Global Risk Management Seminar

GLOBAL OIL MARKET OUTLOOK

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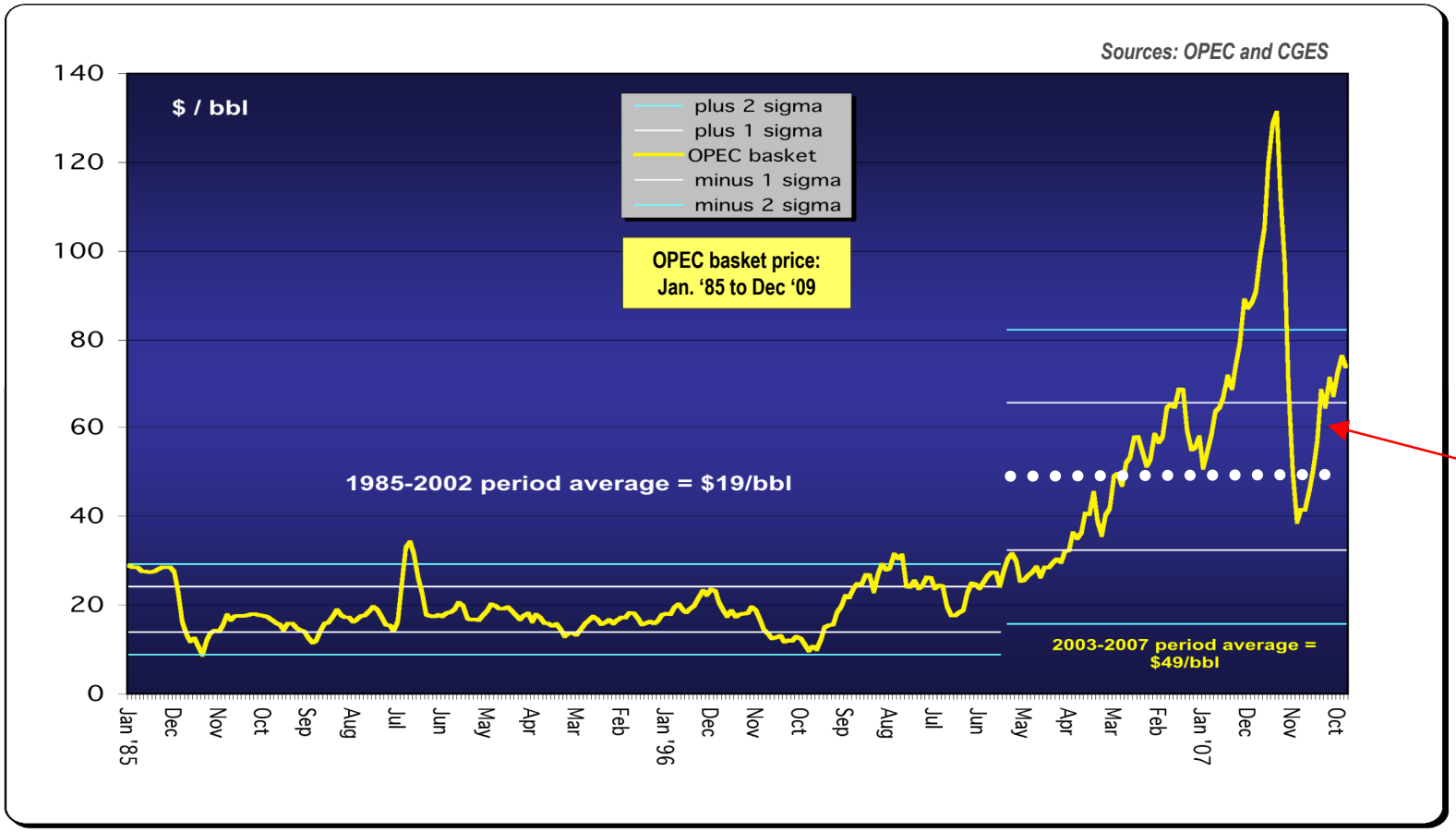
Key questions

1. What will the global economic recovery be like? Business as usual (3.9% per annum and rising, according to the IMF), or anaemic growth (the CGES has 2.7% this year), perhaps even a double-dip?
2. How will oil demand be affected by renewed economic growth?
3. What are the prospects for non-OPEC oil supplies?
4. What oil price will Saudi Arabia be comfortable with?
5. How are oil prices determined? Fundamentals or 'speculation'?
6. How will OPEC cope with the expected surge in Iraq's oil production capacity over the next seven to ten years?
7. What impact will technology have on the oil market?
8. Has the climate change argument suffered a serious body blow?

The great oil price rollercoaster



The price rise in 2009 was as sharp as the 2007 increase and almost as precipitous as the spike in the first half of 2008. There have been signs, though, that in the last month or so the price surge is running out of steam.

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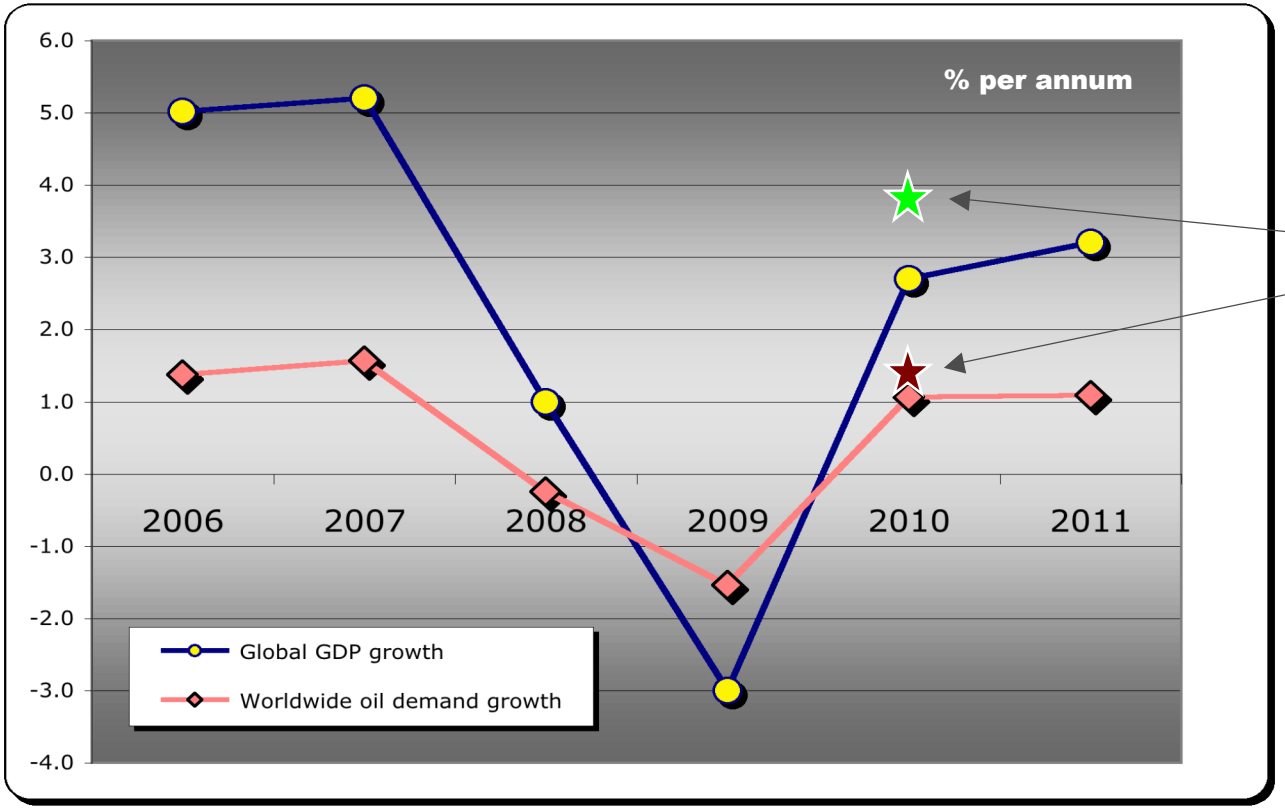
Global economic growth and oil demand



