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Energy Sector Overview

March 10, 2016

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Energy/Oil Views Heading Into 2015

- **At the beginning of 2015, the market expectation (and our view) was that oil would remain volatile well into 2016 (potentially falling well below current price) but that supply/demand forces would balance by mid 2016 and oil would rebound to $70+ by the end of 2016**
  - Oil was certainly volatile in 2015, however <$40 oil today is a long way away from $70+ by year-end

- **The headline factors that caused the fall in oil prices in late 2014 into early 2015 (most of which continue today) were:**
  - Strengthening US dollar since June 2014
  - Reduction in the IEA demand forecast over the course of 2014
  - Ongoing increases in US oil shale production
  - Saudi Arabia continuing to produce despite low prices
  - Stable / surprise production from Libya and other more volatile countries

- **Given this trajectory for the path of oil, our view was that private owners and public E&P/service companies would be generally ok for the majority of 2015 … but that as oil remained low longer, distress would build (this is largely emerging today)**

Energy/Oil Views Heading Into 2015 (Cont.)

- **Though we expected oil to be volatile, we thought that a collective of forces would help to balance supply/demand in 2016:**
  - OPEC fiscal breakeven prices and US shale economic breakeven prices were well above $50/barrel
  - Without continued capital investment supply rolls off below current demand levels
  - Capital investment and rigs counts were already beginning to decline in early 2015
  - Energy credits markets were constrained (limiting capital investment)
  - Any supply shocks from “at risk” sources such as Iraq, Iran, Nigeria, Venezuela and others (which account for 40% of OPEC supply) would help to balance supply/demand
  - The market view (based on futures curves, bank forecasts and long-term ranges of future prices) forecasted $70+ long-term oil
  - Over the long term, the rising middle class in non-OECD countries with large population should drive long-term oil demand

- **However, there were also risks:**
  - OECD demand was flat-to-negative; would it get worse?
  - Would current economic conditions get worse (Europe, China growth, etc.)?
  - Continued strength of US dollar
  - Continued global production stability
  - OPEC (Saudi Arabia) focuses on becoming a volume producer
  - Alternative energy sources (long-term expectations)

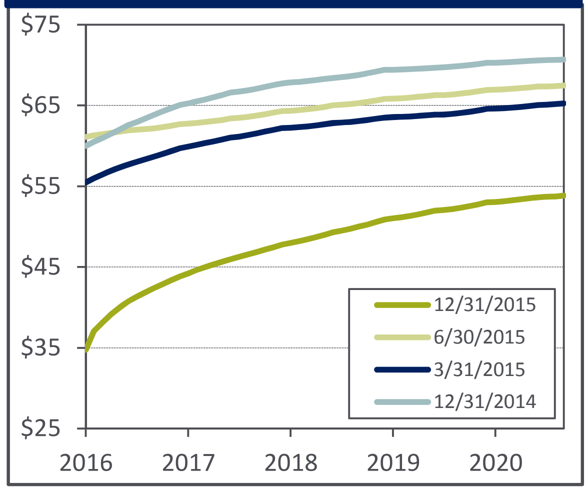
Long Term and 2015 Oil Price Movement

Commentary

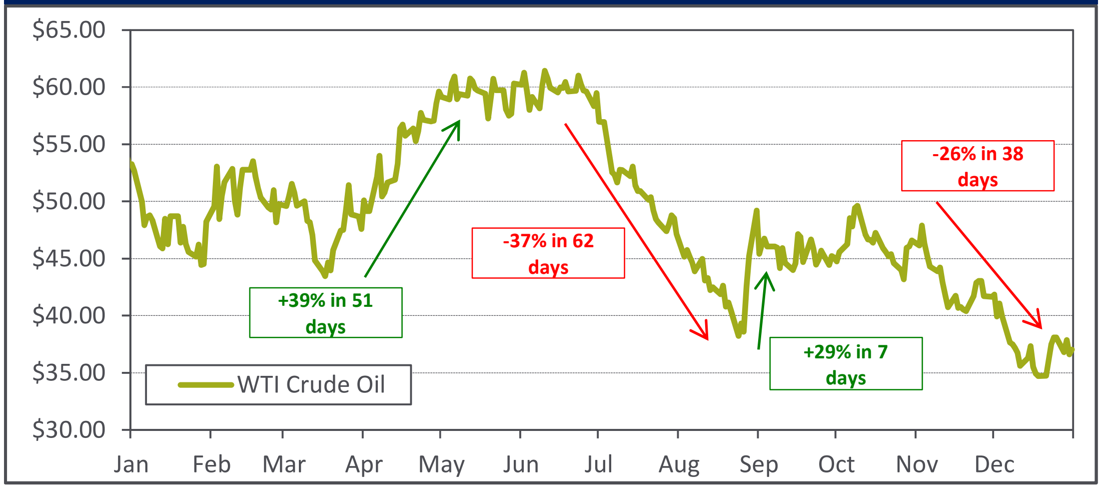
- **Oil prices experienced a rebound in the second quarter but have reached new long-term lows**
- **Volatility in prices continued**
- **The oil futures curve steepened as near-term pricing has come down**
  - The far end of the curve (2020 expiration) is priced at ~$54 per barrel

2001-2015 Oil Prices

Futures Curve



2015 Oil Prices



Source: Bloomberg, NEPC analysis. Data as of December 31, 2015.

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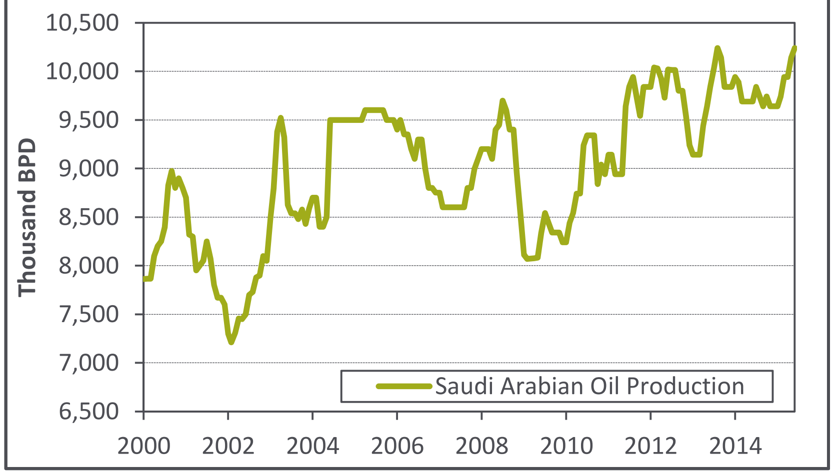
Factors Driving Low Oil Prices Today

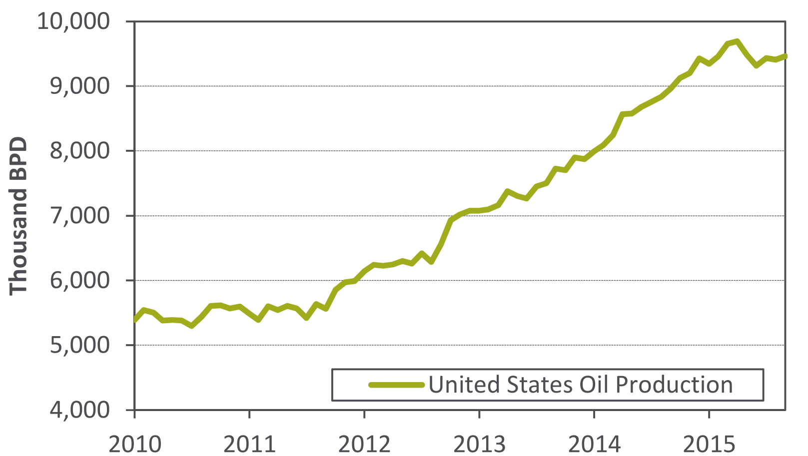
Oil Supply

- **OPEC (led by Saudi Arabia) has continued to increase production in the face of low oil prices**
  - Other OPEC nations (many of which have been more volatile in the past) have remained fairly stable
- **US production, while declining, remains high**
- **Non-OPEC, non-US production has declined slightly**

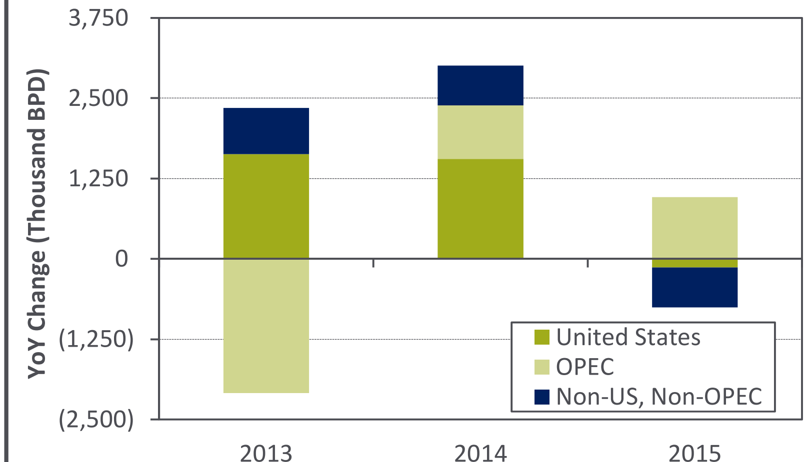
Saudi Arabia at Record Production Levels



