Energy and the Economy

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DISCLOSURES AND ANALYST CERTIFICATIONS ARE LOCATED IN APPENDIX 1.

A Passion to Perform.

Deutsche Bank

Energy Demand Simplified

Population, economic growth, and energy intensity

Global Energy Demand =

Population X

Per Capita Income X

Energy Demand / Dollar of Output

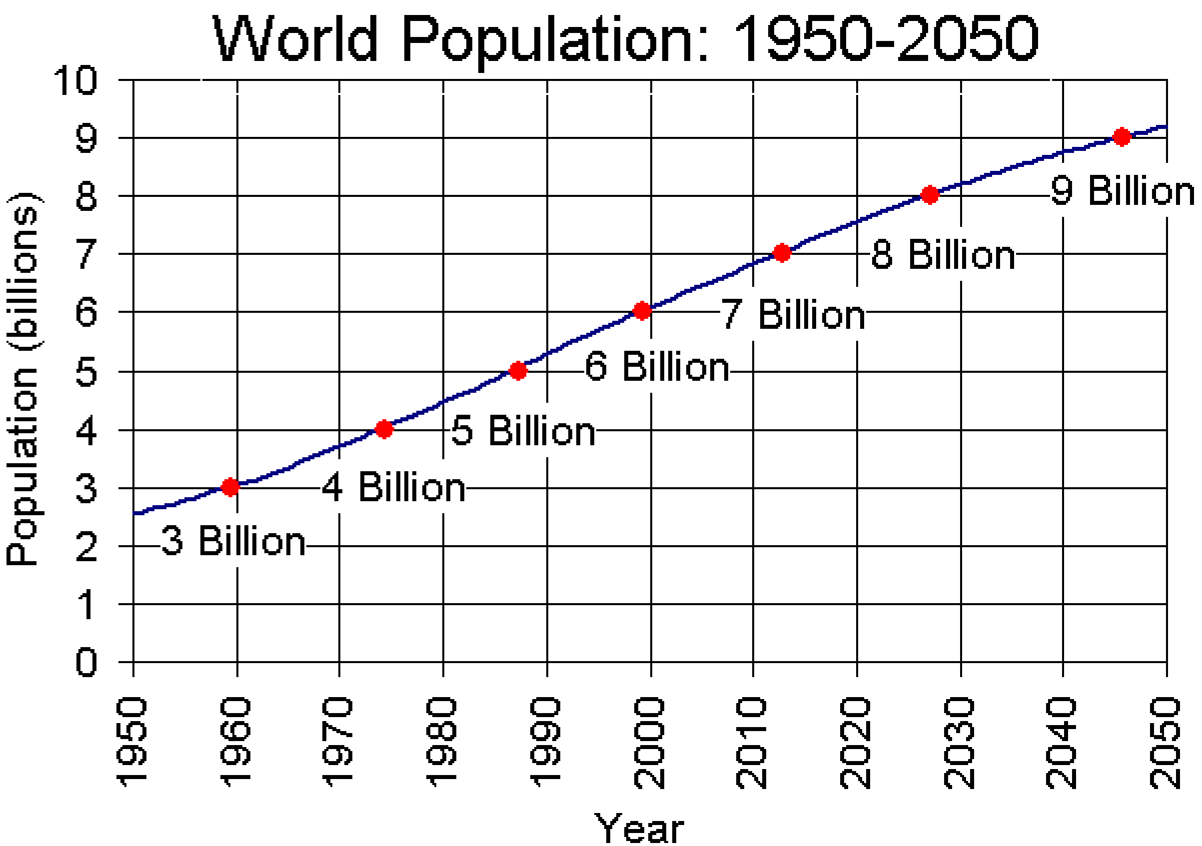
Source: Deutsche Bank

World Population

Global population over 8 billion by 2030

The world population increased from 3 billion in 1959 to 6 billion by 1999, a doubling that occurred over 40 years.

