



Oil Market Trends

NABE – USAEE Webinar

06-May-2011

Passion to Perform

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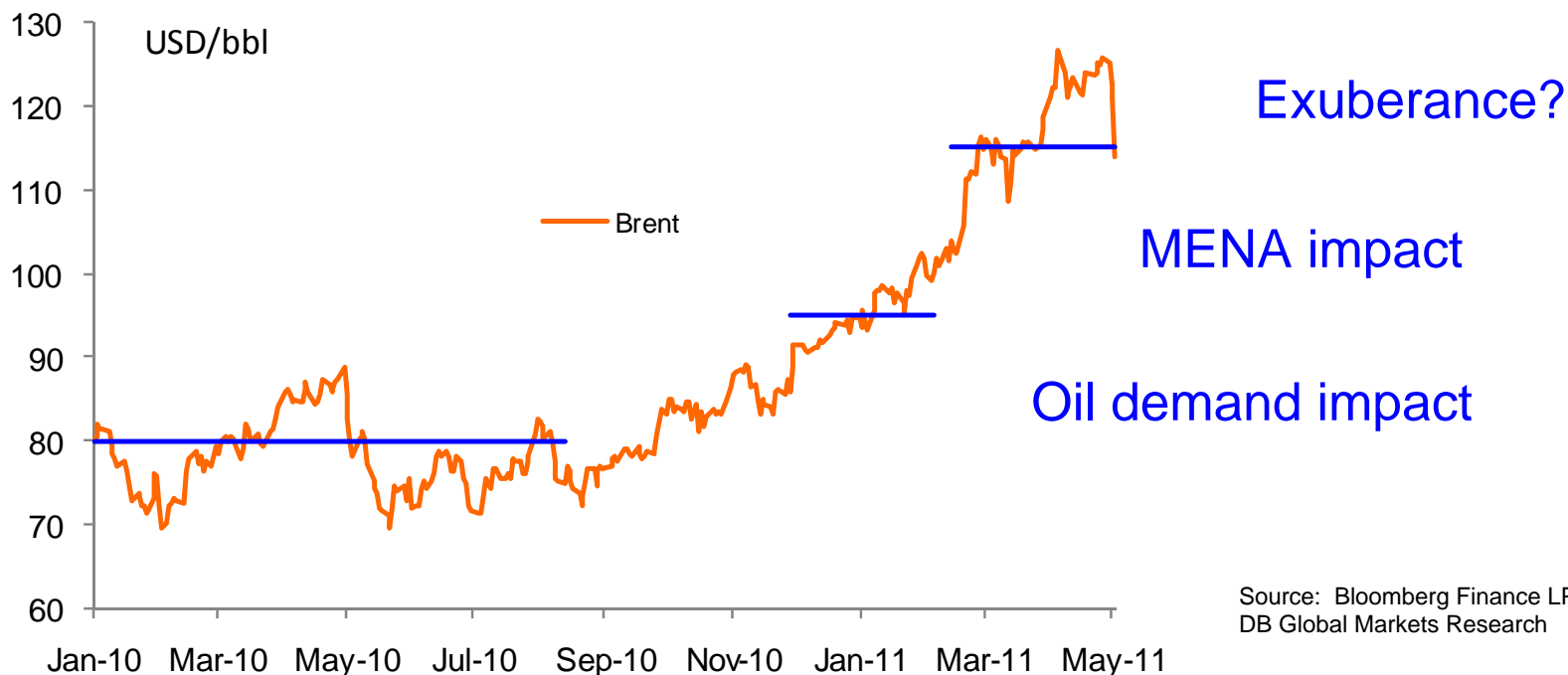
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Two Stage Increase in Brent Oil Prices



Steady near \$80/bbl, then jumps to \$95-100/bbl, followed by \$115-125/bbl



Outlook

- The first \$15 leg up (from \$80 to \$95) coincided with the market starting to feel the pinch of the huge global demand increase that took place in 2010. At the start of 2010, the consensus view was world demand would grow by 1.4mmb/d, and now the IEA estimates a whopping 2.8mmb/d. World economic growth of 5%, coldest winter in 30 years, French oil labor strike, China coal halt at end-2010.
- The second \$15 leg came with the Q1 events in MENA. The Libya export interruption... worth another 1.4mmb/d... probably causing at least half of the second leg (or maybe more) given that it is very low-sulfur crude in high demand for light products and hard to replace (without some logistical changes) by Saudi spare capacity which is higher in sulfur content.



- **Global economy looks strong**
- **China SPR and Japan quake add to demand**
- **Non-OPEC production likely on a plateau**
- **Geopolitical forces constraining OPEC output**
- **OPEC capacity growth reliant on stability in Iraq**
- **Financial factors (e.g. weak dollar) offer support**

Source: Deutsche Bank

World GDP Looks Steady in 2011-12



World economy improving sharply in 2010 but slows a bit in 2011

y-o-y % change	2008	2009	2010E	2011E	2012E
US	0.2	-3.2	2.8	3.5	3.9
Euro Area	0.0	-2.6	1.7	1.4	1.5
Japan	-1.2	-5.2	3.9	1.6	2.2
Other OECD	1.0	-2.3	3.5	3.5	4.0
OECD	0.1%	-3.1%	2.6%	2.5%	2.8%
China	9.6	9.1	10.3	9.4	8.6
Other Asia (1)	5.4	4.3	8.4	6.4	6.5
Latin America	4.3	-1.7	6.0	4.3	4.0
Other Non-OECD (2)	3.6	-4.5	4.5	4.2	4.7
Non-OECD	6.0%	2.5%	7.5%	6.4%	6.3%
World	2.8%	-0.6%	4.8%	4.2%	4.4%

Source: Deutsche Bank

(1) Non-OECD Asia ex-China, (2) E. Europe, Md-East, Africa, Frmr.Sov.Un.

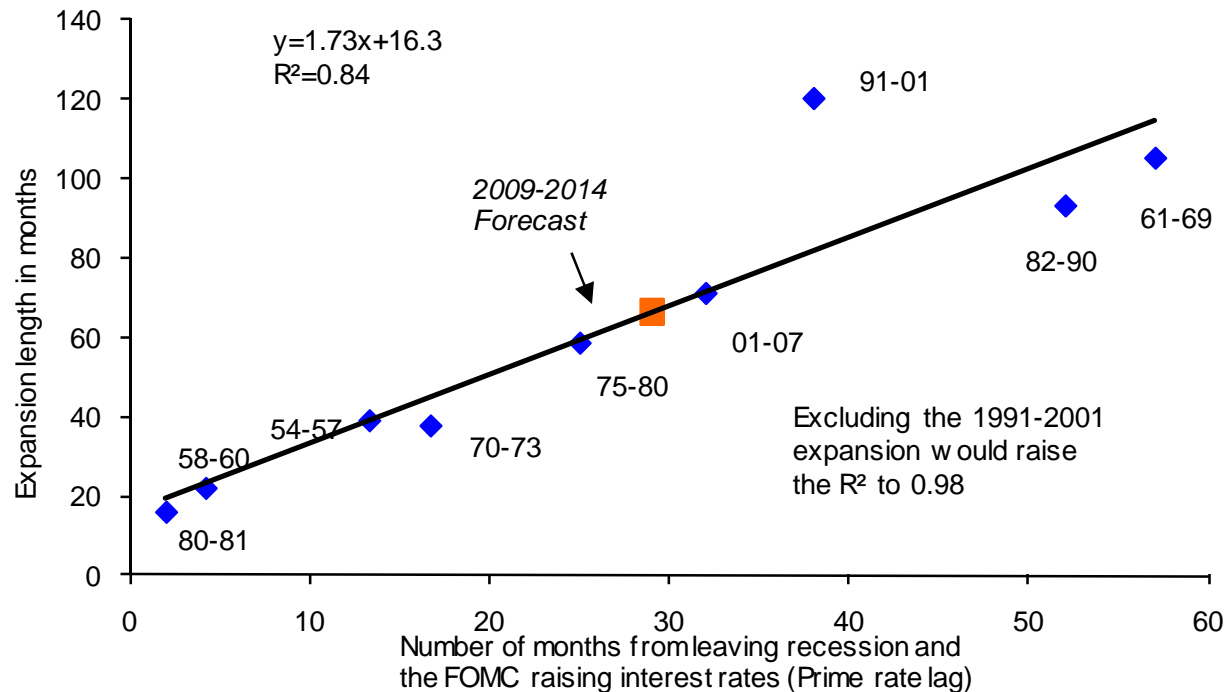
Outlook

- Global output is forecast by the IMF to expand by 4.4% in 2011 and 4.5% in 2012 after growing by nearly 5.0% in 2010. According to the IMF, this reflects stronger-than-expected activity in the second half of 2010 as well as new policy initiatives in the US.
- The IMF is quick to point out that downside risks to the recovery remain elevated. The two biggest potential problems are sovereign debt and financial troubles in the euro area, along with overheating pressures and external rebalancing needs in key EM economies.
- Deutsche Bank forecasts for world and regional economic growth in 2011-12 are slightly more conservative than the IMF.

