Upstream Oil and Gas Investment

CSIS Energy & National Security Forum

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All prices are those current at the end of the previous trading session unless otherwise indicated. Prices are sourced from local exchanges via Reuters, Bloomberg and other vendors. Data is sourced from Deutsche Bank and subject companies.

DISCLOSURES AND ANALYST CERTIFICATIONS ARE LOCATED IN APPENDIX 1.

A Passion to Perform.

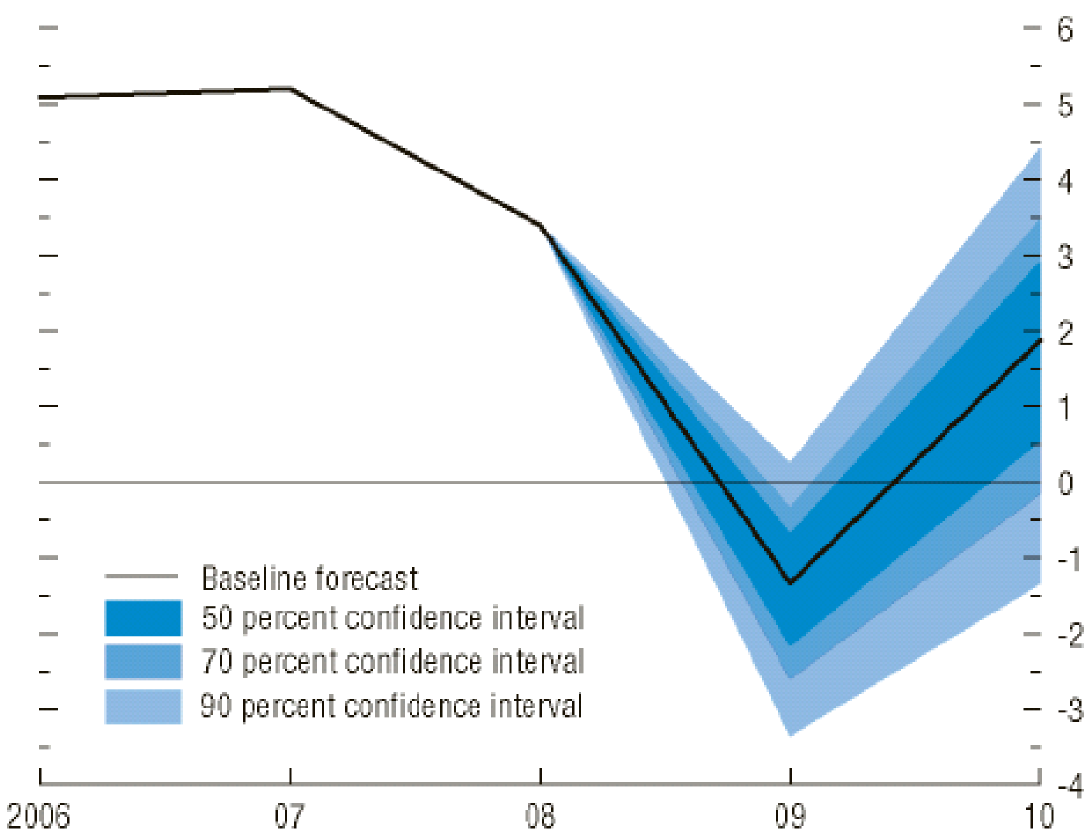
Deutsche Bank

How Low Could the Economy Go? IMF View

IMF significantly revised down on April 22, now expects -1.3% growth in 2009.

The World Bank on 31-Mar predicted that the global economy will shrink 1.7%

If the emerging market economies stumble, world GDP could sink further



Source: International Monetary Fund, April 22, 2009

World Economic Outlook from Deutsche Bank

World economy in deep recession

We are starting to see some signs that sufficient action on the financial front is attenuating the risks to the global economy.

y-o-y % change	**2007**	**2008**	**2009E**	**2010E**	**Weights**
US	2.0	1.1	-3.2	0.7	20.4
Euro Area	2.6	0.7	-3.9	0.8	23.0
Japan	2.1	-0.7	-8.0	-0.3	6.2
Other OECD	2.4	0.5	-2.0	1.5	7.1
OECD	**2.3%**	**0.7%**	**-3.9%**	**0.7%**	**56.7**
China	11.9	9.0	7.5	7.2	12.0
Other Asia (1)	6.2	4.6	0.0	4.2	11.6
EMEA (2)	6.6	4.3	-1.8	3.7	8.9
Latin America	5.4	4.2	-1.3	2.9	6.2
FSU (3)	8.0	4.5	-4.5	2.5	4.6
Non-OECD	**7.9%**	**5.7%**	**1.0%**	**4.6%**	**43.3**
World	**4.7**	**2.8**	**-1.7**	**2.3**	**100.0**

(1) Non-OECD Asia ex-China, (2) E. Europe, Mid-East, Africa, (3) Former Soviet Union

Outlook

- Although we consider the economic outlook sketched above to be the most likely outcome, we see it subject to a much higher degree of uncertainty than usual. Risks are big and lie both on the up and downside.
- We believe that recovery basically depends on four factors successfully coming together: (1) monetary easing; (2) fiscal easing; (3) bank restructuring; and (4) a boost to confidence. At present, the US appears closest to fulfilling all four of these conditions. The early signs from the UK also give grounds for cautious optimism in that nation.

