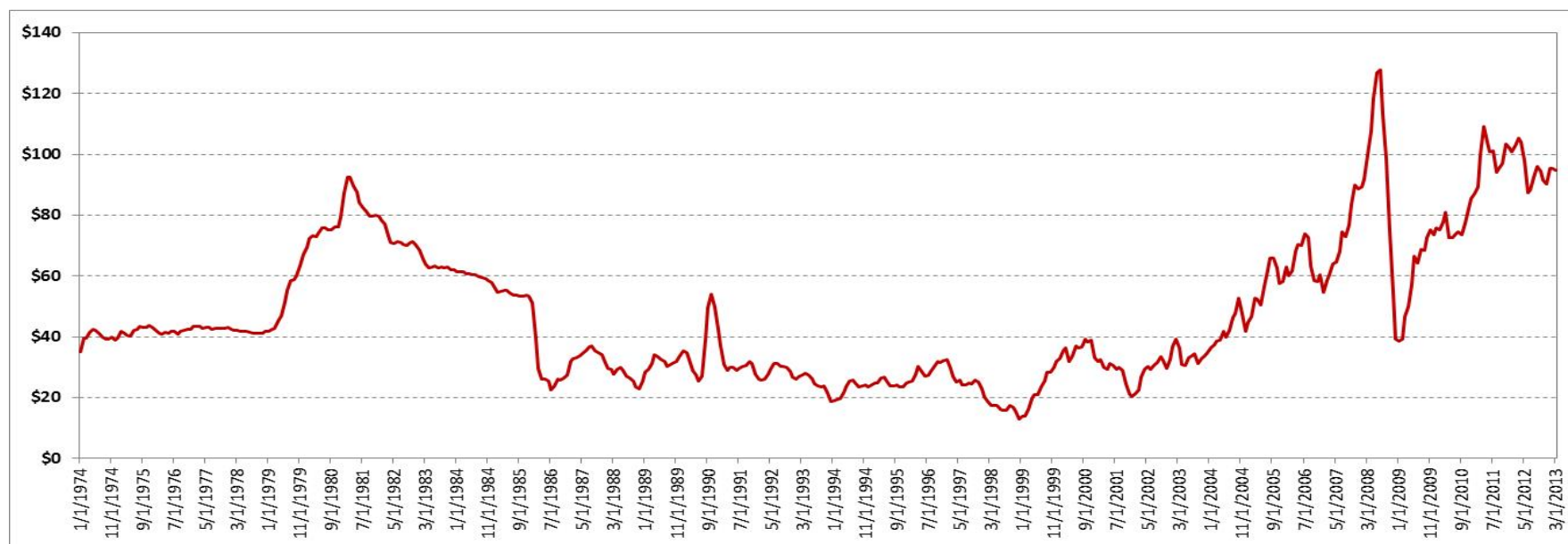


Oil Market Outlook: Recent Trends & Emerging Fundamentals

Presentation to the Deep Offshore Technology Conference 2013



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Is the Past a Prelude to the Future?

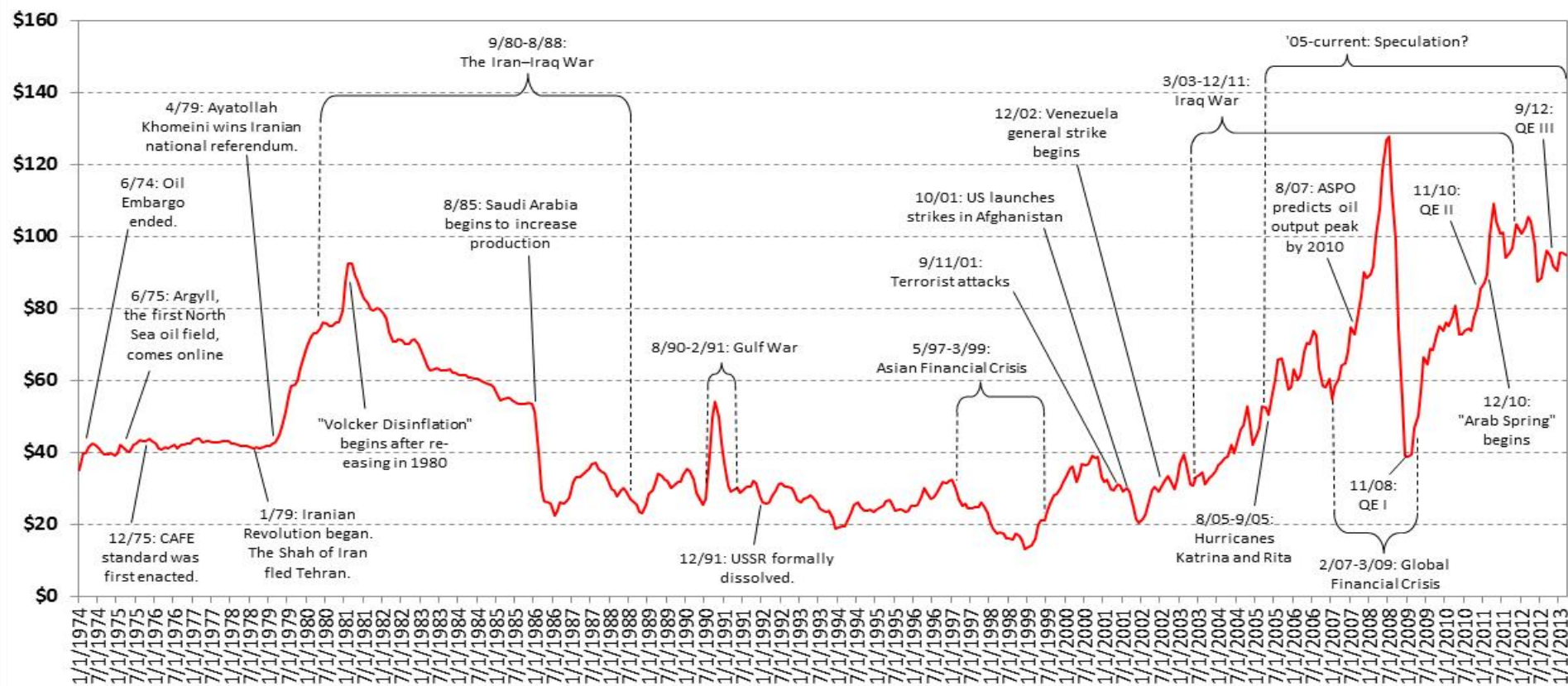
- There are some remarkable similarities between 1973-1982 and 1998-2009
 - One key differences... US monetary policy is dramatically different.