The IMF's prediction and its implied oil consumption

The world economy is recovering, but how strongly and what impact will this have on oil demand? In our base case we have the global economy growing at a conservative rate of 2.7% in '10 and 3.2% in '11, with oil prices around $70/bbl in both years. Note that in 2006 and 2007 the oil price averaged $65/bbl.

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Oil demand growth … an end to the OECD horror show?

	2007 tbpd	2008 tbpd	2009 tbpd	2010 tbpd	2011 tbpd
OECD	- 397	- 1610	- 2031	44	160
of which USA	*0*	*- 1180*	*- 780*	*100*	*120*
Non-OECD	1285	1025	523	564	627
Former CPEs	450	308	- 52	554	387
of which China	*325*	*323*	*285*	*331*	*287*
GRAND TOTAL	1338	- 278	- 1560	1162	1173
		1.6 %	-0.3 %	-1.8%	1.4 %	1.4 %

The trend rate of growth of global oil demand since 1986 has been 1.6% per annum. Oil demand in the OECD has been on a downward trajectory since 2005 despite strong economic growth, suggesting that high oil prices hammered its rate of oil demand growth. In the second half of 2008 the global economy slid into recession and this adverse development, in conjunction with record high oil prices in the first half, took world oil demand into negative territory. A deep recession took hold of the OECD economies in 2009, pushing incremental world oil demand heavily into the red.

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Incremental oil supply

	2007 tbpd	2008 tbpd	2009 tbpd	2010 tbpd	2011 tbpd
OECD	- 70	- 578	- 18	- 235	- 15
Non-OECD	- 1493	- 258	1053	188	75
FSU	503	37	460	278	- 98
China	55	63	30	85	- 7
Processing gains	72	78	48	21	19
OPEC NGLs	103	110	88	613	355
OPEC crude	1043	1405	- 3380	447	- 163
GRAND TOTAL	213	858	- 1720	1395	166

NOTE: Angola (with an average output 1.675 mbpd) joined OPEC in January 2007, Ecuador (with output of 0.51 mbpd) joined in December 2007 and Indonesia (average output of crude and NGLs of 1 mbpd) left OPEC in January 2009.

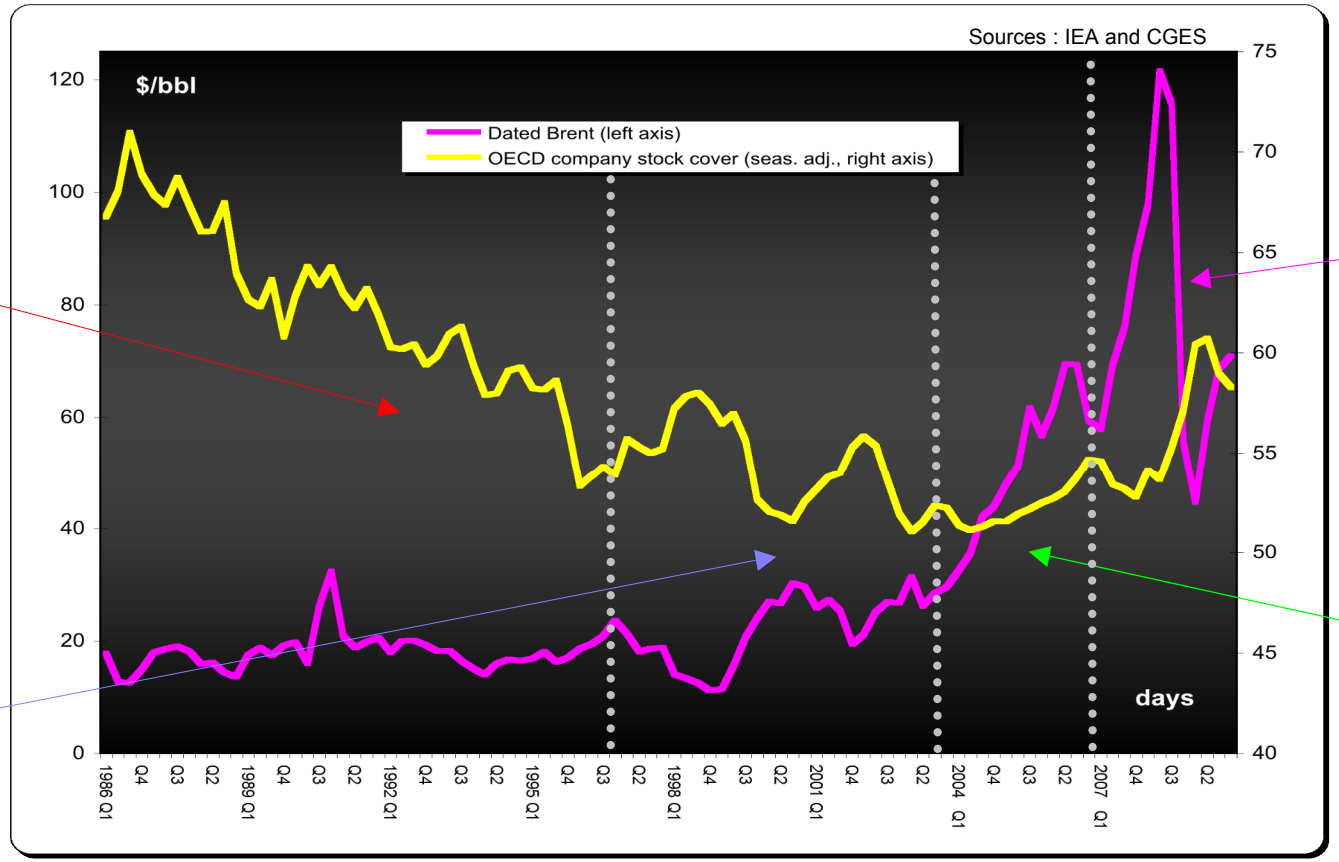
The oil price puzzle: stock cover and the price of oil