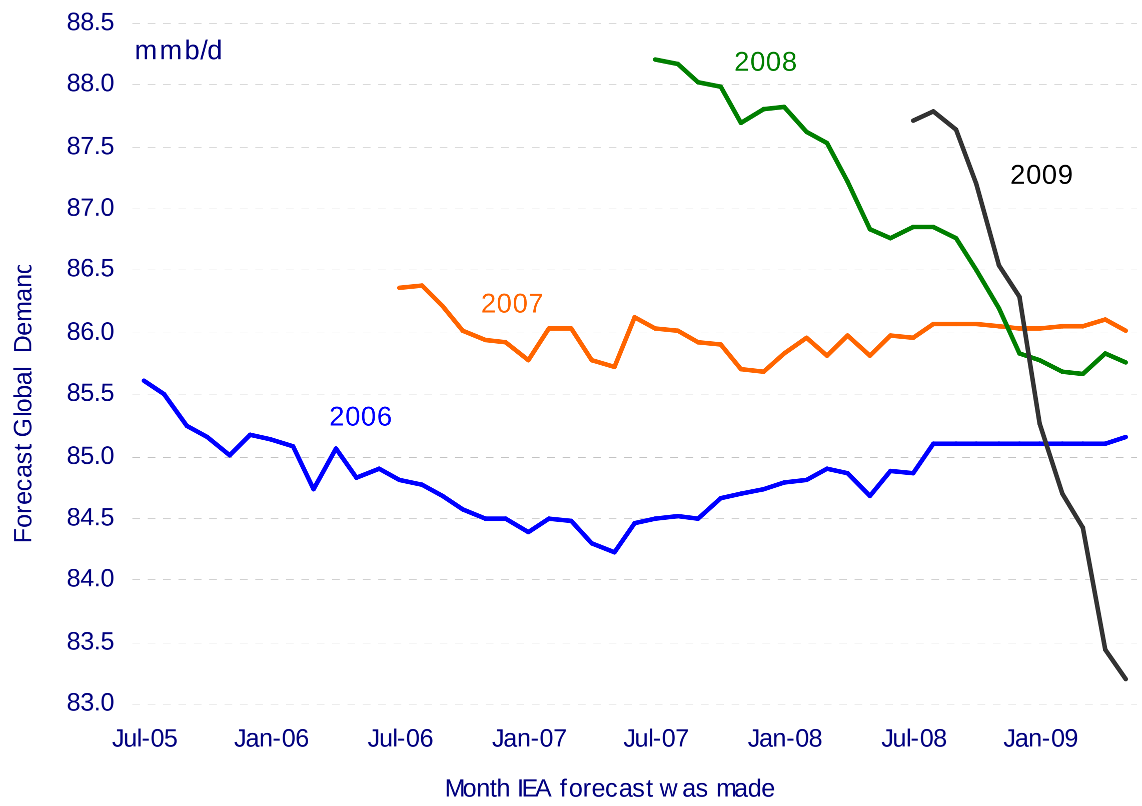
Source: DB Global Markets Research

World Slowdown Impacts Oil

World oil demand grows at about 2% less than global GDP.

If global GDP is down 2% in 2009, oil demand could fall by 4%, or potentially more than 3mmb/d.

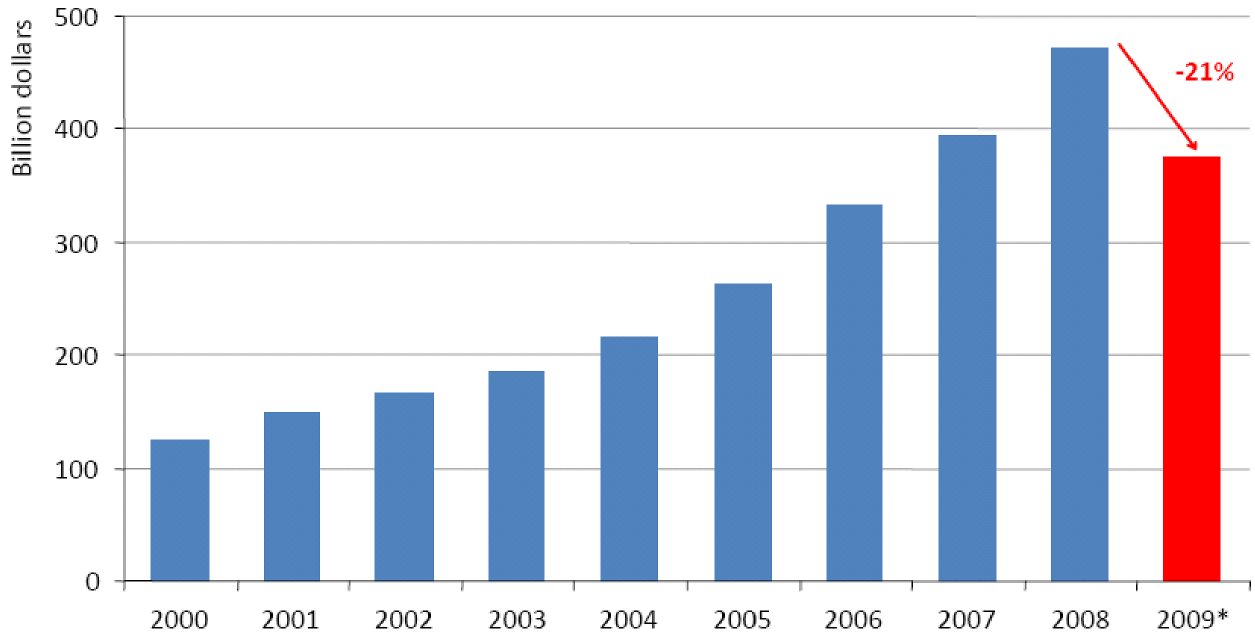
What does a global recession mean for oil demand?



