The Origins of the Global Oil Price Collapse and Potential Investment Opportunities

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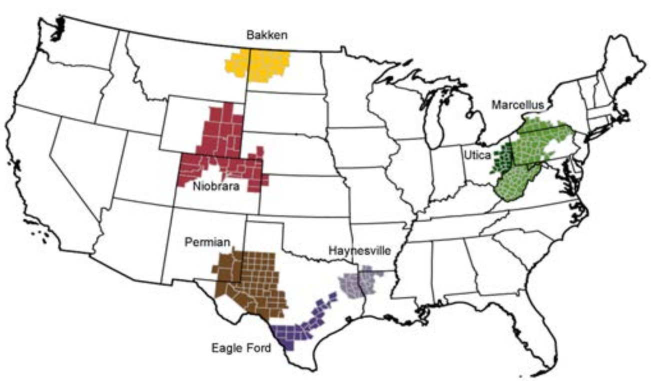
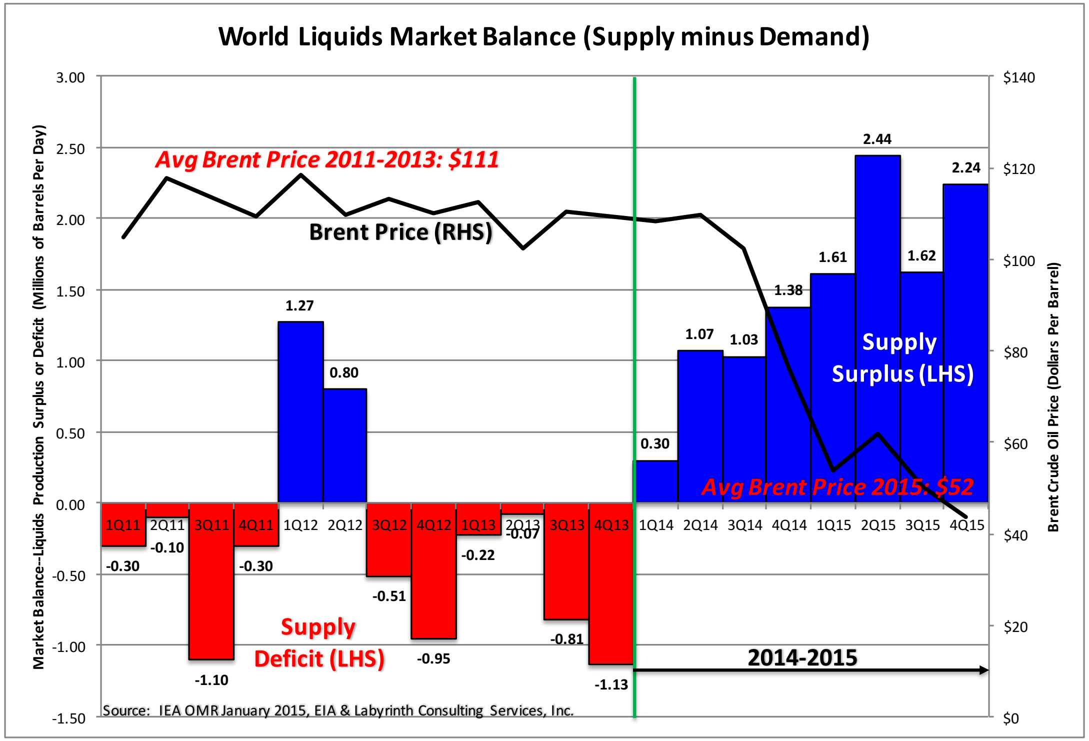
- The current oil price collapse represents devaluation from over-investment in unconventional oil—and most commodities—because of cheap capital, a classic "bubble."
- It is part of a larger structural adjustment of the global economy to unprecedented debt levels and prolonged low interest rates.
- OPEC's decision to increase production is part of a stratagem to stop capital providers from funding non-commercial tight oil projects and to increase its market share.
- High energy costs have resulted in low economic growth.
- Continued oil prices of $30 per barrel or less are the only reasonable path to higher growth and a balanced oil market.
- Oil prices will recover more quickly than most forecasts as long as OPEC holds the line long enough to force a behavior change.