1985-96

OECD company inventory cover was trending downwards without any noticeable effect on the oil price.

1996-2003

Period during which stock-cover and the oil price moved in opposite directions.



2007-09

Oil prices in this period seem to have over-reacted hugely to changes in stock cover.

2003-06

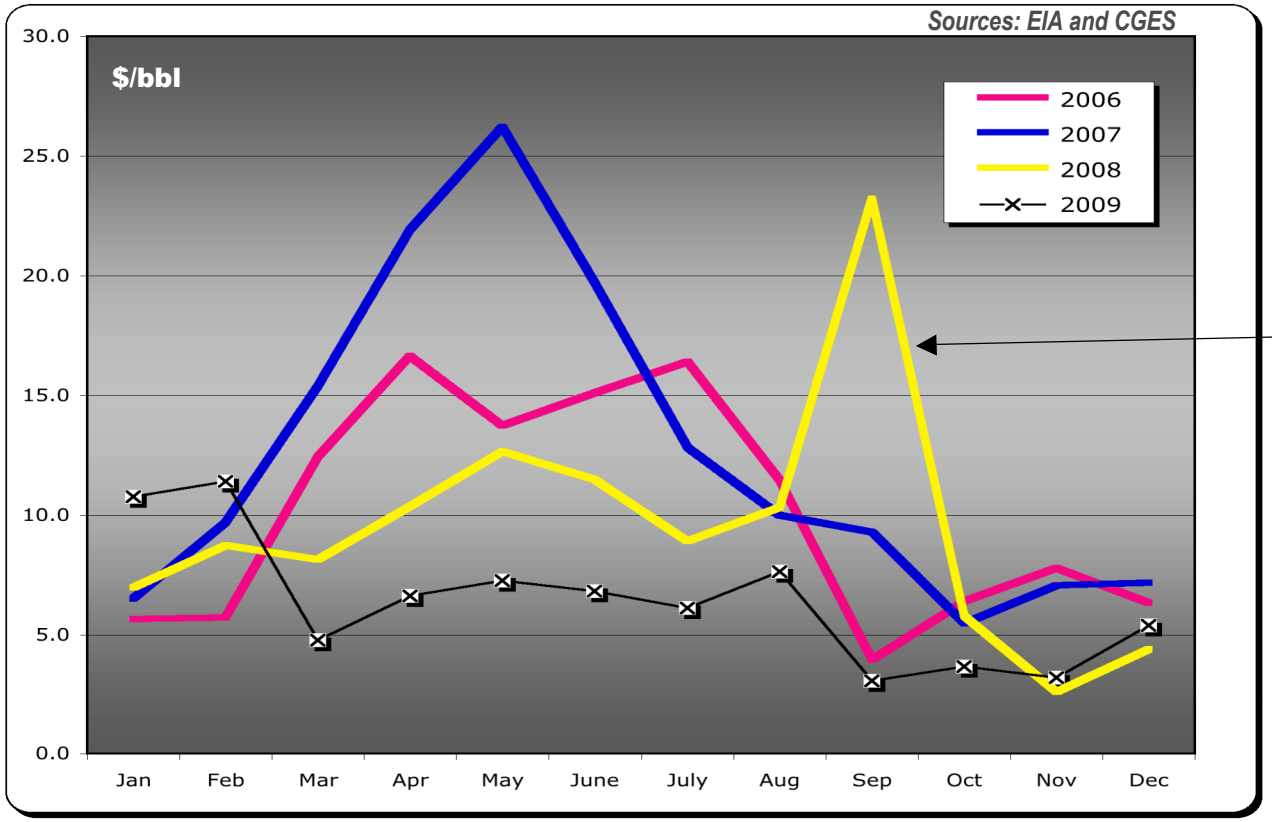
Unusual period during which stock - cover and the oil price were moving in the same direction.

The relationship between inventory cover and oil prices is not straightforward. From 2Q03 onwards forward cover rose from 51 days to 55 days, yet oil prices rose relentlessly, except for two episodes of price weakness (4Q05 and 4Q06-1Q07), both associated with rises in inventory cover. After 1Q07 OECD company stock cover first fell and then rose; oil prices moved accordingly, but in a grossly exaggerated fashion.

Is crude too expensive? 4-product refining margins in the US, 2006-2009

US refinery utilisation %	
2003	92.6
2004	93.0
2005	90.6
2006	89.7
2007	88.5
2008	85.3
2009	83.4*

* till October



This year, refining in the US has been suffering from low margins and low utilisation rates. Margins are low because US refiners have been unable, due to the recession, to claw back in the product markets the crude oil price rises. Refinery utilisation rates have been declining since 2004 because rising crude prices have led to weaker US oil demand growth.

