Energy

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Industry Brief

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Energy: Energy Stat of the Week

Energy Stat: Is "Fake News" Driving Down Oil Prices?... Today We Debunk the Top Ten Oil Myths

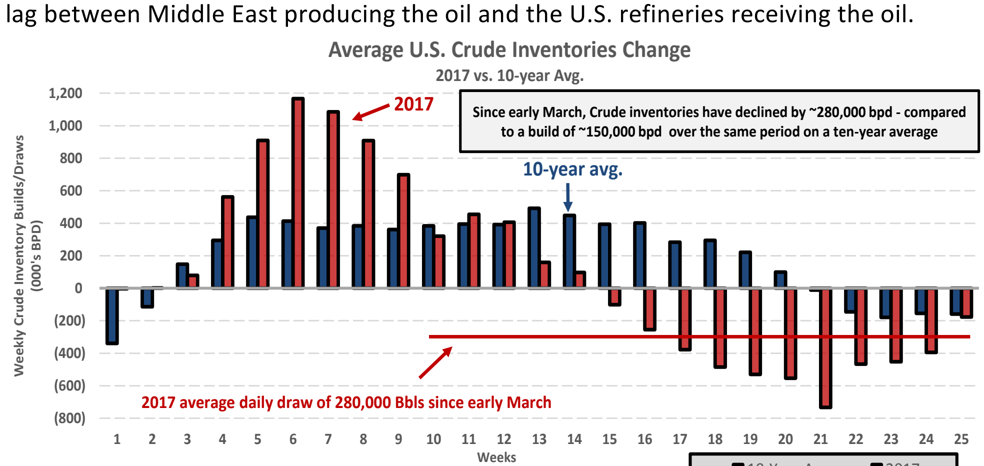
To state the obvious, the first half of 2017 was not a pleasant period for oil prices, making our forecast of $65 in 2018 (or ~45% upside to current oil prices) a highly out-of-consensus prediction. In fact, our recent road trips to buy-side investors suggests we may be the only oil price bulls left. We believe the recent collapse in oil prices was triggered by a breakdown in the technical charts but fueled by the "negative feedback loop" of bearish headlines that usually **follow** price declines. Remember, the trade rags need logical explanations for any price move that has already occurred. While the label "fake news" has gained recent political popularity, the simple reality is that we think some oil price headlines have been misleading, or outright wrong, and they have distracted investors from what we believe is fundamentally a bullish overall picture for oil. **In today's Stat, we try to set the record straight by debunking the top ten bearish oil myths / "alternative facts" that we've encountered in recent months visiting investors.**

In the Spirit of Letterman... Top Ten Oil Market Myths

Myth #1	Weekly DOE inventories data has looked bearish this year helping drive oil prices lower.
Myth #2	U.S. shale production growth is going to flood the market at $35/bbl.
Myth #3	U.S. gasoline demand is weakening.
Myth #4	Output recovery in Nigeria and Libya risks flooding the market.
Myth #5	OPEC production cuts are worthless and their return will flood the market in late 2018.
Myth #6	Rising global "floating storage" suggest a deteriorating supply/demand equation.
Myth #7	In weekly DOE data, crude inventories is the only line item worth tracking.
Myth #8	Rising drilled-but-uncompleted wells creates an additional overhang for U.S. supply.
Myth #9	Electric vehicles present an imminent risk for global oil demand.
Myth #10	2018 supply growth exceeding demand growth is a bearish indicator.

Source: Raymond James research

Myth #1: Weekly DOE inventories data has looked bearish this year helping drive oil prices lower.
Having spent a considerable amount of time on the road visiting energy investors over the past month, **one of the most surprising revelations has been the number of investors with the perception that bearish U.S. oil inventory data has helped drive oil prices lower**. Yes, the first two months of the year had unusually large U.S. oil inventory builds. Those builds were a direct result of the usual 4-8 week transport lag between Middle East producing the oil and the U.S. refineries receiving the oil. Given that OPEC was moving every barrel possible out the door in late 2016 before instituting cuts in January, it is perfectly natural that this supply surge should show up in U.S. oil inventories through February. More importantly, the two-month lag between the Middle East and U.S. means that **the most important data to watch is what U.S. inventories have done since early March**. As shown below, **U.S. crude inventories (including the U.S. Strategic Petroleum Reserve) have fallen by a massive ~300,000 bpd over the past four months!**



Source: Raymond James research, DOE; 4-week moving average, 10-year avg: 2005-14

Since the U.S. represents ~25% of global crude inventories, a simplistic extrapolation would suggest that global oil inventories have been falling by about 1.2 million bpd over the past four months. While this extrapolation is overly simplistic and fraught with

Please read domestic and foreign disclosure/risk information beginning on page 9 and Analyst Certification on page 9.

potential regional inventory flow error, **it would imply that global oil inventories have been falling twice as fast as our global oil model would have suggested for the same time period!** In other words, **U.S. oil inventory trends since March** (the appropriate time-lagged period to focus upon) **have actually looked even more bullish than our bullish oil model**! Since our model forecasts even greater drawdowns over the next nine months, the numbers should only get more bullish from here.