Energy Is The Economy: A Critical Prologue

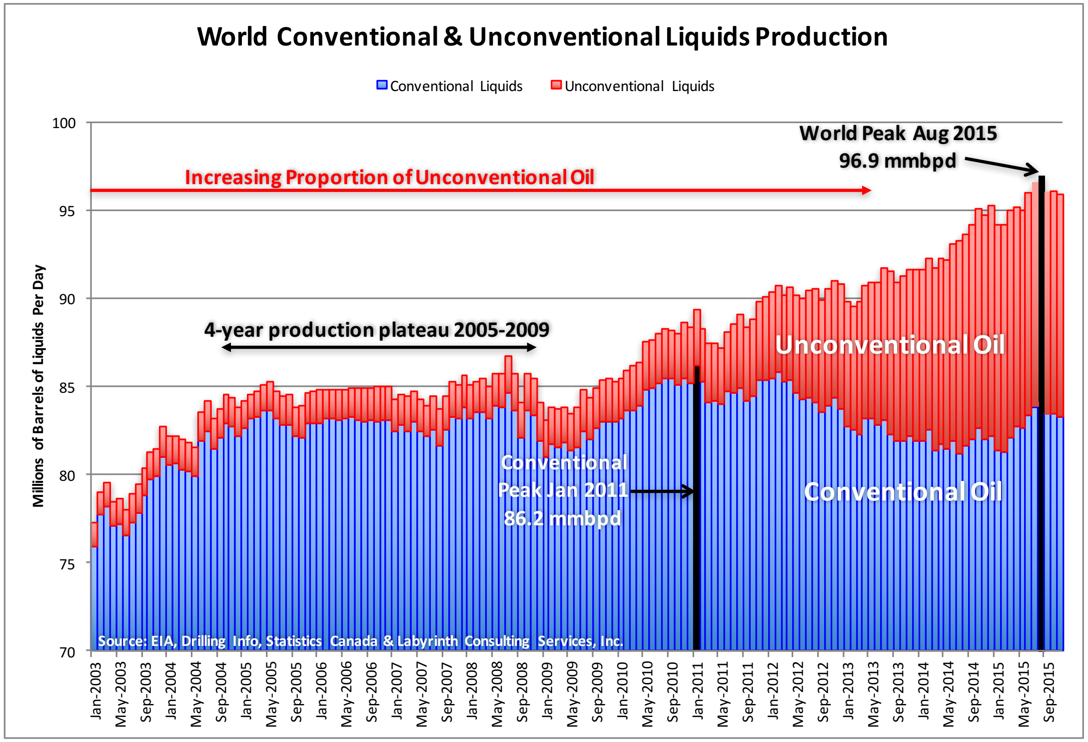
- People think that the economy runs on money but it runs on energy –Nate Hagens.
- Oil prices & the economy must be viewed through the debt lens.
- The end of cheap oil in the 21st century led to financial dislocations and ultimately, the Financial Collapse of 2008.
- Monetary policy focused on forcing consumption and investment: zero interest & further expansion of credit.
- This resulted unintentionally in the longest period of high oil prices in history and a boom in unconventional oil production.
- The bubble deflated in 2014.
- Over-production continues because cash flow is critical to service debt despite losses on every barrel produced.
- There is no quick solution. Production must fall much lower than present levels and this will only happen by prolonged economic pressure.
- Under-investment will cause a sharp oil-price rebound in a few years.
- An OPEC production cut is more likely once U.S. production shows meaningful decline.