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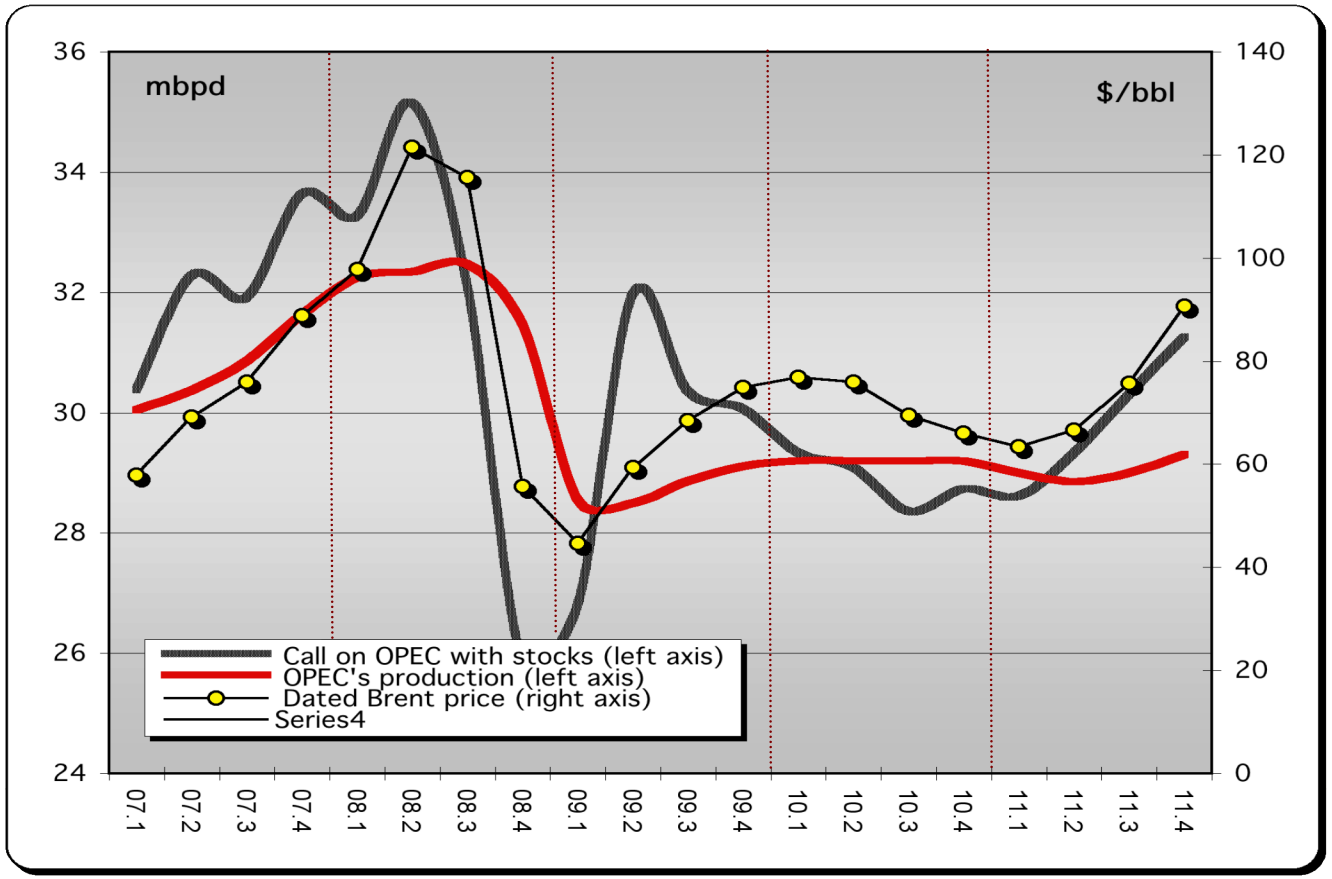
The rollercoaster of desired stocks



To explain the price collapse in 4Q08 and the surge in 2Q09 we have had to resort to dramatic changes in desired stocks that cannot be explained in terms of traditional fundamentals-based analysis. Expectations seemed to have played a key role in driving oil prices down and then up again.

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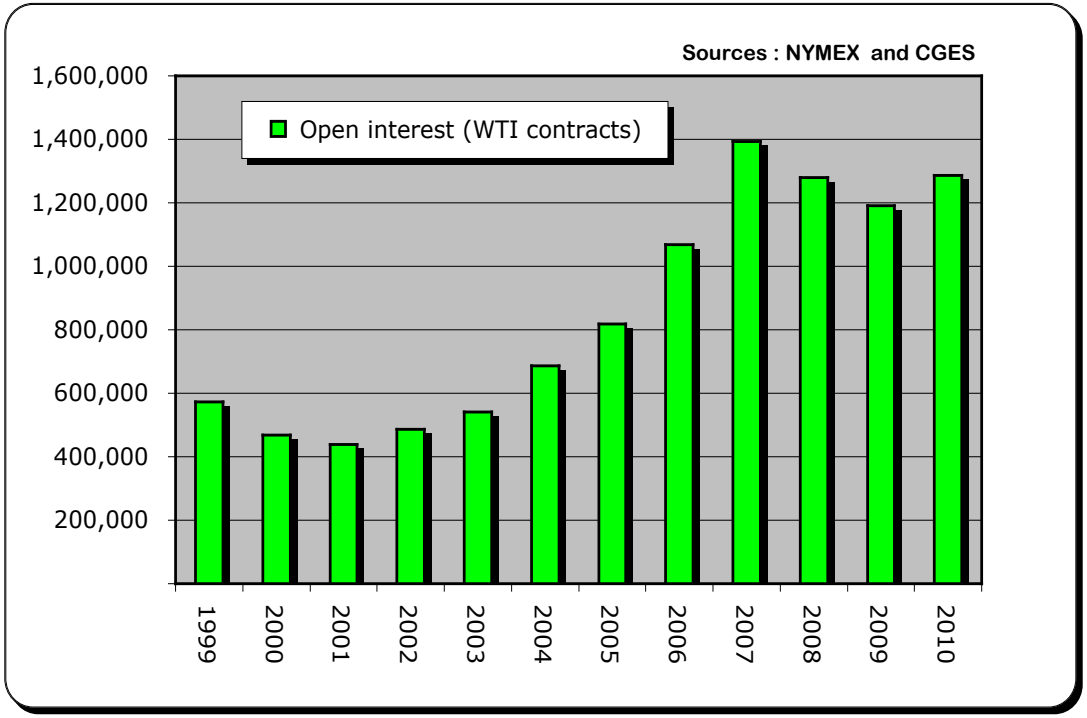
Is the price of oil more susceptible these days to financial plays?

Cheap money in the US has encouraged the so-called Dollar carry trade, whereby those able to obtain loans borrow Dollars cheaply and invest them in higher-yielding dollar-denominated assets, including oil.

Those who have borrowed Dollars to invest outside the US have also benefited from the fall in the value of the $ on repayment of the loans.

On the other hand, the investors coming into Dollars from Euros or the Yen require higher returns (rising oil prices?) to compensate them for the weakening $ on repatriation of their investments. They would need to hedge the currency risk as well as deal with the commodity price risk, should they be so inclined.