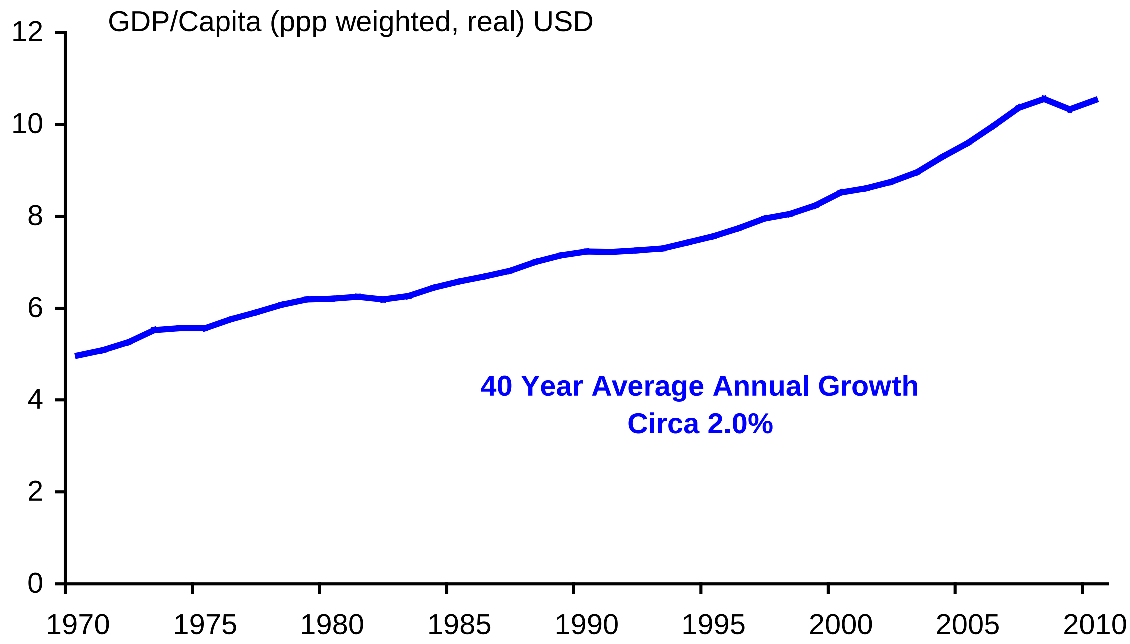
The Census Bureau's latest projections imply that population growth will continue into the 21st century, although more slowly, about 0.8%/yr 2000-2050 vs. 1.8%/yr 1950-2000.



Source: US Census Bureau, International Database, December 2009 update

Per Capital Income

A rising trend in per capita income …could be USD18,000 by 2030



Source: IMF, US Census Bureau, Deutsche Bank

Outlook

- Many academic studies put the long-term growth in global per capita income at about 2% per year.
- Growth in per capita income has accompanied the processes of urbanization, increased access to education, improved health care, longer life expectancies, and improvements in economic, legal, and social institutions.
- Although most nations in the world have policies to reduce population growth rates, virtually every nation seeks to achieve rapid growth in per capita income

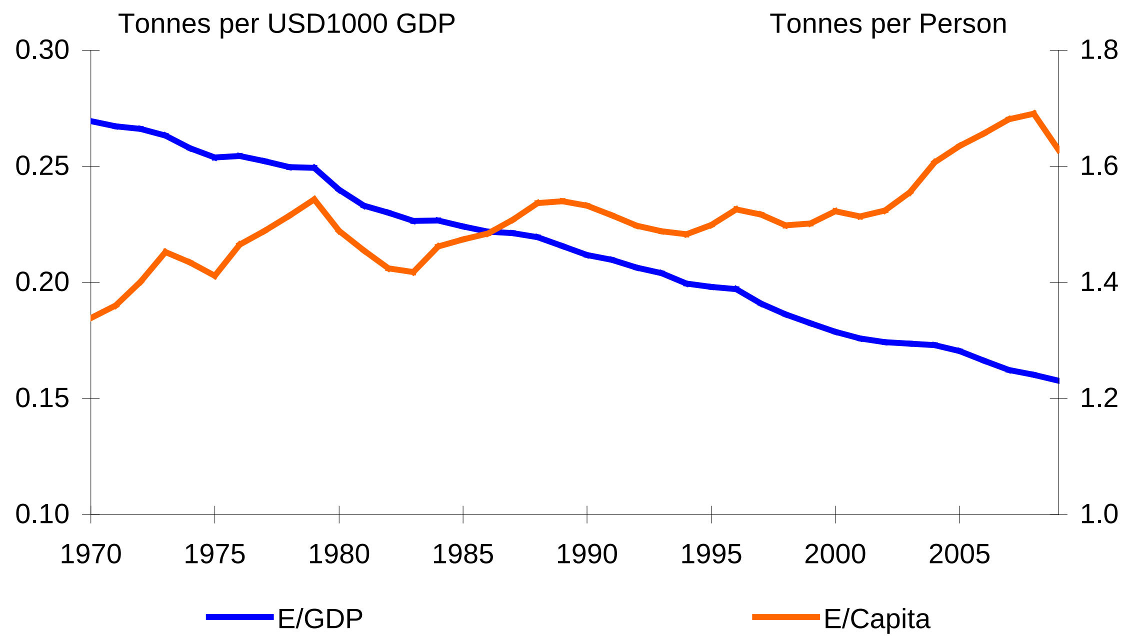
Energy Intensity

Less energy needed to generate GDP …but per capita use giving mixed signals

Energy intensity tends to decline over time as a function of underlying efficiency gains and the transition to a more service-based economy.