1973-1981:
Oil Prices Rise

Economic malaise followed by expansion. Period
of relatively strong US\$ and low oil prices

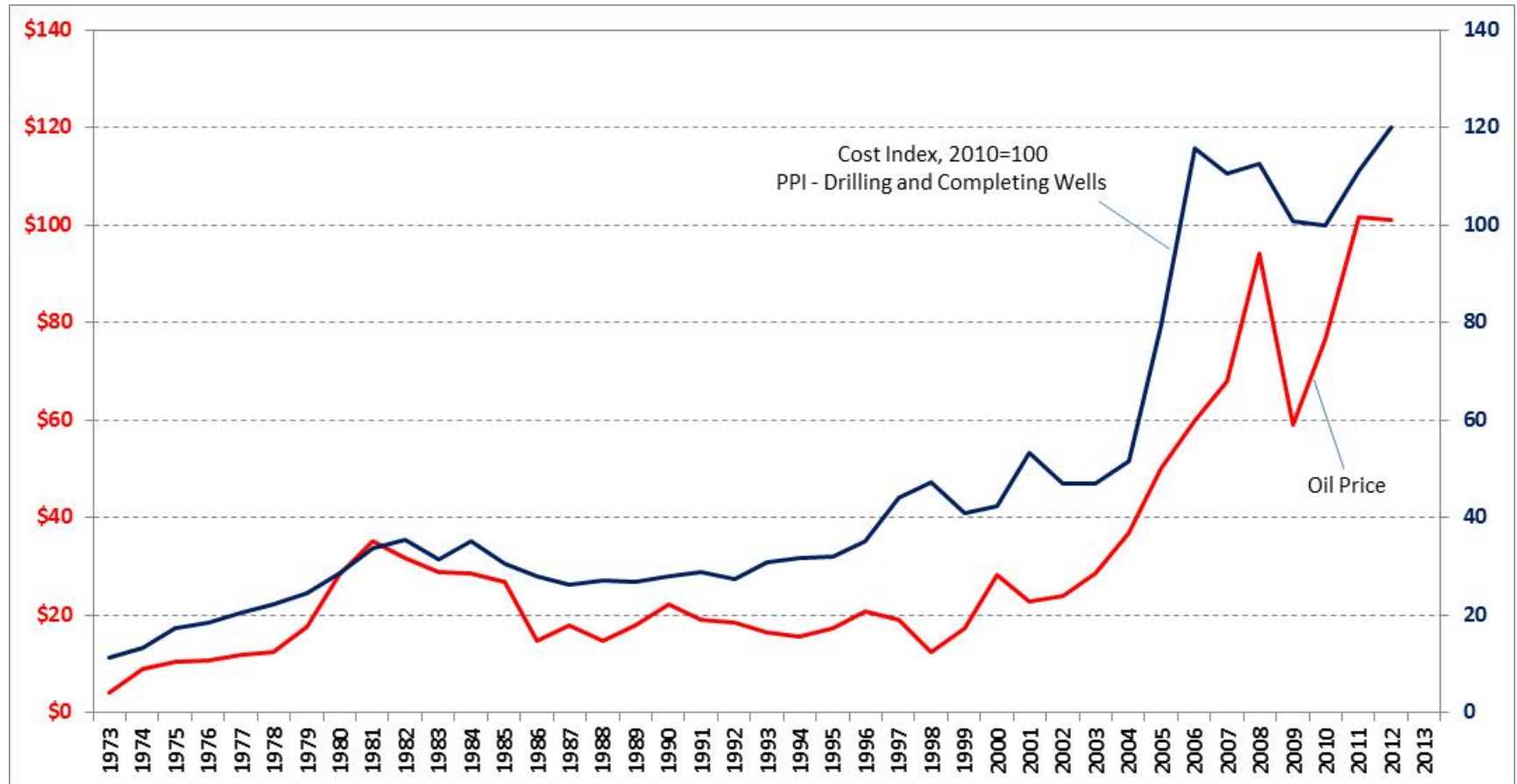
2000-2008:
Oil Prices Rise

???



Price versus Cost

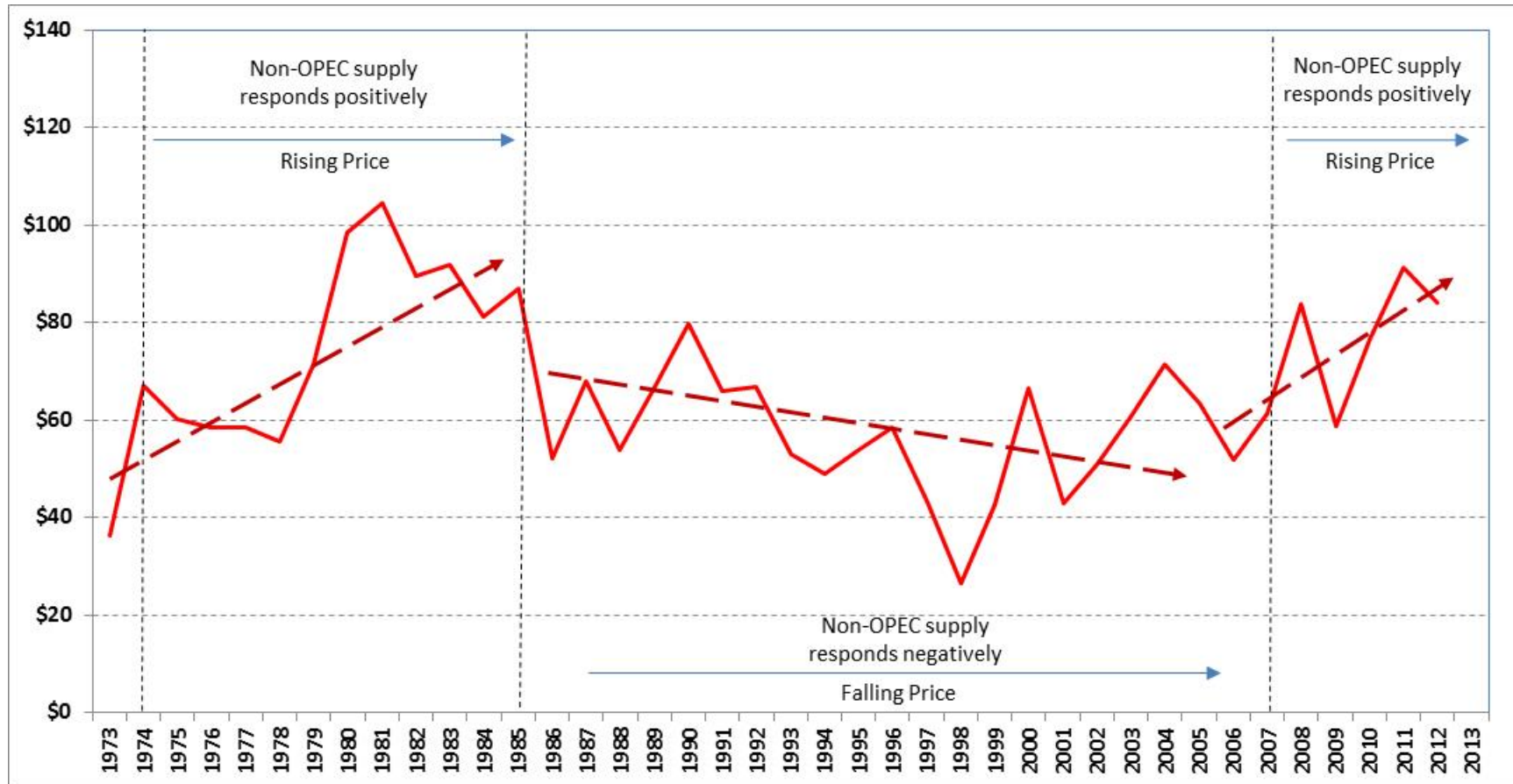
- The price of oil and the cost of development tend to move together.



