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A Forensic Analysis of Pickens' Peak:

Why Were Oil Prices So High in 2008, and What Steps Are Needed to Find an Answer?

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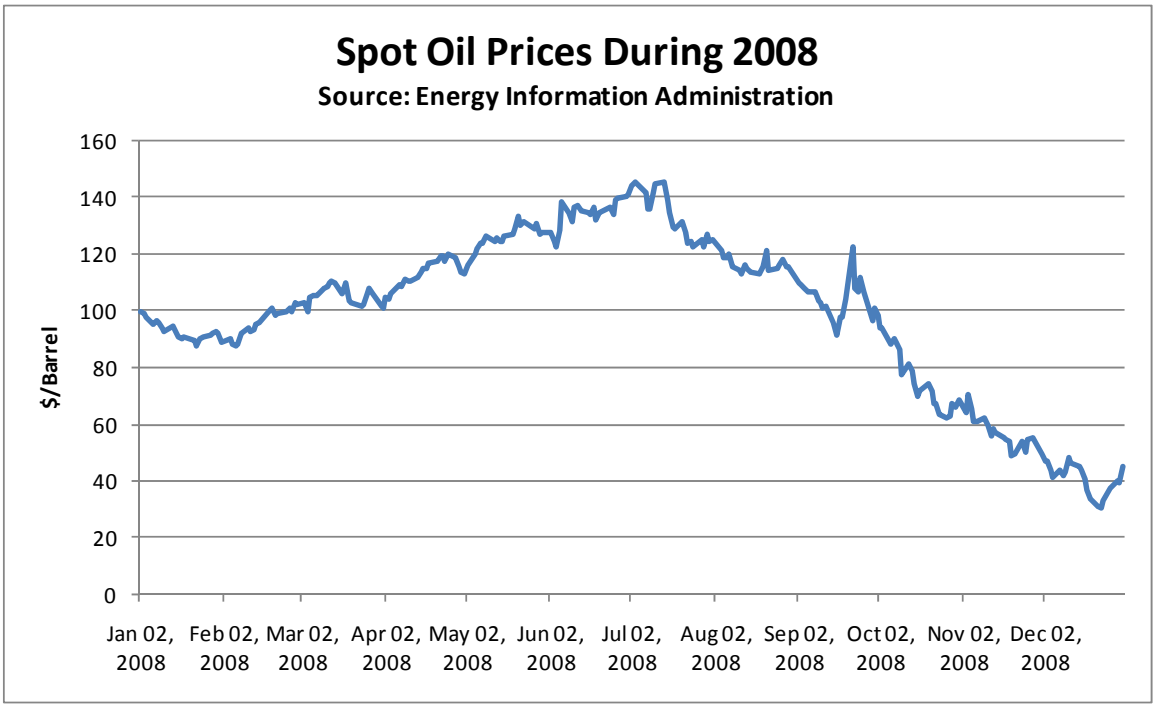
Thank you for the opportunity to testify today before the Energy Subcommittee.

America's most significant import, crude oil, has such strong connections with natural gas and electricity that it affects the entire economy. It is also the import we know the least about. U.S. regulators do not collect data on any spot transactions, and data is available on only a portion of forward transactions. Although we fear that the oil market may have become dominated by speculators, we do not know who they are, or their possible impacts. We do know that oil prices are frequently anomalous. For example, on March 15, 2009, OPEC decided to maintain output at levels agreed to before the onset of the current recession. This was good news for oil consumers. Unfortunately, however, oil prices have risen significantly in the ensuing ten days.

On January 30, 2008, T. Boone Pickens predicted that oil prices would reach $100.00 a barrel during the first half of 2008.[1] By July 23, he predicted that oil prices would reach $300.00 a barrel by the year 2018.[2]

But oil prices in 2008 did not obey Mr. Pickens. On July 3, oil peaked at $146.00 a barrel, only to fall precipitously to a yearly low of $31.00 a barrel on December 22.



At McCullough Research, we have taken to calling the anomalous prices in 2008 the "Pickens' Peak" in honor of Mr. Pickens' forecasting initiatives.