Good News: the Next US Recession Is Not Due Soon



Relationship between Fed rate increases and following economic downturn



The duration of every US expansion since 1954 has been directly proportional to the amount of time it takes the US Federal Reserve to start tightening monetary policy after a recession.

Outlook

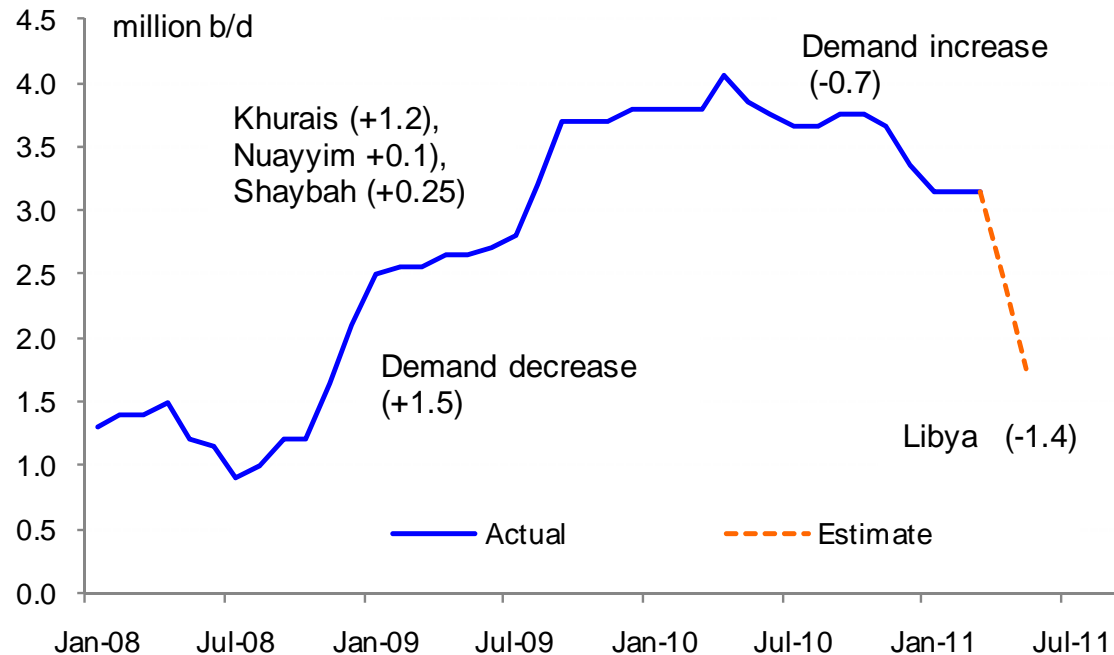
- The last recession ended in June 2009.
- According to our US economics team, the Fed may embark on a new monetary tightening cycle in November 2011.
- Based on our regression calculations, this implies the next US recession will begin in December 2014.

Source: Deutsche Bank, Columbia University Center for International Business Cycle Research

Saudi Spare Capacity Is a Key Indicator



Currently 2mmb/d lower than it was last summer; still above the lows of summer 2008



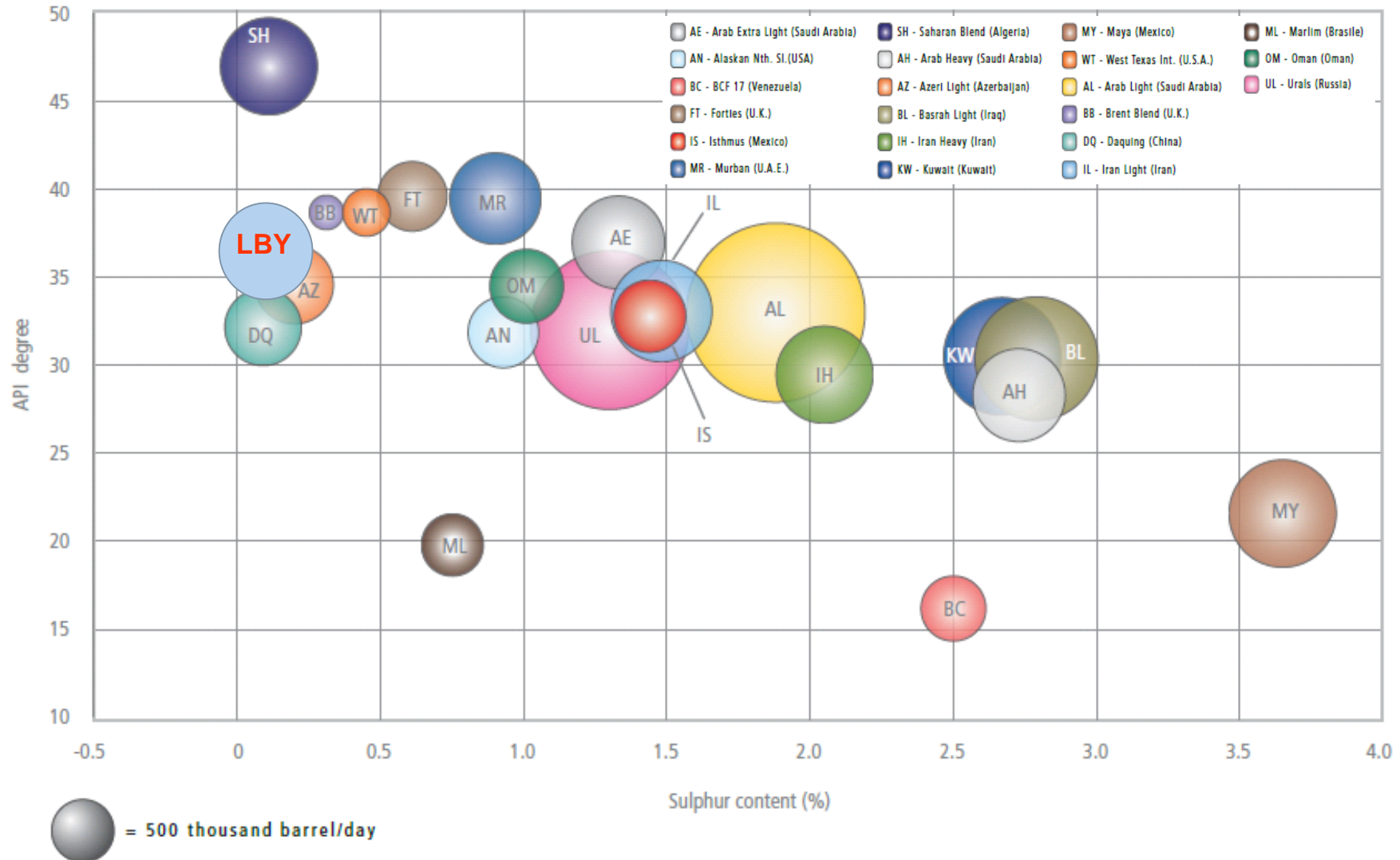
Outlook

- The low of about 1mmb/d was reached in Jul-2008 as Saudi Arabia production rose to 9.7mmb/d in an effort to quench the 2008 price rise. The rise to 2.5mmb/d by Jan-2009 was a function of the drop in needed OPEC crude caused by the economic recession.
- During 2009, Aramco completed three new upstream projects (Khurais, Nuayyim, and Shaybah), adding over 1.5mmb/d of capacity.
- As the economy recovered an oil demand rose in 2010, the US DOE/EIA estimates that by early 2011 Saudi spare capacity was down to about 3.25mmb/d (with Kuwait, Qatar, and the UAE accounting together for a bit less than 1mmb/d more).
- Assuming that the Saudis make up 1.4mmb/d of the lost Libyan production, their spare capacity will be under 2mmb/d in April.

Saudi Crude Is NOT a Substitute for Libyan Blend



Very low sulfur content of Libyan crude makes it nearly impossible to directly replace with Saudi

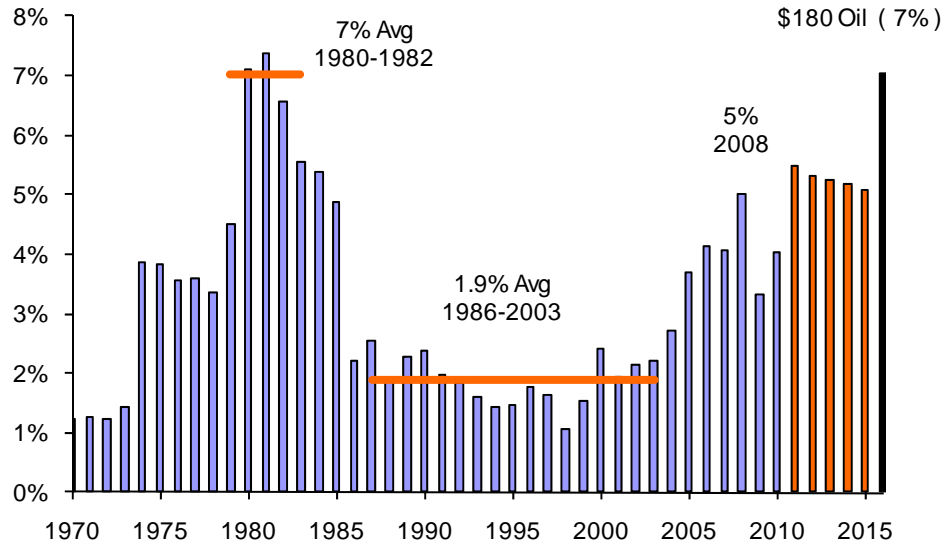


Source: ENI

Can Oil Prices Be Too High- or Too Low?

