The 2008 Commodities Bubble

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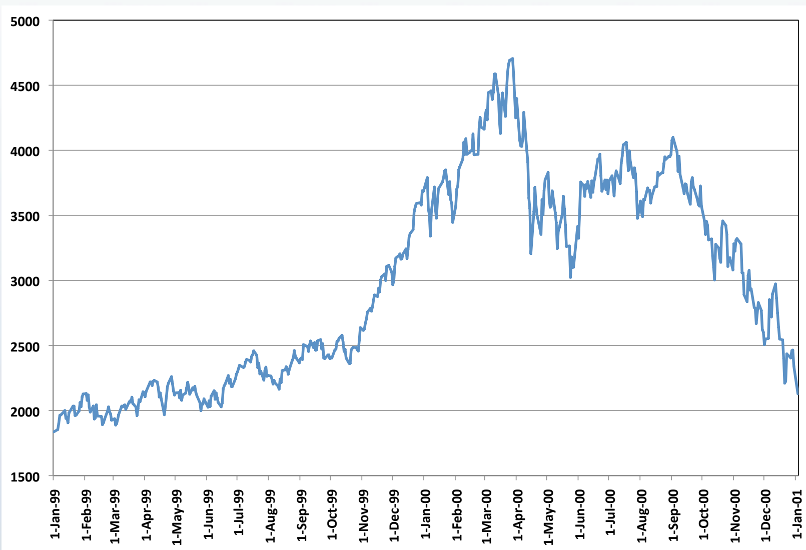
Two Bubble Charts

