OXFORD INSTITUTE FOR ENERGY STUDIES

BIEE AGM

Chatham House 14th October 2008

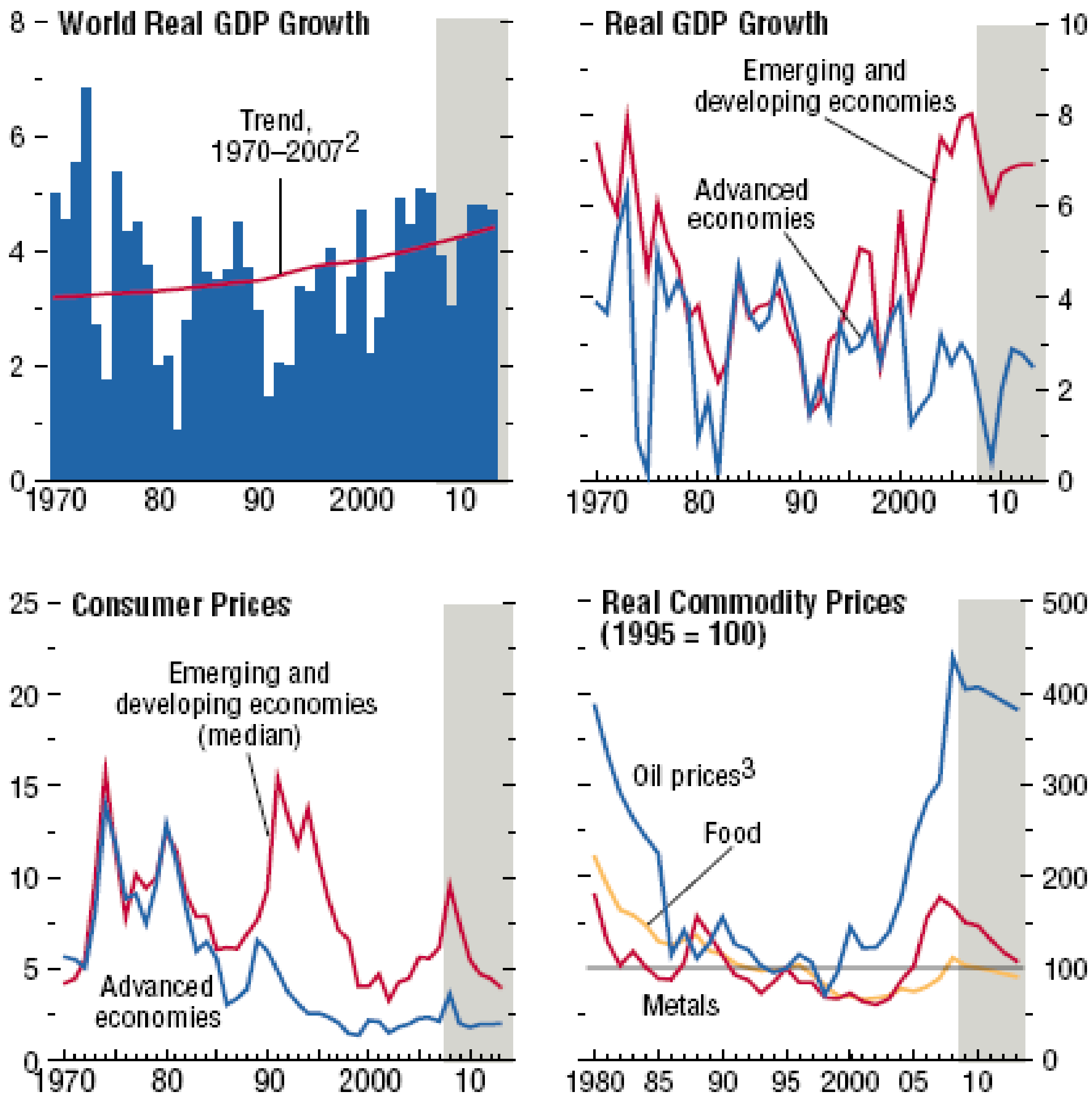
OIL, ENERGY MARKETS and the WORLD ECONOMY

CHRISTOPHER ALLSOPP

CONTEXT

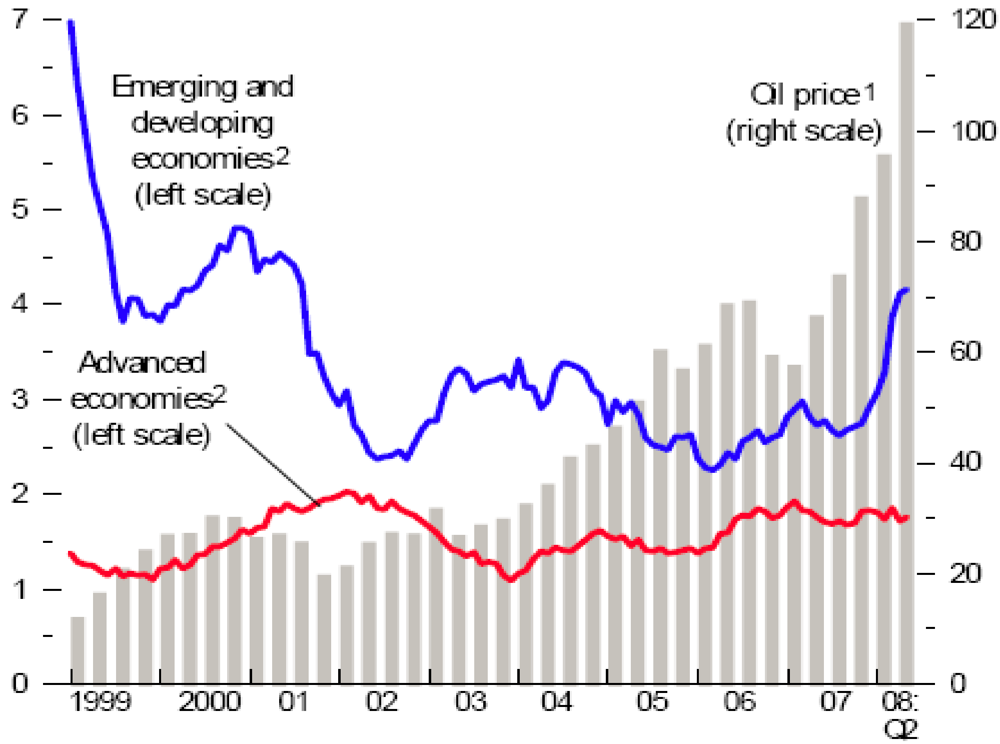
- Unprecedented combination of factors hitting the world economy
  - Oil prices: food and other commodities
  - Volatility (Oil price up to $147 in July: half that recently)
  - International financial crisis plus bail-outs
- Until recently the story was one of continuing growth (especially in China, India) and muted response to oil price shock
  - Big question: Why was the response relatively benign? What will happen now?
  - It was the lack of 70s and 80s negative response to the oil shock that accounted for (a) mounting concerns over energy security and (b) heightened concern over sustainability, especially climate change. The same lack of response altered the market for oil.
  - The key impact now is the credit crunch - raising fears of global depression and possibly deflation. Cf Japan. The credit crunch is not due to oil price rises. Question now: what does the world economy do to energy markets – not vice versa
- Two key questions:
  - What happens to the world economy now?
  - What happens to oil and other energy prices?
  - How do we understand the dynamics of energy prices in the new situation?
- Challenges for the energy sector
  - Conflicting agendas
  - Is there a case for intervention in oil markets: if so, how?