Myth #2: U.S. shale production growth is going to flood the market at $35/bbl.
The fear of massive U.S. oil supply growth at oil "breakeven" prices of $35-40 per bbl is the other panic button that most investors (and many sell-siders) have been happy to push over the past few months. Yes, there are many U.S. horizontal (especially Permian) operators that can make solid incremental well returns at $35-40 per barrel **if and only if** they do not include any costs other than the drilling and completion costs of that next well. The problem with this type of analysis is twofold: 1) **It is definitely *not* capturing the full-cycle returns** where companies must include lifting, overhead, interest expenses, and other sunk costs. **On a full cycle basis, very few U.S. E&P companies are actually generating positive returns at oil prices below $50/bbl,** and **2) There is simply not enough cash being generated by U.S. E&P companies at oil prices below $50 to justify current drilling and completion activity** and some of the U.S. supply growth forecasts that are now starting to appear. In fact**, at current oil prices (of around $45/bbl) we estimate that the U.S. E&P industry as a whole will outspend cash flow generated by a whopping 50% this year!** That amount of outspend is simply unsustainable and means the unfettered U.S. oil supply growth assumptions in a sub-$50 oil world are highly, highly unlikely.

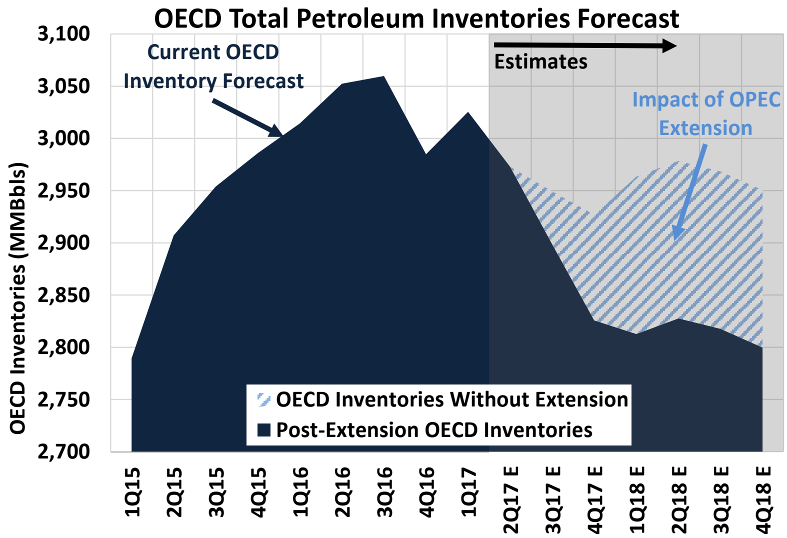
We would also point out two other important points on this emerging U.S. supply growth panic**. First, we have historically had one of the most aggressive (and accurate) U.S. oil supply growth models on the Street.** Despite this, our global oil supply demand equation still suggests a meaningfully undersupplied oil market for the remainder of this year. In fact, if we go back to the beginning of this year (six months ago), our 2018 U.S. oil supply growth estimate of 1.3 million bpd was high on the Street and at least 500,000 bpd **above** consensus estimates at the time. Note that our current U.S. supply estimate is actually down about 500,000 bpd from our estimate a year and a half ago (early 2016) because of downward revisions in U.S. industry cash flows and emerging oil service equipment bottlenecks. In our opinion, forecasts of 2018 U.S. supply growth of 2.5 million bpd at oil prices below $50/bbl are simply not doing the math. **Secondly, the longer-term fear of too much U.S. supply growth at $50/bbl ignores the fact that there is another~30 million bpd of OPEC and ~50 million bpd of non-OPEC supply (across a variety of geographies, both short-cycle and long-lead-time) that will likely be declining in a few years.** Solely considering U.S. supply growth would be a "one hand clapping" approach: that is to say, it gives an exaggerated impression of how much global supply is actually growing. In 2017, for example, at least three significant non-OPEC producers – China, Mexico, Colombia – are posting sizable declines. Several others – Russia, Norway, Argentina – are flattish. Longer term, 2018 is shaping up to be the cyclical trough year for global long-lead-time project startups (down close to 50% versus 2016 levels) meaning **non-U.S. oil supply growth will likely come under significant pressure in 2019 and beyond**.

