
Who's To Blame for Volatility ... in the Global Oil Markets?

**National Capital Area Chapter
US Association for Energy Economics
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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 

What Is Volatility?

To Fly Away

“Oil and energy price volatility is poorly defined and, to my knowledge, there is no accepted conceptual framework for analyzing it or interpreting it...

...not to mention designing policies and policy instruments to mitigate or reduce its effects.”

Ali Aissaoui

- **Chemistry:** Rate at which a chemical will evaporate. Volatility increases with temperature and decreases with pressure. Latin for “to fly away”.
- **Economics:** Rate of change in price over a given period. Expressed often as a percentage, it is computed as the annualized standard deviation of the percentage change in the daily price.
- **Trading:** Historical Volatility is the annualized standard deviation of percentage changes in futures prices over a specific period. Implied Volatility measures the volatility implicit in the market price for the option on the underlying instrument.
- **Politics:** The price is going in a direction you don't like.

Source: businessdictionary.com, Deutsche Bank

Unreal Prices? Wanton Speculation?

Two Respected Analysts

- “Recent volatility in the oil markets has suggested a disjunction between market prices and the fundamentals of supply and demand... prices for oil have slipped their tether to physical reality.”
 - Robert Mabro, Oxford Institute for Energy Studies, Aug-2008
- “...both [the United States and Saudi Arabia] want to limit the volatility in [oil] prices created by wanton speculation.”
 - Edward Morse, “Low and Behold”, *Foreign Affairs*, Sep-2009

Wanton: Malicious risking of harm to others; reckless disregard of the consequences
Source: BusinessDictionary.com

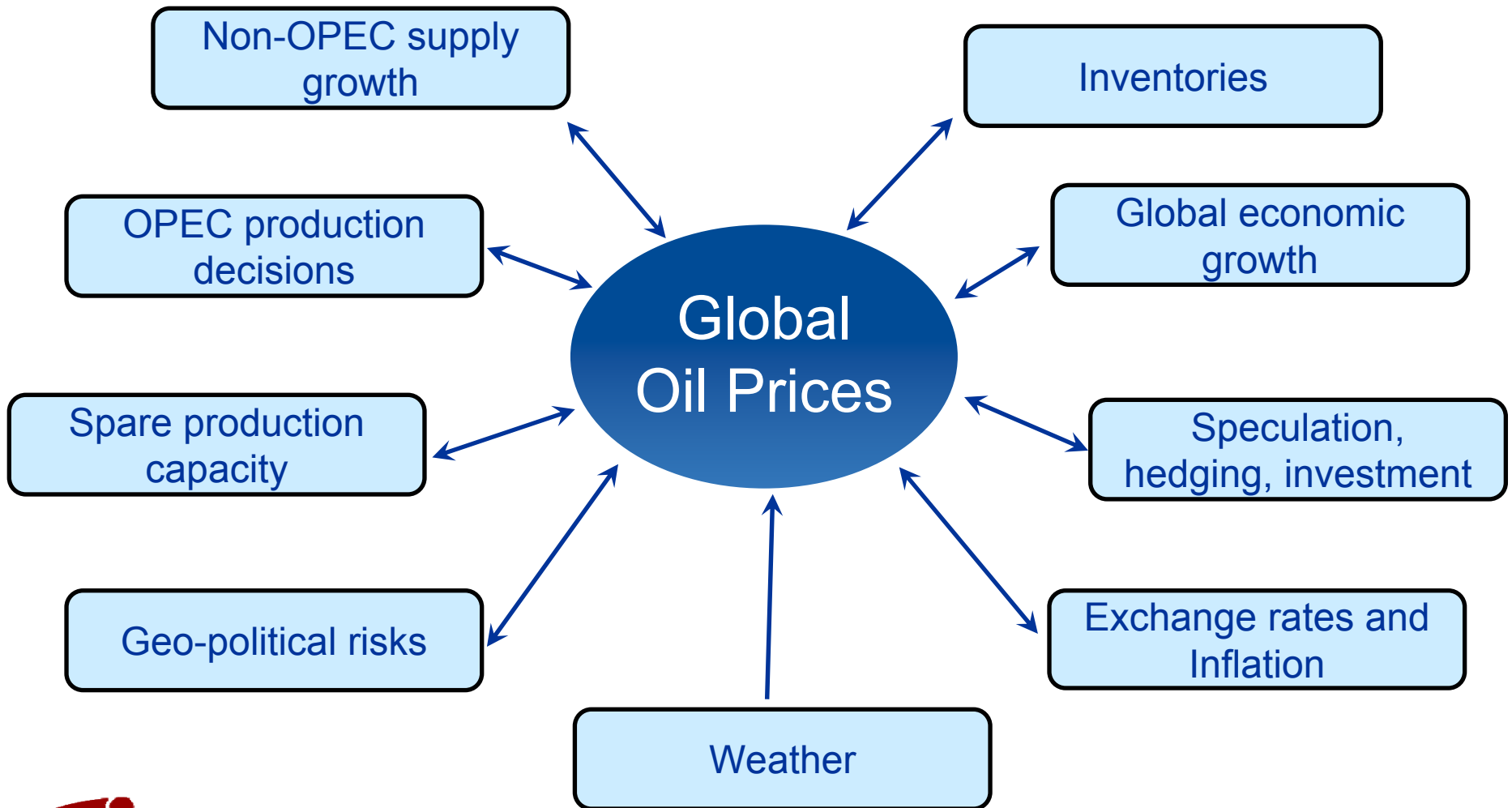
Oil Prices Relate To Many Uncertain Factors

Richard Newell

EIA Administrator

NASEO Winter Fuels Outlook

October 2009



Source: US DOE/EIA

Factors Affecting Crude Oil Prices

Dean Foreman

Chief Economist

Talisman Energy

September 2009

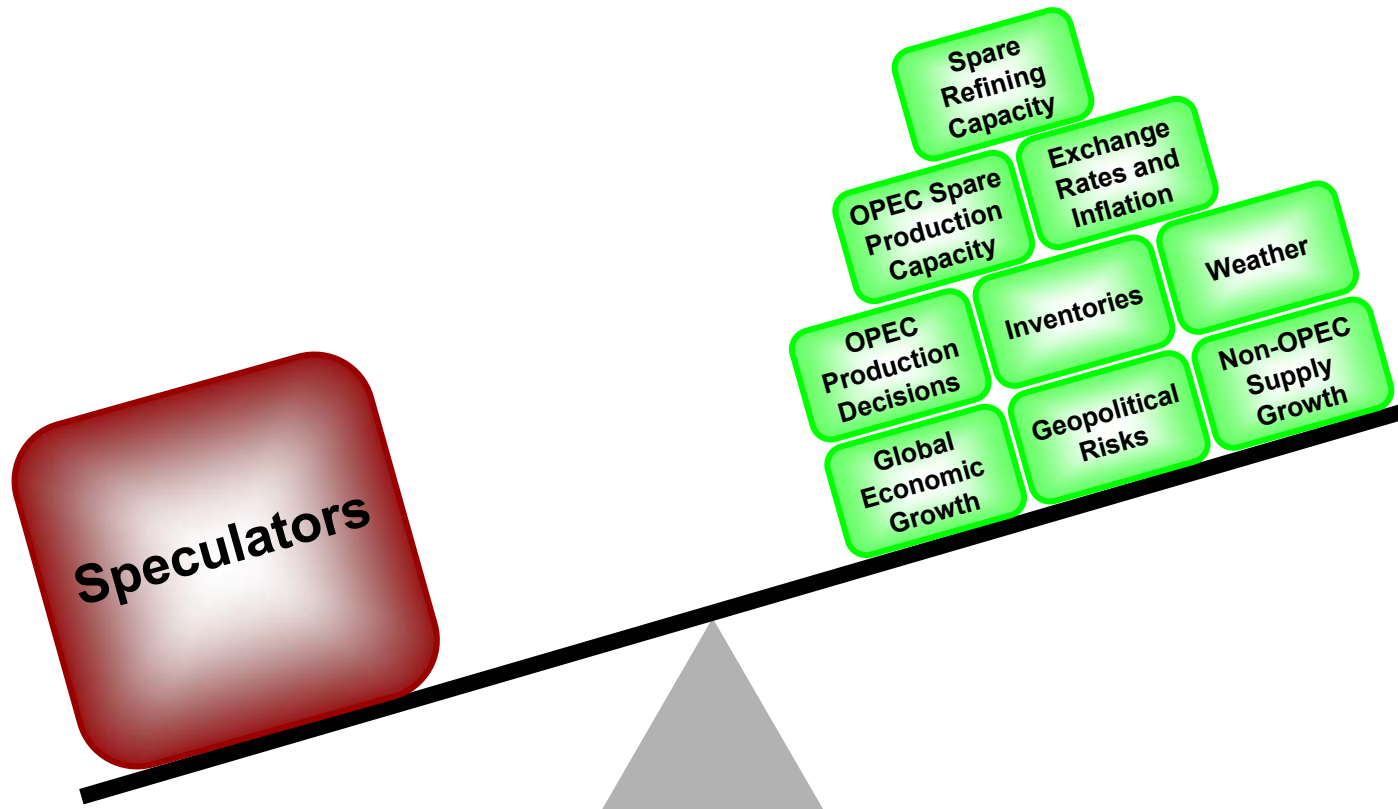
Current Assessments

Future Expectations



Headline Perception of Factor Weights

Blaming Speculators Generates Great 30-Second Sound Bites, But Does It Reflect Reality?



