
MUSINGS FROM THE OIL PATCH

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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 and planning for the future. The newsletter is published every two weeks, but periodically events and travel may alter that schedule. As always, I welcome your comments and observations. Allen Brooks

Saudi Royal Succession Complicated By Events In Yemen

Crown Prince Salman was elevated to the throne, in keeping with the preordained succession plan

The death of Saudi Arabian King Abdullah was announced in the U.S. last Thursday evening signaling the sixth transition in the country's leadership since its founding in 1932 by King Abdulaziz bin Saud. Crown Prince Salman was elevated to the throne, in keeping with the preordained succession plan. Prince Muqrin, the second deputy prime minister, was immediately named Crown Prince by the new king and becomes next in succession line. Shortly afterwards, King Salman elevated Interior Minister Prince Mohammed bin Nayef to be the second deputy prime minister and crown prince, installing the first grandson of the kingdom's founder into the succession process. This appointment was much quicker than the agonizingly long wait that occurred in 2013 when the late King Abdullah appointed his younger half-brother Prince Muqrin to that position following the deaths in 2012 of his two younger brothers who each were in line to become the next king.

One of the early decrees by King Salman was the reappointment of Oil Minister Ali al-Naimi, signaling a continuation of the current oil policy of letting the marketplace determine the price of oil

King Salman is reportedly 79 and in ill health, supposedly suffering from dementia or Alzheimer's disease, although we also heard he may suffer from Parkinson's disease. King Salman's age and health status suggest the possibility his rule could be short, therefore his quick policy moves are that much more important. One of the early decrees by King Salman was the reappointment of Oil Minister Ali al-Naimi, signaling a continuation of the current oil policy of letting the marketplace determine the price of oil. So while oil prices jumped by slightly over 3% in after-market trading following the announcement of King Abdullah's death, by Friday morning's market open oil prices had retreated to mark only a modest increase over the prior day's closing price.

Exhibit 1. King Salman Delivers First Speech

Source: Reuters

There were questions whether there might be a move by Prince Mishal, the head of the Allegiance Council, to declare Prince Salman unfit due to his health problems to assume the throne

We wrote an extensive article in our last *Musings* regarding the succession process and the challenges the kingdom might face when King Abdullah passed. The succession has come sooner than we anticipated, but then again given King Abdullah's medical condition at year-end and his prior health challenges, his death was not a total surprise. Initially, there were many questions about who would fill what positions and whether there might be a move by Prince Mishal, the head of the Allegiance Council, to declare Prince Salman unfit due to his health problems to assume the throne and pass the title on to the 69-year old Prince Muqrin, who presumably would be able to rule longer and thus provide greater certainty about the kingdom's future leadership.

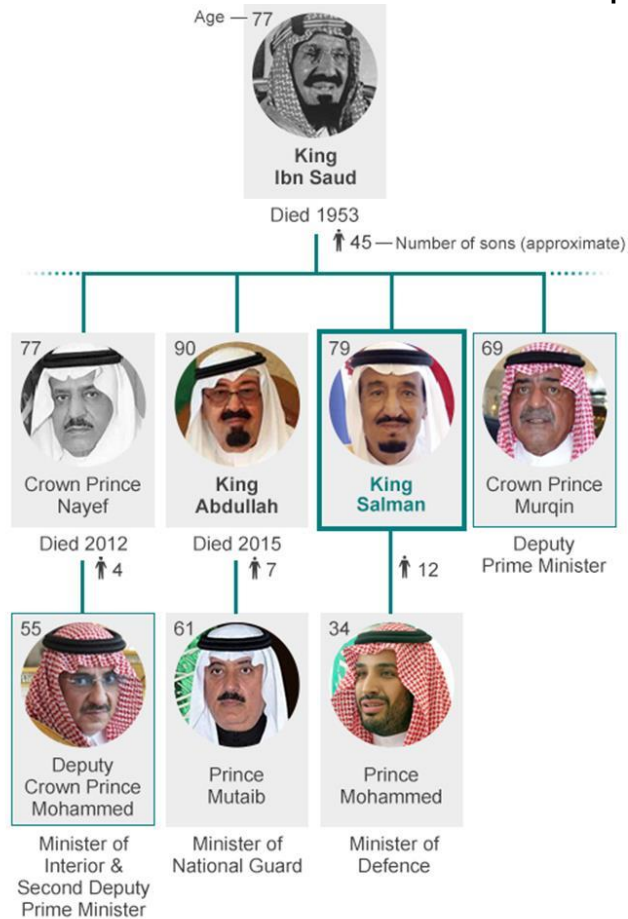
There is still the possibility of a power struggle over the next succession as Prince Muqrin's half-brother, Prince Ahmad, who was passed over in the 2013 succession moves, reportedly has supporters in the Allegiance Council for his elevation

According to Saudi royalty watchers, there is still the possibility of a power struggle over the next succession as Prince Muqrin's half-brother, Prince Ahmad, who was passed over in the 2013 succession moves, reportedly has supporters in the Allegiance Council for his elevation. At the time the Allegiance Council voted to install Prince Muqrin as second deputy prime minister, some members of the council voted against the move. Prince Muqrin's appointment carried the proviso from the council that it could not be overturned, suggesting that action was designed to head off any potential challenge to future succession steps. Prince Ahmad is supposedly well-respected and known as a capable manager for his work as the interior minister who dealt with the earlier shite-sponsored uprisings in the Eastern Province. It is interesting that Prince Ahmad's name was raised by former U.S. state and defense department officials as someone to watch. Now that Prince Muqrin has moved up the succession ladder, one wonders whether the fractious elements in the family will become more open.

The fact that Deputy Crown Prince Mohammed is not the oldest grandson suggests the possibly of a new way of determining succession may be established

Besides appointing Deputy Crown Prince Mohammed, King Salman also appointed his son, Prince Mohammed, as Minister of Defense. Prince Mohammed is in his 30's signifying the rise of the next generation of rulers, but also highlighting a potential problem. Prince Mohammed has run his father court as crown prince for some time. As King Salman's health has deteriorated, Prince Mohammed has gained greater power over his father raising concerns among some royals about his role in the future government. Deputy Crown Prince Mohammed bin Nayef is 55 and has a reputation as a modernizer and is well-versed in the ways of the west. He is reportedly admired by both Washington and London officials for his work as interior minister and having been in charge of Saudi counter-terrorist efforts. He also has been responsible for the Syria portfolio. He survived a close-quarters assassination attempt by an al-Qaeda suicide bomber. The fact that Deputy Crown Prince Mohammed is not the oldest grandson suggests the possibly of a new way of determining succession may be established.

Exhibit 2. The New Faces Of Saudi Arabia Leadership



Source: BBC

The geopolitical struggle against Iran who is supporting various political regimes bordering and targeting Saudi Arabia will be an ongoing problem for the new king

What makes this succession process critically important is the changing geopolitics of the Arabian peninsula as reflected by last Thursday's news of the fall of the U.S.- and Saudi-friendly government in Yemen to Iranian-backed and possibly al-Qaeda-backed elements, along with the ongoing uncertainty surrounding Saudi Arabia's oil policy. The oil policy question has been put to bed with the reappointment of al-Naimi as oil minister. The geopolitical struggle against Iran who is supporting various political regimes bordering and targeting Saudi Arabia will be an ongoing problem for the new king. The leadership from the next generation of royalty will become ever more important in determining the fate of Saudi Arabia and its role in the Middle East political struggles and the future of the global oil market.

