

Oil Price Drivers: Elasticities, NYMEX, and Traders

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Overview

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

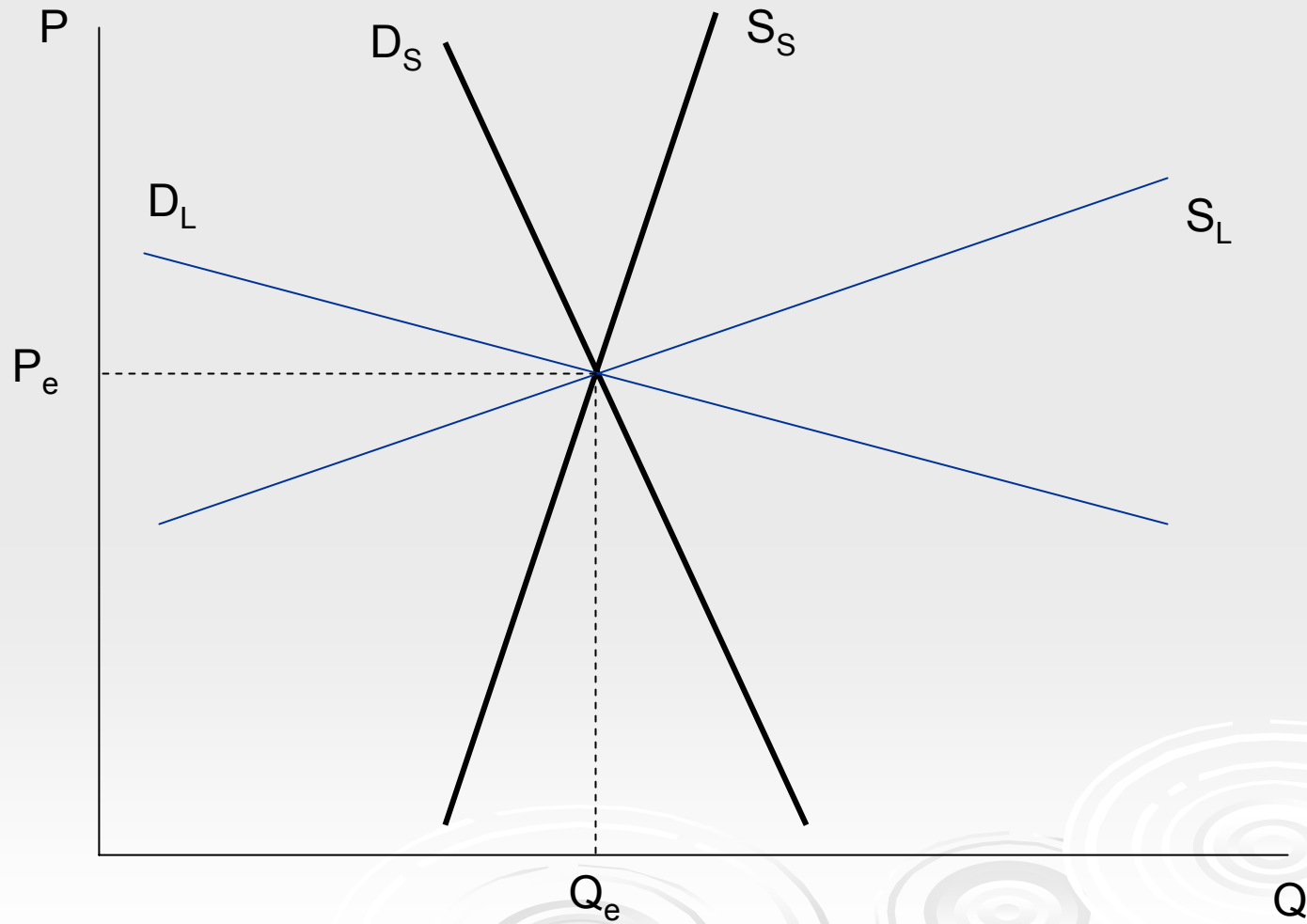
Elasticities and Volatility

- “World Oil: Market or Mayhem?”, James L. Smith, forthcoming in Journal of Economic Perspectives
- Short-run elasticities linked to volatility
- Long-run elasticities may be linked to forward curve volatility differentials