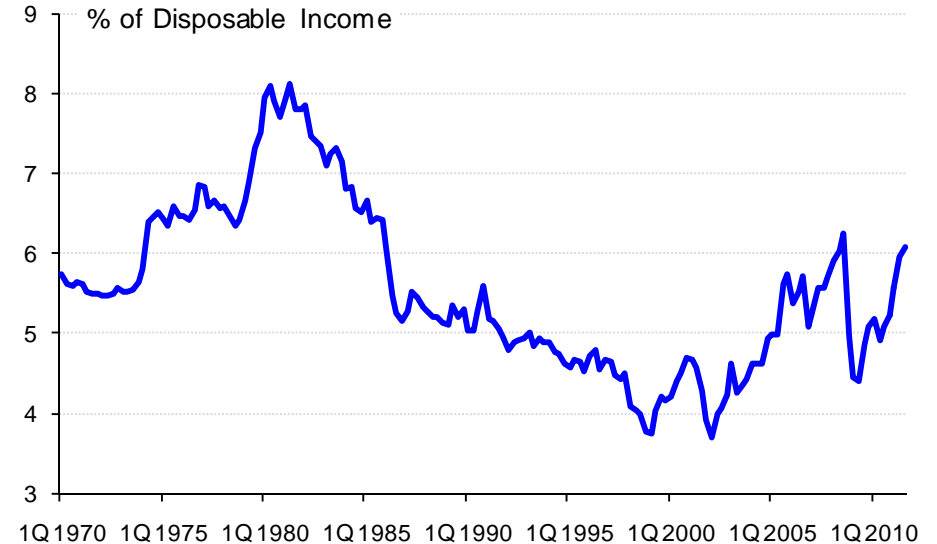


Oil's Share of Global GDP



Source: US DOE/EIA, BP, IMF, Deutsche Bank

Energy's Share of US Consumer Income



Source: US BEA, Deutsche Bank

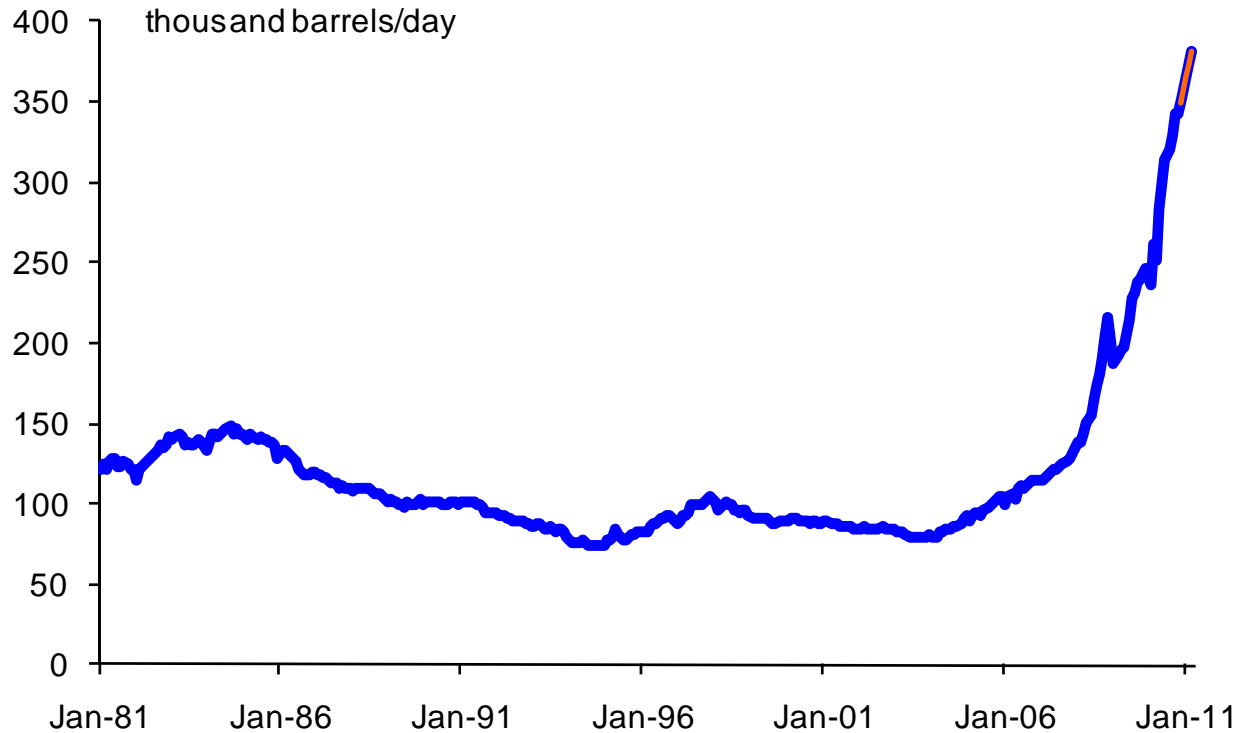
Outlook

- History suggests that when oil is 7% of GDP, consumers are under great pressure to meet other expenses (food, shelter, clothing, etc.) It also suggest that at 2%, companies are hard-pressed to finance new production. The "sweet spot" of 3.5-4.0% seems hard to achieve- with short-term price inelasticity of supply and demand the biggest impediment to stability in our view.
- Energy goods and services (consisting of gasoline and other energy goods- and of electricity and natural gas) are now up to 5.6% of disposable personal income. If gasoline averages USD4.25/gal in Q3 2011, we estimate that energy's share of disposable income will rise to 6.1%- still slightly below the 6.3% reached three years ago in Q3 2008.

Bakken Oil an Unrecognized Supply Option



North Dakota Oil Production



Source: US DOE/EIA,
Deutsche Bank

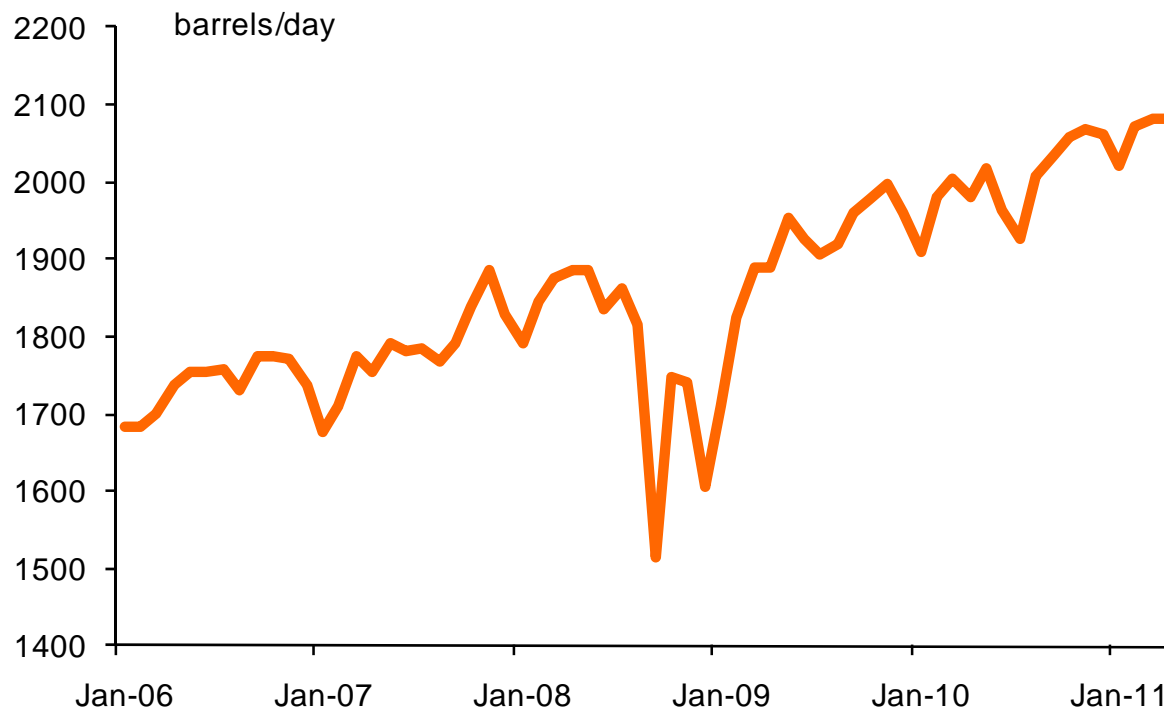
Outlook

- Production in ND languished at 100kb/d for a decade from 1995-2005. Starting around 2006, however, producers in the region began to apply a techniques they had been using in producing gas in the Barnett shales of Texas: multi-stage fracturing of horizontal wells.
- This allows drillers to stimulate oil flow along numerous “stages” of the well bore and to do so without raising water-cuts significantly.
- An intensive search for other formations where this technique will work is underway- the Niobrara in Colorado, the Monterey in California, and the Wolfcamp shales in West Texas come to mind... and we expect there will be more.