Myth #3: U.S. gasoline demand is weakening.
Another common concern voiced by investors over the past month has been the perception that global oil demand and especially U.S. gasoline demand have weakened meaningfully this year. This is because earlier this year, **the DOE's weekly reports suggested that gasoline demand is down by nearly 4% year-over-year.** If true, that would indeed be quite bearish – but we do not believe that it is true. One part of the issue here is the variance between weekly and monthly data: the monthly data is historically more reliable, but the weekly tends to be more popular because it is real-time. Other factors at work include challenging y/y price comps (WTI averaged $34/Bbl in 1Q16 versus $52/Bbl in 1Q17) and changes in the weekly calculation methodology. More importantly, **other data sources suggest that reported U.S. monthly gasoline demand numbers are simply wrong!** Notably, the Department of Transportation reports that miles driven are up ~1.6% y/y. Since vehicle fleet efficiency changes have barely changed, it is extremely unlikely that gasoline consumption would be down. More specifically, it is highly, highly unlikely that the reported PADD 3 (Gulf Coast) gasoline demand was actually down a stunning 15% in March. Clearly, there seems to be a problem in how the DOE is measuring gasoline exports from this region.

Myth #4: Output recovery in Nigeria and Libya risks flooding the market.
We will have more to say in the near future about these two "special situations" in the oil market, but it is important to address the myth – a very recent one, perking up just last month – that incremental supply from Nigeria and Libya will upend our global oil model. Yes, recently rising production in both of these areas represents additional oil supplies that we were not modeling six months ago. Undoubtedly, it is an incremental negative to our model. That said, it is a big leap from incremental negative to upending our global oil supply/demand model. First, both countries' oil supply has followed an ebb-and-flow pattern for the past several years: that is to say, there has been no predictability whatsoever. Nigeria's delta region remains embroiled in a decades-long-conflict between the national government and local militants, with oil industry infrastructure being repeatedly targeted, including this year. Libya, if anything, is in even worse shape, with a full-scale civil war that pits two rival governments – one in Tripoli, one in Benghazi – along with various militias against one another. It is fair to point out that the latest production data points in both countries showed signs of improvement, but this improvement can just as easily reverse: in Nigeria, when another pipeline

gets attacked; and in Libya, when another export terminal gets caught in the crossfire. Needless to say, the security landscape in both countries is not conducive to foreign investment, which means that medium-term supply declines are almost certain on a purely organic basis, even setting aside the risk of future outages. Secondly, even if the increases are sustainable, they would only represent a modest 200,000-300,000 bpd shift to our current late 2017 oil model, which is forecasting a massive ~1.75 million bpd drawdown of global oil inventories.

Myth #5: OPEC production cuts are worthless and their return will flood the market in late 2018.



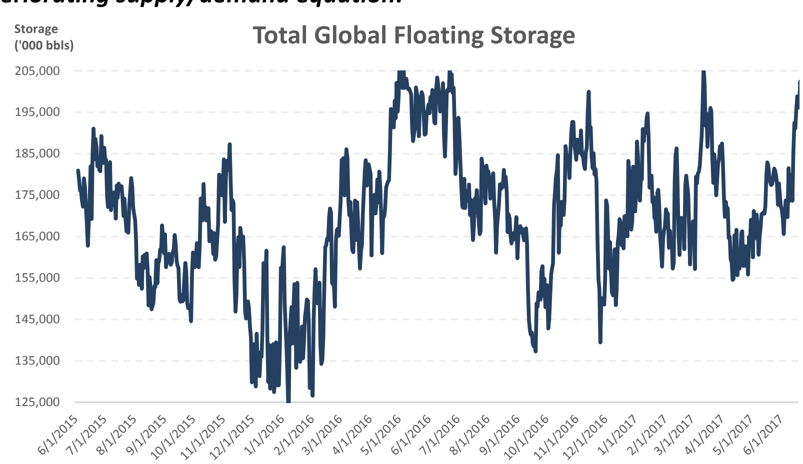
Source: IEA, Raymond James research (Assumes 1/2 the inventory build goes to OECD inventories).