Rare Events

Jonathan Adelman Univ. of Denver

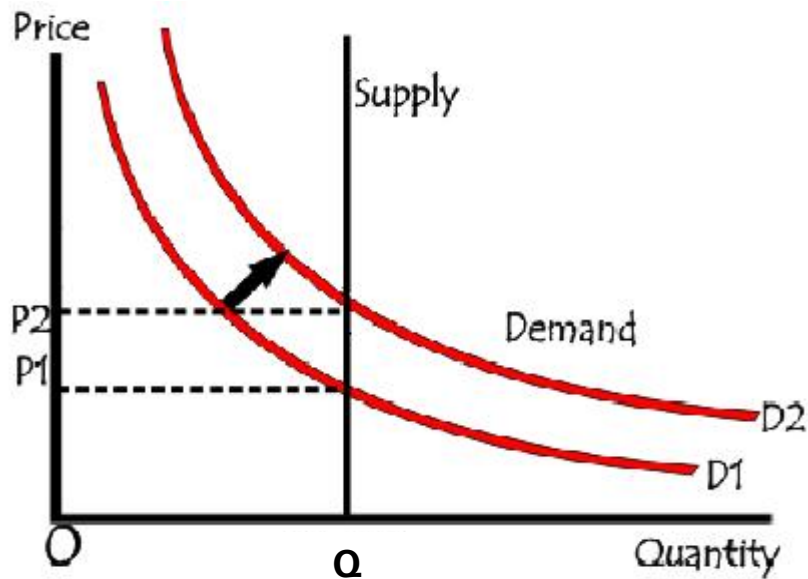


Image Source: The Atlantic Council

- Capacity to understand our world still has limits
- Computer models work best with good data sets
- Recent events loom large
- Non-rational behavior is commonplace
- Accidents happen; some events are random
- Charismatic individuals matter: Who's in the room?

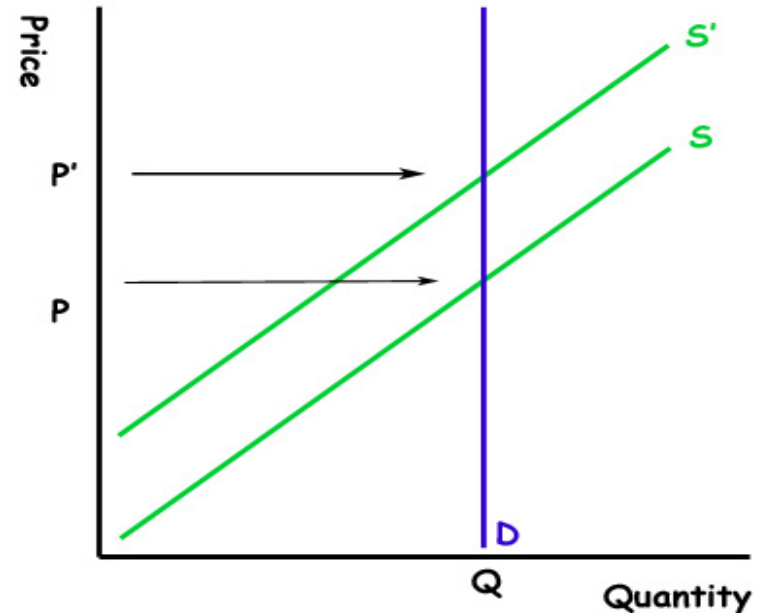
Inelastic Short-Term Supply and Demand

Peak Oil (Inelastic Supply)



Source: <http://www.history-society.com>

Insatiable China (Inelastic Demand)



Source: <http://www.clangmann.net>

James L. Smith

“World Oil: Market or Mayhem?”

SMU

24-May-2009

- “...annual volatilities are so 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 take 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.

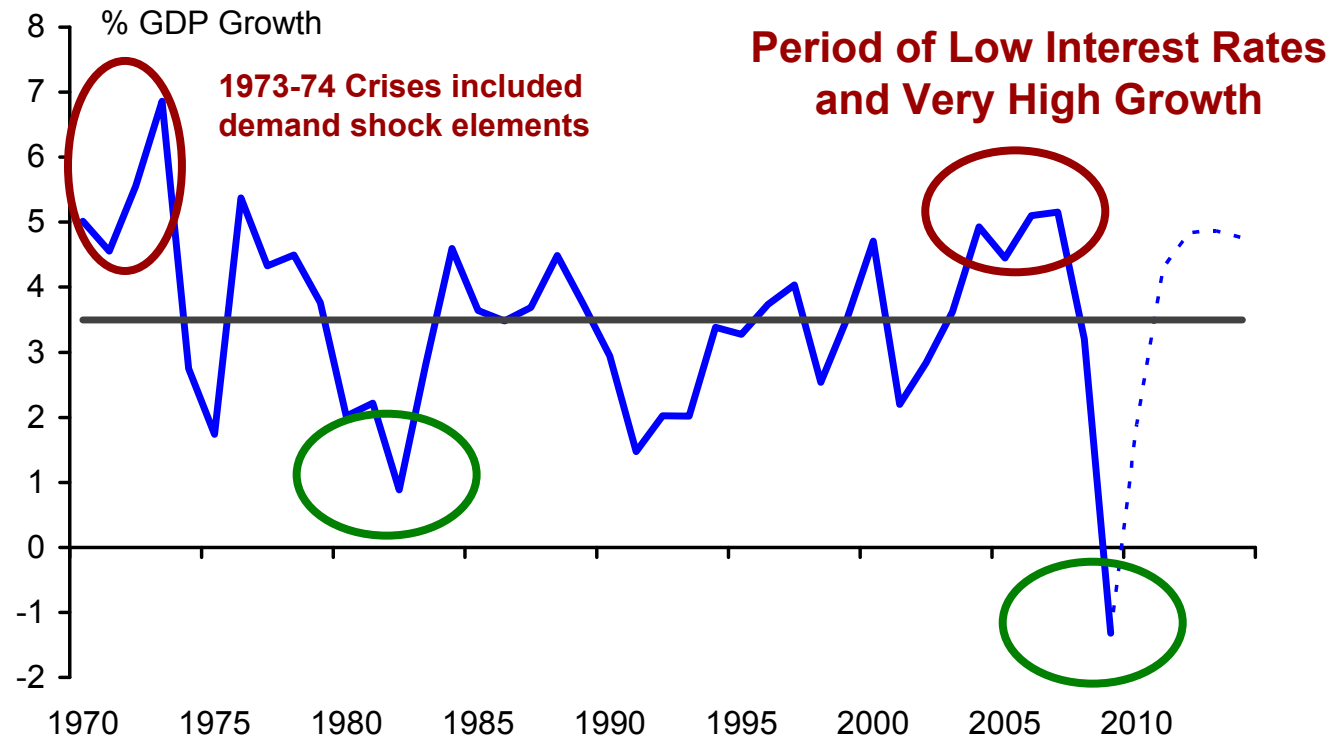
GDP Demand Shocks

A strong growth plateau near 5%/year over 2004-2007 period

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

Oil demand growth averaged 7.6%/year over 1965-73.

GDP growth estimates for 2009 and 2010 are now getting *better* (at the margin) rather than worse.