Source: EIA, BEA

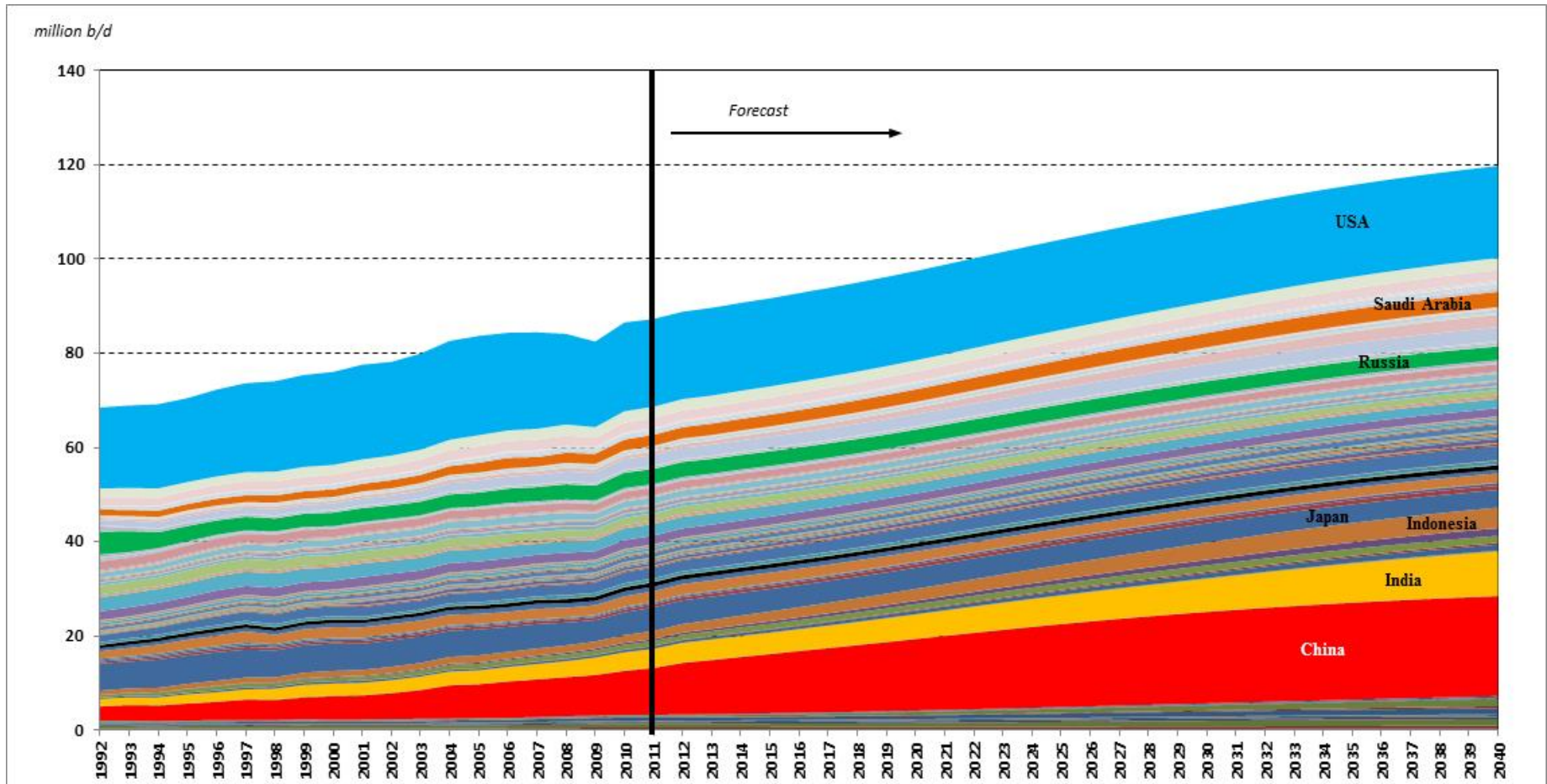
Price Normalized on Cost

- Investment in supply tends to respond positively when the price of oil *relative* to cost rises. But, when relative price falls, investment stagnates.
- Returns matter, not just price. Capital will be pulled into the sector.