Next Step In Keystone Saga Sets Up U.S. Agency Challenges

We are fully prepared for one or more agencies to raise objections over the quality and conclusions of the environmental impact statement (EIS) conducted by contractors for the State Department

With the Nebraska Supreme Court's ruling that the three landowners who brought the suit challenging the constitutionality of the law that allowed the governor to approve the revised Keystone XL pipeline route through the state lacked the standing to bring the case, the clock for the remaining permit approval process is now underway. The restarting of the approval process was highlighted by the announcement a little over a week ago by the Department of State, which is responsible for determining whether the permit should be granted, that the relevant government agencies with oversight responsibility for issues related to the pipeline's construction and operation have until February 2nd to file any objections to granting the approval. We are fully prepared for one or more agencies to raise objections over the quality and conclusions of the environmental impact statement (EIS) conducted by contractors for the State Department. We understand that the Environmental Protection Agency (EPA) will file objections but that the Interior Department will not. The EIS suggested there would be no increase in carbon emissions from the oil sands that will flow through Keystone because that oil will be mined and shipped to global markets regardless of Keystone's existence. Environmentalists have been highly critical of that determination and see the report as having inadequately dealt with the global warming issue.

Can the State Department merely review the objections and any additional data presented and then reject those claims?

We are not sure how objections from these agencies will be handled, but we surmise that they would have to cite specific concerns and or present differing evidence to block the approval process. Can the State Department merely review the objections and any additional data presented and then reject those claims? It may be possible, but given the fact that an agency objects, can that be dismissed out of hand by State, or would that action create grounds for a lawsuit by environmentalists. At the same time they filed suit, they would likely ask the federal courts to put an injunction in place preventing the State Department from moving forward with its review until the claim is concluded. Since this would be a federal

Will Secretary of State John Kerry, an ardent environmental advocate, say yes, kicking the ball to the president for his final decision, or will he say no?

matter, the claimants could file suit in either a state where the pipeline crosses or Washington, D.C. That should provide the claimants with plenty of room to find an anti-Keystone-friendly judge. Once in the federal legal system, we could easily be looking at a year's passage for the case to wind its way from the lower courts through the appeals process before being resolved.

On the other hand, should none of the agencies raise objections to the pipeline then the State Department should soon be able to conclude its review and forward its recommendation to Secretary of State John Kerry who needs to provide a recommendation to President Barack Obama that building the pipeline is in the national interest. Will Secretary of State John Kerry, an ardent environmental advocate, say yes, kicking the ball to the president for his final decision, or will he say no? Personally, if I were Sec. Kerry I would say yes and pass it on, given the number of times his boss has hung him out to dry politically. Then again, a loyal bureaucrat might decide to take the heat for his boss, in contrast to Secretary of Defense Chuck Hagel, who wanted the badge of honor of essentially being fired for his honesty.

Nebraska Supreme Court failed to address the issue of the constitutionality of the law allowing Keystone's approval

One Washington political research firm has issued a report pointing out that the Nebraska Supreme Court failed to address the issue of the constitutionality of the law allowing Keystone's approval. They also pointed out that four of the seven justices were in agreement that the law was unconstitutional, but to declare a state law unconstitutional requires an affirmative ruling of five justices. Since the case was tossed over the standing of the claimants, the environmental groups only need to find some landowners who will be harmed by the pipeline's construction. That appears to be true.

TransCanada (TRP-NYSE) has obtained approval from 84% of the landowners whose land will be impacted by construction of Keystone

According to reports, TransCanada (TRP-NYSE) has obtained approval from 84% of the landowners whose land will be impacted by construction of Keystone. Supposedly 12% of the landowners are opposed to the construction while the remaining few are negotiating with the company. TransCanada has filed for eminent domain to secure the land. They made that filing a day before their two-year timeframe for securing the pipeline route was due to expire. What we know is that the Nebraska Supreme Court justices who believe the law approving the Keystone route is unconstitutional said that anyone objecting to eminent domain claims would have standing to file suit. Therefore, it appears we are back to square one with this case, or maybe it is square two since the legality of the case was never decided. Procedurally we don't know whether the case would be taken by the Supreme Court or whether it must return to lower courts with the new claimants. What we do know is that these twists will delay the approval process – how long is unknown.

In the Keystone saga and Canada's oil sands output, one of the more interesting articles in the past two weeks was a column by Joe Nocera of *The New York Times* entitled "The Keystone XL Illusion."

By having that determination rejected, environmentalists, by inference, can say that oil sands oil is “not in the national interest.”

Mr. Nocera followed the trail of Greg Rickford, Canada's minister of natural resources, who traveled to the U.S. a week ago to make the case one more time for approving Keystone. Mr. Rickford spent two days in Washington visiting Ernest Moniz, secretary of energy, Heidi Heitkamp, Democratic senator from North Dakota and a staunch proponent of Keystone, along with State Department representatives and delivering several speeches. He highlighted the energy relationship between Canada and the U.S. America currently receives three million barrels a day of oil, more than the combined volumes from Venezuela and Saudi Arabia. Mr. Rickford then went to Texas for a couple of days with a focus on two new Canadian-controlled pipelines that started operation in mid-December. Those were the Flanagan South pipeline that runs 600 miles from Pontiac, Illinois to Cushing, Oklahoma, and the Seaway Twin that extends 500 miles from Cushing to Freeport, Texas, the site of several refineries. These two pipelines, constructed at a total cost of \$4 billion, will bring 200,000 barrels a day of Canadian oil sands bitumen, nearly doubling the flow of this oil. While that oil sands volume is only a third of what Keystone will haul south, Mr. Nocera found it fascinating that the environmentalist community had not protested these pipelines. Maybe because they were constructed within the U.S. and thus did not require a federal permit to cross the Canadian-U.S. border. The bitumen these two lines will haul is already crossing the border since Flanagan South links to an existing cross-border pipeline. Plus there is the growing flow of heavy oil by rail and truck crossing the border. The political reality is that approval of the Keystone pipeline permit requires a determination that the pipeline is “in the national interest.” By having that determination rejected, environmentalists, by inference, can say that oil sands oil is “not in the national interest.” Therein is the rallying cry for the anti-fossil fuel crowd.

For Mr. Nocera, rejecting Keystone will not carry over to a rejection of oil sands output

Mr. Nocera wrote in his column that the claims of the job creation of Keystone are overdone; he also highlighted that stopping the line won't prevent oil sands bitumen from flowing out of Canada, including increasing amounts to the U.S. He concluded his column with the following: “If the president ultimately decides not to approve Keystone, he will do so knowing full well that he has not stopped the tar sands oil in any meaningful way. To expect another outcome is, well, a pipe dream. It always was.” So will he (Obama) or won't he approve Keystone? For Mr. Nocera, rejecting Keystone will not carry over to a rejection of oil sands output.

Examining Drivers Contributing To The Oil Price Drop

In some cases suggesting it could fall as low as \$25 a barrel

Current oil prices hover in the mid-\$40 a barrel range, shockingly lower than virtually every forecaster predicted when the price collapse began last November. Now we see some of these same forecasters predicting a further price decline from here, in some cases suggesting it could fall as low as \$25 a barrel. Other forecasters believe we are nearing the bottom of the decline (a cynic

One of the psychological shifts among forecasters and industry participants is a recognition that the decline has been caused by a multiplicity of factors

would say they are right – because we are a lot closer to zero than we were in November) and could be looking at a healthy recovery into the \$65 - \$75 a barrel range over the next few months. To understand how we can have such a wide range of forecasted prices, one must study why we are where we are and whether the forces that caused the decline are weakening, gathering strength or about to be replaced by forces that will take prices higher.