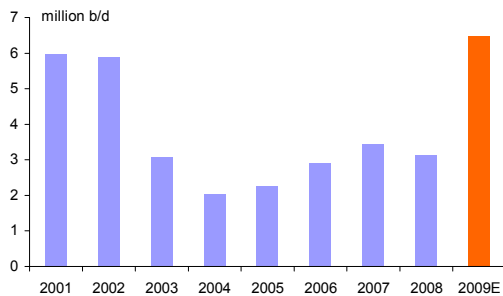
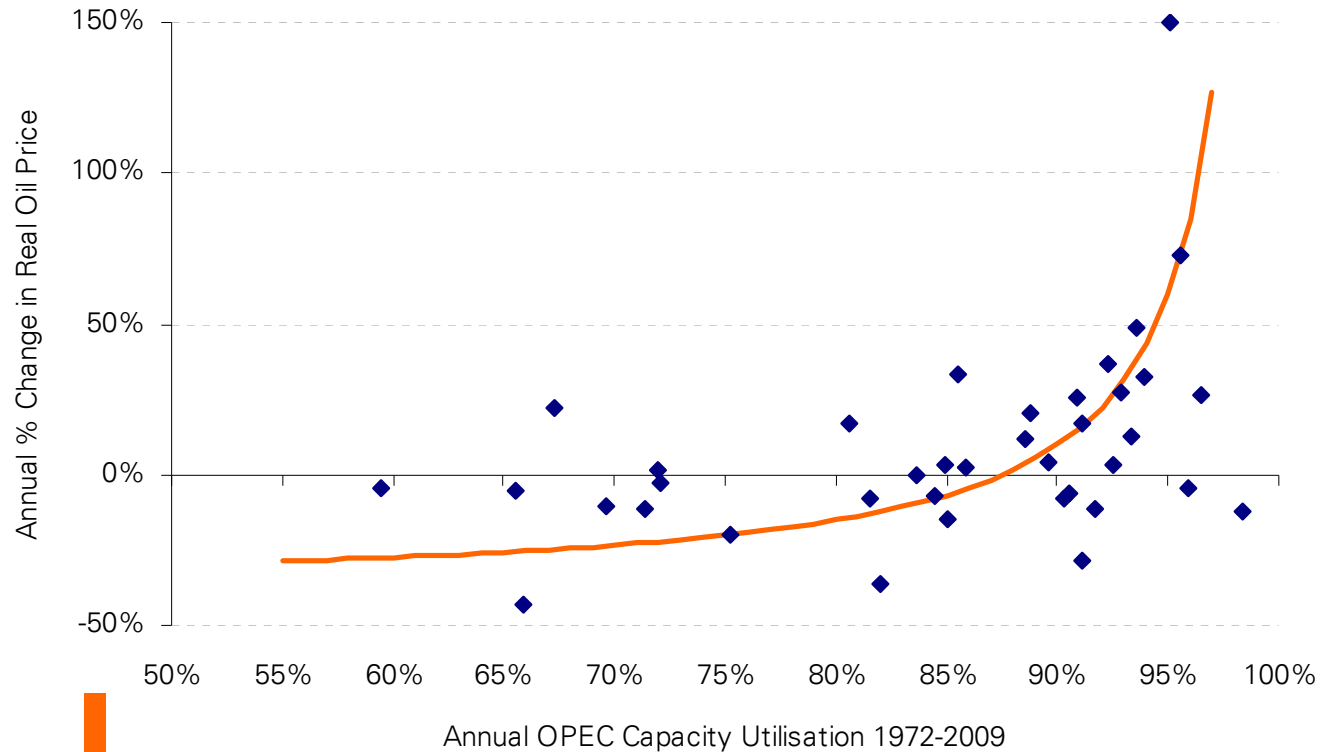
Source: IMF World Economic Outlook Database, DB Global Markets Research

OPEC Spare Capacity and Oil Prices

Low spare capacity often leads to price spikes

The lack of spare OPEC production capacity played a strong role in the run-up in oil prices in 2003-08.

In 2009 and 2010, high spare capacity should help moderate prices.



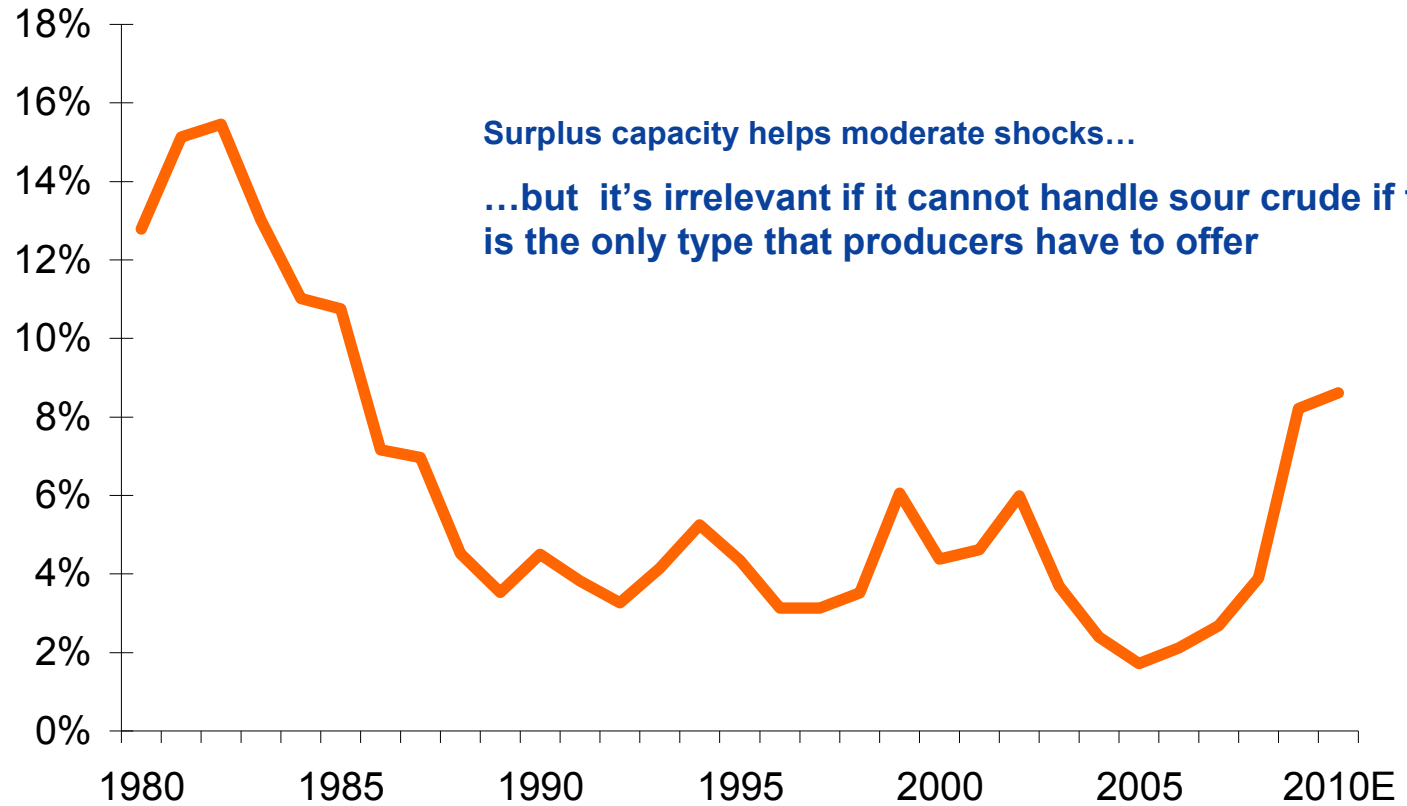
Source: DOE/EIA, IEA, DB Global Markets Research

Refinery Capacity and Oil Prices

Useable distillation capacity was very low 2003-2008

The lack of spare refining capacity played a strong role in the run-up in oil prices in 2007-08.

This is reversing in 2009-10.



