Returning To Market Balance: How Will Prices Respond?

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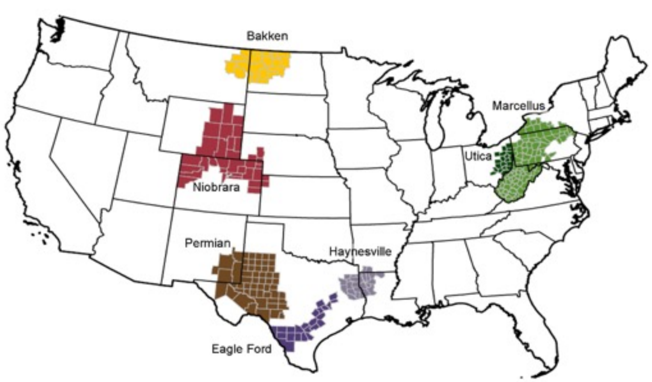
A Return To Higher Oil Prices Is Complicated

- We are in the third oil-price rally since prices collapsed—prices are > 60% higher than in January: $44 vs. $27 per barrel.
- This rally is similar to the previous two but may end differently because of improving market fundamentals and growing concern about supply from underinvestment .
- Data today from EIA suggests that the global oil market is returning to balance.
- Recent world events—failure of the Doha production freeze, dismissal of Al-Naimi—have not affected oil prices like in the past.
- The weak global economy may not be able to sustain much higher oil prices.
- Everyone's break-even price including OPEC's is higher than current prices.
- The U.S. E&P business is in critical condition.
- A balanced oil market does not necessarily mean a return to higher oil prices.
- Because of a profoundly changed economy and associated monetary policies, we have crossed a boundary and a return to higher oil prices is complicated.



Energy Is The Economy: The Context for The Oil-Price Collapse

- People think that the economy runs on money but it runs on energy –Nate Hagens.
- Today, oil and gas prices & the economy must be viewed through the debt lens.
- The end of cheap oil and natural gas in the early 2000s led to financial dislocations and ultimately, the Financial Collapse of 2008.
- Because of resource scarcity, oil prices increased from a baseline of $33/barrel in the 1990s to an average price of $99/barrel from late 2010 until September 2014.
- Post-collapse monetary policy focused on forcing consumption and investment: zero interest & further expansion of credit.
- E&P companies had almost unlimited access to capital.
- It is impossible to understand and critically evaluate shale gas or tight oil without this context.

What Really Controls Oil Prices?

- Futures markets control oil prices today.
- These reflect a collective unconscious that includes world events.
- Massive oil inventories skew the context.
- The world economy is a casino.

Oil company bankruptcies accelerate despite rise in crude prices

By Collin Eaton | May 9, 2016 | Updated: May 9, 2016 11:33pm

Oil Worker Strike Cuts in Half Kuwait Crude Production

Workers are protesting a proposal to cut wages and benefits for all public-sector employees

Saudi Arabia Dismisses Its Powerful Oil Minister Ali al-Naimi

Departure is part of wider government reshuffle, with Saudi Aramco chief Khalid al-Falih succeeding him

Speculative Investors Cut Bullish Crude Oil Price Bets

Doubts grow about sustainability of recent rally in prices

U.S., world stock markets slide as panic in China spreads

In Photos: Canada's Devastating Fort McMurray Wildfires

May 6, 2016 - 1:01 PM ET

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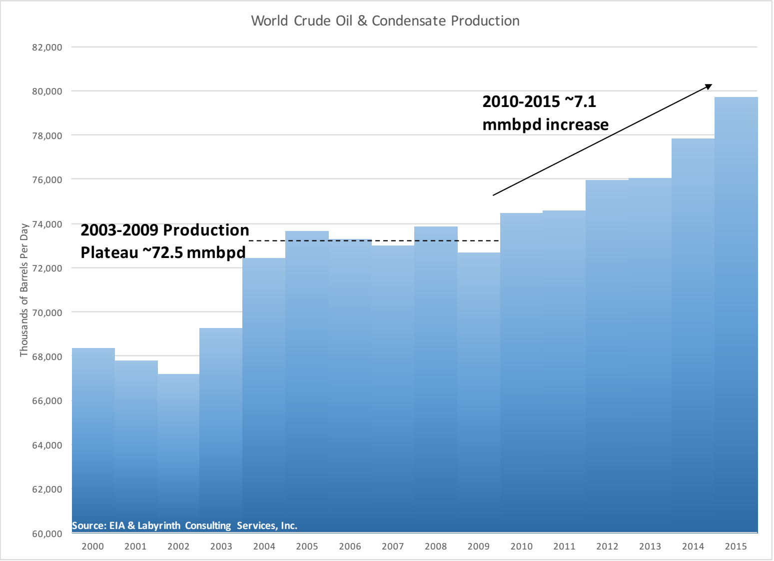
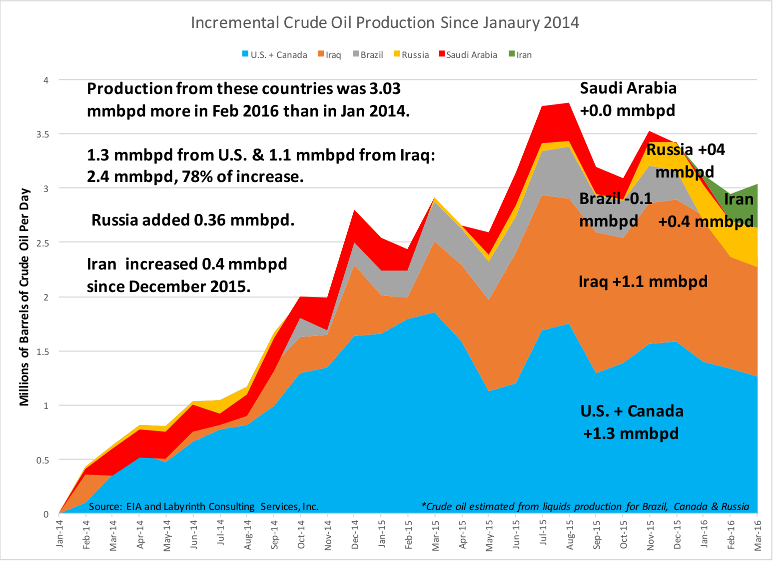
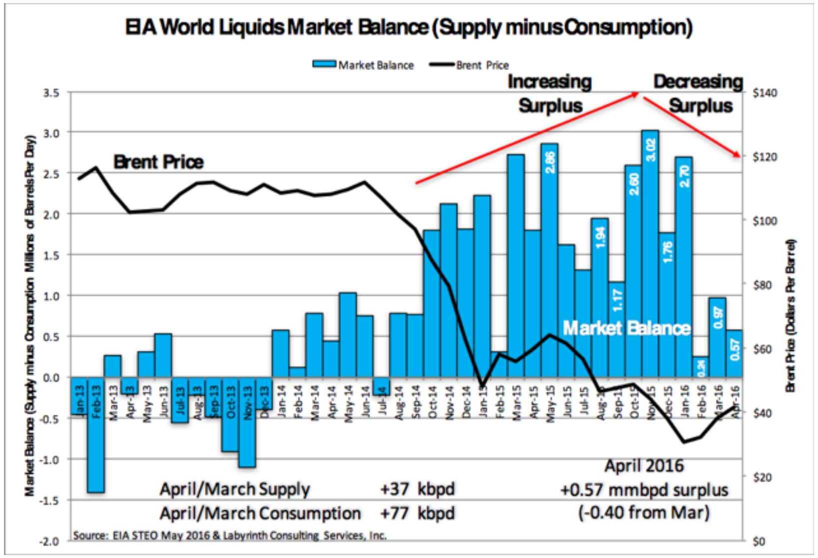
Global Oil Output and Over-Production: How We Got Here