Growth in crude oil open interest at NYMEX — the elephant in the room



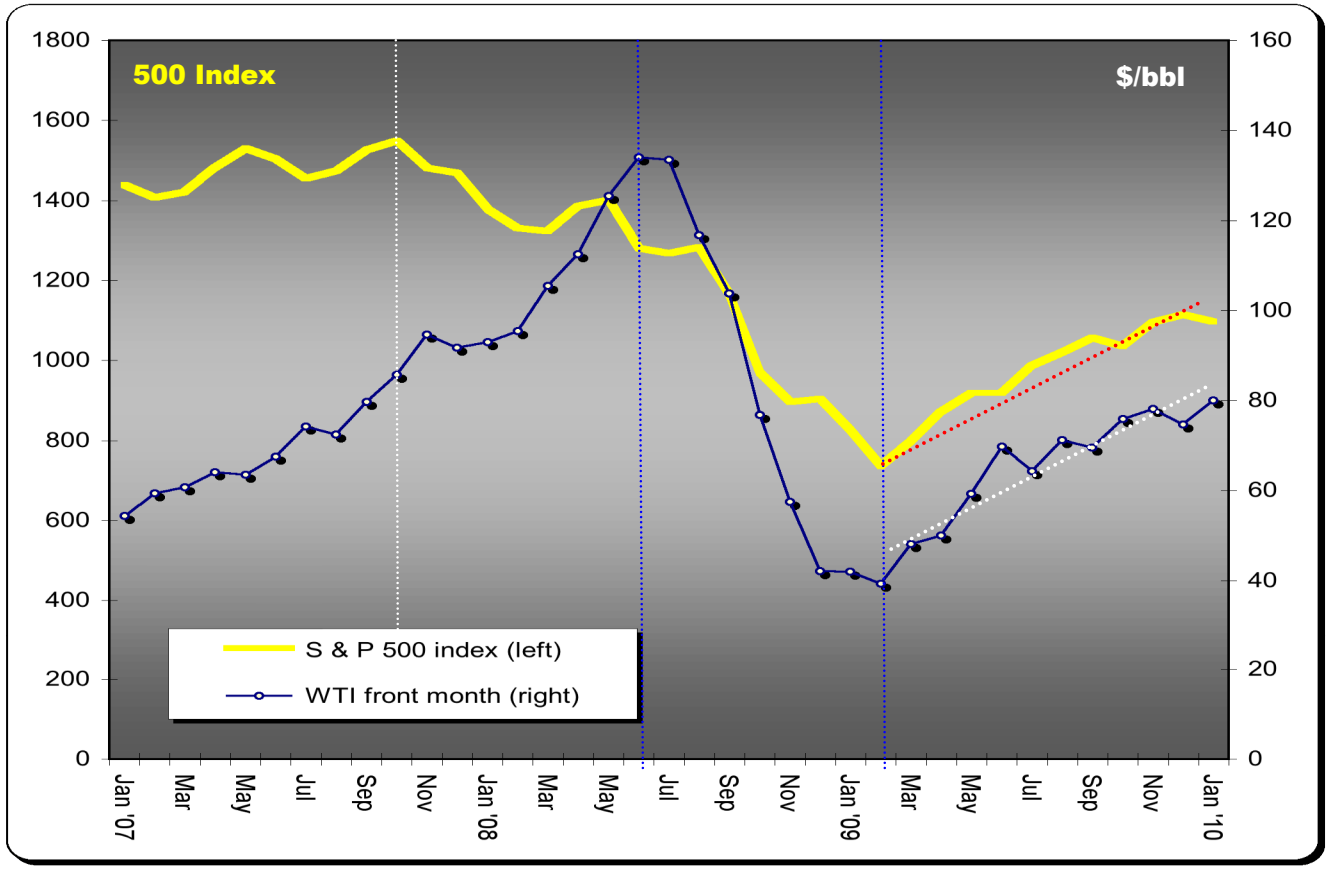
Annual growth rates of open interest positions (average of long and short)

2001 to 2007

Commercial	13%
Non-commercial	23%
Non-reporting	8%
TOTAL	19%

Open interest in WTI grew exponentially at 19% per annum between 2001 and 2007. Much of this surge occurred between 2004 and 2007. A new investor class of commodity investors, hedge funds and financial players emerged. The funds tracking commodity indices (like the Goldman Sachs and Dow Jones-AIG indices) grew dramatically from $8bn in 2000 to around $130bn in 2006 before a sell-off at the end of 2006. They came back into the market in 2007. Note that the assets under pension fund management worldwide exceed $21 trillion; if only 5% of these funds are allocated to oil it amounts to a trillion Dollars. In 2008 there was a marked decline in open interest positions, which continued in 2009. So far this year open interest positions in oil are markedly higher than last year.

Has oil become a financial play? The S&P '500' index and front month WTI



The Standard & Poor's 500 index fell almost continuously between October 2007 and February 2009; however, from February '09 it has staged an impressive rally. As for WTI, it kept on rising from Oct '07 until the peak in early July '08; thereafter it has mirrored the movements of the S&P Index, suggesting that oil is more of a financial play these days than it was in 2007 and the first half of 2008.