US Production Remains High



Non-OPEC Production has Declined Slightly

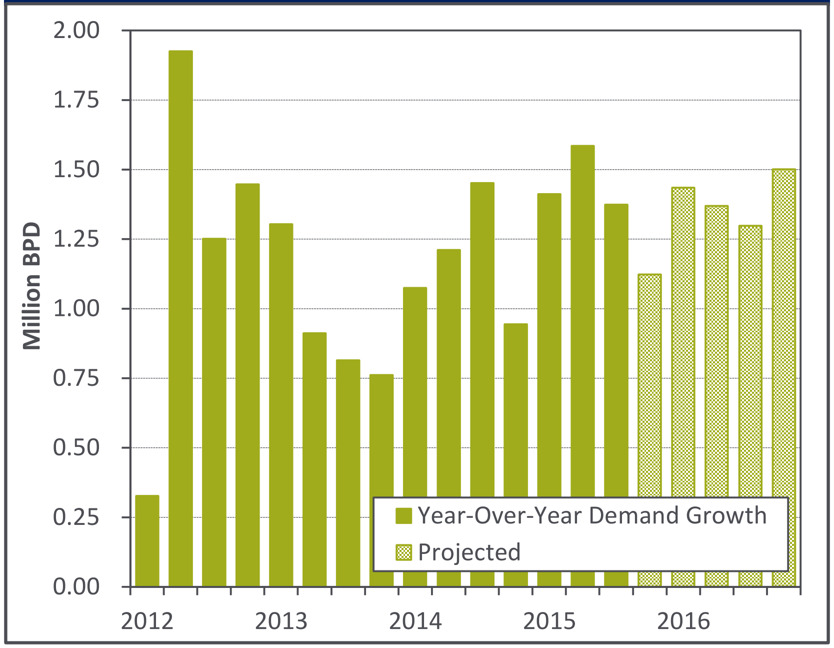


Source: Bloomberg, EIA, NEPC analysis. Data as of June 30, 2015.

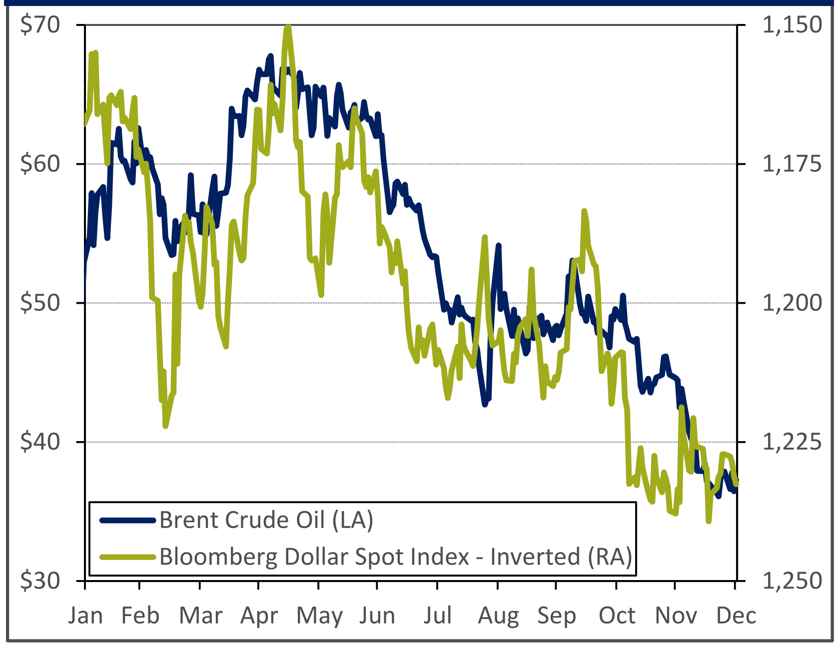
Factors Driving Low Oil Prices Today (Continued)

- **On the demand side, some investors are fearful of a "hard landing" in China and the possibility of slower global growth**
  - Global demand for crude oil, however, shown sustained growth and is expected to continue
- **The strength of the US Dollar has continued to cause headwinds for global oil prices**
  - The Dollar weakened in Q2, concurrent with rally in oil prices, but has since strengthened further

Global Demand Growth



Strength of USD



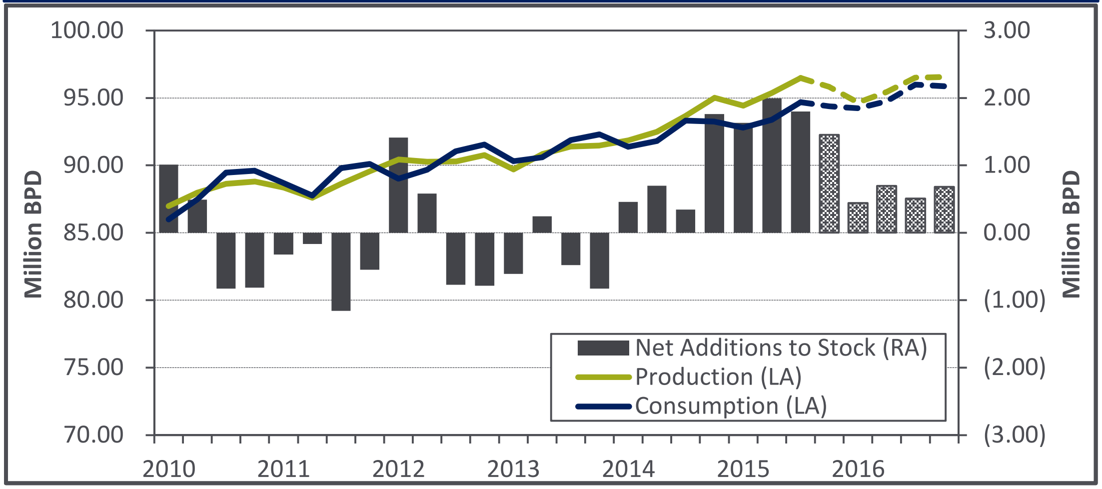
Source: EIA, Bloomberg, NEPC Analysis. Demand data as of September 30, 2015; USD and crude oil pricing as of December 31, 2015.

Supply/Demand Still Not in Balance

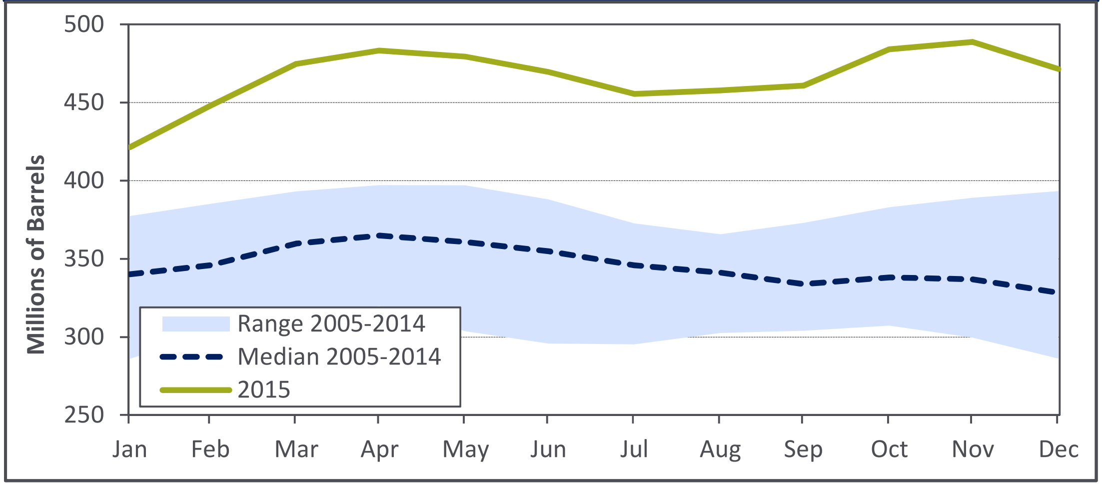
Commentary

- **Ultimately, the cause for low oil prices continues to be a supply/demand imbalance**
  – Globally, the oil market is roughly oversupplied by 1.8 million barrels per day
- **To put this imbalance in perspective, the market is oversupplied by approximately 1.9%**
- **As a result of this oversupply, storage of crude oil is at all-time highs**
  – In OECD nations, storage represents approximately 64 days of supply (long term average is approximately 58 days)

