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)
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: BP Statistical Review

OPEC Surplus Crude Oil Production Capacity

Source: EIA
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

Oil Price Shock

First Round Effects: Immediate Impact on Consumer
Price inflation

Second Round Effects (Wage Inflation)

- Causes:
  - Decline in power of trade unions
  - Bigger pool of labour supply
  - Inflation targeting stabilise expectations

- Monetary policy accommodates one-time shocks to energy prices
- Hard to raise interest rates in environment of glut of global savings

Counter-inflationary Response
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????