The long term trend in intensity has been -1.3%/yr.

Government policies can play a crucial role in how energy intensity changes.



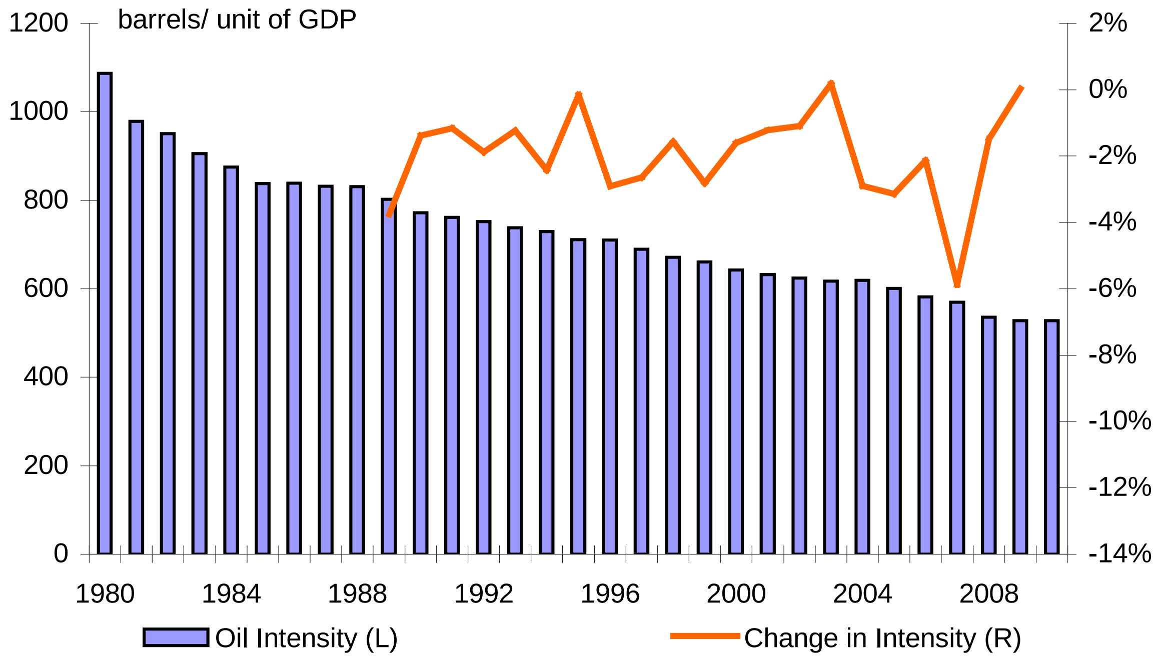
Source: BP, IMF, US Census Bureau, Deutsche Bank

Outlook

- As described by BP, energy intensity measures the amount of energy used to generate a unit of economic output (dividing energy consumption by a measure of economic activity, such as GDP).
- BP observes that energy intensity is not the same as energy efficiency: changes in energy intensity are the product of changes in both the efficiency of energy consuming equipment and the structure of economic output. Energy intensity varies from country to country and over time. Higher levels of energy intensity are often found in emerging economies.

US Oil Demand May Have Already Peaked

US oil intensity (oil used per unit of GDP)



Outlook

- US oil intensity has been declining at about 2% per year, but we believe that is accelerating toward an annual drop of 2.5-3.0% per year.
- If GDP growth averages only 2.5% per year (a typical long-term estimate), US oil demand will not grow.