Short- and Long-run Elasticities

| Demand and Supply Elasticities | | |
|--|----------------|-----------------|
| | Demand* | Supply** |
| Short-run | -0.05 | 0.04 |
| Long-run | -0.30 | 0.35 |
| <p>Sources: * - various, including: Gately, D. and Huntington, H. 2002, "Asymmetric effects of changes in price and income on energy and oil demand," <i>Energy Journal</i>, vol. 23(1), pp.19-37; Cooper, J. 2003, "Price elasticity of demand for crude oil: Estimates for 23 countries," <i>OPEC Review</i>, vol. 27, pp. 1-8; EIA. 2003, <i>National Energy Modelling System, International Energy Module, Model Documentation and Report</i>; OECD. 2004, "Oil price developments: Drivers, economic consequences and policy responses," in <i>OECD Economic Outlook No. 76</i>.</p> <p>** - OECD. 2004, "Oil price developments: Drivers, economic consequences and policy responses," in <i>OECD Economic Outlook No. 76</i>.</p> | | |

Long and short run



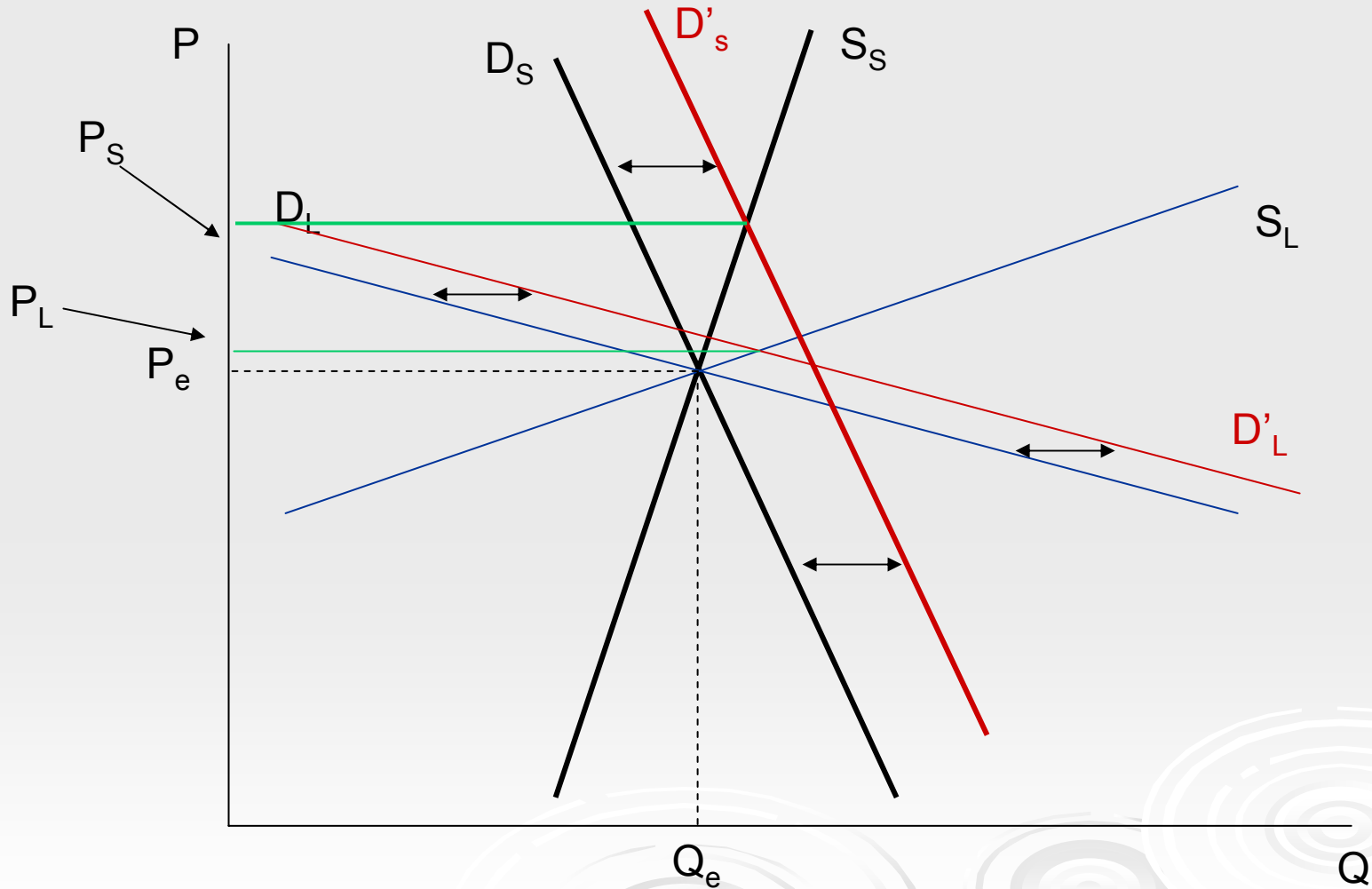
Short-run vs. long-run

- 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 $1/(\epsilon_S - \epsilon_D)$ 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
 - $1/(0.04 - (-0.05)) = 1/0.09 = \underline{11.1}$
- Long-run price response would be
 - $1/(0.35 - (-0.30)) = 1/0.65 = \underline{1.5}$
- **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