One of the psychological shifts among forecasters and industry participants is a recognition that the decline has been caused by a multiplicity of factors. Unfortunately, that conclusion is unsatisfactory for people seeking simple explanations for the decline so they can suggest easy steps to reverse the direction. Late last year we wrote about the oil price decline and the multitude of possible explanations, most of which revolved around the motives behind Saudi Arabia's decision to not support a production cut to reduce the volume of oil exports the Organization of Petroleum Exporting Countries (OPEC) was supplying to the market. The Saudis said that they would not cut their production, but rather would continue to seek to restore their market share while letting the global oil market set the market's clearing price.

The lack of global energy demand as a result of weak economies throughout the world was of long-term concern for Saudi Arabia

Most of the explanations involving Saudi Arabia settled on targeting who they were trying to punish – their fellow OPEC members who were pumping all the oil they could to take advantage of \$90 a barrel prices; Russia who was stepping up its oil exports while also helping Saudi Arabia's leading enemy, Iran; North American oil shale producers who have single-handedly altered the global oil supply/demand balance; Iran who is attempting to sell whatever oil it can in order to support its political agenda that involves bolstering religious opponents of Saudi Arabia. At that time, we offered our view that the lack of global energy demand as a result of weak economies throughout the world was of long-term concern for Saudi Arabia whose income is totally dependent on the marketability of its crude oil. Shrinking oil markets due to persistently weak economic activity, erosion in oil demand from increased energy efficiency, the growing use of renewables and their potential to drive electricity into the transportation market, the stronghold of oil, was of particular concern to Saudi Arabia. They realized, based on their 1980's experience, that low oil prices were key to stimulating economic activity, especially in mature economies such as Western Europe, Japan and North America. That meant allowing oil surpluses to grow driving prices to abnormally low levels, while offering the prospect that their strategy was multi-year in duration and within their tolerance. That would encourage oil company managements to kill-off long-term energy projects such as the oil sands expansions and deepwater and Arctic exploration. While they didn't know the direct sensitivity of oil prices to shale activity, they did know that the nature of shale well production insured that it would fall precipitously once drilling and completions slowed.

For these forecasters, the issue was all about cutting supply and the primary culprit was North American shale drillers

At the time the Saudis threw down the gauntlet to their fellow oil producers, most forecasters believed that the overhang from overproduction was about one to two million barrels of oil a day, a not insurmountable amount to cut from a 92-million-barrel-a-day global oil market. For these forecasters, the issue was all about cutting supply and the primary culprit was North American shale drillers. Forecasters gave short-shrift to a lack of demand as a fundamental problem for the oil market.

Soon, forecasters began acknowledging that the value of the dollar played a role in the decline of oil prices

As we approached year-end, it became more acceptable to suggest that the lack of oil demand growth was a contributing factor in the oil price collapse. We started hearing forecasters hypothesize that the cause of the oil price collapse could be apportioned something like two-thirds to oversupply and one-third to the lack of demand. At this point another school of thought emerged suggesting that the oil price problem was caused by the oversupply of money – especially as a result of the Federal Reserve’s monetary easing policies since the 2008-9 financial crisis and recession. Traditionally, when the Fed prints money (easing) the extra dollars flowing into the financial system depresses the value of the dollar making it more valuable to own commodities, including oil. In other words, you want to hold hard assets over paper money. Soon, forecasters began acknowledging that the value of the dollar played a role in the decline of oil prices.

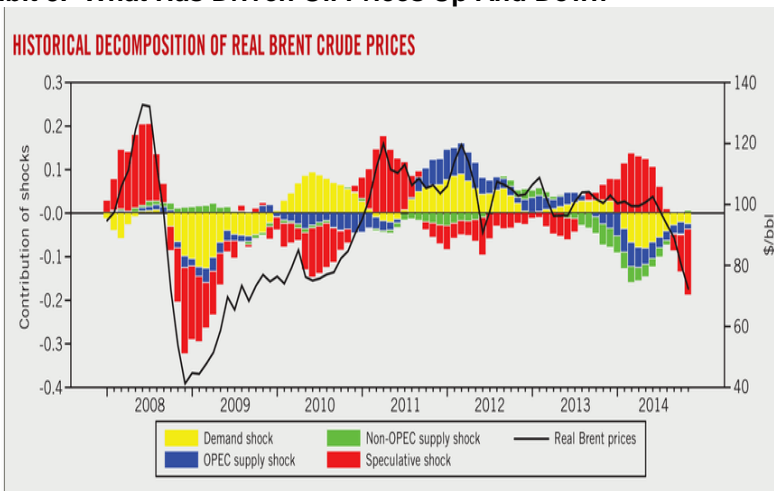
Moody’s, the financial rating agency, stated that the decline in oil prices since June 2014 was 50% due to oversupply, 30% due to lower demand, 15% due to the rise in the value of the U.S. dollar and 5% due to lower political risk

We have now progressed to a menu of factors driving oil prices lower. Recently, Moody’s, the financial rating agency, stated that the decline in oil prices since June 2014 was 50% due to oversupply, 30% due to lower demand, 15% due to the rise in the value of the U.S. dollar and 5% due to lower political risk in oil exporting countries. We fully expect further expansions of the menu explanations with the debate shifting to identifying the appropriate weightings of the factors. This menu provides cover for forecasters who fail to accurately predict the future course of oil prices by claiming they misunderstood the proper weightings and not that they didn’t understand the factors.

The analysis shows the significant impact that the futures market (speculation) plays in moving oil prices

The latest issue of the *Oil and Gas Journal*, which contains its 2015 forecast, has an interesting breakdown of the reasons for the movement of Brent oil prices during 2008 through November 2014. The explanation is derived from a mathematical equation. The analysis shows the significant impact that the futures market (speculation) plays in moving oil prices. The analysis identifies four shocks that impact oil prices: 1) shocks to non-OPEC oil supply; 2) shocks to OPEC oil supply; 3) shocks to oil demand; and 4) residual shocks or the premium resulting from forward-looking market speculations or sentiment changes.

An examination of the 2014 analysis shows that during the first half of the year, speculative shocks largely offset the negative impact of the fundamental shocks from changes in supply and demand.

Exhibit 3. What Has Driven Oil Prices Up And Down

Source: *OGJ*

The other important observation from this analysis is that fundamental factors carried less weight in sinking oil prices after the summer than oil price movements suggested

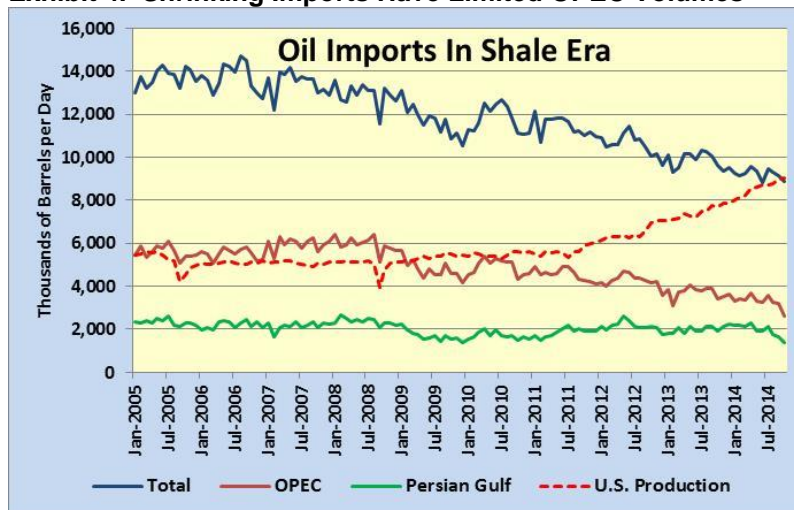
Starting in March, the weight of the speculative shock began to wane, approaching zero in August, before becoming a negative for the Brent oil price. Had it not been for the strength of speculation about higher future oil prices during most of 2014, the negative demand and supply shocks would have brought the price meaningfully below the \$90-100 a barrel level. The other important observation from this analysis is that fundamental factors carried less weight in sinking oil prices after the summer than oil price movements suggested. The growing realization that oversupply and weak demand were sinking oil prices was reinforced on speculators as fall unfolded and is demonstrated by the extremely negative speculative shock measure in November.