IMF October 2008: Shock horror? Or blip?



Core Inflation and Oil Price

(Percent and U.S. dollars a barrel)

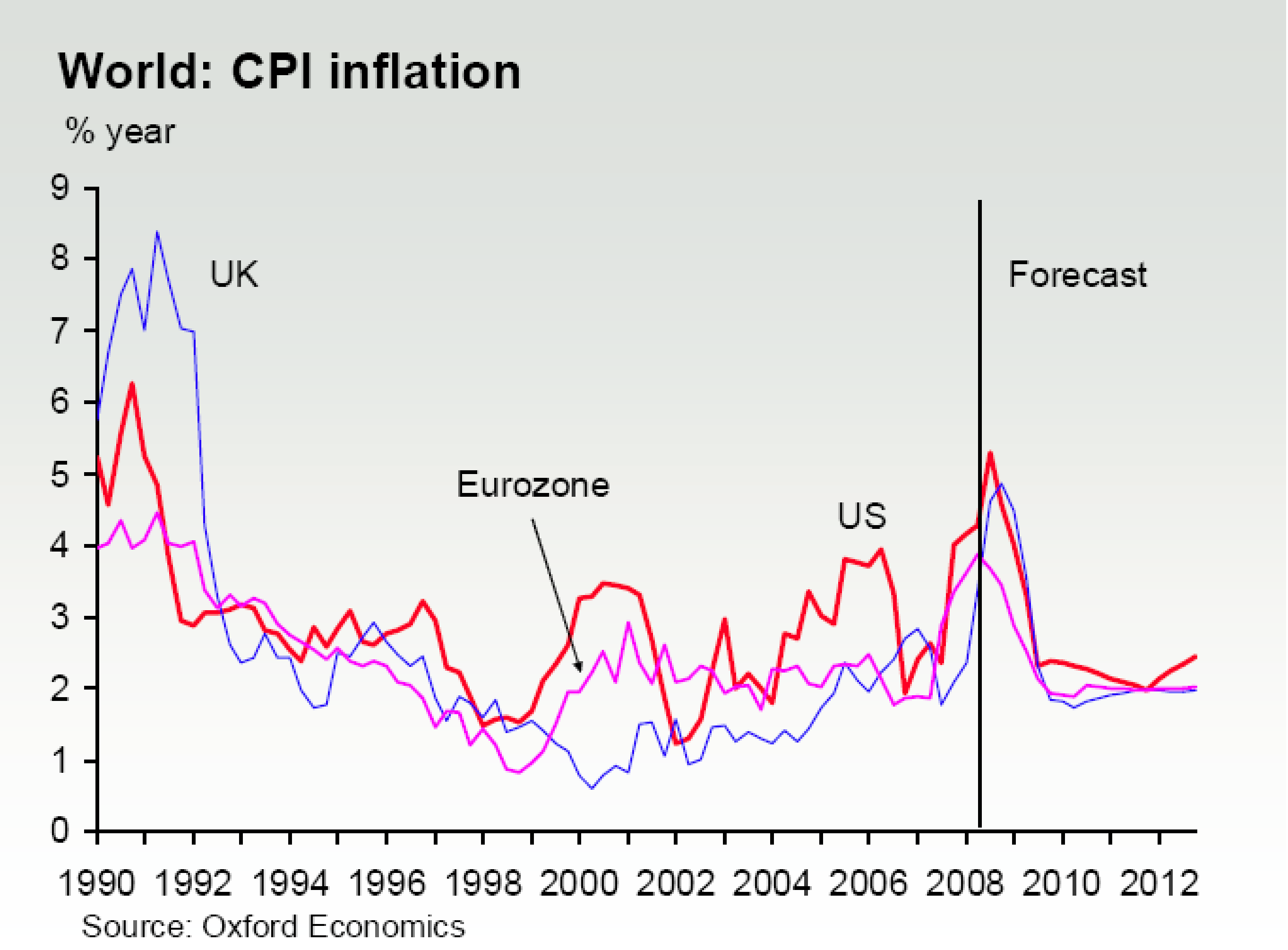


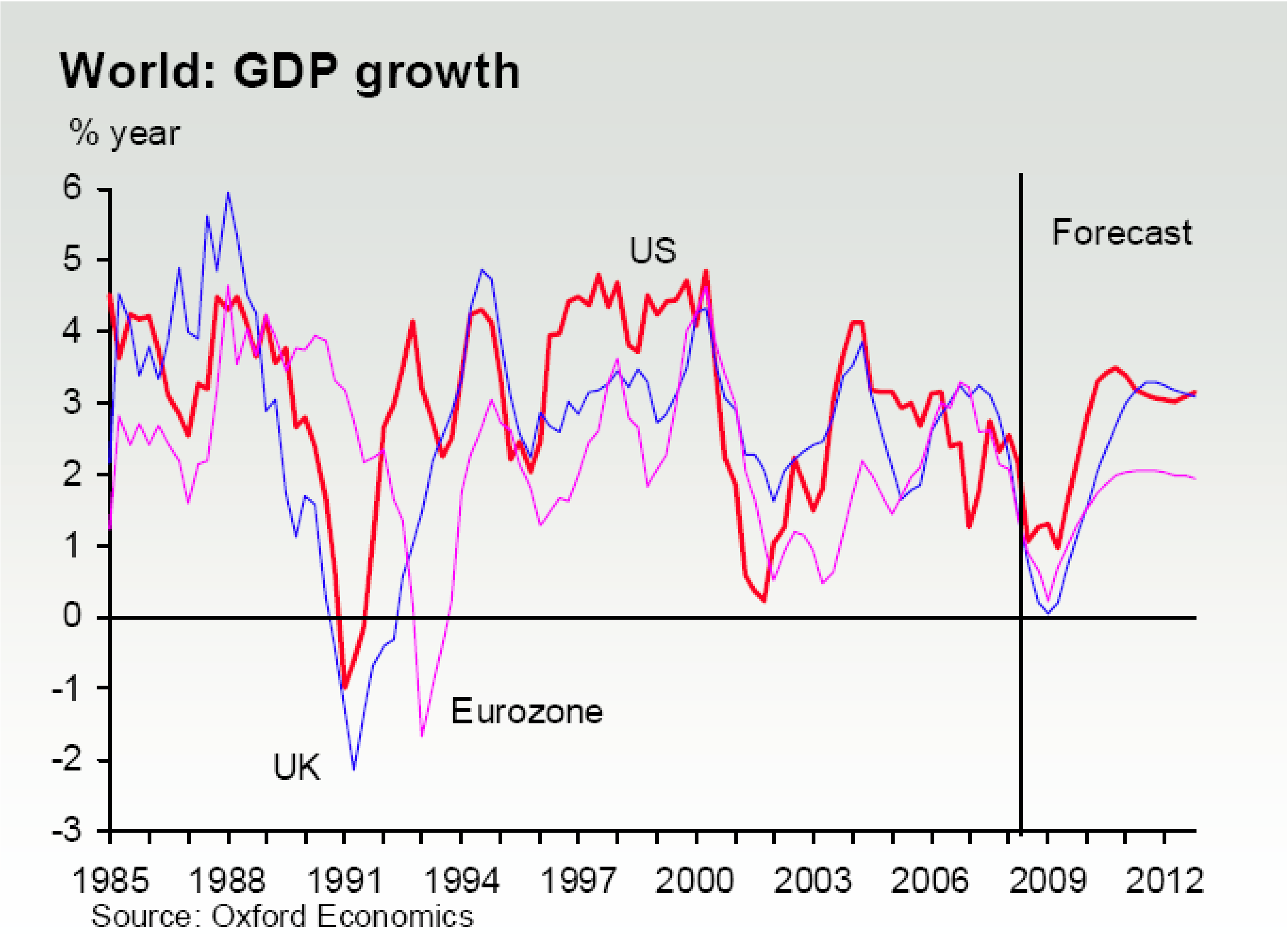
Sources: Haver Analytics; IMF Primary Commodity Prices database; and IMF staff calculations.