US NGL Production Uptrend



NGL production responding to better pricing than dry gas



Source: US DOE/EIA

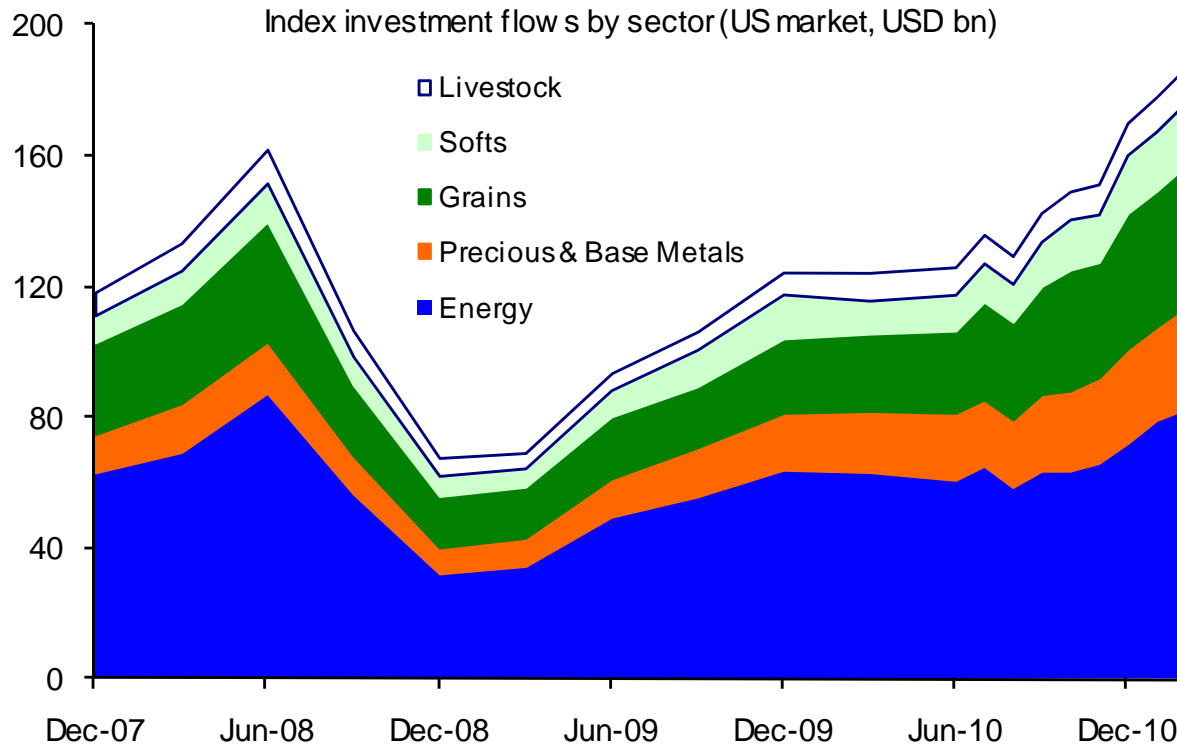
Outlook

- Remarkable climb in US NGL production since January 2006, briefly interrupted by Hurricanes Ike and Gustav in late 2008.
- With the 2011 calendar strip for oil selling well above natural gas equivalents, gas drilling resources are moving to those fields with the highest NGL content. This is the allure of the Marcellus near Pittsburgh and the Eagle Ford in south Texas
- Anecdotally we can see that there has been a shift from markets like Louisiana (Haynesville) and the MidCon region to more liquids rich plays like North Dakota (Bakken) and Eagle Ford.

Energy Prices and Commodity Funds Flows



What role is being played by index investors?



Source: CFTC

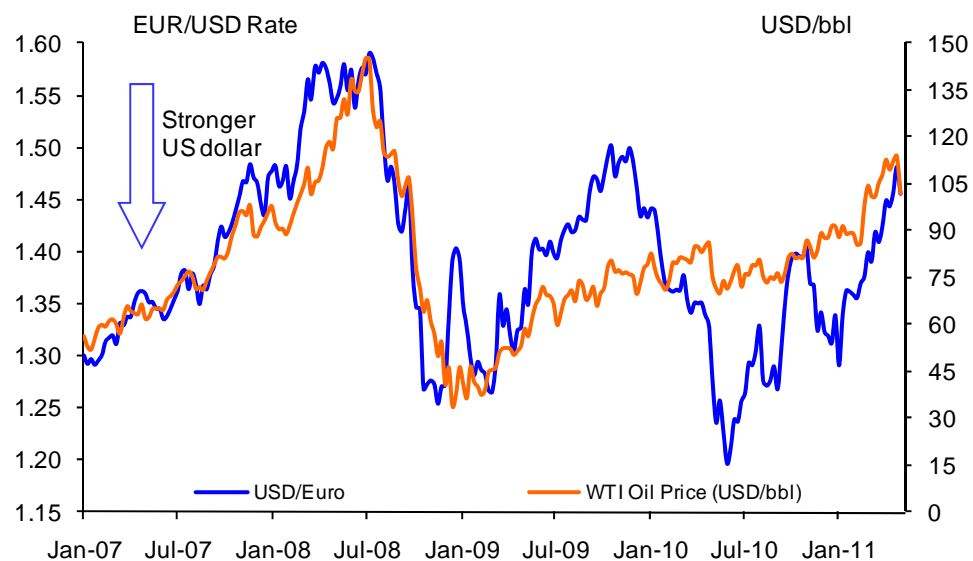
Outlook

- Grains and precious metals were the engine rooms of performance in 2010. Oil index flows are picking up, but other commodity sectors grew faster in 2010. Energy flows were up 13%, precious & base metals 65%, grains 83%, softs 32%, and livestock 45%.
- Evidence that index investing can impact prices is scanty, points more to metals than energy or agriculture, and “speculation” continues to offer significantly less explanation for price movements than traditional “fundamentals” (supply, demand, inventories, etc.)

Oil Prices, the US Dollar, and the US Stock Market

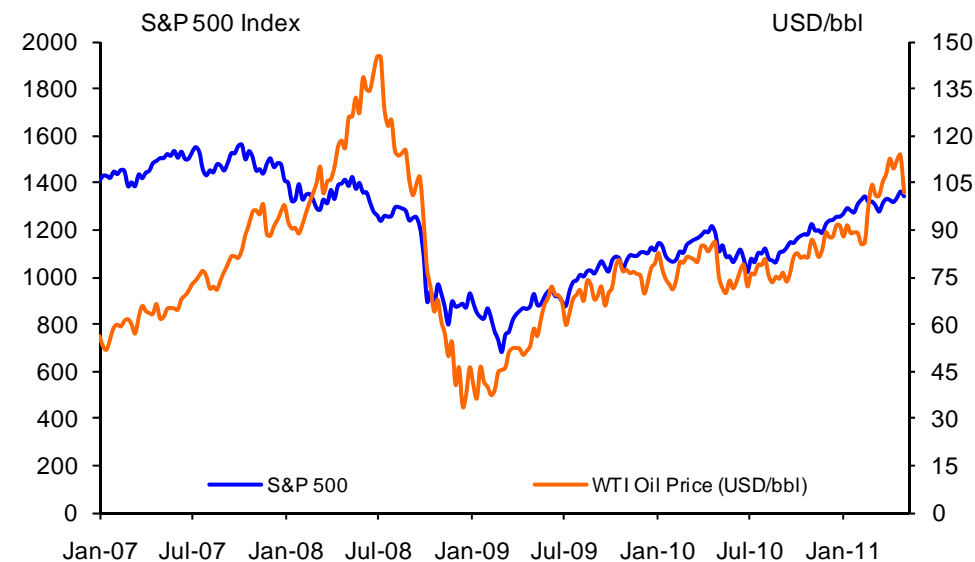


Strong correlation before March 2009



Source: Bloomberg Finance LP, Deutsche Bank

Strong correlation starting in March 2009



Source: Bloomberg Finance LP, Deutsche Bank

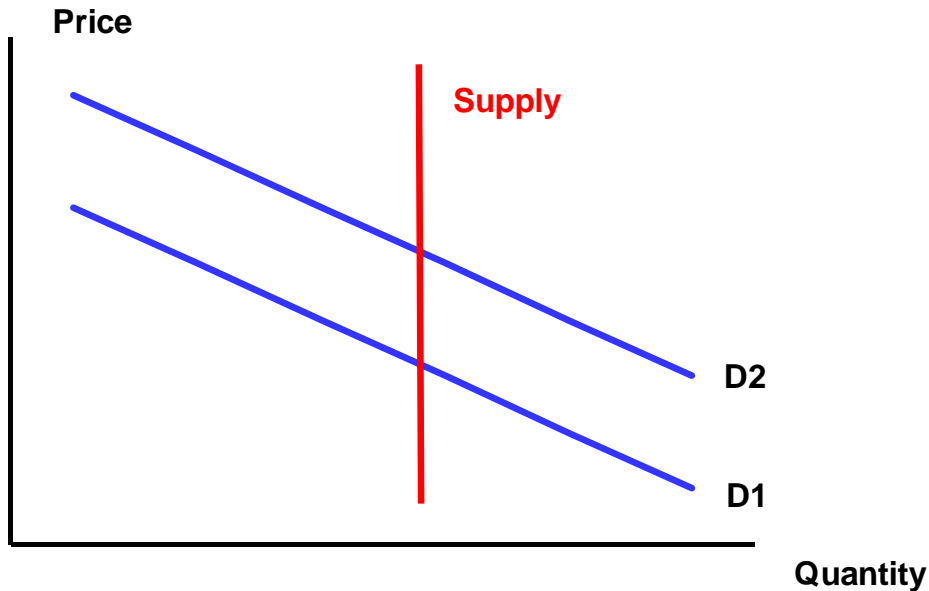
Outlook

- 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.
- The relationship between the S&P 500 and oil is usually inverse. From July 2008 to the start of March 2009, the two moved in parallel down. From April 2009 there has been a direct correlation up.