Source: BP Statistical Review of World Energy 2009, DB Global Markets Research

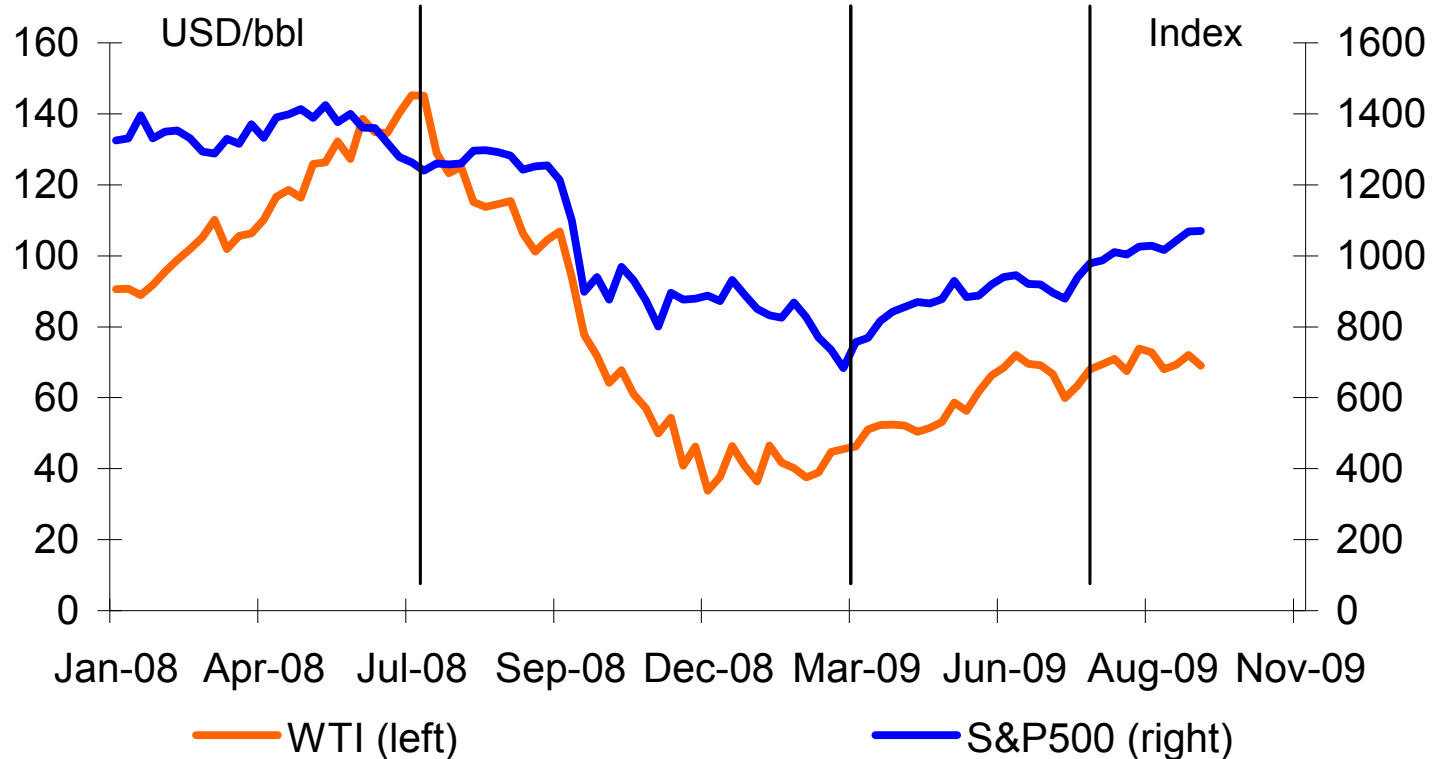
Oil Prices and the US Stock Market

Stock market pulls oil down, then up, and now maybe not pulling at all

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.

From July 2009, the relationship is back to the more traditional inverse correlation.

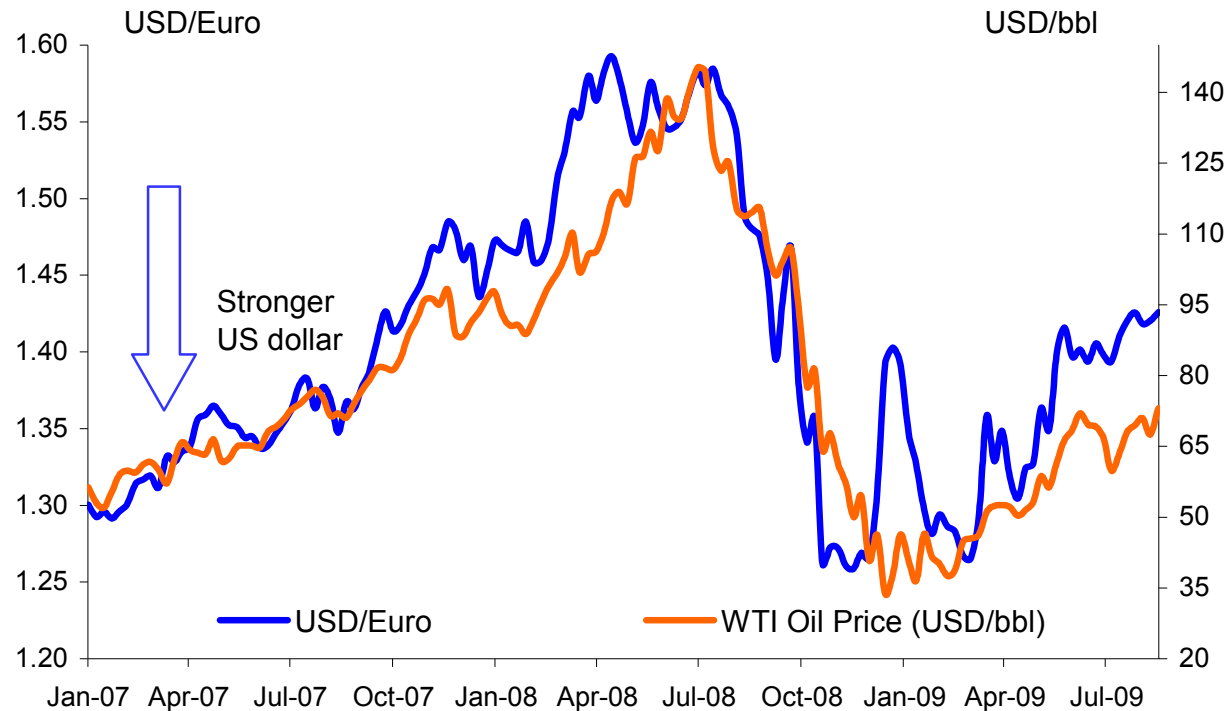


Oil Prices and the US Dollar

What is the shifting dollar doing to commodities and oil?

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.



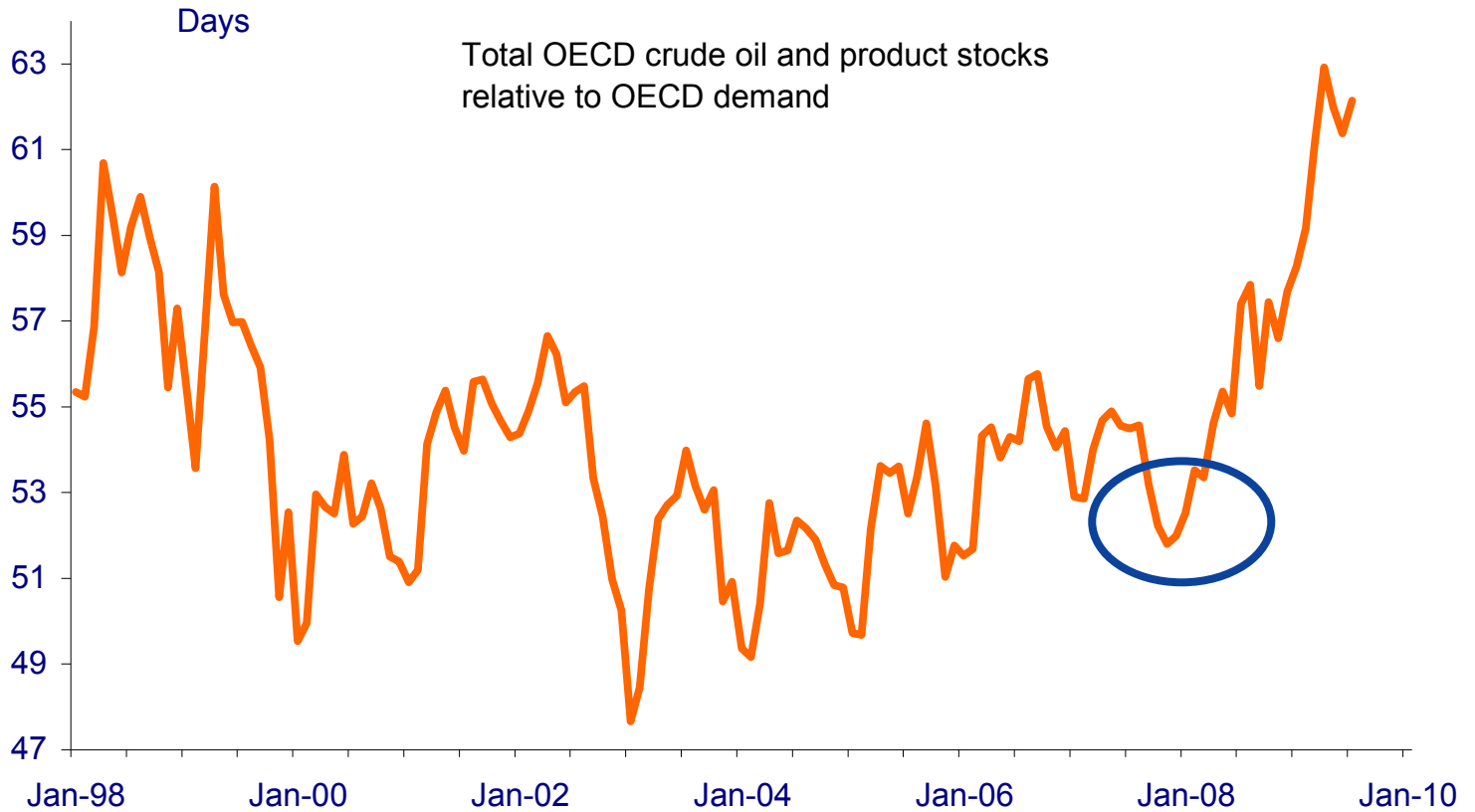
Outlook

- 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 1.50 implies triple-digit oil.