Global Oversupply



US Stocks of Crude Oil Are High



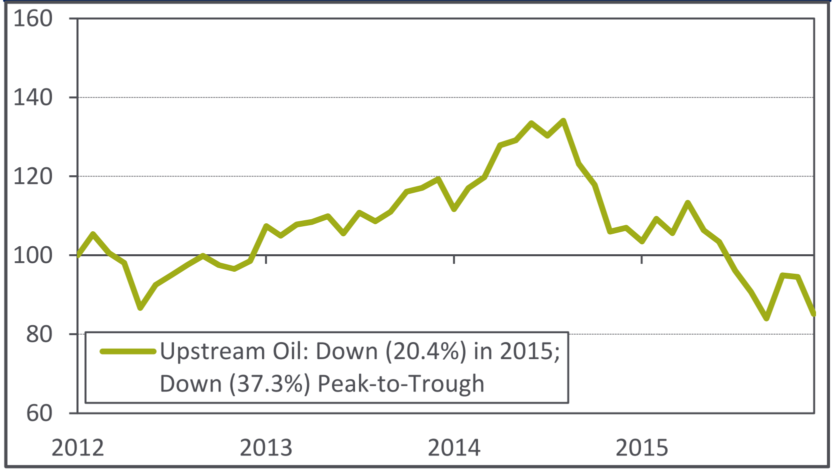
Source: EIA, NEPC Analysis. Supply and demand data as of September 30, 2015; crude oil stocks data as of December 31, 2015.

Impact of Low Oil Prices: Equity Markets Declining

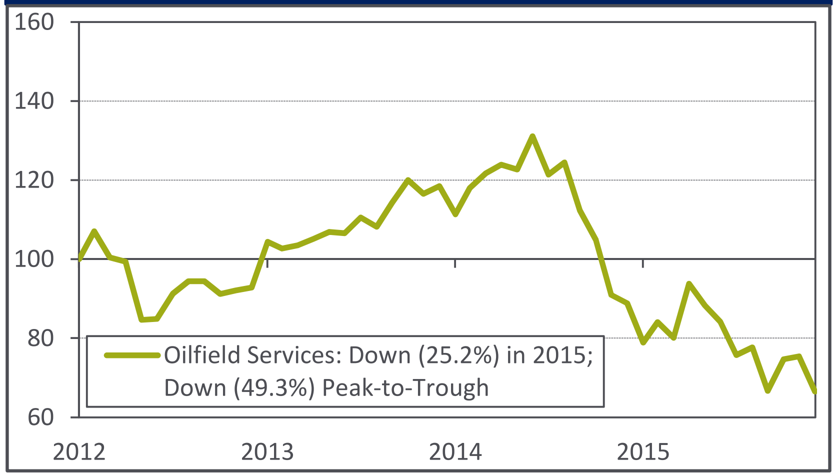
Commentary

- **Energy equity markets continued to decline in 2015**
  - Upstream companies experienced modest recovery early in year as oil prices rebounded but fell dramatically during 2H 2015 as commodity prices fell and capital markets closed
  - Services company margin pressure continues
  - Dramatic MLP selloff in Q3 continued towards end of Q4

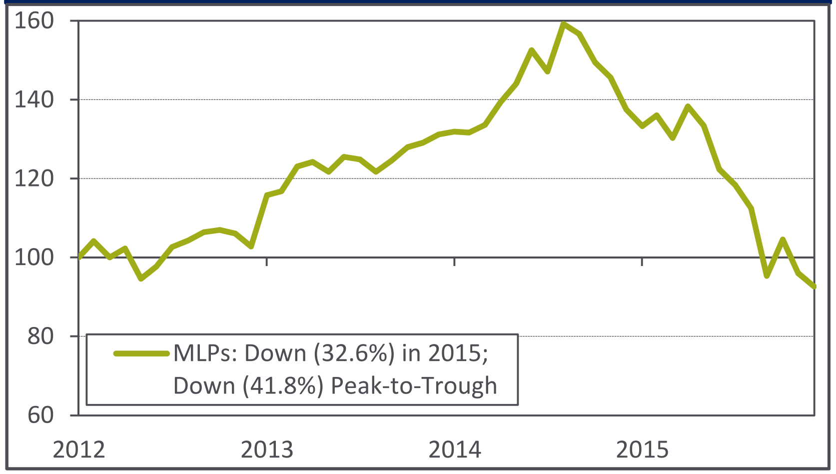
NYSE ARCA Oil Index



PHLX Oil Services Index



Alerian MLP Index



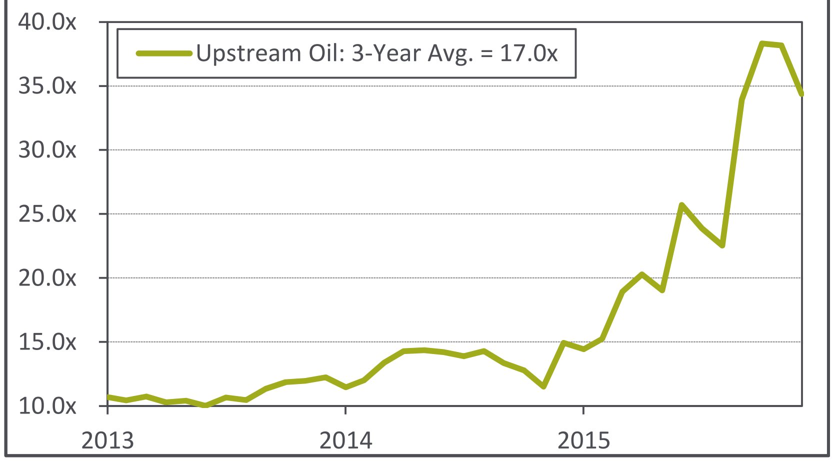
Source: Bloomberg. Data as of December 31, 2015.

Impact of Low Oil Prices: Upstream Oil

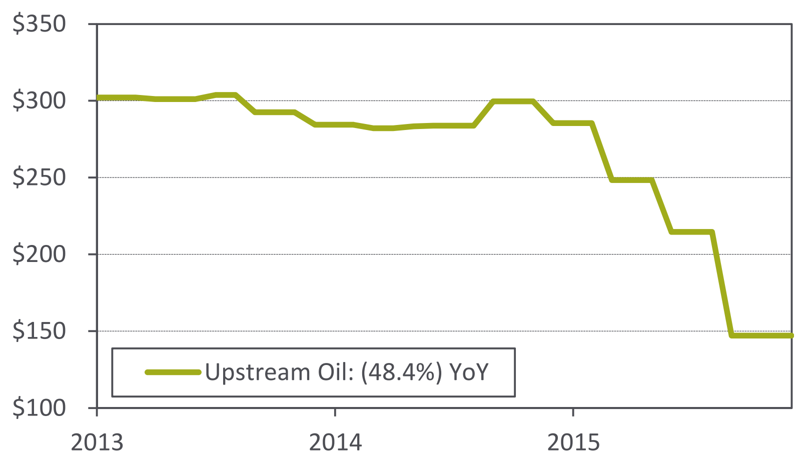
Commentary

- **Upstream companies under increasing stress**
  - Equities are trading at historically high P/E ratios due to falling revenues
  - EBITDA continues to fall as hedges roll off
  - Capex cuts continue, debt service is front of mind and asset rationalization must be considered; extended periods of low capex impacts production in coming years

