

# Speculation and Oil Price Volatility

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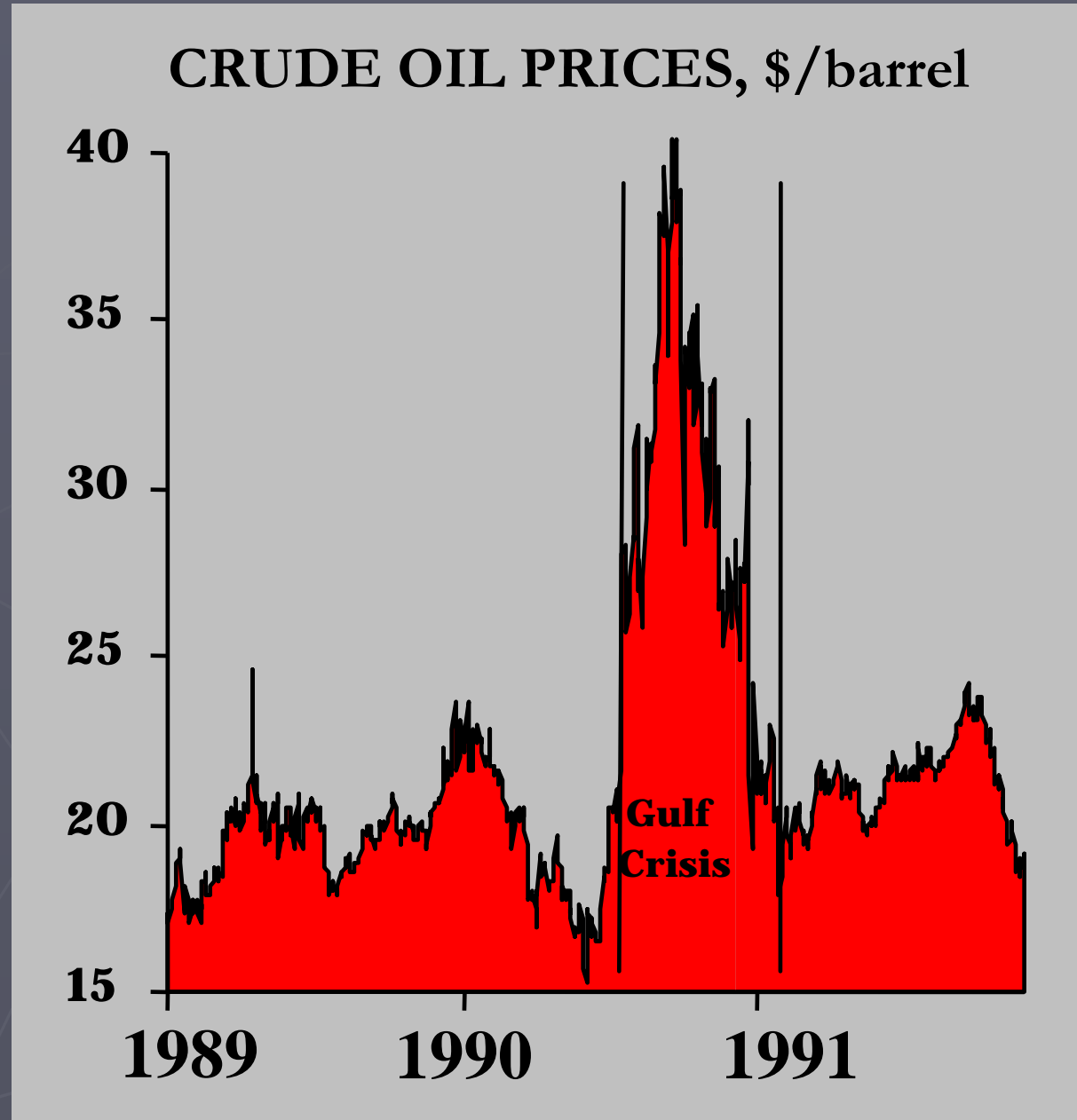
# FACTORS DRIVING OIL PRICE VOLATILITY

- ▶ Market fundamentals. Fluctuations in supply, demand, and market power  
Some fundamentals related to expectations of future production, consumption, so not easily observable
- ▶ Trading, especially speculation. Traders can move prices away from fundamental values in some circumstances