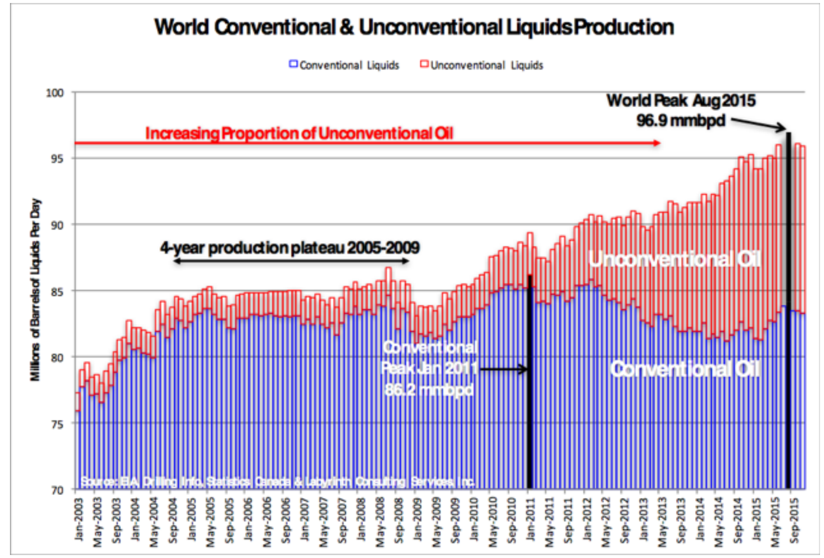




- Over-production caused the oil-price collapse: a classic bubble.
- Low-interest rates and currency devaluation after the Financial Collapse of 2008-2008 enabled over-investment and over-production: cheap money and high oil prices.
- Higher oil prices provided incentive to produce more expensive, unconventional oil: tight oil (shale), oil sands and deep-water oil.
- 7.1 mmbpd increase from 2009-2015 lead to production surplus by February 2014 that peaked in May 2015 and again in November 2015.
- Main contributors to over-production: U.S. + Canada, Iraq, Brazil and Russia.

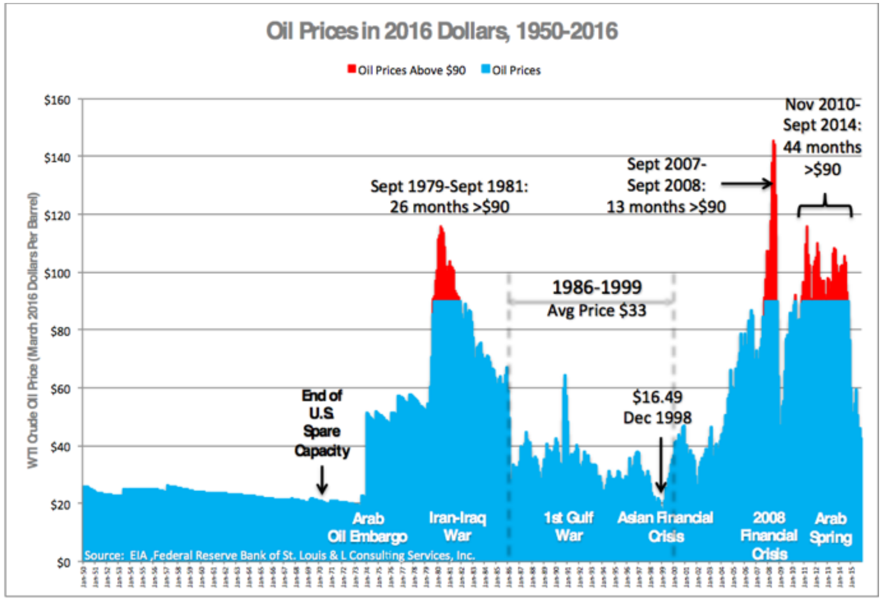
Global Market Balance and Tight Oil Over-Production

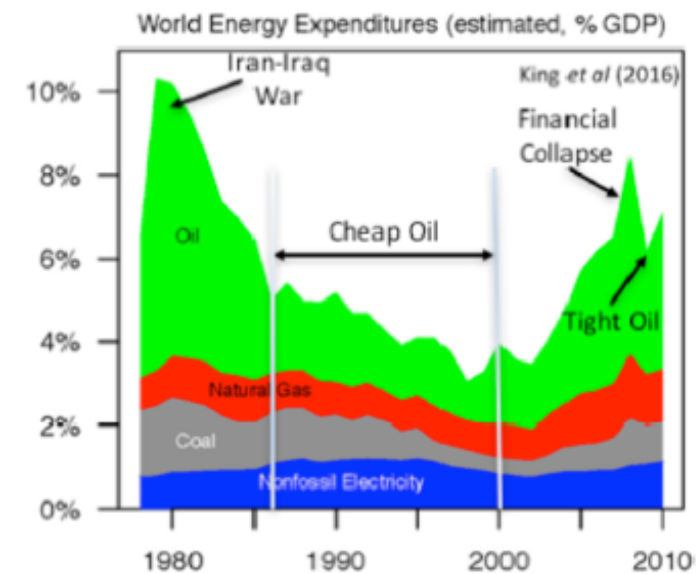




- Current global oil market is over-supplied by ~0.57 million barrels of liquids per day.
- Production surplus increased to > 3 mmbpd by May and November 2015 & has declined since then.
- The market is moving toward balance.
- Consumption has increased. EIA now forecasts 1.4 mmbpd growth in 2016. How much is consumption based on low prices?
- The origins of over-supply of oil and low oil prices are found, ironically, in increased scarcity of petroleum resources.
- Scarcer resources led to higher prices that permitted production of unconventional oil.
- Over-investment because of high prices and easy credit led to over-production, over-supply and lower oil prices.

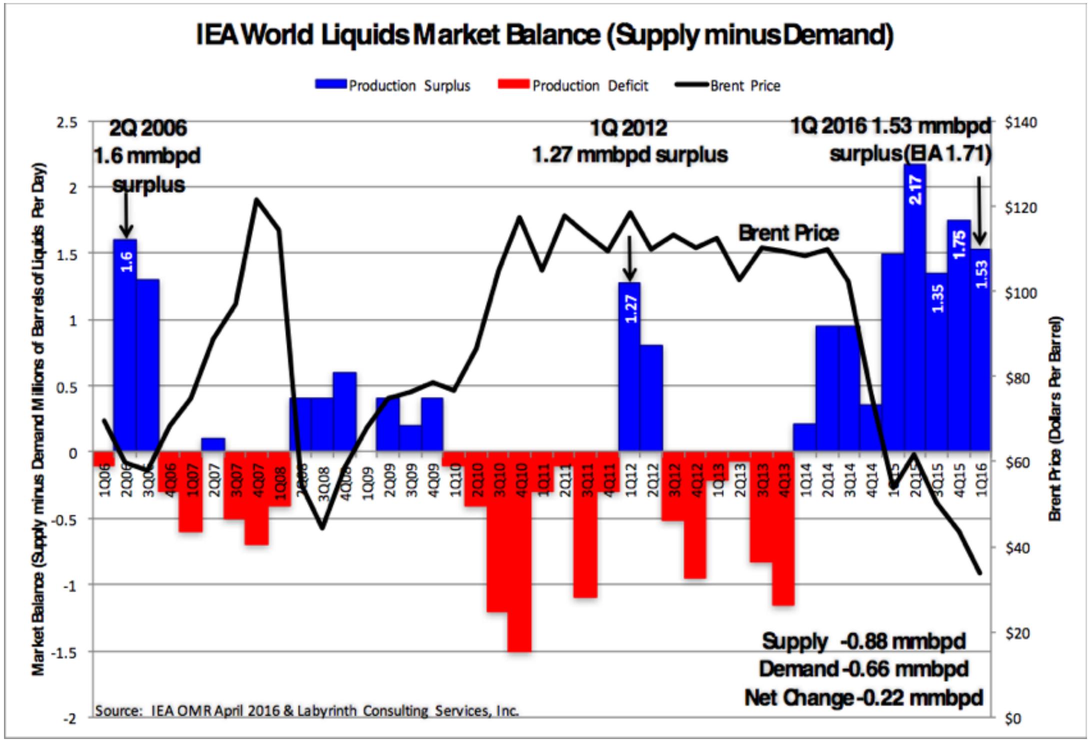
The End of Cheap Oil





- Oil prices have only been more than $90/barrel (March 2016 dollars) 3 times: after the oil shocks of the 1970s and early 1980s, before the 2008 Financial Collapse, and 2010-2014.
- For the last 15 years of the 20th century, oil prices averaged $33/barrel and were partly responsible for economic prosperity in the United States (Reagan-Bush-Clinton era).
- Low percent of GDP spent on energy.
- During the Asian Financial crisis in 1998, oil prices reached lowest level since 1950 ($16.49/ barrel).
- Cheap oil ended in the early 21st century—flat production & increased demand from developing world especially China.
- Longest period (44 months) of high oil prices after the Financial Collapse.

