The Oil Market Through the Lens of the Latest Oil Price Cycle

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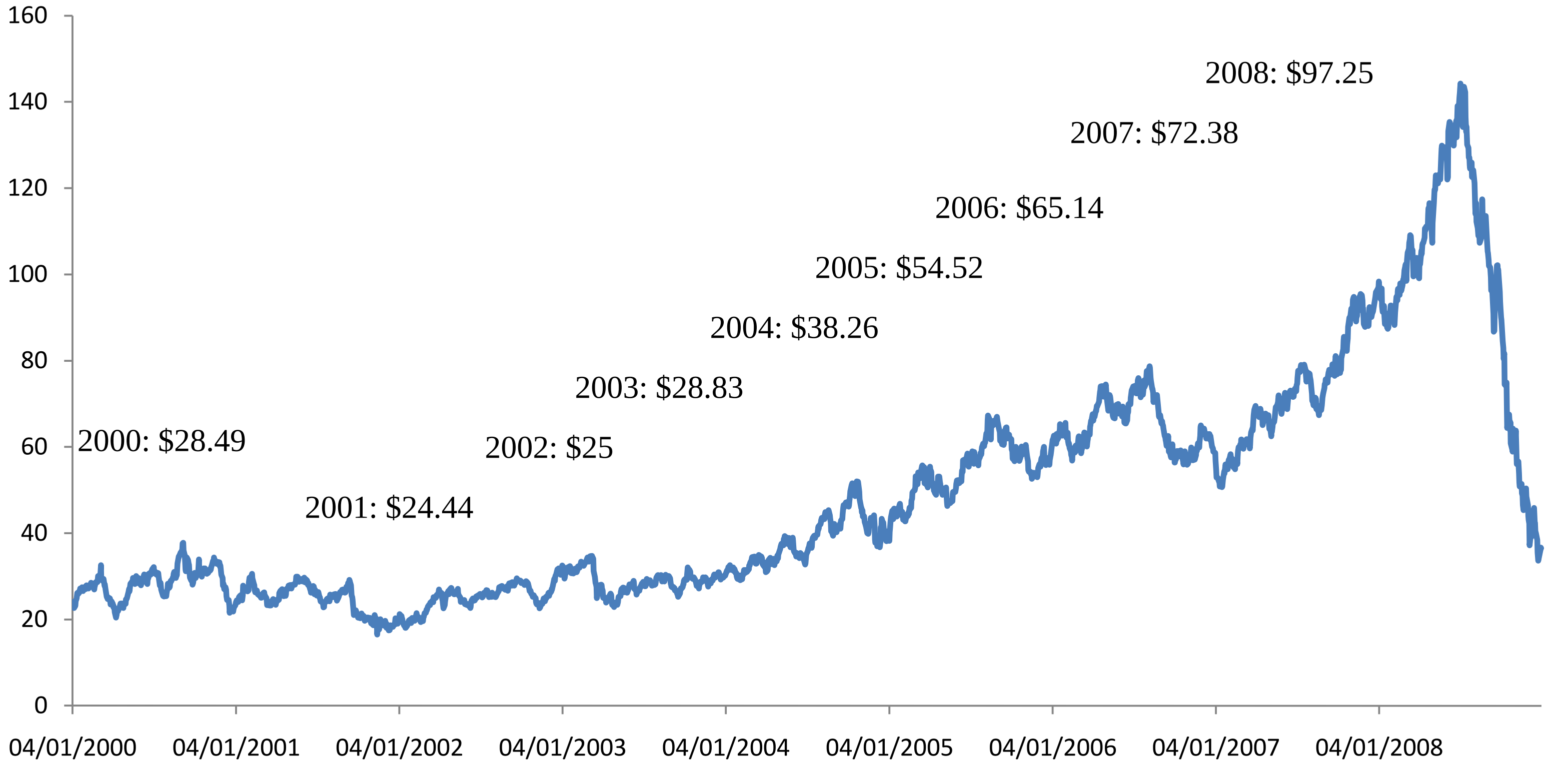
Introduction

- Behaviour of oil prices
  - A sustained annual increase for seven years
  - Spectacular collapse of oil price
  - Increase in volatility
  - Dislocation of the long term oil prices
  - Dislocation of benchmarks
  - Volatile time spreads
- Polarised views about key drivers of oil prices
  - Fundamentals
  - Speculation
- A dichotomy dominates debate, but is it useful?

