MUSINGS FROM THE OIL PATCH

December 23, 2008

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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

The Meaning of Crashing Oil Prices

It's beginning to look a lot like …..a Depression?

Crude oil prices fell last week to the lowest level they have seen since February 17, 2004. To paraphrase a popular holiday song: It's beginning to look a lot like …..a Depression? That prospect seems to be what is establishing the mood currently sweeping the globe, which is reflected most ominously in the world price of crude oil.

You get the feeling that crude oil traders didn't believe the OPEC production cutback would have any impact

The price for crude oil futures for delivery in January plummeted last week, falling by $12.41 a barrel or 26.7%. Part of the explanation for the drop was the expiration of the January contract last Friday, but crude oil traders suggested that the price weakness would be quickly transferred to the February contract. If you consider that early last week, OPEC members met in Oran, Algeria and agreed to cut their production by a record 2.2 million barrels a day (b/d) effective January 1, 2009, the continued near month futures price drop was somewhat surprising. In fact, oil prices dropped more than $2 a barrel immediately following the announcement by OPEC of its production cut decision. You get the feeling that crude oil traders didn't believe the OPEC production cutback would have any impact.

Oil price volatility has marked the pattern of oil trading since Thanksgiving. The 26.7% drop in oil prices last week was matched by a 25% drop the week after Thanksgiving. In the intervening week, however, oil prices rose by 13.2%.

Exhibit 1. Weekly Oil Price Volatility

Date	Price	Change	% Chng
Nov. 28	$54.43		
Dec. 5	$40.81	-$13.62	-25.0%
Dec. 12	$46.21	$5.40	13.2%
Dec. 19	$33.87	-$12.34	-26.7%

Source: EIA, PPHB

Skeptics pointed out that the volume of production to be cut corresponded with the amount of Russian oil production falloff from depletion

There had been rumors prior to the OPEC meeting suggesting that other countries interested in helping to break the fall in oil prices would announce production cuts. The most prominent countries cited were Russia and Azerbaijan who were collectively supposed to cut global oil supplies by more than 600,000 barrels per day (b/d). Russia's deputy premier was talking about his country cutting production by 350,000 b/d, but when pressed for details he said they had already implemented the cut. Skeptics pointed out that the volume of production to be cut corresponded with the amount of Russian oil production falloff from depletion and the lack of new investment to develop new oil reserves.

In the case of Azerbaijan, the Energy Minister said his country was prepared to cut about 300,000 b/d, but the cut would be voluntary. Unfortunately, he failed to discuss the cut with the country's primary oil producer – BP (BP-NYSE) – and he failed to acknowledge the sharp decline in production due to an October accident on BP's main production platform. That accident had already limited BP's production to about 500,000 b/d, which was consistent with the reduced production target the minister was citing. In other words, these oil producing countries had for various reasons already seen their production fall to these new lower levels well ahead of the OPEC production cutback decision.

OPEC doesn't have the greatest track record of honoring its prior production cuts

Why might traders question OPEC's resolve to stop the oil price slide? Well, OPEC doesn't have the greatest track record of honoring its prior production cuts. It has a much better record when boosting production: Surprise! Surprise! as TV's Gomer Pyle would say. Only a few weeks ago, OPEC had agreed to institute a 1.7 million b/d production cut, which based on various shipping data reporting sources, has yet to be fully implemented. So now OPEC plans to cut another 2.2 million barrels effective January 1, but to what level of adherence?

The problem OPEC is having, as they do in almost every period when oil prices are falling, is trying to chase the price lower. The issue commanding the attention of analysts, investors and company managements along with OPEC oil ministers is falling global oil demand. Oil consumption is dropping in response to the growing economic weakness in the major oil consuming regions of the world, and importantly, the absence of signals that the economic slide is nearing an end with recovery on the horizon. In the past several days new economic data released for China has forced forecasters to lower that country's growth projections for 2009.

The Royal Bank of Scotland has just reduced its 2009 forecast for China's economic growth to 5% from 9%

The Royal Bank of Scotland (RBS-NYSE) has just reduced its 2009 forecast for China's economic growth to 5% from 9%, with the suggestion that first half growth would only be 4% but rebound in the second half of the year as the Chinese government's stimulus actions begin to bear fruit. Officials from the International Monetary Fund (IMF) said they would shortly be revising their view of China's growth prospects next year to 5% from their slightly less optimistic view of 8.5% growth. Both Chinese government officials and

economists have said that economic growth rates below 8% could contribute to increased social unrest in the country, something that has been cited recently based on episodes of worker violence in response to job layoffs around the country.

The auto industry bailout decision's most significant impact, however, was on the value of the U.S. dollar

Further undermining optimism about a quick economic recovery next year was the bailout of two of the big three U.S. automakers. While this action was debated in both the media and the halls of Congress, the realization that the federal government would need to come to the aid of this important source of U.S. manufacturing strength has people wondering just how weak the U.S. economy may actually be. The bailout decision's most significant impact, however, was on the value of the U.S. dollar, which after rallying on Friday with the Bush administration's decision to move forward with the bailout has lost about a third of its recovery since mid-summer. The recovery of the U.S. dollar's value in foreign exchange markets since July coincided with the slide in global crude oil prices. The question now is does the reversal of the U.S. dollar signal that oil prices may be at the bottom and poised for recovery?

Exhibit 2. The U.S. Dollar Has Rallied In Second Half of 2009

Source: Barchart.com

The message seems to be: The current recession is going to be deeper and last longer than previously anticipated

As crude oil prices continued to fall following the December 17th OPEC meeting, many market observers began to focus on what broader message the oil market was sending. The message seems to be: The current recession is going to be deeper and last longer than previously anticipated. How about another depression to rival the Great Depression of the 1930s? This view was heightened by the media covering the drama of the auto industry bailout. But is this really likely to happen?