The End of Normal for Oil Markets in 2014: Oil Over-Supply & Price Collapse



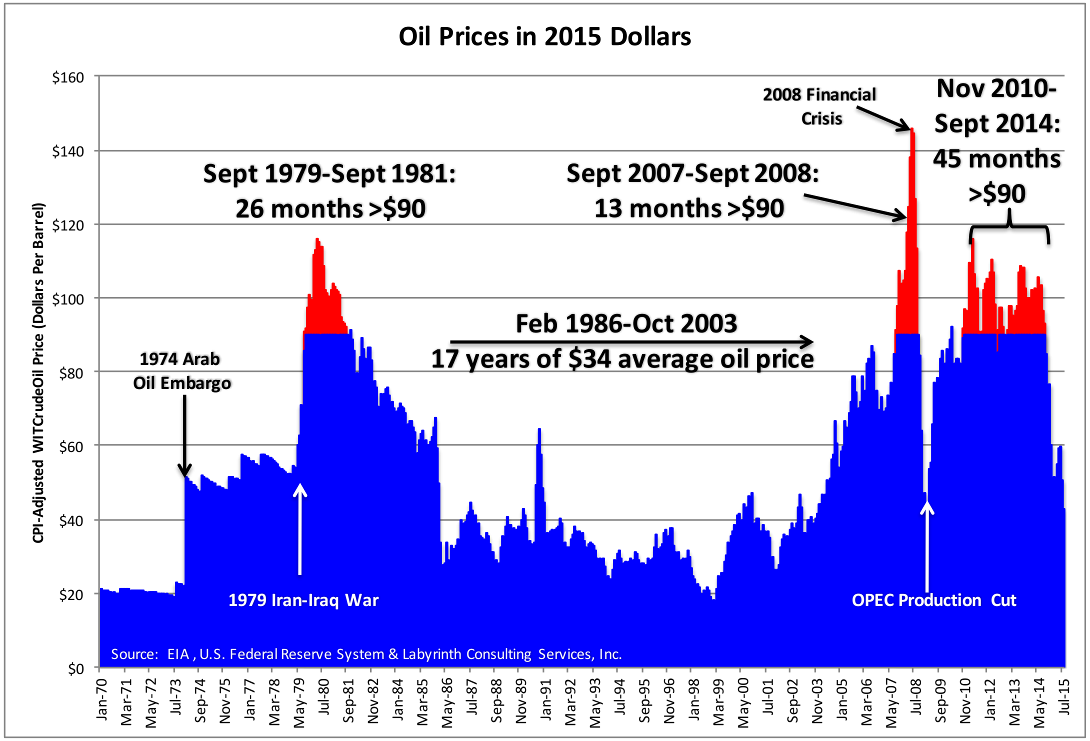
- Energy markets have been characterized by low oil prices and over-supply since mid-2014.
- Supply deficit before Jan 2014, supply surplus after.
- Prices fell from 2011-2013 average of $111 per barrel to average of $52 in 2015.
- Without an OPEC cut, 2016 prices will probably be in the $30 per barrel range.

Origins of Over-Supply & Price Collapse in Increasing Scarcity of Conventional



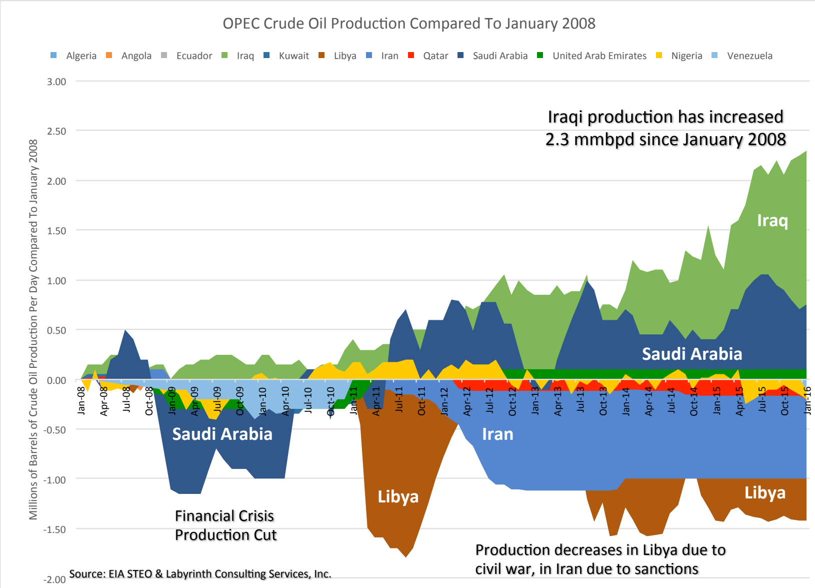
- The origins of this situation are found, ironically, in increased scarcity of petroleum resources.
- Increasing proportion of unconventional oil since 2000: deep-water, oil sands, tight oil.
- 4-year production plateau 2005-2009.
- Conventional production peak in 2011.
- World production peak in August 2015?