[1]Simple quarterly average of prices of U.K. Brent, Dubai, and West Texas Intermediate crude oil.

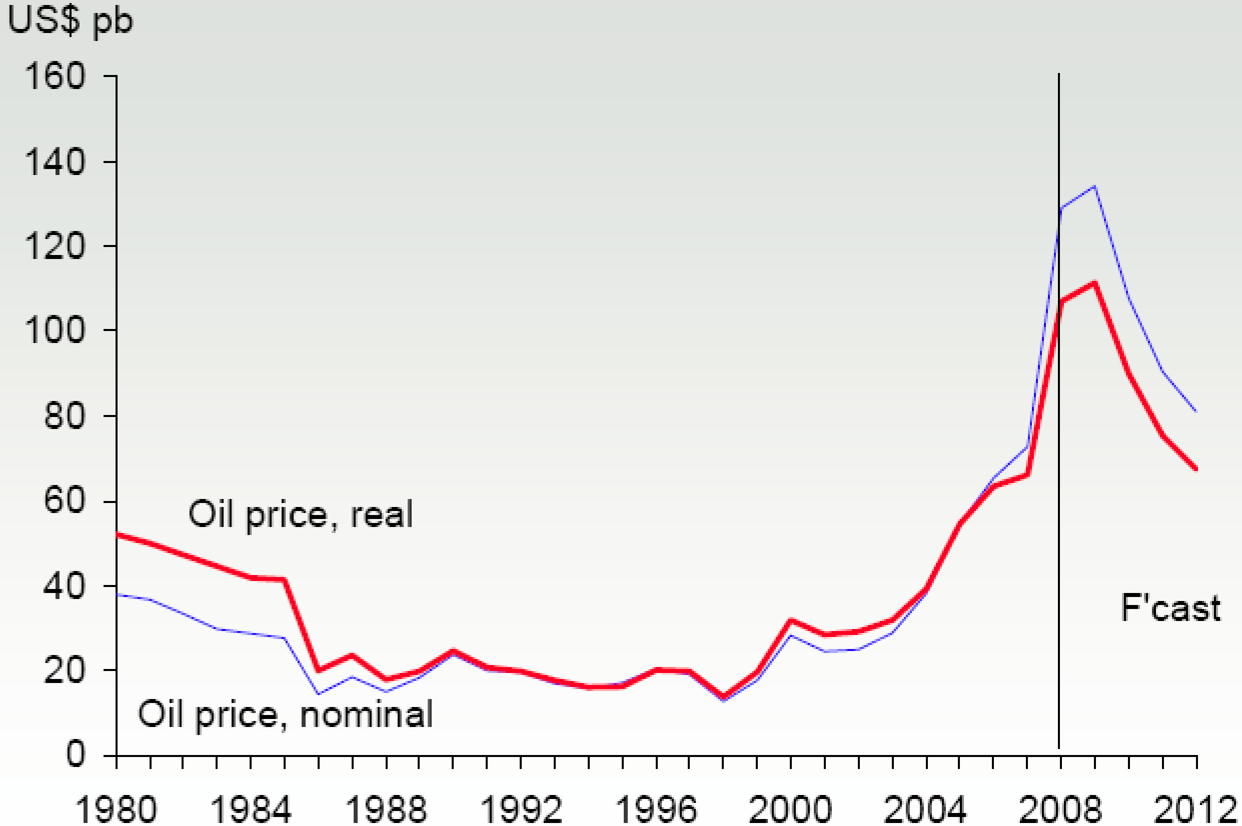
[2]Twelve-month percent change in the core CPI index. Aggregates are computed on the basis of purchasing-power-parity (PPP) weights.