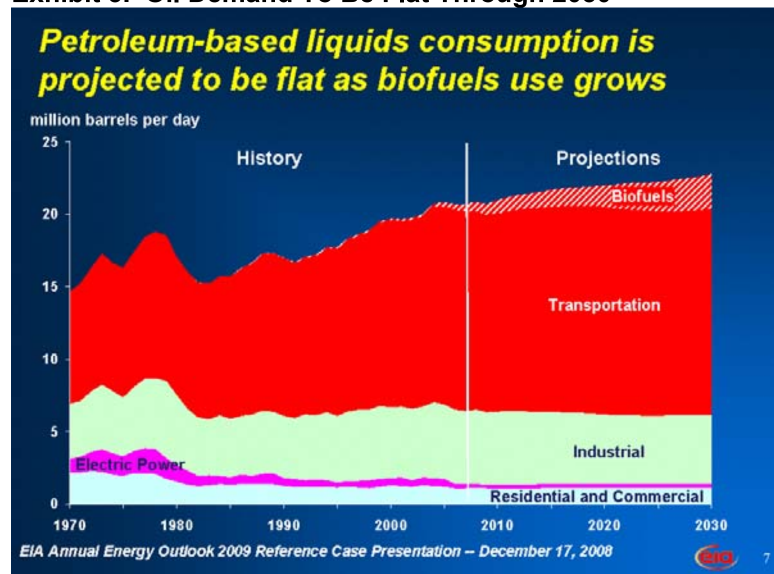
There are several data points that should be considered. In the near term, these data points would suggest the oil industry is facing a much more challenging environment in 2009 than it contemplated merely a few months ago. Yet, these same data points offer up a scenario that suggests a recovery and a return to the industry's

growth pattern that could start in the latter part of next year or certainly in 2010. These data points include recent oil and gas supply and demand forecasts from the Energy Information Agency's (EIA) outlook for 2009-2030, the new political environment about to be ushered in January with the Obama presidency and the impact of China's economy on the global economy.

The EIA's base case forecast for energy demand through 2030 says liquid petroleum consumption in this country will be flat

The EIA's recent release of its base case forecast for energy demand through 2030 points out that with respect to liquid petroleum demand, oil consumption in this country will be flat with all the growth being met by increased biofuels usage. Following a long history of steady growth in oil consumption in the U.S., albeit with brief periods of demand declines, the prospect of flat consumption for 22 more years is quite a surprise. But will it really happen?

Exhibit 3. Oil Demand To Be Flat Through 2030



Source: EIA

The latest EIA Short-Term Energy Outlook report projects that global oil demand will fall by 50,000 b/d in 2008 and 450,000 b/d in 2009 marking the first time in 30 years that we have seen back-to-back oil demand declines. When commenting on the impact of OPEC's production cut decision, EIA economist Neil Gamson commented that the production cuts are "going to be overwhelmed by the economic slowdown." He doesn't expect to see an uptick in oil demand until at least April 2009 when U.S. driving increases.

The primary issue for the near-term, however, will be the oil demand growth outlook for non-OECD countries, primarily China

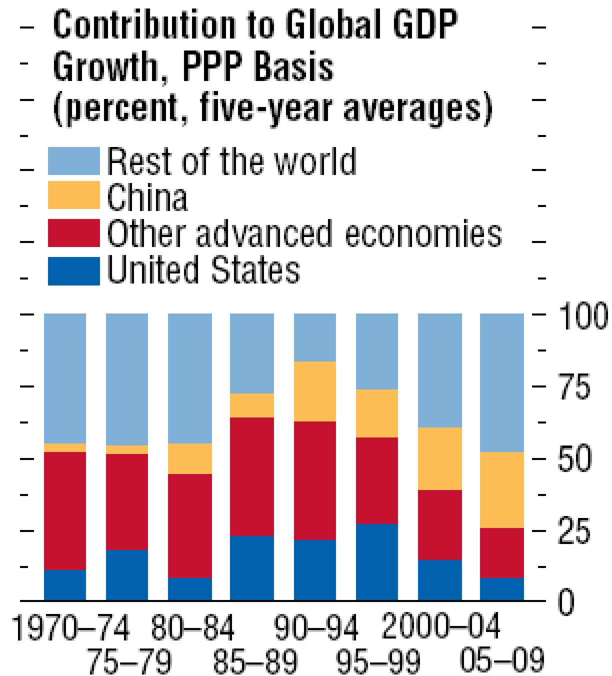
The primary issue for the near-term, however, will be the oil demand growth outlook for non-OECD countries, primarily China. As we pointed out earlier, the forecasts for China's economic growth next year are falling and falling rapidly. Yes, the Chinese government has begun to push stimulus measures, but they require time to ramp up as suggested by the pattern of economic growth in 2009 that Royal Bank of Scotland forecasts. In the interim what is the risk that

social unrest grows and the Chinese government cannot contain it? It has already been reported that the Chinese government has mobilized military troops to a number of locations across the country in anticipation of growing social unrest.

The last time we had three years of falling global oil consumption was in the early 1980s

China has been a major source of economic growth in recent periods, as demonstrated by the data from the IMF presented in Exhibit 4. The important point about the chart is the role that China has played in global economic growth for 2005-2009. If the 2009 growth is as low as both the IMF and other forecasters are calling for, then this period's contribution will be reduced. In fairness, however, the contribution from the United States and other advanced economies will also be reduced. These reductions mean less oil demand than reflected in the EIA's global oil demand forecast for 2009. Will demand also be lower in 2010? The last time we had three years of falling global oil consumption was in the early 1980s. It is the fear of a repeat of that period that is haunting petroleum industry managements. Forecasters, however, should pay attention to the growing contribution from China's economic growth since the 1970s. As its population grows, China's economy will grow and we assume a return to at least high single-digit growth rates. The only uncertainty is just when that will happen.