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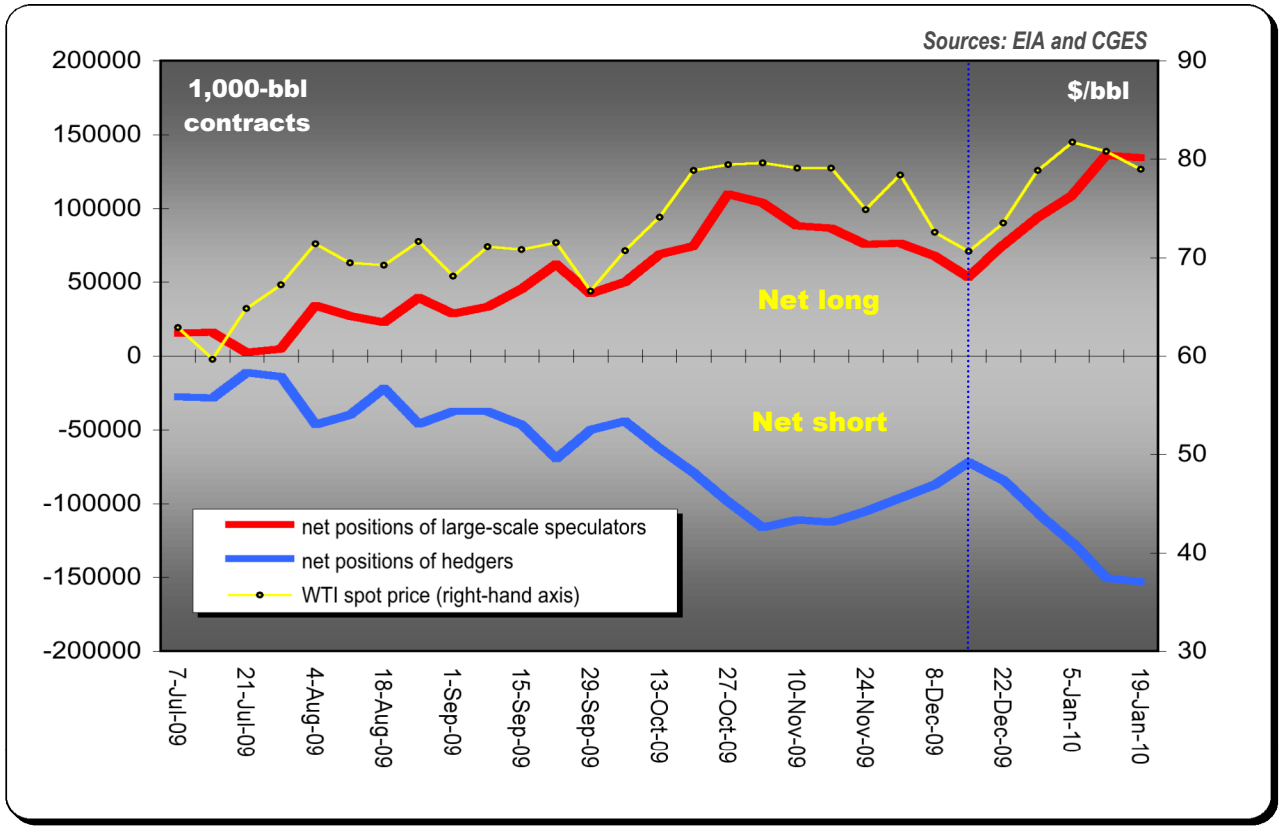
WTI and open interest positions of large-scale speculators and hedgers



There appears to be a positive correlation between the spot price of oil (WTI) and the net positions of the large-scale speculators, but this does not necessarily imply causality. The category of large-scale speculators, which includes **managed money** and **other reportables**, is thought — largely — to reinforce rather than initiate price trends, but it is not easy to tell reinforcement from instigation. The hedgers are typically net short, increasing these short positions when the price of oil rises (expecting prices to fall) and vice versa when it falls.

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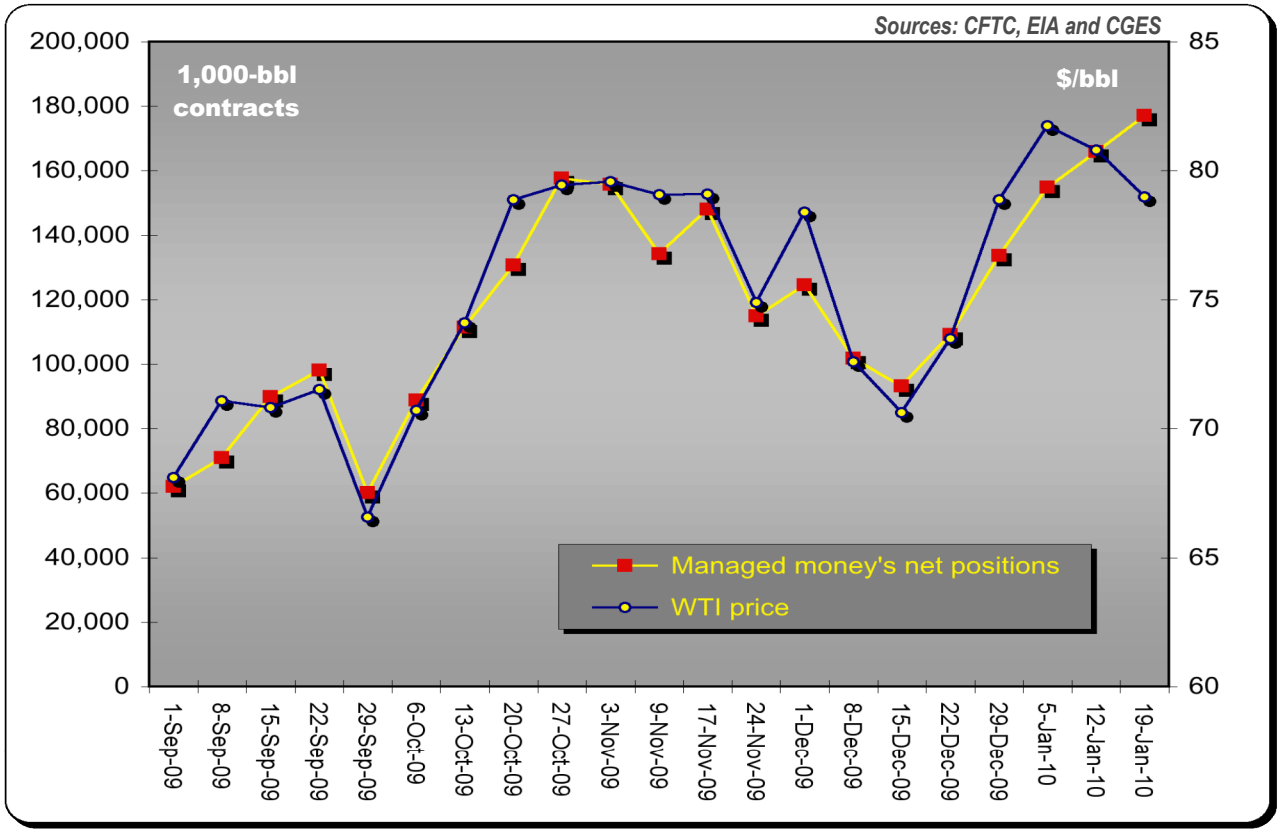
Managed money net open interest positions on NYMEX and WTI prices



Since September '09, the US Commodity Futures Trading Commission has been publishing its disaggregated Commitment of Traders report, which separates its former category of non-commercials (large-scale speculators) into 'managed money' and 'other reportables'. Managed money operators include commodity pool operators, commodity trading advisors and hedge funds. Notice the high correlation (actually, 95%) between the WTI price and the managed money's net open interest positions for the period from the 1st of September 2009 till the 19th of January 2010.