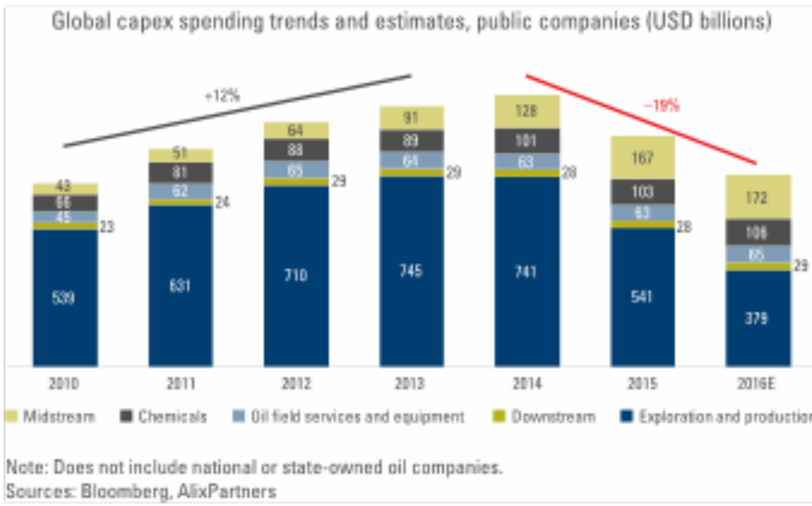
The Collapse of World Oil Prices



- Market balance expressed by relative supply surplus or deficit (supply minus demand).
- Period of supply deficit before the Financial Collapse contributed to high oil prices.
- A supply surplus because of low demand after the Financial Collapse (2008-2009).
- Period of supply deficit most of 2011-2014 because of supply interruptions in the Middle East.
- Growing supply surplus beginning in 1st quarter of 2014 caused collapse of oil prices.
- The surplus reached a maximum in the 2nd quarter of 2015 (2.2 mmbpd) and has generally improved since then with falling production but remains more than 1.5 mmbpd.

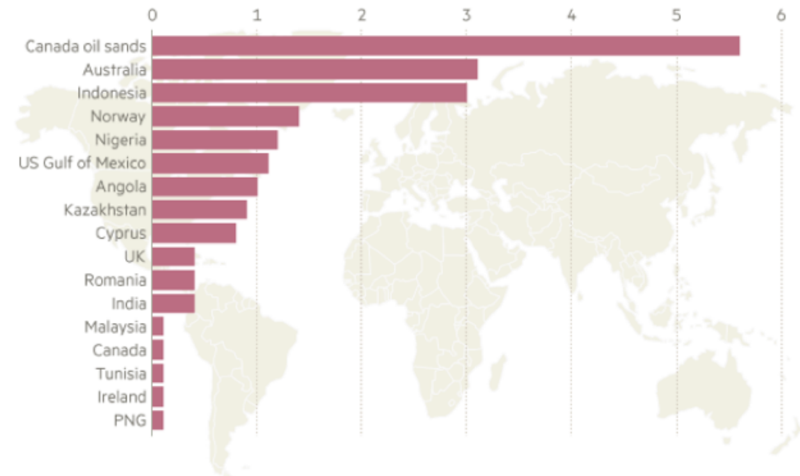
The Big Picture On Oil Prices: Under-Investment

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



Deferred commercial oil reserves

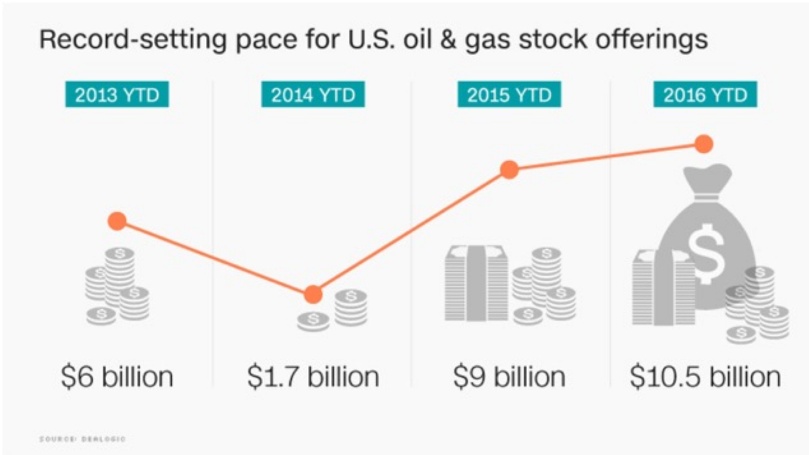
Barrels of oil equivalent (bn)

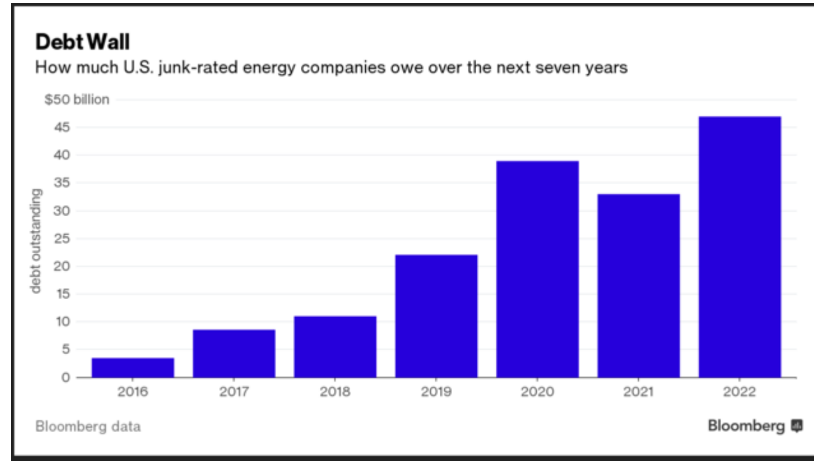


Source: Wood MacKenzie

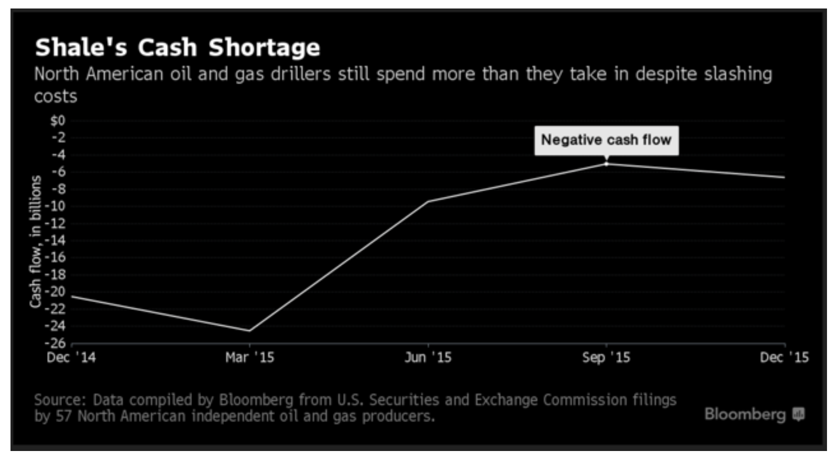
- Large reduction in E&P investment in 2015 and probably even greater in 2016.
- Deferred investments in 2015 equivalent to 20 billion barrels of reserves.
- Global E&P estimated capex for 2016 is 44% (-$412 billion) of 2014.
- A substantial supply deficit will result in the not-too-distant future.
- A price spike seems unavoidable.