Source: IMF WEO Update July 2008


World: CPI inflation
% year
9
8
7
6
5
4
3
2
1
0
UK
Forecast
Eurozone
US
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Source: Oxford Economics

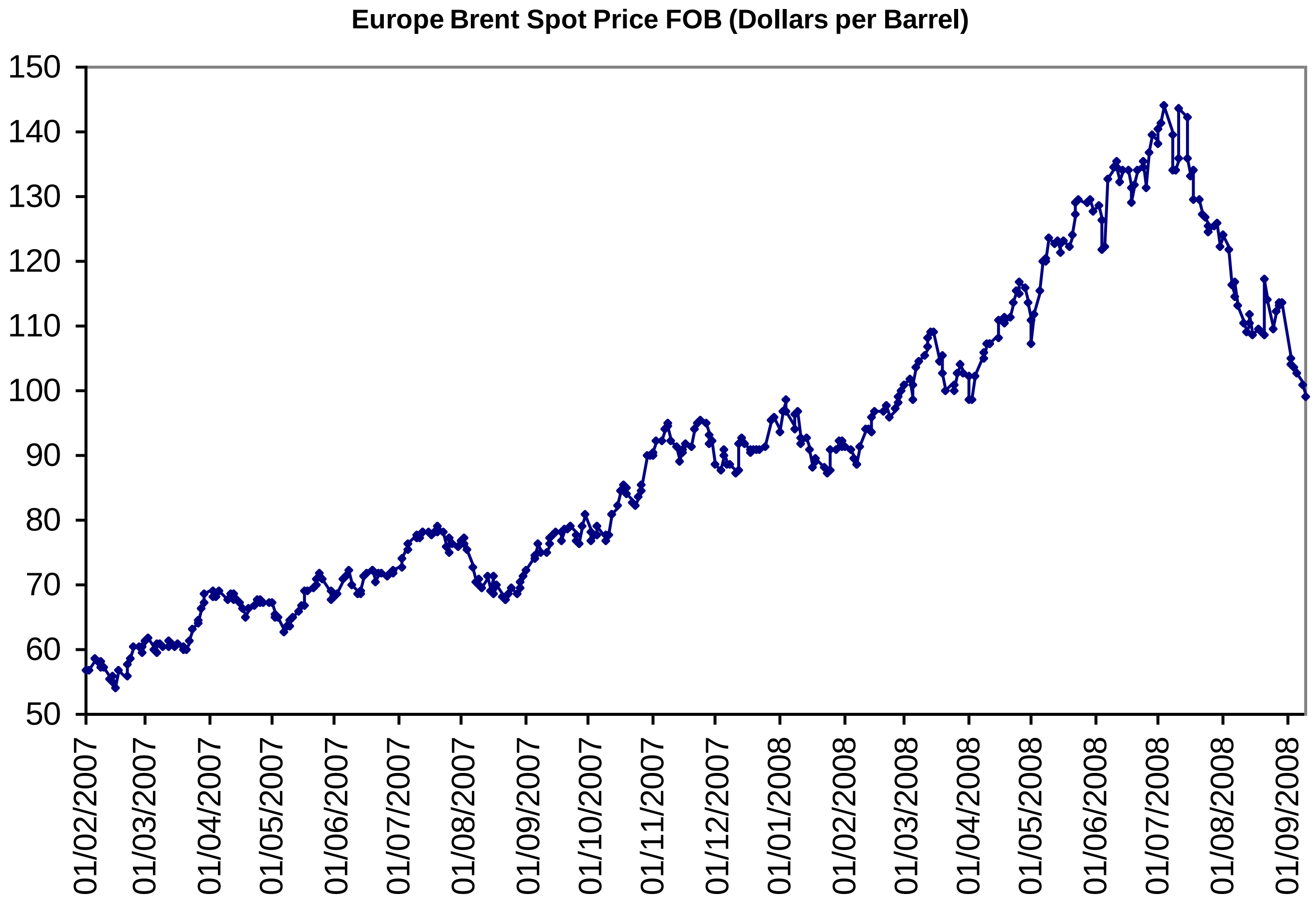

World: GDP growth
% year
6
5
4
3
2
1
0
-1
-2
-3
US
Forecast
Eurozone
UK
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
Source: Oxford Economics