Exhibit 4. China Has Been A Growth Engine



Source: IMF

Furthermore, the change in government administrations coming January 20th means energy industry regulation in the United States

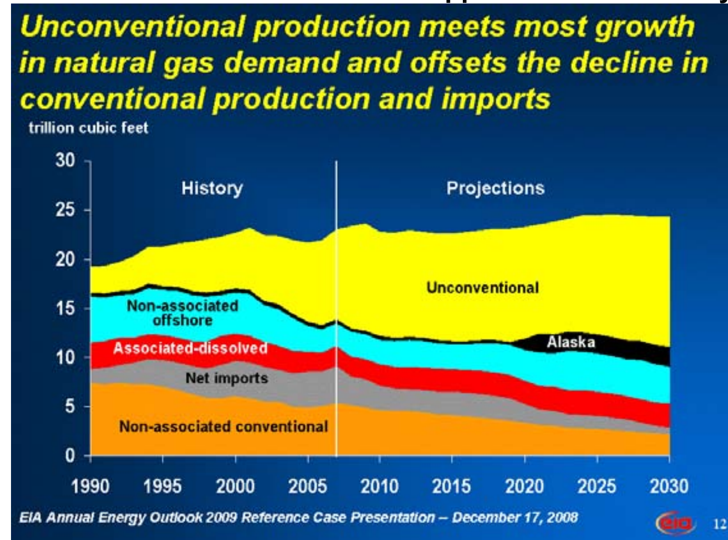
This regulatory shift comes at a time when oil and gas prices have been falling and their recovery is uncertain making forecasting oil industry cash flow in 2009 and thereafter virtually impossible to predict

will shift. The Obama presidency is coming into office with a clear green bias and officials that will drive regulation favoring clean technology development and use and who will be less sympathetic to the needs of the oil and gas industry. This regulatory shift comes at a time when oil and gas prices have been falling and their recovery is uncertain making forecasting oil industry cash flow in 2009 and thereafter virtually impossible to predict. This uncertain environment is contributing to capital spending cuts by oil and gas companies – most voluntarily but some forced by the lack of company access to capital markets. Barclay's oil service analysts are reporting that global capital spending in 2009 is estimated to fall by 12% to $400 billion. A 26% drop is forecast for capital spending in the United States next year. The survey reports that petroleum executives are using $58 per barrel and $6.35 per Mcf prices in establishing their capital spending budgets for next year.

The cost of that new supply will be greater due to the need for greater oil service input

For the U.S. petroleum industry, natural gas plays an important role in forecasting activity. According to the EIA's long-term outlook, the country will meet its natural gas needs from growth in unconventional gas resources. This means, however, that the cost of that new supply will be greater due to the need for greater oil service input. New technology will also play a role, but that too will add to the cost to develop these new gas resources. Because of the nature of these reservoirs once wells come on production they have a huge production surge in the first year or two but then it declines rapidly until production stabilizes at a much lower level, which continues at that reduced rate for a number of years. The huge rise in drilling activity in unconventional gas resources over the past couple of years dictates that we will see further gas supply growth following on the 8% annual growth experienced so far this year. That supply growth is likely to continue into 2010 but then it should start to fall unless natural gas drilling activity is not cut back, a scenario we find hard to comprehend with low current gas prices.

Exhibit 5. Unconventional Gas Supplies Are More Costly

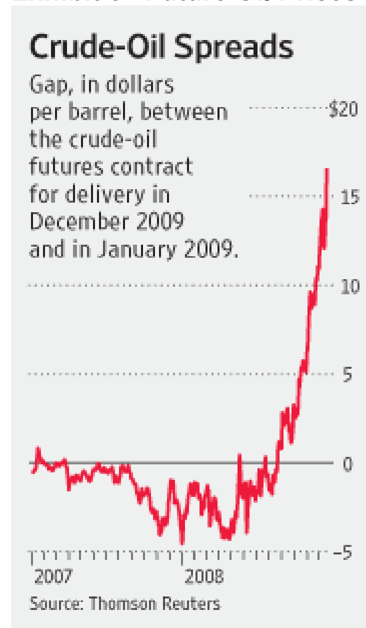


Source: EIA

We have a number of respected forecasters now suggesting that due to the projected fall in global oil consumption this year and next, oil prices may fall into the $25 range

As economic and petroleum conditions play out, we are left with a deteriorating mood among petroleum company managers. We are witnessing a headlong rush by oil market forecasters to cut their oil and gas price forecasts for next year. It almost seems like a bidding war has broken out: I can produce a price forecast lower than you! We have a number of respected forecasters now suggesting that due to the projected fall in global oil consumption this year and next, oil prices may fall into the $25 range. These new price forecasts are down from recent forecasts for oil prices in the $40s and $50s. (We haven't had time to check the accuracy of these forecasters' summer price projections when drawing media attention required having the highest price forecast.) The biggest problem with all these new forecasts is that they have no timeframe associated with their lowered estimates.

Exhibit 6. Future Oil Prices Stronger



Source: WSJ

We believe the futures market may have a better handle on the health of the petroleum industry and the economy than the current mood of forecasters

A key consideration about current weak oil prices is the impact of a shortage of oil storage capacity as Cushing, Oklahoma, where West Texas Intermediate crude oil is traded. According to reports, oil supply is at near-record levels – suggesting that there is only about 500,000 barrels of storage capacity still available. But as shown by the chart in Exhibit 6, there is little demand for near-month crude oil but much greater demand for oil by the end of next year as reflected in the gap between the January 2009 and December 2009 oil price. We believe the futures market may have a better handle on the health of the petroleum industry and the economy than the current mood of forecasters. While the world appears to be collapsing (and there are many scenarios that could support a world depression) we are actually becoming more optimistic after a year of heightened concern about a downturn in the current industry cycle.

Our optimism is based on the nature of business cycles and the power of geology – or the depletion rate of oil and gas resources

Our optimism is based on the nature of business cycles and the power of geology – or the depletion rate of oil and gas resources. The current credit market chaos is the wildcard in the equation, but we believe credit market conditions are starting to improve and once we get past the year-end financial conditions things will look better, helping to restore more optimism to everyone's mood. As we began citing the lyrics of one song, we think our attitude may be best summed up by the following lyrics:

"I have heard people rant and rave and bellow
"That we're done and we might as well be dead
"But I'm only a cock-eyed optimist"

From "A Cock-eyed Optimist" by Rogers and Hammerstein in South Pacific.