Crude Oil Prices: A Quick Look Back

Dated Brent: US$/Barrel



Source: BP
Notes: Annual Average

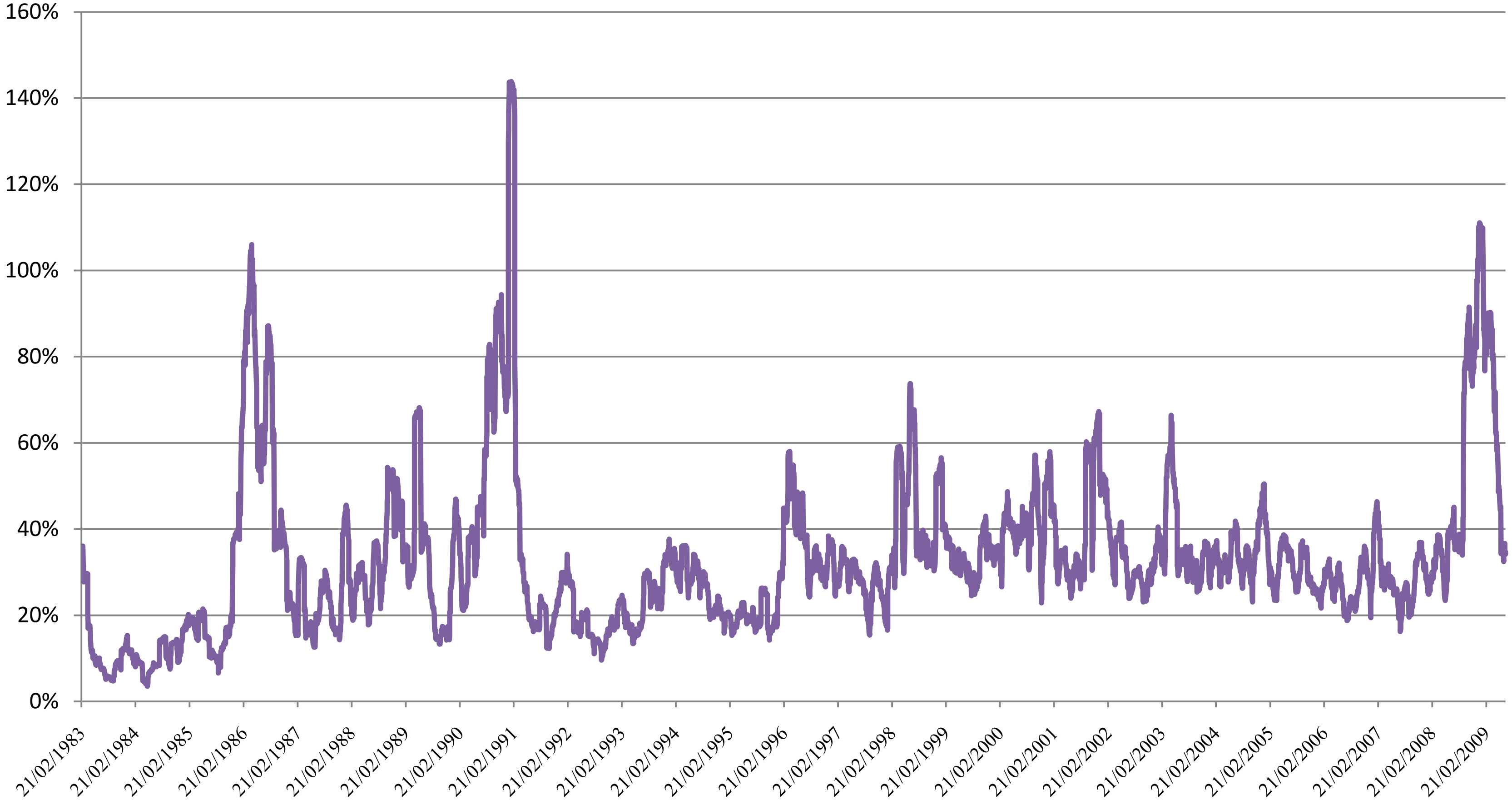
Sharp Cycles in Oil Prices

Front Month WTI Price, US$/Barrel

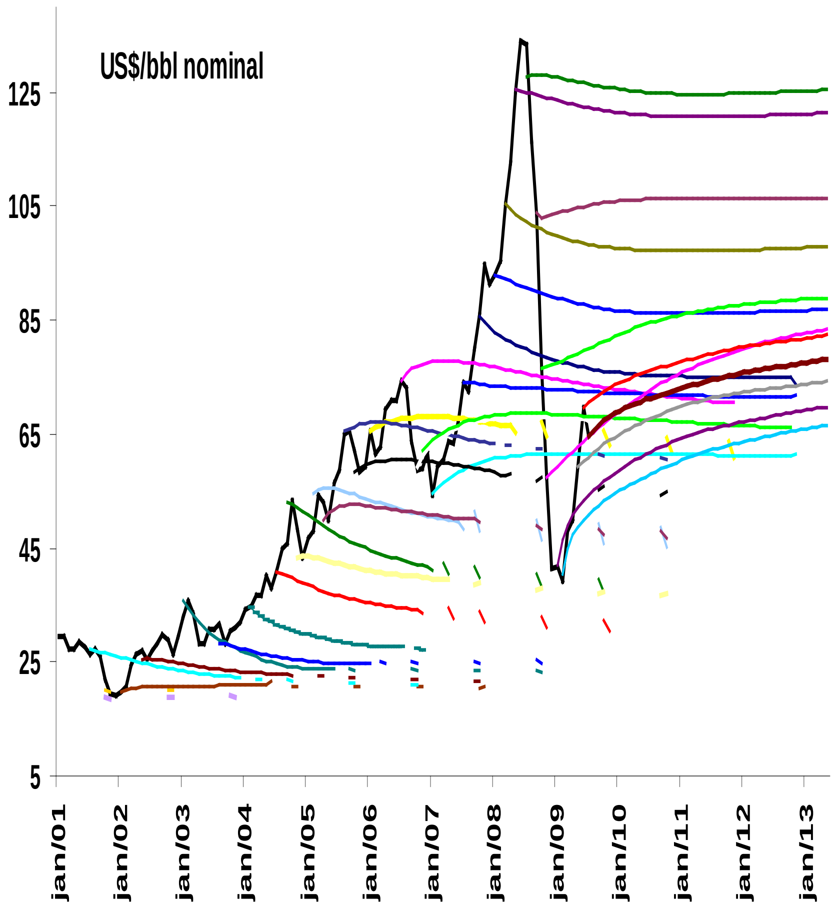
Source: EIA