Global: Oil prices

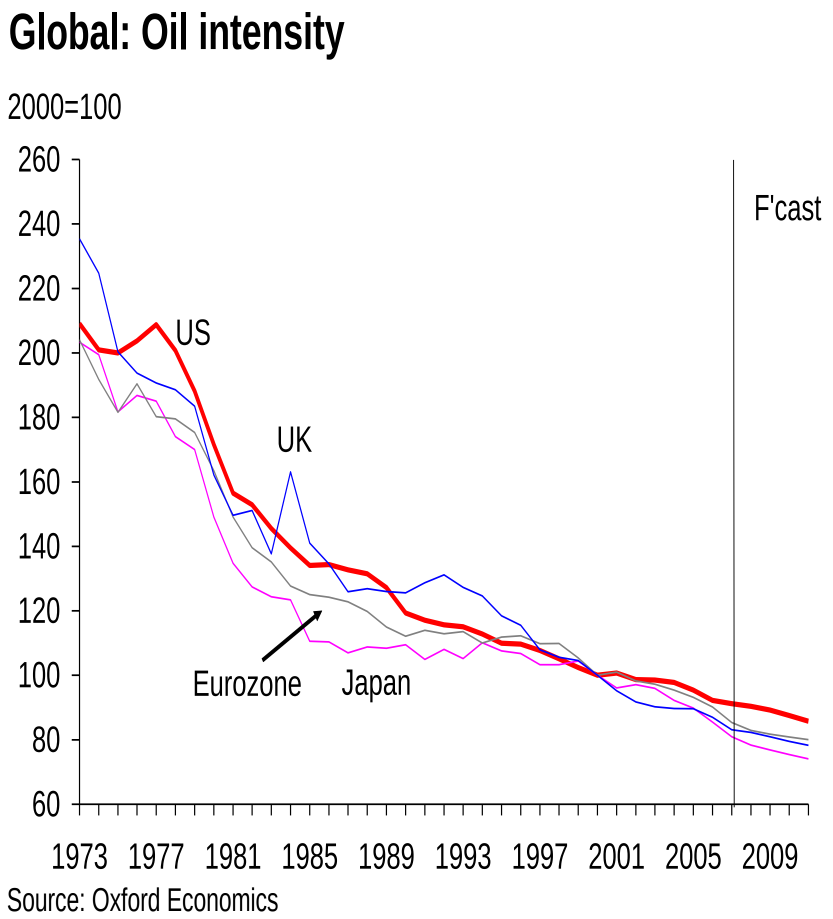


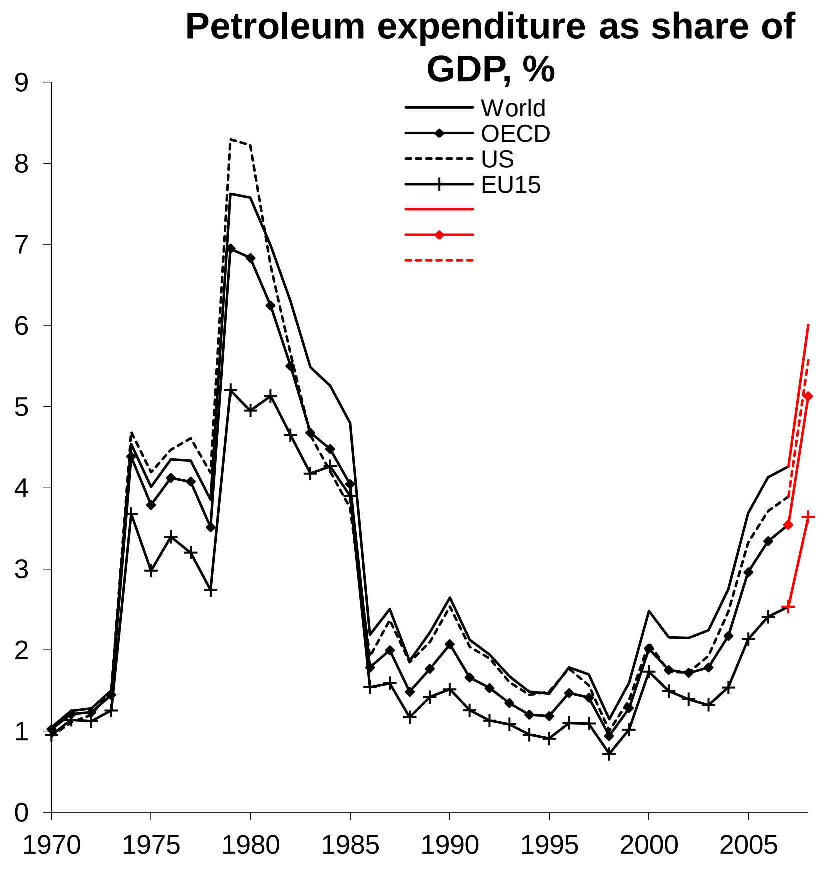
Source: Oxford Economics

The sharp decline in the oil price



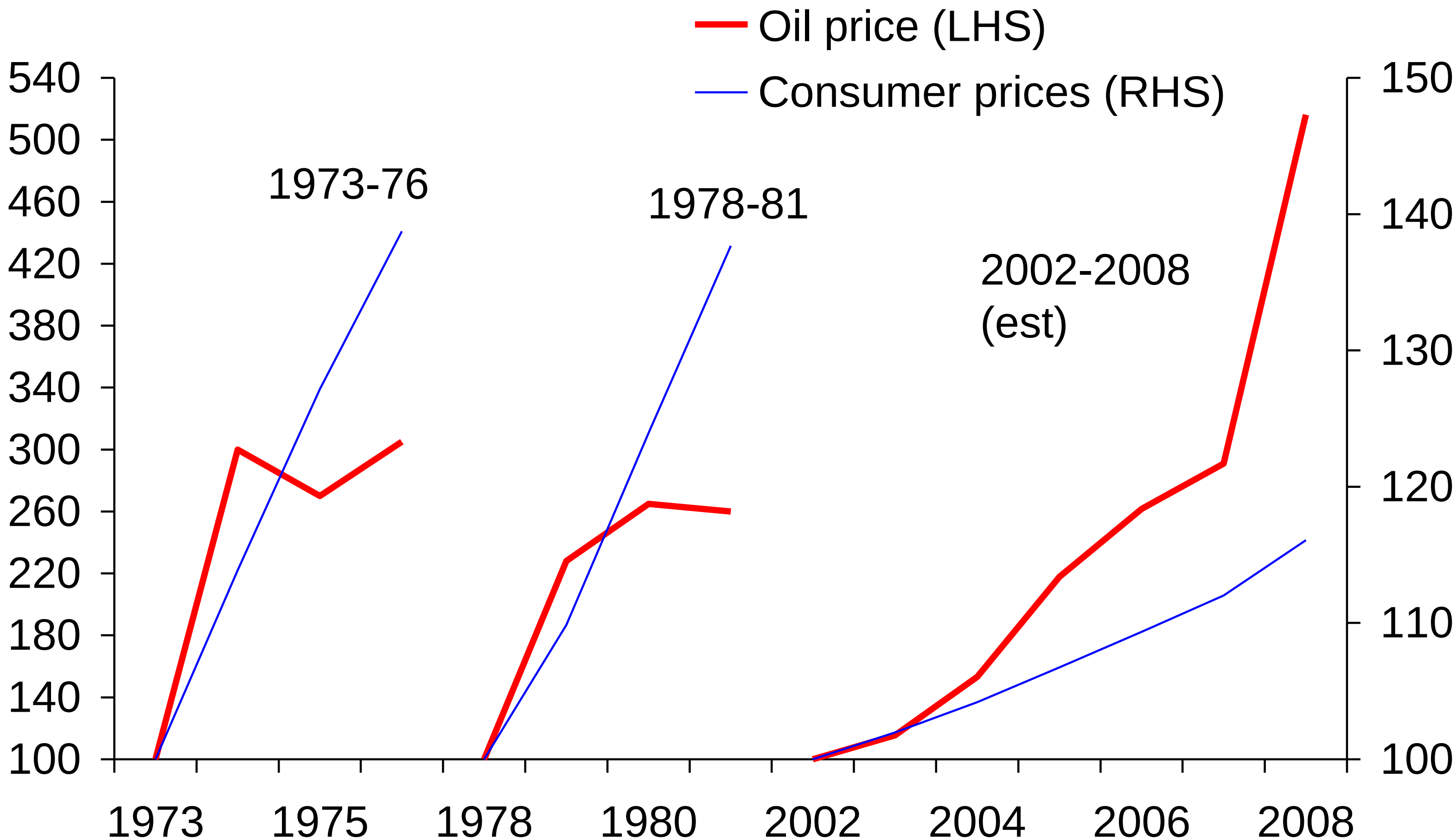
Oil Shock large despite fall in share of oil expenditure





(Note: Last observation based on oil at $110)

Oil price and OECD CPI



Source : Oxford Economics

Oil impacts: a tax analogy

- The indirect tax analogy
  - Price level effect
  - Deflationary effect
  - Offsets depend on how the tax is used (saved, or spent)
  - And on the monetary policy response
  - Oil impacts are just like a lot of other things that hit the economy

- Could the oil impacts of the past have been offset?