A First Look at 2009 Hurricane Season

We can expect 14 named tropical storms in 2009 with seven becoming hurricanes and three of those intense (Category 3-4-5) hurricanes

Colorado State University's first forecast for the upcoming 2009 hurricane season was recently released. It suggests another season with tropical storm activity above normal. According to the forecast, we can expect 14 named tropical storms with seven becoming hurricanes and three of those intense (Category 3-4-5) hurricanes. Another aspect of the CSU forecast is their estimate for the probabilities of at least one intense hurricane landing on the U.S. coast. They see a 63% probability for one storm landing on the entire U.S. coastline compared to a 52% average for the last century. There is a 39% probability for an intense hurricane hitting the U.S. East Coast including the Florida peninsula versus a 31% average. The Gulf Coast from the Florida Panhandle to Brownsville, Texas has a 38% probability of being hit by a hurricane compared to the historic average of 30%. The forecast also suggests an above-average risk of a major hurricane landing somewhere in the Caribbean during 2009.

Exhibit 7 shows the December forecast for 2009's tropical storm season compared to the record of the previous six seasons. The 2009 forecast looks like a repeat of the hurricane seasons of 2003 and 2007 – not the most memorable but certainly active ones when compared to the record of the 50 years of 1950-2000.

Exhibit 7. CSU's First 2009 Hurricane Forecast

Forecast Parameter and 1950-2000 Climatology (in parentheses)	2009 Forecast Dec. 10, 2008	2008	2007	2006	2005	2004	2003
Named Storms (9.6)	14	16	15	10	26	14	14
Named Storm Days (49.1)	70	84.75	34.5	50	116	90	71
Hurricanes (5.9)	7	8	6	5	14	9	7
Hurricane Days (24.5)	30	29.5	11.25	20	48	46	32
Intense Hurricanes (2.3)	3	5	2	2	7	6	3
intense Hurricane Days (5.0)	7	8.5	5.75	3	16.75	22	17

Source: Colorado State University

That suggests low vertical wind shear, warm tropical Atlantic sea surface temperatures and low sea level pressures during the hurricane season, all of which contribute to an active hurricane season

Last year, the CSU forecasters developed a new December forecasting methodology because their prior methodology had not proven significantly better than guessing. They employ three predictors for their December forecast. These predictors include the sea surface temperatures in the North Atlantic, wind heights in the far North Atlantic and pressures in the tropical Northeast Pacific Ocean. The warm North Atlantic sea surface temperatures are indicative of an active phase of the Atlantic Multidecadal Oscillation (AMO) trend. That suggests low vertical wind shear, warm tropical Atlantic sea surface temperatures and low sea level pressures during the hurricane season, all of which contribute to an active hurricane season.

The negative values for the wind height indicators in the far North Atlantic are also correlated to the conditions that create an active hurricane season. Additionally, there is a record of high pressures, such as now, in the tropical Northeast Pacific Ocean during most winters preceding the development of La Niña events that help intensify the hurricane season. All in all, it looks like conditions are ripe for another very active hurricane season in 2009.

The Changing Dynamics Of Private Equity Business

This move marks a breaking of the business model that characterizes the entire private equity industry

A few weeks ago one of Europe's largest buyout groups offered to give back to its investors some of the unused capital in the fund. The buyout group, Permira, has offered to hand back €1.5 billion (approximately $1.9 billion) of investors' capital, marking the first time a private equity group of its size has broken the iron-clad commitments that tie institutional backers into a fund for at least 10 years. While significant in its own right, this move marks a breaking of the business model that characterizes the entire private equity industry. At the same time, other capital market developments are signaling further turmoil that could lead to a re-shaping of the private equity business.

In return for the reduced commitments, investors must forgo a quarter of any eventual profits from the fund and continue to pay management fees based on their original investment commitment

According to media and private equity industry reports, Permira is allowing its investors who include some of the largest pension fund players in the private equity sector – Calpers, Calstrs and Washington State – the chance to cut their commitments by as much as 40%. In return for the reduced commitments, investors must forgo a quarter of any eventual profits from the fund and continue to pay management fees based on their original investment commitment. While these appear to be potentially ominous penalties, for pension funds that do not have the cash to meet near-term capital commitment calls, the forgone future returns is not that severe.

One of the reasons why Permira has elected to make this move is to help resolve a problem for its largest investor, SVG Capital. SVG's investment model has relied on an over-commitment strategy that has come unglued due to the deterioration of capital markets. SVG has relied on distributions from prior investments to fund its capital

commitments to new investments. Current market conditions have upset this strategy. Given its €2.8 billion (approximately $4.0 billion) commitment to Permira's latest fund and the fact that Permira holds a 4% equity stake in SVG, this decision by Permira to unlock investors does not appear to be as extraordinary as it seems on its face. As a result of its release, SVG announced it is reducing its original commitment to Permira's fourth buyout fund by £796 million ($1.2 billion).

Recently a seminar was held by a London law firm for private equity investors and managers. The key risks for private equity funds in 2009 were assessed and at the top of the list was limited partner (LP) default – the inability of investors to meet their capital commitment calls on a timely basis. Other challenges for private equity firms in 2009 include under performance, style drift and LP activism.

The GP needs to develop strategies for how it plans to confront a possible LP default such as deferring of capital calls, transfers of limited partnership interests to a new owner or a partial resizing of the fund

According to one of the lawyers at the seminar's host firm, there haven't been many LP defaults, but the number could be about to rise. He reported that many general partners are now reading those sections in their limited partnership agreements spelling out what happens if LPs default on capital calls. He further said that being proactive in addressing possible LP defaults before they happen is the best strategy. Therefore, the GP needs to develop strategies for how it plans to confront a possible LP default such as deferring of capital calls, transfers of limited partnership interests to a new owner or a partial resizing of the fund such as Permira is engaged in. While developing appropriate strategies, GPs need to deal with the possible conflict of interest problems vis-à-vis the non-defaulting LPs.

While new ground is being broken in the operation of large private equity funds, a new survey of LPs conducted by Coller Capital, which buys and sells interests in private equity funds, shows LPs are turning away existing relationships as they bump up against their target allocations. As a result, after three years of being able to raise immense amounts of money, private equity funds are facing a bleak outlook for new fund raising.