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The transmission mechanism

How do rising futures prices along the forward curve affect the spot price of oil?

If the contango in the oil market is sufficiently large to support a cash-and-carry hedge, there is a clear-cut financial incentive to buy oil in the spot market and simultaneously sell it forward. The desire to get hold of physical oil raises the spot price and the selling of oil forward reduces the futures prices, reducing the contango.

A fresh wave of upward price expectations will push up the forward curve and start the cash-and-carry hedge cycle all over again. When the market is backwardated there is a financial disincentive to store oil, because oil can be sold spot and bought back forward, locking in a financial gain.

Predicting spot WTI prices

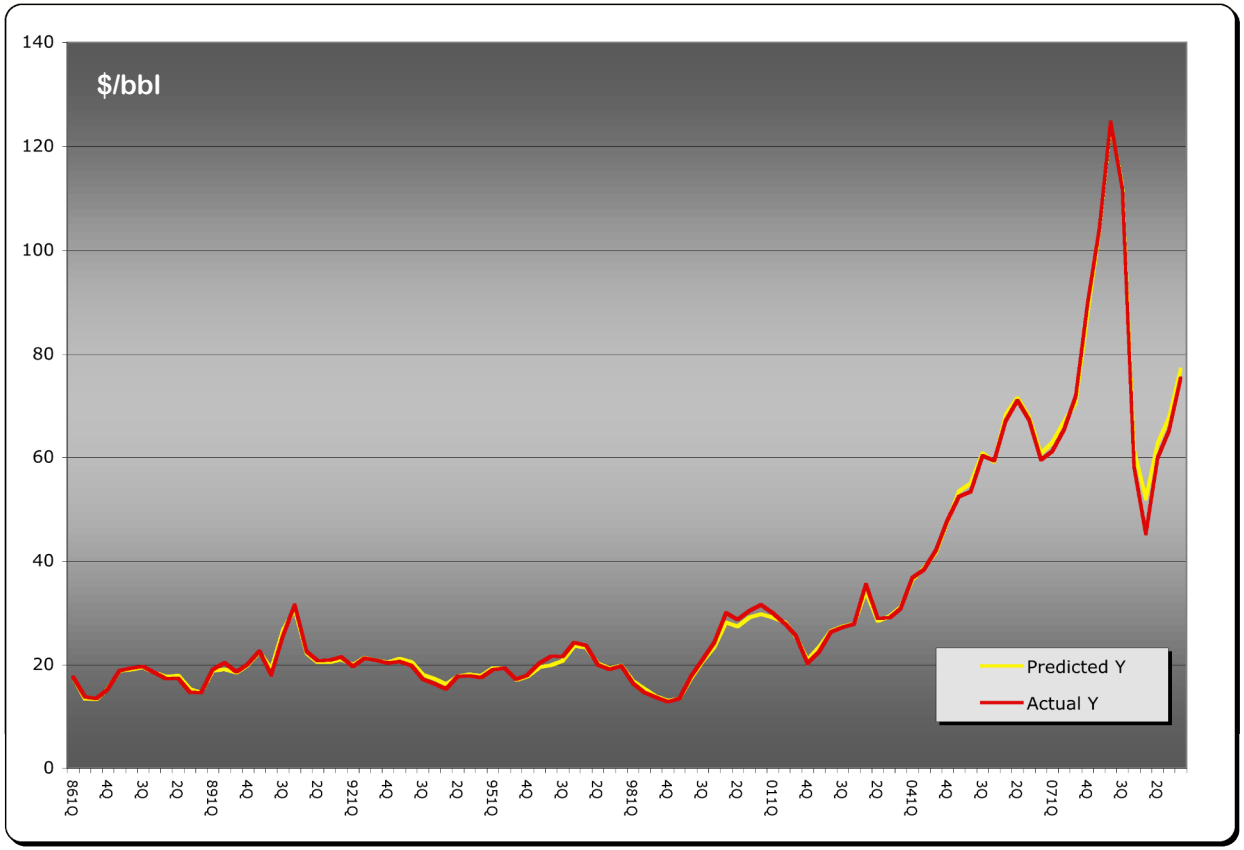
The model is based on inventory disequilibrium: that is, the oil price adjusts to the discrepancy between desired and actual stocks.

The largest effect on the spot price of oil is cash-and-carry hedging, largely driven by the futures price in relation to the spot price and the cost of carry.

Oil consumption and the level of stocks are also significant, but spare oil production capacity does not seem to be an important consideration.

Note that all variables are seasonally adjusted.

Actual vs predicted over the period 1Q86-4Q09, based on a model estimated over the period 1Q86-4Q08; i.e., prediction for 2009 is outside the sample.



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Arriving at the minimum oil price needed by Saudi Arabia, based on expected expenditures and income in 2010

	$ bn	$ bn
General expenditure	141.0	122.6
Debt interest	3.5	3.1
Capital expenditure	20.0	21.0
Total expenditure	164.5	146.7
Non-oil income	15.3	14.0
Investment income	3.5	3.9
Oil revenues* (CGES estimates)	142.3	116.8
Total income	161.1	134.7
Surplus/Deficit	- 3.4	- 12.0

2009 actuals

- With Saudi output at 8.3 mbpd (the expected 2010 average), the minimum OPEC basket price required to cover expected Saudi general expenditure in 2010, less non-oil and investment income, is $61/bbl.
- To cover general and capital expenditure plus debt interest (less non-oil and investment income) the price needed is $71/bbl. To cover total expenditure and debt interest, plus a contingency reserve of $5bn, the Kingdom needs $74/bbl. The CGES expects the OPEC basket price to average $71/bbl this year.

* Incuding $15 bn from NGL exports.