Inelastic Short-Term Supply and Demand

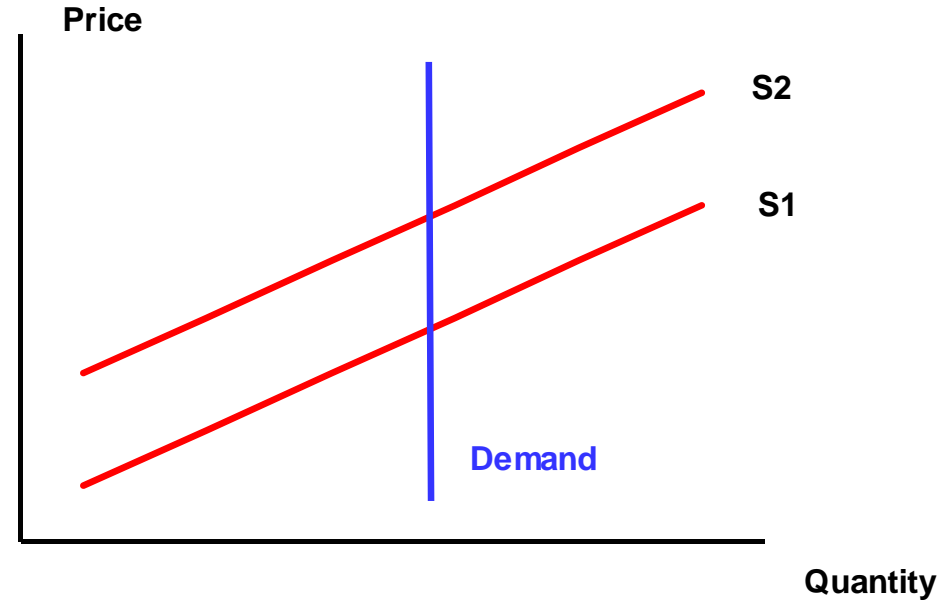


Peak Oil (Inelastic Supply)



Source: Deutsche Bank

Insatiable China (Inelastic Demand)



Source: Deutsche Bank

Volatility is high because the underlying demand and supply curves are so inelastic

- Demand is inelastic due to long lead times for altering the stock of fuel-consuming equipment; supply is inelastic in the short-run because it takes time to augment the productive capacity of oil fields.
- Price volatility provides incentives to hold inventories, but since inventories are costly, they are not sufficient to fully offset the rigidity of demand and supply. This fact means that shocks to demand or to supply can help to explain the high level of volatility in oil prices.

Source: James L. Smith, Southern Methodist University, "World Oil: Market or Mayhem?", MIT/CEEPR, September 2008



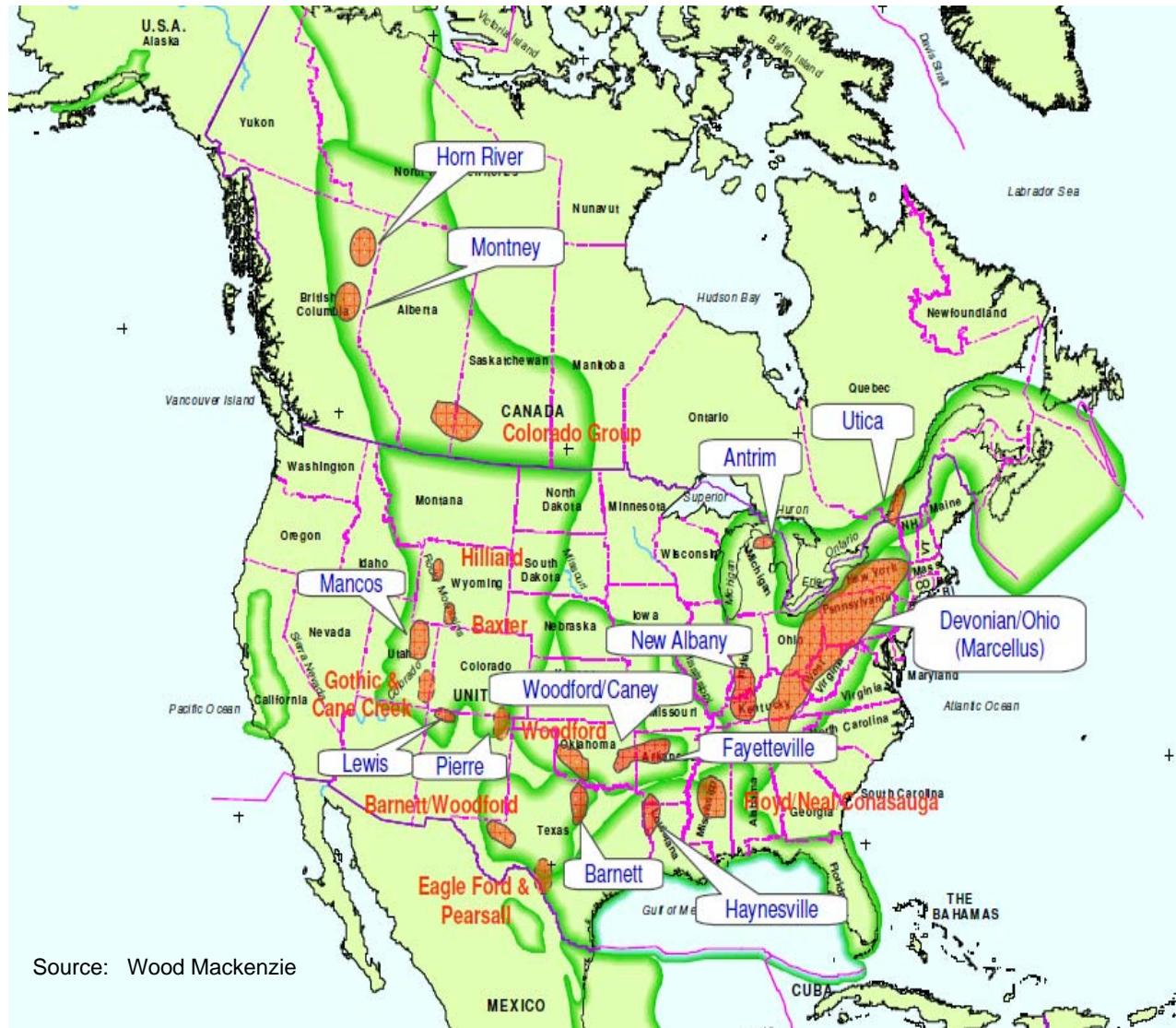
- **Strong US economy revives ind / utility demand**
- **Supply should moderate as investment goes to oil**
- **High oil/gas ratio an incentive for user innovation**
- **EPA rules on air quality could retire coal plants**
- **N. Am. LNG exports could be competitive in Asia**