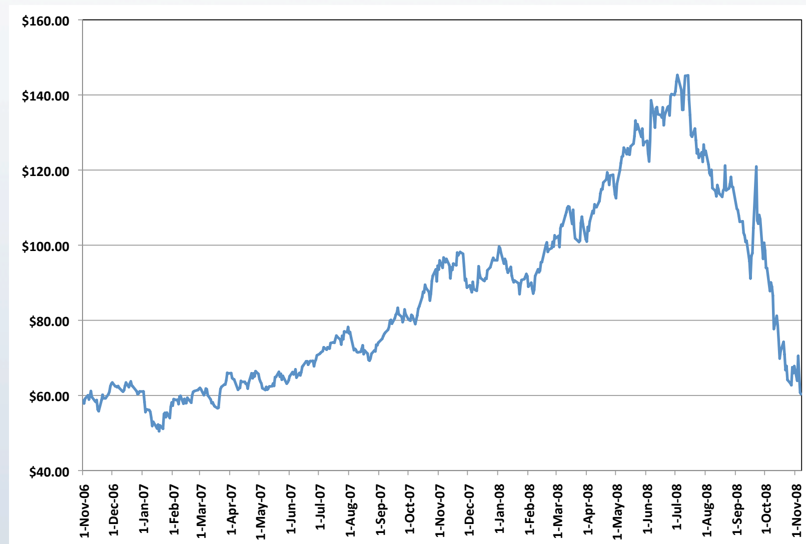
Nasdaq 100 Index

Two Year Chart +125%



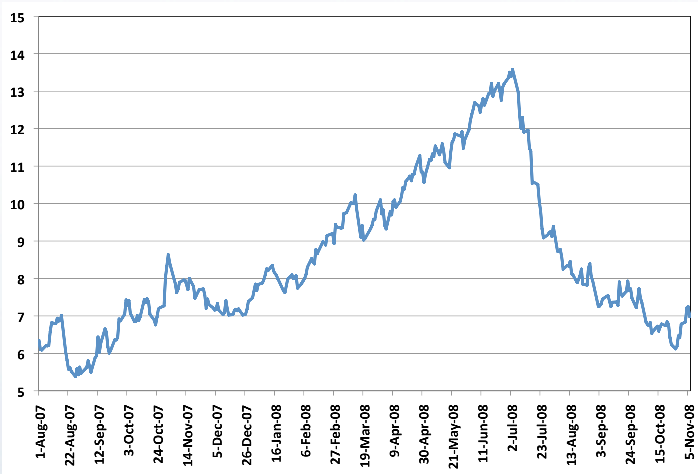
WTI Crude Oil

Two Year Chart +133%

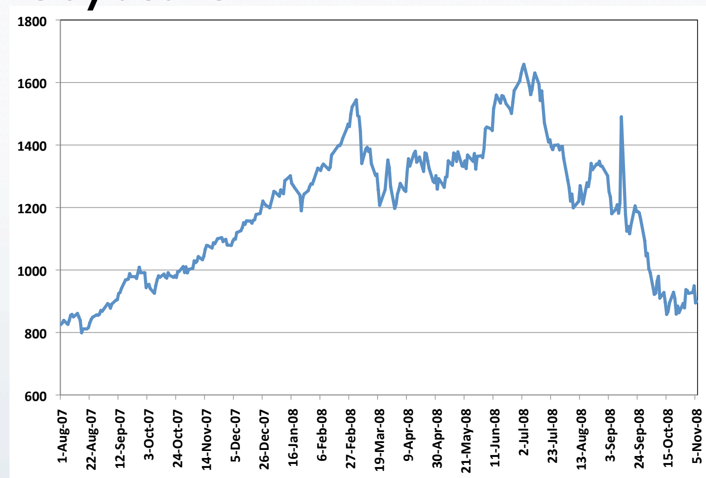


Multiple Commodity Bubbles

Natural Gas

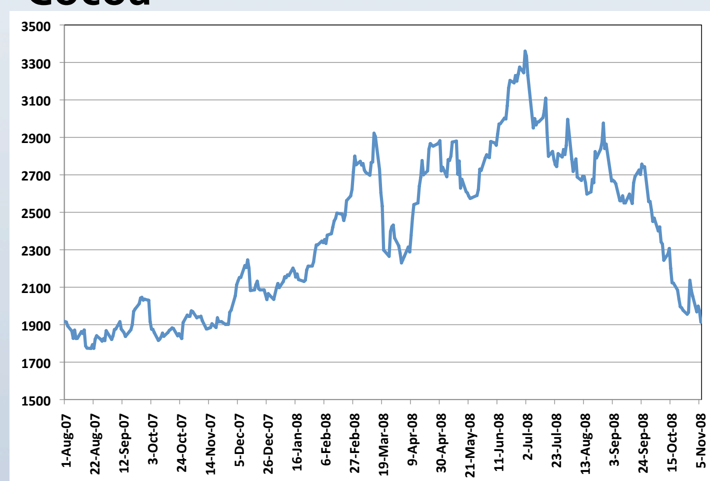


Soybeans



Aluminum

Cocoa



Ockham's Razor

- Physical oil supply and demand explain some but not all of the dramatic moves in crude oil prices.
  - $70 to $147 in one year
  - $147 to $56 in four months
- Marginal cost of production never moved much beyond the $60 to $80 per barrel range
- We have never seen dramatic price movements like these in crude oil futures
  - Persian Gulf War I is the only thing that comes close

Hedge Fund Managers

- "'You have a generalized commodity bubble due to commodities having become an asset class that institutions use to an increasing extent,'"
  - *George Soros - April 17, 2008*

- "Oil is a huge mania, and it's going to end badly. We've seen it play out hundreds of times over the centuries, and this is no different. It's just the nature of a rip-roaring bull market."
  - *Paul Tudor Jones - June 1, 2008*

Academic Bubble Experts

- "You've got speculation in a lot of commodities and that seems to be driving up the price, . . . Movements are dominated by momentum players who predict price changes from Wednesday to Friday on the basis of the price change from Monday to Wednesday."
  - *Dr. Robert Aliber, University of Chicago - June 13, 2008*
    co-author of "Manias, Panics & Crashes"

- "Commodities followed the euphoria cycle that we had along with housing,"
  - *Dr. Robert Shiller, Yale University - October 13, 2008*
    author of "Irrational Exuberance"

Wall Street Analysts

- "This is a market that is basically returning to the price level of a year ago which it arguably should never have left, . . . We pumped up a big bubble, expanded it to an impressive dimension, and now it is popped and we have bubble gum in our hair."
  - *Tim Evans, Energy Analyst at Citigroup - October 10, 2008*

- "Without question increased fund flow into commodities has boosted prices. . . . The so-called commodity speculator should be applauded for speeding up the message to both oil companies and consumers that energy markets are tight."
  - *Arjun Murti, Energy Analyst at Goldman Sachs - May 5, 2008*

How Is A Bubble Possible?