Marked Increase in Volatility

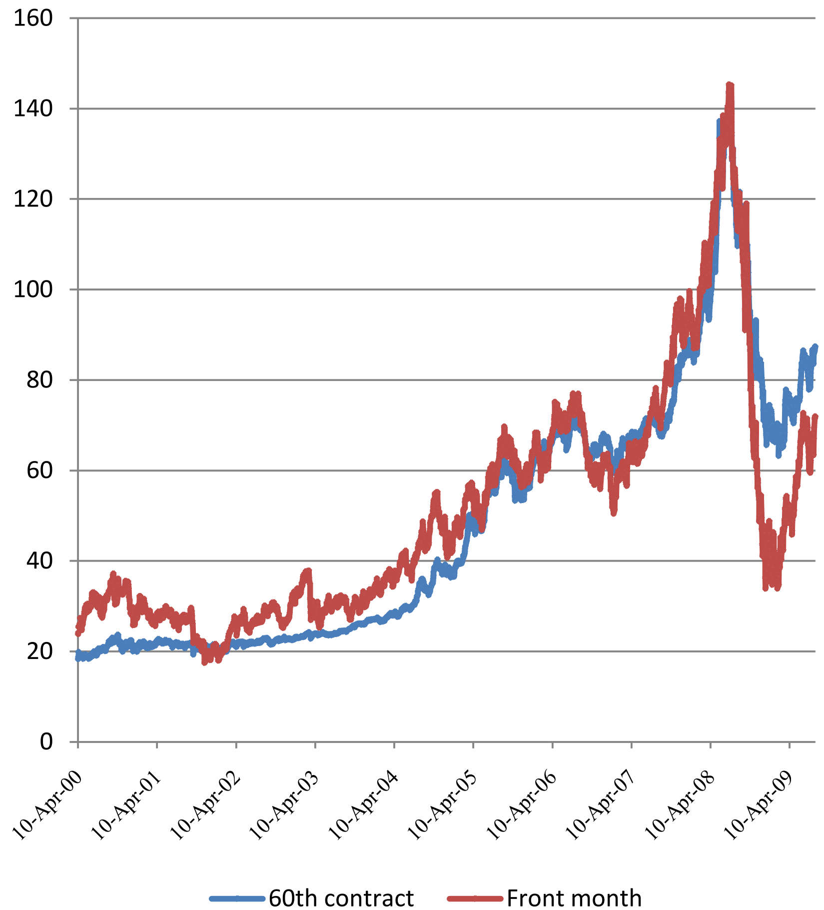
Annualised Daily Volatility (1 month rolling Average)



Dislocation of Long Term Oil Prices



Nymex Light Sweet Crude Oil contract Front-Month Contract and 60th Contract ($/barrel)