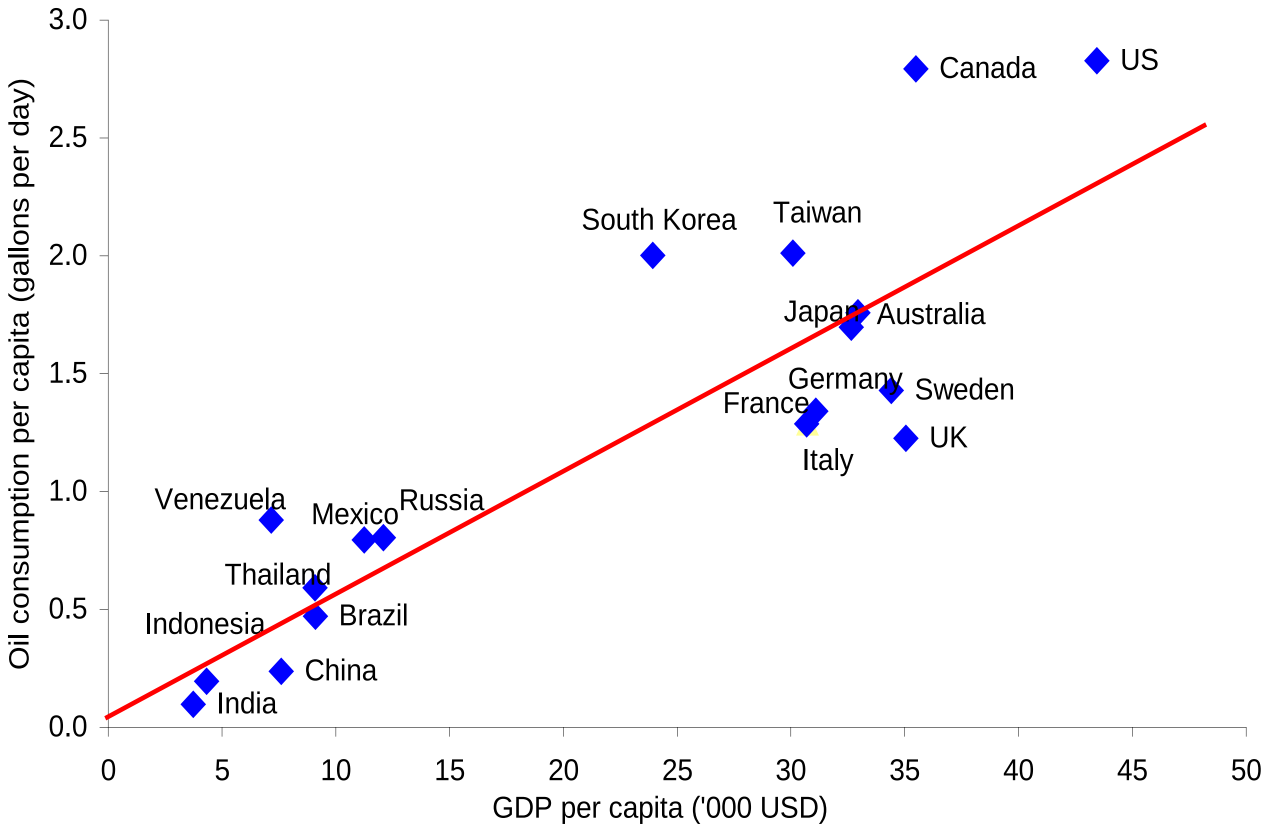
Source: DOE/EIA, IMF, DB Global Markets Research

Long Term World Oil Demand Still Grows

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.