[1] T. Boone Pickens shares his views on energy, politics, the Olympics, OSU's new president, *The Daily Oklahoman,* January 30, 2008.
[2] Pickens warns of $300 oil, Herald News Services, July 23, 2008.

Because of the linkages among the nation's fuel markets, retail gasoline, natural gas, and electricity followed similar trajectories during 2008. Pressure on household budgets accentuated the sub-prime financial crisis, and the change in automobile economics brought a steep decline in car sales.

While oil is arguably the U.S. economy's most important commodity, it is ironic that no agency of the U.S. government has been assigned the task of investigating and explaining the extraordinary price changes of last year.

Current responsibilities are allocated among the Federal Energy Regulatory Commission (pipelines), the CFTC (some, but not all, forward contracts), and the EIA (forecasting.) On June 10, 2008, the CFTC announced the formation of an interagency task force, including the CFTC, the Federal Reserve, the Department of the Treasury, the SEC, the DOE, and the Department of Agriculture, to study commodity markets. The task force expeditiously published an interim report, but apparently stopped its activities soon thereafter.[3]

It is surprising that not one of the three lead federal agencies has expressed much interest in Pickens' Peak. A review of materials issued by FERC, which regulates natural gas and electricity trades, but not oil trades, also reveals little interest in the dramatic run-up in the price of oil in the first half of 2008.

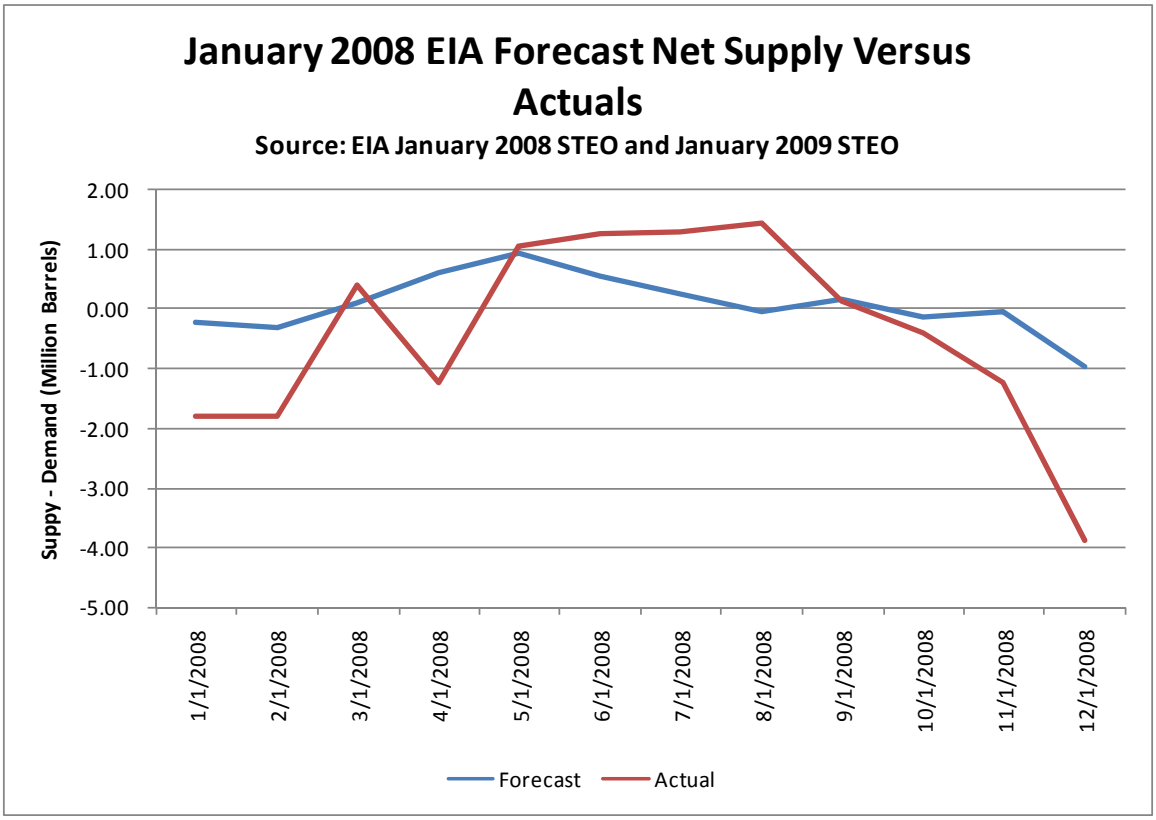
Like the market surveillance of electricity and natural gas prices, reviews of pricing anomalies largely rely upon third parties, such as McCullough Research, that are retained to examine whether the markets are reflecting fundamental supply and demand conditions.