Source: IEA, DB Global Markets Research

Challenges in a Weak Global Economy

Worldwide upstream oil and gas capital expenditures down



Source: IEA

Outlook

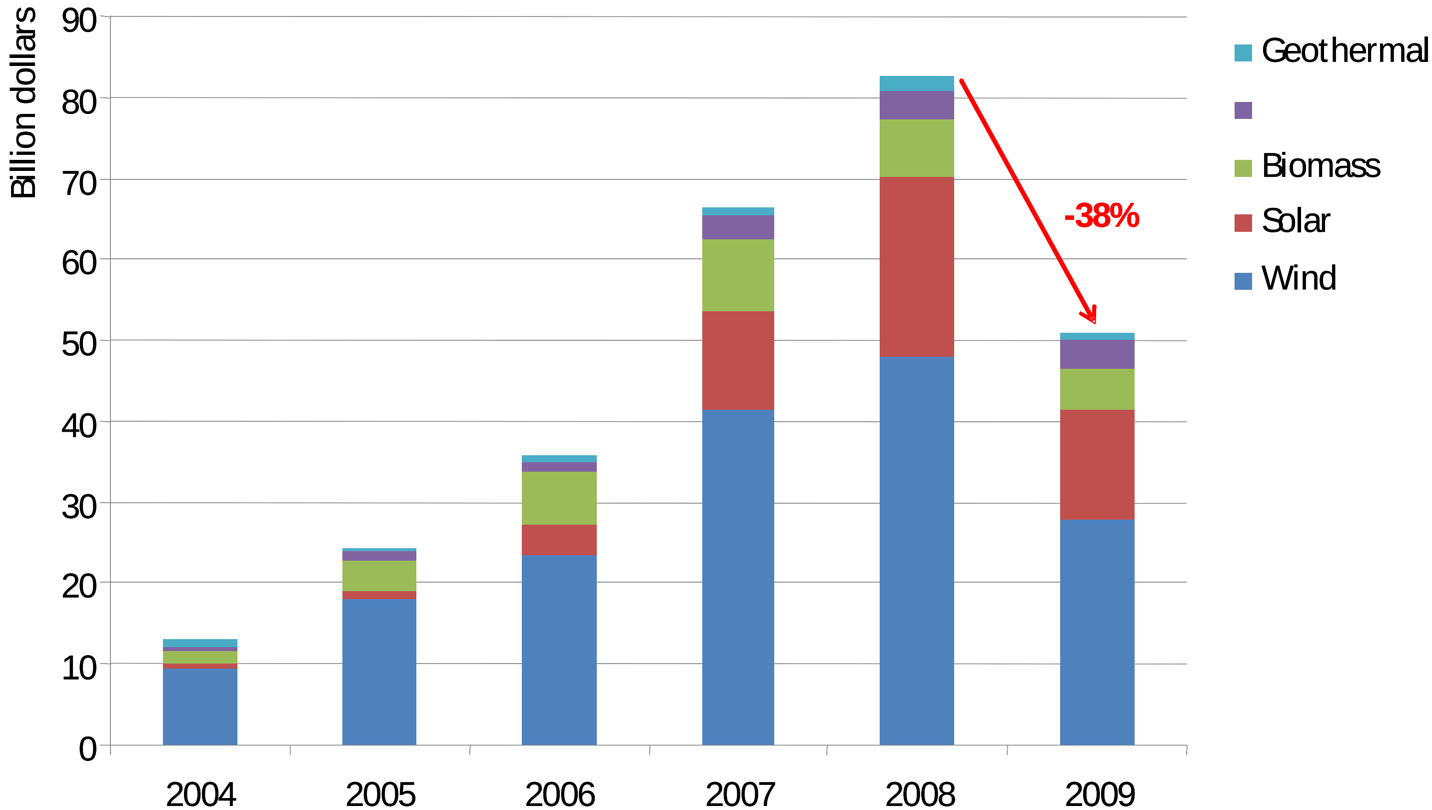
- Capex looks set to fall by USD100 billion, from USD475b in 2008 to USD375b in 2009.

Asset financing for new build renewable assets

Project financing is typically structured as a line of credit secured by a specific asset.

With asset financing, a company uses its assets as collateral to obtain capital.

Renewable energy investment has collapsed



Source: IEA

Outlook

- The drop in electricity demand is reducing the immediate need for new capacity additions. But if a recovery takes longer than expected, and energy prices remain at depressed levels relative to recent peaks, the IEA expects to see a shift to coal- and gas-fired plants at the expense of more capital-intensive options such as nuclear and renewables.

Possible Good News?