*Speculation is the focus of this presentation*

# Some memorable experience highlights speculation

- Gulf Crisis as impetus for concern
- Oil prices spiked, then plummeted
- Little evident change in fundamentals
- Speculators, futures markets claimed responsible for market volatility



# Speculation Widely Claimed to Drive Volatility

OPEC (Press Release, 14 July 2006)

"Geopolitical developments, over which OPEC has no influence, have been behind this sudden rise in volatility, and these have come at a time when the market was already out of line with today's supply and demand fundamentals, **with speculation playing a significant role in driving up prices.**" *(emphasis added)*

Investment Analysts (Société Générale Cross-Asset Research, Multi-Asset Portfolio, October 2006)

"Exponential price rises observed since summer 2005 were not consistent with fundamental valuations (for example, 45% overvaluation, still, on current oil price)... **Hedge funds have been a massive force amplifying the positive uptrend in commodity prices.** At the peak of the commodity cycle, they held more than 17% of the most liquid of them, the oil market." *(emphasis added)*

# Speculation Widely Claimed to Drive Volatility, cont'd

## *US Senate Permanent Subcommittee on Investigations*

The Role of Market Speculation in Rising Oil and Gas Prices: A Need to Put the Cop Back on the Beat, June 2006

“Based upon its investigation into the role of market speculation in rising oil and gas prices, the Subcommittee staff makes the following findings and recommendations.