[3] Interim Report on Crude Oil, Interagency Task Force on Commodity Markets, July 23, 2008.

The EIA's Short Term Energy Outlook (STEO) Forecasts

The preeminent independent forecast of world oil markets is performed monthly at the Energy Information Administration. Curiously, this resource was largely ignored by apologists for the 2008 price spike, who relied instead on anecdotes concerning exchange rates, Chinese and Indian oil imports, and surging U.S. demand. Now that data from 2008 is in hand, it is useful to compare the EIA's quantity forecasts with actual historical quantities.

On January 8, 2008, the STEO forecasted supply shortfalls at the beginning and the end of 2008.



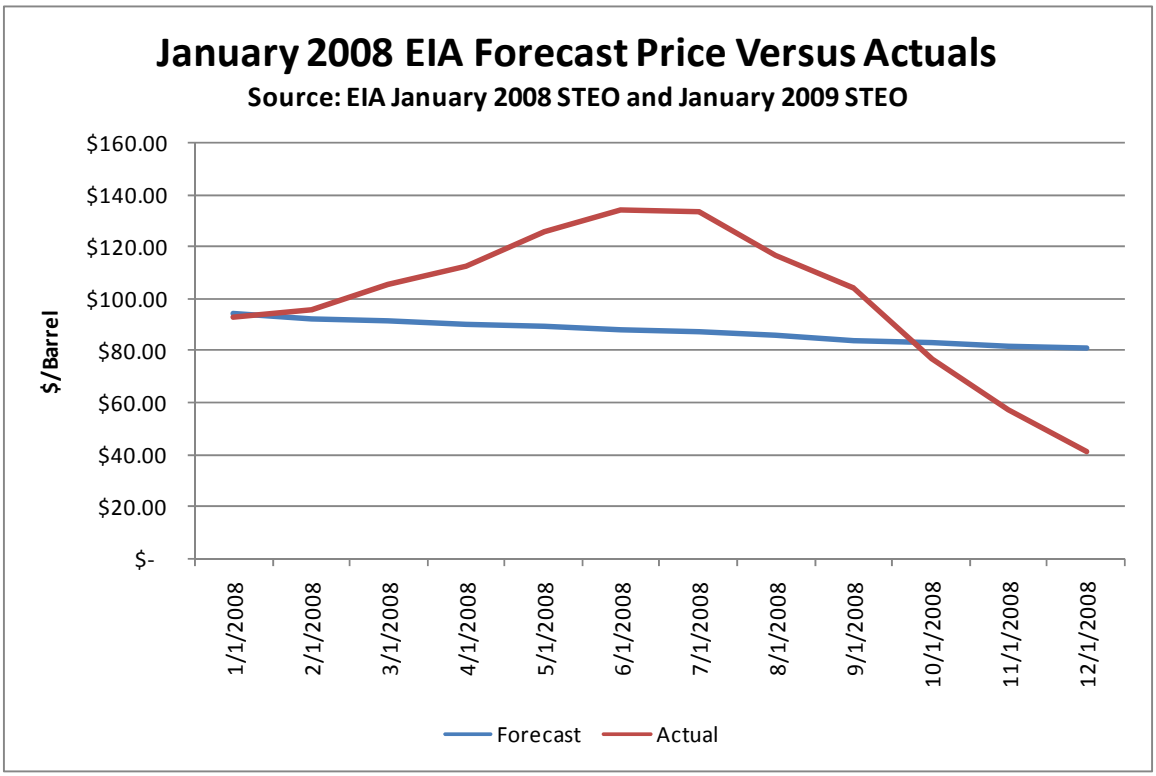
The chart shows the EIA's forecasted additions (blue line) to world oil inventories in the spring and early summer of 2008, followed by drawdowns in the fall and winter of 2008. Actual data (red line) shows that while the EIA accurately predicted the basic pattern, it underestimated the inventory build-up during the price spike and the reduction in inventories during the autumn when oil prices were falling.

