Oil Price Drivers: Elasticities, NYMEX, and Traders

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Dual Plenary Session

Drivers of Oil Prices and the Outlook for the Future

32nd IAEE International Conference
22 June 2009
Overview

- Elasticities and volatility
- The NYMEX Settlement Committee
- Swap Dealers
- Spread Traders: Vitol case
Elasticities and Volatility


- Short-run elasticities linked to volatility

- Long-run elasticities may be linked to forward curve volatility differentials
### Demand and Supply Elasticities

<table>
<thead>
<tr>
<th></th>
<th>Demand*</th>
<th>Supply**</th>
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</thead>
<tbody>
<tr>
<td><strong>Short-run</strong></td>
<td>-0.05</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>Long-run</strong></td>
<td>-0.30</td>
<td>0.35</td>
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</tbody>
</table>


Long and short run

\[ P \]

\[ D_L, D_S \]

\[ S_L, S_S \]

\[ Q_e \]

\[ P_e \]
Short-run vs. long-run

- A supply shock will entail a shift of the supply curve
- A demand shock will entail a shift of the demand curve
- At an initial equilibrium price these will lead to excess demand or excess supply conditions that will be met with price changes to restore equilibrium
- Smith shows us that this price change may be approximated by $1/(\varepsilon_S - \varepsilon_D)$ times the percentage change in quantity resulting from the shock.
Short-run vs. long-run

- From the elasticities table:
- Short-run price response would be:
  - $1/(0.04 - (-0.05)) = 1/0.09 = 11.1$
- Long-run price response would be:
  - $1/(0.35 - (-0.30)) = 1/0.65 = 1.5$

- So a one percent supply shock would be expected to produce an 11.1% price increase in the short run, but only a 1.5% price rise in the long run.
Relative price effects
Elasticities and the forward curve

- This suggests that we should expect different price movements over the extent of the forward curve.
- We should expect that the near-maturity contracts will show more price responsiveness to observed or expected changes than will occur for the distant-maturity contracts.
NYMEX Settlement Committee

- The reported settlement price for each contract are set each day by the NYMEX Settlement Committee.
- The committee is made up of sector experts, including members and traders on the Exchange.
- Relatively few settlement prices reflect actual market trading activity.
- Only a contract that begins the trading day with at least 10% of the total open interest for the commodity and represents 30% of the trading activity during the closing range will have its settlement price set according to the weighted average of the trades during the closing range.
  - These conditions will rarely be met by more than the first two near-maturity contracts.
- All other contracts have their settlement prices set by the decision of the Settlement Committee.
Open interest and price

Crude oil Open Interest and Near-month Futures Price

1 August 2000 to 17 July 2007
OI increased by 1,142,016
Large trader positions

Crude oil futures open interest positions

Commercials accounted for
592,581 or 52% of the increase of the long positions, and
705,178 or 61% of the short positions.
Swap Dealers

- Some claim that swap dealers should not be considered commercial traders
- It is suggested that they are not typical, or traditional, hedgers
- It is at least implied that they are speculators in hedgers clothing
- How can we tell?
- Hicks (Value and Capital) argued that we should expect hedgers to be net short
- Do swap dealers change that dynamic?
Commercial Net Short Positions

Commercial Short minus Commercial Long Positions

Positive values mean Commercials are net short.
Commercial Net Short Positions

Differences between the logs of short and long Commercial open interest positions

Positive values mean Commercials are net short.
Spread traders: The Vitol case

- When the CFTC reclassified a single trader, later identified as Vitol, from Commercial to Non-commercial, it was argued in the media that this represented evidence that speculators had been running amuck in the guise of hedgers.

- This was further heralded as evidence that the price rise had indeed been driven by these speculators who were not being adequately accounted for, let alone regulated.

- These conclusions were just more misunderstanding of what the open interest data available from the CFTC tell us.
Vitol was net long by just 3,860 contracts, when counting futures contracts only. This amounted to 0.3% (roughly one third of one percent) of total open interest.

It was actually net short by 4,093 contracts, when we count combined futures and options. This amounted to 0.1% of total combined futures and options open interest.
Spread trading

- Spread trading is relatively low risk trading
  - Profit is made by a change in the slope of the forward curve
  - The volatility of these returns is much lower than that for straight long and short positions
- Spread trading actually provides the potential for increased hedging, and by speculators taking lower risk positions.
Conclusions

- Jim Smith shows us that volatility, as well as price level, is linked closely to fundamental market economics.
  - Volatility is not just the result of some ARCH, GARCH, E-GARCH, M-GARCH, etc. time series process.
- The NYMEX plays a significant role in setting the forward curve settlement prices.
- The data do not support the arguments that speculators, or even swap dealers, dominate the crude oil futures market, nor the price.