Do you remember how oil prices fell 5% on the day in May when OPEC announced a [nine-month extension] of the production cuts? It is tempting to call this "buy on the rumor / sell on the news," except there wasn't much of the former in advance of the OPEC decision… oil had been in a trading range over the preceding six months. The implication is that OPEC action is either (1) not going to actually materialize; or (2) it will materialize, but it will be only a temporary fix.

Year-to-date, OPEC's overall compliance with the cuts has been not just good but great: we estimate ~96%. Of course, that is not uniform across the board: Saudi, for example, cut even more than it had committed to, while some smaller members are (not surprisingly) underperforming. Will there be backsliding during the extension phase? Quite possibly, which is why our assumption for the next nine months is 85% compliance, down from 96%. And as far as the temporary nature of this fix: well, that's the whole point. The objective is to work off current excess inventories, which is precisely what's taking place. OECD inventory levels would be down in 2H17 and 1H18 even without help from OPEC, but with that help added into the picture, we project inventories falling from ~3.1 billion Bbls in February 2017 to ~2.8 billion Bbls in March 2018, the latter being below historical norms on a days of supply basis. Additionally, we question OPEC's ability to return to late 2016 "surge" levels given further deterioration in problem areas like Venezuela and our belief that Saudi was actually producing as much as 500,000 bpd above their "comfort" level (i.e., the production rate that wouldn't damage reservoir integrity). That means we believe the OPEC supply rate from current restricted producers in late 2018 will actually be below levels seen in late 2016.

Myth #6: Rising global "floating storage" suggest a deteriorating supply/demand equation.

This is a somewhat esoteric, below-the-radar topic that we will provide more detail about in the near future, but the basic issue is that the latest Bloomberg "floating storage" data suggests global floating storage levels have recently risen to ~195 MMBbls. While this is higher than a month ago, the adjacent graph shows it is below March levels and well within the highly volatile three-year band. We should also note these numbers ***excluded*** *a massive 50 million bbl drop in Iranian floating storage over the past eight months.*

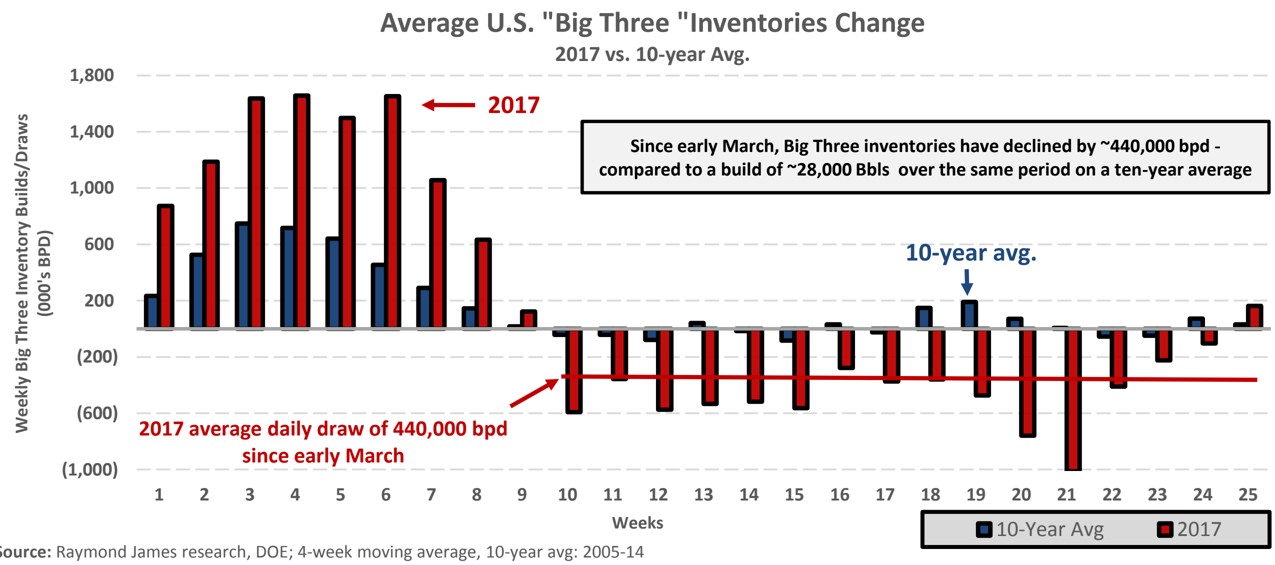


Source: Bloomberg

While the "floating storage" data can be hard to come by and are not exactly reliable, we do not question the numbers themselves. The "fake news" aspect is that we've seen some headlines in recent weeks using the data to make the argument that global inventories are "bursting at the seams" and the global supply/demand equation is massively oversupplied. Well, no. The industry is quite far from maximum storage levels globally and global inventories are falling. **A more reasonable narrative is that the oil futures curve has shifted to open up more contango opportunities, and trading shops often use floating storage in these circumstances**. Remember that tanker rates have collapsed since the OPEC cuts and cheap storage vessels are readily available for a contango trade. Furthermore, floating storage levels are highly volatile, bouncing in a wide range (between ~125 and ~205 MMBbls) over the past few years, and moving by as much as 50

MMBbls per month. Interestingly, we didn't see any stories along the lines of "the world is running out of oil" during the multiple times in recent years when floating storage bottomed at ~125 MMBbls.