It is worth noting that the EIA had correctly forecasted all of the fundamentals that supposedly drove up last year's market prices, including:

- Demand from China (which did not change materially during the run-up in prices)[4]
- Demand from the U.S. (which declined during the run-up in prices)[5]

Yet the EIA's price forecast was very poor:

[4]EIA STEO Table 3a, http://www.eia.doe.gov/emeu/steo/pub/contents.html
[5] Ibid.



Examining the numbers the way a statistician would approach this problem, the EIA's forecast of quantities is statistically significant at 99%, i.e. very good. The EIA's forecast of prices, however, is not statistically significant at any level.

We may conclude therefore that the basic assumptions underlying the EIA's forecast require careful examination. It appears likely that price responses to changes in supply and demand are more complex than those modeled in the EIA's price forecast.

The Economic Theory of Oligopolistic Markets

The heart of the problem is the assumption that the global crude oil market reflects a competitive market with a large number of buyers and sellers. Very little research has been performed concerning the degree of competition in the oil market. Although we know that mergers have reduced the number of very large players, there is almost no real data about the degree of market concentration.

Understanding the degree of competition is crucial, because economic theory gives very different predictions under different market structures:

1. **Perfect Competition**

   In perfect competition the presence of many buyers and many sellers make it impossible for any one supplier (or a small group of suppliers) to set prices. To forecast prices in perfect competition, economists rely upon the years of experience that have established the use of supply and demand curves.

2. **Oligopoly**

   Oligopoly is a market with relatively few sellers. Forecasting prices in an oligopoly is far more complex since a few large players can – and do – exert control over prices.

Inventories are important in an oligopoly. A market with only a few large participants is likely to experience situations where market participants will accumulate in-

ventory rather than sell their products at prices they see as less than their long-term prospects.

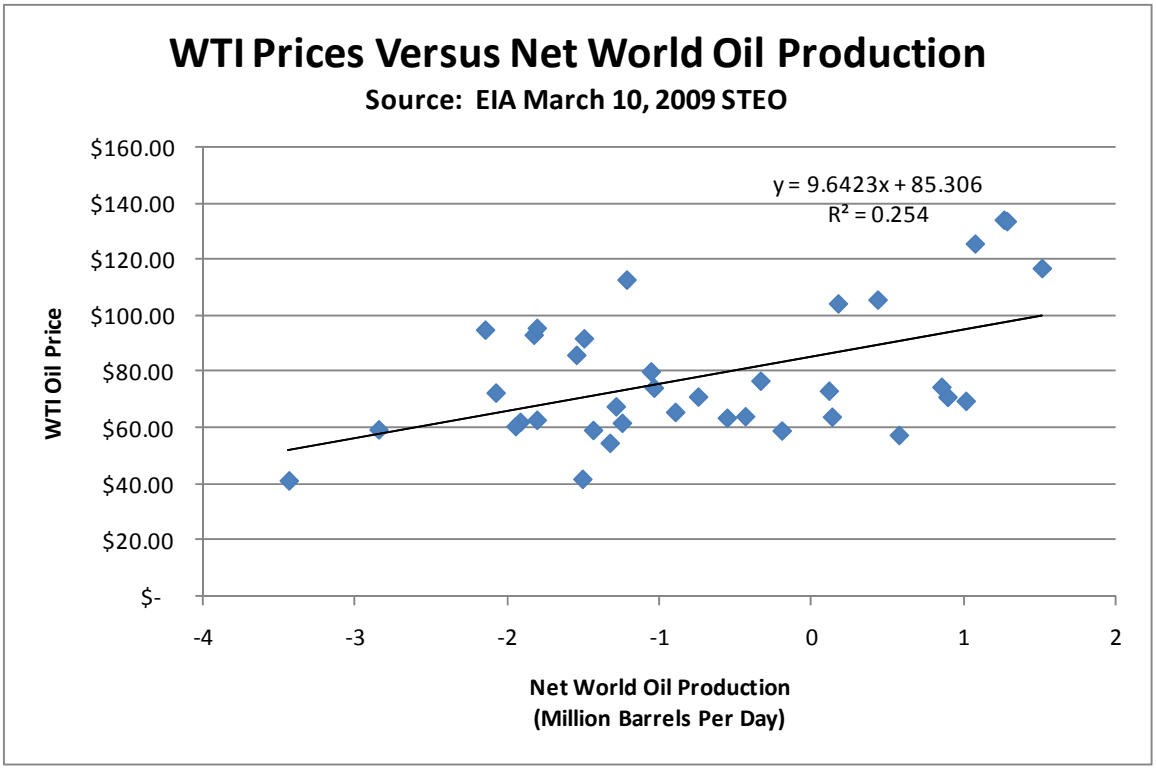
An extreme case of oligopoly is a market with a few pivotal suppliers. A pivotal supplier can exert strong control over prices because its output is absolutely required to meet demand even after all alternative supplies have been purchased.