Almost two-thirds of LPs indicated in the survey that they will sell interests on the secondary market to focus resources on the best GPs

Almost two-thirds of LPs indicated in the survey that they will sell interests on the secondary market to focus resources on the best GPs. This action is due to the shrinking of the investment pools that typical private equity investors have to manage. As the large pension funds, endowments and wealthy individuals who make up the vast majority of the private equity investors evaluate the target percentages of their investment funds allocated to various investments, private equity shares are approaching or possibly exceeding their target percentages. At the same time, these investors are signaling that long-term they still wish to commit money to private equity funds, especially those funds targeting investments in Asia and Europe.

While the private equity industry struggles to regain its balance in

today's investment world, funds are continuing to downsize. The latest private equity firms to retrench include Investcorp that plans to terminate 90 employees thus reducing its staff by 20% and Blackstone that has cut 5%, or 70 positions. Others have reduced operations include UK-based Cognetas with a 12% cut and Dubai-based Shuaa Capital cutting 9%. 3i has taken additional restructuring steps by shuttering its Hong Kong and Shanghai offices and concentrating its entire China staff in Beijing.

We doubt these will be the last moves by private equity firms to right-size as the bubble of private equity has been punctured and the air is slowly escaping

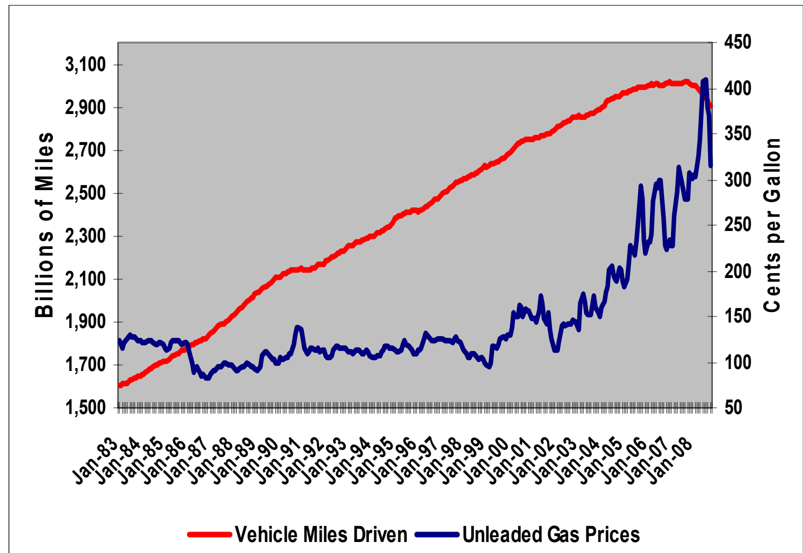
We doubt these will be the last moves by private equity firms to right-size as the bubble of private equity has been punctured and the air is slowly escaping. At the same time, the world is desperately grappling with a need to restructure its commercial sector – the premise of private equity – that should provide a goldmine of opportunity. Our views were supported by comments from Philip Yea, CEO of 3i Group when he said, "Funding is going to be an issue for the classic buy-out for some time. Will every private equity firm survive this period? I think there is some doubt about that. But there may be a golden age for those which do survive."

The Upside to Americans Driving Less Is Fewer Deaths

Cumulatively for 2008 so far, Americans drove 3.5% fewer miles

The data for October shows a continuation of the decline in the estimated number of miles Americans drove. According to the latest estimates from the Federal Highway Administration, Americans in October drove 249.7 billion vehicle miles, a decline of 3.5%, or 9 billion fewer vehicle miles traveled (VMT) than in October 2007. Cumulatively for 2008 so far, Americans drove 3.5% fewer miles (-89.2 billion vehicle miles), continuing the downward driving trend that commenced in October 2007, 12 months ago.

Exhibit 8. VMT Continue to Fall Even With Lower Gas Prices



Source: FHWA, EIA, PPHB

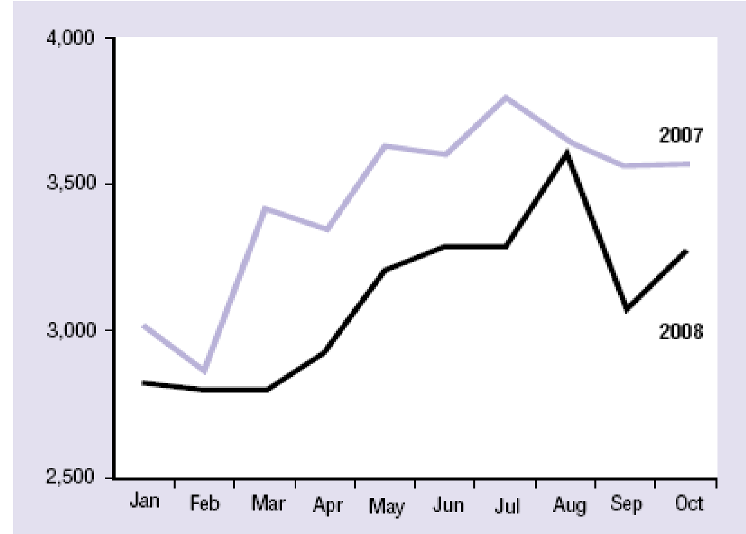
As gasoline prices have tumbled in recent months, the data so far has not shown a significant upturn to offset what suggests may be a fundamental change in American driving habits

As we have chronicled the change in American driving habits, most observers initially attributed the decline to higher gasoline prices. Clearly that was a major cause of the driving decline earlier this year, but as gasoline prices have tumbled in recent months, the data so far has not shown a significant upturn to offset what suggests may be a fundamental change in American driving habits. Last week's petroleum data report from the Energy Information Administration (EIA) shows that on a sequential weekly basis, gasoline demand increased by 160,000 b/d, or a 1.8% gain. Despite that weekly gain, compared to the same week a year ago, gasoline demand was off by 1.2% or 112,000 b/d. The 4-week average for gasoline demand shows a 3.5% decline from the prior year period while sequentially the 4-week average was up 0.6%. MasterCard's SpendingPulse reports that gasoline demand as measured by consumer purchases of gasoline was lower by 2.5% last week, which is more in keeping with the 4-week average decline reported by the EIA. The bottom line seems to confirm our conclusion from an analysis of gasoline demand and pump prices in a recent Musings, which suggested there had been some recovery in gasoline consumption with the advent of lower pump prices, but that consumers had not completely abandoned their conservative driving pattern.