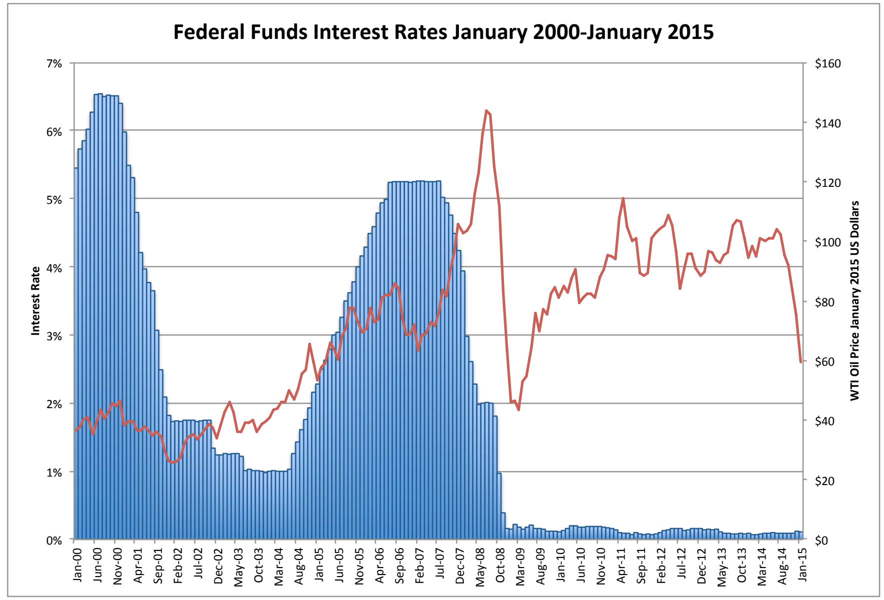
Highest Oil Prices in History, 2010-2014



- After the Financial Collapse of 2008, oil prices fell briefly below $40 per barrel but recovered quickly because of 3.2 mmbpd OPEC production cut.
- Prices were more than $90 per barrel for 45 months between November 2010 and September 2014. Longest period of high prices in history.
- By comparison, high prices in early 1980s did not last as long but triggered almost 2 decades of low oil prices.

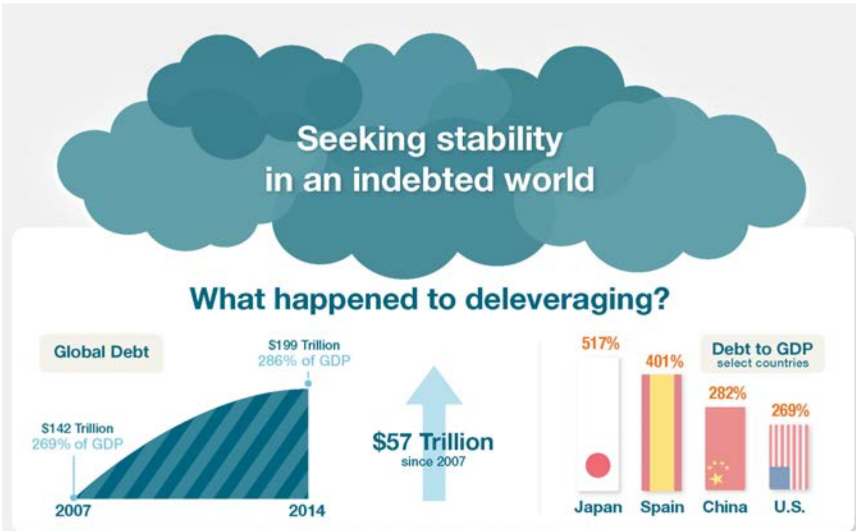
High Oil Prices Fueled U.S. Tight Oil Production