Baltic Dry Freight Index

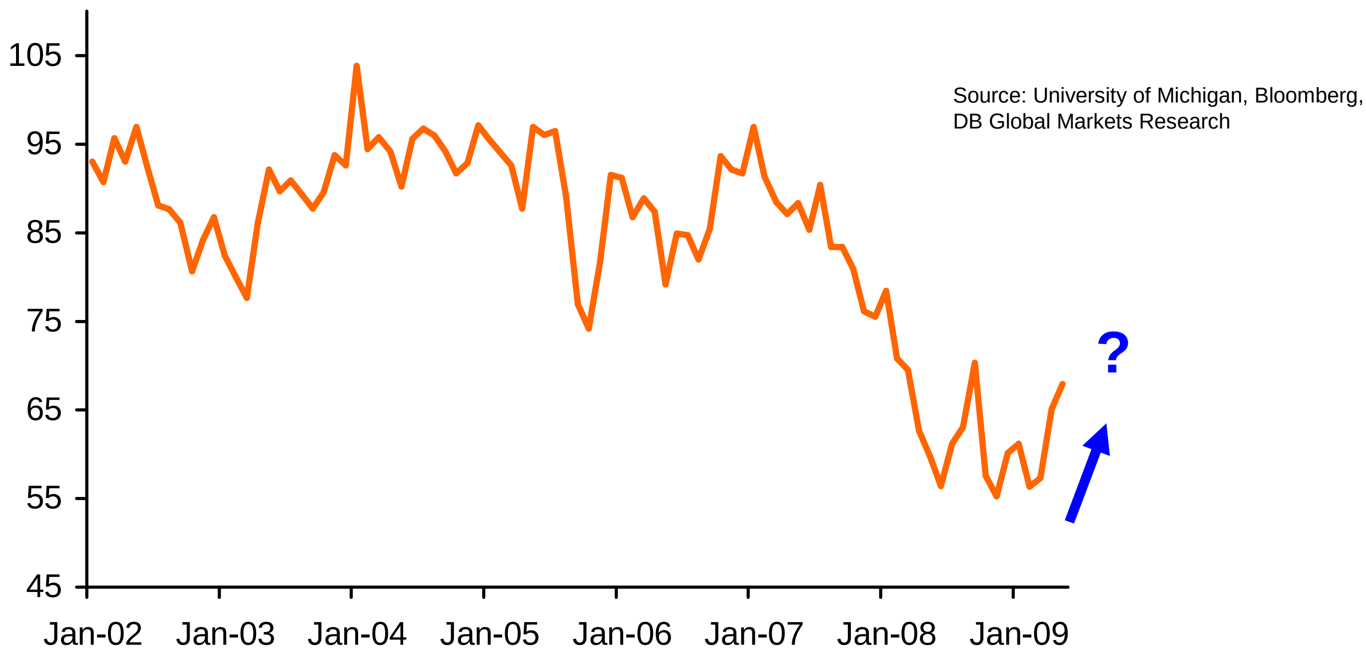
Source: Bloomberg

Outlook

- The Baltic Freight Index has been a useful barometer for global growth cycles.

US Consumer Sentiment Is Bottoming

Michigan Consumer Sentiment Index up in Dec/Jan, fell in February, flat in March



Outlook

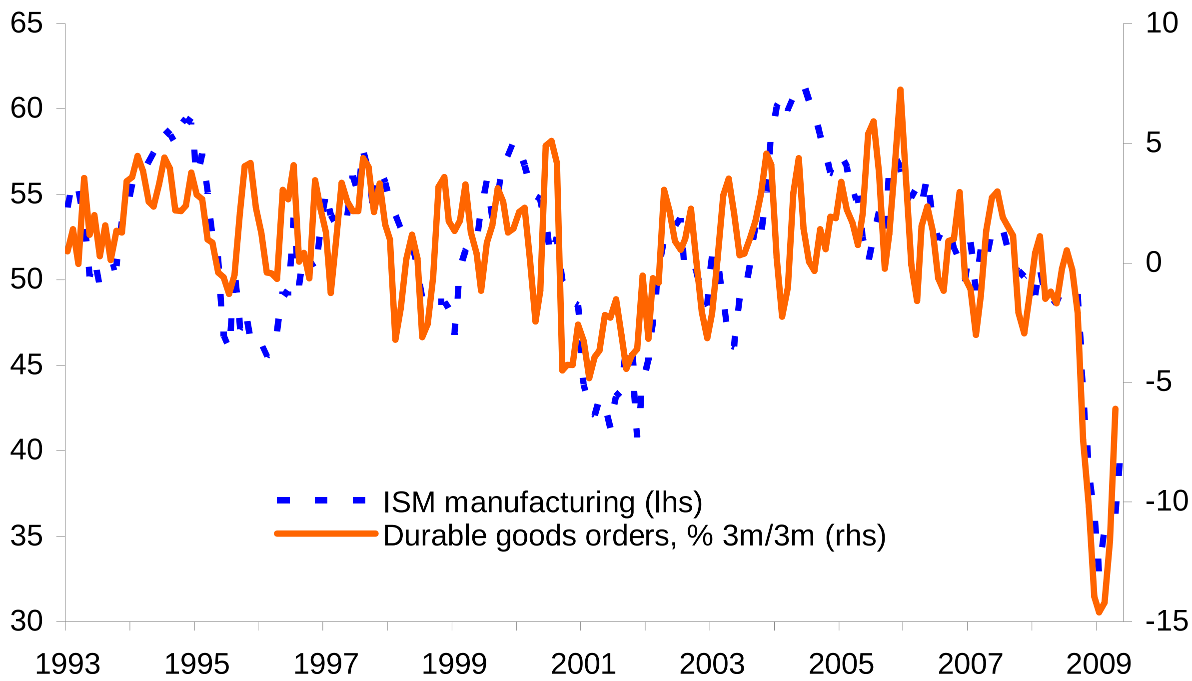
- The value of the consumer sentiment index is disputed. Some say that it represents an important indicator and perspective on future economic growth, while others claim that gasoline prices and political events can have such a large impact that it makes the data of little economic use.

US Economy Showing Signs of Hope

Current-quarter developments will impact our second-half estimates. If we were to revise Q2 real GDP up from -2% to -1%, due mostly to stronger spending on commercial structures, we would be inclined to allow that 1% to flow through to Q3 and Q4.

Hence, we would be looking at -0.5% Q3 real GDP and +0.5% Q4 real GDP.