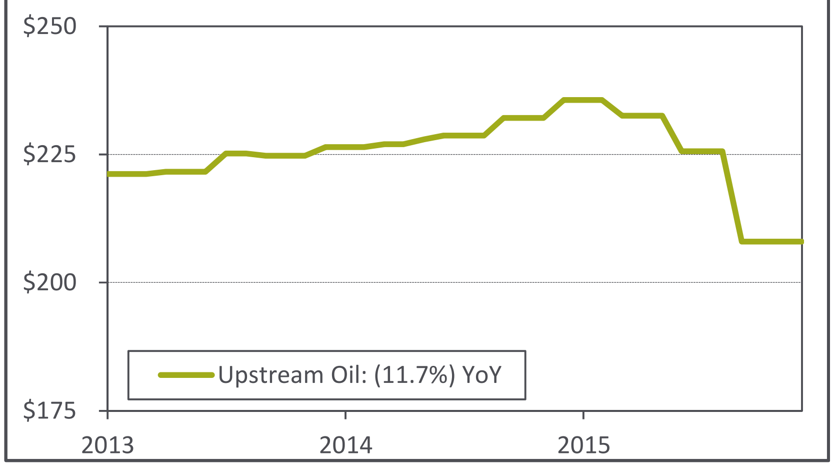
Valuation



EBITDA



Capital Expenditures



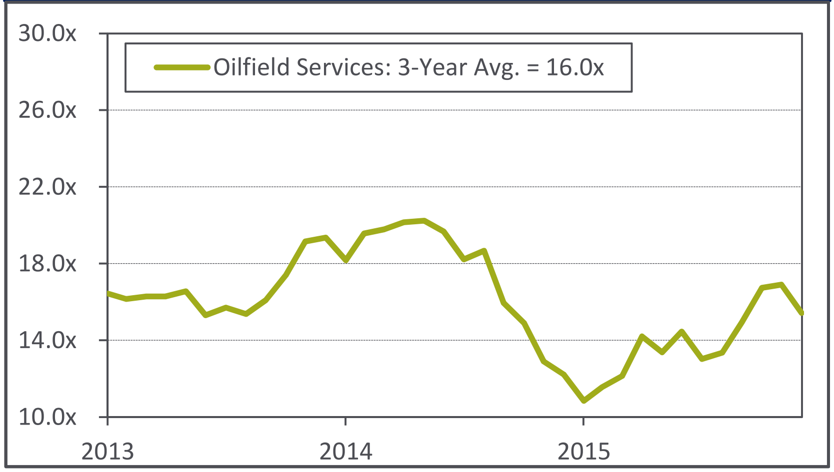
Source: Bloomberg. Data as of December 31, 2015. $ in millions.

Impact of Low Oil Prices: Oilfield Services

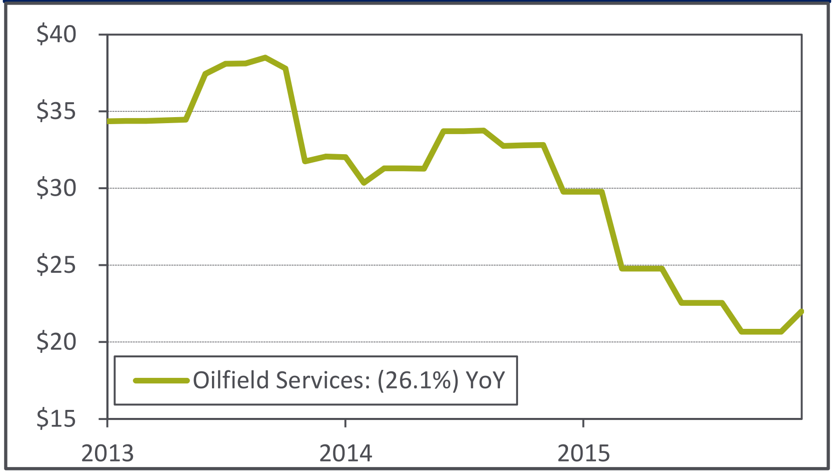
Commentary

- **Oilfield services companies under significant stress**
  - Companies pricing services at or below breakeven to maintain customers and generate revenue
  - Valuations remain low from lower EBITDA
  - Companies appear to be moderately investing more ahead of potential rebound
  - M&A activity amongst large caps (Halliburton acquisition of Baker Hughes), more to come?

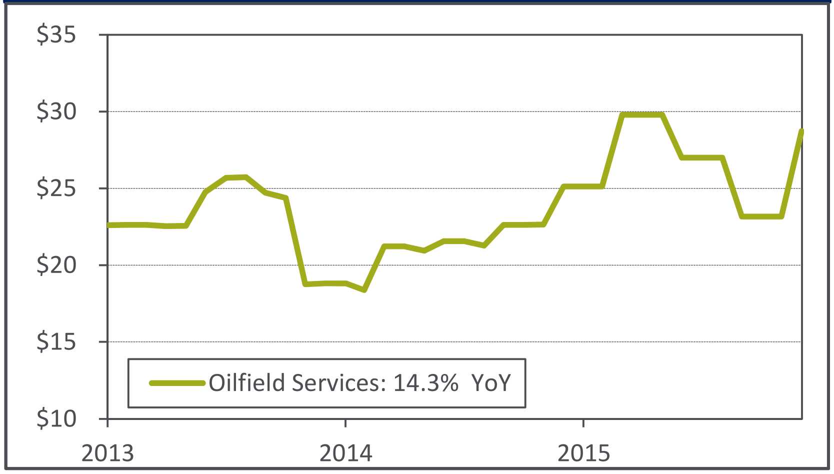
Valuation



EBITDA



Capital Expenditures



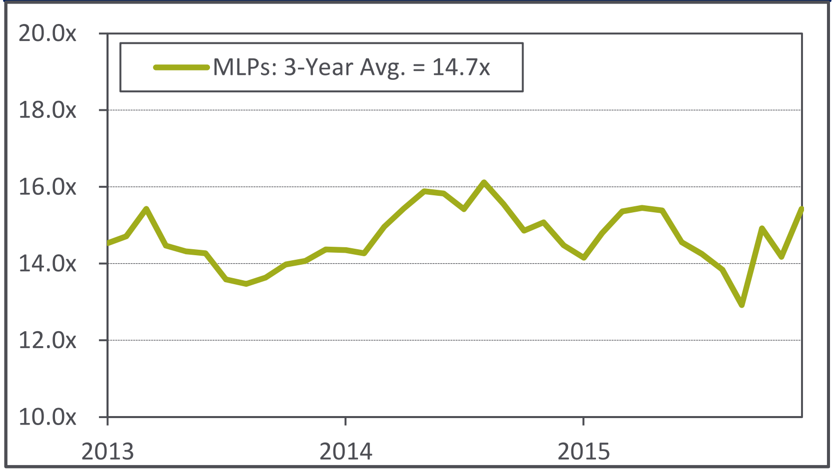
Source: Bloomberg. Data as of December 31, 2015. $ in millions.

Impact of Low Oil Prices: MLPs

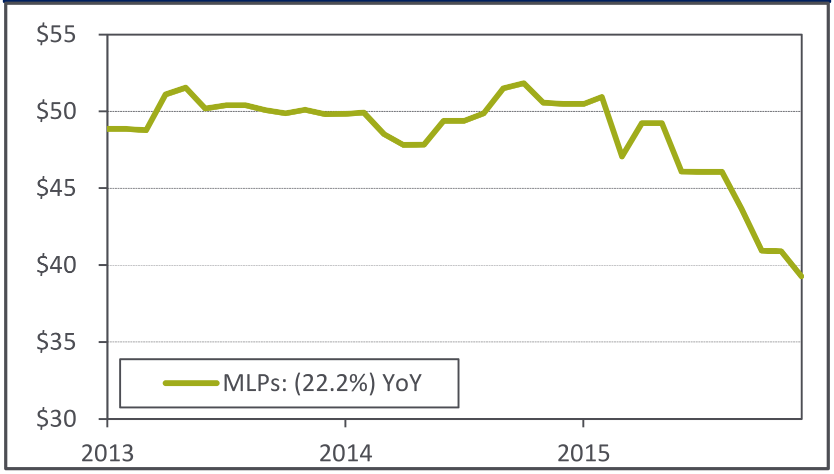
Commentary

- **MLPs led energy sector decline in 2015; Q3 was worst quarter for MLPs in history**
  - Initial decline in unit price coming into 2015 was less severe than other energy sub-sectors
  - Concerns over existing cash flows and future distribution growth contributed to selloff
  - Rising rates and revised earnings expectations create further downside; however, entry point on selective basis appears attractive

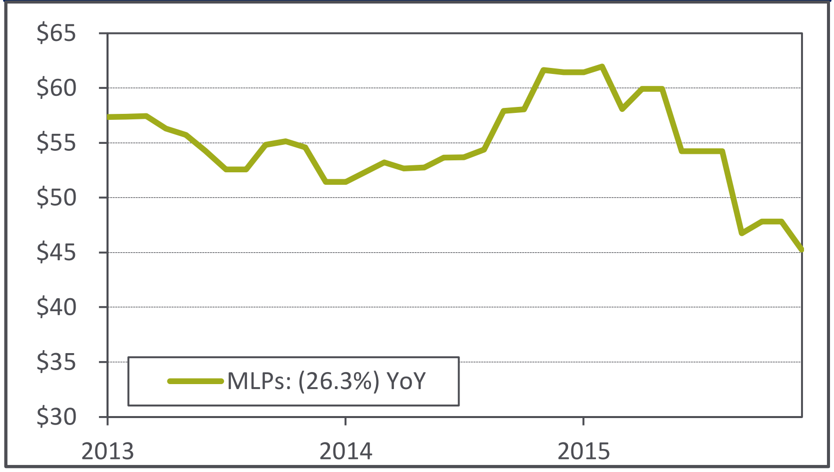
Valuation



EBITDA



Capital Expenditures



Source: Bloomberg. Data as of December 31, 2015. $ in millions.