OECD Inventories and Oil Prices

Days forward cover of OECD crude and product stocks

Early 2008 stock levels were at a 2-year low.

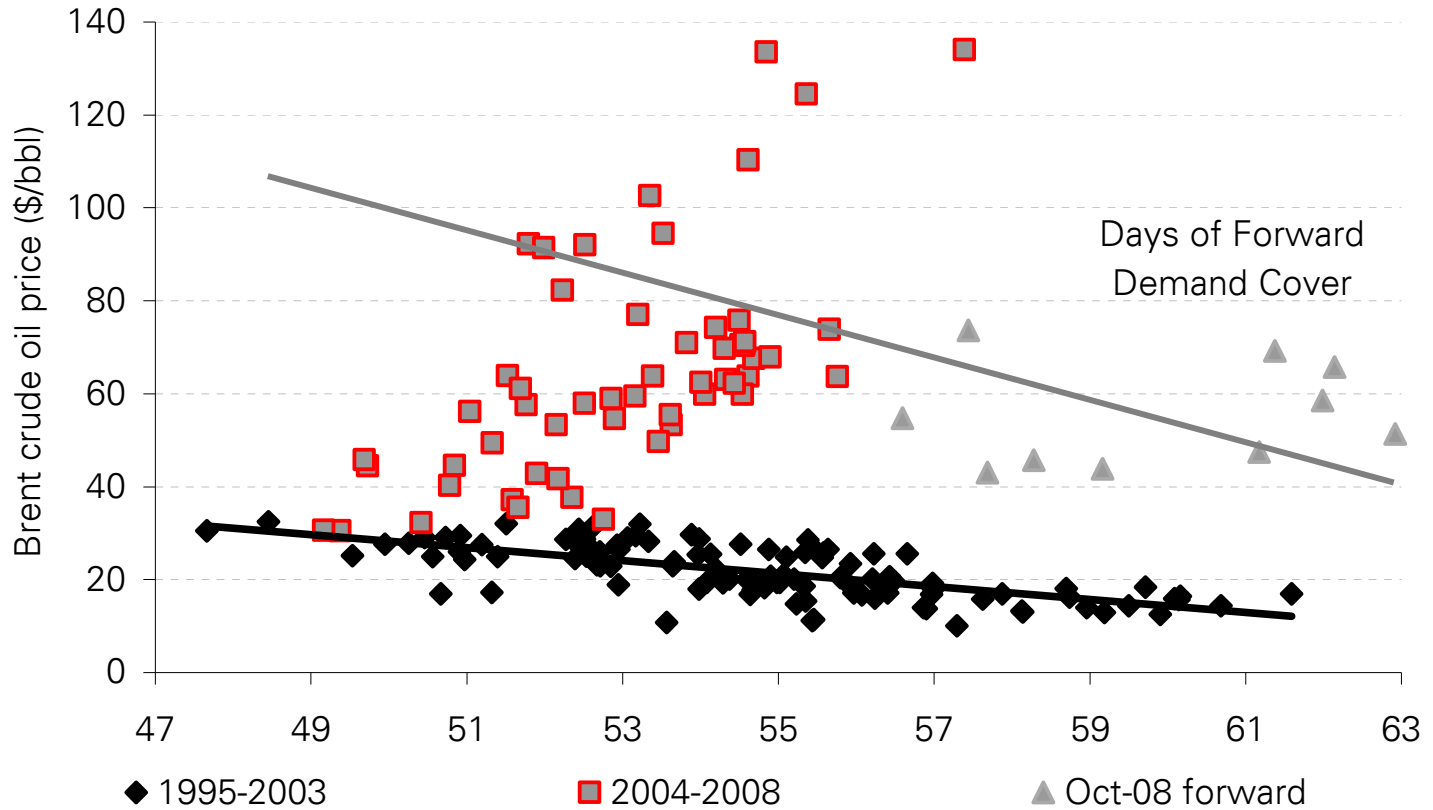


Source: IEA, DB Global Markets Research

OECD Inventories and Oil Prices

Days forward cover of OECD crude and product stocks vs. oil prices

Prices and stock levels had a very predictable relationship in the 1995-2003 period.



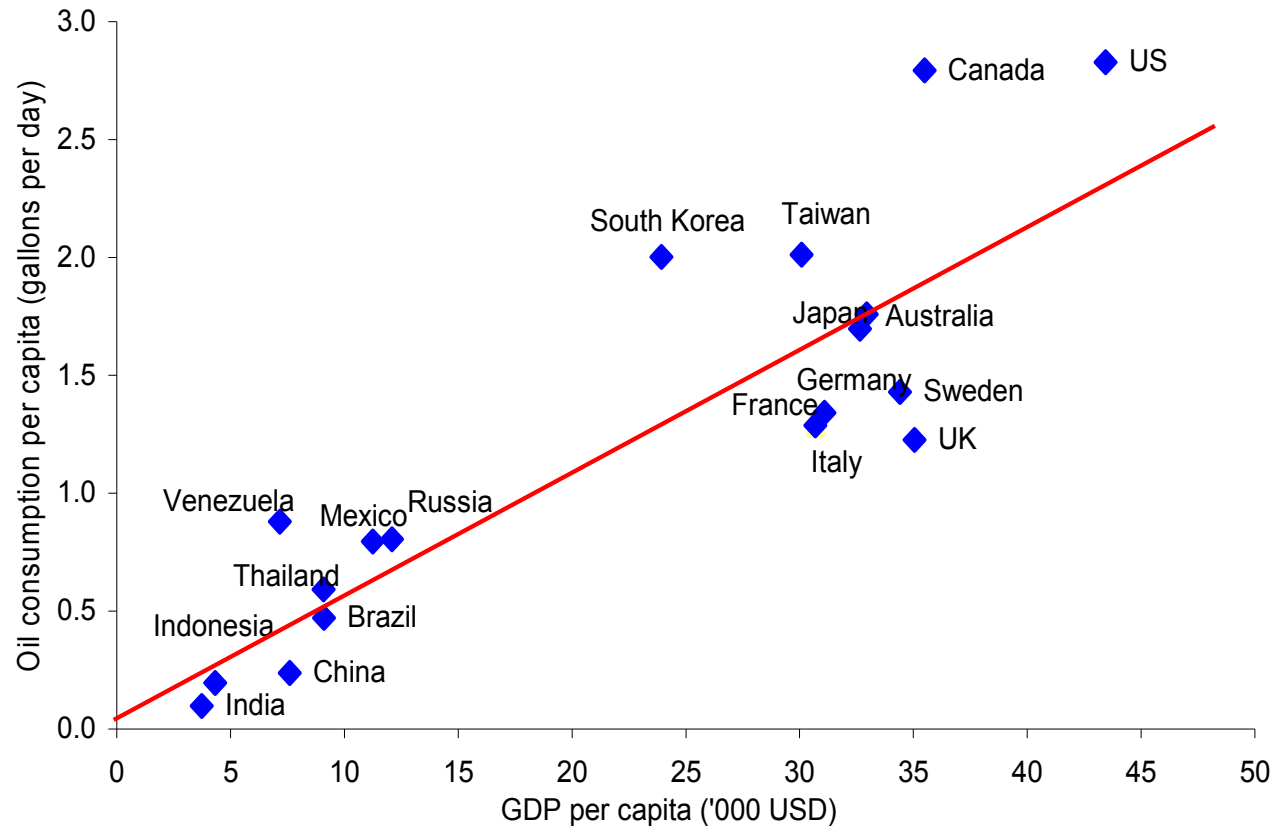
Source: IEA, DB Global Markets Research

Long Term Oil Demand Grows Despite “Conservation”

Per capita oil consumption relative to GDP

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.