- Policy responses. Budget deficits, interest rates and other offsets

- Lots of other similar macroeconomic impacts (tax changes, terms of trade movements, the exchange rate). Analogy: VAT +3 % pts in Germany 2007.

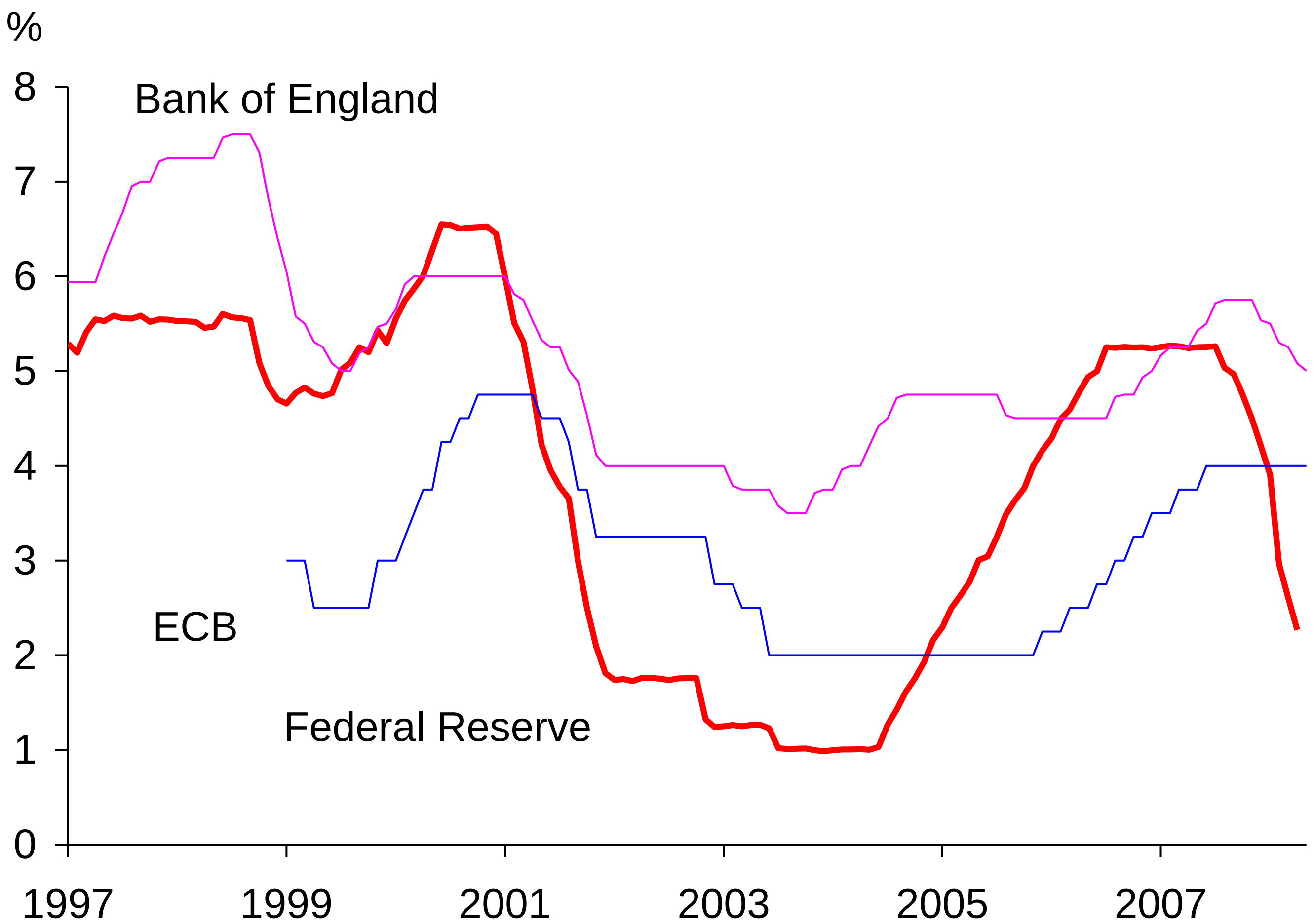
- Policy reacts to the total situation – especially inflation.

The role of monetary policy

- Inflation forecast targeting
- Maintains growth near potential if inflation under control
- Bernanke interest rate cuts: fears of recession (even price deflation)
- Oil prices secondary
- Deflationary effects of oil price rises will be offset if inflation does not come through

- Monetary policy and the response to oil and other level effects
  – Accommodate level effect: prevent second round effects
  – Difficult in practice
  – Responses of wages and expectations key
- But: the credit crunch poses very different problems.
- And: central banks reluctant to cut in face of measured inflation

Fed, BoE and ECB rates



Source : Haver Analytics

The credit crunch

- Completely new set of policy issues:
  - crisis management
  - Fiscal authorities, not central banks (central banks as agents)
  - Liquidity (including guarantees and TARP)
  - Recapitalisation (capital base)
  - Nationalisation/partial nationalisation (temporary)
  - The effect on national debt? IFS story
  - Fiscal policy more generally – budget deficits as a support to the economy and deleveraging.
  - Issues not particularly difficult but politics and coordination are very problematic. The UK model
  - prospects

Problems looking forward

- The ‘savings glut’ – Bernanke:
  - What happens in China, Middle East, Russia
- Monetary policy – policy makers ‘blamed’ for asset bubbles.
  - Will monetary policy be too cautious?
- Fiscal policy
  - Are we ready for it?
  - Stupid accounting
  - The medical model
- Deleveraging
  - How do people (banks, consumers, businesses) get out of debt?
  - Budget deficits versus low interest rates
- A Japan-type situation or rapid response?
- World deflation?

What happens to oil prices?: fundamentals, speculation or what?