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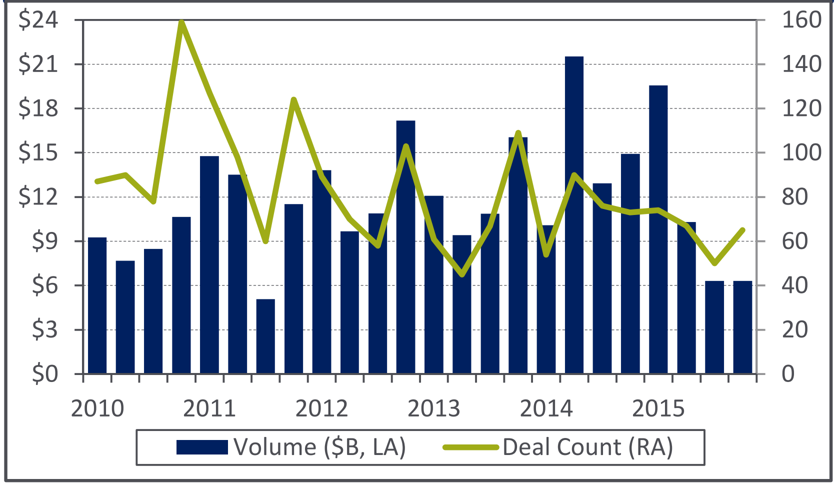
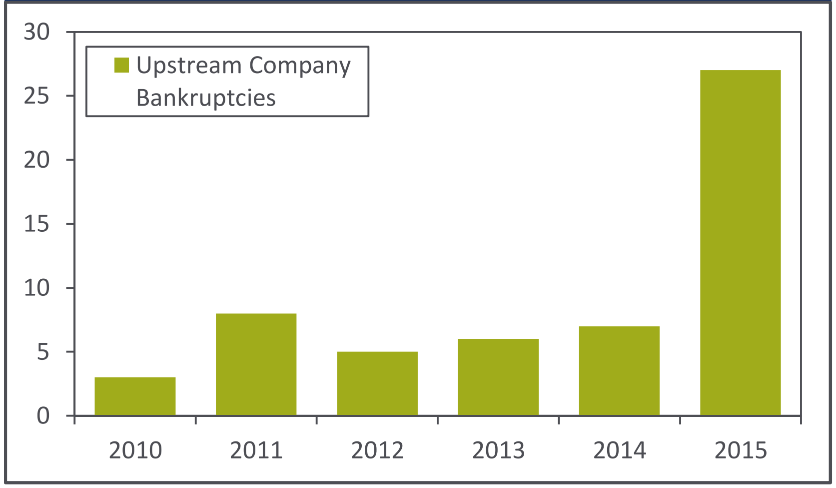
Impact of Low Oil Prices: US Public Company Distress

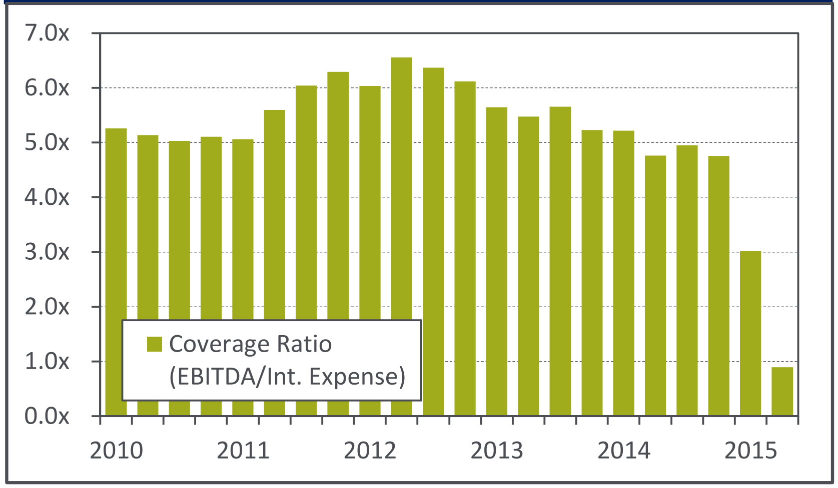
Equity Issuances Down



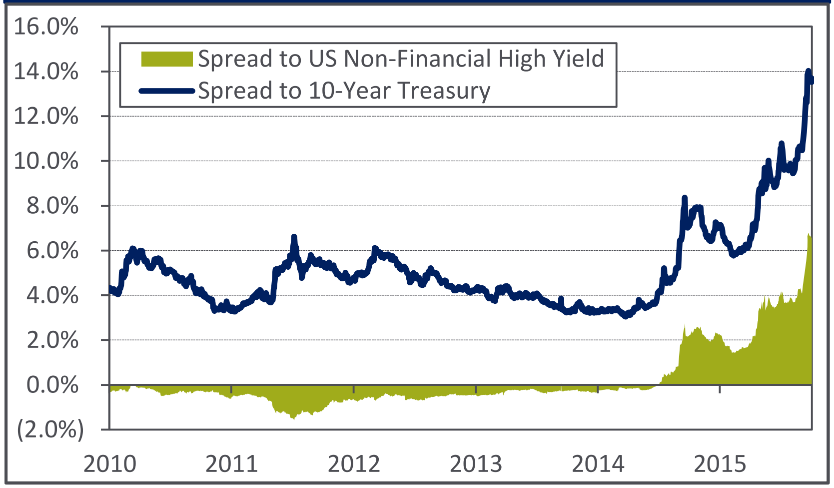
Bankruptcies Increasing



Energy High Yield Coverage Ratios Are Low



Energy High Yield Spreads Widening



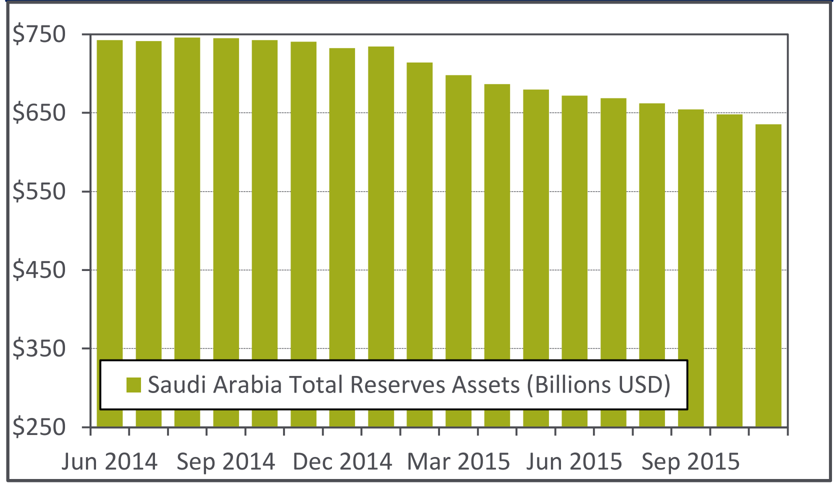
Source: Bloomberg, Merrill Lynch, Bank of America, New Generation Research, Federal Reserve Bank of Dallas.
Coverage ratios as of June 30, 2015; all other data as of December 31, 2015.

Impact of Low Oil Prices: Saudi Arabia, Production Costs and Rig Counts

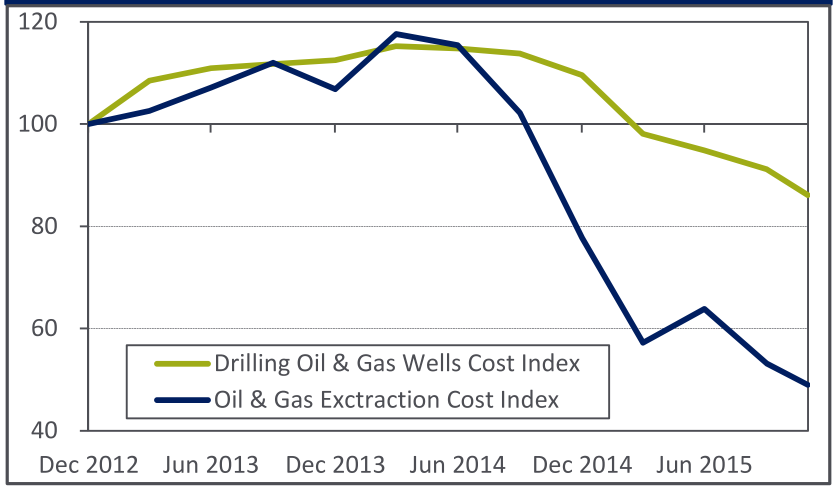
Commentary

- **Saudi Arabia recently increased taxes, cut subsidies and may IPO Saudi Aramco**
  - Desperate fiscal position for the country driving OPEC policy indicative of stress felt in petro-dependent economies
- **OPEC increases production targets**
  - New target better-reflect what they're already exporting; market consensus is that OPEC does not have much spare capacity to further increase production
  - Sanctions on Iran have been alleviated