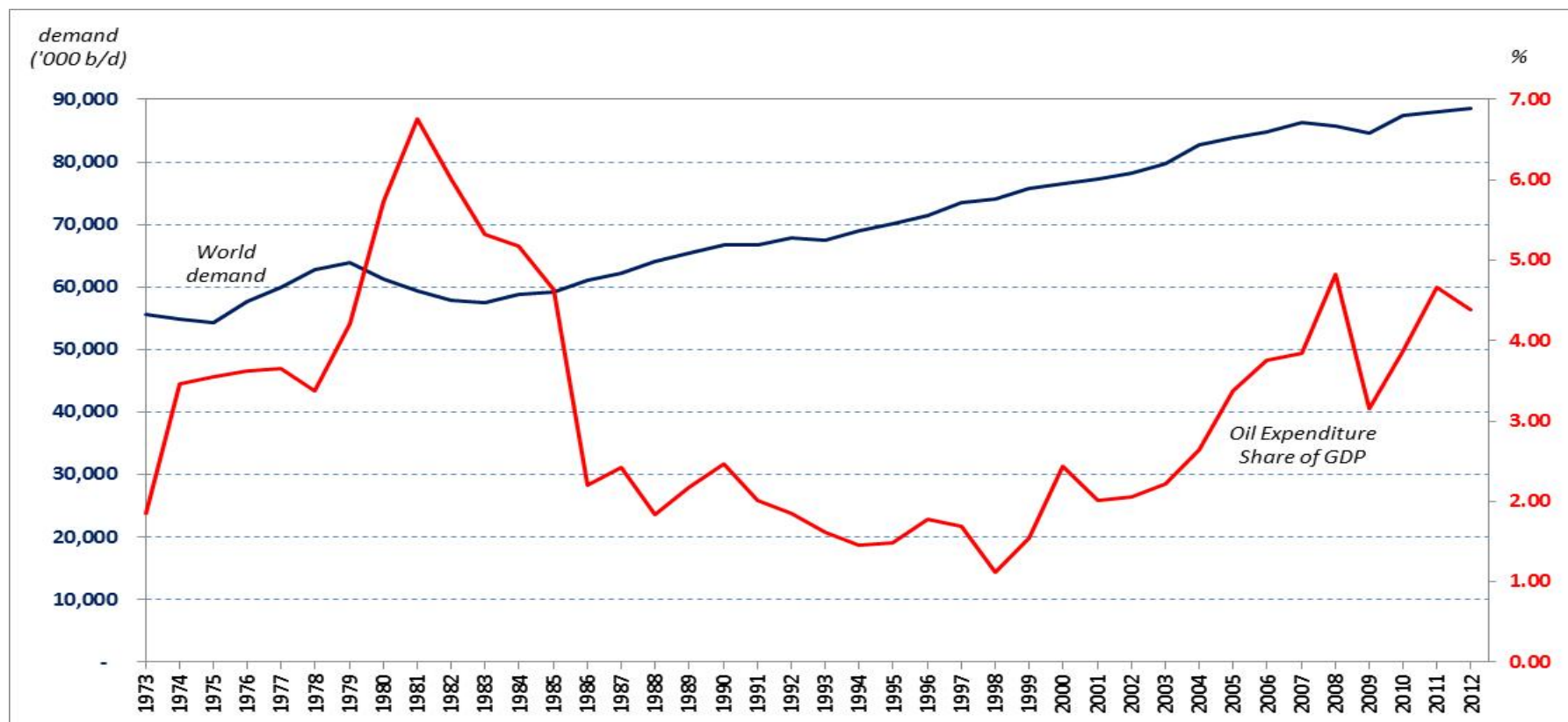
Demand Pull is Strong

- Baker Institute CES forecast of petroleum demand by country, 1992-2040
- Demand will continue to grow, driven largely by very populous developing economies such as China and India.



But, Be Careful: Demand Response and the Oil Expenditure Share of GDP

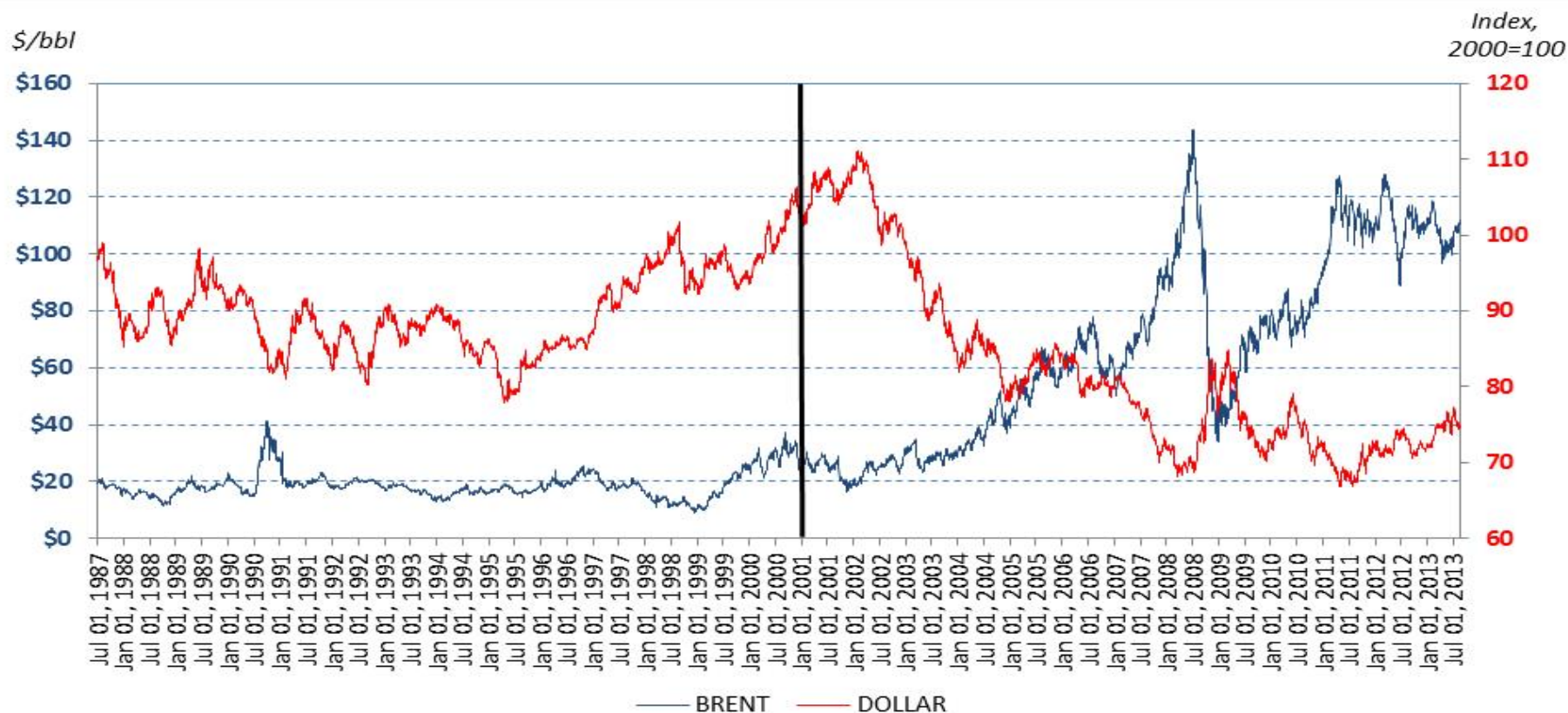
- Demand response was high in the 1980s relative to the last few years.
- The crude oil expenditure share of global GDP hints why.