- This is the first ever bubble in oil

- Bubbles are a capital markets phenomenon
  - Last 10 years every capital market has bubbled
    - 1997-1998: Emerging Markets
    - 1998-2000: Tech & Internet Stocks
    - 2003-2005: Real Estate
    - 2007-2008: Credit

Three Necessary Pre-Conditions

- ***Condition One: 1980s***
  - Physical oil market participants decided to price spot transactions as the futures prices +/- differential
  - Spot prices became derivatives of the futures price – not the other way around

Platts Spot Prices

"In the spot market, therefore, negotiations for physical oils will typically use NYMEX as a reference point, with bids/offers and deals expressed as a differential to the futures price. Using these differentials, Platts makes daily and in some cases intra-day assessments of the price for various physical grades of crude oil, which may be referenced in other spot, term or derivatives deals."

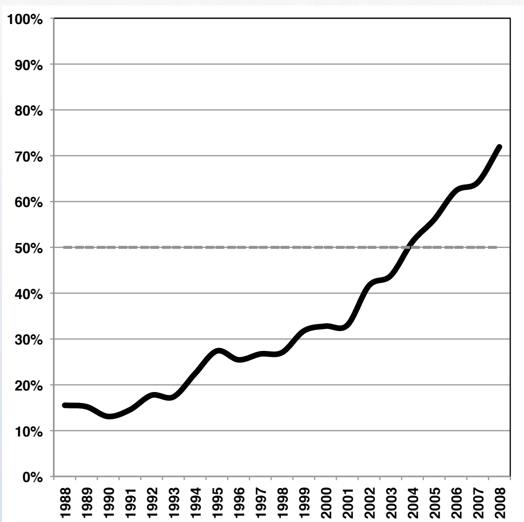
"Platts Oil Pricing and Market-on-Close Methodology Explained - A Backgrounder," Platts, A Division of McGraw Hill Companies, July 2007, page 3. http://www.platts.com/Resources/whitepapers/index.xml

Three Necessary Pre-Conditions

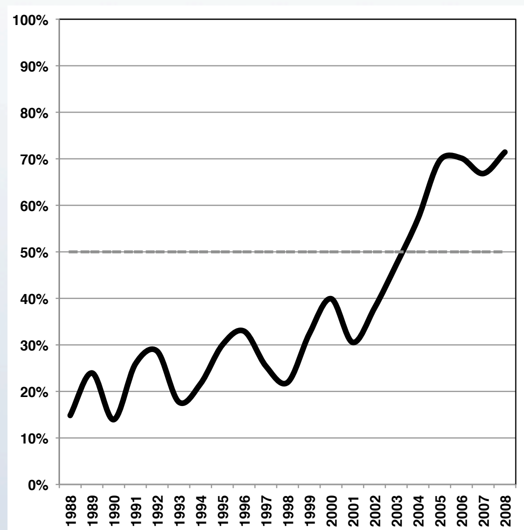
- ***Condition Two: 1990s***
  - Speculative position limits were effectively eliminated so that speculators had unlimited access to the futures markets
  - Creation of ICE exchange following CFMA 2000
  - OTC swaps market developed to the point that they are 8-10 times bigger than NYMEX
    - Swaps dealers have unlimited access to futures markets

Speculation Percentage

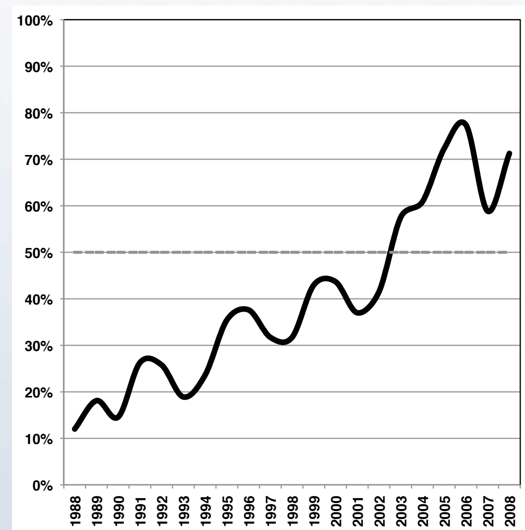
Crude Oil



Heating Oil



Gasoline



Source: CFTC, Goldman Sachs, Standard & Poor's, Dow Jones, calculations based upon CFTC CIT report.
2008 figure is as of July 1, 2008

TIPPING POINT

Markets Become *Excessively Speculative*

- Physical Hedger Dominance gives way to Speculator Dominance
  - Just like capital markets - capable of bubbles
  - Price discovery function is damaged

- Oil becomes "financialized"