Per Capita Oil Consumption Relative to GDP

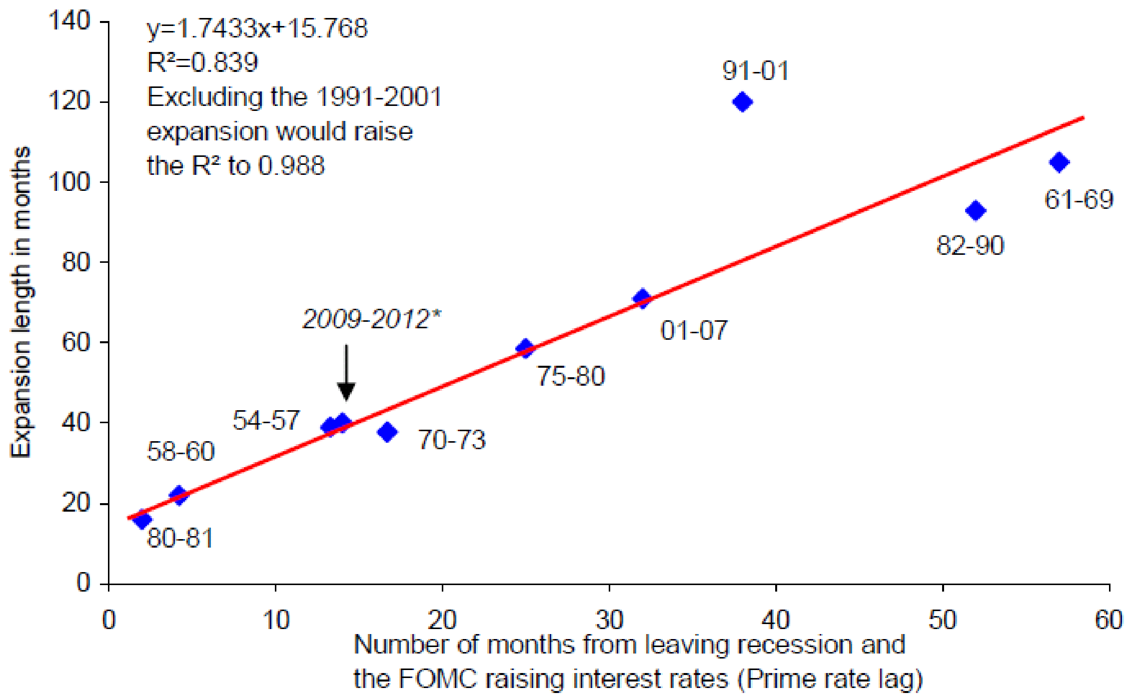


Source: IMF, IEA DB Global Markets Research

Timing the *Next* Recession

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.



** This assumes the US Federal Reserves starts a new monetary tightening cycle in August 2010*

Source: Deutsche Bank

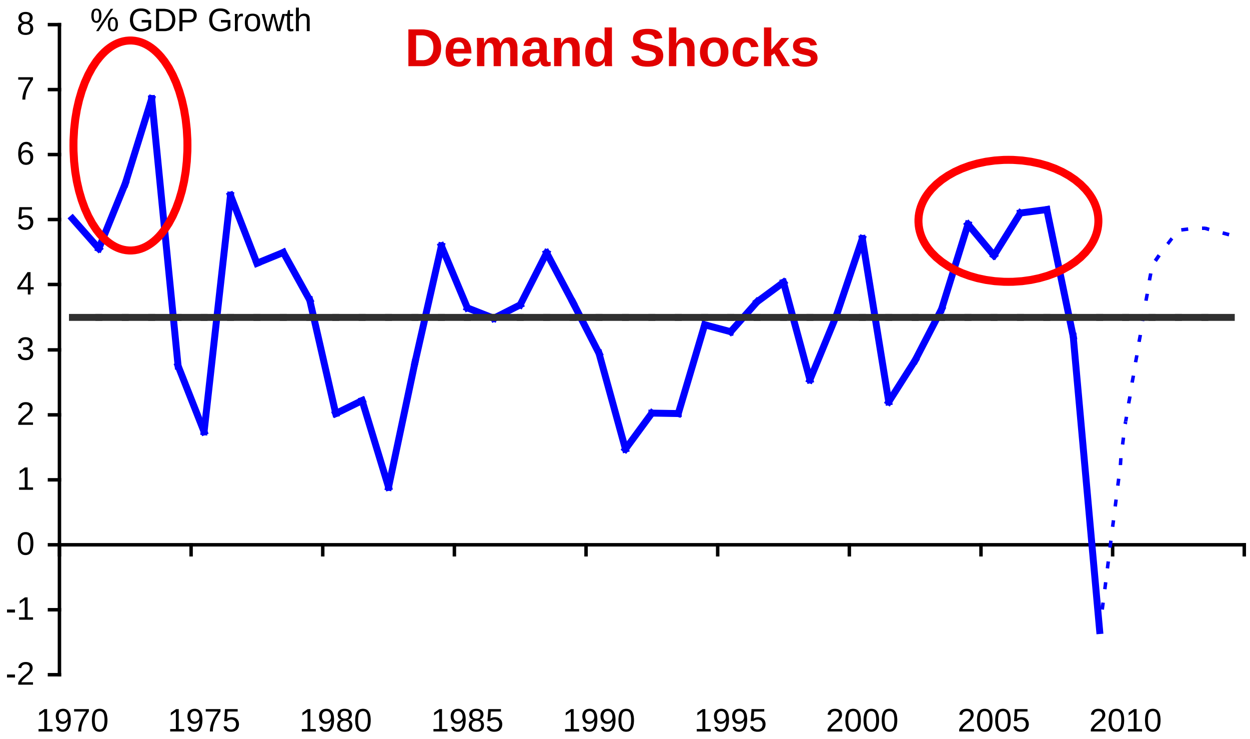
Outlook

- Although it has not been officially declared yet, the latest recession appears to have ended in June 2009. According to our US Economics Team, the Fed will embark on a new monetary tightening cycle in Aug-2010.
- Based on our calculations, this would imply the next US recession will begin in November 2012, which would represent one of the shortest economic expansions in the last 55 years.