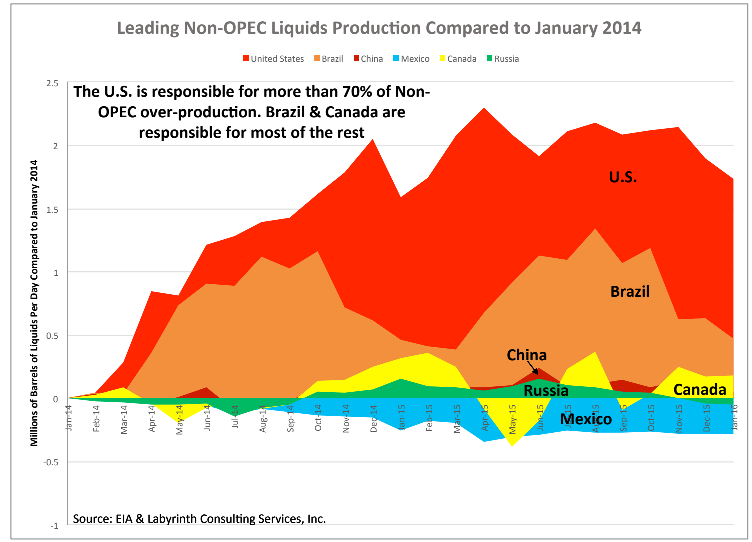




- High oil prices partly because of supply interruptions from Libya (-1.4 mmbpd) and Iran (-1.0 mmbpd). These losses were largely offset by increases from Iraq (+2.35 mmpbd) and Saudi Arabia (+0.6 mmbpd).
- High prices also caused by extraordinary monetary policies enacted in response to the Financial Collapse.
- 8 years of zero-interest rate policies discouraged conventional investments in CDs, money markets and Treasury bonds.
- High yield corporate bonds from U.S. E&P companies offered better margins with only moderate perceived risk.

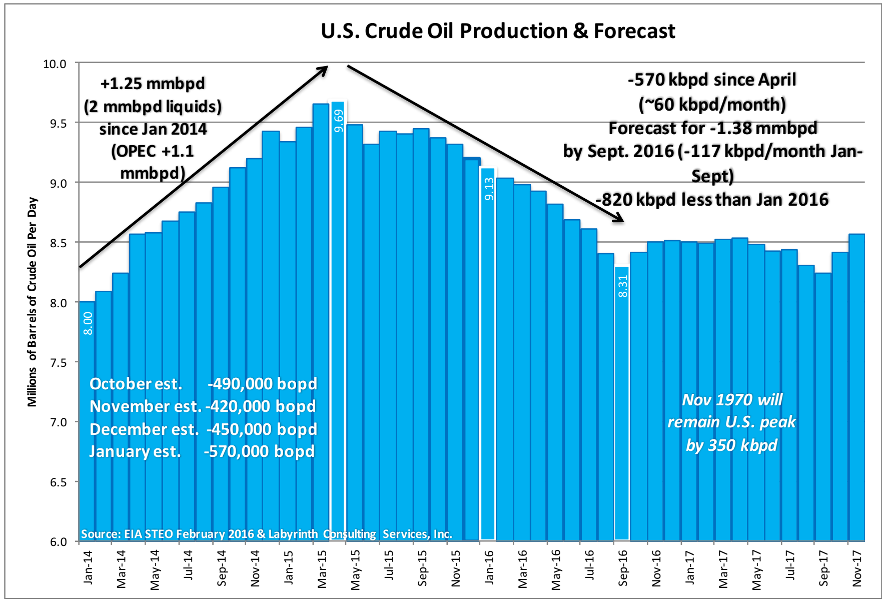
Expansion of Credit and of U.S. Tight Oil Production

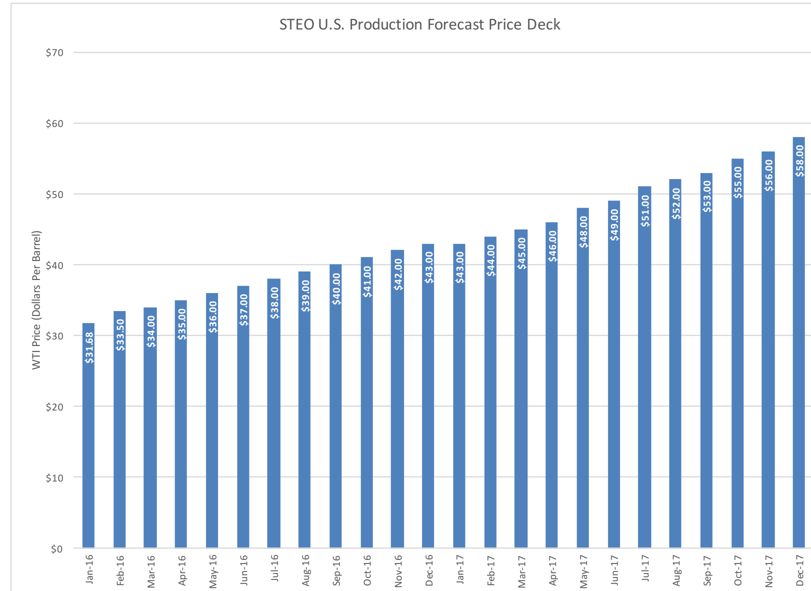




- Debt caused the Financial Collapse and more debt was created to remedy the problem.
- $57 trillion in new debt since 2007.
- Global debt is now $199 trillion—286% of GDP.
- U.S. debt is 269% of GDP. China is even higher.
- U.S. is responsible for more than 70% of non-OPEC over-production since Jan 2014 (+2.2 mmbpd). Brazil (+1.6 mmbpd), Canada, China and Russia are responsible for most of the rest.
- This over-production is the main cause of the global oil supply imbalance.