The Big Picture On Oil Prices: E&P Debt

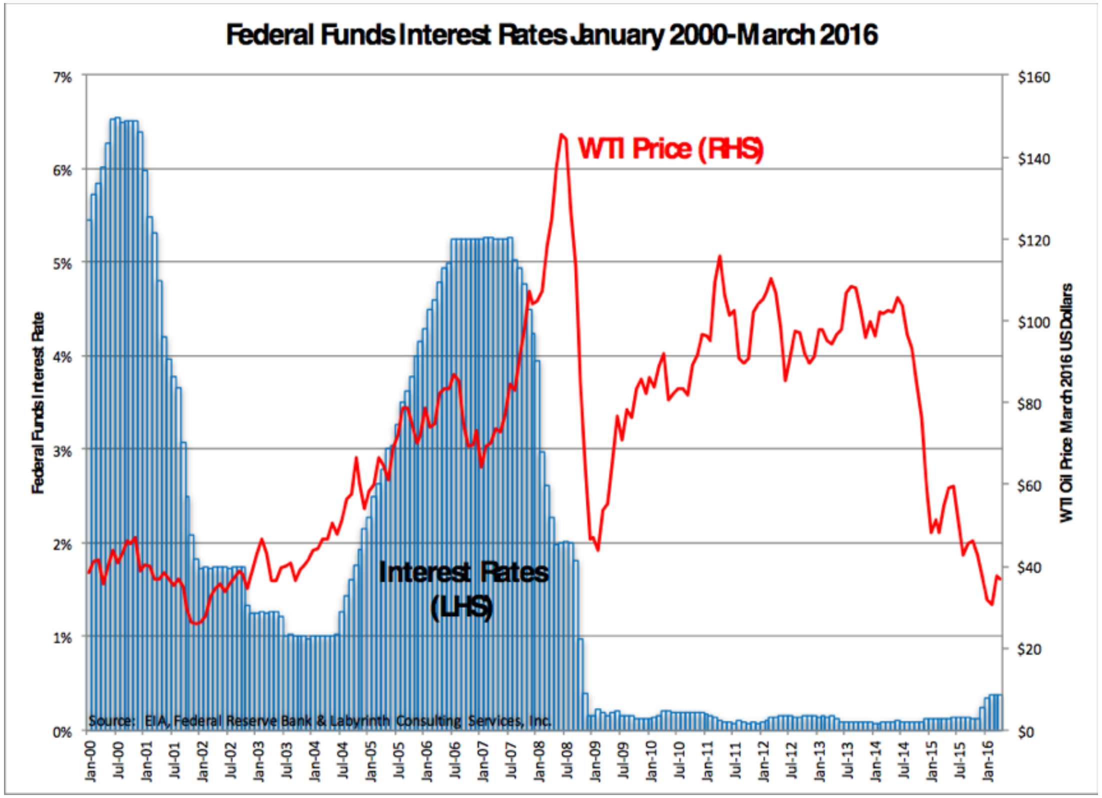




- Oil companies have relied on debt during good and bad times since the Financial Collapse.
- Secondary share offerings in U.S. E&P companies are already higher YTD 2016 than in 2015.
- Pioneer $1.4 billion, Devon $1.3 billion.
- Investors are looking for the bottom.
- ~$140 billion in junk bond debt coming due over next 7 years.
- Huge bank exposure to energy debt.
- But companies are spending more than they earn from operations.

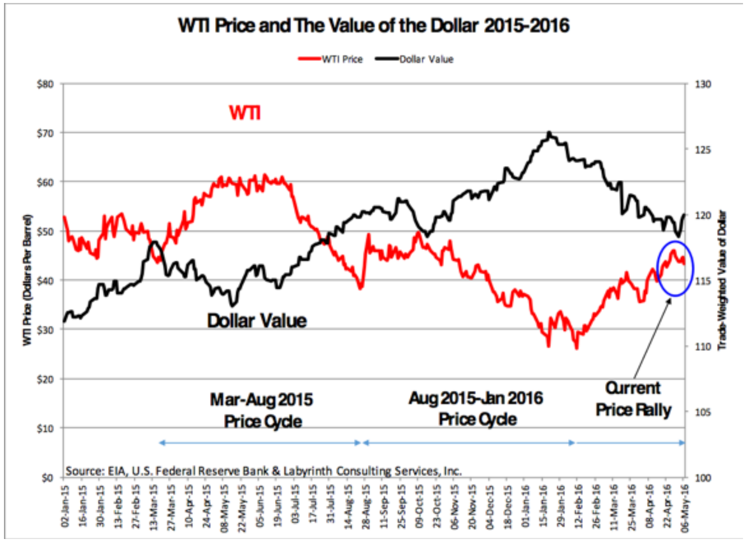


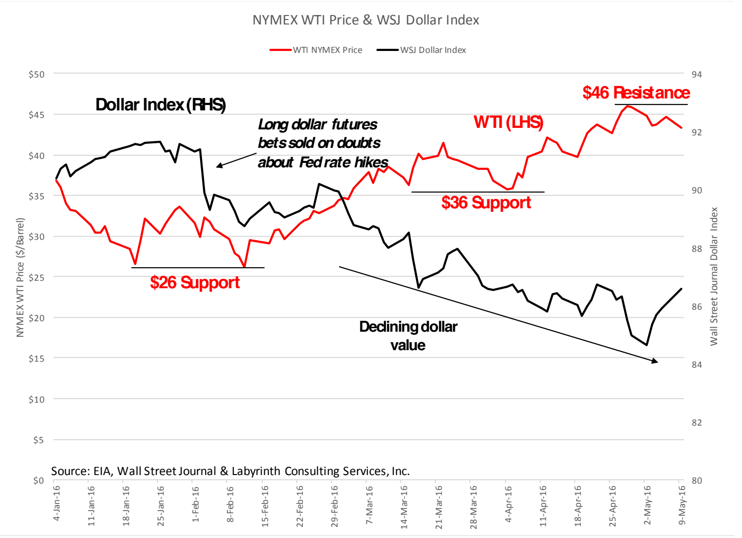
The Big Picture On Oil Prices: Monetary Policy



- Interest rates have been almost zero since the 2008 Financial Collapse.
- 8 years of zero-interest rate policy have distorted investments and the economy.
- Investors seek yield because traditional investments have almost none.
- U.S. E&P companies became an attractive investment because of high yield and relatively low risk.

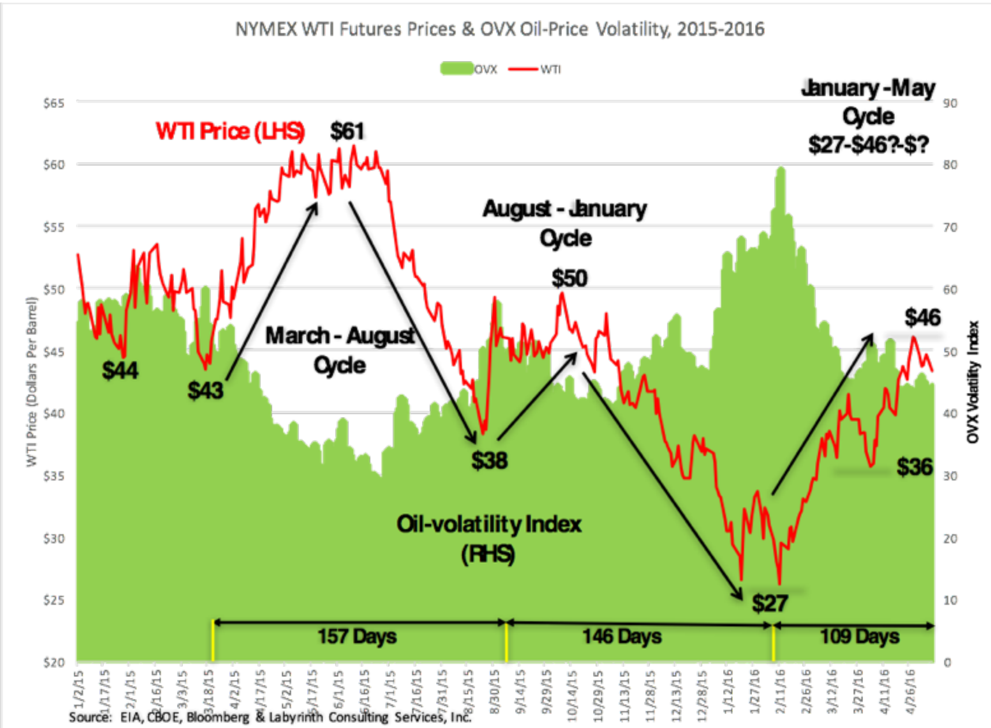
The Big Picture On Oil Prices: Monetary Policy