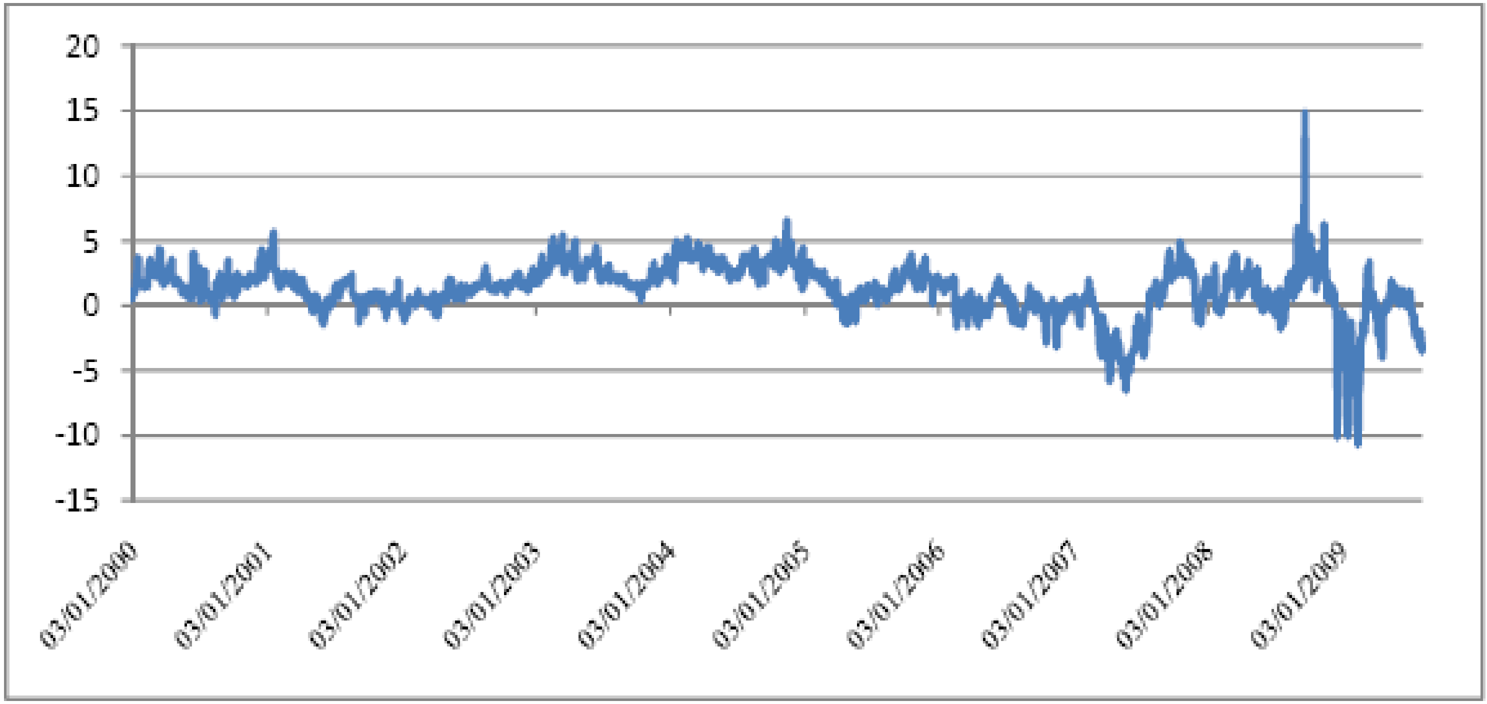


Source: Bloomberg

Dislocation of Benchmarks

WTI-Brent Differential ($/barrel)

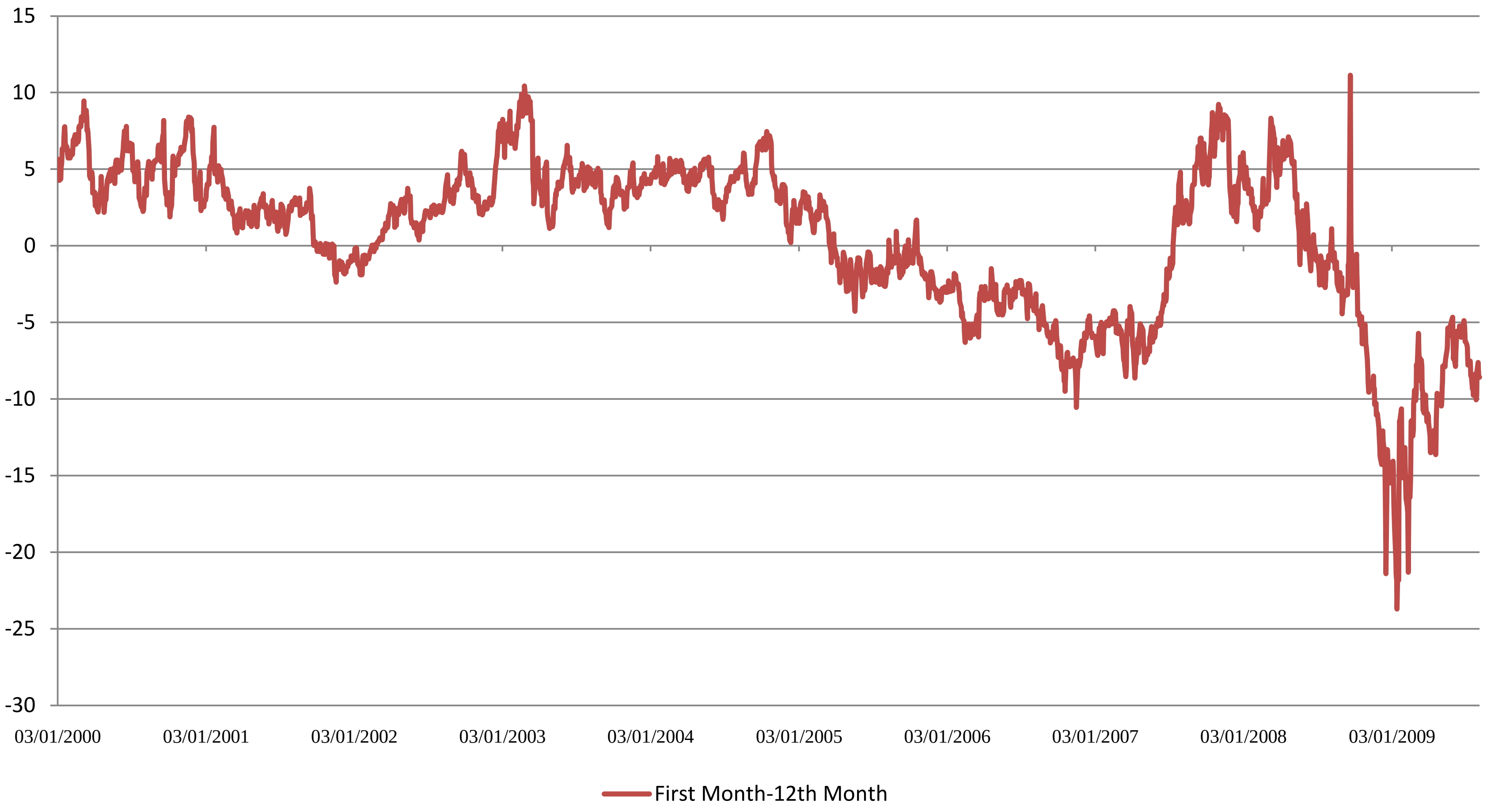
Figure 4: WTI-Brent Differential ($/barrel)