Source: IMF, EIA

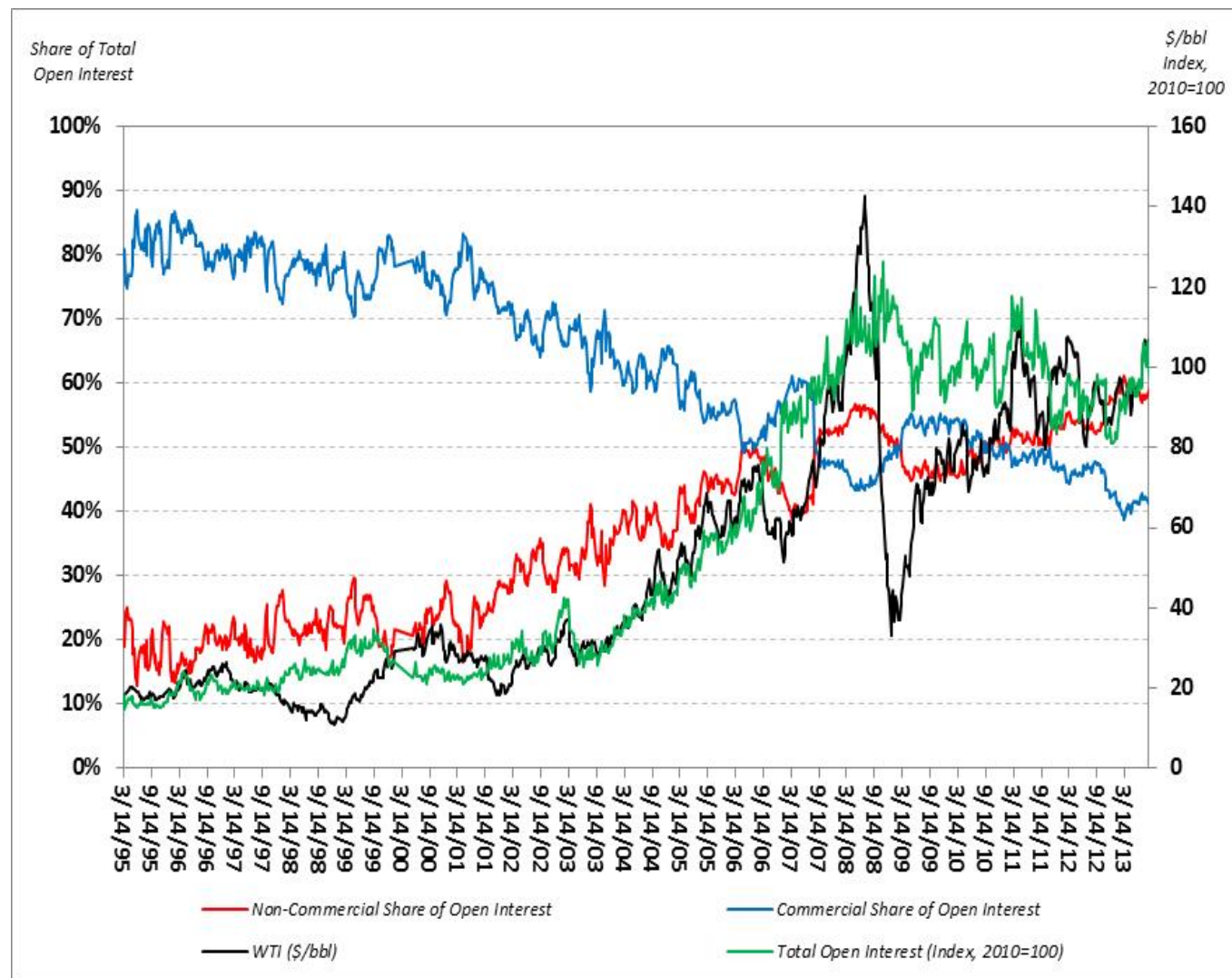
Other Factors: The US Dollar

- Jan 2001-Aug 2013: the correlation between the XR and oil price is -0.85.
- Jul 1987-Dec 2000: the correlation is 0.08.
- Why did the relationship change?
 - One hypothesis asserts this is tied to the “financialization” of crude oil.



Other Factors: Speculation?

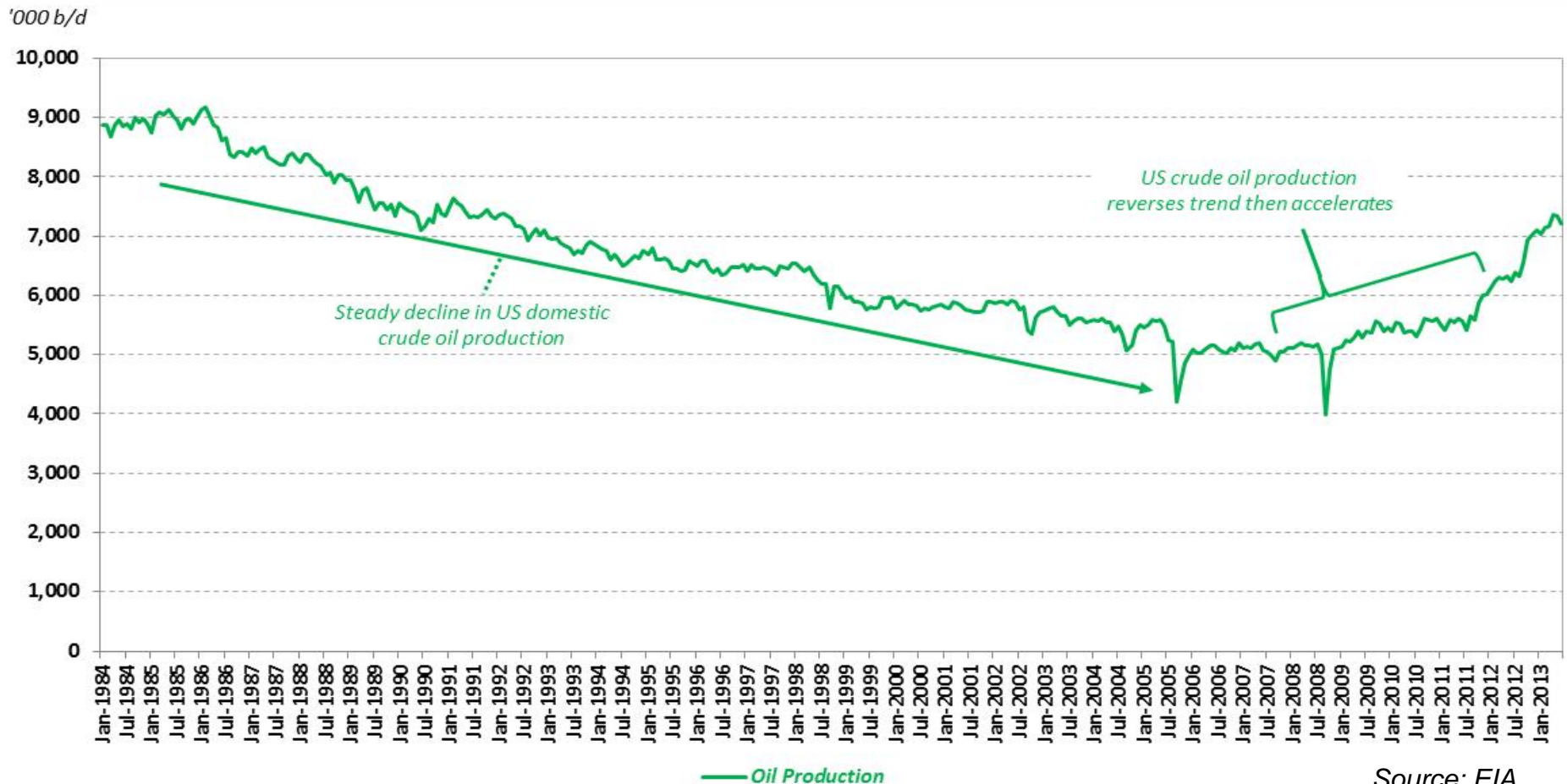
- Market structure began to change shortly after the Commodity Futures Modernization Act (CFMA) was signed into law in Dec 2000. The CFMA made all trades on electronic exchanges non-reportable. This contributed to rapid growth in OTC trades. The figure only indicates the NYMEX contract for light sweet crude.



