouts

the building of new power generating plants to avoid the problems of power shortages. The problem is that these new plants cannot be either coal or nuclear powered. The state has pushed for more wind power, but that doesn't meet peak electricity loads. There is one LNG plant in Mexico importing gas from Indonesia and soon gas from Russia, but the State Coastal Commission has vetoed a proposal to construct another LNG receiving terminal that would be supplied by Australian LNG.

The rationale for the PCT is that it may eliminate the traditional manner of dealing with power shortages often experienced during heat waves, which is to mandate rolling brownouts. According to Arthur Rosenfeld, a member of the California Energy Commission, "You realize there are times – very rarely, once every few years – when you would be subject to a rotating outage and everything would crash including your computer and traffic lights, and you don't want to do that." But as we see as a result of California's economic conditions, its high and rising tax rates in an attempt to close the state's budget deficit and governmental attitudes toward energy mandates, citizens and businesses are heading out of state. Maybe the state's power supply problems will be solved by out-migration.

How Low Might Oil Prices Go In 2008?

The odds leading economists are placing on the country experiencing a recession in 2008 have risen to 50-50

After breaking the \$100 per barrel barrier, crude oil prices have declined noticeably so far this year, although they remain extremely volatile, as fears about reduced demand due to a U.S. recession grow. As the stock market correction has become more violent in recent days in response to dismal economic statistics and financial news, the odds leading economists are placing on the country experiencing a recession in 2008 have risen to 50-50 or greater. Investors are turning cautious on those business sectors most exposed to economic activity and they are grabbing profits wherever they have them as they raise cash to weather a falling stock market.

The future direction of oil prices is being hotly debated

Given this outlook, the question becomes how far might crude oil prices fall? As we wrote in the last issue of Musings From the Oil Patch, the future direction of oil prices is being hotly debated. That's because the factors influencing the price are multiple and not clear cut. They include the health of the U.S. economy and its direct impact on the global economy. There is also the question of when, or if, the recent period of extraordinarily high crude oil prices will dampen consumption. Internationally, there is no shortage of ongoing geopolitical hot spots, any one of which could disrupt meaningful global oil supplies. On top of these concerns, during the past year the value of the U.S. dollar has depreciated significantly, which has contributed to the rise in oil prices as foreign sellers want to offset their declining purchasing power.

Other factors that have impacted global oil prices include growing concerns about the phenomenon of a peak in the world's oil supply. As the rhetoric about the world having reached Peak Oil, or more

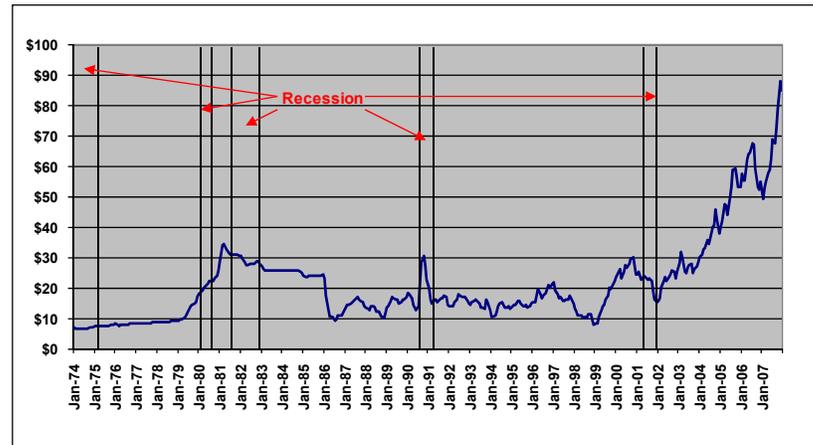
The strongest forces at work on global oil prices today include global demand destruction, either temporary or permanent, geopolitical issues and reservoir depletion

likely a plateau in oil production that cannot be exceeded meaningfully in the foreseeable future, becomes stronger, owners of oil are recognizing the value in hoarding their reserves for either higher prices or for their own growing consumption. For oil consumers, these influencing factors are creating a scenario that, if true, means steadily higher oil prices until either production can be boosted or demand destroyed.

It seems to us that the strongest forces at work on global oil prices today include global demand destruction, either temporary or permanent, geopolitical issues and reservoir depletion. Let's try to dissect these forces to understand just how strong each might be in influencing the price of oil. Demand destruction has both short- and long-term implications, and each can wield meaningful pressures on the oil price. In the short-term, the issue is whether or not there will be a recession, and whether it will be limited to the U.S. or encompass a greater part of the industrialized world. A subset of this question is what might be the impact of recessionary conditions on the economies of developing countries.

As we wrote in the last Musings, we found an investment strategist to be essentially correct who said that in each of the past four recessions, crude oil prices fell even though they often rose in the very early stage of the recession. But as we also noted, knowing when this country enters and exits recessions is always an ex post determination by the official judges at the National Bureau of Economic Research. Therefore, on a current basis, there is little guidance, and much guess-work.

Exhibit 8. Recessions Result In Lower Oil Prices



Source: EIA, PPHB

A number of Wall Street investment firms revised their economic outlooks for 2008 to reflect weaker growth

In response to a rash of poor economic statistics recently - the December U.S. government employment growth estimate; the Institute of Supply Management estimate of an economic contraction in December; a jump in the unemployment rate to 5%, weak holiday retail sales figures; and signs of problems in the high-end, luxury goods space - a number of Wall Street investment firms revised their

The stock market drop – almost 15% from its late fall 2007 high to last week’s low – sure looks like a typical pre-recession correction

economic outlooks for 2008 to reflect weaker growth and a higher probability of a recession. In fact, one firm declared that the U.S. was already in a recession. Whether we are in a recession, or merely headed for one as other firms believe, we aren't sure. What we do know is that the stock market drop – almost 15% from its 2007 high in late fall to last week's low – is that it sure looks like a typical pre-recession correction. With the stock market's correction, we have also seen a correction in the price of crude oil. If we follow the analysis, this price drop would appear to be confirming the start of a recession. What we were intrigued by was the correlation between a stock market falling more than 10% (often listed as a predictor of recessions) and a drop in oil prices.