100% Supply & Demand

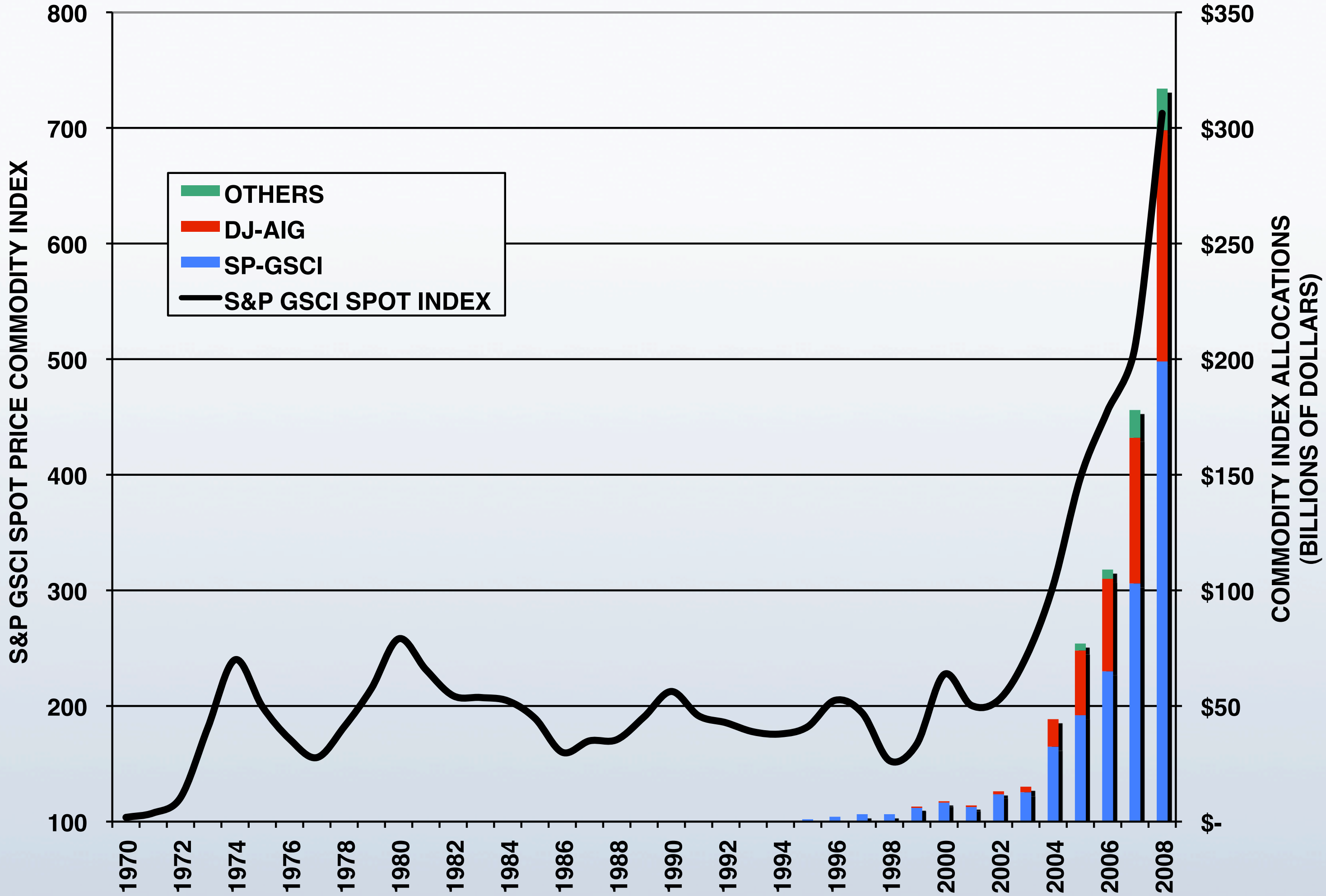
- Price of Oil Futures is a function of the Supply and Demand for Oil Futures

- Demand for oil futures comes from 3 sources
  - Physical consumer hedging demand
  - Traditional speculator demand
  - Index “investor” demand