Tentative turning point emerging



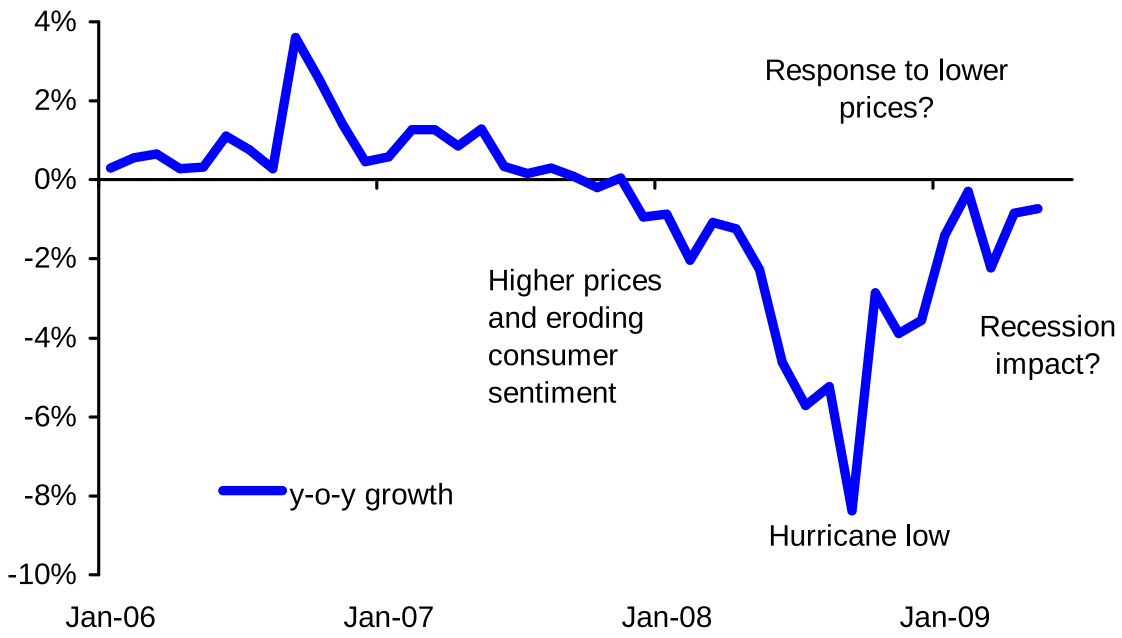
Source: Nymex, Bloomberg, DB Global Markets Research

Outlook

- We anticipate the economy is on track to decline 2.0% this quarter followed by declines of 1.5% next quarter and 0.5% in Q4. However, several developments have moved in the economy's favor.
- Besides the PPIP and the stress tests, the Chrysler bankruptcy restructuring appears to be going smoothly, and the recently announced GM bankruptcy appears to be following in a similar path. Politics have not been a factor. Indeed, it appears the regulators may allow some TARP recipients to repay funds this month. This is another positive development for investors.

US Gasoline Demand Recovering… but still weak

Recent weekly data show demand still falling on a y-o-y basis



Outlook

- Lower gasoline prices appear to have stimulated a recovery in use in late 2008
- Gasoline demand has essentially flattened relative to year-ago levels
- Lower payroll and disposable income in 2009 may be eroding some of the late 2008 gains

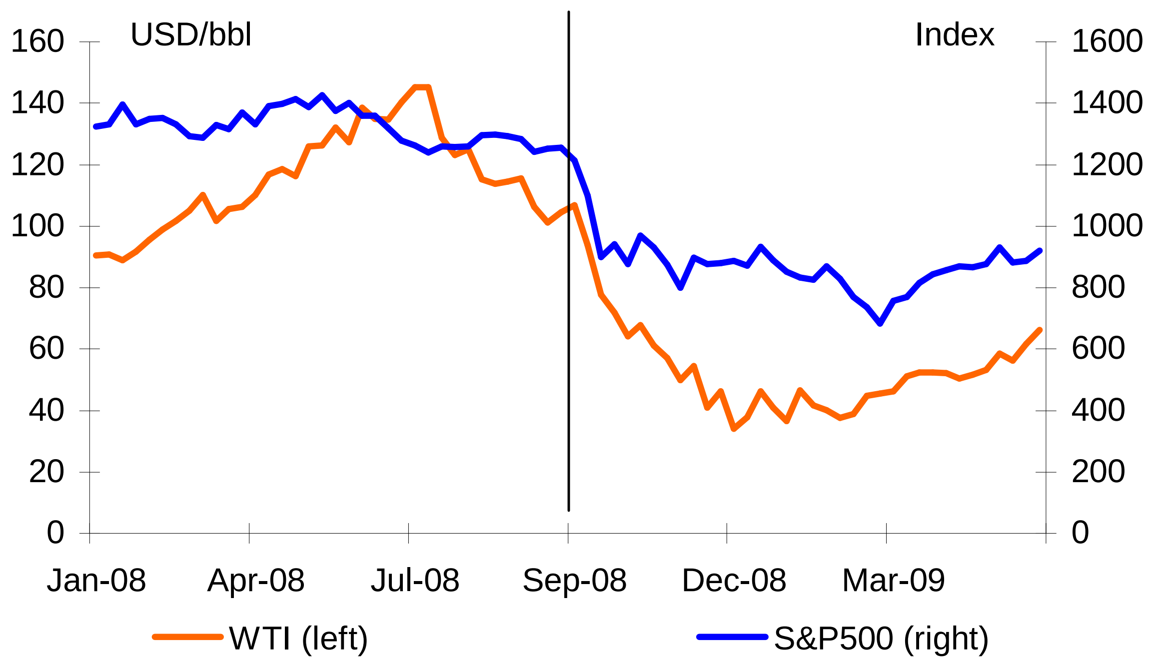
Source: US DOE/EIA, DB Global Markets Research

Crude Oil and the S&P500

Looking ahead to 2010, we wonder what sector will lead the economy out of recession?

Households have negative buying power, capital spending will be crimped by a record amount of excess capacity, residential investment will be hamstrung by foreclosures, and spending on commercial structures has only recently turned downward.

Oil prices have been following the equity markets



Outlook

- Since 1948, the S&P500 has tended to turn higher six months before the US recession ends.
- If sustained, the rally in the S&P500 today would suggest equity markets are calling for the US to leave recession from September 2009. We believe this is too optimistic and consequently view equity market rallies during the second quarter as based on shaky foundations.