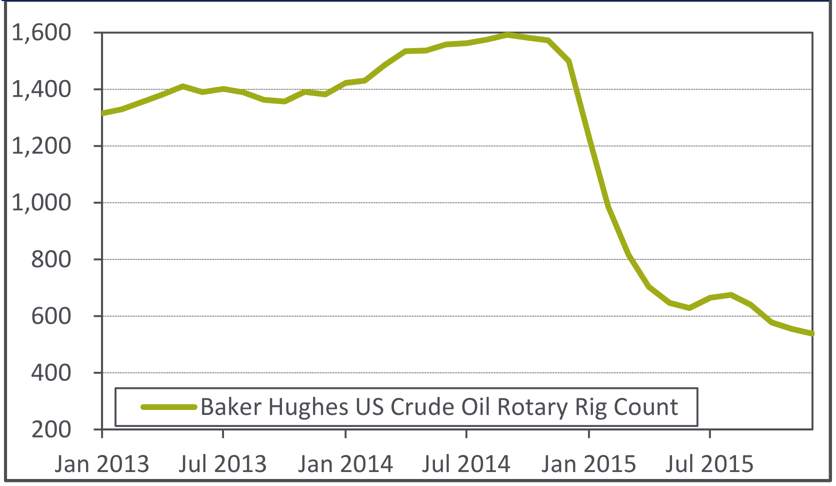
Saudi Arabia Reserves Down 14% YoY



Production Costs Falling



Rig Counts Continue to Decline



Source: Bloomberg, Baker Hughes, Bureau of Labor Statistics. Data as of December 31, 2015.

Implementation Views Heading into 2015

- **For implementation, we outlined three different scenarios:**
  - Base case: Oil rebounds to $70+ by year-end 2016 (viewed as most likely case)
  - Bear case: <$50 oil well past 2016/2017
  - Bull case: Oil rebounds to $70+ by year end 2015

Oil Price Scenarios: Relative Attractiveness, Risk and Timing					
Future Oil Price Expectations	Base Case		Bear Case		1Q 2015 Viewpoint & 2015 Results
	Return Potential	*Downside Risk*	*Return Potential*	*Downside Risk*	
Long-only commodities	*Low*	*Medium*	*Low*	*High*	*Futures curve in contango creating negative roll yield in near-term; going long on the curve provides only marginally attractive returns under scenario;* • *Index: (24.7%)*
Long/short commodities	*Medium*	*Medium*	*Low*	*Medium*	*Alpha potential from continued volatility and not based on oil price recovery; lower volatility makes this investment less attractive* • *Manager Returns: 18.3% - (2.0%)*
Long-only equities	*High*	*High*	*Low*	*High*	*Highest return potential; risk of prolonged downturn (> 2 years) would impair equity values; high volatility expected in near-term* • *Index: (24.0%); Manager Returns: (28.3%) to (33.3%)*
Long/short equities	*High*	*Medium*	*Medium*	*Medium*	*Ability to generate alpha around volatility while participating in recovery (e.g. buy the winners and short the losers)* • *Manager Returns: (6.1%) to (9.9%)*
Long-only MLPs	*Medium*	*Medium*	*Low*	*High*	*Price dislocation has been smaller than equities and risks to revenue growth in long-term should upstream drilling activities decline for a significant period of time* • *Index: (-32.6%); Manager Returns: (26.9%) to (31.7%)*
Long/short MLPs	*Medium*	*Low*	*Low*	*Medium*	*Ability to generate alpha around volatility while participating in recovery; less upside than long/short equities as MLPs have less sensitivity to commodity prices* • *Manager Returns: (33.0%) to (40.0%)*
Stressed / dislocated credit	*High*	*Low*	*Medium*	*Medium*	*Equity-like return potential with credit downside; principal losses likely should asset values diminish; large amounts of capital flowing to this opportunity* • *Manager Range: 13.4% to (21.2%)*
Distressed credit	*High*	*Low*	*High*	*Low*	*Traditional distress not likely until 2016; new origination, private placements and direct lending to fill void in capital structure; 2H15/16 opportunity set in base case* • *Drawdown structure, returns not yet meaningful*
Private equity investments	*High*	*Medium*	*High*	*Medium*	*Near-term bid/ask spread remains wide, attractive acquisition opportunities likely once distress increases; 2H15/16 opportunity set in base case* • *Drawdown structure, returns not yet meaningful*

What does this mean?

- **Seek active management**
  - Given the disparity in asset quality and balance sheet health among companies in the sector, knowledgeable security and asset selection is required
  - Timing for commodity price recovery is important to investment thesis

- **Negative pressures in shorter term**
  - Will the US Dollar strengthen? Or not?
  - If interest rates rise, what's the impact on valuations and financing options?
  - Oversupply continues in the US and abroad…how quickly can Iran ramp up?
  - Demand is strengthening but concerns remain about China and the global economy
  - Balance sheet crunch for producers with decreasing cash flows as hedges roll off, bank revolvers are reduced…services are getting squeezed the most
  - MLPs have sold off and guidance will likely come down for next year

- **Dollar price target of oil is not as important since costs have declined dramatically and production has become more efficient**
  - Shale breakeven prices have dropped but a lot of production is still not economic <$50
  - Supply overhang will be worked through absent a global recession
  - Investment in new production will be required to meet the supply gap created by underinvestment which is likely

- **It could happen sooner…or later**
  - Geopolitical and/or weather events and/or OPEC/others cut supply: prices rebound sooner
  - Severe recession or other disruption (e.g. hard landing in China) which causes demand shrinkage would weaken prices further which is a risk to any investment in this opportunity

2016 Implementation Views

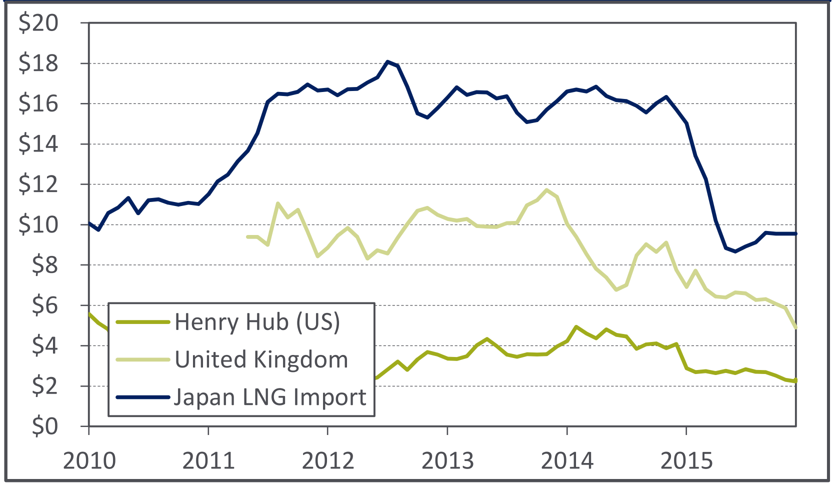
Relative Attractiveness, Risk and Timing			
	Return Potential	*Downside Risk*	Commentary
Long-only commodities	*Low*	*Medium*	*Futures curve in contango creating negative roll yield in near-term; going long on the curve provides only marginally attractive returns*
Long/short commodities	*Medium*	*Medium*	*Alpha potential from continued volatility and not based on oil price recovery; lower volatility makes this investment less attractive; Manager returns vary widely*
Long-only equities	*High*	*High*	*Highest return potential (especially in fast oil price recovery scenario); high cash burn, companies with some runway present highest return potential and also have highest impairment risk: highly volatile so requires a long view and can't focus on short term returns; emphasis on active management (which has been challenged thus far)*
Long/short equities	*Medium*	*Medium*	*Difficult to execute in current market; only attractive as a volatility dampener to potentially capture some upside with recovery*
MLPs (Midstream)	*Medium/ High*	*Medium/ High*	*Valuations appear cheap relative to recent past; near-term risks include 2016 guidance potentially revised down, interest rate sensitives and business model impairment; attractive return potential for winning midstream companies with the best assets and balance sheets; emphasis on active management (which has been challenged thus far)*
Liquid Credit	*Medium / High*	*Medium/ High*	*Some attractive returns available but mark to market valuations will give heartburn; priming likely to become more widespread and expect restructurings to occur; Manager returns vary widely*
Illiquid/ Negotiated Credit	*Medium/ High*	*Medium*	*New origination, private placements and direct lending to fill void in capital structure presenting opportunities that will accelerate as companies begin rationalizing balance sheets and thinking about how to survive 2016; regulator pressure on banks may accelerate deal flow*
Private equity investments	*High*	*Medium*	*Near-term bid/ask spread remains wide, attractive acquisition opportunities are coming as companies rationalize assets and M&A activity increases*