There have been 31,110 fatalities from car crashes through October, an overall drop of 9.8% from last year

The upside to Americans driving fewer miles is that highway deaths have also fallen this year. According to the data from the National Highway Traffic Safety Administration, there have been 31,110 fatalities from car crashes through October, an overall drop of 9.8% from last year. The safety improvement is on track to be the lowest total recorded fatalities since the government began measuring the statistic in 1966. As shown in Exhibit 9, every month for the first ten months of 2008, the highway death toll has been below that of the corresponding month in 2007.

Exhibit 9. Monthly U.S. Traffic Deaths Are Down With Driving

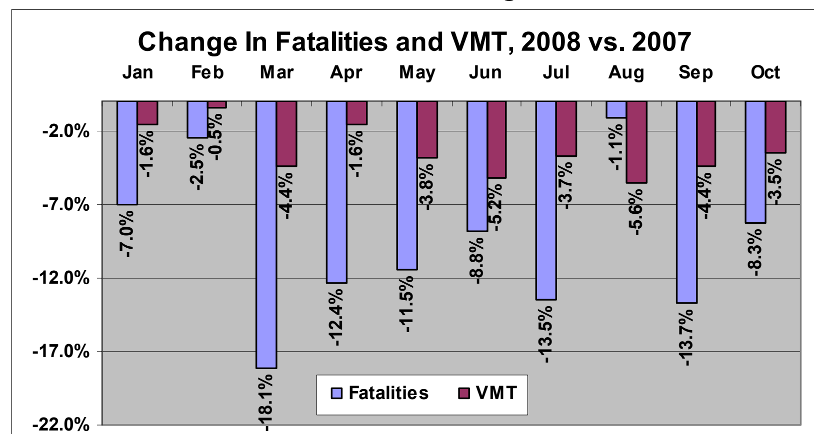


Source: U.S. Department of Transportation

There appears little doubt about the significant improvement in highway safety that is largely attributed to the decline in vehicle miles driven

When the death toll estimates are related to 100-million vehicle miles driven the trend of monthly improvement in 2008 remains intact except for August when the reported deaths-to-miles ratio was above the figure for August 2007. Another way of looking at the improvement in highway safety due to reduced driving is shown in Exhibit 10. The chart plots the magnitude of the monthly safety improvement against the decline in miles driven. In most months, the year over year safety improvement has been dramatic compared to the decline in the number of vehicle miles driven. As shown by the chart, with the exception of August 2008, there appears little doubt about the significant improvement in highway safety that is largely attributed to the decline in vehicle miles driven.

Exhibit 10. Fewer Miles Driven Is Saving Lives



Source: National Highway Traffic Safety Administration

At the present time the OPP has tallied only 299 fatalities, a drop of 30% from this time last year

Canadian automobile data trackers report similar safety improvement trends, although there is no up-to-date nationwide data. Transport Canada, the source of nationwide statistical data, has not finished with its 2007 data compilation and analysis and has yet to acquire any 2008 data. According to inquiries made by *The Globe and Mail*, the Ontario Provincial Police (OPP) has seen between 444 and 451 annual traffic deaths for the past three years. At the present time, the OPP has tallied only 299 fatalities, a drop of 30% from this time last year, and with barely two weeks left to the year, Ontario is on track for one of its safest years in modern time.

The OPP claims that tougher enforcement of speeding and street racing rules is largely the reason for the safety improvement. The province purchased a plane this year to help in catching speeders on highways and it implemented a tough street-racing law that impounds cars of drivers caught going more than 50 kilometers over the posted speed limit. They have reportedly caught 10,000 high-speed drivers so far. However, others who study the data suggest that high gasoline prices earlier this year have been more important than increased enforcement. They are waiting to see if the trend changes with lower pump prices.

Wave Energy Rivals Wind For Regulatory Prominence

Seattle-based Grays Harbor Ocean Energy Company LLC has filed a plan with the Federal Energy Regulatory Commission (FERC) for approval of a $28 billion proposal for seven wave energy projects off both coasts of the United States. The company is proposing a project offshore Rhode Island near Block Island. It has also proposed a project near the Cape Islands offshore Massachusetts, along with projects off New Jersey and New York. In the Pacific Ocean the company is proposing two projects offshore San Francisco and one in the Hawaiian Islands.

The project will involve the installation of 100 three-leg fixed platforms located in 200-ft. to 300-ft. of water that extend about 50-ft. above the surface of the ocean

The Rhode Island project is estimated to cost between $400 million to $600 million and is targeted for a 96-square mile area situated between 12 miles and 25 miles south of Block Island. (See Exhibit 11.) The site is about 12 miles wide East-West and 9 miles long North-South. From that distance, even large offshore wind turbines are visible only a few days of the year. The project will involve the installation of 100 three-leg fixed platforms located in 200-ft. to 300-ft. of water that extend about 50-ft. above the surface of the ocean. Wave energy converters (WECs) will be built into each leg of the platforms, for a total of 300 WECs. Each WEC is rated at 350 kilowatts of power and collectively will generate 100 megawatts (MW) of power at peak, typically during winter months, and about 40 MW of power on average. The platforms are being designed to be capable of supporting wind turbines to augment the electricity generation capability of the project although no wind turbines are part of the initial plan.

Exhibit 11. Location of Rhode Island Wave Energy Project

Source: Grays Harbor Ocean Energy Co.