Source: Deutsche Bank

Shale Gas... Looks Like It's Everywhere



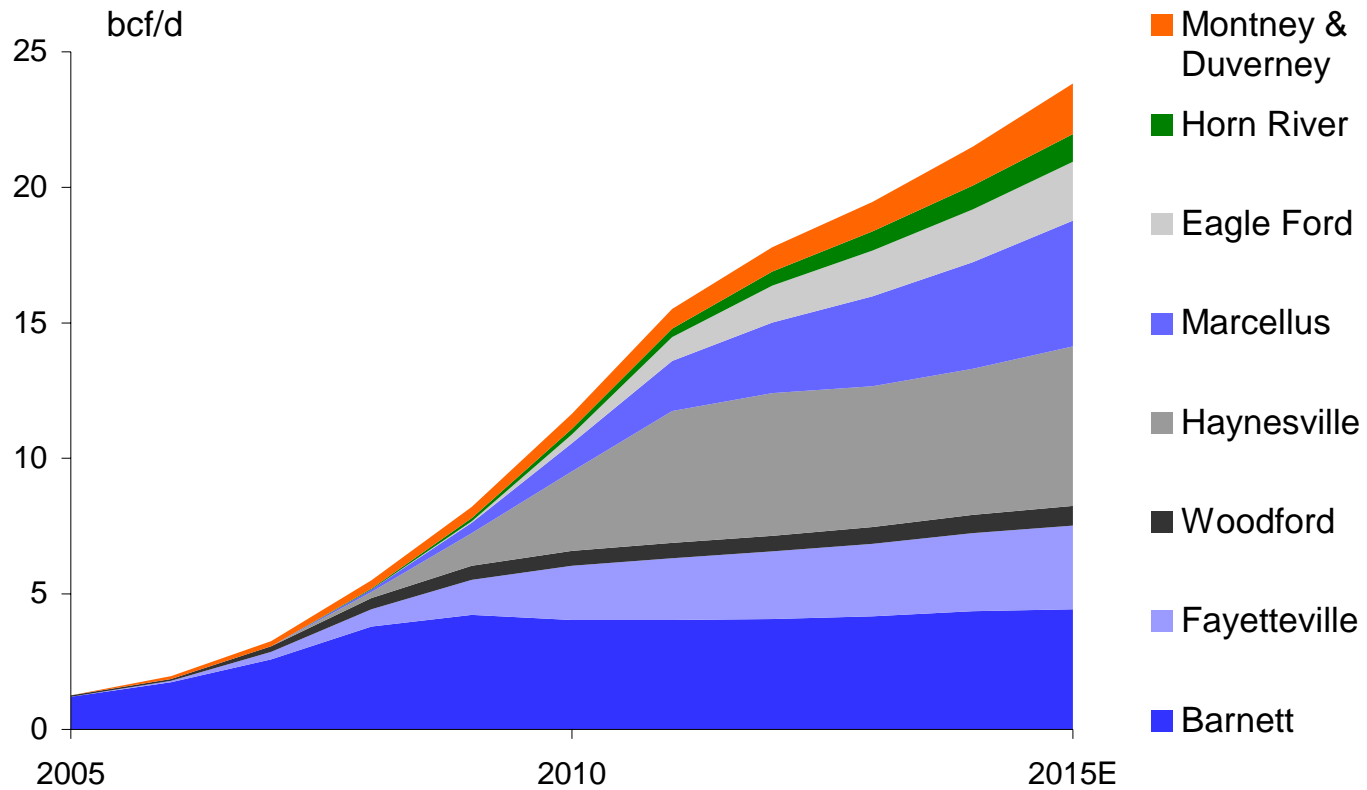
Major North American shale basins



Shale Gas Production in the US & Canada



Over 10bcf/d this year- and over 25bcf/d by 2015

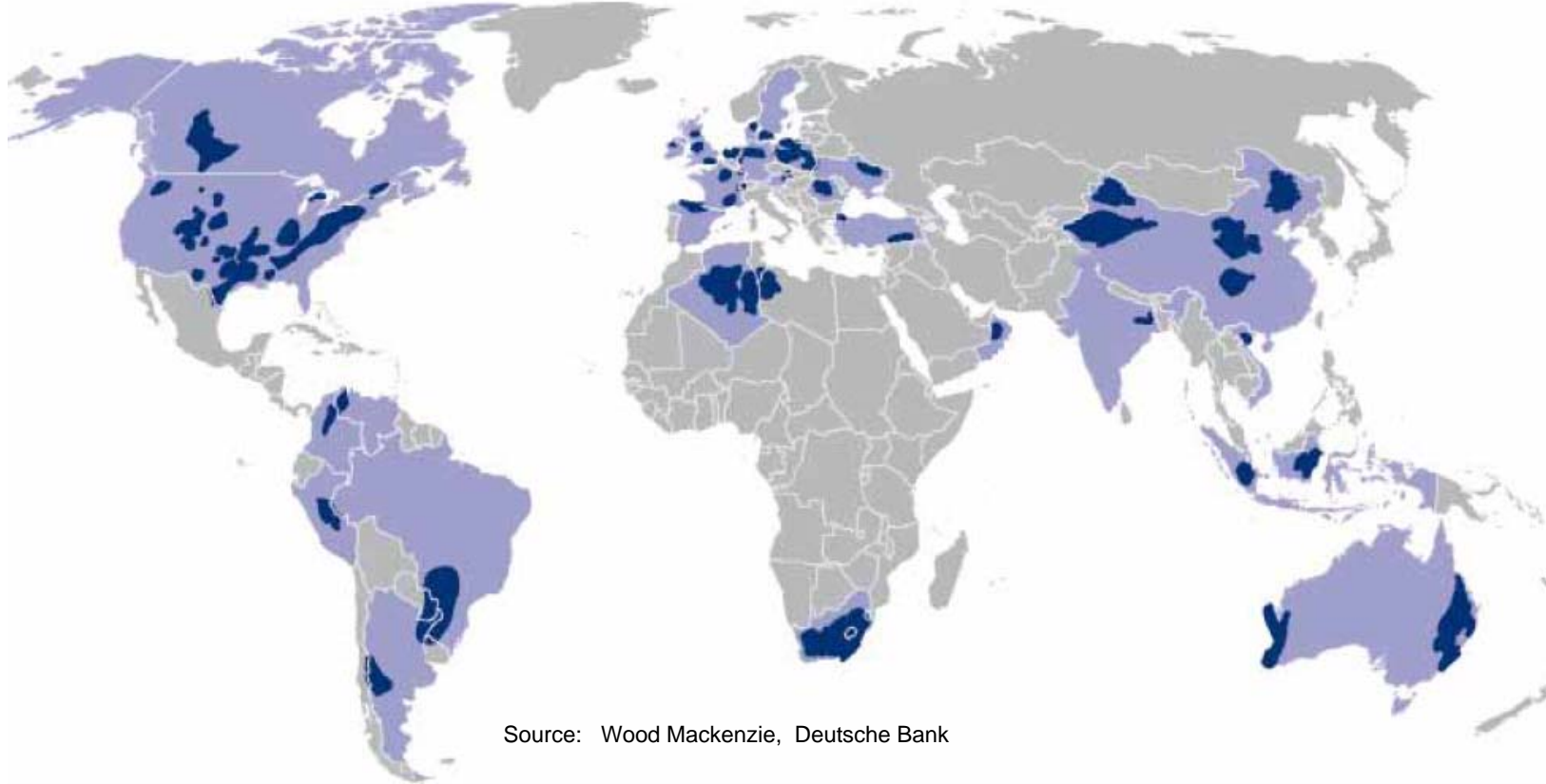


Source: Wood Mackenzie

Shale Gas Is Global



Major shale basins around the world that have been identified



Source: Wood Mackenzie, Deutsche Bank

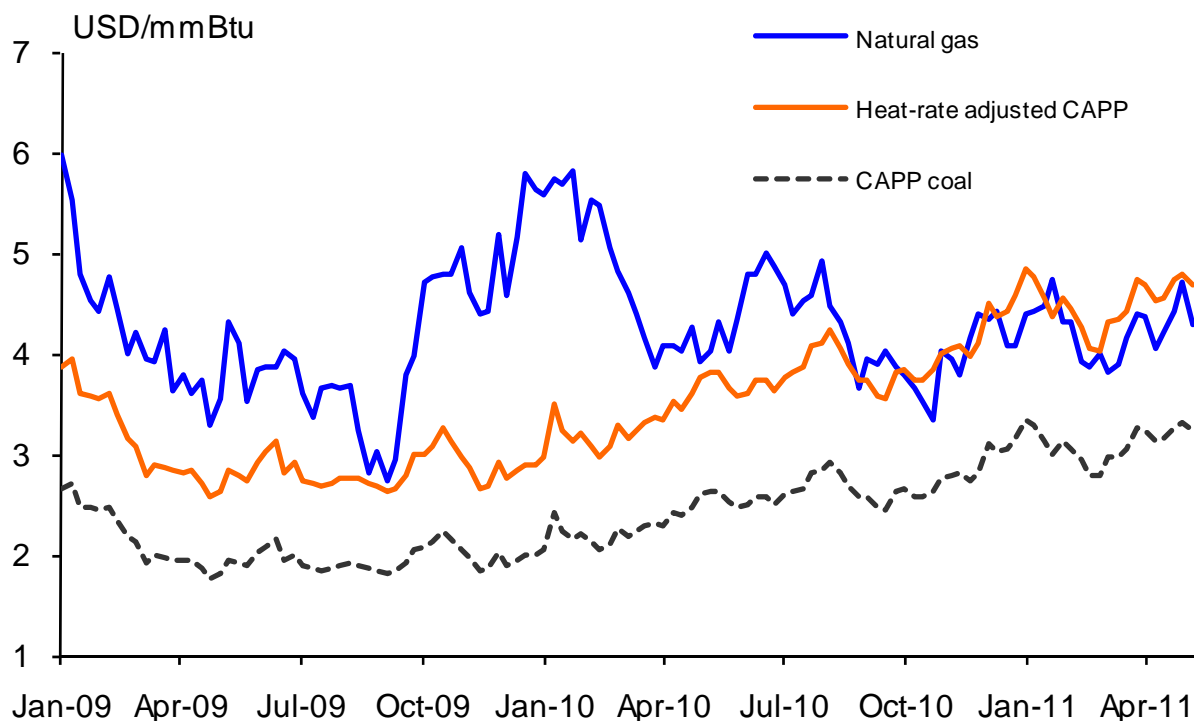
Outlook

- Development of just a small proportion of this resource could dramatically change local gas markets with implications for global gas dynamics. New EIA study suggest global shale could potentially double the global reserve base.
- Specifically, it could reduce import requirements, provide additional export sources and dramatically impact global oil-linked gas pricing.