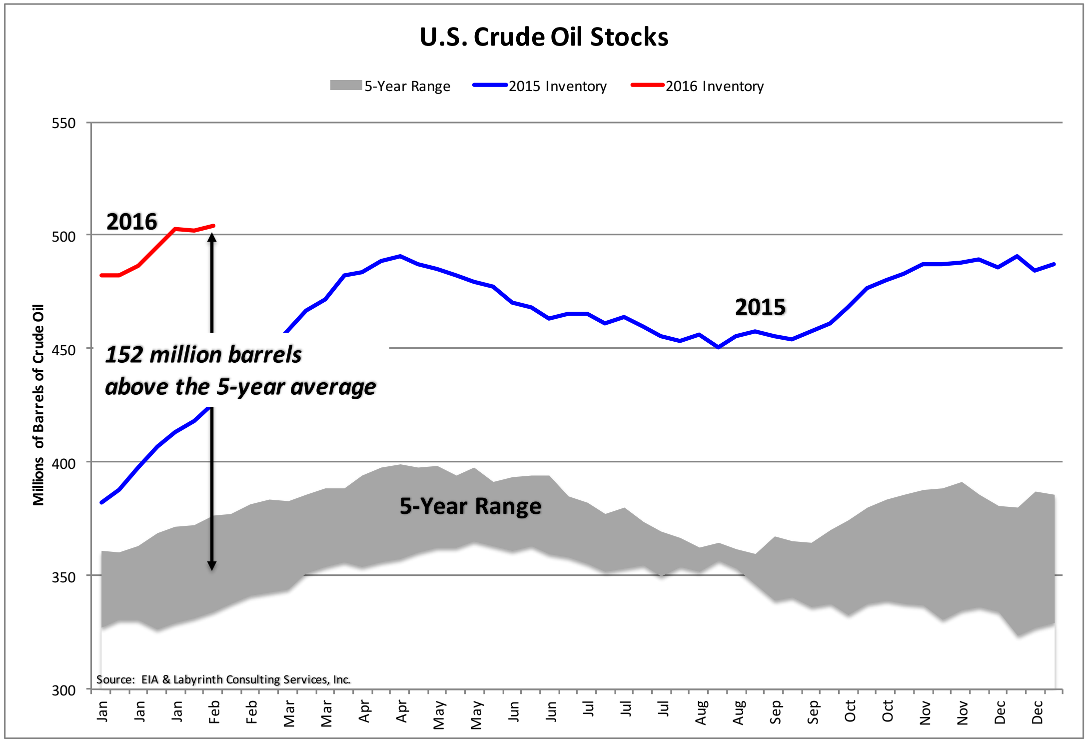
U.S. Production Has Not Declined As Much or As Early As Most Predicted