Oil in the US: A Microcosm with Global Implications

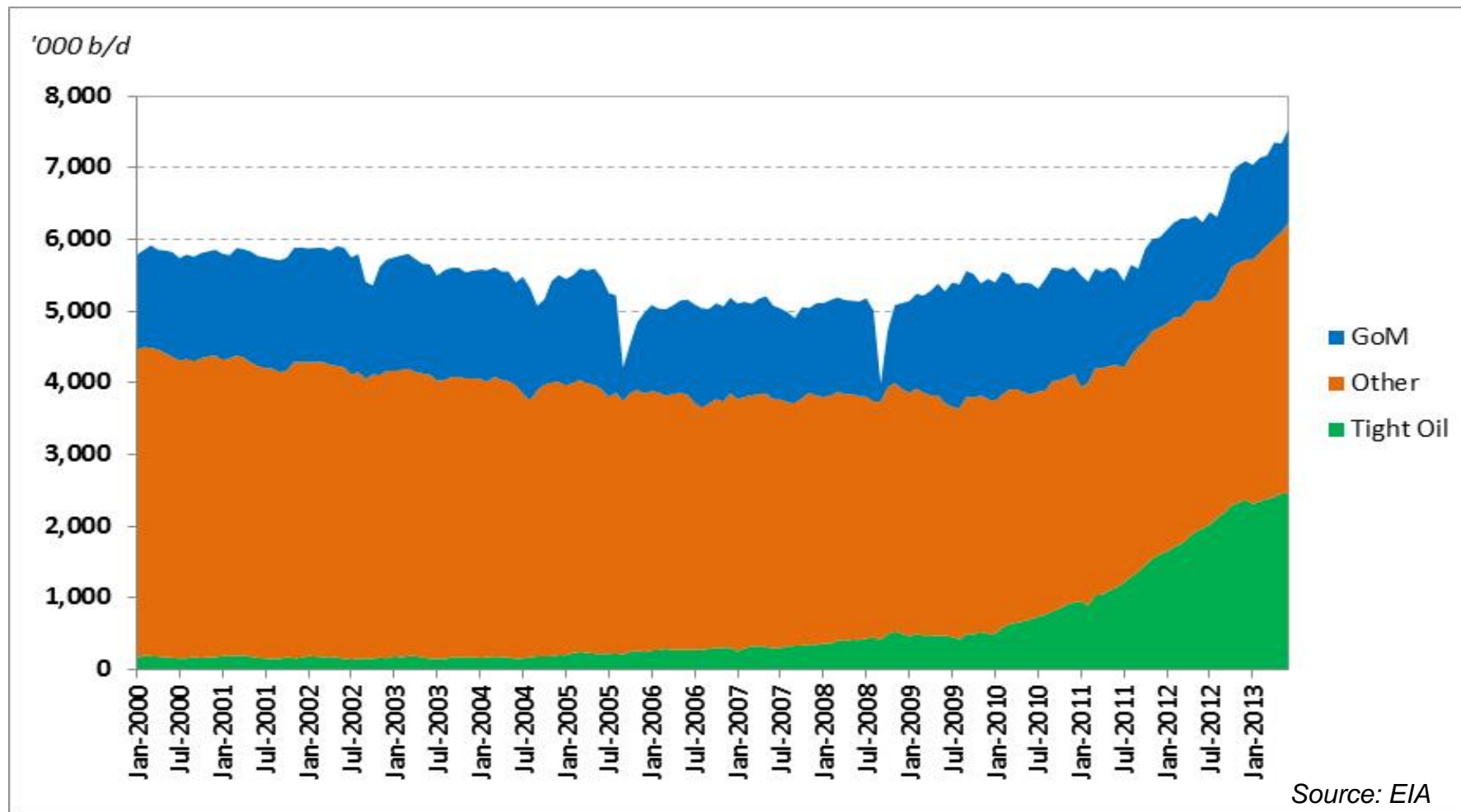
US Supply Response

- Over the last 5 years, higher price has led to a resurgence in US oil production. Growing US oil production has significant implications for... (1) Brent-WTI spread, (2) US imports, and (3) US foreign policy.



US Supply – Last 12 Years

- Growth driven primarily by unconventional plays, but US GoM has flattened, with strong prospects for growth over the next several years.



Ongoing Developments in Tight Oil

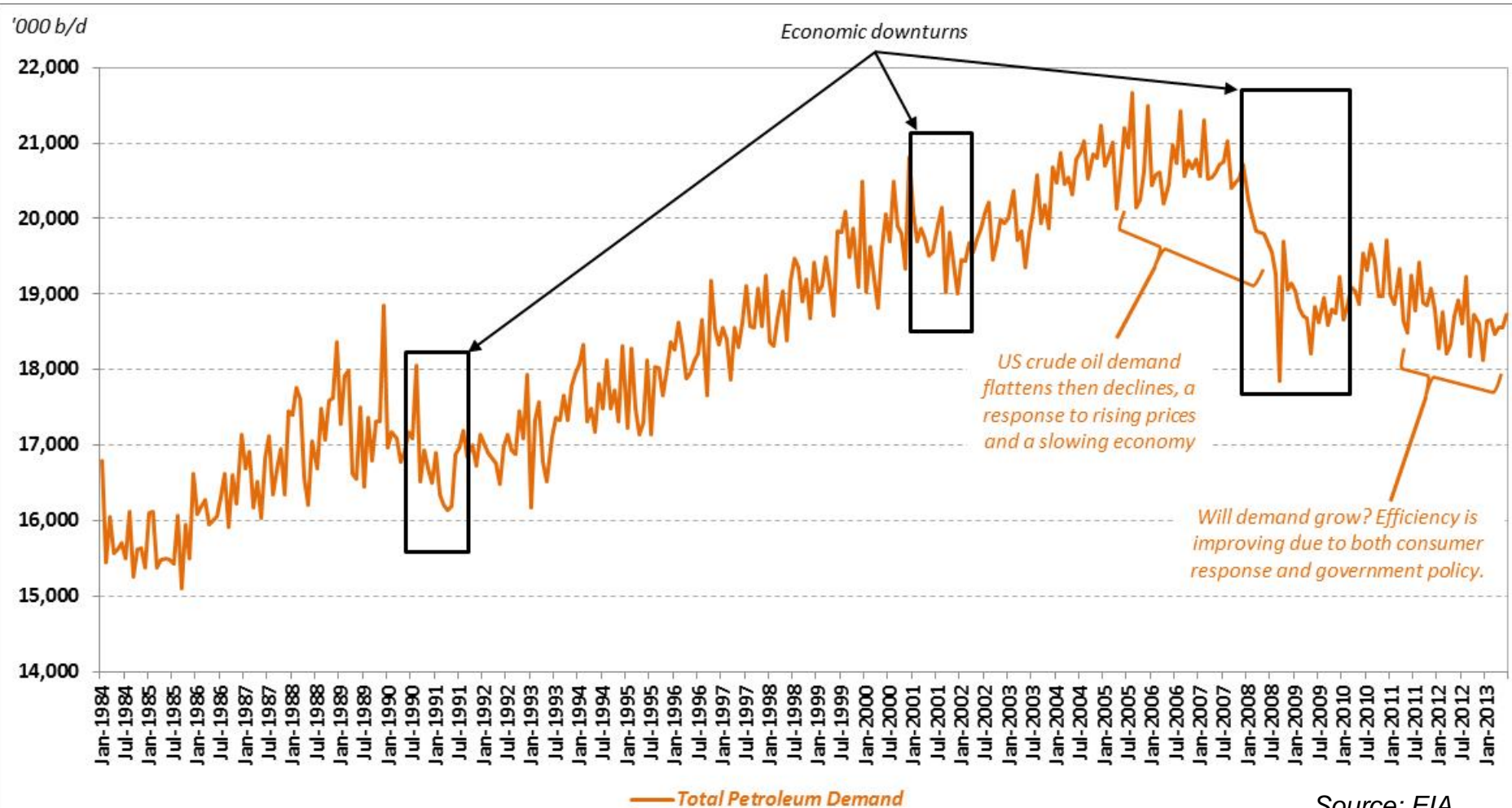
- Resource potential in North America is distributed widely.
 - For example, North Dakota (Bakken), Texas/New Mexico (Permian – Spraberry, Bone Springs, Wolfcamp, South Texas – Eagleford), Ohio (Utica), Pennsylvania (Marcellus), Colorado (Niobrara), Florida (Sunniland), Louisiana (Tuscaloosa Marine), Oklahoma (Mississippi Lime), California (Monterey).
 - Just as with gas, not all shales are created equal.
 - Bakken and Eagleford currently accounts for most US LTO production.
 - Internationally, shale oil resources could total over 260 billion barrels, according to the recent ARI-EIA (2013) report.
- International potential? Technical and cost hurdles exist, as do impediments from regulatory and institutional frameworks.
- Production from shale has increased from under 200,000 b/d 10 years ago to over 2.3 million b/d currently. This is likely to increase further over the next 10 years, contingent on price.