Source: DB Global Markets Research, NBER, Bloomberg

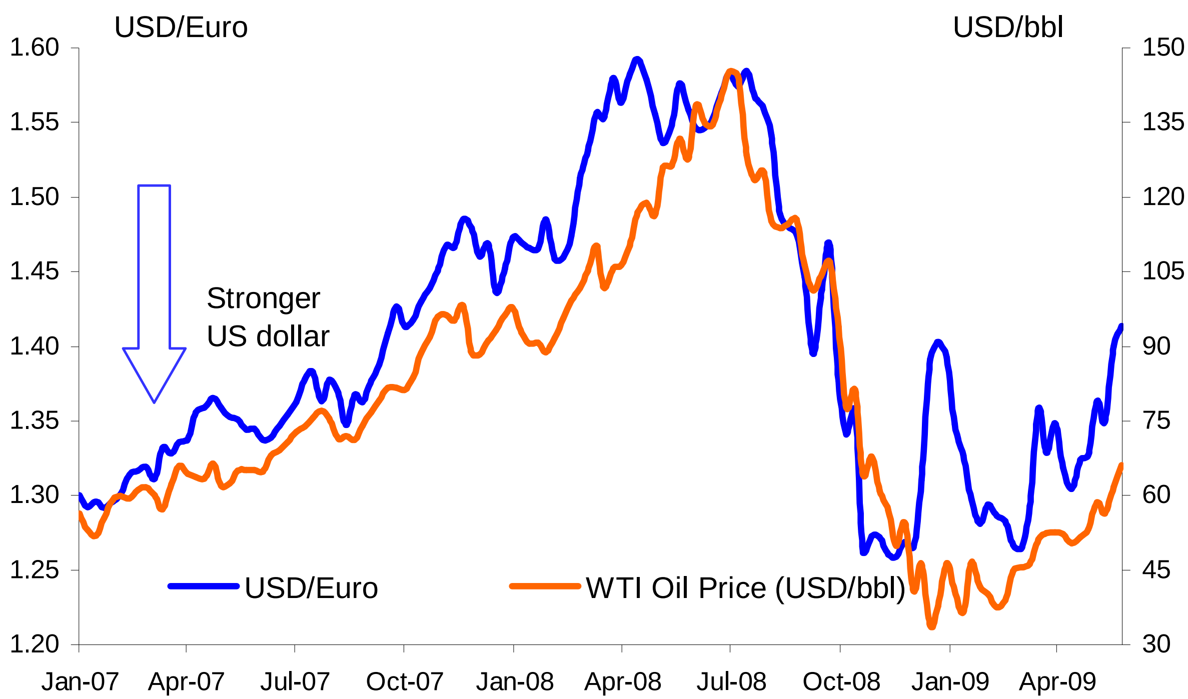
Oil Prices and the US Dollar

The dollar-oil regression is not perfect, but traders like it...

...and a recent study by the IMF says that gold and oil are sensitive to movements in the dollar.

DB says the USD could be at 1.20 to the Euro in a year.

What is the shifting dollar doing to commodities and oil?



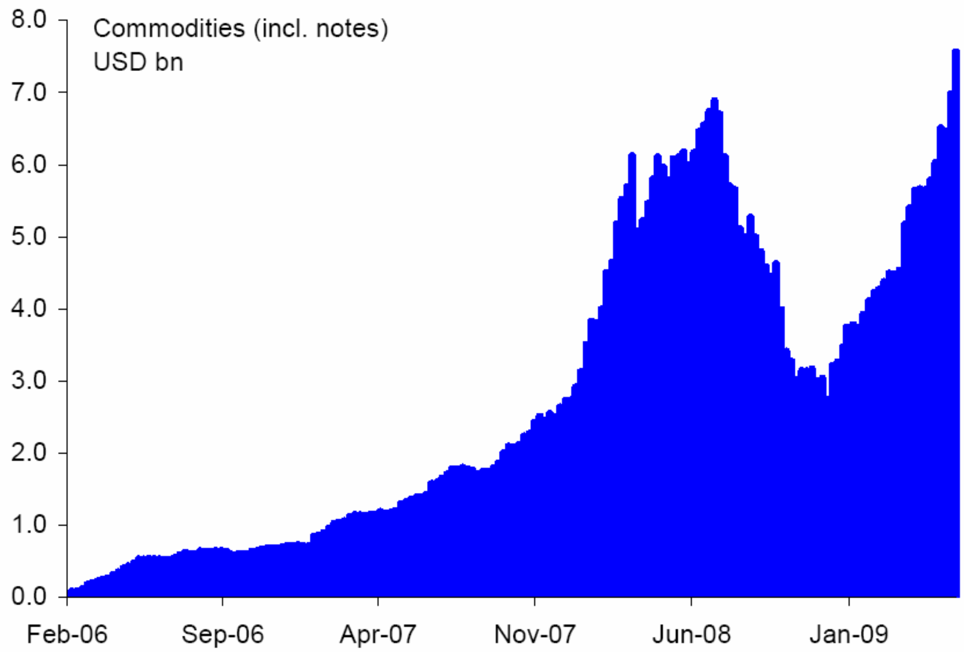
Source: Nymex, Bloomberg, DB Global Markets Research

Outlook

- According to the IMF, in the long run, a 1% depreciation in the US dollar is associated with increases for gold and oil prices of more than 1%.
- In the short run, the elasticity is close to 1, but higher for gold than for crude oil, says the IMF.
- We believe the relationship between oil prices and the US dollar is highly unstable. However, the EURUSD at 1.25 implies USD45/bbl oil.