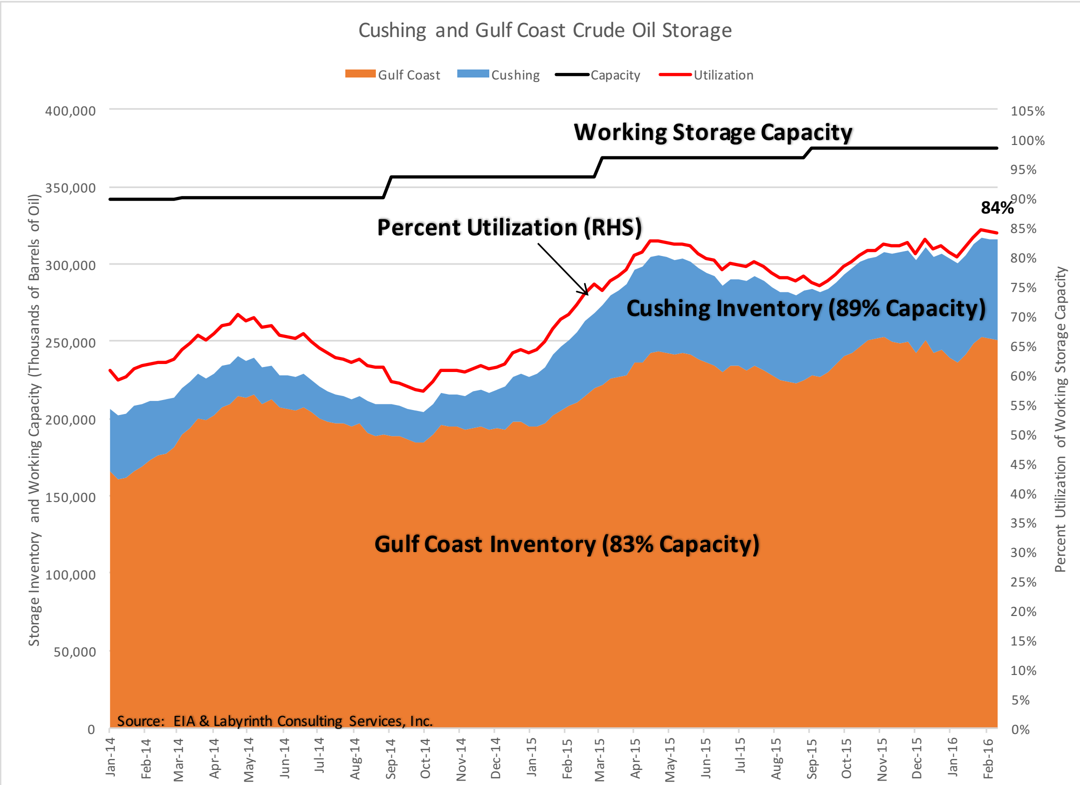
- U.S. crude oil production has declined about 570,000 bopd since the peak in April 2014, about 60,000 bopd per month.
- EIA forecast is for a total decline of 1.4 mmbpd by September 2016 (~100,000 bopd per month) before increasing again based on $43 per barrel WTI by year-end 2016 and $58 by year-end 2017.
- Price deck has WTI at $43 per barrel by December 2016 & $58 by December 2017.
- Forecast suggests that the oil market is sufficiently in balance now for prices to increase but that production will not respond to price signals until later in 2016—very optimistic.

U.S. Crude Oil Stocks



- Little chance that oil prices will increase beyond the head-fakes and sentiment-driven price cycles of 2015 and early 2016 until U.S. crude oil storage begins to decrease.
- Oil stocks are currently 152 million barrels above the 5-year average and 128 million barrels above the 5-year maximum.

Cushing & Gulf Coast Working Storage Utilization

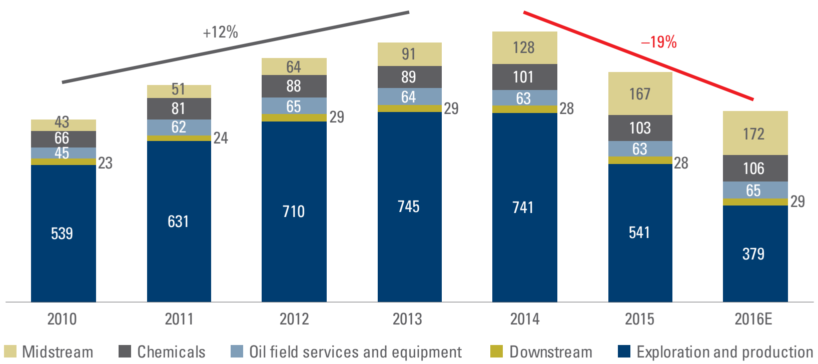


- Cushing and Gulf Coast storage make up almost 70% of U.S. working storage.
- These areas are currently at 84% of capacity. Cushing at 89%.
- As long as storage volumes remain above 80% of capacity, oil prices will be crushed.
- Until U.S. oil production declines substantially, storage will remain near capacity.