Under the banner of geopolitical issues are several subtopics such as the real and perceived violence in producing countries that could impact oil availability, government attitudes toward exporting oil to the United States, and shifting attitudes by oil exporting countries to the development of their economies. Last year the violence in Nigeria and Iraq reduced the amount of oil available from those two major OPEC oil exporting countries. In Venezuela, the government has established a program designed to reduce the amount of oil that flows to the United States as a political statement. The antipathy between Venezuelan President Hugo Chavez and the Bush Administration has driven the South American leader to do everything in his power to use his oil as a political weapon. So far he has failed to have any real impact on U.S. oil markets, but his cacophony of threats occasionally rattles commodity traders. President Chavez, through his friendship with the leading socialist and Islamist governments, has been able to use these relationships to foster political tension that spills over into the commodity markets periodically. Commodity traders worry that political tensions over the fate of Iraq and the future of Islam in the Middle East might explode and create a situation where oil exporting countries elect to cut supplies as leverage to secure political agreements they favor. While this has yet to happen, and likely will not happen, merely the fear that it might happen impacts the commodity market from time to time.

Stratfor Strategic Forecasting Inc., recently issued a report suggesting that it perceives oil prices are poised to fall this year, possibly significantly

As we commented in our last issue, the Austin, Texas-based global intelligence firm Stratfor Strategic Forecasting Inc. recently issued a report suggesting that it perceives oil prices are poised to fall this year, possibly significantly, as a result of the easing of geopolitical tensions. It believes that the violence in Nigeria will ease due to the completion of the election and thus the determination of which political party would influence the government's control over nation's crude oil reserves and petroleum revenues. (It would seem that the very recent violence there might belie Stratfor's view.) With regards to other political issues, Stratfor believes that Venezuelan President Hugo Chavez has lost all his leverage in the oil market as any overt action could undermine his political support at home due to his economy's sad shape. Lastly, Stratfor believes the Western World's battle with al Qaeda has its leadership trapped in the Afghanistan-Pakistan border mountains with little operational capability to cause

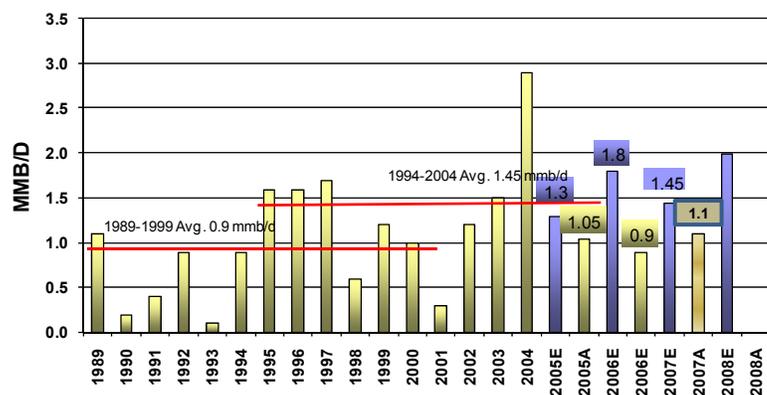
From \$27.65 on 9/11, oil prices dropped by 35% three months later

A U.S. recession could cut China's economic growth rate by 2%-3%, bringing it down into the 7%-8% range

violence outside of the immediate region. In Iraq, the “surge” has brought meaningful progress in security and on social and economic fronts. This improvement appears to be leading to stepped up investment in the country’s oil producing infrastructure that has enabled Iraq to boost its oil exports to levels not seen since days immediately prior to the U.S. invasion. With all these geopolitical tensions in decline, Stratfor believes oil prices are poised to fall maybe as much as they did following the 9/11 attacks. From \$27.65 on that date, oil prices had dropped by 35% three months later.

If the geopolitical risk factor is shrinking, then the course of oil prices will be more dependent on the underlying trends of the petroleum industry – namely supply and demand. We have previously discussed how global oil demand in 2008 will be dependent upon world economic activity and in turn whether there will be a recession in the U.S. and/or Europe and what impact it would have on economic activity in developing economies. There have been suggestions that a U.S. recession could cut China’s economic growth rate by 2%-3%, bringing it down into the 7%-8% range. With the U.S. consumer accounting for 19% of global GDP, a recession here that cuts consumer spending, which appears to be happening already as evidenced by the dismal holiday retail sales figures and Tiffany’s (TIF-NYSE) and American Express’s (AEX-NYSE) warnings about their client spending, will impact economies throughout the world. We have seen since 2004 that the International Energy Agency’s (IEA) estimate for global oil consumption growth has consistently proved too high, so the agency’s estimate that world oil demand will grow this year by 2.0 million barrels per day (mmbd), or up 2.3%, is materially greater than last year’s growth of 1.1 mmbd and 1.3%, and may prove again to be optimistic. Only time will answer the recession question.

Exhibit 9. IEA’s Recent Forecasts Were Too Optimistic



Source: IEA, PPHB

An oil supply “crunch” before 2015 may face the world

On the supply side there are even greater questions, especially from a long-term perspective. The most pressing one is the ability of the global petroleum industry to meet future oil consumption growth at whatever rate economic activity generates. For several months the

The IEA study will construct a new set of data for depletion rates in the world's top 250 oil fields

IEA's chief economist has been warning about the growing supply problems facing the petroleum industry. Officially, the IEA warned that the lack of investment in new supply in past years combined with soaring demand growth had increased the risk of a supply "crunch" before 2015.