Role of Funds Flow in 2009 Commodities Prices

Commodity ETF & ETN assets under management



Source: Bloomberg (Data as of 29 May 2009, DB Global Markets Research

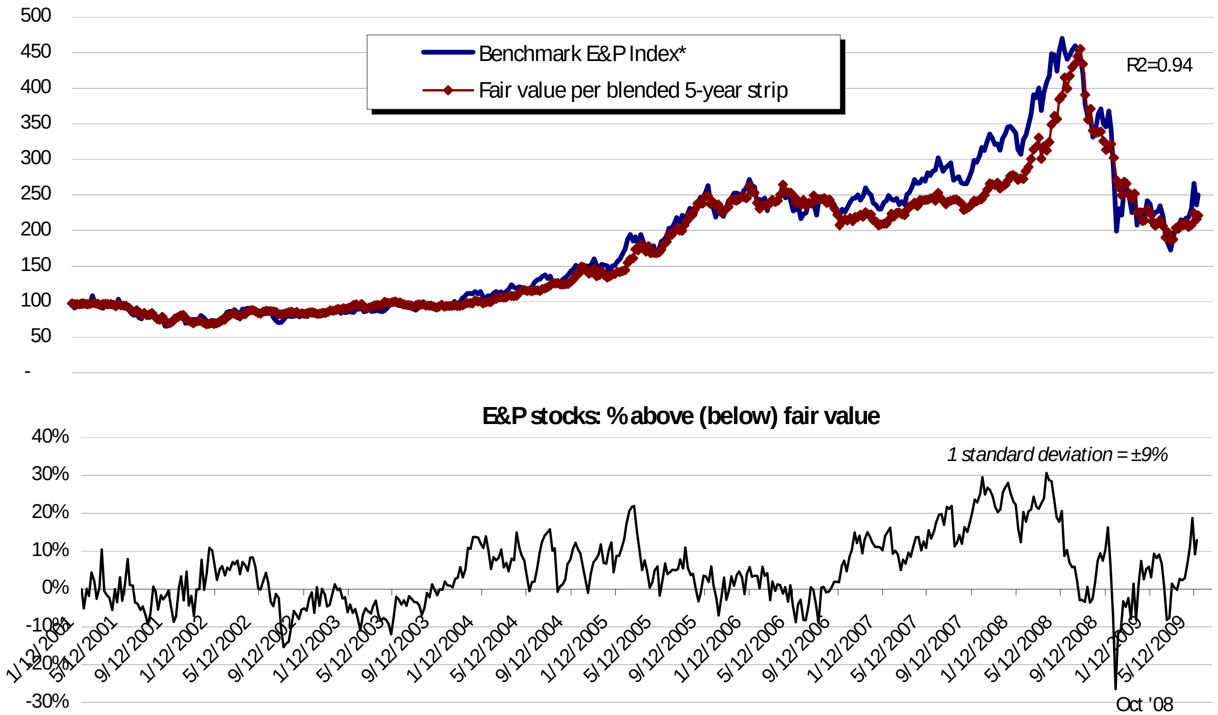
Outlook

- The collapse in commodity prices during the second half of last year has provided investors with a new opportunity to gain exposure to commodities during 2009.
- Assets under Management (AUM) of Powershares ETF/ETN commodity products registered for sale in the United States has risen to a new all time high over the past month. Indeed total AUM on the ETF/ETN platform is now greater now than it was at the peak of 2008 when the crude oil price was trading above USD140/bbl.
- The run-up in commodity index returns may require more convincing evidence of positive growth returning in the US. Events today are reminiscent of early 2008 when commodities were alluring to global investors given the poor performance of traditional asset classes such as bonds and equities.

What price are E&P stocks discounting?

The 5-year blended strip explains 94% of E&P stock price movements since 2001

E&P stocks now sit 14% above fair value as implied by the futures strip; discounting ~$7 and $70 long-term pricing