World Economic Growth

World economy had a strong growth plateau near 5%/year over 2004-2007 period

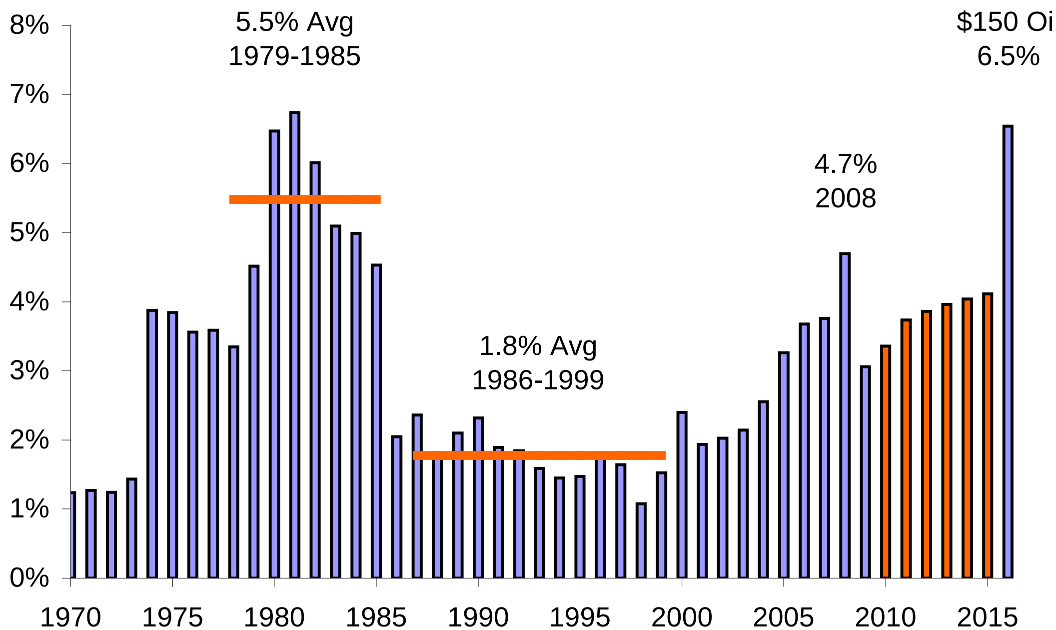
Was the 1973-74 oil crises really a demand shock?



Source: IMF World Economic Outlook Database, DB Global Markets Research

Can Oil Prices Be Too High or Too Low?