Oil imports recovered in 2010 following the end of the recession, but then began a steady decline through the end of 2014

In considering the role that the growth in shale oil's output played in the price collapse, we examined U.S. oil production along with oil import volumes since the shale revolution commenced in 2005. Domestic oil production began growing materially about mid-2011, but, surprisingly, the decline in oil imports actually started in 2007, but then accelerated during the 2008-2009 financial crisis and recession. Oil imports recovered in 2010 following the end of the recession, but then began a steady decline through the end of 2014.

OPEC and Persian Gulf volumes show sharp drops during the second half of 2014

Another interesting point is to examine the trend in total oil imports from OPEC countries and the volumes exclusively from Persian Gulf countries. While there was a small decline in imports from Persian Gulf countries in 2009-2011, overall OPEC volumes began a steady decline about mid-2008, which has continued. Notice that both OPEC and Persian Gulf volumes show sharp drops during the second half of 2014, with the magnitude of the OPEC decline being greater.

Exhibit 4. Shrinking Imports Have Limited OPEC Volumes

Source: EIA, PPHB

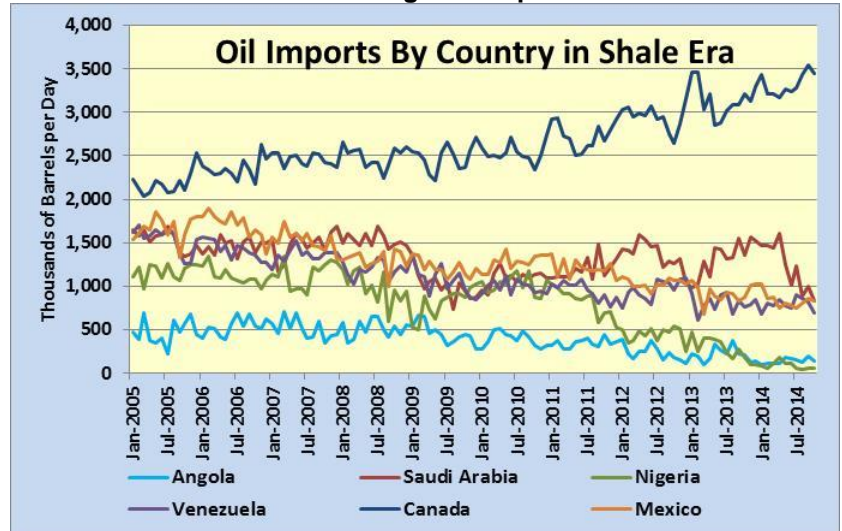
Nigeria seems to have been particularly hard hit starting after the economic recovery in 2010

To gain a better understanding of import volumes, we plotted (Exhibit 5) the volumes flowing from a handful of traditionally important U.S. oil suppliers, both OPEC and non-OPEC countries. While the chart is busy, what it shows is a steady growth in supply coming from Canada with significant deterioration in imports from Angola and Nigeria throughout the period. Nigeria seems to have been particularly hard hit starting after the economic recovery in 2010. We would attribute that decline to the rapid growth in light oil output from shale formations. Other interesting trends were the steady declines over the period posted by Mexico and Venezuela, both suppliers of heavy oil. At the same time, Saudi Arabia's contribution was sharply lower in 2008-2010 due to economic conditions, but then its volumes slowly returned to 2005 levels, which were sustained until mid-2014 at which point they collapsed. We believe the 2010-2014 growth in Saudi Arabian volumes reflected heavy oil that directly offset the decline in oil imports from Mexico and Venezuela.

The burden of any overall OPEC cutback in output would have fallen hardest on Saudi Arabia

We suspect Saudi's current oil strategy reflects both the overall macro outlook for the growth in shale oil in the U.S. and America's need for fewer imported barrels and increased competition for U.S. market share in the heavy oil segment. This competition over heavy oil between Saudi and Venezuela may have been a reason why the two countries could not agree on a unified OPEC position last November since the burden of any overall OPEC cutback in output would have fallen hardest on Saudi Arabia, probably causing it to lose whatever U.S. market share it had. Even though Saudi volumes are small, losing a footing in the U.S. market would have been a very painful event with potentially long-term consequences.

Exhibit 5. Canada Has Been Big U.S. Import Winner

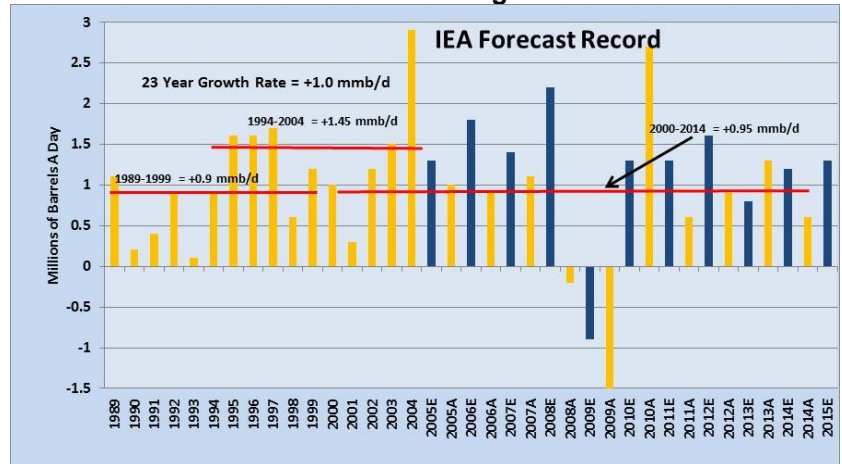


Source: EIA, PPHB

Yes, the shale output growth in the U.S. has played a role in reshaping the global oil market, but its effect is both amplified and muted by other countries' oil flows

As always, those of us on the outside looking in on OPEC's internecine battles have to try to read the tea leaves from the data we have plotted. Yes, the shale output growth in the U.S. has played a role in reshaping the global oil market, but its effect is both amplified and muted by other countries' oil flows. We still contend that if global oil demand was growing at more than a million barrels a day per year as it was during much of the early 2000's, or at the nearly 1.5 million barrels a day rate of 1994-2004, this oil price collapse would not have happened.

Exhibit 6. IEA Has Terrible Forecasting Record



Source: IEA, PPHB

We have recently updated our chart showing the forecasting record of the International Energy Agency (IEA). It shows an overly optimistic bias in IEA forecasts since the agency's huge miss due to

What we saw in 2014 was a significant falloff in demand

China's oil demand explosion in 2004. The record shows how the IEA underestimated the magnitude of the energy demand recovery following the global financial crisis and recession of 2008-9. It also underestimated oil demand growth in 2013. What we saw in 2014 was a significant falloff in demand. In fact, the year's demand growth has been estimated at only 600,000 barrels a day, or half the original IEA estimate for the year. The agency's forecast for 2015 initially called for an increase of 1.3 million barrels a day, but that has recently been cut to only a 900,000-barrels-a-day gain.