Power Fuel Switching and the “Coal Floor”



Central Appalachian Coal (CAPP) competes with natural gas



We think natural gas prices are supported by coal breakeven economics at prices near \$4.00/mmBtu, but coal could recapture share when gas rises much over \$5/mmBtu.

Source: Bloomberg Finance LP, Deutsche Bank

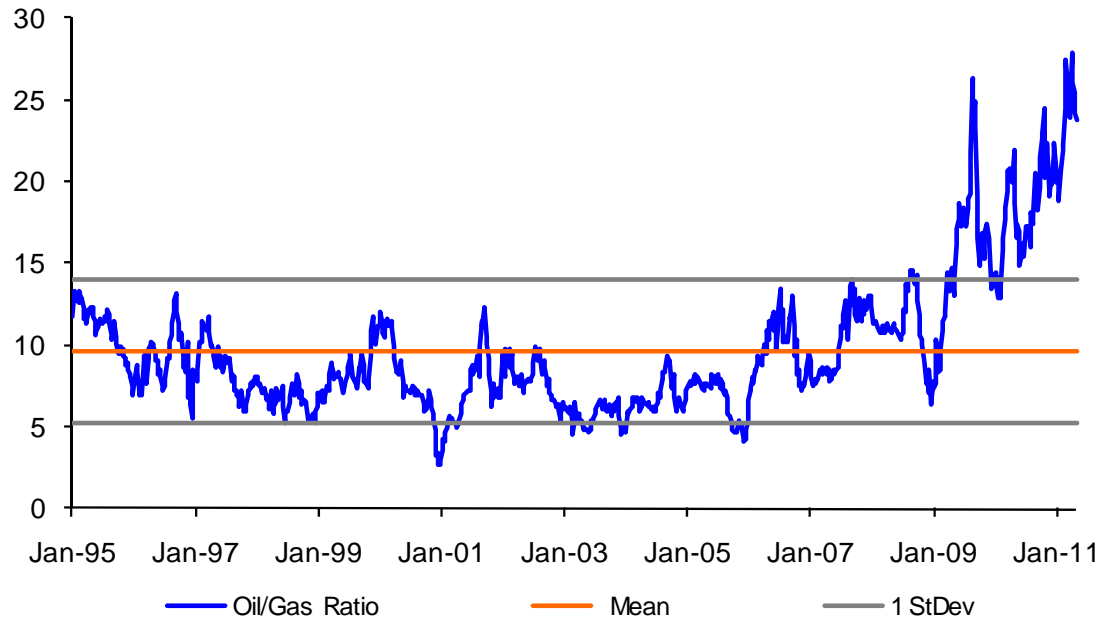
Outlook

- It used to be the case that fuel switching traditionally came from power plants that could run on either residual fuel oil or natural gas, meaning competition was primarily concentrated between natural gas and crude oil products, as opposed to between gas and coal.
- This is no longer the case. The main competition for gas in power markets is coal.
- In 2009, gas-fired generation gained from coal displacement in spite of a reduction in overall electricity demand due to low natural gas prices. In 2010, rising coal prices began to raise the floor price at which natural gas is competitive.

US Natural Gas Opportunity



Although they trade on different economics, this spread is an opportunity for innovation



Source: Bloomberg Finance LP, Deutsche Bank

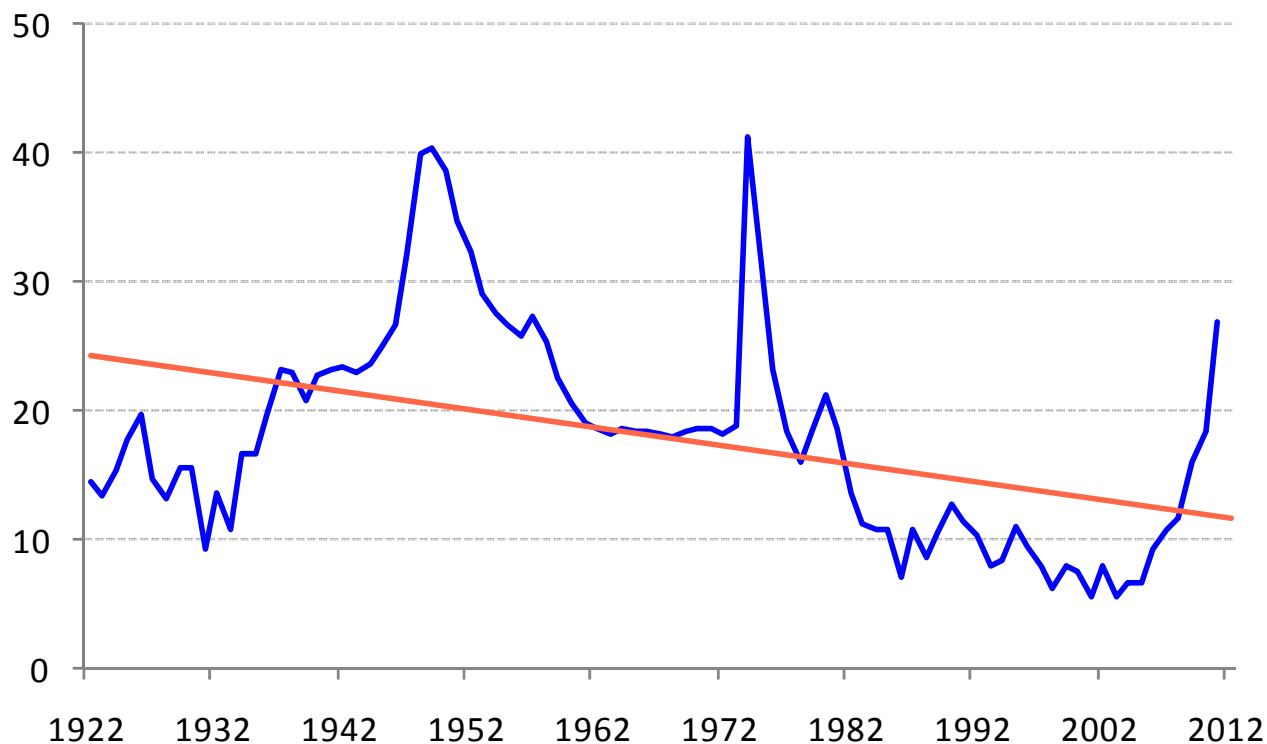
Near Term Drivers

- US natural gas demand should improve
 - Industrial production picks up in Q2 2011 (after the flat period which started in August 2010).
 - Warmer weather in the upcoming summer
 - Utilities turn to natural gas in view of rising coal prices; eventual opportunities in transportation?
- US natural gas supply should come under some downward pressure
 - Lower natural gas rig count impacts output (rig count is below 900, down from a peak of 992 in August 2010)
 - Expected decline of nearly 15% in US Gulf of Mexico production is only partly offset by rising lower 48 shale production
 - Both LNG and Canadian pipeline imports pull back due in response to poor market conditions
 - Economics of LNG exports are improving

Oil/Gas Ratio Back to 1922



It's been higher !



Source: US DOE/EIA,
Deutsche Bank

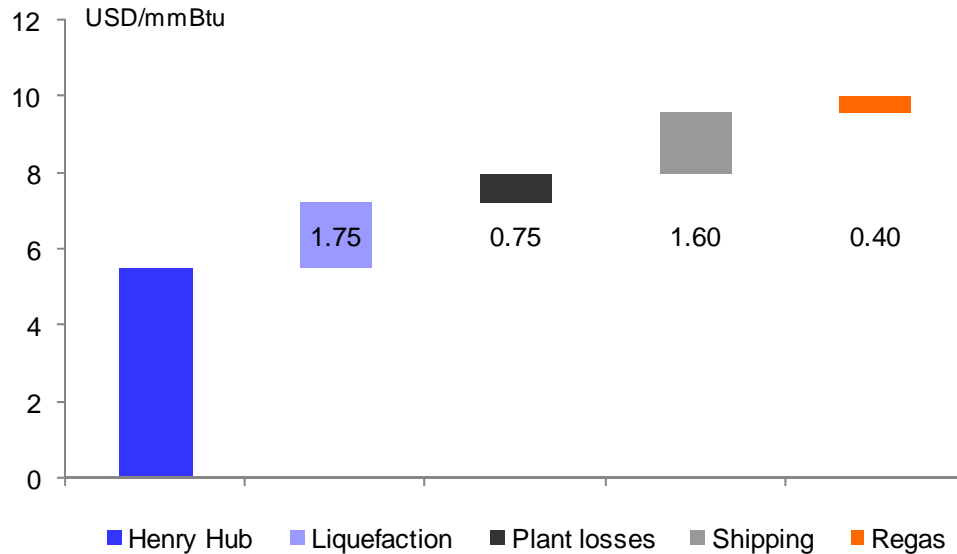
Outlook

- Spike in the late 1940s was driven by oil prices rising in an environment of an inadequate gas transportation infrastructure.
- Spike in the 1970s was driven by high oil prices (OPEC embargo) when interstate natural gas prices were still under price controls.
- Current spike is driven by high oil prices in an environment of strong natural gas supply.