Oil's share of world GDP (nominal oil price x demand volume / nominal GDP



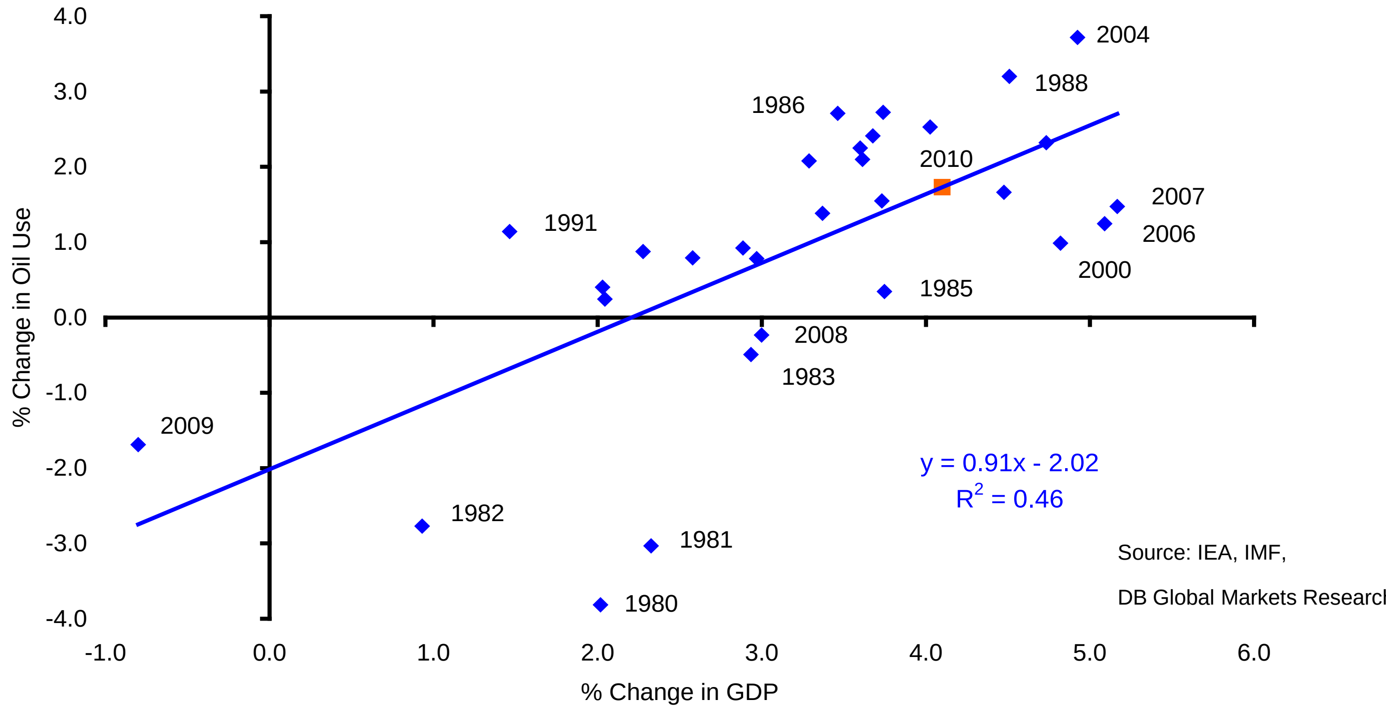
Source: US DOE/EIA, IMF, DB Global Markets Research

Outlook

- At 5-6% of global GDP, oil absorbs too much income -- and provides too much incentive for substitutes.
- At 1-2% of global GDP, end use demand grows rapidly and upstream investment does not.
- The "sweet-spot" appears to be somewhere near 3-4% - which translates into a current WTI price near $70/bbl.

Oil Demand Growth as a Function of GDP Growth

World Total Oil Consumption Relative to Real Global GDP



Outlook

- Assuming that the 1980-2009 historical relationship continues, world economic growth of 4.1% should translate into a 1.7% rise in oil demand. On a base of 84.9mmb/d of demand in 2009, this amounts to circa 1.4mmb/d of oil demand growth in 2010.
- Examining the major forecast assumptions of the DOE/EIA,IEA, and OPEC against our own, we note that if the EIA were using our macro demand model, the EIA's 2.7% GDP growth would generate only 0.5mmb/d of oil demand growth, bringing their absolute forecast more in line with OPEC's view that oil demand will only rise by circa 0.8mmb/d in 2010 than either the IEA or DB forecasts which use higher GDP assumptions.