This means that last year's demand grew by only two-thirds of the historical growth rate

What is most interesting is the consistency in long-term demand growth since 1989. As shown on the chart, for the decade 1989-1999, demand grew on average by 900,000 barrels a day. For the overlapping decade of 1994-2004, average demand grew 50% faster, or an average rate of increase of 1.45 million barrels a day. That period was marked by 2004's dramatic increase along with healthy growth during the last half of the 1990's. When we calculated the average demand growth for 2000-2014, it was at an annual average rate of 950,000 barrels a day. This means that last year's demand grew by only two-thirds of the historical growth rate. This year's growth will come close to matching the long-term average, however, that forecast was made before the International Monetary Fund (IMF) cut its global economic growth estimates for 2015 and 2016 by 0.3 percentage points, respectively. The problem is that if industry planners were anticipating growth more like that experienced over the 1994-2004 decade, then demand is falling well short of expectations. What we know about this year's energy demand forecast is that it will continue to be buffeted by the cross-currents from the demand stimulus as a result of lower oil prices and reduced economically-driven demand from around the world.

Saudi Arabia knows it needs a healthy global economy to spur long-term oil demand growth and thus lift global oil prices

In our view, much of the world's energy business for the past decade has been driven by an extrapolation of the demand trends established in 1994-2004. The financial crisis and recessionary period presented a brief interruption in that healthy growth trend. Population growth, rising living standards and cheap capital, courtesy of easy monetary policies around the world, stimulated significant growth in oil drilling and production that contributed to the current supply growth. Lack of demand continues to play a greater role in the weak oil prices of today than many are willing to acknowledge. That imbalance between demand and supply is not particularly large – maybe 1.5 million barrels a day, although supply is growing while demand is lagging. Saudi Arabia knows it needs a healthy global economy to spur long-term oil demand growth and thus lift global oil prices. How long will it take to reestablish this growth? Saudi Arabia said it was prepared to live with low oil price for up to two years. Fundamentals, however, should shorten that time frame.

Too Many Trucks, Too Little Parking

For several years we have commented on the overflow condition of rest stops and truck stops caused by the new federal work rules for long-haul trucks

The headline for this article was borrowed from a story in last week's *Wall Street Journal* that highlighted the problem long-haul truck-drivers face in finding parking spots in order to comply with the tightened federal work rules for rest periods. Long-time readers of the *Musings* know that every year we write about the volume of trucks and general highway traffic, road construction, the intensity of police patrols, occupancy at hotels and restaurants, and any other general economic trends we observe in our several-day trips back and forth between Houston and our summer home in Rhode Island. For several years we have commented on the overflow condition of rest stops and truck stops caused by the new federal work rules for long-haul trucks, and how it has sometimes become a hazard for highway traffic.

The driver's wife wondered why he didn't stay the night at a truck stop

The *WSJ* article began by detailing the last phone conversation between a truck driver and his wife the evening before his burned out truck and body were discovered 150 yards from the gate to a ThyssenKrupp steel plant near Detroit. The police believe the destruction was caused to cover up a robbery. The driver's wife wondered why he didn't stay the night at a truck stop and reasoned he probably didn't want to spend the money on fuel to get to one or he didn't want to pay the overnight parking fee. The couple was expecting their first child in a few months.

Drivers must quit for the equivalent of a night's rest after driving for 11 hours straight

The article focused on the problem of too few parking spots along highways due to the new federal rules requiring more frequent and longer mandatory rest periods for highway truck drivers. Drivers now are required to stop at least once during every eight hours of driving and quit for the equivalent of a night's rest after driving for 11 hours straight.

70% of the drivers said they had tried to stop at a truck stop on the route but found it full

The article cited various surveys of truck drivers dealing with parking. In a 2012 survey of truckers on Interstate 5 that runs the length of California, 70% of the drivers said they had tried to stop at a truck stop on the route but found it full. More than half of the respondents said that happened every other day. Another study by the Federal Highway Association found about 300 parking spaces available along a stretch of I-40 in Arizona and New Mexico for more than 10,000 trucks that passed daily through the area.

"If you don't find a place by 4 p.m., you're in bad shape"

We were not surprised by a quote attributed to Debora da Rocha, who is on the road for four months straight hauling freight, who described the situation in the Northeast. She said, "All the truck stops fill up early. If you don't find a place by 4 p.m., you're in bad shape." We can attest to that problem from our travels into that area of the country. Once, when driving through New Jersey, we encountered a string of parked trucks over a half a mile long leading up to the entrance for a highway rest stop, which was not only full but had another quarter-of-a-mile-long line of parked trucks after the

About 28% said they regularly or occasionally stay on freeway ramps, although that is illegal

exit. The article quoted data from an informal Web survey in 2013 that received nearly 4,000 responses from truck drivers. Nearly 40% said it takes them, on average, an hour or more to find a parking spot for the night. About 28% said they regularly or occasionally stay on freeway ramps, although that is illegal; 52% said they pull up behind shopping centers, and 45% hunt for places such as abandoned gas stations or vacant strip malls. We can attest to having seen trucks in all these locations, as unsafe as they often have turned out to be.

Tired truck drivers are a hazard and if more vehicles get on the roads due to lower gasoline prices, we should expect more accidents

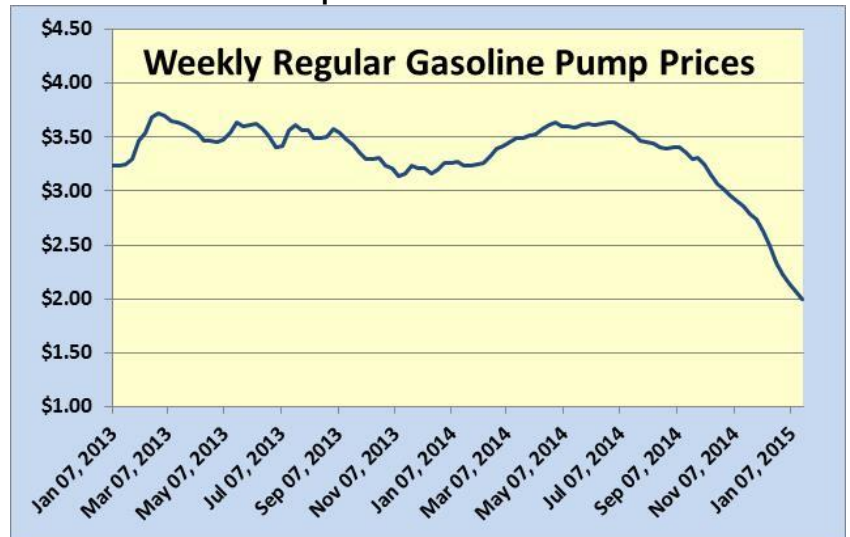
Expanding highway rest stops is just one more construction project competing for federal highway funds that are in short supply due to the lack of increase in the federal gasoline tax and the diversion of some of those funds to general government expenditures. Theoretically, private truck stops should work to increase their accommodations for truck drivers, but the challenges are often a lack of space and high costs. Tired truck drivers are a hazard and if more vehicles get on the roads due to lower gasoline prices, we should expect more accidents. Too few truck parking spaces is just one unintended consequence of new federal regulations on driver rest periods.

Gasoline Sales – A Precursor For Energy Demand Recovery?

Gasoline prices rose in the spring of 2014 in anticipation of the start of the seasonally strong summer driving season

Average weekly gasoline sales for the period encompassing the final two weeks of December and the first two weeks of January are up over 7% from the same four-week period a year ago. The increase reflects improved economic conditions and better weather year to year, but there is also the positive stimulus from sharply lower gasoline pump prices coincident with the collapse in global crude oil prices. In Exhibit 7, we plotted the average weekly retail regular gasoline pump price from the start of 2013 to mid-January 2015. It is interesting that overall, pump prices appeared to be in a downward trend throughout all of 2013 following their sharp recovery after the severe winter early that year. Gasoline prices rose in the spring of 2014 in anticipation of the start of the seasonally strong summer driving season. After mid-year 2014, gasoline pump prices followed crude oil prices downward only to accelerate the decline as oil prices collapsed last fall. The decline continued early in 2015, but it appears to be stabilizing.