In recent days the Agency announced it was initiating a new study on global oil reserves that would be completed later this year. The study will construct a new set of data for depletion rates in the world's top 250 oil fields. Additionally, the IEA will also be reassessing its own forecasts for projected oil discoveries, which it bases on estimates made by the U.S. Geological Survey (USGS). That body's original estimates for new oil discoveries around the world were originally calculated in 2000. A re-assessment of the statistics by the USGS in 2005 showed that actual new discoveries averaged only nine billion barrels a year between 1996 and 2003, 60% less than the average annual estimate for the forecast period 1995-2025. In addition, the USGS recently lowered its estimate of future new discoveries around Greenland by 38 billion barrels. These two events have created doubt within the industry about whether the USGS estimates are too optimistic.

Probably the most closely guarded statistic in the global oil industry is the depletion rate of oil fields. It is a key to determining the bulk of long-term supply growth. Gross supply growth needs to first offset lost production due to depletion in existing fields before supporting new consumption needs. The energy within a producing field declines as it ages. That is why producing fields often begin with the oil naturally flowing to the surface but eventually need to have some form of pumping mechanism installed. The flow within a field can often be sustained by other artificial means such as natural gas injection, water and/or chemical floods. These other artificial stimulation techniques are often employed not only to sustain or boost production, but to increase the recovery of oil from the reservoir.

According to Peter Jackson of Cambridge Energy Research Associates, his company's study of 800 oil fields shows an average decline rate of 4.5%

However, the most important consideration about the decline rate is that it tends to increase over time as all the natural energy within the reservoir is depleted. As the decline rate increases over time, the productive life of the oil field shrinks at an accelerating rate. Therefore, forecasters need to have a better understanding of whether the decline rate is 4%, as is generally employed in the models, or some faster rate. According to Peter Jackson of Cambridge Energy Research Associates, his company's study of 800 oil fields shows an average decline rate of 4.5%. On the other hand, Saudi Arabia has acknowledged that its giant Ghawar field has been experiencing about an 8% per year decline. The giant Cantarell field offshore Mexico is projected to be declining at 14% per year. The best estimates we can illicit from industry experts is that the global decline rate is probably somewhere in the 5% to possibly as high a 6% rate currently, but with a number of the giant oil fields reaching stages of accelerating decline rates, that overall industry rate could start to inch higher.

The physical evidence suggests that the world's oil industry is struggling, and will continue to struggle, to find more low-cost oil, if any still exists

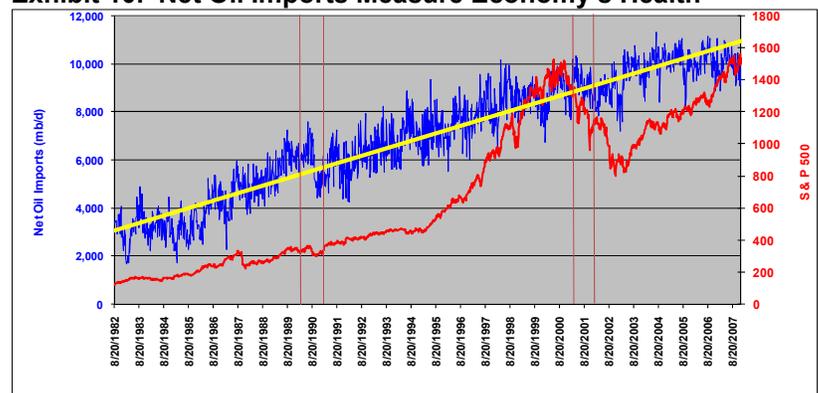
One measure of economic health is oil imports, which needs to grow to support greater economic activity since U.S. production is stable to falling very slightly

What is the significance of a higher decline rate? If the rate is 4%, then with global liquids production of 86 mmbd this year then next year new supply growth will first have to offset 3.44 mmbd of lost production before new supply can meet any new demand. If that decline rate is 5%, then the replacement bogey becomes 4.25 mmbd, a 23% greater hurdle than at 4%. If, as Andrew Gould, Chairman of Schlumberger (SLB-NYSE) suggested in his answer to a question on a recent earnings call that the global decline rate is 8%, based on what one of his good clients told him, then the world is looking at an annual supply growth of almost 7 mmbd to merely sustain existing consumption – a huge hurdle for the industry.

Since new oil discovery rates have been trending lower over the past 20 years, the physical evidence suggests that the world's oil industry is struggling, and will continue to struggle, to find more low-cost oil, if any still exists. We don't doubt that there is more non-conventional oil and more expensive oil left to find in the world, but that oil will only reach the market as producers become convinced that the current high oil price environment will be sustained. Whether sufficient volumes of high-priced oil can be developed on a timely basis remains a serious question mark. But we never fail to be amazed at the ability of the petroleum industry to do the seemingly impossible.

We doubt the oil industry will gain much clarity about the state of supply and demand this year. That means oil prices in the near-term will likely be determined by the course of demand. So if we are in a recession how far down might oil prices drop? To try to answer that question, we went back to our earlier point that the stock market often tells us when we are entering a recession. By dropping more than 15% between its October peak and last Friday, the recessionary correction measure of 10% was exceeded. One measure of economic health is oil imports, which needs to grow to support greater economic activity since U.S. production is stable to falling very slightly. So if we look at net U.S. oil imports excluding government purchases for the strategic petroleum reserve and compare that to the S&P 500 stock index, we have a rough indication of the health of the economy.