The Future Looks Better…Maybe

FIGURE 2: Capex cut by 20% in 2015, with more in store for 2016

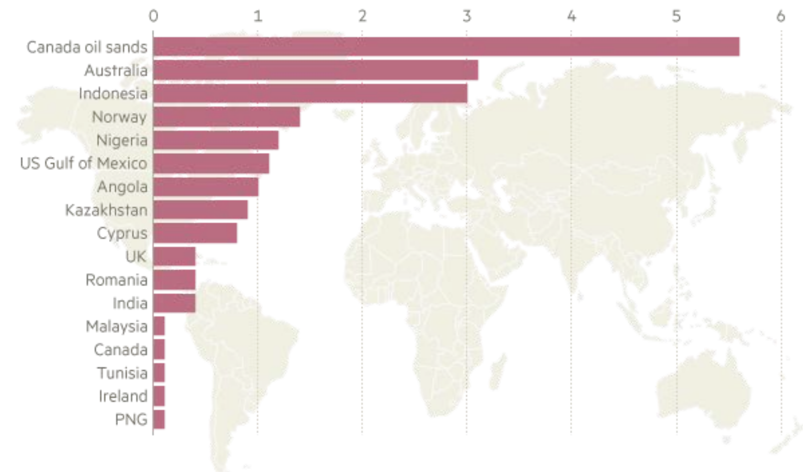
Global capex spending trends and estimates, public companies (USD billions)



Note: Does not include national or state-owned oil companies.
Sources: Bloomberg, AlixPartners

Deferred commercial oil reserves

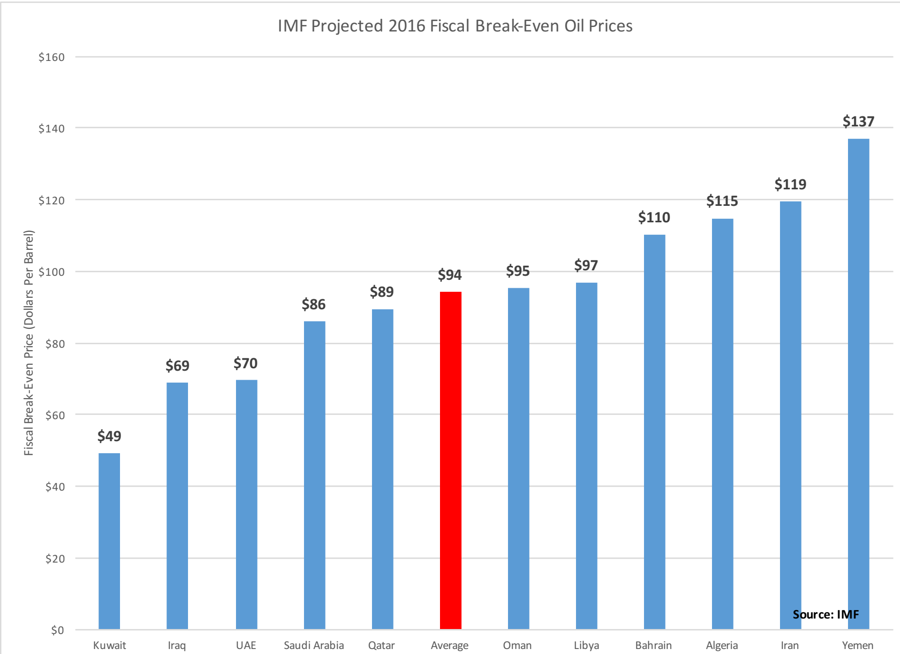
Barrels of oil equivalent (bn)



Source: Wood MacKenzie

- Large reduction in E&P investment in 2015 and probably even greater in 2016.
- Deferred investments in 2015 equivalent to 20 billion barrels of reserves.
- A substantial supply deficit will result in the not-too-distant future.
- A price spike seems unavoidable.

An Oil Price We Can Live With



U.S. Tight Oil Plays	Break-Even Price
BAKKEN ($8mm D&C)	$65.24
EAGLE FORD ($5.7 mm D&C)	$67.43
PERMIAN ($6.5 mm D&C)	$70.51

- IMF projections indicate that Saudi Arabia and its Gulf State block need ~$75 per barrel to balance their fiscal budgets.
- OPEC average is $94 per barrel.
- Key operators in the three main U.S. tight oil plays need ~$70 per barrel to break even.
- $70-80 per barrel accommodates the lower-cost producers.

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- Widespread defaults and bankruptcies are possible in the first half of 2016.
- An OPEC cut in mid-2016 is likely. Without this, the price recovery will be very slow.
- It is unlikely that prices will return to $90-100 levels except for brief spikes.
- The global economy will remain weak until de-leveraging occurs and will be unable to sustain high oil prices.
- There will be investment opportunities by betting long (1-3 years) on oil prices at the earliest signs of movements toward market balance.
- There will be opportunities playing oil-price volatility cycles.
- These bets involve considerable risk and will require diligent and expert monitoring of events.
- Investors should be willing to lose their entire investment because of extreme market uncertainties.
- Energy investment cannot be successful without awareness of the co-relationship of energy and the total economy.