Exhibit 7. Gasoline Pump Prices Are In A Downturn

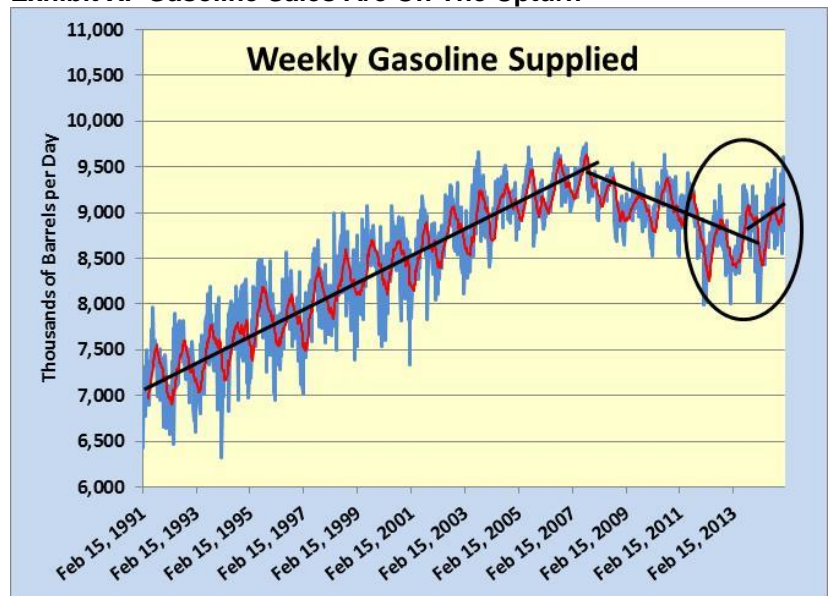


Source: EIA, PPHB

What we see is gasoline consumption grew steadily between 1991 and 2007, at which point sales volumes began a steady decline

The movement or some might say the lack of movement, in gasoline prices between the start of 2013 and mid-2014 belies the rising volumes of gasoline sold. Exhibit 8 shows the trend in weekly gasoline volumes supplied to the market, which approximates retail gasoline consumption, from 1991 to early 2015. What we see is gasoline consumption grew steadily between 1991 and 2007, at which point sales volumes began a steady decline that appeared to end in the spring of 2013.

Exhibit X. Gasoline Sales Are On The Upturn



Source: EIA, PPHB

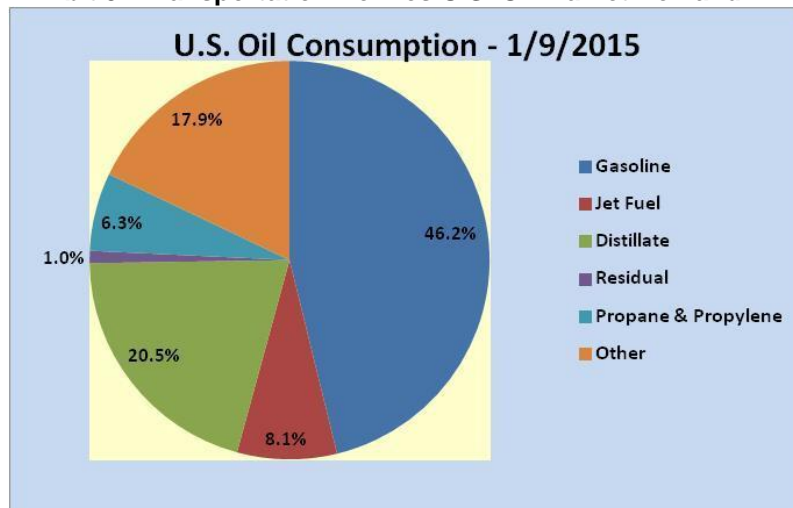
Year to year, the average regular gasoline pump price has fallen from \$3.24 a gallon to \$1.99, or roughly a 40% drop

If we look only at the increase in 2014 of average weekly gasoline volumes compared to the prior year, the increase was 1%, which masks the explosive year-over-year growth experienced last fall as pump prices dropped. According to the Energy Information Administration (EIA), for the week of January 19th, regular gasoline pump prices averaged \$1.99 per gallon. We know from the reports about the gasoline market tracked by the American Automobile Association (AAA) that pump prices in some areas are below the EIA's estimate, but that is merely confirmation of the changed retail gasoline market. Year to year, the average regular gasoline pump price has fallen from \$3.24 a gallon to \$1.99, or roughly a 40% drop.

Transportation accounts for approximately 70% of the oil consumed in America

The gasoline market is the primary oil market in the United States as shown in Exhibit 9. It accounted for 46% of the oil used in America during the week of January 9th, with jet fuel representing another 8%. Distillates, which represents both diesel fuel and home heating oil, accounts for 20.5% of the oil volumes consumed. Based on 2013 data, transportation uses accounted for 77% of distillate volumes, so overall, transportation accounts for approximately 70% of the oil consumed in America. This means that we should monitor the factors that increase or decrease transportation in this country.

Exhibit 9. Transportation Defines U.S. Oil Market Demand



Source: EIA, PPHB

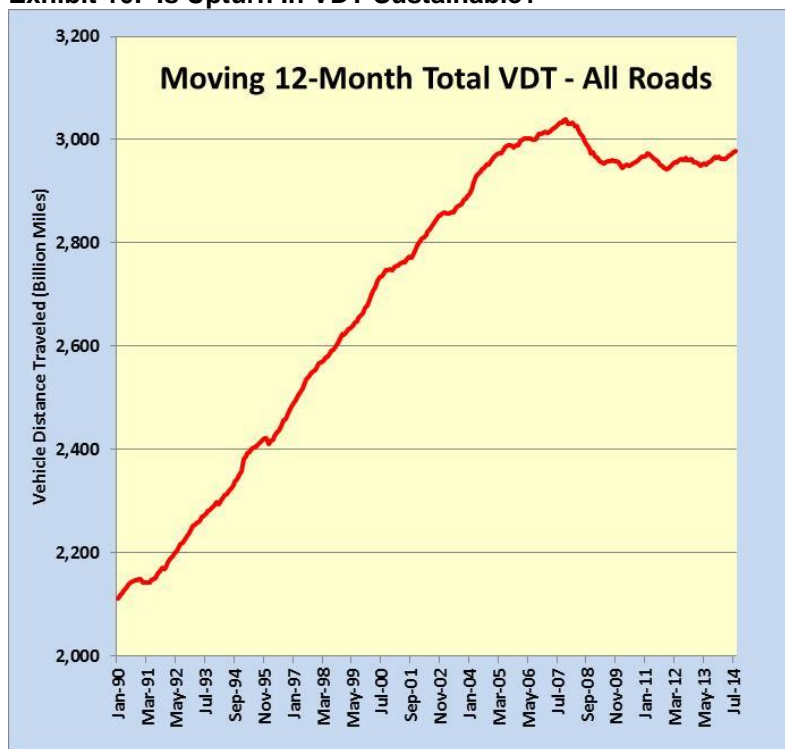
The significance of the ICE was its ability to promote mobility besides power

The most dramatic change underway in the U.S. transportation market is the recent upturn in vehicle distance traveled (VDT). One of the greatest inventions in history was the internal combustion engine, or ICE as it is often referred to, because it replaced human and then animal power in both commercial and personal applications. These engines also replaced some natural power sources such as hydro and wind, but those applications relate primarily to fixed energy sources. The significance of the ICE was its ability to promote mobility besides power. In Exhibit 10, we show what has happened to VDT from 1990 until the first half of 2008,

As the peak became clearer, analysts started examining the reasons for the stop in the rise of gasoline consumption

or about when the global financial crisis emerged. Surprisingly, very few people caught on to the peaking in VDT, which drove the decline in gasoline sales volumes. As the peak became clearer, analysts started examining the reasons for the stop in the rise of gasoline consumption. For the first time, continuation of America's love-affair with the automobile was questioned.