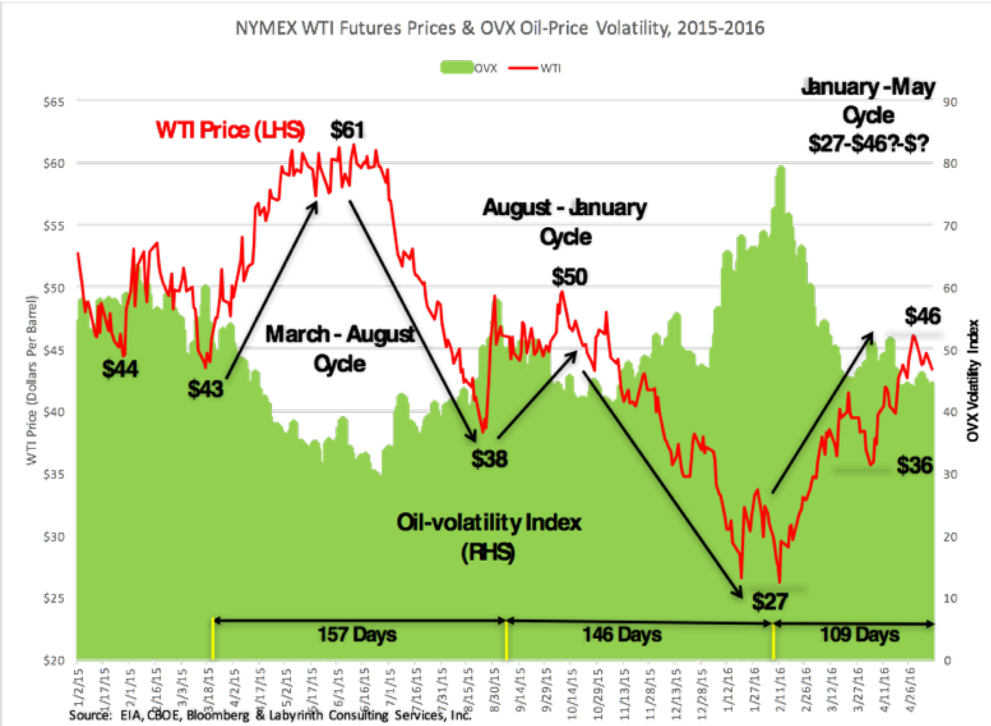
- A negative correlation between the value of the U.S. dollar and world oil prices: a globally connected economy in which countries compete for investment based on interest rates and currency valuation.
- Oil transactions are denominated in U.S. dollars as the world reserve currency.
- Higher U.S. interest rates favor investments in the U.S. economy over commodities like oil. When the dollar is strong, oil prices are generally lower and vice versa.
- The correlation between oil price and the dollar is especially strong since 2015 and partly explains price cycles.
- The latest price rally began after the Federal Reserve Bank indicated that further interest rate increases in 2016 were unlikely.

Price Cycle Trends and Price Volatility



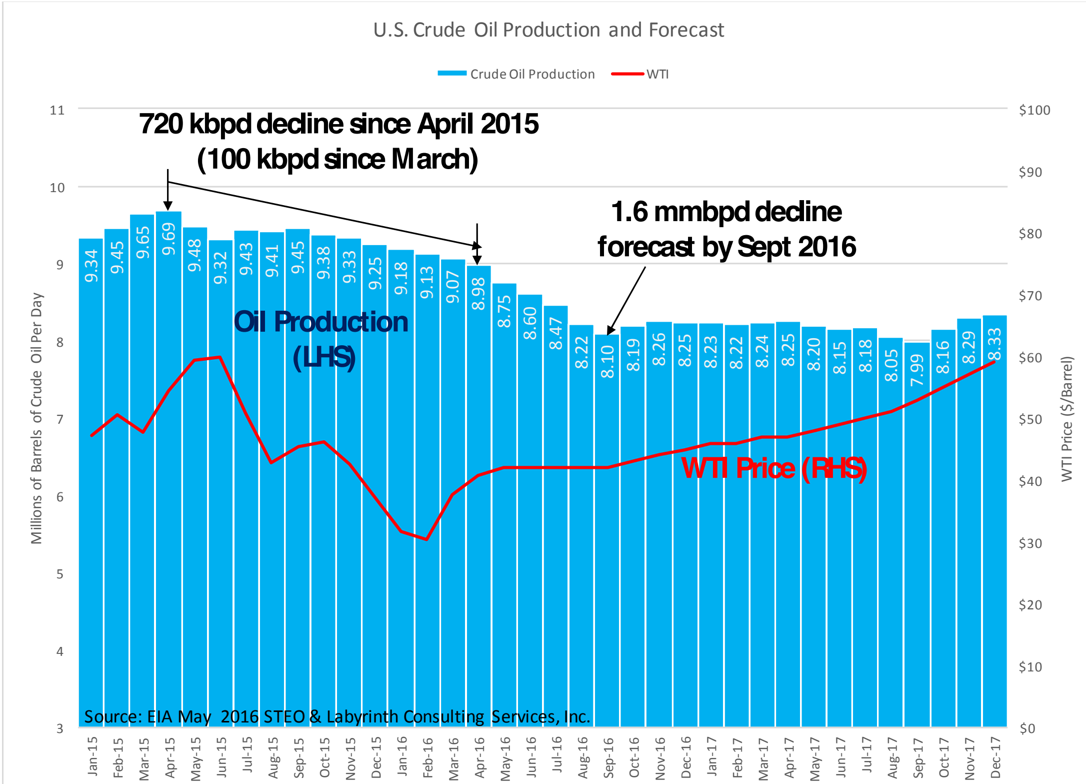
- Oil prices increased from $26 to $46 per barrel during the current January–May price rally.
- This was based partly on hope for an OPEC-plus-Russia production freeze but mostly, the collective unconscious was fed up with low oil prices.
- There were two major price cycles in 2015: March-August ($44-$60-$38 per barrel) and August-January ($38-$49-$27 per barrel).
- Both of these cycles lasted approximately 150 days (5 months).
- Oil-price volatility was generally high at the beginnings and ends of the cycles and generally low during their peaks.