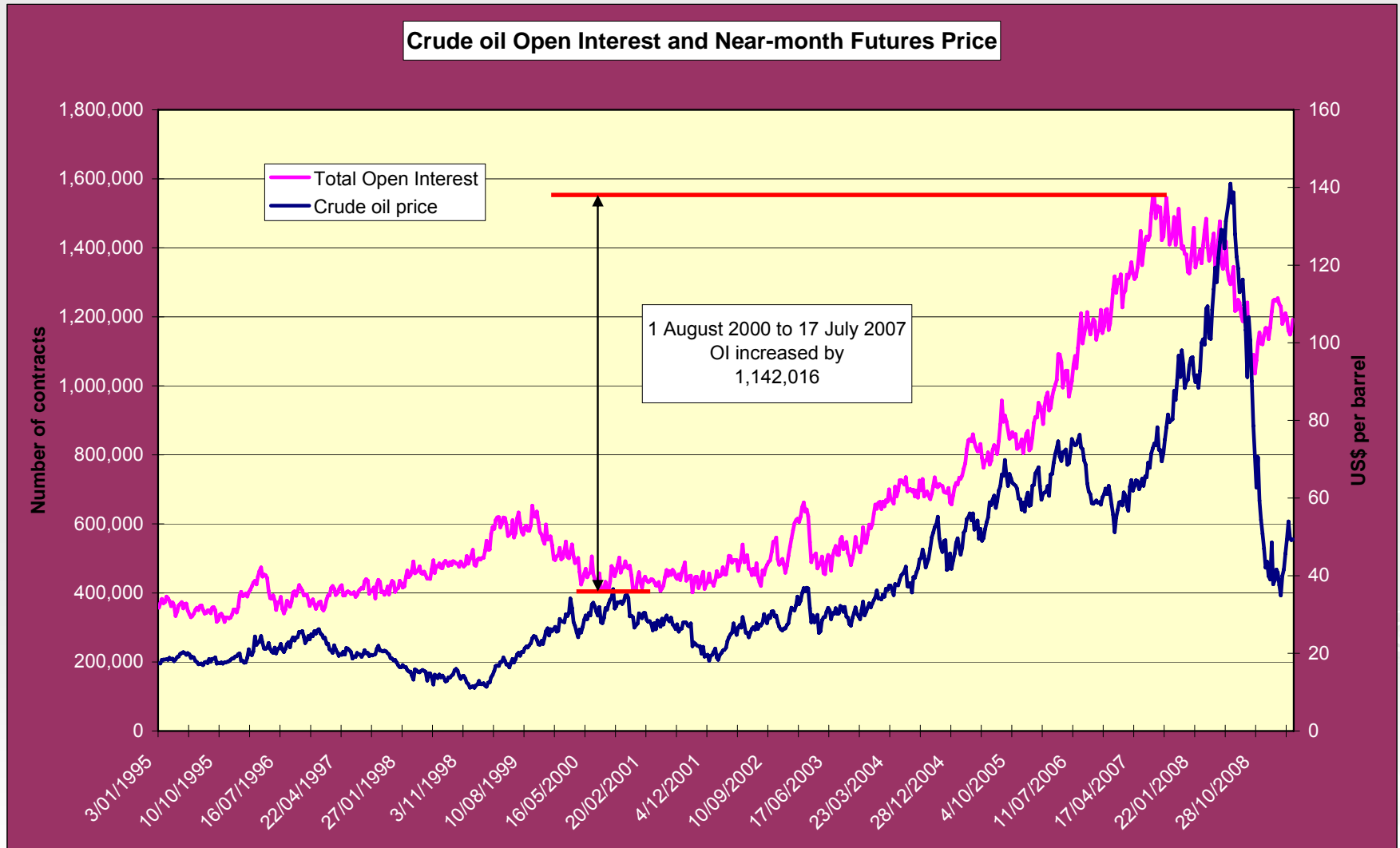
Elasticities and the forward curve

- 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

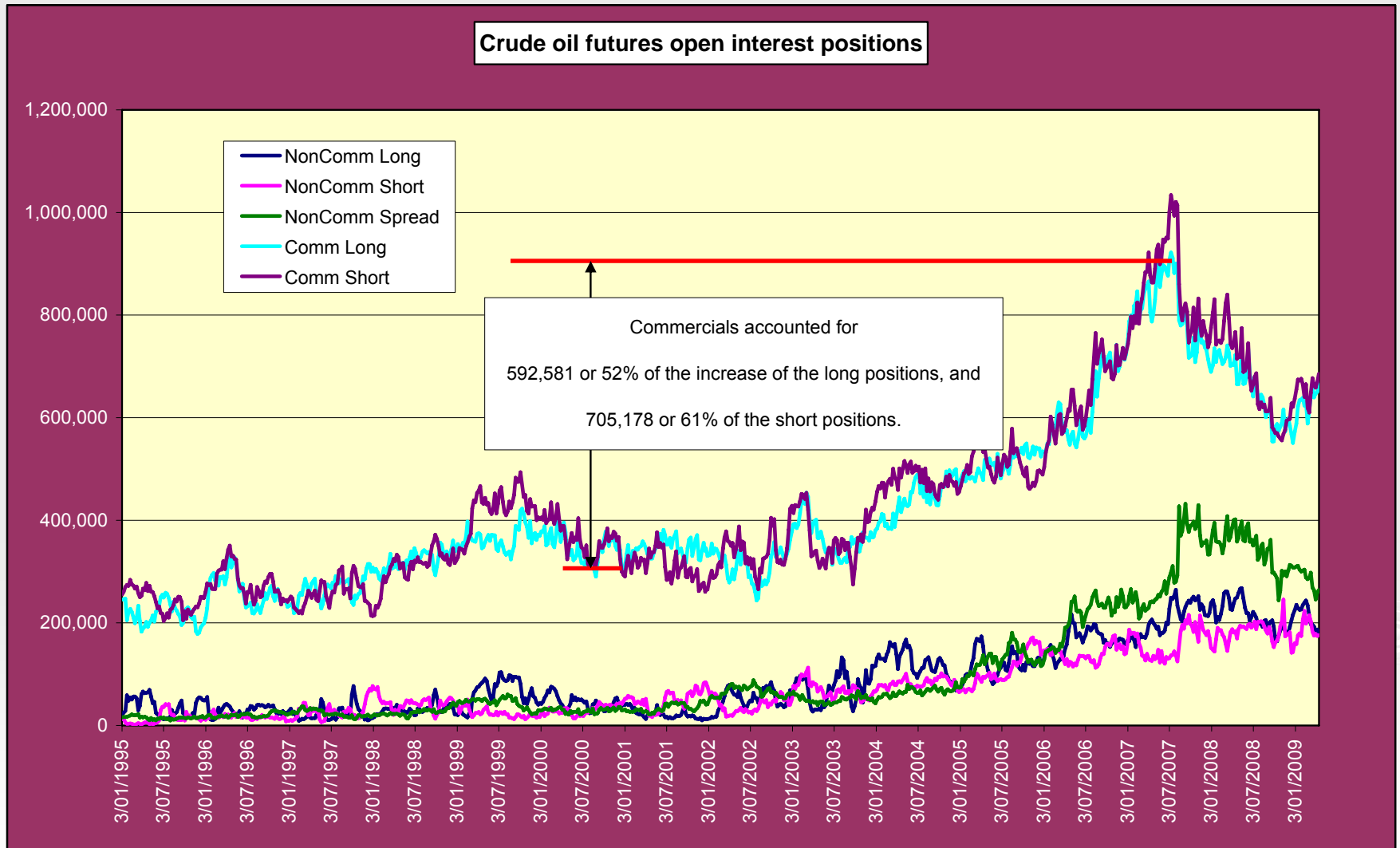
NYMEX Settlement Committee

- 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



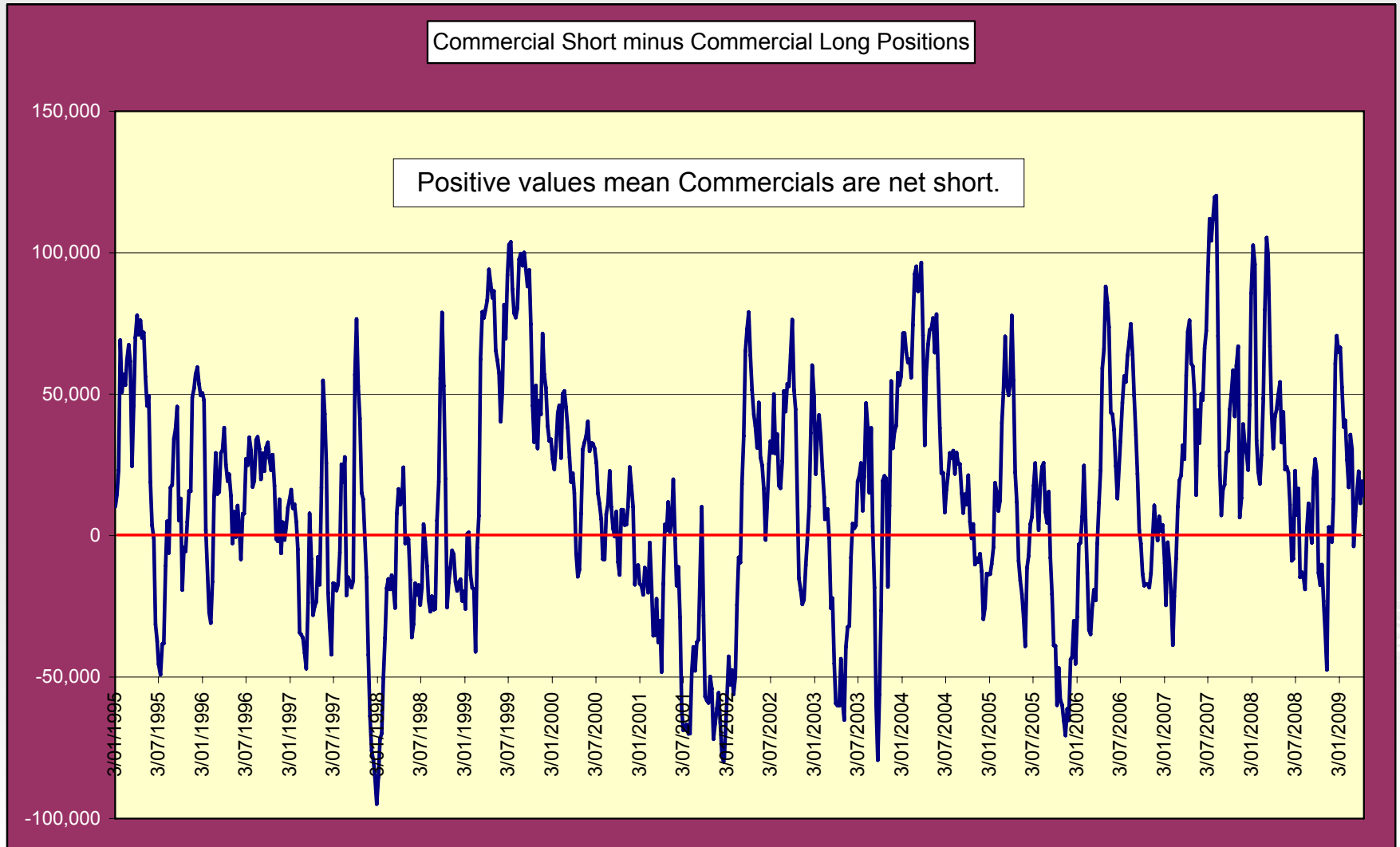
Large trader positions



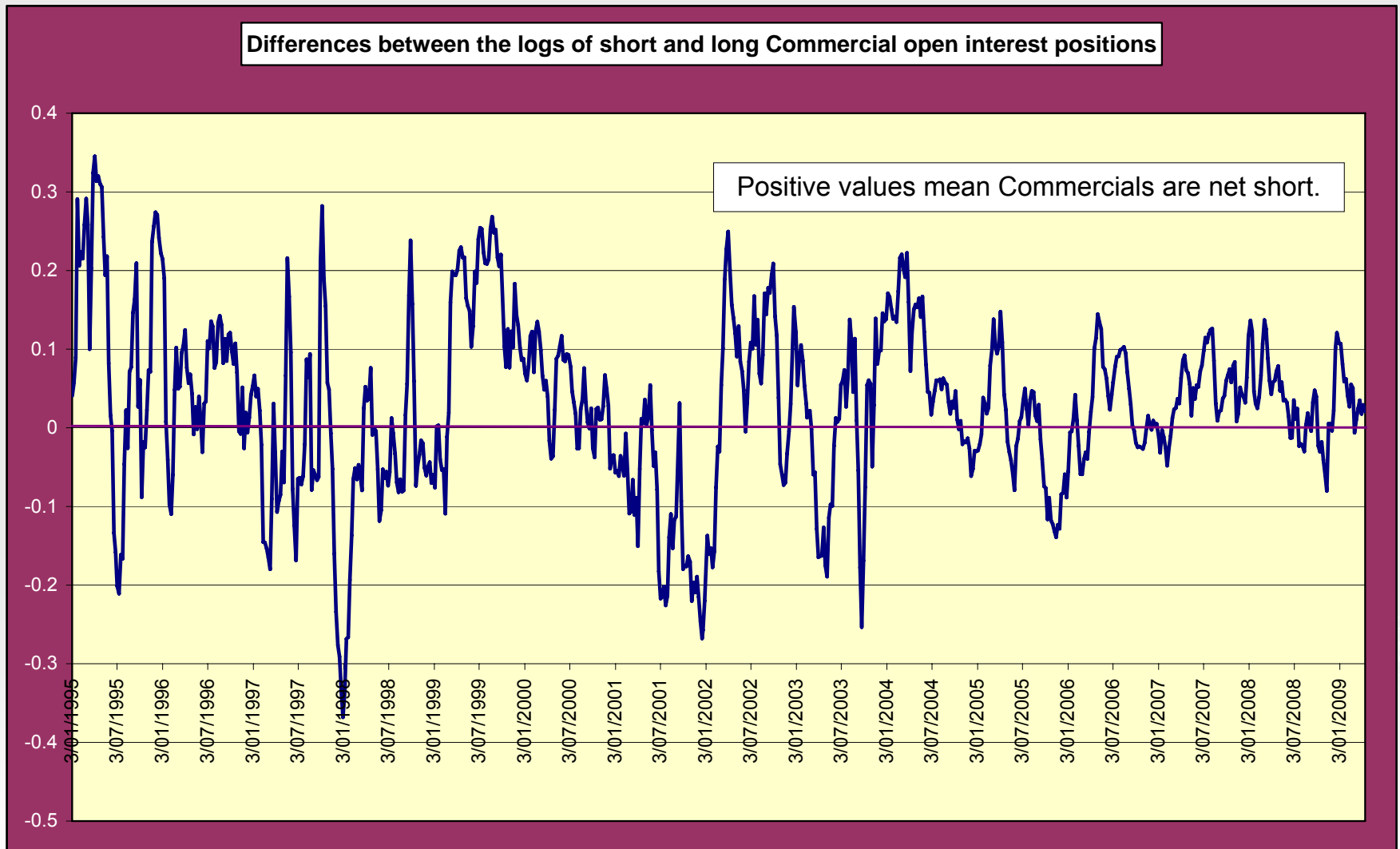
Swap Dealers

- 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 Net Short Positions