Exhibit 10. Is Upturn In VDT Sustainable?



Source: Department of Transportation

This new trend, coupled with a rebound in light duty vehicle sales, has energy analysts excited that oil demand in America will soon be on a sustained growth curve, especially if low gasoline prices continue

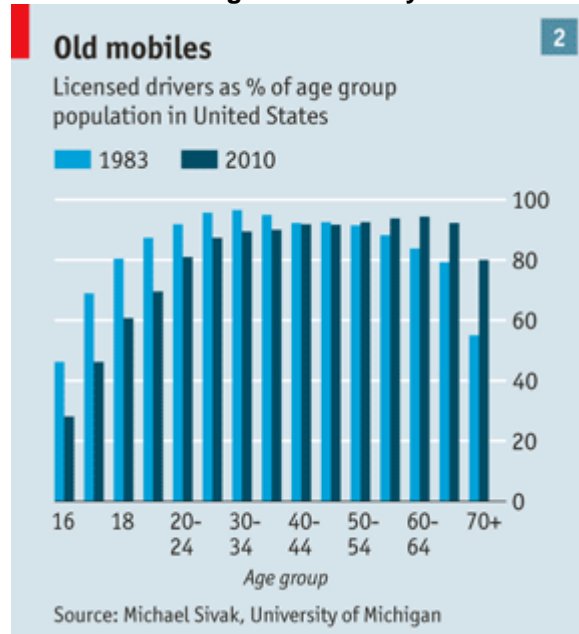
Initially it was assumed that the VDT decline, which reflected a sharp correction, was due to fallout from the 2008-9 financial crisis and recession. When the recession ended and VDT failed to snapback, people started searching for more substantive explanations for its lack of response. As everyone was searching for explanations, VDT would periodically reverse and start rising spurring hope that whatever had caused the break in the trend was fixed and we were establishing a new upward trend only to see the trend fall back. Since early 2013, we have experienced what appears to be a sustained upward trend. This new trend, coupled with a rebound in light duty vehicle sales, has energy analysts excited that oil demand in America will soon be on a sustained growth curve, especially if low gasoline prices continue.

As analysts strived to understand how the social, economic and demographic trends in the U.S. that explained the historical upward trend in VDT had changed, the spotlight focused on social attitudes

Millennials led with a shift in attitudes that often made obtaining a driver's license of less importance

toward driving and demographic considerations. Surveys and data showed that younger Americans were less interested in obtaining drivers' licenses as new mores about socializing took hold along with new ways to work and shop. Millennials led with a shift in attitudes that often made obtaining a driver's license of less importance. Rather than gathering ones friends and going to a location to hang out, texting, messaging and Skyping became preferred socializing avenues.

Exhibit 11. Young Drivers Delay Car Interest



Source: *The Economist*

Millennials have also reshaped the housing market

On commuting demand, the ability of increasing numbers of Americans to work and shop from home via their computers reduced the need to venture out to malls and offices. Millennials have also reshaped the housing market, favoring remaining single longer and wanting to live in central cities or near their places of work reducing the need to drive, especially if public transit options exist. These trends were reinforced as young people extended their education, delayed buying homes and postponed getting married and having children – all events associated with needing vehicles for mobility.

Some of that rebound was due to Americans' need to replace aging vehicles

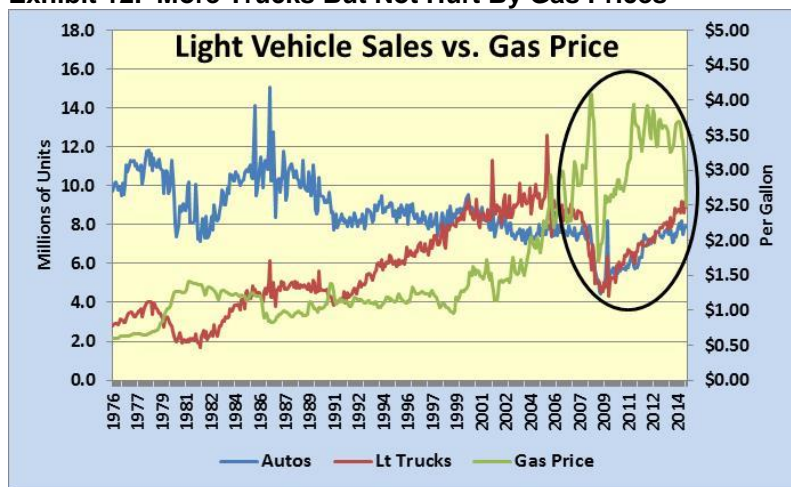
The 2008-2009 financial crisis and recession acted to reinforce these trends as many people were damaged financially to the point they could not afford to purchase or even lease new cars. The restructuring of the domestic automobile industry and the increased distance from the economic pain of the recessionary years has contributed to a rebound in light duty vehicle sales. Some of that rebound was due to Americans' need to replace aging vehicles. As the average age of the American automobile stock rose to 11 years, buyers of new cars emerged with the better economic times, lower

vehicle prices and improved credit terms. After falling to an annualized sales rate of 9.5 – 10.0 million units in 2010, the industry has rebounded, ending 2014 at close to 17 million units. While the sales level is below those heady 20-million-unit years early in the new century, the industry is confident it can sustain sales at around 17 million units per year.

Amazingly, the auto sales recovery was not hampered by the rise in gasoline pump prices

Amazingly, the auto sales recovery was not hampered by the rise in gasoline pump prices. That relationship speaks to the power of pent up demand for new vehicles driven by the need to replace older ones. It was certainly helped by cheap financing. This relationship is shown in the circled area in Exhibit 12.

Exhibit 12. More Trucks But Not Hurt By Gas Prices



Source: EIA, PPHB

At the moment, the trucks to cars imbalance is not as great as it was in 2004-2005, but the spread appears to be widening with important implications for gasoline consumption

Another important trend was how in the early years of this century, light duty trucks outsold automobiles. At the moment, the trucks to cars imbalance is not as great as it was in 2004-2005, but the spread appears to be widening with important implications for gasoline consumption. Light duty trucks include both traditional pickup trucks and sport utility vehicles (SUVs), along with the growing number of cross-over vehicles that have the increased carrying capacity of SUVs and the smoother ride of autos. The recent decline in gasoline prices is helping the outlook for sales of light duty trucks, SUVs and cross-over vehicles. News stories from the recent North American International Auto Show in Detroit focused on the “muscle cars” and other power-hungry vehicles the automakers were introducing to satisfy the desires of American vehicle buyers. At the same time, there was increased focus on new electric vehicle (EV) models designed to provide increased distance per electric charge but at a lower cost. Energy analysts must pay attention to this development as it will impact the future of the new car market as the demands of the Corporate Average Fuel Economy (CAFÉ) standard agreed to with the Obama administration several years ago calling for all cars

to attain an average of 54.5 miles per gallon by 2025 will force increased purchases of EVs. More EVs will be the only way automakers will be able to boost their fleet fuel efficiency to meet the standard, as today the fleet is only at 25 miles per gallon.