Exhibit 10. Net Oil Imports Measure Economy's Health

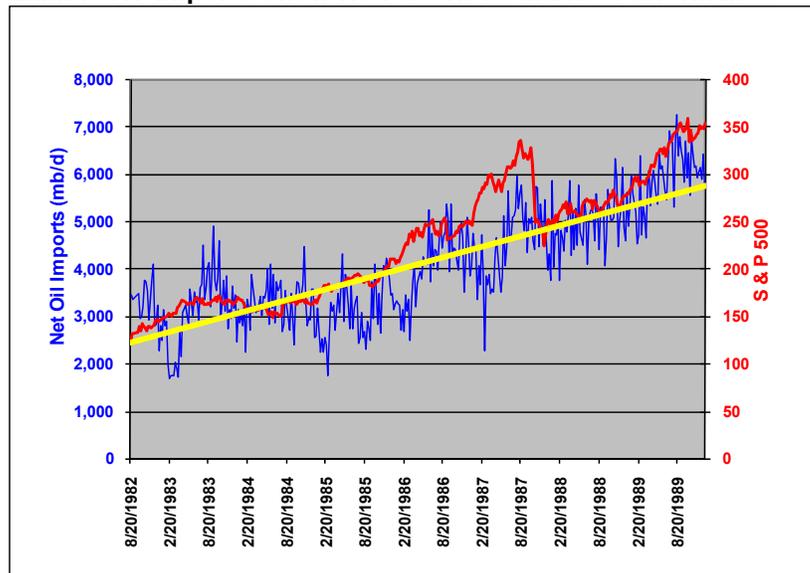


Source: EIA, PPHB

There are several time periods when the stock market's drop is followed by a drop in oil imports that would suggest a recessionary environment

Exhibit 10 shows the relationship between oil imports and the stock market over the period 1982 to 2008. When examined, there appear to be several time periods when the stock market's drop is followed by a drop in oil imports that would suggest a recessionary environment. The current period seems to be one of those times. What we did to look closer at this phenomenon was to chart shorter time periods: 1982-1989; 1990- 1999; and 2000-2008. In each case we put a trendline on the growth in net oil imports to be able to highlight those times when the volume of imports fell below the trendline and to see the relationship with the S&P 500.

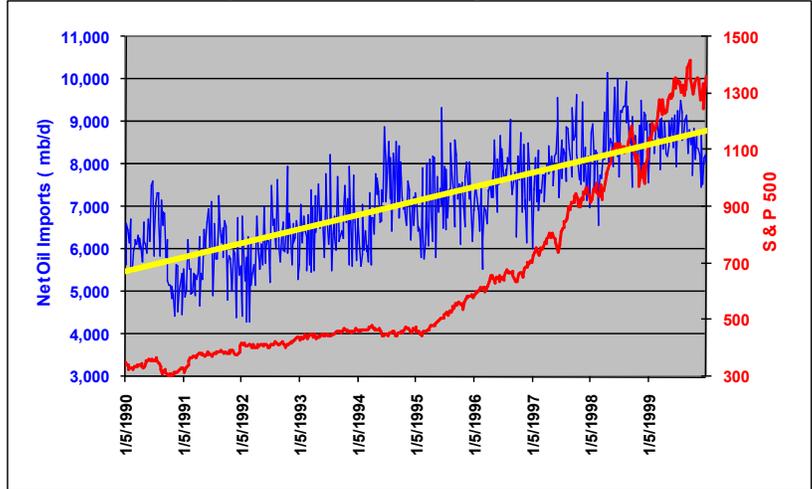
Exhibit 11. Imports Show No Pattern To Market Performance



Source: EIA, PPHB

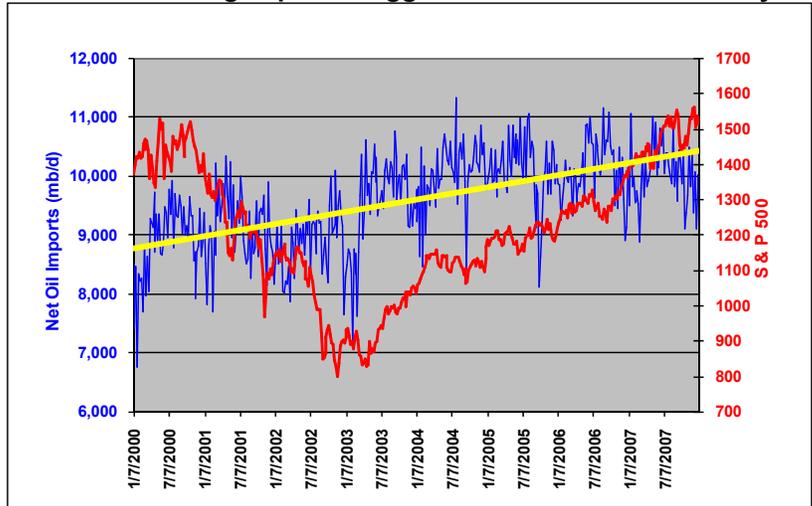
If we look at the two official recessions during the period of this data – 1990 and 2001 – we find a very interesting parallel with the Stratfor analysis and the post 9/11 oil price correction. According to the NBER, there were two recessions. One was from July 1990 to March 1991 and the other was from March 2001 to November 2001. Since we don't know exactly when in the month the recession started or ended, we elected to measure the monthly average oil price change between the months following the official starting and ending months. This gave us a drop in oil prices in the 1990 recession of 23.7% and 29.5% for the 2001 period. Those declines are quite similar to the drop (35%) in oil prices experienced in the three months following the 9/11 attacks.