In a dynamic economic model we would expect an oligopolist in a market with increasing prices to accumulate inventory to sell during later periods. If the market for oil experienced prices increasing 6% per month – as happened in the first six months of 2008 – only a very altruistic competitor would not be tempted to increase its inventory in anticipation of higher prices later. If other competitors made similar decisions, their inventory changes would also alter the supply of oil available to the market and increase oil prices.

If a pivotal supplier was present, its inventory decisions could directly set the price in the market. Decisions to withhold supply are frequently observed in the nation's wholesale electricity markets. This was the case during the Western Market Crisis of 2000-2001 when major suppliers in California reported only 50% availability for their plants during periods of high demand.

Given the data now available from the EIA, the assumption of oligopoly is a better candidate for a model of the world oil market than perfect competition. Inventories rose during the period of rising prices and then fell when prices were falling.

Statistically, the relationship between prices and net world production has been positive since 2006:



Increases to world inventories – production larger than current needs – has been correlated with higher prices. This is more consistent with oligopolistic behavior than perfect competition. Given the extreme levels reached during July 2008, it is very possible that the oil market had one or more pivotal suppliers.

Recommendations

The inability of the federal government to fully investigate oil price behavior in 2008 is fundamentally a data problem. Perhaps it is not a coincidence that oil is the most opaque of our nation's energy supplies.

The transparency legislation that you are discussing today is a step in the right direction, because it will expand the EIA's ability to track oil inventories within the U.S. by owner.

We know so little at this point that any information is useful. There are, however, limitations to having only a small amount of the information available. The oil inventories in the U.S. in 2008 averaged only 37% of total OECD inventories. They do not include data from either Russia or OPEC.

As with the current problems with the CFTC's oversight being limited to just a fraction of the total forward markets, inventory data for the U.S. will not identify inventory decisions from our major trading partners. I recommend that another useful step is to direct the EIA to identify data-sharing arrangements with our OECD partners, including Canada, our single largest oil supplier.

Over the last decade, and especially after 9-11, Americans have been told that the concept of secrecy applies to many types of energy transactions. There has been little public debate about the heightened levels of secrecy in energy transactions, or studies of the impact of this secrecy on energy prices and on our national economy.

The American economist, Paul Samuelson, always included transparency in markets as one of the conditions for perfect competition. If we are seeking more efficient oil markets that are less vulnerable to manipulation, we may want to re-examine a concept of secrecy that may be taking us in the opposite direction.

My testimony before the Senate Energy and Natural Resources Committee on September 18, 2008 stated that we have a double standard for reporting market data. While some energy sources are relatively transparent, other competing energy sources are largely opaque. FERC's Web site openly publishes the electricity trades within the U.S. on a quarterly basis, and is a good model for reporting other energy sources.[6] The creation of an Oil Quarterly Report modeled after FERC's Electric Quarterly Report would give regulators, decision-makers, and the public a better sense of whether oil markets are dysfunctional.

This completes my testimony today.

[6] Depending On 19th Century Regulatory Institutions to Handle 21st Century Markets, http://www.mresearch.com/pdfs/355.pdf