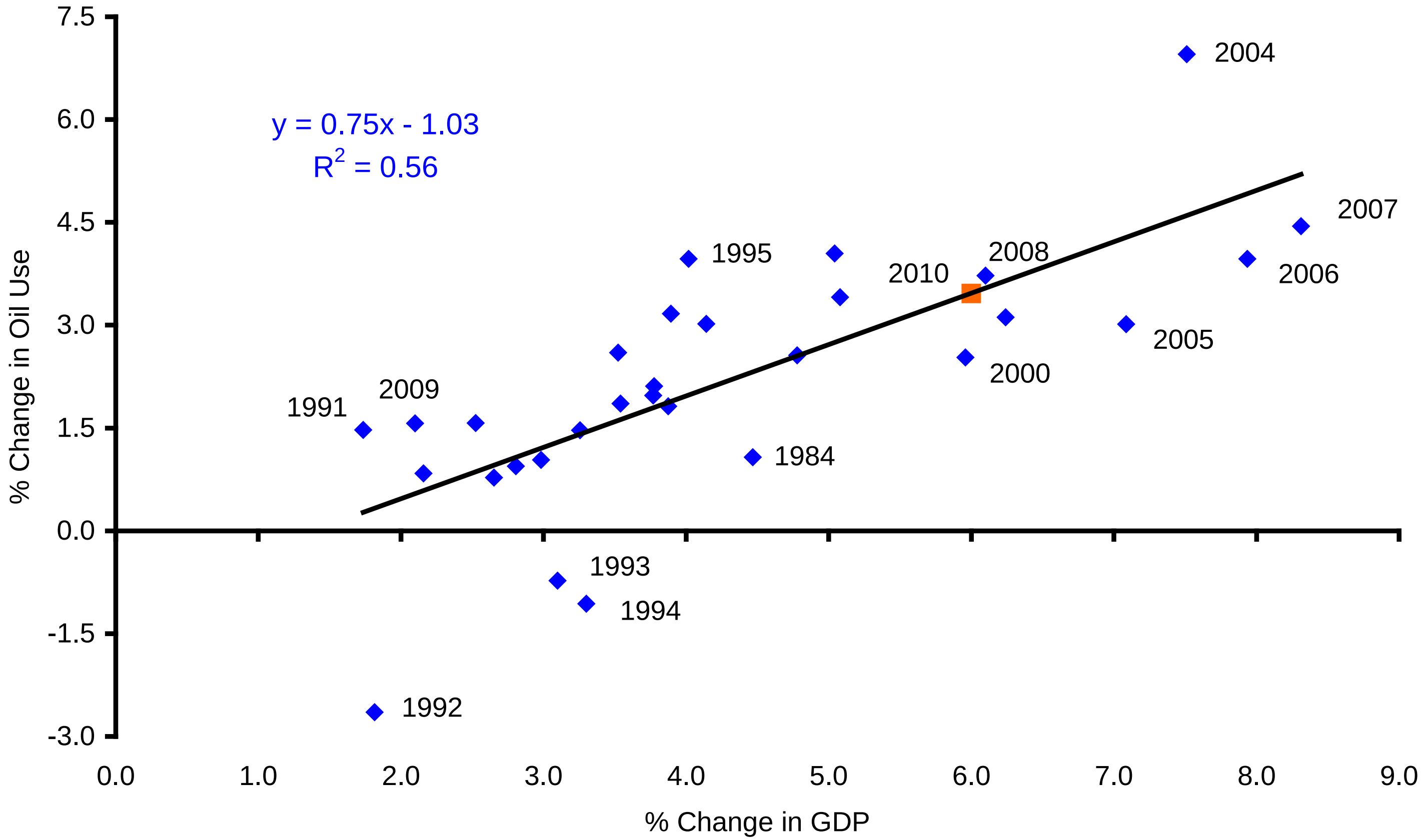
Oil and GDP in the Non-OECD Countries

Non OECD oil demand in 2009 averaged about 39.5 mmb/d.

GDP growth in the non-OECD region should be about 6% in 2010.

The regression equation implies about 3.5% oil demand growth, or circa 1.4 mmb/d in the non-OECD nations in 2010.

Developing Region Oil Consumption Relative to Regional Real Global GDP



Source: IEA, IMF, DB Global Markets Research

Appendix 1 – Disclosures and Certification

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Additional information available upon request

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Appendix 1 – Disclosures and Risks

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Macroeconomic fluctuations often account for most of the risks associated with exposures to instruments that promise to pay fixed or variable interest rates. For an investor that is long fixed rate instruments (thus receiving these cash flows), increases in interest rates naturally lift the discount factors applied to the expected cash flows and thus cause a loss. The longer the maturity of a certain cash flow and the higher the move in the discount factor, the higher will be the loss. Upside surprises in inflation, fiscal funding needs, and FX depreciation rates are among the most common adverse macroeconomic shocks to receivers. But counterparty exposure, issuer creditworthiness, client segmentation, regulation (including changes in assets holding limits for different types of investors), changes in tax policies, currency convertibility (which may constrain currency conversion, repatriation of profits and/or the liquidation of positions), and settlement issues related to local clearing houses are also important risk factors to be considered. The sensitivity of fixed income instruments to macroeconomic shocks may be mitigated by indexing the contracted cash flows to inflation, to FX depreciation, or to specified interest rates – these are common in emerging markets. It is important to note that the index fixings may -- by construction -- lag or mis-measure the actual move in the underlying variables they are intended to track. The choice of the proper fixing (or metric) is particularly important in swaps markets, where floating coupon rates (i.e., coupons indexed to a typically short-dated interest rate reference index) are exchanged for fixed coupons. It is also important to acknowledge that funding in a currency that differs from the currency in which the coupons to be received are denominated carries FX risk. Naturally, options on swaps (swaptions) also bear the risks typical to options in addition to the risks related to rates movements.

Appendix 1 – Global Disclaimer

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