Exhibit 12. Oil Imports Started Falling Before 2000 Correction



Source: EIA, PPHB

Exhibit 13. Falling Imports Suggests Recession Is Underway



Source: EIA, PPHB

We could be looking at something like a 25%-type price correction for oil

If one looks at the recession periods marked on the chart in Exhibit 10, it is quite clear that the stock market either peaked with or shortly before the peak in net oil imports. Net oil imports then fell to a rate below the trendline during the recession and for a short time afterward. The reason for looking at these patterns is to point out the similarity in the recent stock market drop that has been matched by drops in net oil imports. While nothing is exact, it sure looks to us like the pattern of net oil imports and the stock market demonstrated during the past two recessions is currently being repeated. If so, then we could be looking at something like a 25%-type price correction for oil.

While both this analysis and Stratfor's view suggest a meaningful oil price correction in 2008, and something we will not rule out, we

The faster the price drop occurs the greater will be the fear factor over significant damage to the health of the industry

recognize that other industry dynamics could mute the drop. Most particularly we would point to the growing challenge of increasing global oil output. That takes into consideration the issue of the world's oil depletion rate, the industry's success in new discoveries, the ability of the petroleum industry to develop new fields on a timely basis and the wildcard of oil exporting country internal petroleum consumption. We plan to visit several of these topics in upcoming Musings. In the meantime, we think the odds favor an oil price drop more in the 25% range than 35%, which from a \$100 price would put oil prices into the \$75 range. This is higher than the \$65 range suggested by the Stratfor correction prediction. Our caution about this scenario is that the faster the price drop occurs the greater will be the fear factor over significant damage to the health of the industry. With that fear comes sharply lower energy stock prices – presenting possibly the last great buying opportunity.

Mercury and CFL Bulbs

One question raised was how the federal government and various states could ban citizens from buying thermometers that contained mercury yet now mandate the use of CFL bulbs that contain mercury

Several people contacted us following our recent articles on the legislation outlawing incandescent light bulbs in favor of compact fluorescent light (CFL) bulbs. One question raised was how the federal government and various states could ban citizens from buying thermometers that contained mercury around the turn of the decade yet are now mandating the use of CFL bulbs that contain mercury. They wanted to understand the hypocrisy in these decisions. Unfortunately we have no answer other than to suggest that politicians are not always consistent. The real truth is that CFL bulbs have achieved an exalted status because of their perceived status as a silver bullet for solving the global warming problem. Since it is expected that the number of broken CFL bulbs will be minimal, the risk of mercury poisoning is ignored, or at least you never heard anyone raise the issue in the discussion about mandating CFL bulb use.

If you Google “mercury thermometer” you will find numerous articles from various state agencies along with newspaper accounts discussing the effort to recall these thermometers. What struck us about many of these articles was the associated discussion about how to clean up the mercury from a broken thermometer in addition to how to dispose of them – find a hazardous waste disposal facility. These instructions are similar to those procedures outlined for what to do should you break a CFL bulb that we wrote about last fall. At that time, we discussed the story of the family in Maine that broke a CFL bulb, called the Home Depot store where they had purchased the bulb, were told to contact the state poison control hotline that instructed them to contact a hazardous waste disposal firm that billed them \$2,000 to clean up the mess – some 600 times the cost of the CFL bulb. These stories and increased publicity about the health risks of mercury in CFL bulbs may make consumers more cautious both about using the bulbs and how to properly dispose of these bulbs. In the mean time, many people are disposing of their

Does anyone believe that before the CFL bulb mandate is put in place, some congressman will request a study of the mercury risk the federal government is inflicting on the public?

burned out CFL bulbs in their regular trash as the effort required to find a hazardous waste facility and take the bulbs there is too great an effort.

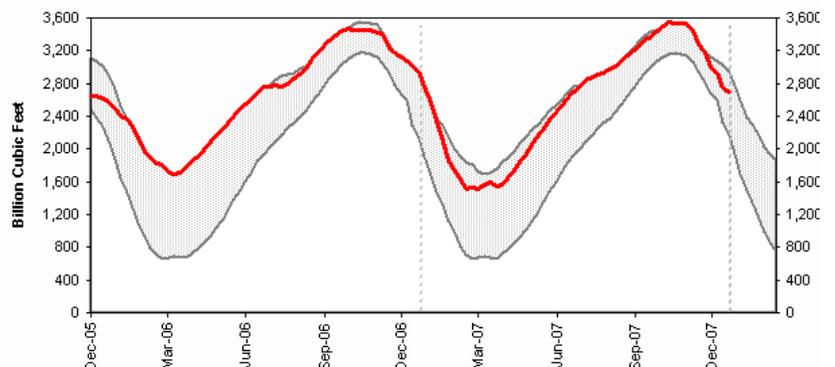
Does anyone believe that before the CFL bulb mandate is put in place, some congressman will request a study of the mercury risk the federal government is inflicting on the public? We'd like to think so, but the rush to solve global warming may overwhelm reasonable inquiries. History should stand as a reminder of the inconvenient risks that past government mandates have visited on our citizens. During World War II, the U.S. Navy mandated the use of asbestos coatings in ships because it was the best fire retardant then available. We all know the cost in both human and economic terms that that government mandate and its adoption for other construction applications to suppress fire risk. Let's hope CFL bulbs don't pose the same eventual risk.

Natural Gas Markets About to Recover?

The winter weather has contributed to a reduction in the amount of natural gas in storage that is helping lift gas prices

Natural gas futures prices have improved significantly in the past month, rising about \$1 per mcf into the low \$8 range. The improvement has largely been driven by the arrival of traditional winter weather that has spread across the Midwest and Northeast regions. The winter weather has contributed to a reduction in the amount of natural gas in storage that is helping lift gas prices. According to the Energy Information Administration's (EIA) most recent weekly report, the nation had 2,691 billion cubic feet (Bcf) of gas in storage, down 8.7% from a year ago, but still some 6.7% above the average of gas storage volumes for the period 2003-2007.