Exhibit 13. Trucks Are Among Leading Vehicle Sellers

	Dec 2014	% Chg from Dec '13	YTD 2014	% Chg from YTD 2013
Ford F - Series PU	74,355	-0.3	753,851	-1.3
Chevrolet Silverado PU	57,837	35.8	529,755	10.3
Dodge Ram PU	44,222	32.4	439,789	23.6
Honda CR-V	32,369	12.6	335,019	10.2
Nissan Altima	32,331	30.3	335,644	4.7
Toyota Camry	31,618	5.5	428,606	4.9
Honda Accord	31,589	-2.3	388,374	5.9
Toyota Corolla / Matrix	30,125	33.5	339,498	12.3
Ford Escape	25,603	4.7	306,212	3.5
Honda Civic	25,337	-12.6	325,981	-3.0
GMC Sierra PU	23,436	31.3	211,833	14.9
Ford Fusion	23,166	-5.1	306,860	3.9
Toyota RAV4	22,997	9.7	267,698	22.7
Chevrolet Equinox	21,298	23.7	242,242	1.7
Hyundai Elantra	18,860	-13.1	222,023	-10.4
Ford Explorer	18,464	9.2	209,994	9.1
Hyundai Sonata	17,924	23.8	216,936	6.5
Chevrolet Cruze	17,800	-2.0	273,060	10.0
Jeep Cherokee	17,715	17.8	178,508	592.3
Jeep Grand Cherokee	17,176	4.0	183,786	5.5

Source: *Automotive News*

What we know about these type vehicles is that they have lower fuel-efficiency ratings than automobiles so they are destined to help drive gasoline volumes higher

When we examine the list of the top twenty vehicles sold last in December and for all of 2014, the top three are all light-duty trucks. The list, however, is populated with trucks, SUVs and cross-over vehicles. What we know about these type vehicles is that they have lower fuel-efficiency ratings than automobiles so they are destined to help drive gasoline volumes higher, assuming they are driven the same number of miles as an auto would be. A contributing factor for truck sales has been the growth of the energy business as these vehicles are the workhorses of oilfield workers.

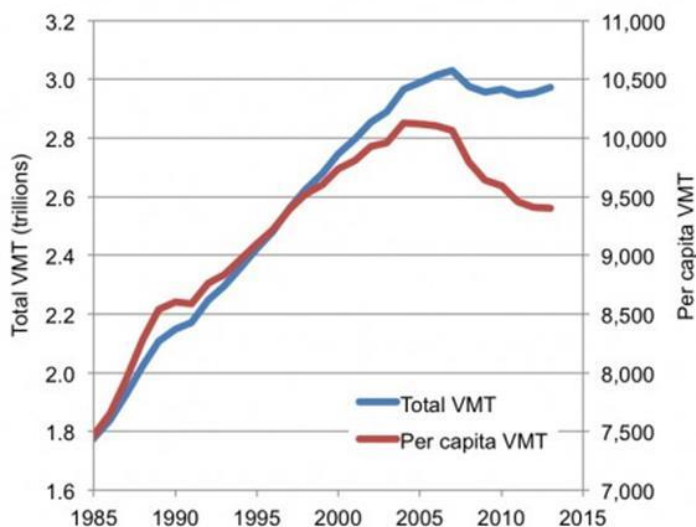
We find this trend interesting as it suggests more people are driving, but that each person is driving less

Another aspect of the VDT story is that although the overall 12-month moving total has trended upwards, the measure of per capita VDT has declined for nine straight years. That trend is shown in Exhibit 14. We find this trend interesting as it suggests more people are driving, but that each person is driving less. How much of the upturn in VDT is related to growing economic activity? If the per capita figure continues to lag, it reinforces the view that the intensity of the use of vehicles is declining due to changing social attitudes to cars. So is America's love-affair with the automobile over?

That is good news for those of us who believe part of the reason for low oil prices is a lack of demand

When we put all of these trends and factors together, we conclude that gasoline consumption is on the rise and will likely continue to climb for the next few years. That is good news for those of us who believe part of the reason for low oil prices is a lack of demand. The challenge is attempting to determine what the future path of VDT may be. We found that the Department of Transportation has

Exhibit 14. Driving Per Capita Continues Falling



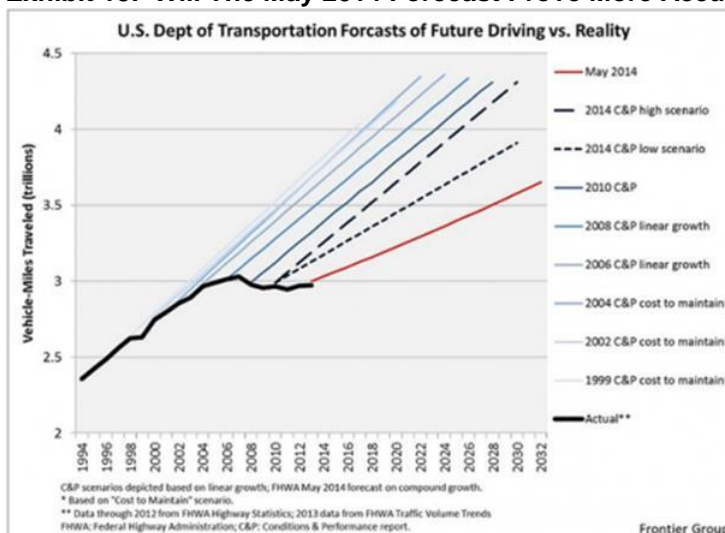
Source:

Those missing miles represent approximately one-third of total VDT reported in 2014

revised its outlook for VDT as the upturns previously predicted did not develop. Exhibit 15 shows a number of historical projections made by the DoT, including their most recent one made last May. As can be seen from the chart, actual VDT has been consistently fallen short of the forecasts. It appears the latest forecast may be more realistic based on the latest data. On the other hand, it is impressive to mentally draw a line from 2020 upward that intersects multiple projections. That line would show a difference between the 2014 forecast and the 2002 forecast of nearly one trillion miles traveled. Those missing miles represent approximately one-third of total VDT reported in 2014. The absence of those miles means gasoline demand would have been substantially higher than current consumption, but why they are missing is important for understanding the health of the vehicle market.

Between 2001 and 2009, the average number of miles driven by 16-24 year-old youths declined 23%

This series of forecasts in Exhibit 15 show a consistent pattern of downward revisions to VDT projections. A major reason is a different attitude of today's youths toward driving and mobility. Between 2001 and 2009, the average number of miles driven by 16-24 year-old youths declined 23%. The decline results from fewer trips, shorter trips and a larger number of trips by other modes of transportation. According to data, young Americans drive less than older Americans and use public transportation more. An example of this relationship, according to census data, is that 16-24 year olds traveling to work by car has declined by 1.5 percentage points from 2006 to 2013. On the other hand, the share of young Americans getting to work by public transportation, on foot or by bicycle, or who work from home has increased.

Exhibit 15. Will The May 2014 Forecast Prove More Accurate?

Source: Frontier Group

The percentage of high school seniors with driver's licenses dropped from 88% to 73% between 1996 and 2010, according to the AAA Foundation for Highway Safety

Another important trend is that the percentage of high school seniors with driver's licenses dropped from 88% to 73% between 1996 and 2010, according to the AAA Foundation for Highway Safety. Federal census data suggests that the decline has continued since 2010. And as we have seen, the number of miles driven by average Americans has declined nearly continuously since 2004. As pointed out earlier last year, Americans drive no more in total than we did in 2005 and no more on average than we did in 1996. Therefore, the upturn in VDT during 2014 may be significant if it truly reflects a change in the underlying fundamentals that influence driving attitudes. Otherwise, it may merely represent another brief upturn similar to those experienced during the extended flat trend period since the 2007 VDT peak.

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