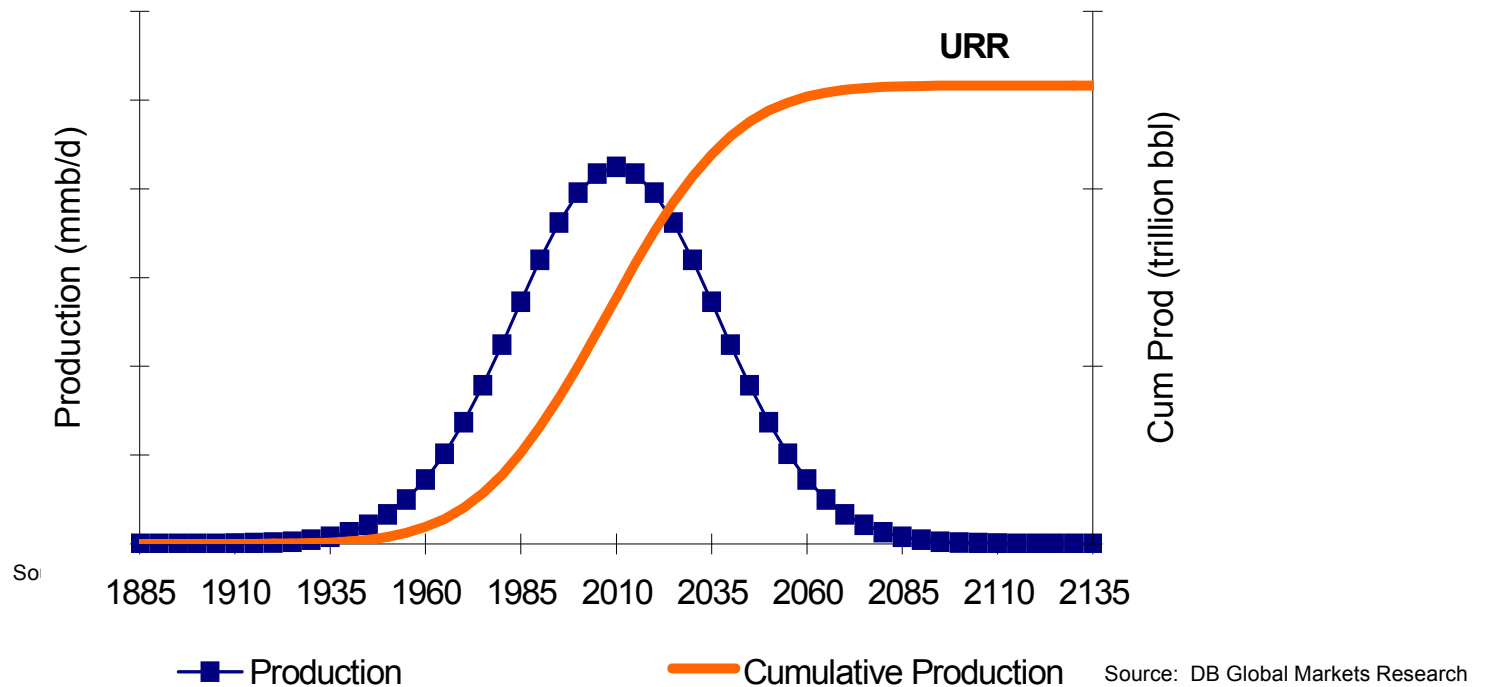
Source: IMF, IEA DB Global Markets Research

Are We Running Out?

“Peak Oil” Theory
 (1) requires a “final” estimate of the level of ultimately recoverable reserves (URR)... but URR estimates have been rising.

(2) assumes that once half of the world’s reserves have been used up, production must fall... may be true, but that point keeps moving ahead in time.

Hubbert Peak Curve (Idealized)



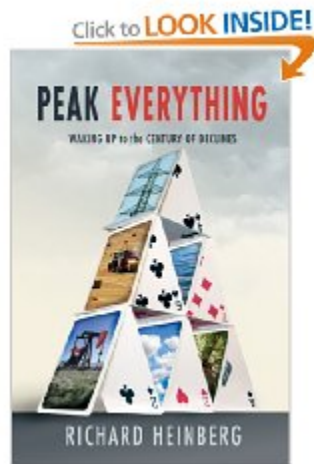
Outlook

- Dr. M. King Hubbert, a geologist for Shell and the USGS in the early 1960s, used a bell curve to correctly predict the 1972 peak in US oil production. A number of followers have attempted to extend Hubbert’s methodology to forecast a world oil peak this decade.
- Hubbert models do not account for changes in technology, costs, prices, or politics - all of which can have a huge impact on the actual shape of the production curve. Hubbert peak oil models assume a symmetric curve to determine the year and amount of peak production.
- Increases in subsoil knowledge, the spread of technological progress, and the advancement of drilling – along with political decisions and oil price changes – have shown time and again that peak production can be increased and delayed, so the decline phase of the bell curve can be shifted to the right

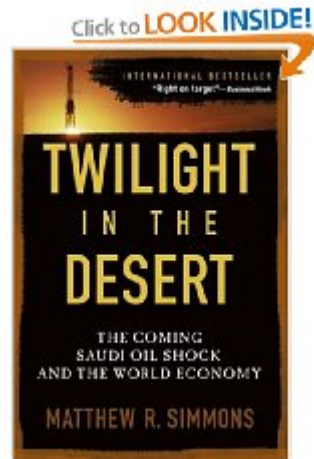
Click Here If You've Written a Hubbert Peak Book!

“...doomsayers
hard at work
fanning the
flames of
hopelessness and
pessimism”

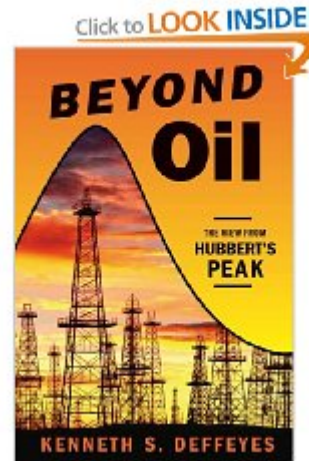
Leonardo Maugeri



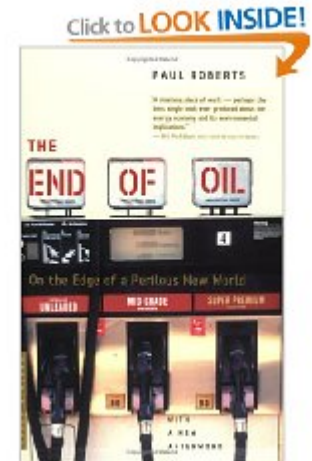
2007



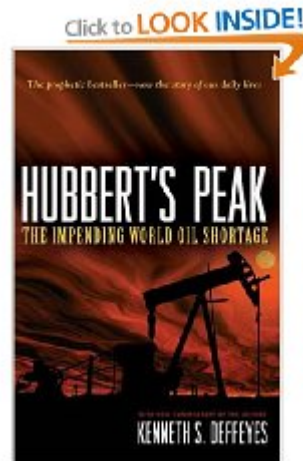
2005



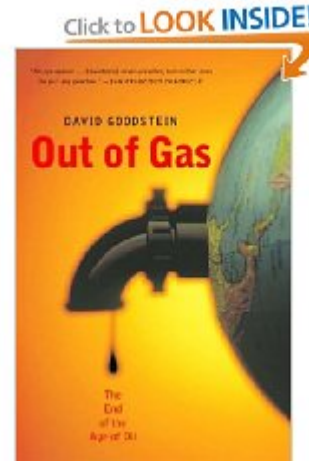
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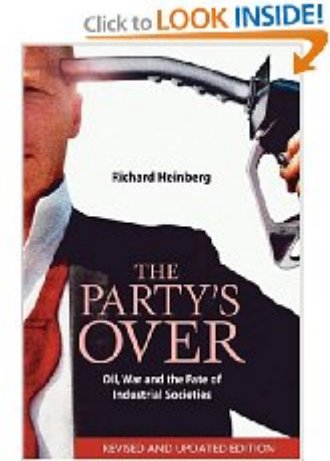
2005



2001- 2003



2004



2003-2005

Can These Countries Deliver?

World remaining proved oil reserves (billion barrels)

80% of the world's remaining proved oil reserves are in countries that are NOT strong market economies.

		Remaining Reserves	Share of Total
1	Saudi Arabia	264.1	21.0%
2	Iran	137.6	10.9%
3	Iraq	115.0	9.1%
4	Kuwait	101.5	8.1%
5	Venezuela	99.4	7.9%
6	United Arab Emirates	97.8	7.8%
7	Russian Federation	79.0	6.3%
8	Libya	43.7	3.5%
9	Kazakhstan	39.8	3.2%
10	Nigeria	36.2	2.9%
	Top 10 Total	1014.1	80.6%
	Proved Reserves at end 2008	1258.0	100.0%