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.

Before and after reclassification

| Comparison of open interest positions before and after reclassification | | | | | | | | | | |
|--|-----------------|----------------------------------|--------------|------------------|----------------------|--------------|-------------------|--------------|----------------------|--------------|
| | Total | ----- Reportable positions ----- | | | | | | | Nonreportable | |
| | Open | ----- Noncommercial ----- | | | ---- Commercial ---- | | ----- Total ----- | | positions | |
| | Interest | Long | Short | Spreading | Long | Short | Long | Short | Long | Short |
| ----- Contracts of 1,000 bbl ----- | | | | | | | | | | |
| Futures only | | | | | | | | | | |
| New | 1,344,411 | 210,013 | 187,631 | 369,766 | 670,135 | 686,747 | 1,249,914 | 1,244,144 | 94,497 | 100,267 |
| Old | 1,344,411 | 206,153 | 187,631 | 222,910 | 820,851 | 833,603 | 1,249,914 | 1,244,144 | 94,497 | 100,267 |
| Futures and options | | | | | | | | | | |
| New | 2,974,130 | 238,974 | 150,870 | 1,269,679 | 1,356,837 | 1,440,782 | 2,865,489 | 2,861,330 | 108,641 | 112,800 |
| Old | 2,974,130 | 238,974 | 146,777 | 943,030 | 1,683,485 | 1,771,523 | 2,865,489 | 2,861,330 | 108,641 | 112,800 |
| Source: US Commodity Futures Trading Commission | | | | | | | | | | |

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.