Notes: Light Crude Futures 1-month (Nymex, Closing price) minus Brent Crude Futures 1-month (ICE Closing price).

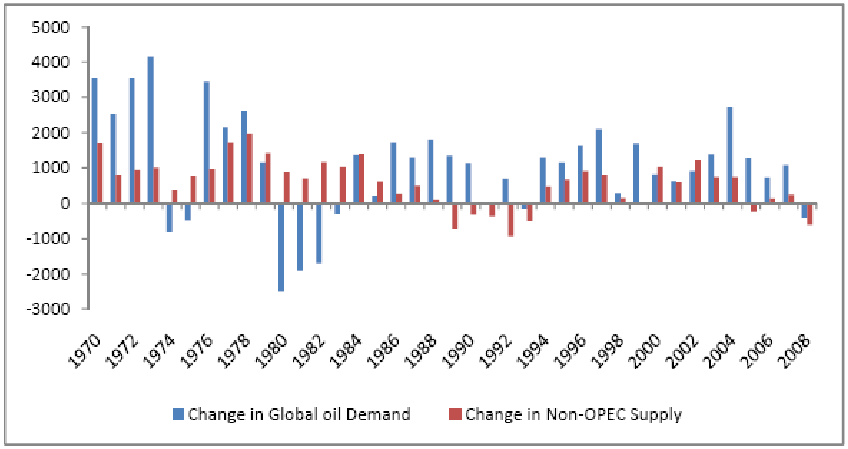
Volatile Time Spreads

Time Spreads for WTI ($/barrel)



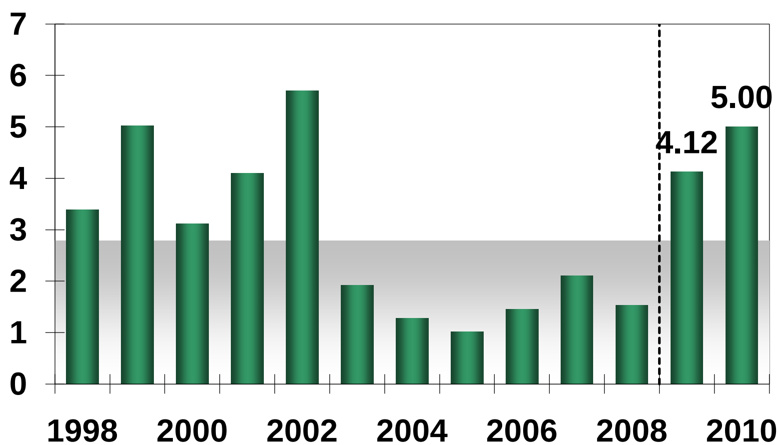
Fundamentals

Figure 9: Change in Global Oil Demand and Change in Non-OPEC Supply (Year-on Year)