Exports of LNG from the US and Canada

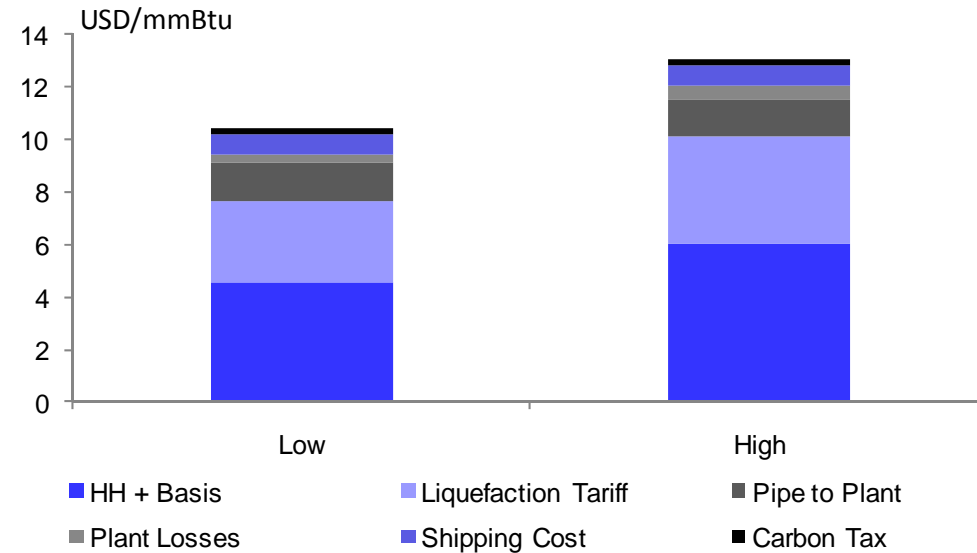


LNG exports from the US Gulf Coast



Source: Wood Mackenzie, Deutsche Bank

LNG exports from Canada's West Coast



Source: Wood Mackenzie, Deutsche Bank

Outlook

- The most publicized proposals for LNG exports from N.Am. are the redevelopment of existing regas facilities in the Gulf Coast, using gas from the local market, and the Kitimat LNG proposal on the west coast of Canada, sourcing gas from shale plays in B.C.
- US Gulf Coast LNG exports require delivered gas prices between US\$9.45-12.20/mmBtu to breakeven, while Canadian West Coast LNG exports require higher prices, at US\$10.36-12.97mmBtu. At \$100/bbl oil the economics of LNG exports improve.

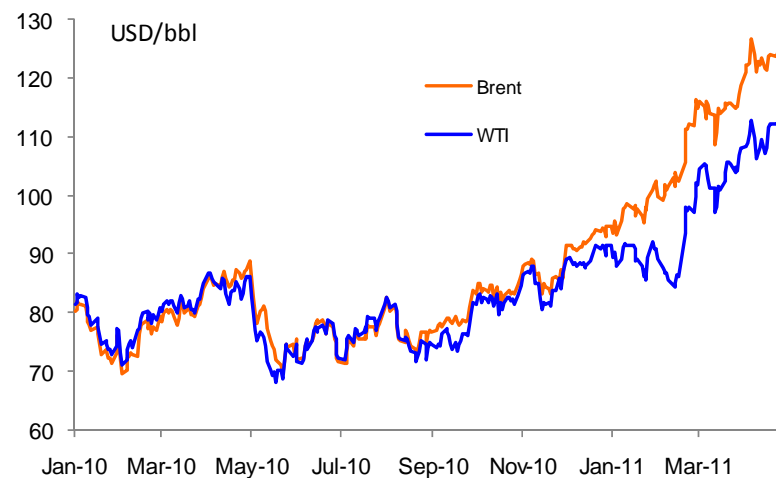
DB Oil and Gas Price Forecasts



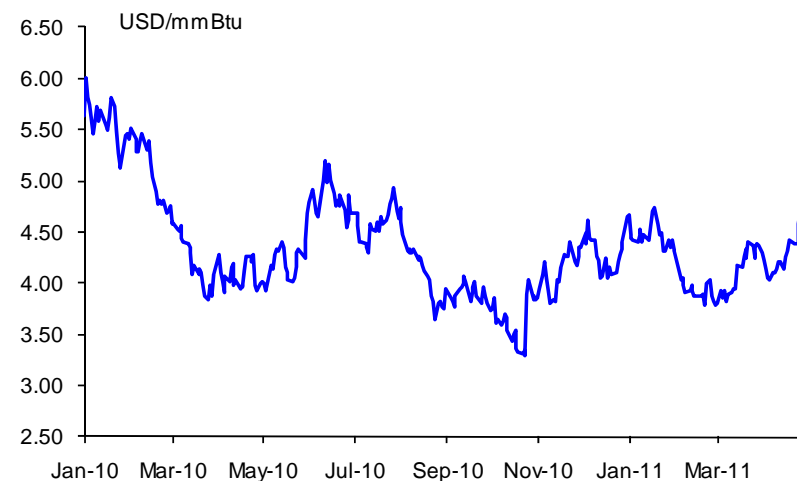
	WTI (USD/bbl)	Brent (USD/bbl)	WTI- Brent Spread (USD/bbl)	US Gas (USD/mmBtu)	Oil/Gas Ratio
2009	62.09	62.67	-0.58	4.16	14.9
2010	79.61	80.34	-0.73	4.38	18.2
Q1 2011	94.60	105.52	-10.92	4.20	22.5
Q2 2011E	110.00	120.00	-10.00	4.25	25.9
Q3 2011E	115.00	125.00	-10.00	4.00	28.8
Q4 2011E	112.00	120.00	-8.00	4.75	23.6
2011E	108.00	117.50	-9.50	4.30	25.1
Q1 2012E	113.00	120.00	-7.00	5.25	21.5
Q2 2012E	108.00	115.00	-7.00	5.00	21.6
Q3 2012E	108.00	115.00	-7.00	5.25	20.6
Q4 2012E	113.00	120.00	-7.00	5.50	20.5
2012E	110.50	117.50	-7.00	5.25	21.0
2013E	115.00	120.00	-5.00	5.50	20.9
2014E	118.50	122.50	-4.00	5.75	20.6
2015E	122.00	125.00	-3.00	6.00	20.3

Source: Deutsche Bank, Bloomberg Finance LP

Crude Oil



US Natural Gas (Henry Hub)



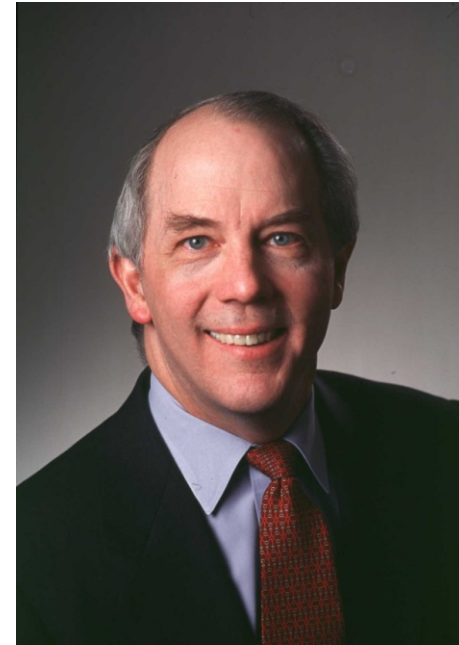
Adam Sieminski



Adam is the Chief Energy Economist for Deutsche Bank, working with the Bank's global commodities research and trading units.

Drawing on extensive industry, government and academic sources, Mr. Sieminski forecasts energy market trends and writes on a variety of topics involving energy economics, climate change, politics and commodity prices. From 1998 to 2005 he served as the energy strategist for Deutsche Bank's global oil & gas equity team. Mr. Sieminski was the senior energy analyst for NatWest Securities in the US during 1988-1997, covering the major US international integrated oil companies. He received both his undergraduate degree in Civil Engineering and a masters in Public Administration from Cornell University.

He has been president of the US Association for Energy Economics and the National Association of Petroleum Investment Analysts. He is a member of the US National Petroleum Council, an advisory group appointed by the US Secretary of Energy. He also acts as a senior advisor for the Center for Strategic and International Studies, a nonpartisan policy think-tank in Washington. He is a member of the London, New York and Washington investment professional societies, and holds the Chartered Financial Analyst (CFA) designation.



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Adam Sieminski

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