What about the Gulf of Mexico?

- Shallow GoM is a mature province, but will remain a viable target of opportunity for smaller firms seeking to enhance recovery from older developments
- DeepWater GoM is the most attractive offshore investment opportunity for large upstream capital projects... in the world!
 - Despite strong interest in Brazil and West Africa, US is seeing higher levels of investment by a more diverse group of developers
- DeepWater GoM will likely drive an overall increase in offshore production in the US, after years of steady decline.
- Rarely discussed, but... energy reform in Mexico could open entirely new exploration targets.
 - Onshore targets are lower cost, but safety is a major issue.
 - Importantly, the exact terms of reform are still unclear, and Mexico must offer attractive fiscal terms to attract much needed foreign capital₃

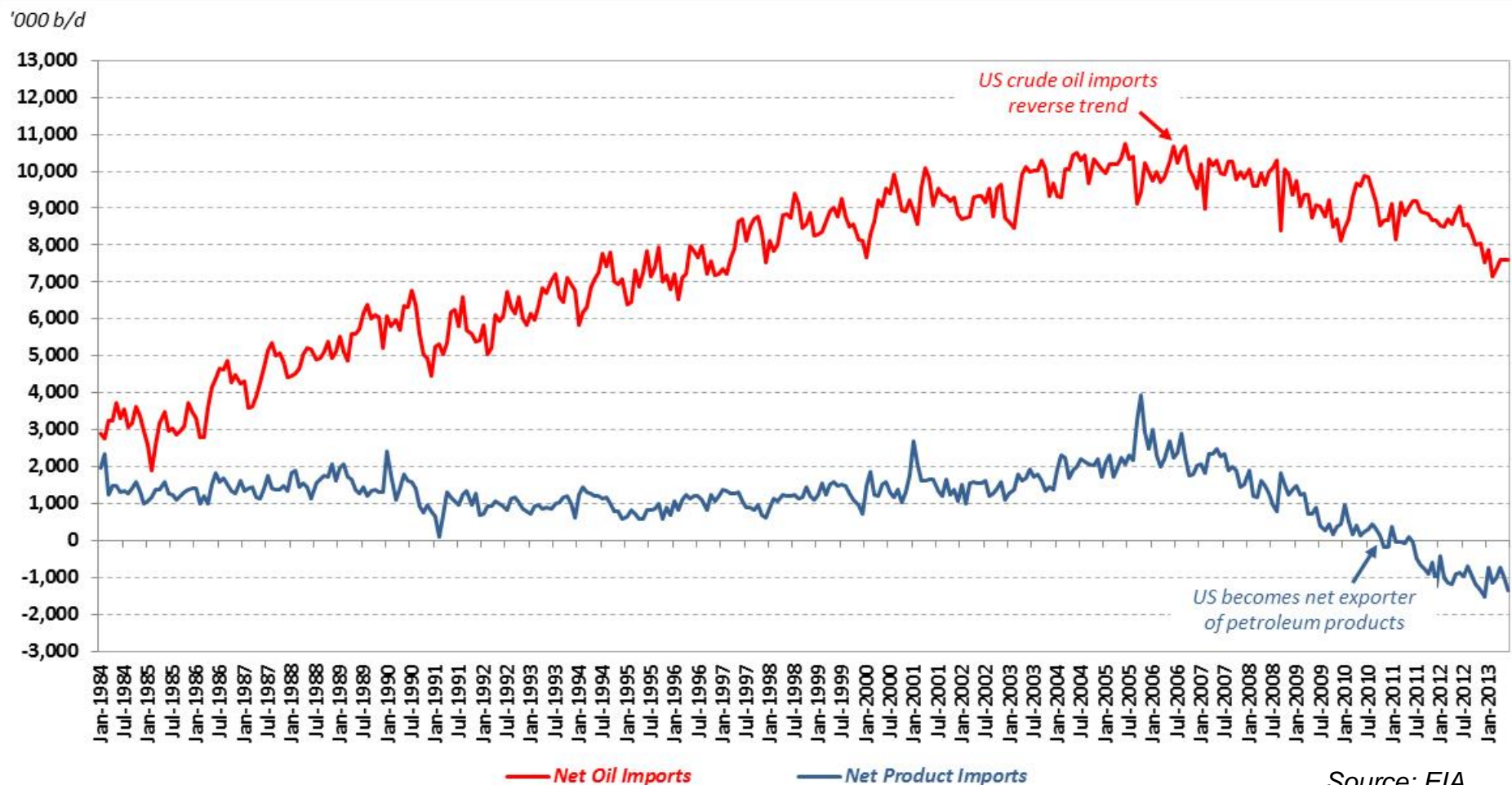
US Demand: A New Paradigm?

- Recent demand trends are indicative of high prices and the economy. But, there is more going on that may signal longer term demand destruction.