Exhibit 14. Gas Storage Inventories Are Below Peak Levels

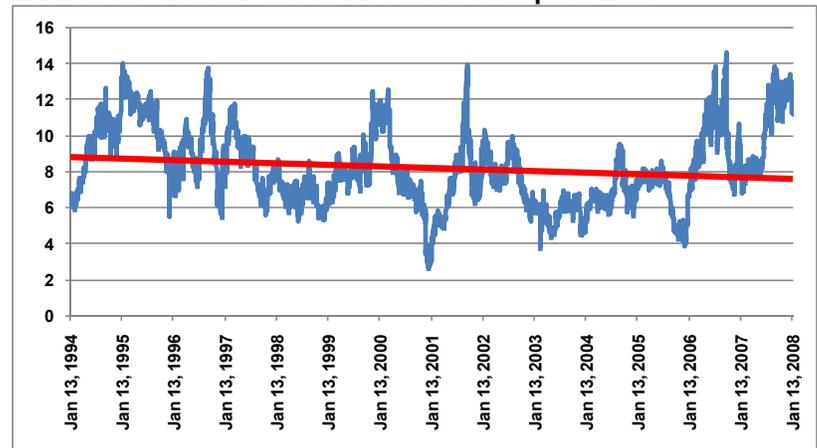


Source: EIA

With the dramatic rise in crude oil prices last year, we thought it would be interesting to look at how cheap natural gas is on a relative basis to oil. As shown in Exhibit 15, during 2007, the ratio of crude oil to natural gas prices, as reflected by the near-month futures price, reached a level that has only been attained or exceeded four

times since 1994 – oil prices at 14 times the price of gas. Since the fall of last year, that ratio has improved, although it is still high by historical standards.

Exhibit 15. Natural Gas Is About As Cheap As Ever

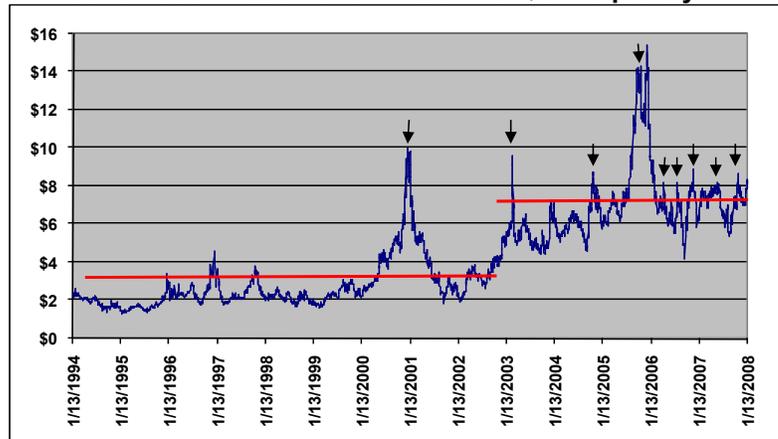


Source: EIA, PPHB

When we look at the pattern of the ratio over the past couple of years, it looks a lot like the pattern of the early years on the chart – 1994-1996 – that marked the last days of the natural gas “bubble” or “sausage” as the natural gas surplus was often referred to

There were two things that struck us about this chart. First, when we superimposed a trendline on the chart, we found that it sloped downward as we moved toward recent months. From close to 9 times in the 1994 period, the ratio has now dropped below 8 times. Secondly, when we look at the pattern of the ratio over the past couple of years, it looks a lot like the pattern of the early years on the chart – 1994-1996 – that marked the last days of the natural gas “bubble” or “sausage” as the natural gas surplus was often referred to. Clearly we have a gas surplus as reflected by low gas prices and historically high gas volumes in storage. As opposed to the earlier period that was marked by restrictions against the burning of natural gas in power plants and as boiler fuel in industrial applications, the surplus of recent days reflects warm winters, a growth in domestic production, Canadian gas imports remaining fairly stable and a surge in liquefied natural gas (LNG) imports.

Equally important in understanding the state of the domestic natural gas market is to look at the price of gas and the volume of LNG imports. Natural gas prices are above \$8 per mcf, a price threshold that had not been experienced in modern times until the winter of 2000-2001. Since then gas prices had periodically spiked above \$8, but following the explosion in prices caused by the loss of huge volumes of Gulf of Mexico gas supplies due to the damage from hurricanes Katrina and Rita, gas prices have flirted with the \$8 level much more frequently, including now. In fact, if one puts a line on the chart to reflect average gas prices over extended time periods, it becomes obvious that there has been a significant jump in average gas prices in the United States since 2003.

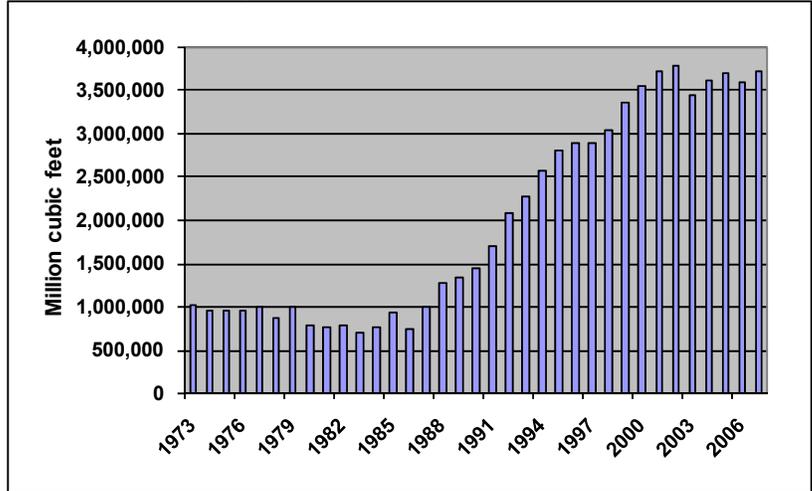
Exhibit 16. Gas Prices Have Flirted With \$8 Frequently