Natural Gas

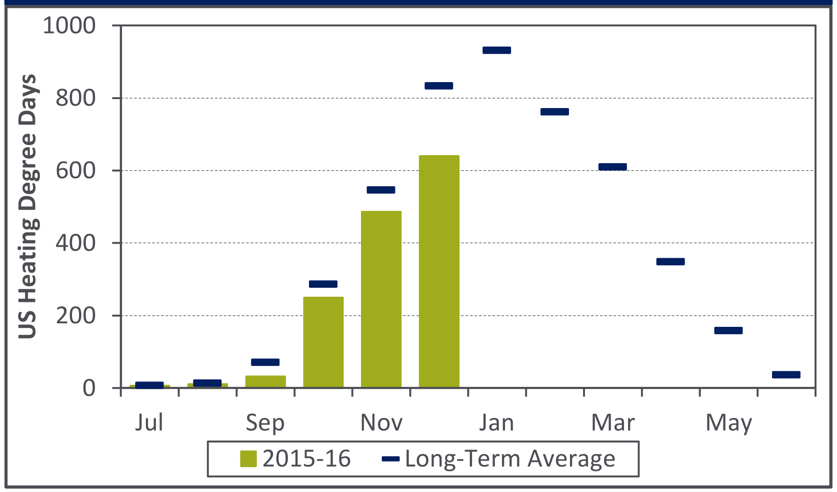
Commentary

- **Global price differentials have collapsed**
- **Despite lower rig count production remains high**
- **Basis differentials persist: increasing supply in regions with capacity constrained infrastructure**
- **Questions on LNG Demand**
- **Natural gas was at its lowest average price in 2015 since 1999**

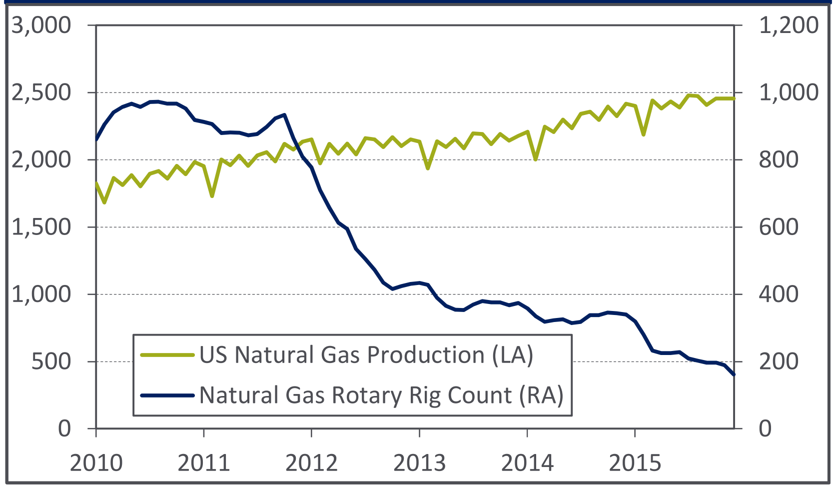
Natural Gas Prices by Region



Warmer Weather and Decreased Demand



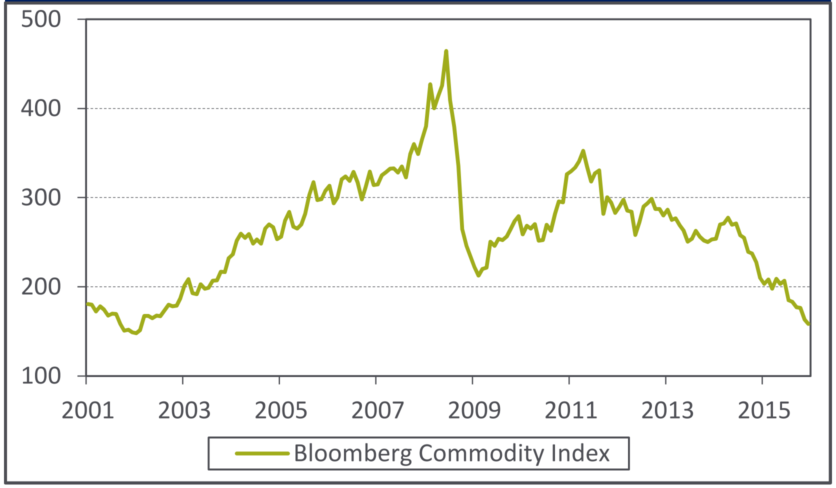
Production Steady Despite Less Drilling



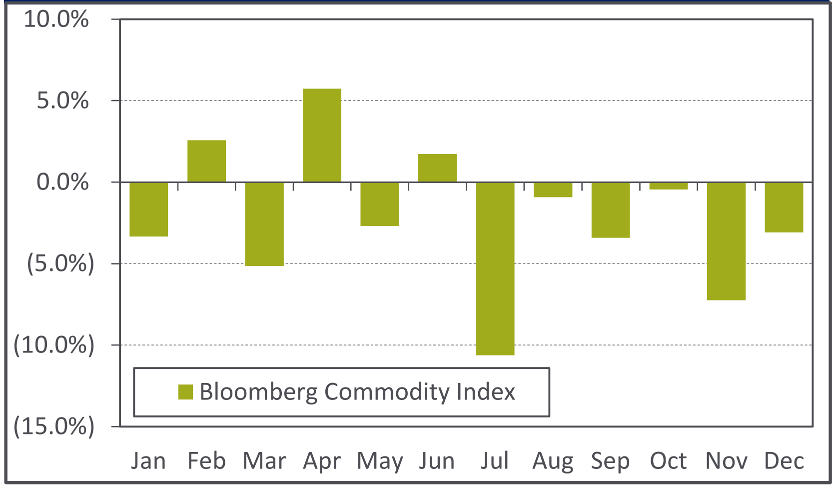
Source: Bloomberg, Baker Hughes, EIA. Data as of December 31, 2015.

Commodities Markets

Commodities Have Round-Tripped Since 2001



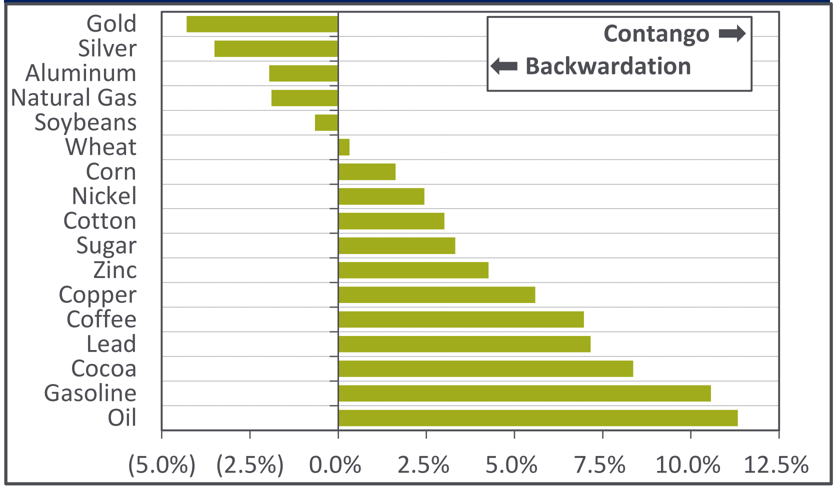
Volatile Returns in 2015



Commodities

- **Bloomberg commodity index is now lower than when China entered the WTO in 2001**
- **Volatility has increased across the commodity complex**
- **Most commodities are in contango, resulting in negative roll yield**

Most Markets Are In Contango



Source: Bloomberg, NEPC analysis. Data as of December 31, 2015.