Effects of Supply & Demand Trends

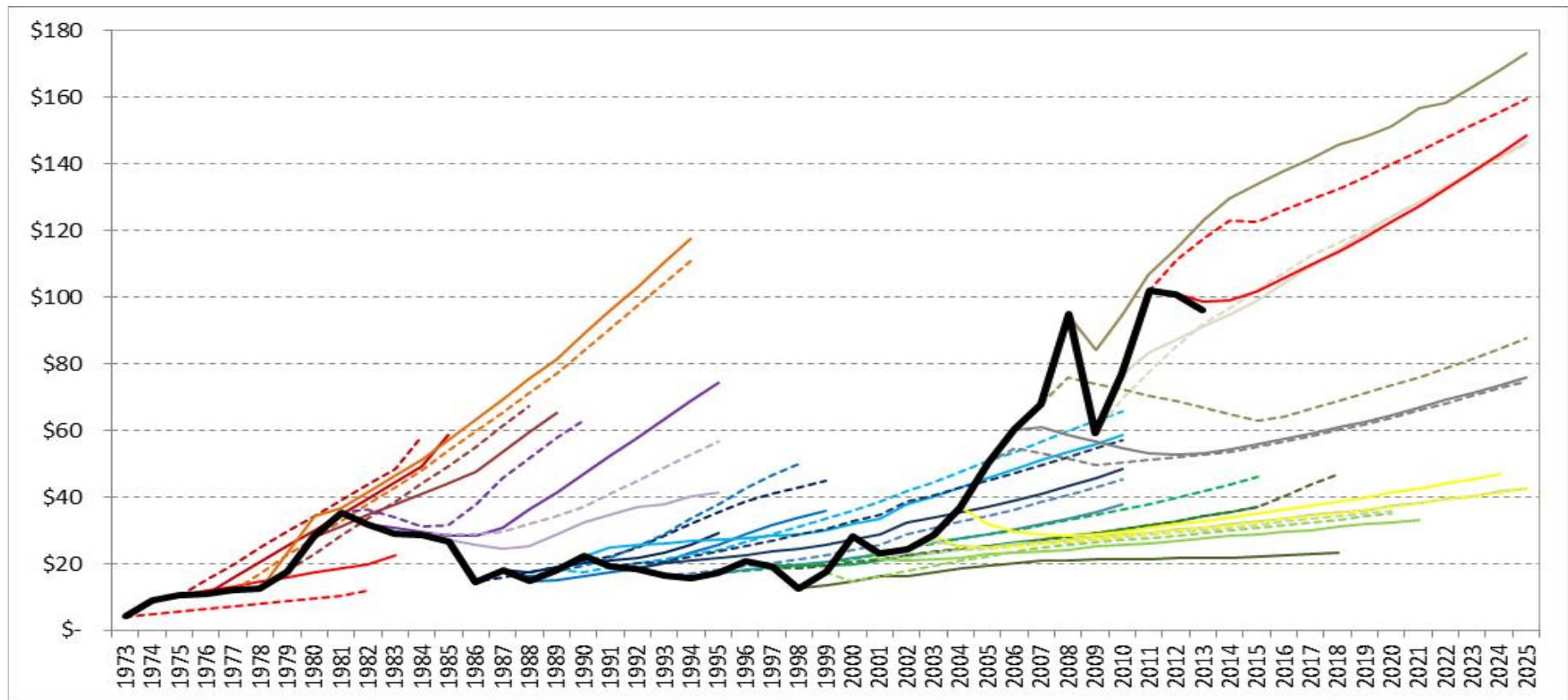
- Import trends shifted with demand beginning in 2006.
- Production growth since 2008 is exacerbating the trends in imports.



Where are we headed?

The Expected Price of Oil

- Long term price projections rarely are accurate, but they do signal the shifts in behavior by signaling future possible returns.
- Expectations are highly adaptive, rising more rapidly when prices have been rising and taking time to adjust to shifts in current price.



Source: EIA

Putting it all Together

- Consensus is a dangerous place to be.
- When prices are rising, and expectations are for them to continue rising, investment behavior shifts.
 - Producers respond by sinking more capital into upstream endeavors.
 - Consumers respond by investing in greater efficiency, often aided by the adoption of efficiency-related policies in large consuming nations.
- Such investment behavior contributes to price cycles because the incentives for consumers and producers are misaligned.
- Other issues, or “X-factors”, remain:
 - US Fiscal and Monetary Policy: continued spending and quantitative easing will prevent the US\$ from strengthening, thus having direct XR implications.
 - Will Asian demand continue to grow regardless of oil price?
 - Has financial speculation altered price formation?
 - Concerns about widespread conflict in the Middle East and North Africa will continue to fuel speculation about potential supply disruptions.

Will We See US Crude Oil Exports?

- Currently, crude oil exports are not allowed, except in special circumstances
- This differs from rules on petroleum product exports, for which there is no current regulation to limit.
- It also differs from regulations on exports of natural gas, which requires a 'national interest determination' prior to licensing/approval.
 - The debate in Washington over the last 18 months has been a prelude to a much larger pending debate about crude oil.
- An 'energy security' argument is usually at the center of these discussions, but such concerns have come under scrutiny.

Questions/Comments

Bonus Material

US Crude Oil Exports: Existing Landscape

- Oil exports are regulated by the Dept. of Commerce's Bureau of Industry (BIS) and Security under Short Supply Controls
- Laws and regulations effecting oil exports
 - Mineral Leasing Act
 - Energy Policy and Conservation Act
 - Export Administration Act
 - Jones Act

Jones Act, 1920

- A.K.A. the Merchant Marine Act, the Jones Act prohibits any foreign-built or foreign-flagged vessel from engaging in coastal trade within the United States.
- The US-flagged fleet is relatively small, which tends to drive up tanker rates due to scarcity of available capacity .
- Because the Jones Act prohibits foreign-owned tankers from moving crude oil between US ports, it is estimated to raise the cost of coastal transport by as much as \$3/bbl (Argus Media).
- This has, at the margin, implications for regional crude oil supply and processing opportunities, but does not explicitly limit crude oil exports.
- The Jones Act has been suspended during duress, such as Hurricane Katrina in 2005 and Hurricane Sandy in 2012.

Energy Policy and Conservation Act, 1975

- The EPCA allows the permitting of crude oil exports in circumstances of national interest. Executive decisions allowed the export of heavy crude oil from California in 1992 [3 C.F.R. 382 1992], crude oil produced from Alaska's Cook Inlet in 1985 [51 FR 20252], and to Canada for use therein in 1985 [54 F.R. 271] and 1988 [50 F.R. 25189].
- The EPCA does not stipulate authorization as a requirement for export of petroleum products. However, it grants the President the authority to restrict exports of coal, petroleum products, natural gas, or petrochemical feedstock "by rule, under such terms and conditions as he determines to be appropriate and necessary to carry out the purposes of this Act." [42 U.S.C. 6212 (a)]. This authority has never been used.

Export Administration Act, 1979 & Mineral Leasing Act, 1920

- The Department of Commerce Bureau of Industry and Security (BIS), regulates crude oil exports under its Short Supply Controls will grant export licenses for crude oil if it is:
 - shipped on the Trans-Alaska Pipeline,
 - of foreign origin and has not been co-mingled with U.S. crude, or
 - from the Strategic Petroleum Reserve if such export will directly result in import of refined products not otherwise available.
- Export of refined petroleum products are generally permitted and do not require license from BIS, except if derived from crude oil from the Naval Petroleum Reserve [CFR 754.3].
- 1995 amendment to the Mineral Leasing Act permits exports of oil transported via the Trans-Alaska pipeline. The President quickly deemed this to be in the national interest.

General Agreement on Tariffs and Trade (GATT)

- Prohibition on quantitative exclusions or restrictions (i.e.- quotas) on the exportation of any products from WTO Member signatories to any other WTO member state. The GATT prohibition contains general exceptions and specific allowances, including:
 - export restrictions for temporary measures to prevent critical shortages of foodstuffs or other essential products
 - measures relating to the conservation of exhaustible natural resources if imposed in conjunction with limits on domestic production or consumption
 - export restrictions posed in conjunction with price stabilization plans
 - restrictions for reasons of short supply
 - export restrictions for reasons of national security

North American Free Trade Agreement (NAFTA)

- NAFTA restricts the ability of the United States to limit exports of energy and basic petrochemical goods to Canada (and vice versa). There are limited exceptions to the NAFTA restrictions (see NAFTA, Article 607).