Three Necessary Pre-Conditions

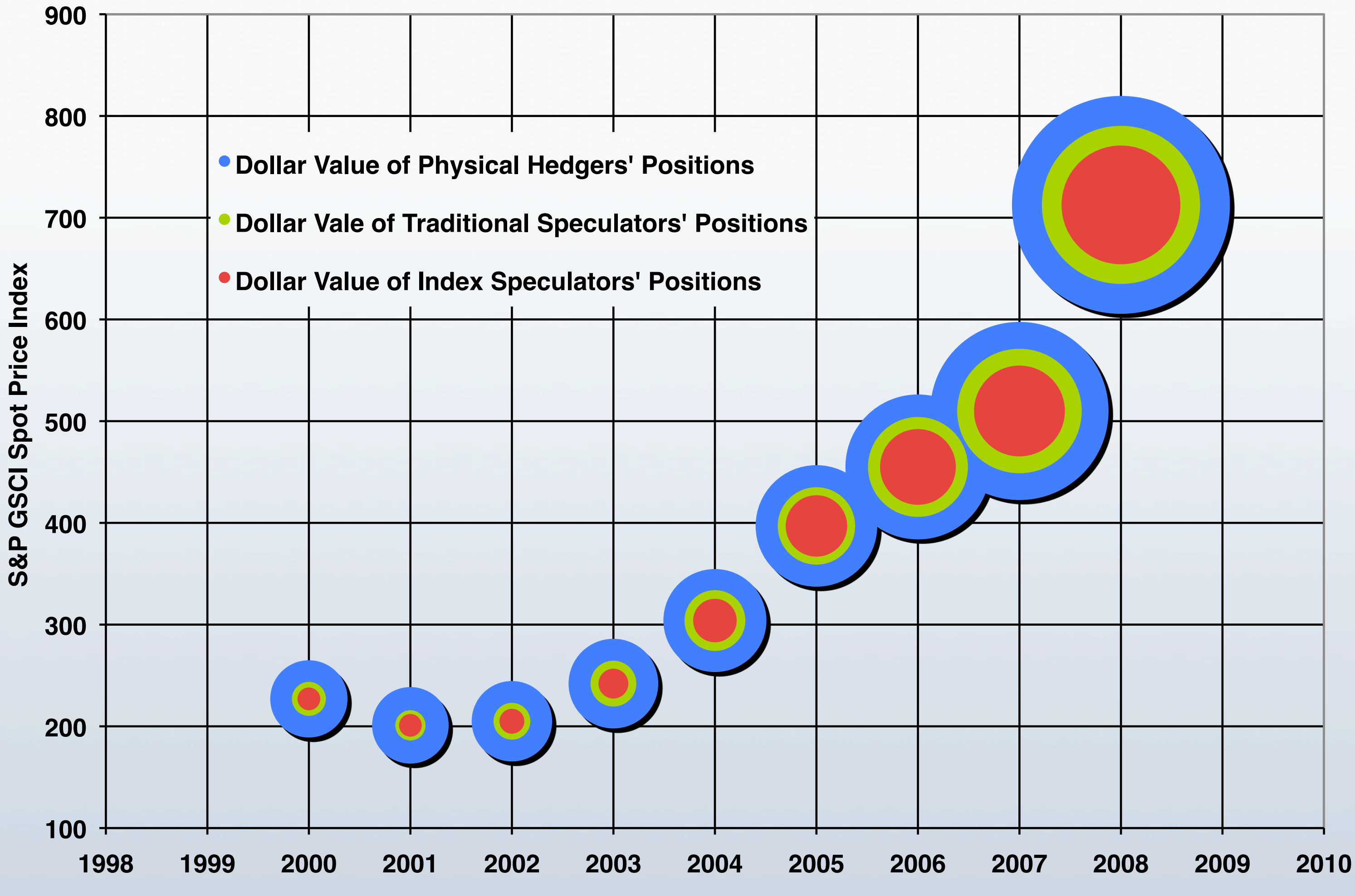
- ***Condition Three: 2000s***
  - "Commodities as an asset class"
  - Inventories vs. the Means of Production
  - **Rise of the Commodity Indexer**

S&P GSCI Spot Price Index vs. Index Speculator Assets



Source: Bloomberg, Goldman Sachs, Standard & Poor's, Dow Jones, calculations based upon CFTC CIT report. 2008 figure is as of July 1, 2008