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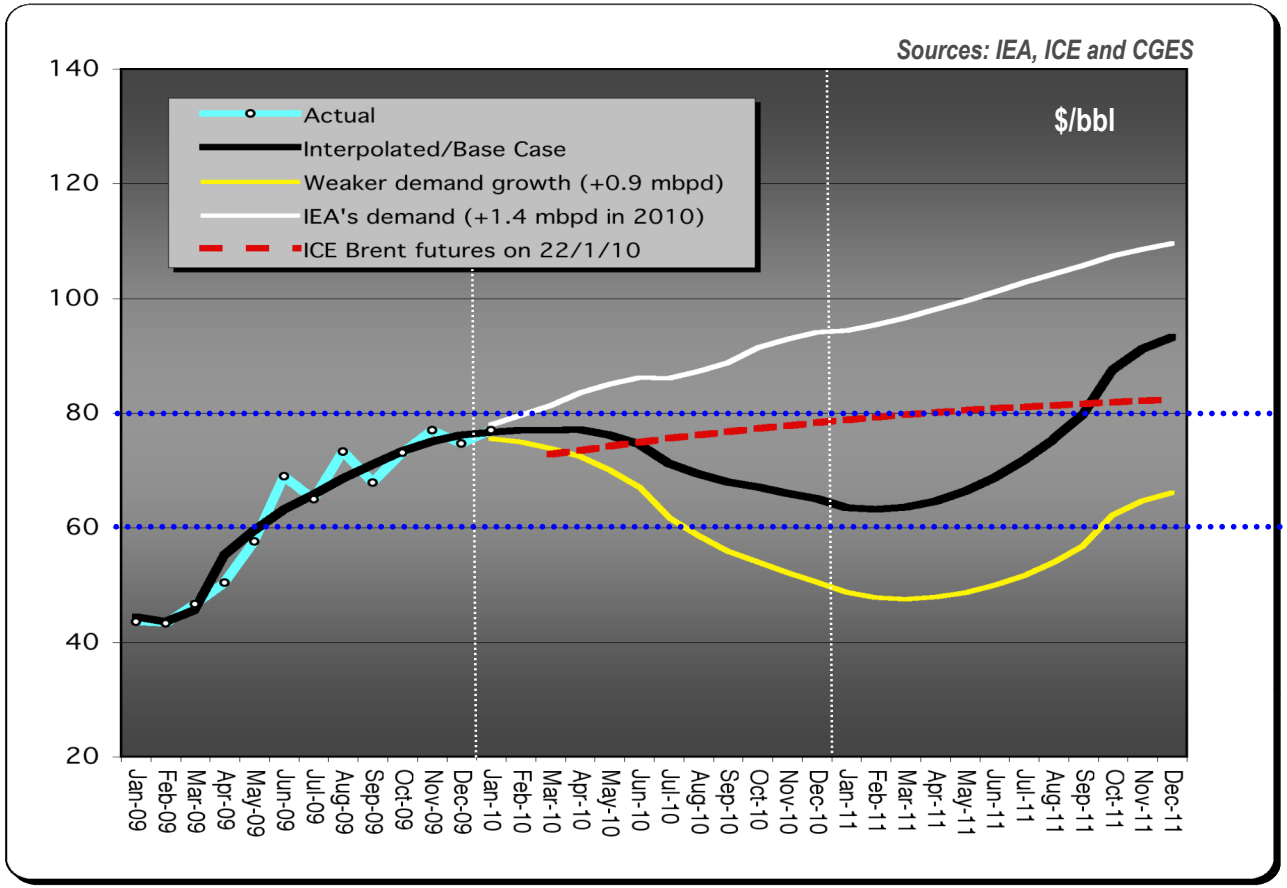
Dated Brent price scenarios : 2010 and 2011



Action needed by OPEC

What happens to the oil price this year and next will depend on three factors — how strong the economic recovery will be, how will this affect the demand for oil and how will OPEC respond to the changing economic circumstances. In the base case OPEC's output stays around current levels with minor adjustments; however, we have assumed that Saudi Arabia will lead OPEC into cuts should the price drop below $60/bbl and into production rises should the price trend upwards.

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OPEC'S DILEMMA : how to accommodate Iraq

Additional capacity delivered by service contracts in 7 years, mbpd	
Rumaila	1.85
Zubair	0.93
West Qurna I	1.84
Kirkuk	0.41
Majnoon	1.30
Halfaya	0.70
West Qurna II	0.50
TOTAL	7.53

	2009 mbpd	2015 mbpd	2020 mbpd
Global oil demand	84.6	92.0	97.9
of which China	8.0	9.5	10.5
Non-OPEC supply	50.6	49.3	49.1
Call on OPEC	28.7	36.0	41.0
Met by ... Saudi Arabia	8.5	9.0	10.1
Iraq unconstrained A	2.5	8.4	9.9
Met by ... Saudi Arabia	8.5	9.7	10.4
Iraq unconstrained B	2.5	6.3	8.9
Met by ... Saudi Arabia	8.5	9.9	11.3
Iraq constrained C	2.5	5.5	6.3

Case A > Iraq achieves a capacity level of 10 mbpd by 2017.

Case B > Slower rate of capacity expansion for Iraq; 10 mbpd by 2022.

Case C > Iraq reaches quickly its 1990 capacity of 3.5 mbpd; it is then allowed to reach 5 mbpd by 2013 (a 42% increase equal to OPEC's output gain between 1990 and 2008) and is subsequently made to abide by OPEC's quota restrictions.

Final remarks

- The oil price peak of $147/bbl in July 2008 is highly unlikely to be seen again for the foreseeable future; however, nor will the price settle below $50/bbl. It will probably be quite volatile in a $20/bbl range around a long-term level of $70/bbl.
- OPEC will try to keep prices above $70/bbl; the outcome will depend on the amount of spare oil production capacity available and the fiscal needs of the oil-producing states.
- In the longer term, oil demand growth is likely to be on the low side due to OPEC's preoccupation with high oil prices, concern about the environment and technological change.
- The world's oil resources are ample; getting them out of the ground is the problem. Key questions : **(a)** is there the desire to do so, **(b)** will there be enough investment by OPEC and the oil companies and **(c)** will there be political stability?

Current elements of instability

- **OPEC** thinks oil demand is highly inelastic and that restricting residual supplies of oil will ensure rising prices and ever-growing revenues; it also does not differentiate between consumers, tending to treat them as one.
- **OPEC** also believes that the marginal non-OPEC producers need oil prices above $80/bbl today in order to make reasonable returns.
- **OPEC** wishes to keep oil inventories low, fearing the 'ghost of Jakarta' in 1997. Stock increases, for example, in 4Q06 led to an OPEC-led output squeeze.
- The **COMPANIES** are kept out of the low-cost areas with potential and are opportunity constrained as a result. Their horizons are foreshortened and they have not been investing enough, for years preferring to return funds to their shareholders.
- **GOVERNMENTS** of oil-consuming countries, especially in the developed world, wish to reduce their dependence on oil in the longer-term, especially from the volatile Middle East; they are also fearful of rising levels of CO_2 emissions and have pledged to reduce drastically their use of hydrocarbons.
- **THE OIL DERIVATIVES MARKET** has grown hugely since 2001 and exaggerates the effect of changes in fundamentals.