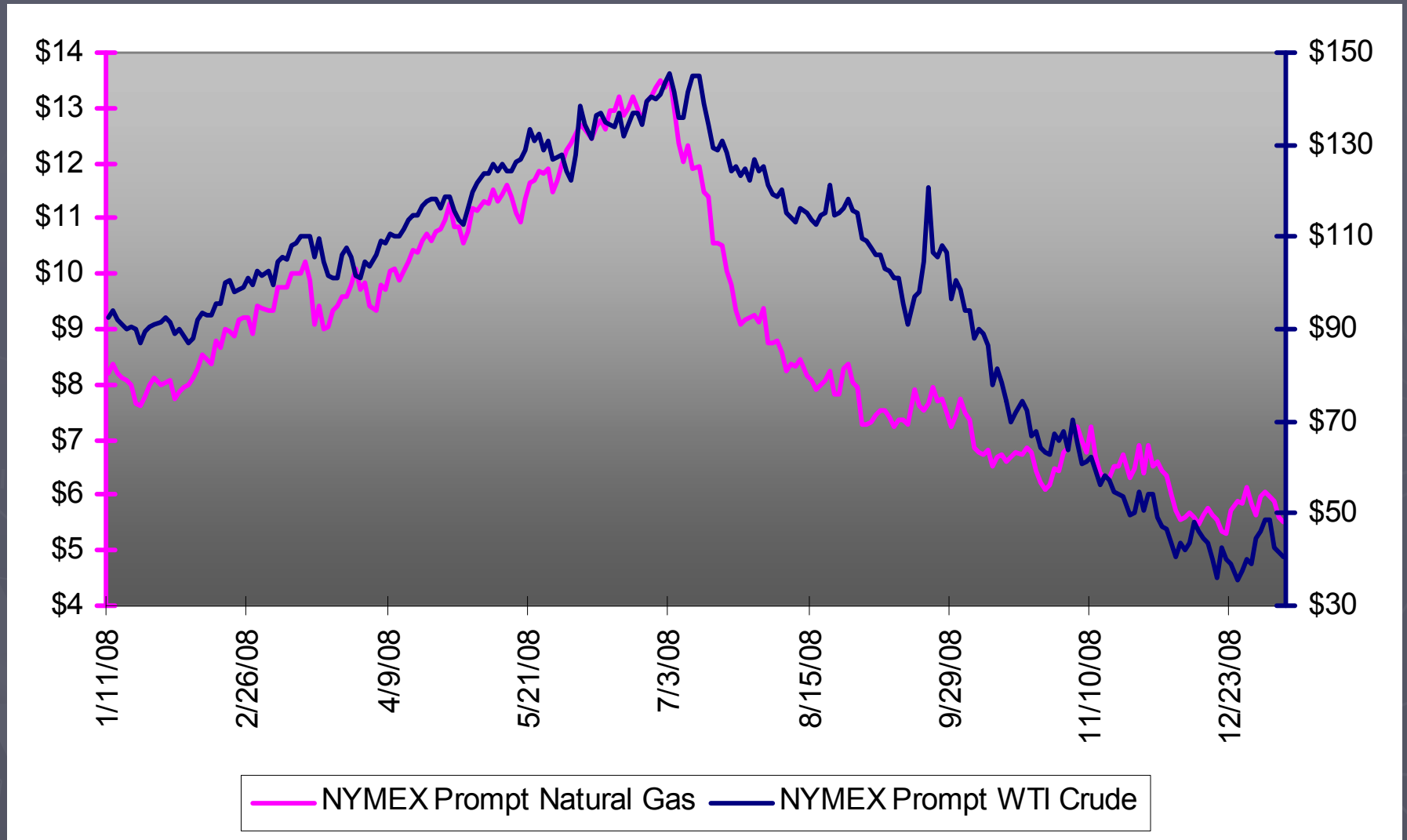
### A. Findings

- 1. Rise in Speculation.** Over the past few years speculators have expended tens of billions of dollars in U.S. energy commodity markets.
- 2. Speculation Has Increased Prices.** Speculation has contributed to rising U.S. energy prices, but gaps in available market data currently impede analysis of the specific amount of speculation, the commodity trades involved, the markets affected, and the extent of price impacts.”

# HOWEVER...

- ▶ Conventional wisdom: trading → volatility.  
Based on intuition, not facts or systematic analysis
- ▶ Economic theory → speculators cannot affect price levels, but could affect price volatility
- ▶ A couple of studies using aggregate data do not find support for any effect (CFTC 2005, IMF 2006)
- ▶ Some aggregate statistics cast doubt on view that speculation causes or exacerbates volatility
  - *Trading volumes increased in recent years*
  - *Volatility remains high, but no clear trend*
- ▶ Speculators make convenient targets