Real Assets General Market Thoughts and 2016 Implementation Views

General Market Thoughts

- **Massive energy market dislocation**
  - Private equity and debt opportunities are attractive
  - Potential for public stressed/distressed credit, equity and commodity plays (high risk/return potential)
- **Infrastructure – select opportunities to access growth markets**
  - High quality assets are receiving premium bids from direct investors (Pension Funds and Sovereigns) with low costs of capital and long hold horizons
  - Stable, high yielding returns can be achieved in more accommodative regions (Europe, UK, Australia) but cash flows are highly levered and return potential is dependent on market conditions at realization
- **Metals & Mining – weakened commodity prices may be new norm as China growth shifts**
- **Timber – attractive entry point remains illusive**
- **Agriculture - outlook supported by strong demographic trends**

Implementation Views

Strategy	Outlook	Commentary
Energy	++	Private equity and debt managers are viewed as most attractive given multi-year investment period; liquid strategies offer high risk/return potential (however not for the faint of heart)
Infrastructure	0	Seek managers with operating expertise who can drive asset cash flow and/or managers targeting out of favor assets (ex. shipping)
Renewables	0	Favorable financing opportunities remain but returns depend on tax credits and renewable capital markets past initial contract terms
Metals & Mining	0	Commodity prices weakened but may be new norm, China slowing
Timber	-	Less attractive due to low yields
Agriculture	0	Implementation is challenging due to limited quality managers

Real Assets: Implementation

Strategy	Viewpoints	FPL Managers
Energy	• Private equity and debt opportunities are attractive • Potential for public stressed/distressed credit, equity and commodity plays (high risk/return potential)	• *Aether Partners Fund IV* • *Apollo Natural Resources Fund II** • *Denham Oil & Gas Fund** • *Kayne Anderson Private Energy Income Fund* • *Kayne Anderson Energy Fund VII* • *Riverstone Global Energy & Power VI* • *Riverstone Credit Partners* • *Magnetar Energy Fund II*
Infrastructure	• Seek managers with operating expertise who can drive asset cash flow and/or managers targeting out of favor assets (ex. shipping)	• *Brookfield Strategic Real Estate Partners II** • *JPM Infrastructure Fund** • *Global Infrastructure Partners III** • *Northern Shipping Fund III**
Renewables	• Favorable financing opportunities remain but returns depend on tax credits and renewable credit markets past initial contract terms; exit opportunities may be limited by recent turmoil in the yieldco market	• *North Sky Cleantech Alliance Fund II* • *BlackRock Global Renewable Power Fund II**
Metals & Mining	• Weakened commodity prices may be new norm as China growth shifts	
Timber	• Attractive entry point remains illusive due to low yields	
Agriculture	• Outlook supported by strong demographic trends however implementation is challenging due to limited quality managers	

* Note: Pipeline fund; have not yet been reviewed by NEPC's AAC.

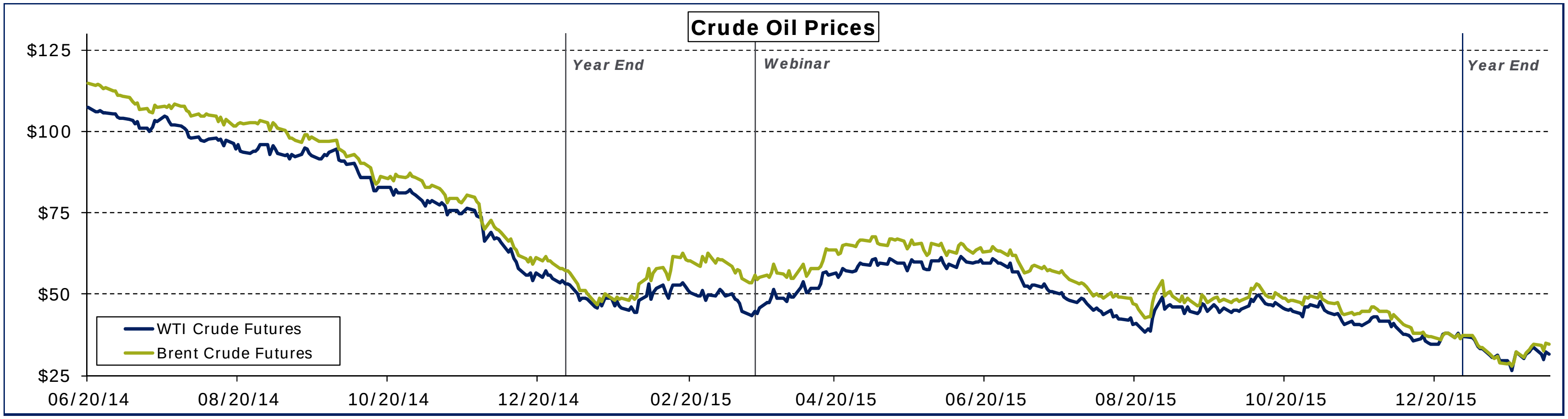
Appendix:
Ongoing Energy Market Monitoring

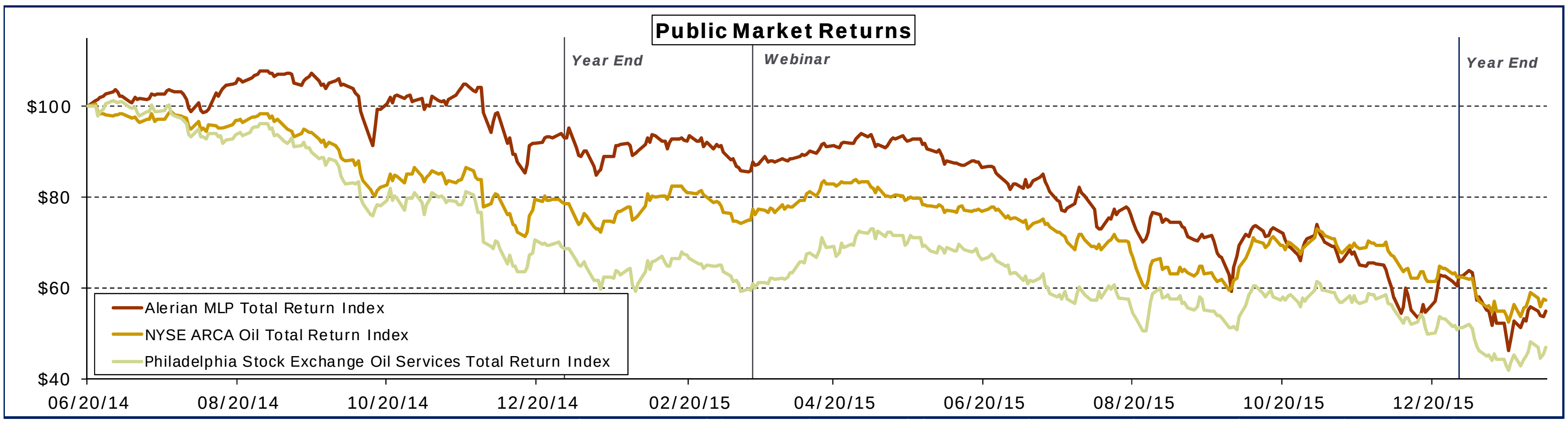
Index Returns

Index	Current Value	Week to Date		Month to Date	Quarter to Date	YTD 2016	2015	Since Webinar (3/18/2015)	Since Oil Peak (6/20/2014)
WTI Crude Futures	$31.72	($1.50)	(4.52%)	(5.65%)	(14.36%)	(14.36%)	(30.47%)	(28.97%)	(70.43%)
Brent Crude Futures	$34.46	$0.57	1.68%	(0.81%)	(7.56%)	(7.56%)	(34.97%)	(38.37%)	(69.99%)
Natural Gas Futures	$1.97	($0.21)	(9.62%)	(14.19%)	(15.62%)	(15.62%)	(19.11%)	(32.47%)	(56.48%)
Baker Hughes US Crude Oil Rotary Rig Count	467	(43)	(8.43%)	(6.22%)	(13.20%)	(13.20%)	(64.11%)	(46.07%)	(69.77%)
Bloomberg Dollar Spot Index	1,221.02		(1.88%)	(2.48%)	(0.94%)	(0.94%)	8.98%	2.19%	20.91%
NYSE ARCA Oil Total Return Index	985.67		0.12%	(2.61%)	(8.11%)	(8.11%)	(20.43%)	(25.80%)	(42.62%)
NYSE ARCA Natural Gas Total Return Index	436.74		2.10%	(1.67%)	0.37%	0.37%	(40.18%)	(38.62%)	(54.61%)
NYSE Energy Total Return Index	12,569.18		1.07%	(1.30%)	(4.55%)	(4.55%)	(22.61%)	(23.54%)	(43.47%)
Alerian MLP Total Return Index	964.64		(0.67%)	(1.68%)	(12.60%)	(12.60%)	(32.59%)	(37.47%)	(45.17%)
Alerian MLP Infrastructure Total Return Index	1,839.43		(0.37%)	(1.73%)	(14.59%)	(14.59%)	(31.74%)	(37.92%)	(43.80%)
Philadelphia Stock Exchange Oil Services Total Return Index	144.05		2.26%	(2.70%)	(8.67%)	(8.67%)	(25.20%)	(23.10%)	(53.13%)
S&P 500 Total Return Index	3,587.71		1.23%	(1.22%)	(6.12%)	(6.12%)	1.38%	(7.09%)	0.90%

Source: Bloomberg, NEPC Analysis. Data is not annualized; as of February 4, 2016.

Oil Prices and Select Public Indices Over Time





Source: Bloomberg, NEPC Analysis. Data as of February 4, 2016.