Source: EIA, PPHB

Canada's gas imports to the United States peaked in 2002

The principal driving forces influencing natural gas prices are Canadian gas imports and the surge in LNG imports. Canada has supplied upwards of 15% of U.S. gas supplies over the past decade plus, but that supply source may be about to shrink. Canada's natural gas production is subject to the same factors influencing U.S. gas production – aging wells, a highly explored basin with limited new gas resources, and growing domestic supply. Canada's gas imports to the United States peaked in 2002, as demonstrated by the chart in Exhibit 17. The maturity of the Western Canadian Sedimentary Basin is demonstrated by the decline in production. Future gas demand in Canada will be rising as the need to power the process to produce synthetic oil from the northern oil sands region grows. Recent delays in the start-up of some of these oil sands projects have eased the demand on local gas supplies that has enabled Canada to sustain, and even increase in recent years, gas export volumes to the United States. Gas export data is only available through October 2007. It shows that based on 10 months of 2007, Canadian gas export volumes to the U.S. were up 4.2%. If we annualize the 10-month data, then 2007's gas exports would be up 3.5%.

Exhibit 17. Gas Imports From Canada Are Lower Than 2002

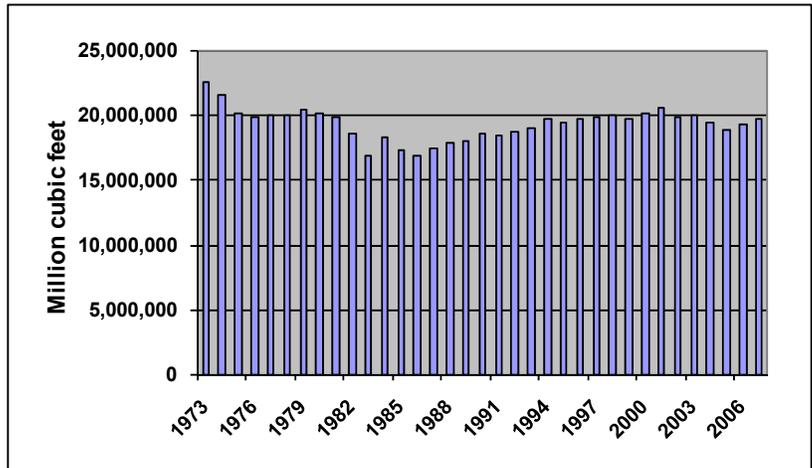


Source: EIA, PPHB

The gas supply increase is driven by the growing exploitation of unconventional gas resources, in particular the gas shales in Texas, Arkansas, Appalachia and the Rocky Mountains

As mentioned earlier, U.S. natural gas production has grown, and based on the first 10 months of 2007, is 2.2% higher over the same period in 2006. Again, if we annualize the partial 2007 data, it suggests that production may have increased by 2.1%. The gas supply increase is driven by the growing exploitation of unconventional gas resources, in particular the gas shales in Texas, Arkansas, Appalachia and the Rocky Mountains. The recent slowdown in domestic gas drilling, especially as natural gas prices sank close to \$4 per mcf, will impact the future growth of domestic production. In addition, these unconventional gas resources are boosting the industry’s average depletion rate. At some point, probably not in the too distant future, even a higher level of gas drilling will not be able to overcome depletion. When this happens, the United States will become increasingly dependent on Canadian gas exports and LNG imports.

Exhibit 18. Natural Gas Production Has Started To Grow

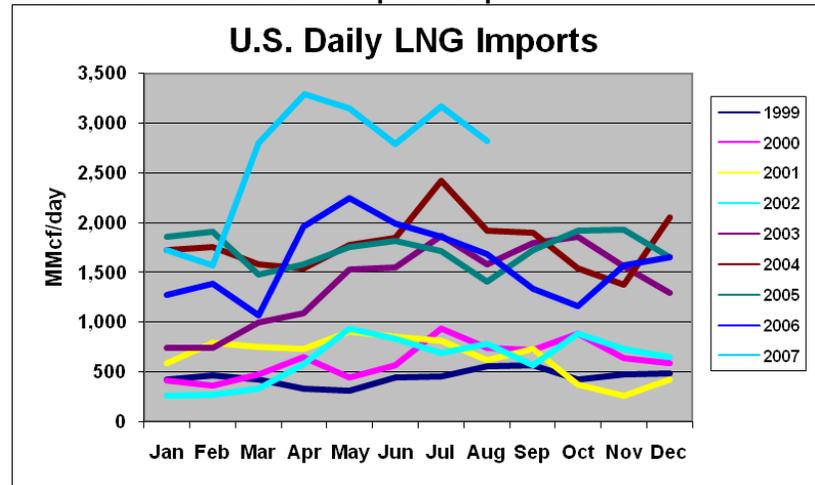


Source: EIA, PPHB

The seasonal surge in LNG imports works to depress domestic gas prices, which in turn curtails U.S. gas drilling

LNG imports to the United States, as we have previously written, have been growing in recent years. But more significantly, they tend to surge during the first half of the calendar year as U.S. gas storage capacity enables global LNG output to be stored for winter demand. Unfortunately, this seasonal surge in LNG imports works to depress domestic gas prices, which in turn curtails U.S. gas drilling. Recently we learned that several large LNG consuming markets have been aggressively bidding for global LNG supplies, reducing the volume of LNG entering the U.S. and going into storage. This shifting of LNG supplies away from the U.S. partially explains why gas storage volumes have been shrinking.