Outlook

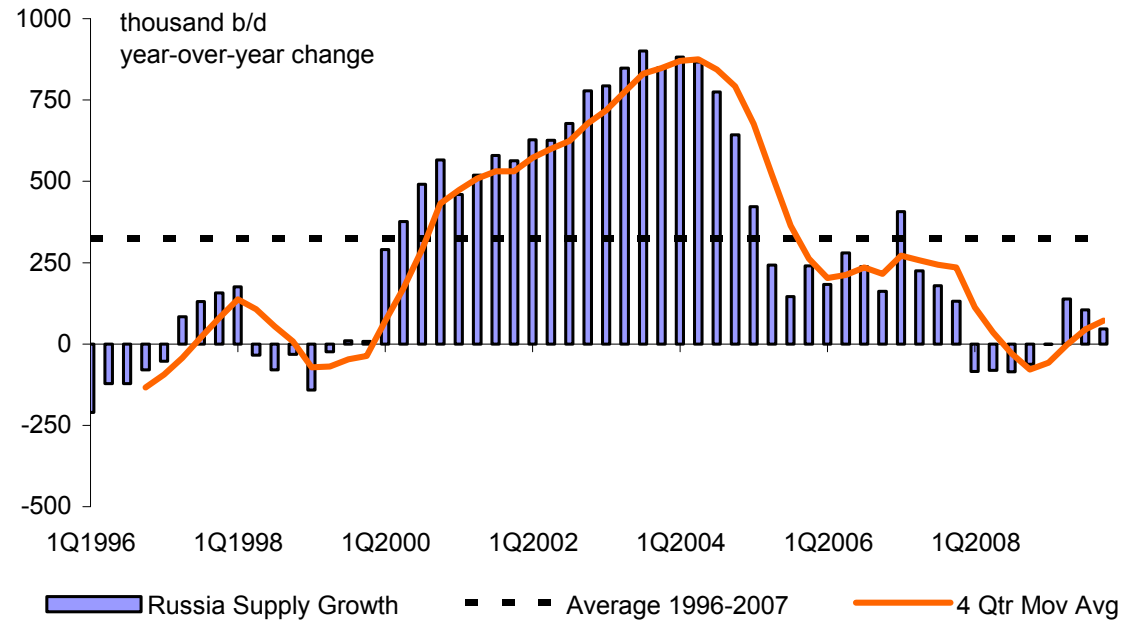
- Iran, Iraq, Venezuela and Nigeria together have nearly 1/3 of the total remaining reserves.
- With the possible exception of Iraq, there is little prospect of any near-or-medium-term growth from these massive reserve holders.

Source: BP Statistical Review of World Energy, June 2009

Rare Events: Trouble with Russia's Economy

Russian production declines for the first time in a decade in 2008

Putin's policies in his first term worked but in his second term were a disaster for oil output.



Outlook

- The Russian government's policy of hostility to its own oil entrepreneurs, growing disdain for foreign capital, and desire to maximize taxes regardless of the impact on capital investment brought an end to the growth in production that characterized President's Putin's first term (2000-2004).
- Although "peak oil" proponents are citing the development as proof that global production is faltering because of geological constraints, we see the situation as offering strong evidence that oil production problems are being driven more by "above the ground" problems.

Source: IEA, Deutsche Bank

Rare Events: Unstoppable Nuclear Ambitions in Iran?

Top World Oil Net Exporters (kb/d)

Iran is the 4th
largest oil
producer in
the world...
..and the 5th
largest
exporter.

Rank	Country	Exports
1	Saudi Arabia	8,038
2	Russia	7,054
3	United Arab Emirates	2,507
4	Norway	2,361
5	Iran	2,326
6	Kuwait	2,291
7	Nigeria	2,082
8	Venezuela	1,960
9	Algeria	1,907
10	Angola	1,711
11	Libya	1,584
12	Iraq	1,501
13	Mexico	1,361
14	Kazakhstan	1,213
15	Canada	1,116

Source: US DOE/EIA, 2007 rankings

The Oil Under-Investment Cycle

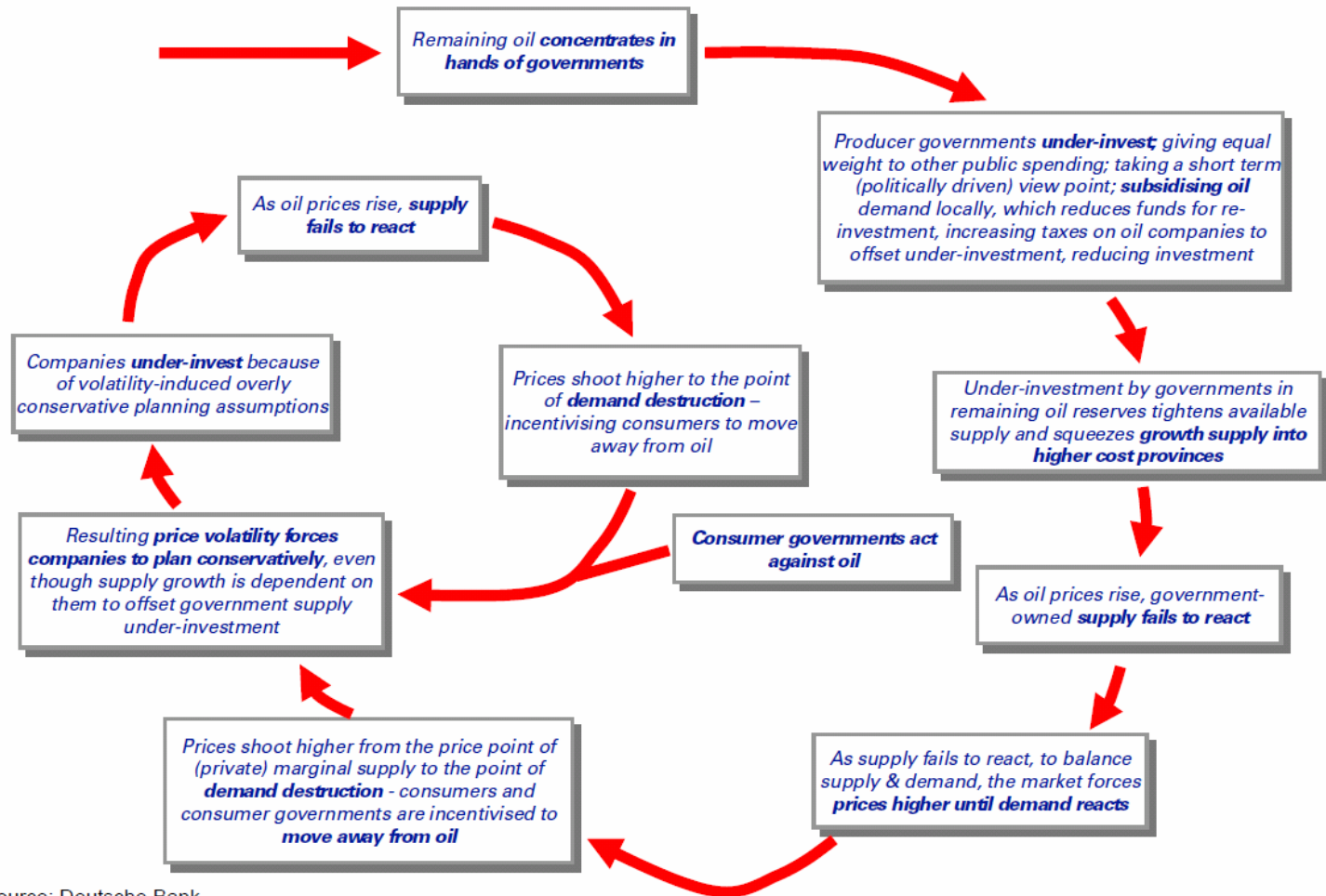
Paul Sankey

Deutsche Bank Securities

October 2009

As governments (producer and consumer) take more control of oil, supply is constrained and the under-investment cycle is exacerbated.

Paul Sankey



Source: Deutsche Bank

Speculation Is NOT Manipulation

Some Definitions

- **INVESTMENT:** An outlay of a sum of money to be used in such a way that a profit or increase in capital may be expected. Dividends are distributions of a company's profit, paid out to common and preferred shareholders.
- **HEDGING:** Taking a position in a futures market opposite to a position held in the cash market to minimize the risk of financial loss from an adverse price change; or a purchase or sale of futures as a temporary substitute for a cash transaction that will occur later.
- **SPECULATION:** The act of knowingly investing funds in a venture carrying higher-than-average risks in the hope of making above-average profits. Speculators expect to make a profit because of price changes.
- **GAMBLING:** Gambling (or betting) is any behavior involving risking money or valuables (making a wager or placing a stake) on the outcome of a game, contest, or other event in which the outcome of that activity depends partially or totally upon chance.
- **MANIPULATION:** The illegal buying or selling of a security in order to create a misleading appearance of active trading that inflates or deflates the price of the security.

Source: InvestorDictionary.com

Did Speculators Drive Oil to \$147/bbl?

Politicians are looking for somebody to blame

Why Don't They Look Here?

- Extraordinarily strong (unsustainable?) global economic growth from 2002-2007.
- Constrained oil supply from key producers like Russia, Venezuela, Nigeria, Iran, Iraq and others.
- Lack of OPEC spare production capacity and untimely cutbacks by OPEC at the end of 2006 that were not reversed until late 2007.
- Subsidies on oil consumption in many rapidly growing (economy, population or both) countries in Asia and the Middle East.
- Untimely strategic petroleum reserve purchases by both China and the US in 2007 and 2008.
- US dollar depreciation.
- Lack of spare refining capacity to handle heavy sour crude oil.