Source: BP Statistical Review

OPEC Surplus Crude Oil Production Capacity



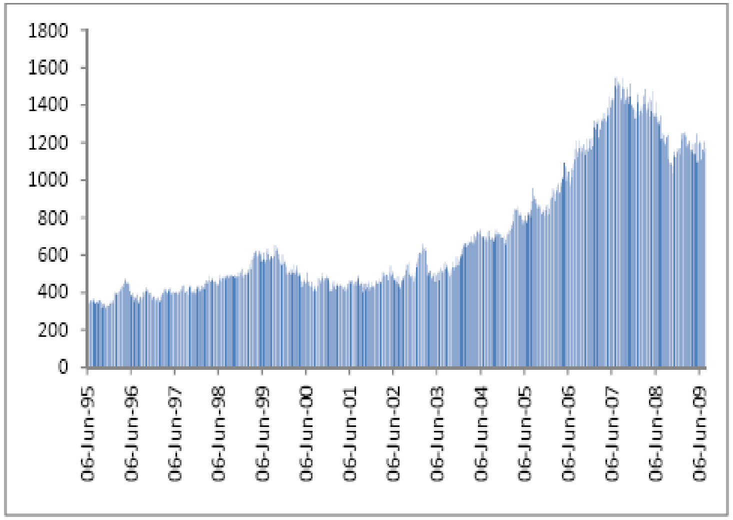
Elasticity Matters:

- Price elasticity of oil supply low
- Price elasticity of oil demand low
- Oil demand more responsive to income than prices
- Perfect recipe for oil price volatility

Source: EIA

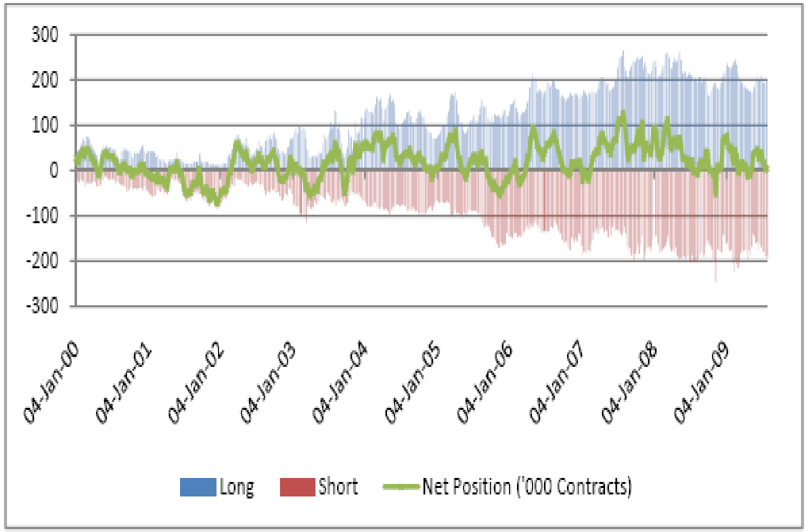
Speculation

Figure 14: Total Open Interest (Thousands of Contracts)



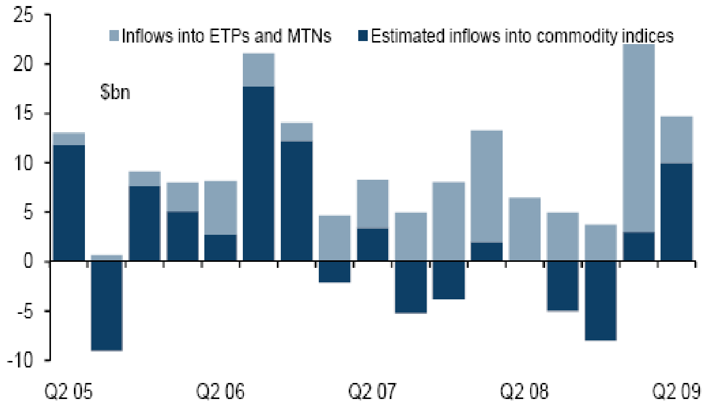
Source: CFTC

Figure 15: Short, Long, and Net Positions of Non-Commercials (000 of Contracts, Futures Only)



Source: CFTC

Figure 20: Inflows into ETPs and MTNs (in Billion of US$)



Source: Barclay's Capital

Risks to the Dichotomy

- Assumes a clear dividing line between speculators and hedgers
  - “ the line between minimizing risks – which is what the term “hedge” connotes – and maximizing profits – which is what the term “speculation” connotes – can be exceedingly difficult to draw”
  - In need to define speculation
- Idea that the oil price be sliced into various components reflecting fundamental and non-fundamental factors is theoretically weak and empirically can’t be implemented
  - Interrelated determinants
  - By no means suggests that market always generate the ‘correct’ or efficient price
- Financial players don’t operate in isolation of physical parameters of oil market
  - Choice to enter and leave market is partly endogenous to oil market dynamics
- Two layers of price discovery: paper and physical
  - What are the links between the two?

An Alternative Perspective

- Feedbacks and responses
  - The conventional framework revisited
- Perception of limited feedbacks
  - Oil prices and growth
  - Oil prices and non-OPEC supply
  - OPEC cycles
- Role of financial players
- Implications on price formation
- Role of expectations: The missing link?