The Present Price Cycle



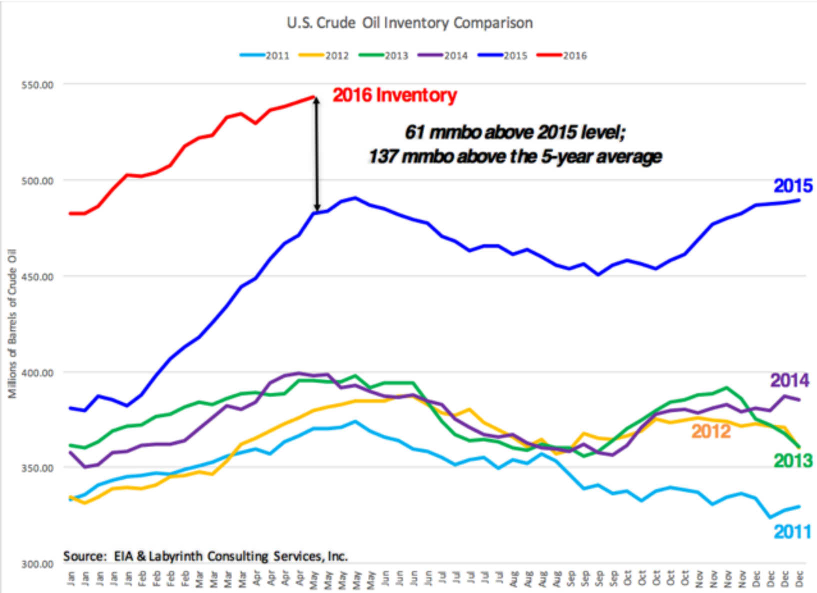
- Prices increased from $26.55 to $33.62 in late January and then dropped to $26.21 on February 11.
- This $27 "double-bottom" pattern probably tested the support level for the greater oil-price collapse that began in June 2014.
- Prices increased to $41.45 on March 22 over a period of 40 days, then fell to $35.70 over the next 12 days before peaking at $46.03 on April 28. $46 was the upper resistance level.
- The $35.70 low probably tested a support level.
- Prices are now fluctuating between $42 and $44/barrel.
- Volatility patterns generally are consistent with earlier cycles but it is too early to say how these are developing.
- The total duration of this cycle is 109 days so far.

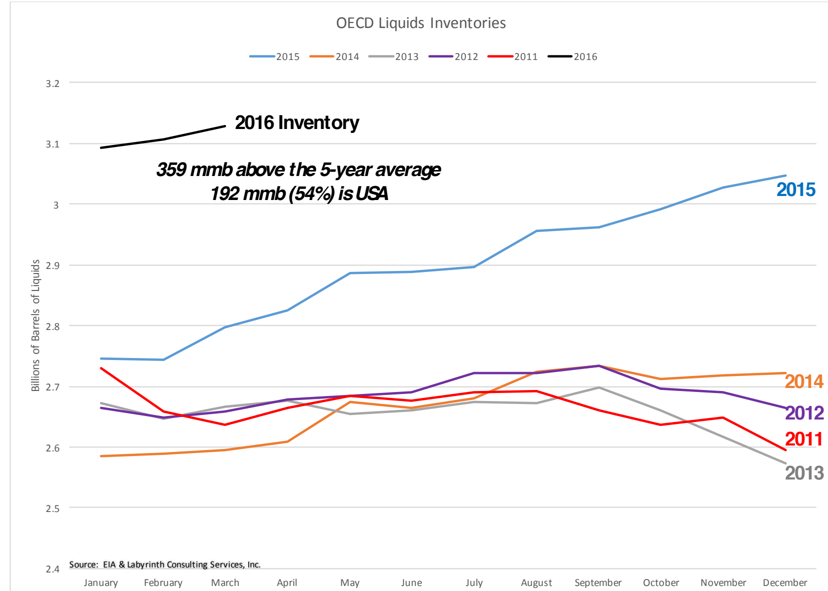
U.S. Production Decline



- March production fell to 8.98 million barrels per day, 100,000 barrels per day less than in February.
- 720,000 barrels per day less than peak production in April 2015.
- EIA forecasts that production will drop another 880,000 barrels per day by September 2016 for a total decline of 1.6 million barrels per day compared to April 2015.
- Average Q1 2016 decline rate of 60,000 bpd/month.

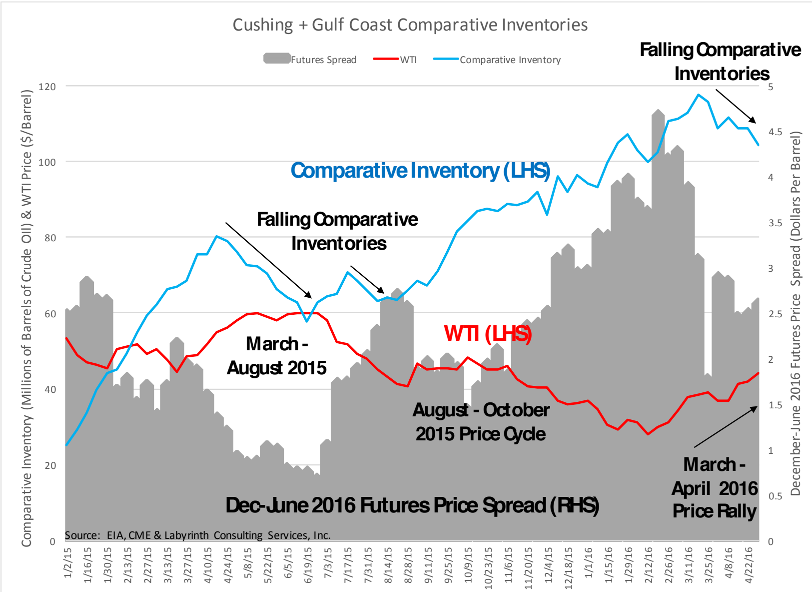
Inventories Remain An Obstacle To Price Recovery

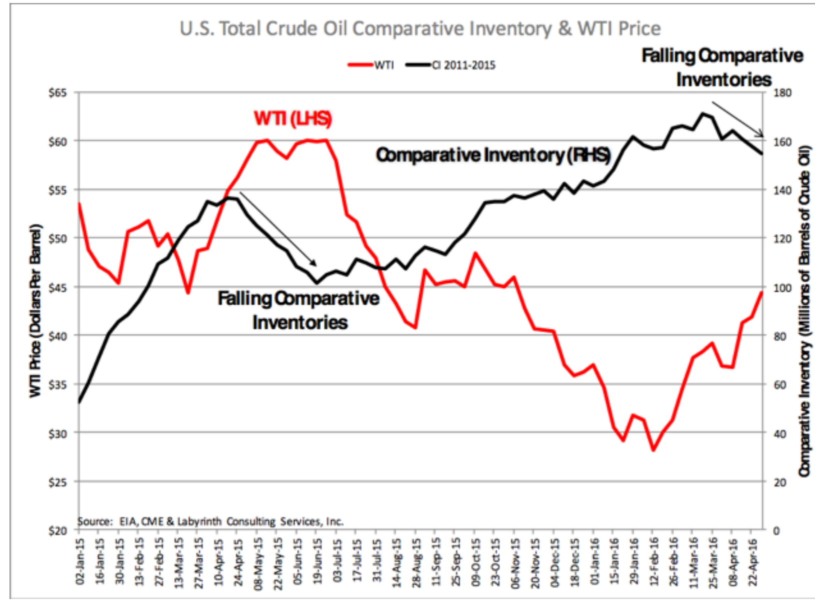




- U.S. stocks are near record high levels of 543 million barrels: 61 million barrels more than at this time in 2015 and 137 million barrels more than the 5-year average.
- OECD stocks are also at record levels of 3.13 billion barrels of liquids.
- That is 359 million barrels more than the 5-year average but 54% of those volumes are U.S. stocks.