Exhibit 19. Seasonal LNG Imports Depress Gas Prices



Source: EIA, PPHB

LNG experts believe that the supply needs of Japan and South Korea will sustain the current wide price differential well into 2009

According to people active in the LNG market, the demand from Japan due to one of its major nuclear power plants being offline and South Korea because it has had to shut down four major LNG storage tanks has resulted in them competing aggressively for gas supplies and driving gas prices to \$16-\$18 per mcf as opposed to Gulf of Mexico prices of \$7-\$8. These LNG experts believe that the supply needs of these countries will sustain the current wide price differential well into 2009. If that happens, then U.S. gas storage volumes could fall further and refill slower than last year, helping to boost domestic gas prices and stimulate domestic gas drilling. It is that potential - a recovery scenario that many people are not paying attention to - that could turn out to be the catalyst for a sustained recovery in natural gas prices and North American gas-related oilfield activity.

New Yorkers And High Heating Oil Bills

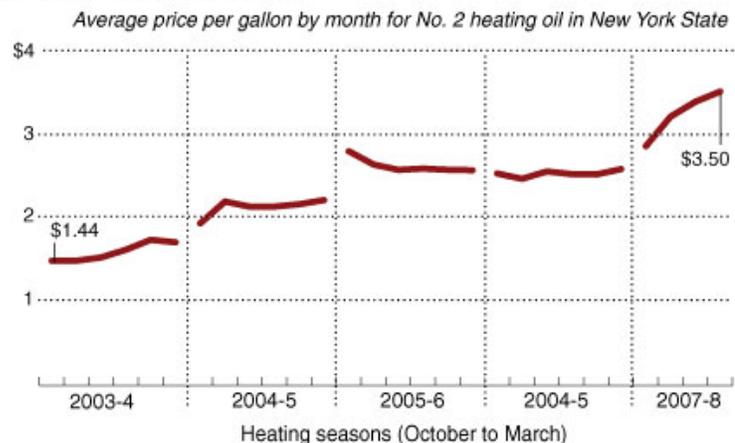
Residents of New York appear to pay the highest heating oil bills in the country, largely reflective of the general cost to operate businesses in the region. A recent article in *The New York Times* highlighted the rapid rise in heating oil bills for New Yorkers this

Last week the price of heating oil reached \$3.50 per gallon, a jump of more than 143% in four years

winter. Four winters ago, according to data from the New York State Energy Research and Development Authority, heating oil cost citizens in the state about \$1.44 per gallon. Last week the price reached \$3.50 per gallon, a jump of more than 143%. The article focused on the sharp jump in heating oil bills for low-income residents between November and December, but also between this winter and last.

Exhibit 20. Heating Oil Prices In New York Have Jumped Heating Oil Prices Rising Steeply

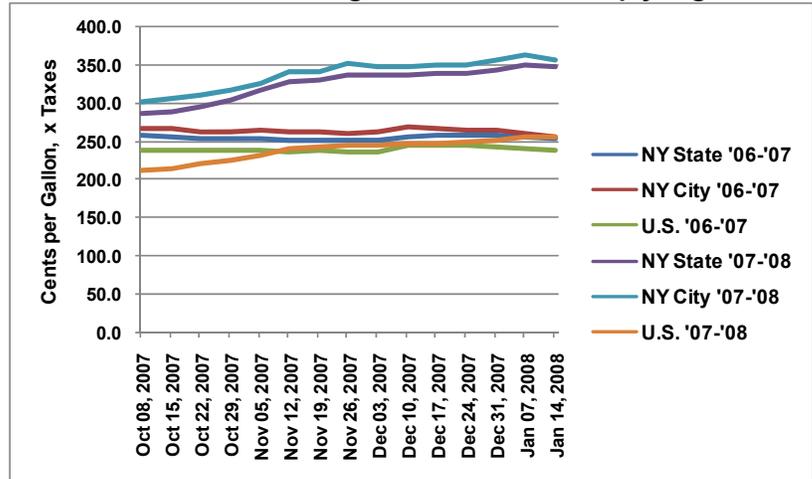
After remaining steady for the last two winter heating seasons, oil costs have climbed sharply this winter. Prices are more than double the level of four years ago.



Source: New York State Energy Research and Development Authority THE NEW YORK TIMES
Source: *The New York Times*

Already 658,000 low-income families in the state have received federal assistance to help cover their heating costs this winter

One resident, a customer of National Fuel Gas Company (NFG-NYSE) living in Buffalo, stated that her December bill was \$368, nearly double the \$190 she paid in November and about \$100 more than she paid in December 2006. According to New York State officials, already 658,000 low-income families in the state have received federal assistance to help cover their heating costs this winter. State politicians are clamoring for the release of more federal funds for heating bill assistance. In fact, these politicians, and even President George W. Bush, have talked about how the cash payment anticipated as part of the proposed economic stimulus package currently being negotiated by the Administration and Congress could be used by citizens to help pay their fuel bills.

Exhibit 21. 2008 NY Heating Oil Prices Are Sharply Higher

Source: EIA, NY State Energy Research and Development Authority, PPHB

This data merely supports a conclusion we have had for many years – New York and the Northeast are high cost places to live

Besides looking at what has happened to heating oil bills over the 2003-4 to 2007-8 winters in the State of New York, we also looked at the past two comparable winter periods for New York State, New York City and the country as a whole. What we know is that between the past two winters, heating oil prices are 38% higher for residents of New York state and 41% for New York City residents. But those increases were less than the rise experienced for the entire country, which has jumped by 42%-43%. However, the national heating oil price is about 10-12 cents lower than the New York State price, which in turn is about 10-15 cents below New York City prices. This data merely supports a conclusion we have had for many years – New York and the Northeast are high cost places to live.

Contact PPHB:
 1900 St. James Place, Suite 125
 Houston, Texas 77056
 Main Tel: (713) 621-8100
 Main Fax: (713) 621-8166
www.pphb.com

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