Oil and Commodities
The 2008 Price Spike Was Not an Anomaly
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Oil Prices Back To 1860

Trying to Re-Invent the Texas Railroad Commission

U.S. Oil Prices
(Constant 2010 Dollars Per Barrel)

Source: API, DOE, and Deutsche Bank estimates
If It Happens Again- Is It Still an Anomaly?

May of the factors present in 2008 and 2011 are likely to persist

USD/barrel

- Brent
- Euro equivalent OPEC basket price

Source: Bloomberg Finance LP, Deutsche Bank
Investor Demand For Commodities Is Strong

Outlook

- Investor inflows into commodity indices is now at an all time high. We believe commodities will continue to attract inflows as investors seek to play EM growth, given the risks of higher inflation ahead and as a tool to hedge against tail events.

- We are also maintaining our bullish outlook for commodities in response to US efforts to stimulate growth, which we expect will be successful. We also believe European sovereign risk fears will be contained and that physical fundamentals across various commodity markets are tightening.
Income Elasticity of Oil Demand is Strong

Contributing to a view that demand is highly inelastic

Twenty five years ago, South Korea and Taiwan were where China and India are now.

One third of the world’s population is just entering the middle class and want the oil-consuming lifestyle that goes with that.

Source: IMF, IEA, Deutsche Bank
Oil Price Elasticity of Demand Is Low

Hard to turn off transportation demand

Source: US DOE/EIA, Deutsche Bank
OPEC Spare Capacity Impacted by MENA Events

OPEC Spare Capacity

- Relatively healthy OPEC spare capacity levels are available to offset the loss of 1.4 mmb/d of Libyan crude oil production alone.
- The pledge from Saudi Arabia to increase supply though welcomed by the market comes with some challenges for some end-users because of the differing quality of the crude grades.
- Libya produces higher quality crude closer to Brent than to the Saudi crude oil grades. In our view, this should prove supportive for the light-heavy spread. Algerian production and exports are also a very light/sweet grade.

Outlook

Source: US DOE/EIA, Wood Mackenzie, Deutsche Bank
Saudi Spare Capacity

Spare Capacity Drops as Demand Increases and Libya Falters

- We estimate that overall OPEC capacity will decline as the “call on OPEC” grows faster than capacity additions.
- We are assuming that Iraq’s total capacity will grow from circa 2.5mmb/d in 2010 to circa 4.3mmb/d in 2015. Absent this improvement, spare capacity in OPEC in 2015 could be closer to the 1.0mmb/d low hit in 2005.

Outlook

Source: US DOE/EIA, Deutsche Bank
Refining Capacity and Stocks Look Healthy for Now

Global refining capacity vs. demand

- The refining capacity bubble of 2009 has been partially closed by strong demand growth in 2010. However, capacity additions over the next few years will continue to provide excess spare capacity.
- Our supply/demand model suggests OECD forward demand cover could be down to 54 days by the end of 2012 v. 58 days now.

OECD total inventory cover

Outlook
Global Trends in Demand & Non-OPEC Supply

Need for OPEC oil grows over time… even allowing for a slowdown in 2014

Source: IEA, Deutsche Bank
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. The EURUSD at 1.60 implies USD150/bbl oil, but USD1.40 to the euro suggest USD80/bbl oil.
Oil Prices and the US Stock Market

Positive correlation takes hold in March 2009

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, the relationship appears to be positively correlated.

The 2010 regression implies the S&P500 at 1400 equates to an oil price circa USD100/bbl oil.

The recent ‘crossover’ (oil now above the S&P 500 in the figure above) suggest that we may be back to an inverse relationship.
Can Oil Prices Be Too High or Too Low?

Oil’s share of World GDP (nominal oil price x demand volume / nominal GDP)

- At 5-6% of global GDP, oil absorbs too much of disposable income -- and provides too much incentive for substitutes.
- At 1-2% of global GDP, oil demand grows rapidly and upstream investment does not. Company cash flow is insufficient to expand.
- The “sweet-spot” appears to be near 3-4% (not often achieved).

Outlook

Source: US DOE/EIA, IMF, Deutsche Bank

$125/bbl oil in 2011 would push oil’s share to 6%

$150/bbl oil in 2011 = 7%, near the all time high of 1980-81

Using the IMF’s GDP growth forecasts, oil at $180/bbl in 2016 would imply a 7% share
Finding Costs Are Related to Oil Prices

**Worldwide Finding Costs (USD/boe)**

- Finding and development (F&D) costs were up sharply in 2008 to circa USD24/bbl, then dropped sharply to USD18/bbl in 2011.

- We believe that the 2009 data was skewed downward by high natural gas reserves (converted by the EIA to equivalent barrels of oil at 0.178 barrels per thousand cubic feet, or a 5.6x ratio).

- F&D costs have tended to be closely related to oil prices. Since 1995 we find that the oil price has tended to be about 3.5-4.0 times greater than F&D costs. Assuming 2011-12 finding costs are near USD22/bbl implies that current “equilibrium” oil prices are close to USD80-90/bbl.

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OPEC Revenue Requirements

OPEC “Fiscal Cost” Curve for 2010

[Bar width: country’s production; bar heights: estimate ranges]

Petroleum production (million b/d)

Fiscal break-even price ($/bbl)

OPEC countries represented: KUW, ANG, SAU, UAE, VEN, LIB, IRN, IRQ, ALG, NIG, ECU

APICORP Research
The Performance Of Commodity Indices Compared

Deutsche Bank Liquid Commodity Index
DBLCI- Mean Reversion
DBLCI- Optimum Yield
S&PGSCI

Total returns
1-Dec-1988=100

Source: Deutsche Bank, Bloomberg Finance LP
<table>
<thead>
<tr>
<th>Sector</th>
<th>Outlook</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Energy</td>
<td><img src="Image" alt="Oil" /></td>
<td><strong>Energy</strong>  Spare capacity fears are coming to the fore given the unrest across the MENA region. Events in Japan and Germany as well as supply-demand fundamentals are bullish natural gas prices.</td>
</tr>
<tr>
<td>Industrial Metals</td>
<td><img src="Image" alt="Industrial Metals" /></td>
<td><strong>Industrial Metals</strong> Higher energy prices are injecting negative growth risks for the sector. However, we believe supply side trends remain bullish especially for copper.</td>
</tr>
<tr>
<td>Precious Metals</td>
<td><img src="Image" alt="Precious Metals" /></td>
<td><strong>Precious Metals</strong> We believe renewed inflows into gold ETFs and central bank buying will drive gold prices higher over the medium term. Gold prices would need to move above USD2,000/oz to represent a bubble in our view.</td>
</tr>
<tr>
<td>Agriculture</td>
<td><img src="Image" alt="Grains" /></td>
<td><strong>Agriculture</strong> Price rallies in the sector are maturing and markets should be braced for strong production responses. We view corn and soybeans as the tightest markets in terms of physical fundamentals.</td>
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Appendix 1: Certification

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.
Adam Sieminski
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