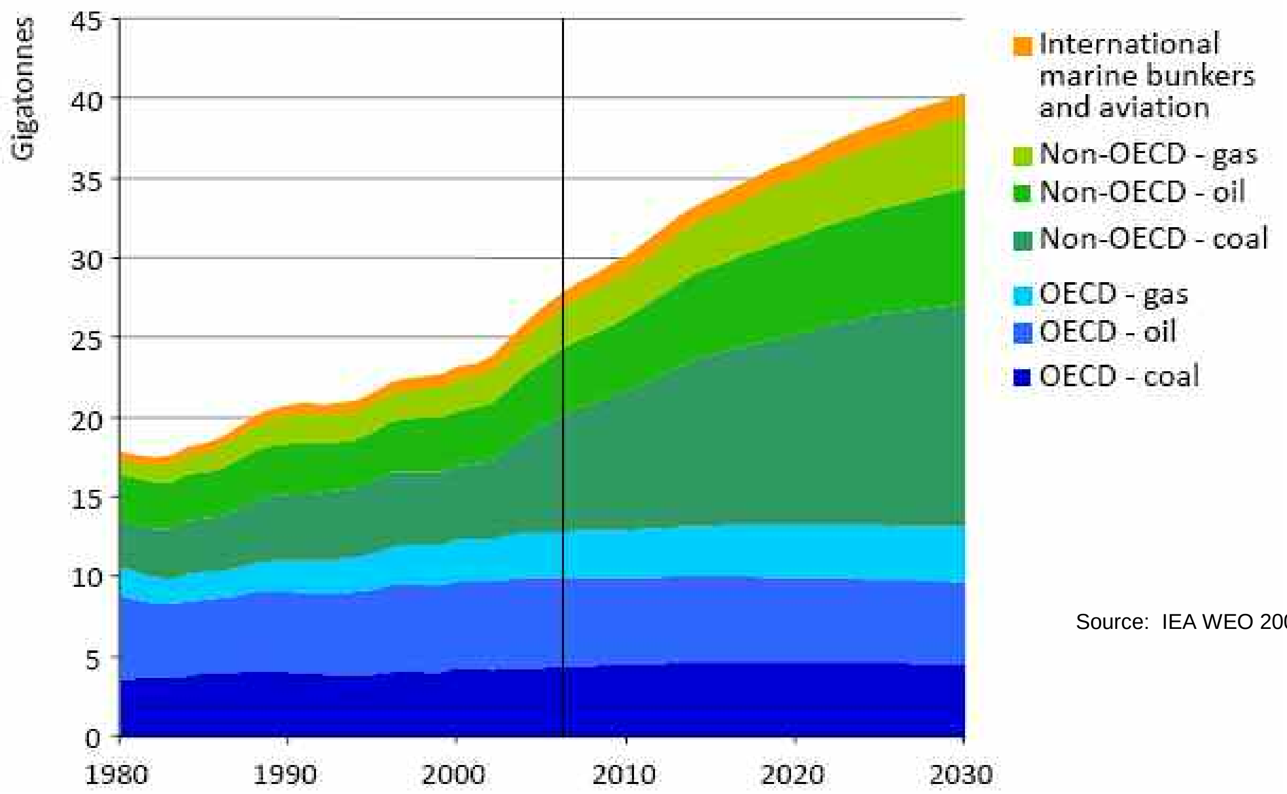
Outlook

- E&P stocks historically correlate at a 0.94 r-squared with the five-year blended strip, blending at 75% gas/25% oil (converting at 8:1)
- The recent runup in the stocks has taken the group to 14% above “fair value” as implied by the strip
- The stocks are currently trading at parity with 2P NAV on average, implying they discount $7 and $70 long-term pricing assumptions

Source: FactSet; Deutsche Bank

Energy-Related CO2 Emissions (Business as Usual)

CO2 emissions are headed from 30 gt/yr now to 40gt/yr in 2030



Source: IEA WEO 2008

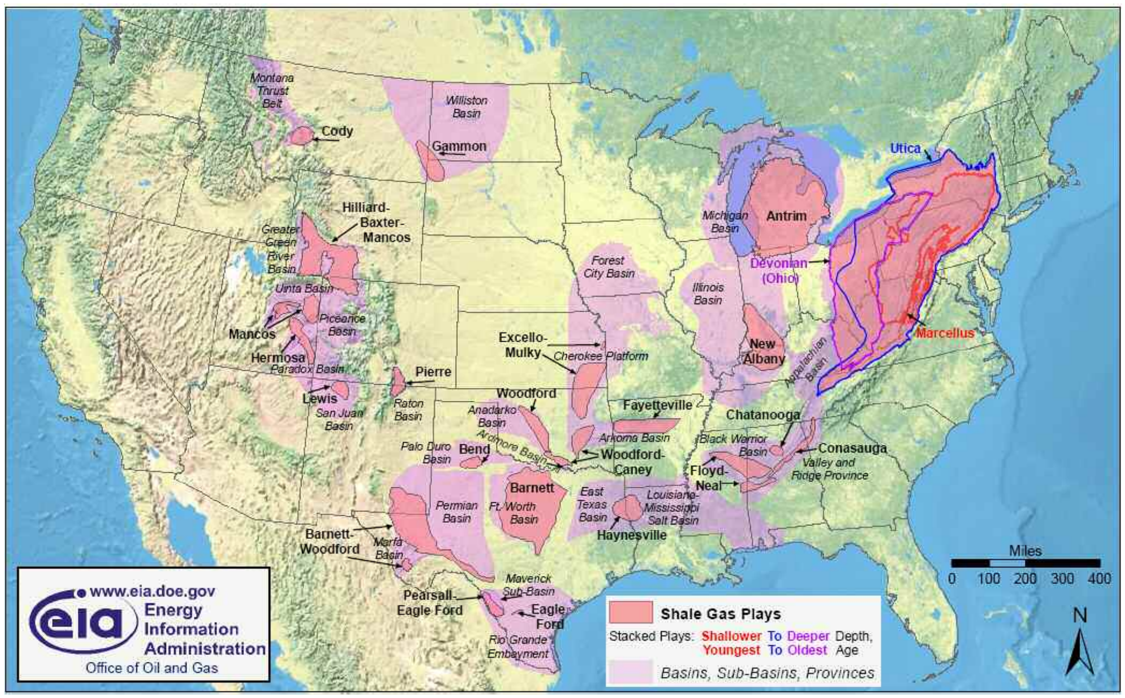
Outlook

- 97% of the projected increase in emissions between now & 2030 comes from non-OECD countries –three-quarters from China, India & the Middle East alone

Deutsche Bank

Shale Gas in the US… an unrecognized CO2 option?

Major US shale basins



Outlook

- Independent natural gas producers are increasingly optimistic about their ability to develop shale plays around the US.
- The Barnett shale in Texas has been a huge success. DOE's gas supply models may be underestimating the potential strength of domestic production.
- If the industry is successful in conveying the "supply security" message, natural gas could receive favorable treatment from Washington policymakers, but this will take time and effort

Source: DOE/EIA, DB Global Markets Research

What Determines Investment in the Oil Sector?

IMF Working Paper by Lyudmyla Hvozdyk and Valerie Mercer-Blackman

- In the 1990s, low oil prices and reduced government budgets led companies to neglect investment
- Recently, soaring costs and overdue maintenance costs have meant that little has translated into real investment.
- Limited geographical opportunities in some major producing countries led many outward-oriented companies — both NOCs and IOCs — to take greater technological risks, contributing to already high finding and development costs.
- Efforts by many governments to increase tax takes may have also been a significant contributor to lower investment through the effect on profits.

Outlook

- Ultimately, technology will determine the ensuing size of the supply response to prices.
- It is important to remove investment obstacles and foster efficient and stable tax policies for companies
- But the potential impact of these policies in the short term should not be overestimated, given that the slow capacity expansion is highly influenced by geology.

Source: IMF Working Paper, *What Determines Investment in the Oil Sector?*, Lyudmyla Hvozdyk and Valerie Mercer-Blackman

Appendix 1 – Certification and Disclaimer

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst. In addition, the undersigned lead analyst has not and will not receive any compensation for providing a specific recommendation or view in this report. Michael Lewis

Global Disclaimer

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