Waves are created by wind, but wind is primarily caused by solar energy

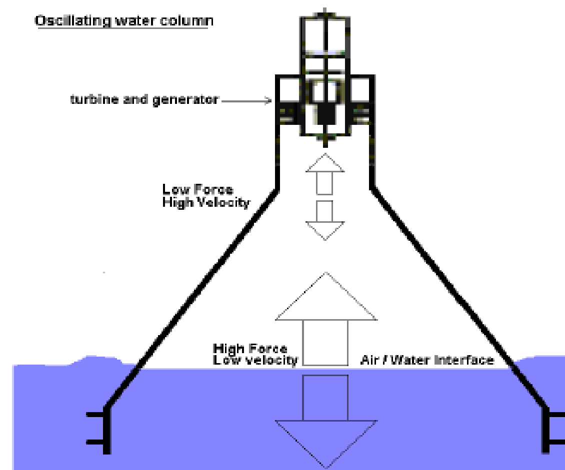
The concept behind wave energy projects is to capture the wind and solar energy contained in waves. What many people know is that waves are created by wind, but wind is primarily caused by solar energy. Sunlight creates an uneven heating pattern of the earth's surface. As air warms it thins, lightens and rises. On the other hand, as air cools it becomes heavier, denser and falls. Thus, as the sun heats the surface, the air immediately above it warms and rises. Neighboring cooler air falls into the space vacated by the warm air and that shifting of air masses generates wind. These waves are termed surface waves and are generated at the interface of the water and air with the restoring force being gravity.

Wave energy is seasonal and strongest in the winter months, which happens to be when energy demand tends to be the greatest. Studies have shown that wave energy in the winter can be up to four times the average level of wave energy over the course of a year. By locating a series of WECs in an area with steady and potentially large waves, the solar energy contained in the waves can be captured and used to drive a mechanical device that would provide power to turn a turbine to generate electricity.

An Oscillating Water Column is a funnel arrangement located within each leg of the platforms that channels the wave and ocean swell action in order to move air back and forth through a turbine powering an electricity generator

The WEC of choice for this project is an Oscillating Water Column (OWC), which essentially is a funnel arrangement located within each leg of the platforms to be installed that channels the wave and ocean swell action in order to move air back and forth through a turbine powering an electricity generator that is positioned above the surface of the water. The reason for locating the OWC inside the legs of the platforms is to ensure that it is within a structure that can withstand the pressure of waves. For this reason the concept of offshore platforms used for producing oil and gas or for the drilling of wells is to be employed. Within the OWC, the chamber's air supply expands and contracts much like an accordion and in the process powers the turbine.

Exhibit 12. Oscillating Water Column Concept



Source: Grays Harbor Ocean Energy Company LLC

With the location of the WECs further offshore and on the other side of Nantucket and not standing too tall, there would be little or no visual pollution, the principle objection to the Cape Wind wind-farm project planned for Nantucket Sound

The electricity generated by the OWCs would be transferred from the offshore site to shore by conventional underwater electrical cables. As shown in Exhibit 11, the electric power cable would run from the wave-energy collection field to Block Island with the surplus power being carried by cable to the Rhode Island shore. For the Cape Islands project offshore Massachusetts, the power is planned to flow to Nantucket Island from which a certain portion would be transshipped to Martha's Vineyard and the remainder sent to shore at Cape Cod. With the location of the WECs further offshore and on the other side of Nantucket and not standing too tall, there would be little or no visual pollution, the principle objection to the Cape Wind wind-farm project planned for Nantucket Sound. At this time there are no plans for putting wind turbines atop the wave-energy collectors, but we suspect if regional power demands are present and the locals become comfortable with the existing platforms, that option may be exercised.

Exhibit 13. Location of Cape Islands Wave-Energy Project

Source: Grays Harbor Ocean Energy Co.

To make wave energy cost-competitive there will need to be some significant technological breakthroughs to reduce the capital investment

The cost estimates for electricity from the first commercial-scale wave energy facilities proposed for the seven locations permitted by Grays Harbor are in the range of $0.09 to $0.11 per kilowatt hour (kWh) after tax incentives. These facilities are capital intensive with capital cost estimates ranging from $4,000 to $15,000 per kWh. To make wave energy cost-competitive there will need to be some significant technological breakthroughs to reduce the capital investment.

The permitting activity is creating a regulatory jurisdictional dispute

Besides technological challenges, this permitting activity is creating a regulatory jurisdictional dispute. Grays Ocean's application with FERC is seeking to use that body's regulation of onshore hydropower facilities, of which wave energy facilities is technically a subset, to circumvent the regulation of offshore oil and gas and alternative energy projects by the Interior Department's Minerals Management Service (MMS). The MMS is in the final stages of completing the establishment of the rules and regulations governing the permitting and operation of offshore alternative energy facilities. By going to FERC, which has a less onerous regulatory mechanism, Grays Ocean presumably is trying to shorten the length of time needed to secure its permit and move forward with the project. This will become an interesting battle, especially with a new government that has a strong environmental and green energy bias.

Autos Target of State Budget Gap Closing Efforts

Almost every state in the union is struggling with budget problems as their tax revenues shrink due to the weakness in housing and the overall economy, yet their spending continues to rise. Locally, Texas is one of the states in the best financial shape largely due to the revenue impact from high oil and gas prices earlier this year and a strong local economy. While the underlying conditions boosting Texas' economy may be changing, the state does not face the devastating financial conditions currently confronting states such as California and New York.

The smallest state in the nation is about the size of Harris County, yet has only a fraction of the population

Besides Texas, we personally pay particular attention to the financial and political fortunes of Rhode Island where our second home is situated. The smallest state in the nation is about the size of Harris County, yet has only a fraction of the population (1 million versus 4 million), but contains 39 separate police, fire, school and municipal governments. We have contended for several years that Rhode Island was broke but didn't realize it. Now they do!

The panel was charged with figuring out how to fund the repair and maintenance of the state's aging transportation infrastructure along with reducing its claim on state financial resources

Rhode Island's budget deficit has mushroomed from about $100 million earlier this year for the 2008 fiscal year that ended last June 30th to almost $400 million for the upcoming fiscal year ending June 2009. We have marveled at some of the proposed solutions for closing the deficit. The latest income-boosting proposal came from Rhode Island Governor Donald Carcieri's blue ribbon panel for transportation. The panel was co-chaired by R.I. Department of Transportation Director Michael Lewis and the governor's director of administration, Jerome Williams. This panel was charged with figuring out how to fund the repair and maintenance of the state's aging transportation infrastructure along with reducing its claim on state financial resources. The panel's solution was to propose a whole new class of taxes related to driving.