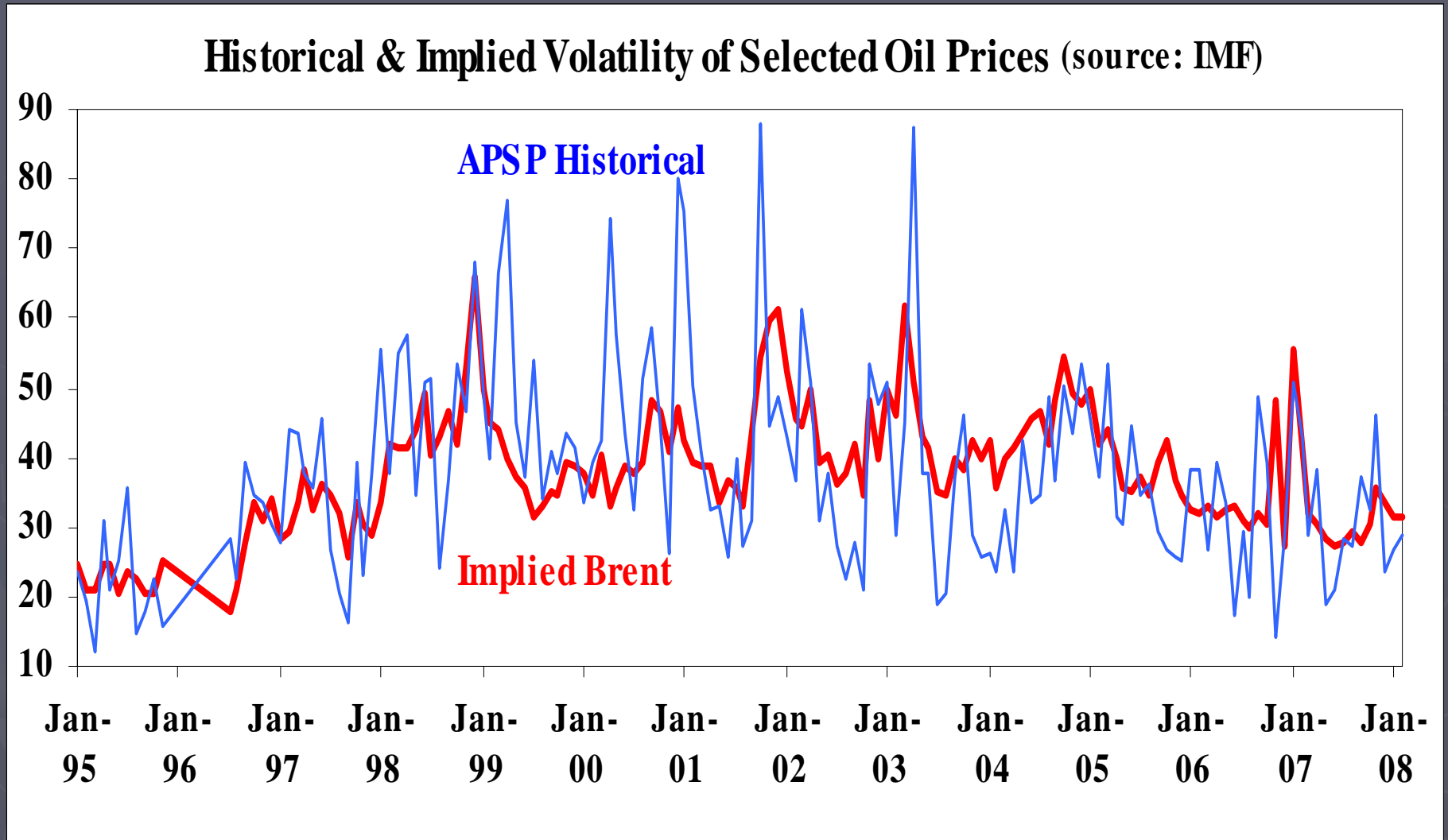
# Elevated Volatility in 2008



Financial firms, institutional investors entered & exited <sup>6</sup>

# VOLATILITY HIGH BUT FLAT LAST DECADE

Annualized standard deviation of daily crude-oil price changes



Source: IMF, APSP Avg. Producer Spot Price

Implied volatility from nearby Brent call options, 3 strike prices nearest the money 7



# ANALYTICAL PERSPECTIVE

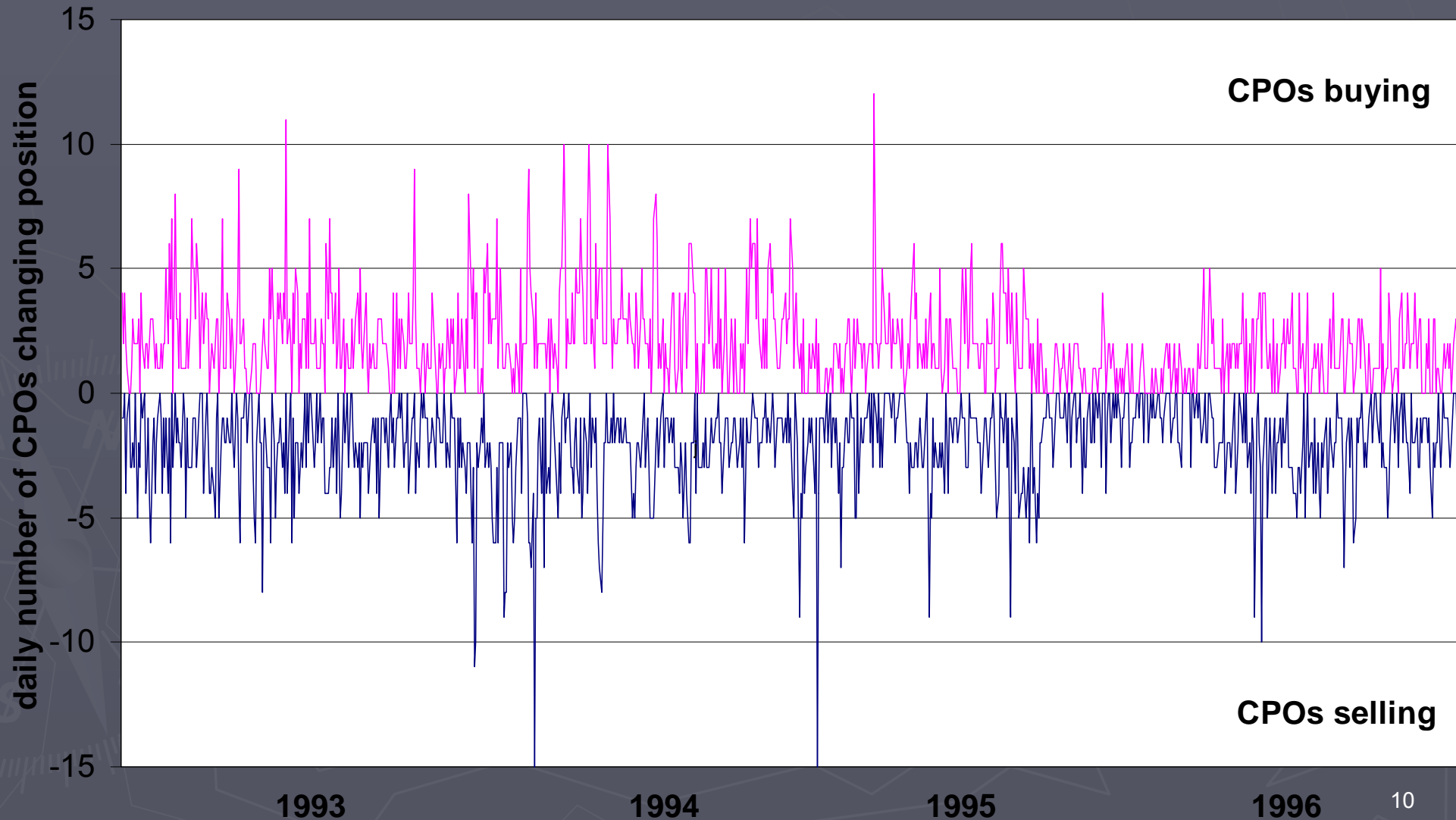
## How can speculation influence price volatility?