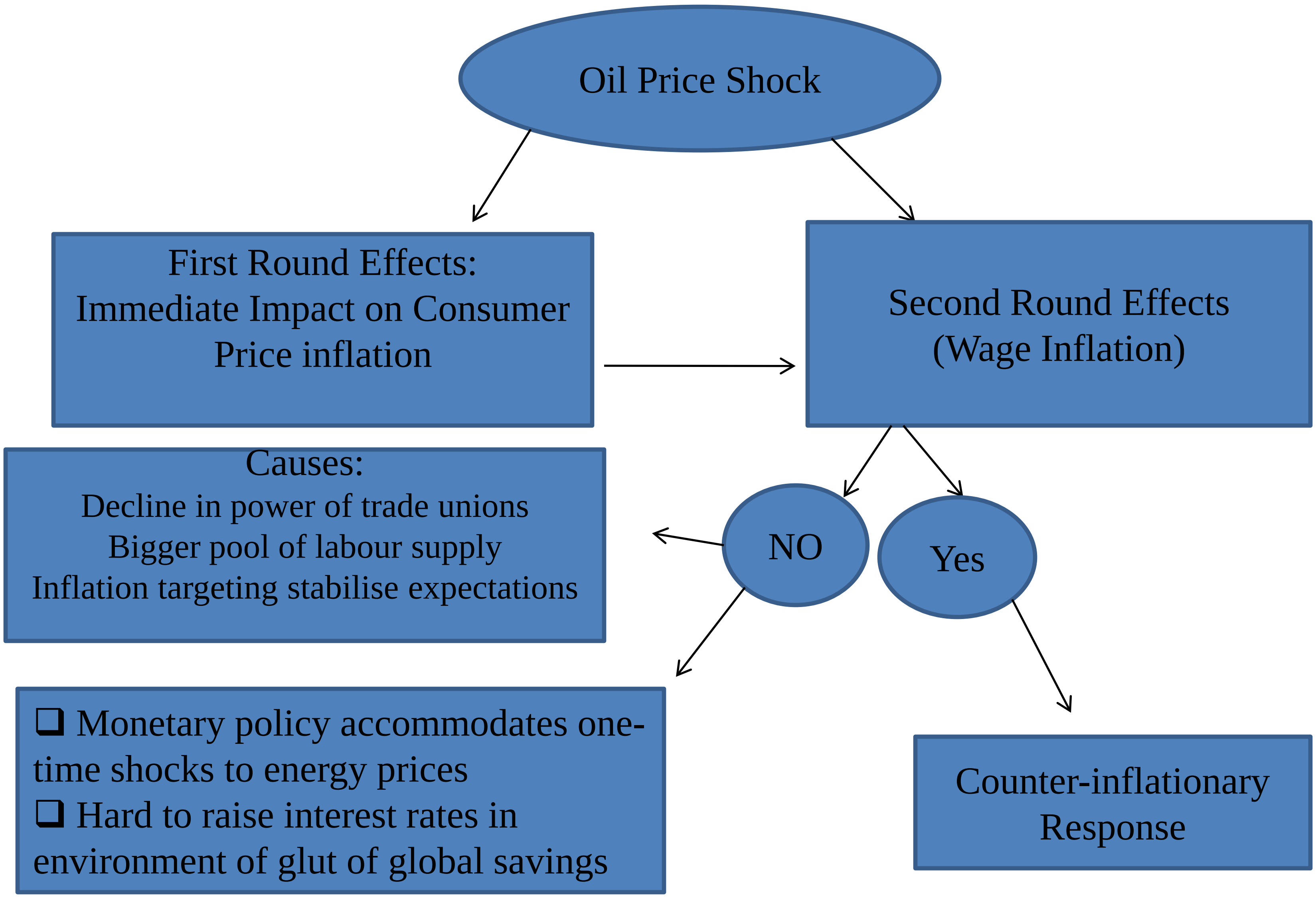
The Feedbacks in the Conventional Framework

- Changes in oil prices would induce supply/ demand feedbacks and government responses that put limit on oil price rise
- Demand side
  - High oil prices would have an adverse impact on demand through price and an income effect
  - High oil prices would eventually slowdown economic growth
- Supply side
  - High oil prices encourage investment in non-OPEC countries
  - High oil prices encourage substitution at the margin by increasing the relative price of oil
  - OPEC increase oil supply to prevent oil prices from rising
    - High oil prices result in long-term destruction of oil demand and encourage the entry of substitutes at a large scale
- Availability of large spare capacity
  - Has effect of increasing the elasticity of oil supply and generates strong feedback in presence of large supply disruptions
- Consuming government response

Perception of Limited Feedbacks

- Uncertainty about existence of and timing of feedbacks from prices to oil supply and demand increased markedly during boom
  - Perception of strong feedbacks replaced by perception of limited feedbacks
- Key feedbacks absent
  - High oil prices would trigger a rise in global inflation rates and a subsequent recession, tempering growth in the demand for oil
  - High oil prices would induce strong growth in non-OPEC supply
  - OPEC would increase its oil supply to prevent oil prices from rising to high levels
- Transformation of oil into a financial asset