S&P GSCI Spot Price Index vs. Dollar Value of Open Interest



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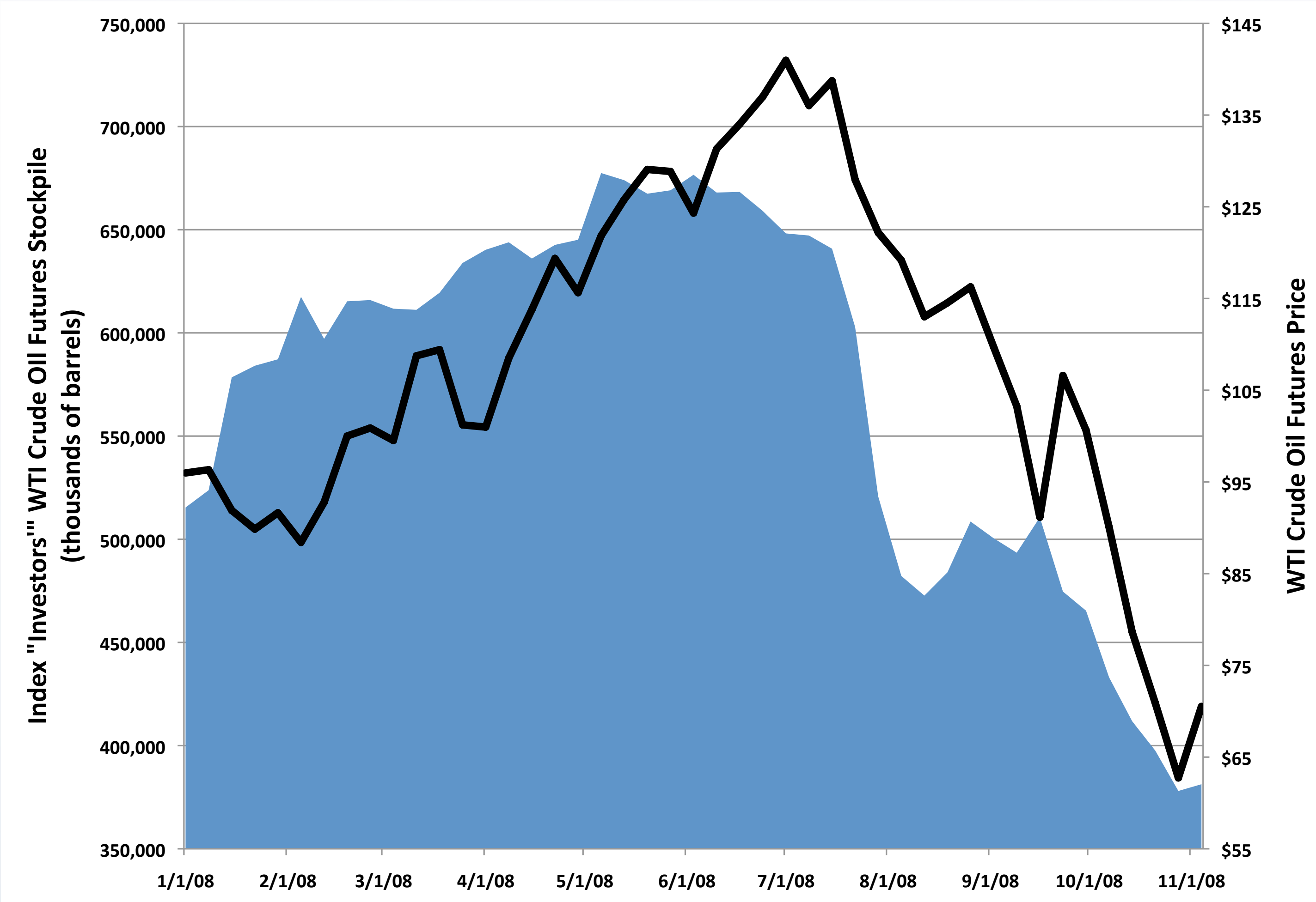
Index Speculators' WTI Crude Oil Futures Stockpile vs. WTI Crude Oil Price in 2008



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Where Are The Inventories?

- Best place to store oil is in the ground – just pump less
- Non-OECD countries are major producers of oil not reporting with accuracy or timeliness
- OECD refineries have every incentive to keep inventories at a minimum given financing challenges
- Demand is so inelastic in short run consumers are held hostage to higher prices

Bubble Consequences

- Direct cost to economic growth with $4 gas instead of $2 gas plus multiplier effects
  - Businesses forced into bankruptcy
  - Workers laid off or given less hours
- Direct impact on mortgage, auto and credit card receivables and delinquencies (MBSs and CDOs)
- Created artificial inflation signals that did not reflect economic reality
  - Kept Fed, ECB and other Central Banks fearful of inflation
  - Kept interest rates higher than otherwise
    - Kept ARM holders paying more on their mortgage
- Lost investor capital when the bubble finally popped