Long term fundamentals versus short term

Position of OPEC

Challenges for the energy markets

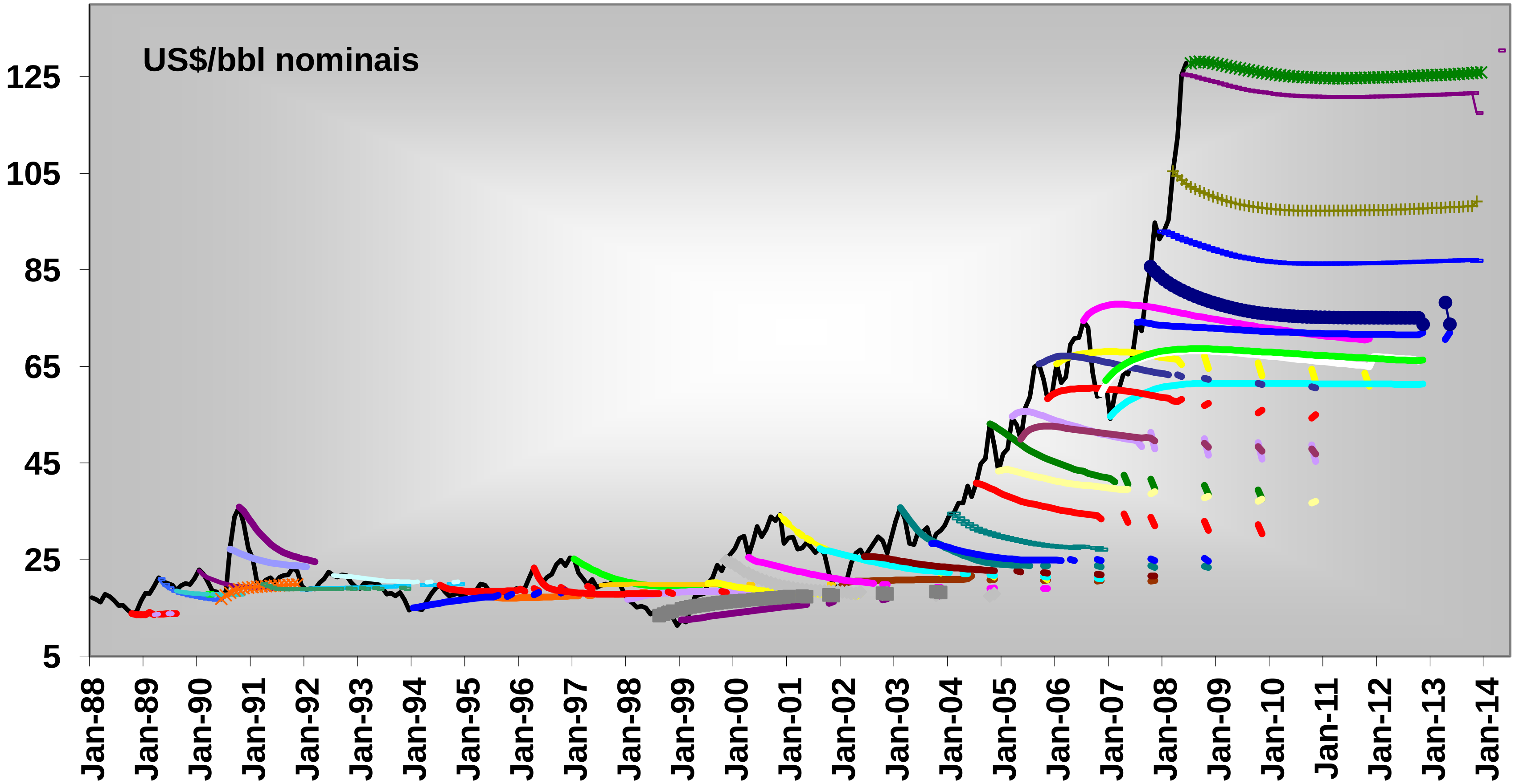
- Conflicting agendas
- Coordination of oil prices?
- But how?

Who gets the rent?

The conventional framework: spot prices tied to a longer term view of ‘fundamentals’.

- Demand
  - High oil prices will have an adverse impact on demand and economic growth
  - High oil prices induce inflationary pressures that require tightening of monetary policy
  - High oil prices will induce efficiency and conservation policies
    - Feedback: Reduced global oil demand or slowdown in oil demand growth
- Supply and Investment
  - Non-OPEC supply
    - Feedback: High oil prices induces greater investment and supply response from non-OPEC countries
  - Entry of substitutes
    - Feedback: High oil prices will encourage substitution at the margin
  - OPEC response
    - Feedback: OPEC imposes a price ceiling on the oil price
    - Avoid demand destruction for its oil in the long term and limit entry of substitutes
- Spare capacity
    - Feedback: Cushion against adverse supply/geopolitical shocks
- Climate change challenge can be ignored by the industry
- Implications
  - High degree of determinacy in the future oil price based on supply/demand ‘fundamentals’
  - Back end of crude oil futures curve very rarely strayed outside \$20 -\$22 range and governments and financial market thought in terms of that range
  - Relationship between current price of oil and expected change in prices: stabilising

Oil prices: rise in front end and back end



The situation now: explaining high and volatile oil prices

- The ‘fundamentals’ have changed
  - Continued growth in the world economy
  - Anticipation of policy response to slowdown in the US (and OECD)
  - Decoupling: continuation of rapid growth in China, India and other areas
  - Disappointing supply response in non-OPEC: lack of spare capacity; etc.
- But the ‘fundamentals’ are very uncertain
- Back end of the curve appears ‘unlocked’
- Lack of previous feedbacks from price to medium term supply and demand
  - From the world economy
  - From supply and demand responses
  - From OPEC behaviour
  - From policy responses in consumer countries
- Adds up to indeterminacy; drifts, bubbles
  - If the price were higher or lower, what would happen? The answer appears to be ‘very little’ – a regime change in energy markets?

OPEC and the Market

- Conventional wisdom
  - OPEC puts a floor on oil price
  - OPEC puts a ceiling on oil price
    - Avoid demand destruction for its oil in long term
    - Limit entry of substitutes, technical change, etc.
- Reinforced by OPEC price band
  - Production adjustments if OPEC basket prices above $28 per barrel for 20 consecutive trading days or below $22 per barrel for 10 consecutive trading days
- Implication
  - From 1986 to 2002 back end of crude oil futures curve very rarely strayed outside the $20 range
  - Governments and financial market thought in terms of that range
- OPEC's main objective is to defend prices from falling below some level deemed unacceptable
- OPEC's role not to prevent price rises
  - Ceiling was never relevant in period of the band
  - At times the perception that OPEC would respond to limit price rises has been important

OPEC behaviour

- Learning process
  - Increasing oil prices did not affect growth in oil demand (more price inelastic than they thought: world economy effects muted)
- Not concerned about long term effects on global oil demand
  - No sign of urgent political economic response by OECD countries
  - Climate change agenda unlikely to seriously undermine demand for oil – in the absence of alternative transport fuel and likely technical and behavioural lags
- OPEC's position until recently:
  - Will increase output but in response to customers' requests (at current prices)
  - Thinks of itself as price taker in international market even though the price depends on the market's perception of OPEC behaviour
- Concerned about high oil prices and has the ability to influence oil price, but
  - Politically constrained
  - Fears that any move may induce a downward spiral of oil prices.
  - Not willing to put more oil in the market (auction part of the spare capacity) or to engage in heavy discounting

OPEC: quantity adjustment at market prices

- Saudi Arabia position:
  - Will increase or decrease output but in response to customers' requests at current/future market prices
  - Limits observed excess supply/demand
  - Unwilling to auction or discount: regards itself as a ‘price taker’
- Assume a self-fulfilling speculative price increase that raises the futures price (but does not affect the spot price)
  - This would increase the demand for spot oil for inventory accumulation - which would not be sustainable in the long run and is not desired by OPEC/Saudi Arabia since high inventories trigger fears of sharp oil price falls
  - In response OPEC/Saudi Arabia can cut supplies
  - Spot price increase in response to OPEC cut eliminates contango
- Helps to explain parallel shifts – and the non-appearance of excess supply
- Market well supplied even as prices rose to $147 pb
- What will OPEC do now?