- ▶ Only two theoretical possibilities – dominant player or herding
- ▶ First unrealistic – the market is too large and entry barriers too low
- ▶ Second has long history in financial markets  
"...I explained to you the instability of [stock] prices and the reasons therefore...and discussed the frenzy and foolishness of speculation. ...As there are so many people who cannot wait to **follow the prevailing trend of opinion, ...they think only of doing what others do and following their examples**" (de la Vega, *Confusion de Confusiones*, 1688)

# What is Herding, and is it Rational?

- ▶ Easier to recognize than define
- ▶ Broadly, making decisions by observing others and copying them, rather than by assessing fundamentals
- ▶ Can be rational if others are better informed. Widespread phenomenon: buying books on best-seller lists, choosing restaurants because they are crowded
- ▶ In financial markets, fixed asset supply → can only take place among a subset of participants, e.g. speculators. *"Flocking"*
- ▶ Herding can move prices away from fundamentals and exacerbate volatility. Possibility of "stampede" as speculators try to buy or sell simultaneously

# Do Commodity-pool Operators Herd in the Heating-oil Futures Market?



# Summary of Analysis

1. Problem Actions of speculators difficult to monitor
2. Approach Use of CFTC microdata to measure parallel trading in petroleum futures markets
3. Methodology Count number of speculators buying and selling each day, and test if most are on same side of the market

# Summary of Findings

1. No evidence of parallel trading among commercial participants -- petroleum companies or financial institutions -- in crude-oil or heating-oil futures
2. No evidence of parallel trading among speculators (noncommercial participants) *as a group* in the crude-oil or heating-oil futures markets
3. Strong statistical evidence of flocking among fund managers in these markets, but levels moderate
4. Interpretation Roughly half the active speculators buying, rest selling on any day→ effect of trading on pieces limited

# Implications

## Oil Prices Reflect Fundamentals, not Speculation

1. Oil prices determined by current supply and demand, and expectations of future supply and demand
2. Widely heard claim that speculation is adding \$X to oil price incorrect. Best guess:  $X=0$
3. Futures reasonable basis for oil-price forecasts. Forecasts that diverge from futures prices subject to scrutiny
4. Need to examine fundamentals to understand oil market causes and consequences

# Implications (cont'd)

Data scarcity, lack of market transparency serve industry, government, and the public poorly

- ▶ Aggregate data (CFTC COT) widely used, yet not useful for addressing role of speculation in oil markets
- ▶ Data void, market opacity → low-quality reports, policy analysis based on opinions or ideology
- ▶ Herding calculation possible only because of CFTC/DOE cooperation
- ▶ Regular reporting in other financial markets (e.g., FX, interest rates). Not difficult to break out petroleum in BIS reporting, enabling a handle on market size

# For those interested in the gory details

- ▶ The study is on the web:

[www.rff.org/News/Features/Pages/Do-Birds-of-a-Feather-Flock-Together.aspx](http://www.rff.org/News/Features/Pages/Do-Birds-of-a-Feather-Flock-Together.aspx)