Image Source: Deutsche Bank

Source: DB Global Markets Research

A Primer On Oil Prices

Philip Verleger

PKVerleger LLC

January 2007

A Bidirectional System of Causality

Product prices determine crude oil prices and crude oil prices determine product prices.

Here are the things that really matter:

- Volume and characteristics of alternative crude oil types offered for sale (not all the same!)
- Capability and capacity of the world refining industry to process these crudes
- Government-mandated specifications for oil products marketed by refiners
- Characteristics and volume of global petroleum demand
- Available storage capacity for crude oil and petroleum products
- Flexibility of the world transportation system for getting petroleum from the point of production to the point of sale

Who Was To Blame for High Oil Prices in 2008?

Let's pin the blame on these folks

Virtually every serious study ever published says that speculators add liquidity to markets and don't set prices.

Why don't speculators get blamed for low prices?

- High oil demand: Loose monetary policy- Greenspan
- Subsidies on oil consumption: Asia, Middle East, Russia
- Inflexible SPR management: Bush...or was it Cheney

- Low oil supply: Putin, Chavez, MEND, Ahmadinejad
- Lack of OPEC spare capacity: OPEC/Saudi Arabia
- Peak oil hysteria: Campbell, Simmons

- Lack of spare refining capacity: US Congress, OPEC
- US dollar depreciation: US consumer spending
- Extreme weather events: God...or sunspots, or is it CO2?

Source: Deutsche Bank

CFTC's Old Conclusions

Ali Aissaoui

Arab Petroleum Investments Corporation

October 2009

Comments about the CFTC's main published findings (July 2008 and July 2009) and their conclusion that "speculative activity has not systematically driven changes in oil prices":

- Based on linear Granger-causality tests, the CFTC failed to find the causality from the traders' positions to prices.
- However, CFTC reminds us that Granger-causality results should not be interpreted as "cause" and "effect" relation but as "lead" and "lag" relation between variables (this caveat is invariably ignored by the general media, the trade press and, pitifully, by some researchers and analysts).
- Indeed, Granger causality measures whether one thing happens before another thing and help predict it – and nothing else. It may catches some "real causality" in the process, but it may not.
- Therefore, it might be possible that both variables (net positions and prices) could be reacting to some common, non-modeled factors.

CFTC's New Data

International Energy Agency

Oil Market Report

October 2009

- The US Commodity Futures Trading Commission (CFTC) released a new disaggregated version of the Commitments of traders (DCOT) report in September, as part of its efforts to increase market transparency.
- The new format is designed to better reveal the role of investment banks and index traders, among other in commodities markets.
- The time series currently available is as yet too small to draw meaningful conclusions. The CFTC plans to publish three years of historical data under the new format soon, which should enable more detailed analysis.
- The new report is expected to provide greater depth on activities of swap dealers.
- One current flaw with the new report is that it does not fully capture information about the swap dealers' counterparties.

A View From The IMF

International Monetary Fund

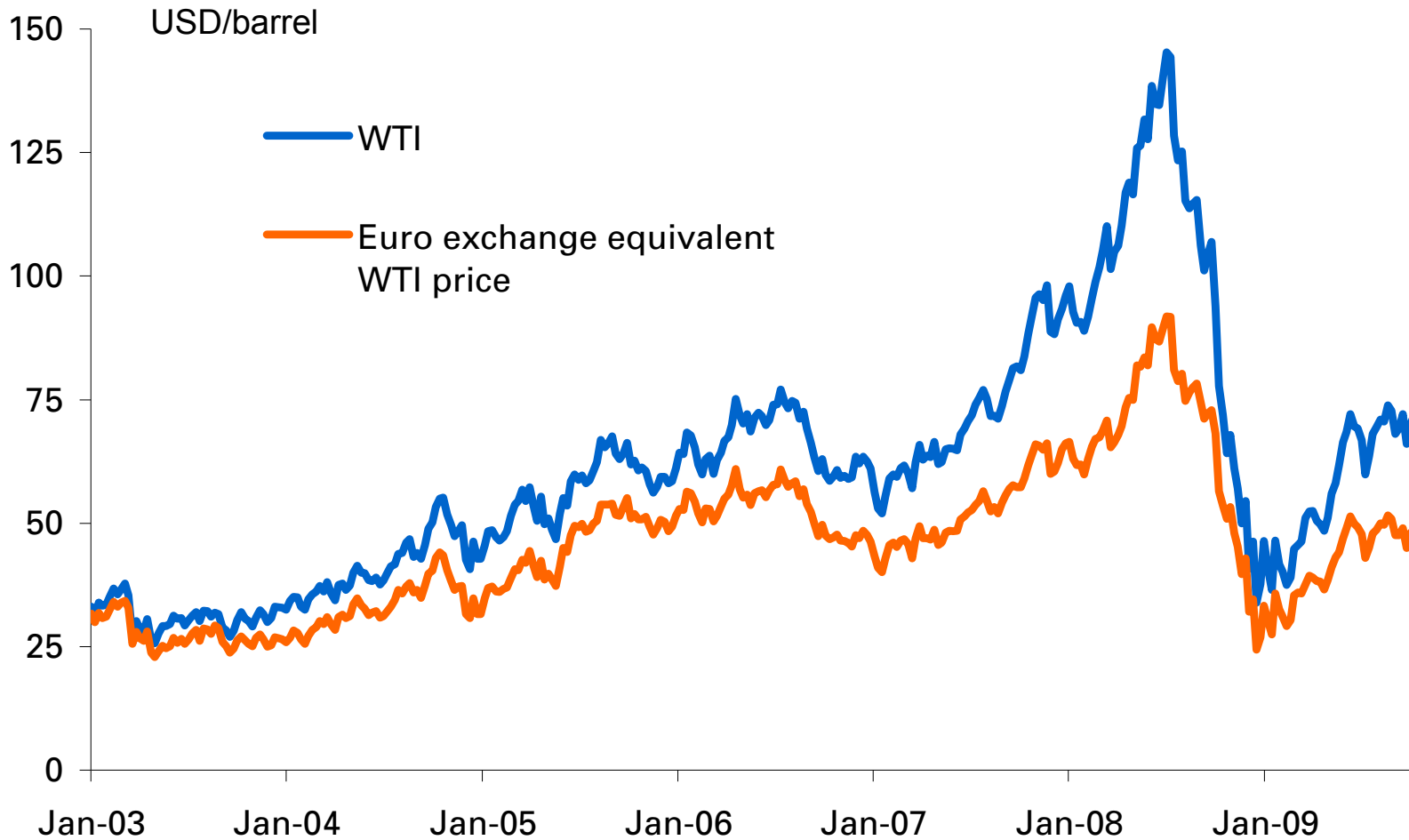
World Economic Outlook

October 2009

- The early commodity price rebound has led to renewed discussion of whether prices are increasingly driven by commodity financial investment.
- The inflows still tend to follow changes in fundamentals.
- The perception of an improving near-term outlook has affected physical commodity markets primarily by increasing the incentive to hold inventories.
- At the same time, improving financial conditions have provided for increased credit availability for inventory financing.
- Additional expectation-based demand for inventories, and some stabilization in stock buildups as end-user demand bottomed out, allowed for easier absorption of the continued excess supply.
- The rising inflows into commodity funds, which contributed to the normalization of liquidity conditions in commodity markets, likely facilitated the hedging of inventory positions.

Maybe Oil Never Really Got to \$147 for Most Buyers

Oil Prices Adjusted for the Euro Exchange Value of the US Dollar



Source: Bloomberg, Deutsche Bank

Where Does That Leave Us?

“It leaves us with a need to find way to temper speculative excess while acknowledging that we won't necessarily be able to distinguish speculative excess from an entirely sustainable boom. Financial regulation will be part of that.”

Justin Fox, *The Myth of the Rational Market*, Harper Collins, 2009

Verleger gets the
last word.

“Six factors will dictate the direction of oil prices of the next 18 months: (1) refining profits (or losses), (2) banks' readiness to lend, (3) high inventories, (4) the CFTC's willingness to allow investors to stay in the energy markets (*forcing passive investors out will reduce contango and inventories, and ultimately push prices up*), (5) OPEC's responsiveness, and (6) Mother Nature.”

Philip Verleger, *The Petroleum Economics Monthly*, August 2009

Adam Sieminski

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 to the US Secretary of Energy, and helped author the NPC's Global Oil and Gas Study: *The Hard Truths*. He also acts as a senior advisor for the Center for Strategic and International Studies in Washington and is an advisory board member of the Global Energy and Environment Initiative at Johns Hopkins / SAIS. He is a member of the London, New York and Washington investment professional societies, and holds the Chartered Financial Analyst (CFA) designation.



Appendix 1 – Certification and Disclaimer

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