Some implications

- It is the lack of feedbacks from price to anticipated supply or demand responses that appears to have unlocked the back end of the futures curve
- The whole curve can shift upwards or downwards depending on OPEC’s behaviour or financial markets’ perception of OPEC behaviour, as well as perceptions of supply and demand trends. Great uncertainty about fundamentals. Range of possible prices with little effect on perceptions. Indeterminacy?
- Five phases?
  - The OPEC band
  - A quasi-equilibrium, around $60, with market perceptions that fear of demand ‘destruction’, perhaps due to political change in OECD, would lead OPEC to limit the upside. (Sometimes used to explain why Saudi Arabia wanted a margin of excess capacity of about 2 million barrels per day)
  - The perception as prices rose from $100 to nearly $150 that OPEC would not, or could not, police the upper bound
  - The fall since the July peak - which coincides with Saudi production increase of 1mb per day and increasing worries over the growth of the world economy
  - Reversion to previous Saudi pricing behaviour at OPEC meeting in September
- A key question now is what feedbacks there are that might limit the range of uncertainty about the oil price: supply, demand, OPEC behaviour, OECD policy.
- What will the credit crunch do?

But what determines the price?

- News about the fundamentals really has been changing: the market is finding the new equilibrium (e.g. Paul Horsnell)
- There is a range of indeterminacy: e.g. the market could coordinate on high or low outcomes
- Thinking makes it so: sun spots
- Economic outcomes are influenced by a set of beliefs
  - Each set of beliefs is “logically coherent, consistent with the known features of the economy, and borne out by subsequent events” and results in different outcomes (Morris and Shin, 2000)
- Keynes, General Theory, Chapter 12, on expectations in share markets:
  - “We have reached the third degree where we devote our intelligences to anticipating what average opinion expects average opinion to be.”
- Beliefs are correlated with news about the fundamentals – but the fundamentals themselves are very uncertain

The oil market: summarising

- Expectations about the long run oil price appear to have become detached from any idea of 'normality' or fundamentals. The whole curve can move up or down.
- We have tentatively explained this in terms of reduced feedbacks, which, if they were present, would pin down the longer term anticipated price.
  - Supply prospects, including investment, seem unresponsive to price changes
  - Demand elasticities are low, and uncertain. Expectations of demand growth (depending on growth in Asia and Middle East) suggest continuing tightness in the medium term
  - Crucially, anticipations of world growth have become insensitive to oil price impacts
  - Opec has learned that high oil prices do not lead to world economy reactions and demand falls, and markets have learned that OPEC either does not want to, or cannot, limit upward movements in oil prices
- This is the kind of situation where speculative forces, drifts, and bubbles can take hold.
- OPEC policy: to supply the market at the current (future) price possibly validates whatever price is established (with little cost since there is little response of demand or supply to price).
- Speculation seems to have played a normal role along the futures curve. It remains quite difficult to explain the large rise in the oil price as due to the presence of speculators.
- This does not mean that the rise in price simply reflects news about the fundamentals (though that is one story about what has happened). The alternative hypothesis is that the price could be higher or lower with relatively little effect.

The selection of equilibrium

- Which equilibrium will be selected?
  - Largely left unexplained
  - We have described why the price might be ‘indeterminate’, but not why it has moved
- Morris and Shin (2000) [in a different context]
  - Small amount of noise or arrival of publicly observed signals can help us select a unique equilibrium
- If there is some news about a fundamental which is publicly observed
  - Affects your own beliefs about the oil price
  - More importantly it affects your beliefs about the beliefs of the others and how they would react to the signal
  - Implication: a small amount of public news can have dramatic effect on outcomes
  - Helps to explain which of many equilibria is selected
  - And helps to explain why the adverse news flow has raised the whole curve

What might change the oil market?

- One set of questions raised is what kind of signals might lead through to a lower/and more stable oil price.
  - World-wide recession
  - Sharp slowdown in China
  - Change in perception about OPEC behaviour
  - Entry of substitutes, including news about costs of alternatives
  - Credible energy security or climate-change policy in OECD
- A more complex question is whether policy should seek to establish a stable medium term expectation of the oil price, e.g. via the consumer producer dialogue.
  - In the currency markets, a credible commitment to (say) an exchange rate backed up by ample reserves, alters the 'game'
  - Policy changes, e.g. from benign neglect, to public concern over (say) the balance of payments, alters expectations, introducing a feedback previously absent.
- In the case of the oil price the difficulties are great
  - Is it OPEC, or OECD who are expected to act? And with what interventions?
    - OPEC for the lower bound, OECD for the upper? Or vice versa?
    - US fear that use of SPR would not work:
    - Saudi fear that price falls might get out of control
- Finally: how would producers and consumers agree on a 'fair' oil price.

The challenges

- Focus on interaction between oil markets and the world economy. But more complex than this
- Competing agendas:
  - Security and climate change objectives
  - Come together with objectives for efficiency
  - Diametrically opposed when it comes to coal
  - The present situation favours coal
- Is there a case for policy coordination in international energy markets?
  - A new consumer/producer dialogue? To do what?
  - Obviously difficult
- International cooperation even more difficult in case of climate change
- Finally: who gets the rent? Consumer or producer governments?

Summarising: Slowdown or recession in OECD: Continued rapid growth in Asia and Middle East. Inflation to subside quite rapidly. Policy supportive further out. But risks:

- The credit crunch: monetary policy may find it hard to offset recessionary forces
- Oil and food prices: inhibit a monetary policy response
- World current account imbalances: still an issue
- Slowdown in China, India? But IMF (July) forecasting over 9% for China in 2008 and 2009; 8% for India. But risks
- Inflation a problem for non-OECD: policy response?
- Geopolitical risks

- Most of the risks point to lower oil prices