Monetary Policy: No One Single Way to Deal with Oil Price Shocks



Non-OPEC Supply

- Features of non-OPEC supply growth
  - Variability of non-OPEC supply growth
    - Main sources of non-OPEC supply be deep offshore in Brazil, ethanol in the US and tar sands in Canada
  - Entered phase of substituting a relatively cheap-to-extract barrel with a relatively expensive-to-extract one
  - Maintaining stable decline rates in mature fields require use of advanced and more costly technology
  - Scale and risk profile of non-OPEC suppliers different from past
    - Technically, financially, and managerially much more challenging to extract oil in these areas
  - Non-OPEC supply has become more sensitive to oil price cycles
    - Asymmetric response to oil prices
- Constitute a major source of uncertainty in market concerning both magnitude of change in non-OPEC supply and timing of new supply's arrival to the market
  - Represents a major departure from the early 1980s

Asymmetry in OPEC Response

In a Falling Market

Objective
Defend oil prices from falling below some level deemed unacceptable

Mechanism
Impose quotas and implement output cuts

Issues
- ❑ Will OPEC be able to implement the cut?
- ❑ How would the market respond to announcement of cuts?

In Rising Market

Objective:
- ❑ Increase output in response to customers' demand at market determined prices
- ❑ Consider itself as price taker
- ❑ Not to impose a ceiling on oil prices

Mechanism
- ❑ No mechanism exists
- ❑ OPEC does not offer discounts or auction spare capacity to bring prices down

Issues
- ❑ Internal and external political constraints
- ❑ Learning process about impact of oil price shocks on growth

Lack of feedback mechanism from OPEC when prices rising affects short-term and long-term expectations

Changes in the Financial Scene

- Financial markets witnessed transformations that consolidated importance of futures and OTC markets and financial players in process of oil price formation
  - Change in international pricing system
  - Large entry of financial players
    - Perception of tight market conditions
  - Increase in players’ diversity in recent years
    - Low interest rates on alternative assets, financial innovation, diversification, hedging against inflation and weak US dollar
- Growing interest of financial investors in the oil market is
  - Endogenous to oil market conditions
  - Interlinked with the tightening of the physical market as a whole
  - Should not be thought of as an external development that occurred in isolation
  - Represents a consolidation of a trend that began with collapse of administered pricing system and emergence and increasing importance of derivatives markets in price discovery
- Crude oil increasingly acquired characteristics of a financial asset

Implications on Market Participants' Behaviour

- Market characterised by perceived limited feedbacks and indeterminacy of beliefs bring to fore role of expectations and signals
- Destabilised short term expectations
  - Market can clear at any price within a wide range
  - Marginal cost irrelevant: No smooth supply curve
- Affected way in which long expectations formed
  - Whole futures curve became subject to a series of shifts sometimes parallel sometime weighted to the front and sometimes to the back
- Herding behaviour and the beauty contest games
  - Market participants form expectations not only in terms of expected fundamentals but also on basis of anticipations of other players' expectations
- Impact of public information or signals amplified even if do not necessarily reflect large changes in underlying fundamentals
  - Can affect my guess about other players' guesses
  - Market participants tend to focus only on few signals while ignoring others as it is not possible to coordinate on a large number of signals
    - Inventories, weak dollar, shortages of supply, peak oil

The Long Awaited Feedback

- Impact of financial crisis on global growth and on global oil demand that generated a powerful feedback into the market
- Three features characterised the nature of this feedback:
  - Its impact was felt on the demand side
    - Altered expectations about global economic growth
    - Shifted the sentiment towards weaknesses in demand
  - It mainly originated from outside the oil market and had little to do with government policy
  - Complicates analysis: Events outside the oil market such as financial fragility and regulatory failure can have big impact on the oil market

Role of Expectations

- Expectations the key missing link
  - Crude oil prices do not only reflect current market fundamentals, but also expectations about the future evolution of these fundamentals.
- Raises key issues
  - What factors do affect market expectations?
  - Do financial players amplify expectations? For how long? What about governments and international organisations?
- A key question: How to stabilise market expectations? Is there a role for government policy and international coordination?
- Convergence of expectations and focal points
  - When individuals confronted with large uncertainty focal points may in some instances play an important role in providing a point of convergence for individual expectations
  - How successful?

Conclusion: The Battle of the Stories

- “But what if stories themselves move markets? What if these stories of over-explanation have real effects? What if themselves are a real part of how the economy function?...The stories no longer merely explain the facts; they are the facts”

  Akerlof and Shiller; Animal Spirit, p.54

- Discourses of oil debate dominated by one view
  - Tight future market fundamentals, “likely return to oil shortages”, energy crisis
  - Elements of the story
    - Limited non-OPEC supply growth (peak oil, over-ground constraints)
    - Limited investment and weak supply growth in OPEC countries (willingness, capability, geopolitical)
    - Rapid growth in global oil demand fuelled by non-OECD countries
- Is there an alternative story????