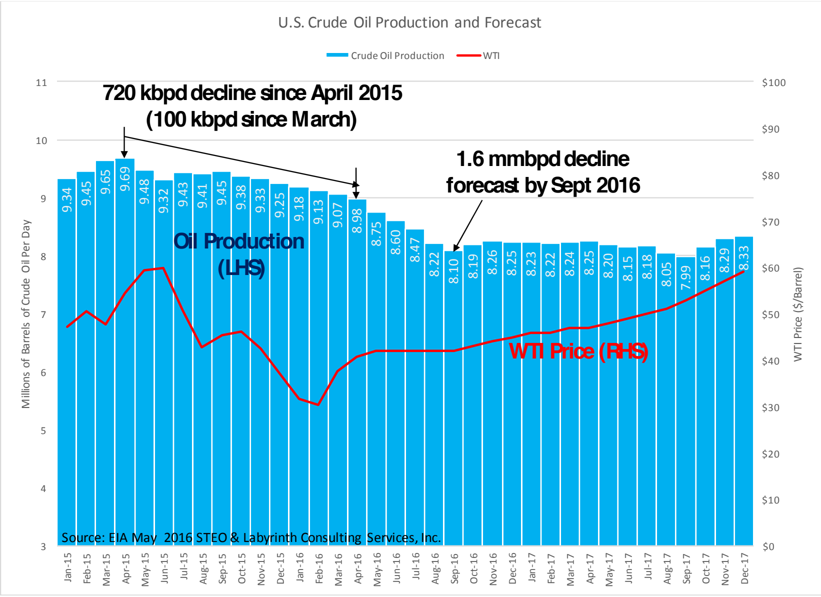
Comparative Inventories Are Falling

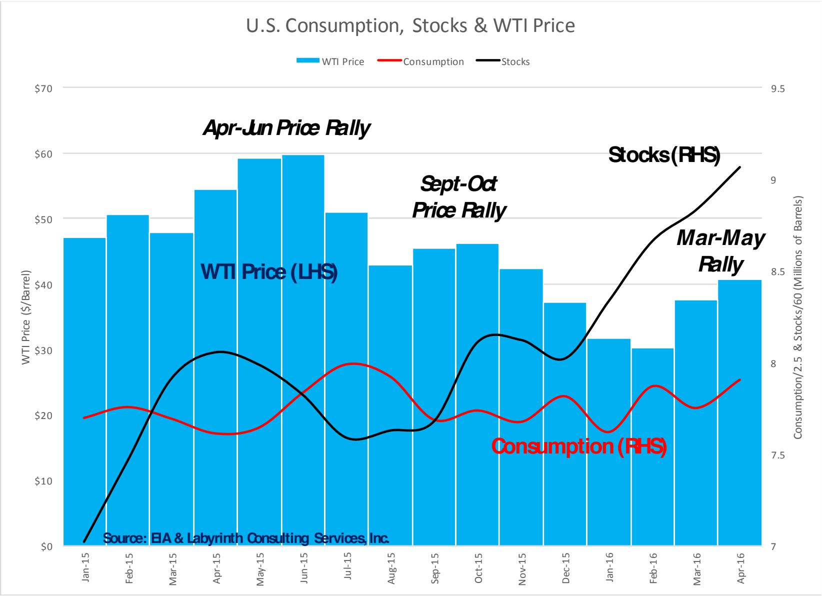




- Comparative inventory is determined by comparing current stocks with a moving average of stocks over the past 5 years.
- The two previous price cycles in 2015 were both characterized by falling comparative inventories. When C.I. patterns reversed, prices fell.
- The current price cycle shows a decrease in comparative inventories.
- Front-to-back futures spreads typically fall with decreasing inventories because short-dated contracts gain value compared to longer-dated contracts.
- The past two cycles ended because producers increased drilling and production at higher prices.

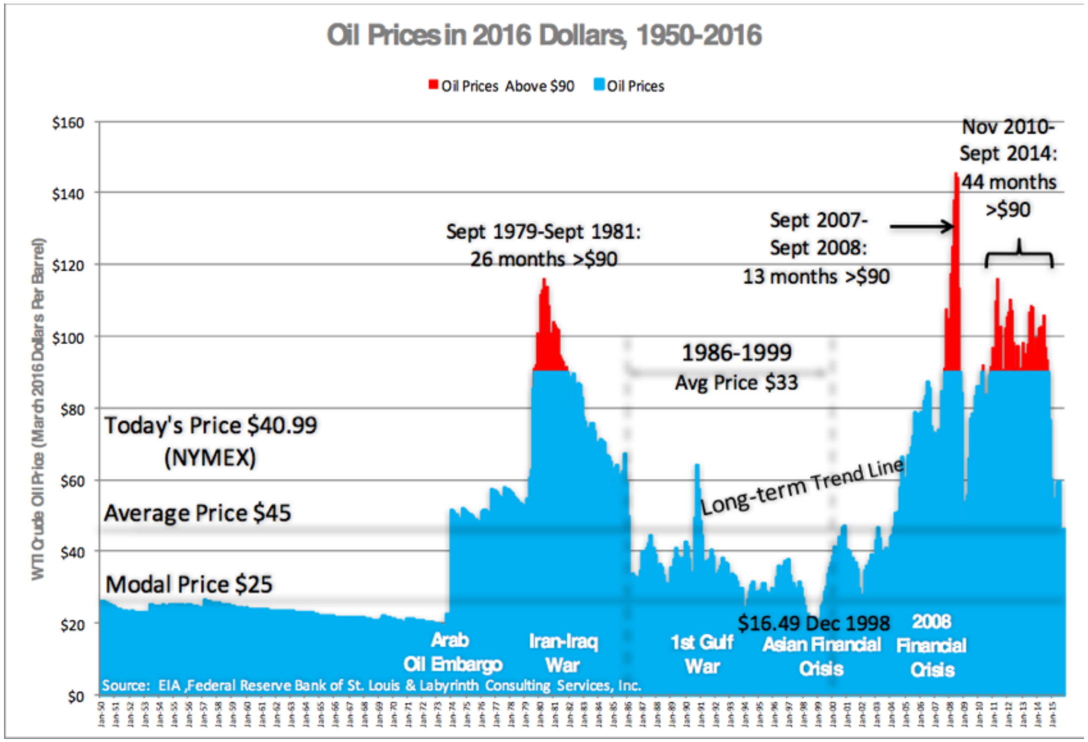
Crude Oil Inventories, Oil Consumption and WTI Prices: 2016 Price Rally





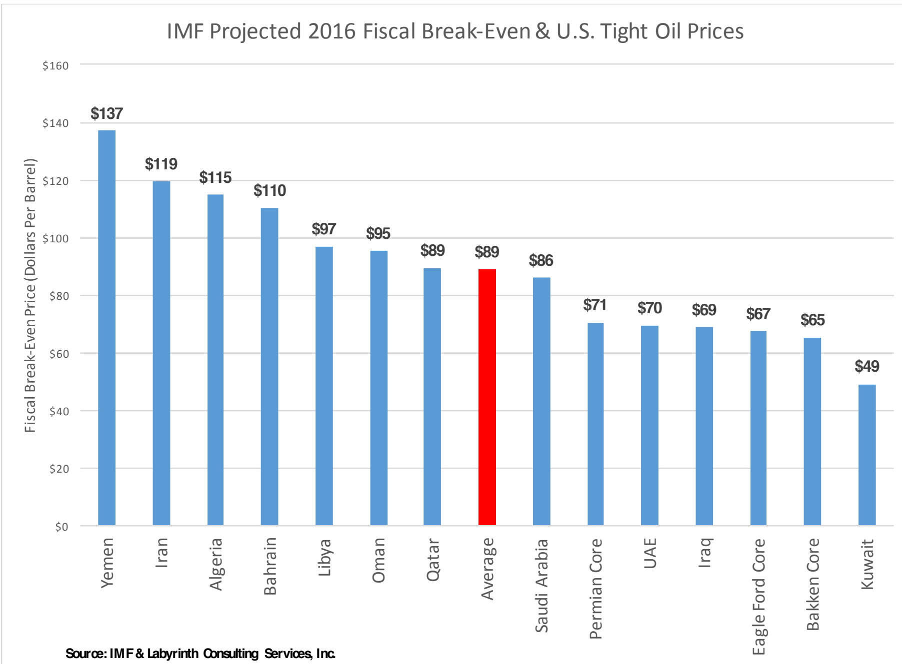
- In the current price rally, consumption has increased following record low prices from December 2015 through February 2016.
- Very high stock levels.
- Consistent production decline of ~60,000 barrels per month since September 2015.
- 100,000 barrel per day decline in April is largest monthly drop so far.
- During 2015 price rally, $15 per barrel (41%) price increase killed consumption.
- In current rally, peak price was almost $17 above baseline with greater percent increase (63%) than 2015.