The panel developed five recommendations. First was to boost the state's gasoline tax from 30-cents per gallon to 40-cents. At the present time, one cent of the current gasoline tax goes to the state's

general revenue fund. But the vast majority of the gasoline tax revenues are earmarked for paying the debt on the general obligation bonds the state issues to meet its share of the federal government's transportation spending. That spending includes money for new transportation projects, subsidies for mass transit and spending for road and bridge maintenance.

Rhode Island is one of the few states that rely on the federal government's transportation spending program that requires the state to match by 20% the total amount of federal spending. Lately, Rhode Island has been receiving about $200 million a year from the federal government, meaning the state must raise roughly $40 million from selling bonds each year.

The second proposal is to put tolls on all the interstate highways at the state borders

The second proposal is to put tolls on all the interstate highways at the state borders. When this proposal first surfaced, it stirred up considerable negative reaction. Many of the residents of Rhode Island commute to Connecticut and Massachusetts to work, so for them this would become a commuter tax. But other and even stronger objections came from people concerned about the impact on local highways from drivers, especially truckers, who are merely passing through the state on their way to other locations. How many of them would seek to avoid the interstate highway tolls by exiting and going on local roads around the toll booths?

Another concern is the safety aspect of toll booths

Another concern is the safety aspect of toll booths. A number of critics of this idea cited a fiery accident a number of years ago at a Connecticut toll booth on I-95 as a catalyst for that state removing the toll booths. We remember reading about that accident in the late 1980s, but didn't know it was what motivated the state to eliminate all the toll booths on the Connecticut Thruway. What we remember growing up in Connecticut when the interstate highway system was being built in the 1950s was the pledge by Connecticut's governors at the time – John Lodge (Rep.) and Abraham Ribicoff (Dem.) – to remove the tolls once the highway was paid for. Like most interstate highway projects constructed in the 1950s, the funding came from 25-year and 30-year bonds, which would have meant the tolls should have been scheduled to be removed in the mid to late 1980s. Since we moved from Connecticut in 1974, we cannot vouch for whether the earlier governors' commitments were altered, only to be revisited following the tragic accident.

The panel's third proposal is to put a toll on the Sakonnet River Bridge, another major transportation route. The state has the nation's fifth oldest bridge structures, which are rapidly falling into disrepair. In fact, the state has two major bridges – the Sakonnet River Bridge being one – that have had weight limits imposed on transiting vehicles.

The fourth proposal is to boost the state's car registration fee

The fourth proposal is to boost the state's car registration fee from $60 a year to $100. This is a popular income raising tactic as we noticed both Massachusetts and New York are talking about raising their vehicle registration fees to garner additional income. This is a

relatively easy fee to increase since owning a car is a privilege and not a right.

If one were to drive his car 10,000 miles in the course of a year, the 1-cent per mile tax would amount to a $100 fee

The fifth proposal by the panel, however, was the most controversial – imposing a 1-cent per mile tax for each mile driven by a Rhode Island driver. This proposal drew howls of protest. If one were to drive his car 10,000 miles in the course of a year, the 1-cent per mile tax would amount to a $100 fee. So just who would verify the fee's accuracy and collect it? The answer came in letters to the editor of the major state newspapers suggesting that, as a play on the federal government's auto bailout proposal, Rhode Island would need to establish its own "Odometer Czar" to fulfill this function. Since state vehicle registrations are renewable for two years at a time and state vehicle inspections are also set for two-year periods, using this mechanism for inspecting and certifying annual mileage totals wouldn't work. It also raises the question of whether the state could turn service stations operators who perform vehicle safety inspections into revenue enforcement officers.

The growing need for more revenues is forcing states like Rhode Island to boost existing taxes and fees for automobile owners and drivers

So after a summer of outrageously high gasoline pump prices that sapped family budgets, the current income reprieve due to lower oil prices in Rhode Island may be ending. The growing need for more revenues is forcing states like Rhode Island to boost existing taxes and fees for automobile owners and drivers. At the same time, states will also be seeking to find new and innovative tax schemes for drivers and vehicle owners that will further increase state revenues in this period of extreme financial hardship. Taxing drivers for every mile they drive is a questionable measure.

Cleantech Is Favored Sector Of Venture Capitalists

The respondents believe the venture capital industry will put $27 billion to work in 2009 down from $30 billion

The latest annual survey by the National Venture Capital Association (NVCA) of 400 venture capitalists suggests that the amount of money invested in 2009 will decline by about 10% from 2008. According to the survey, the respondents believe the venture capital industry will put $27 billion to work in 2009 down from $30 billion estimated to have been invested this year. The hardest hit by the reduction in investment will be entrepreneurs and others trying to launch a new company. Some 96% of the survey respondents say it will be much harder for these businessmen to secure funding in 2009.

Another problem for the venture capital industry is the absence of the IPO market that would allow the investors to harvest their investments

Another problem for the venture capital industry is the absence of the initial public offering (IPO) market that would allow the investors to harvest their investments. The functioning of the IPO market is related to the health of the overall securities market. Both the NVCA survey and a recent survey by accounting firm KPMG suggest that venture capital investors believe the IPO market will reopen in 2010.

According to the venture capitalists, cleantech companies, which includes companies focused on solar and pollution control, are the best positioned for increased funding. Venture capital funding in

most tech sectors in 2009 is expected to be lower. Some 68% of the venture capitalists surveyed say they expect cleantech investing will either rise next year or at least remain flat. Investing in cleantech is broader than many perceive. "It's not just energy technologies like solar or wind," said NVCA President Mark Heesen. "It also includes smart buildings, lighting and technologies that provide more efficient ways to get oil and gas out of the ground."

That share of venture capital spending rose to 10% in 2007 and is estimated to have reached 15% in 2008

In 2003, cleantech investing captured 2% of venture capital funding. That share of venture capital spending rose to 10% in 2007 and is estimated to have reached 15% in 2008. Eight of the ten largest venture capital deals this year were in cleantech. With the orientation of the Obama Administration on green energy and cleantech, we would expect the share of venture capital investing oriented this way will climb higher in the next several years.

The biotech sector has the second highest promise for venture capital investment in 2009. Some 58% of survey respondents said that biotech investment would rise next year or remain flat. An interesting side note is that there are some biotech applications that can be considered cleantech investments such as those involving algae.

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