The Long-Term Perspective On Oil Prices



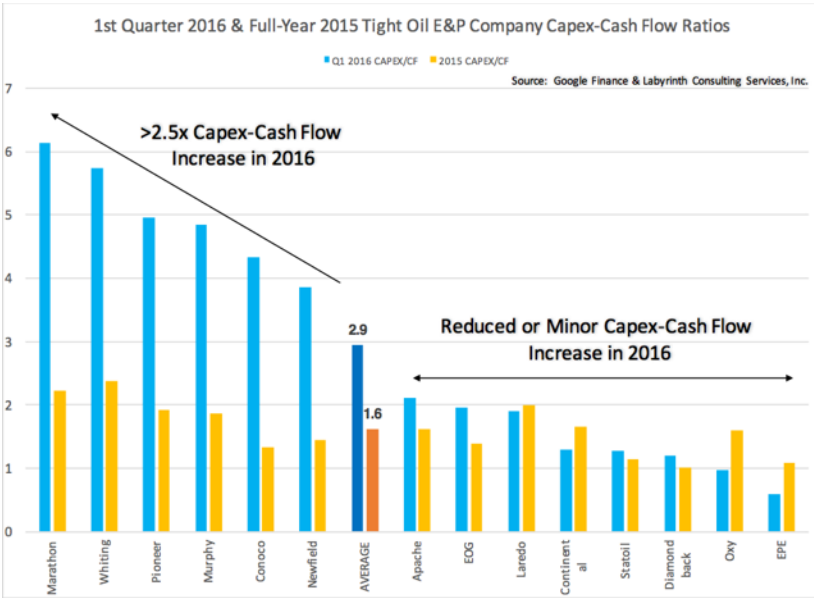
- Average oil price 1950-Present: $45 per barrel.
- Modal oil price: $25 per barrel.
- Present price: $44.68 per barrel.
- 1986-1999: $33 per barrel.
- The end of cheap oil in the 21st century led to financial dislocations and ultimately, the Financial Collapse of 2008.

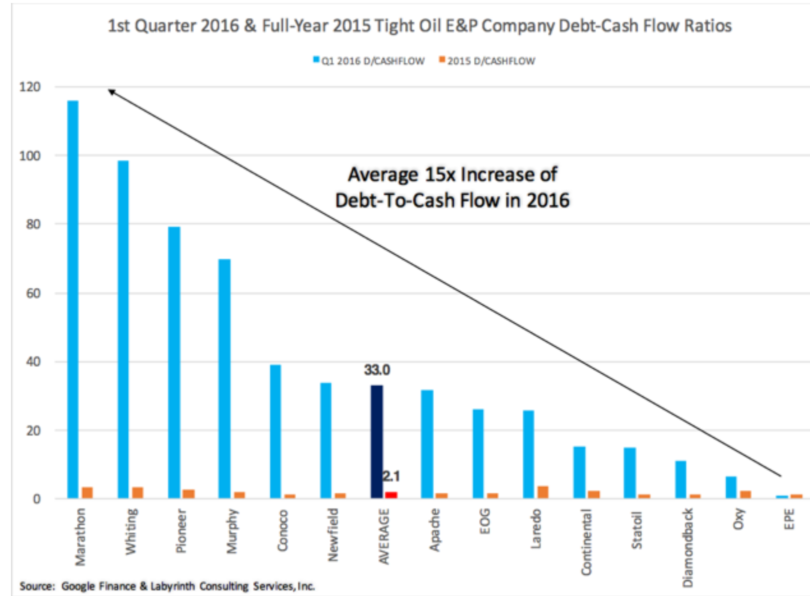
A Perspective On Break-Even Prices



- There has been a lot talk about low- and high-cost producers since the oil-price collapse of 2014.
- IMF published fiscal break-even prices for OPEC in 2015.
- We have determined break-even prices for the core tight oil plays in the U.S.
- Everyone needs prices higher than today's to break even.
- Realistically, $70 per barrel is the minimum for the most lower-cost producers.
- Most OPEC members need more than $80 to break even.
- U.S. tight oil plays look pretty good in this company!

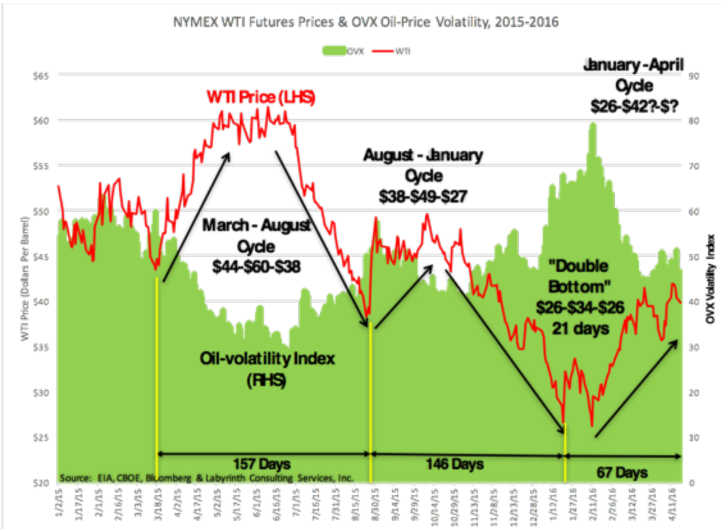
Tight Oil E&P Companies Are Failing

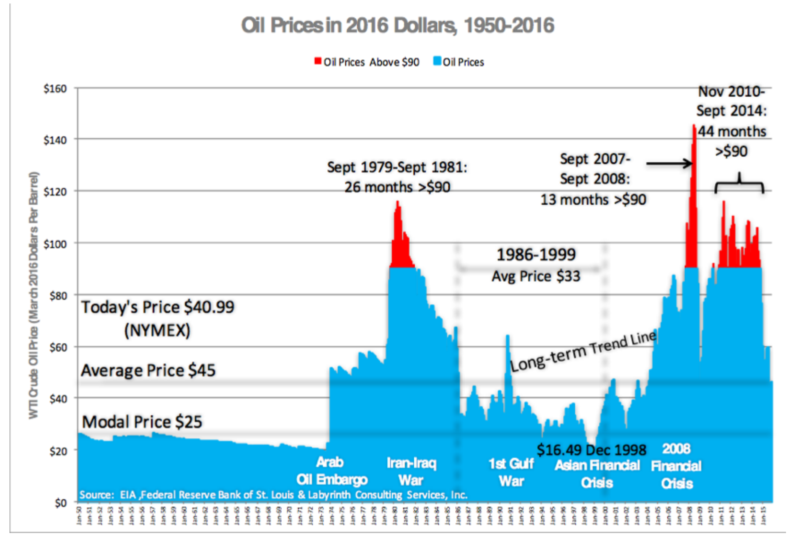




- U.S. tight oil and shale gas E&P companies are failing based on first quarter 2016 earnings reports.
- All the tight oil-weighted companies had negative cash flow in Q1 2016 except EP Energy and Occidental Petroleum.
- On average, companies spent twice as much as they earned; many spent >2.5x.
- 15-fold increase in debt-to-cash flow. 1992-2012 average was 1.5. Q1 2016 was 33.0.
- Companies are managing their negative cash flow by spending almost nothing and, therefore, earning almost nothing.
- Those who believe that things will return to normal with somewhat higher oil prices need to think again.

A Return to Higher Oil Prices Is Complicated





- The current price cycle may represent the beginning of an oil-price recovery.
- The global market appears to be moving quickly toward balance with higher consumption growth.
- Comparative inventories are falling.
- Chart patterns suggest that a bottom may have been established at $26-$27 per barrel and at $36/barrel.
- The likely path forward will be more price cycles but this time, with higher rather than lower ending prices.
- What is a reasonable price recovery level? History suggests $45 per barrel but everyone needs more now to break even. Even with market balance, prices will probably not return to 2011-2014 ”normal” prices.
- A weak global economy and weaker demand with higher oil prices are the biggest risks to oil-price recovery.
- We crossed a boundary in 2014 and old rules no longer necessarily apply.