Myth #7: In weekly DOE data, crude inventories is the only line item worth tracking.
We have already highlighted the excessive attention being ascribed to U.S. crude only inventory data as the No. 1 myth, but a related point is that within this data, the market tends to overly focus on just crude inventories (i.e., overlooking refined products). It is important not to ignore what's happening with gasoline and distillates, the other "Big Three" inventory components. Following what we viewed as the year-end OPEC supply surge "head-fake" that led to rising U.S. inventories at the beginning of the year, Big Three inventory trends have improved dramatically since March. As shown below, the total of Big Three has fallen contra-seasonally by nearly ~500,000 bpd (or ~52 MMBbls in aggregate) since mid-February. Looking at crude to the exclusion of refined products would not capture this full trend that would actually be more bullish than looking at the crude only trend.



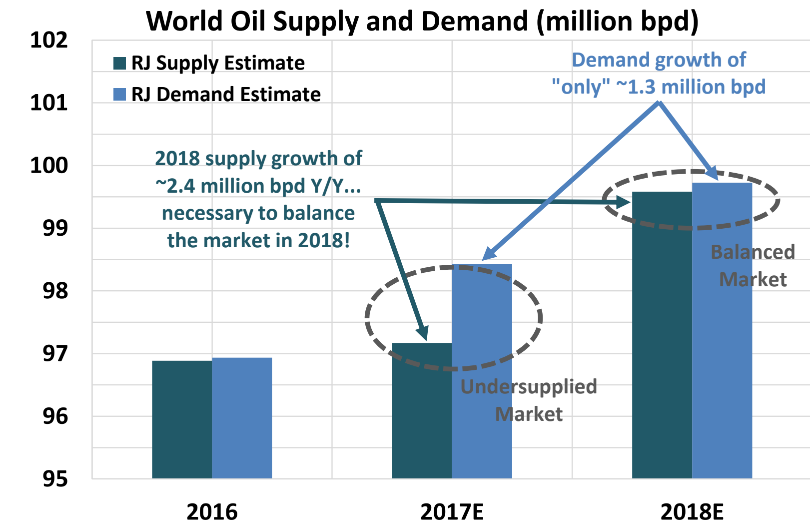
Source: Raymond James research, DOE; 4-week moving average, 10-year avg: 2005-14

Myth #8: A rising level of drilled but uncompleted (or DUC) wells represents a massive U.S. oil supply overhang.
Here is another fairly technical topic that we will provide more clarity on in the near future. The complex math behind drilled-but-uncompleted wells (DUCs) makes it difficult for most investors, even energy specialists, to get a precise read on the potential supply impact of DUCs. We have increasingly encountered concerns that the inventory of DUCs is surging again and will lead to significant incremental supply growth that the market is not considering or modeling. Our take is that DUC drawdowns will likely have only a modest effect on the market over the next several years. More importantly, we believe that we have already captured the impact of abnormal DUC inventory being worked down in our U.S. supply model. To accurately gauge the production impact from the DUC phenomenon, it is important that investors look at DUC levels on a "normalized" basis: that is to say, a ratio of DUCs per completed well, rather than in absolute terms. This normalized approach shows that **abnormal DUC levels peaked in March 2016 – right as oil prices were bottoming – and have been declining ever since**. Furthermore, there are three reasons why DUCs will likely have only a slim impact on boosting U.S. production relative to other models that may not be capturing this nuance. First, operators are more likely to "grow into" their current DUC backlog than aggressively draw DUCs down. Second, since the completion phase represents around two-thirds of the overall well cost, the industry's cash flows are simply not high enough to boost activity beyond our current expectations for total well completions. Put another way, completion costs that account for 60-70% of total costs means that an aggressive drawdown of DUCs would put an untenable strain on E&P balance sheets. Third, fracking equipment is currently in short supply, thereby limiting the pace of completions. Finally, the proliferation of pad drilling means that the time between drilling and completing will naturally increase, meaning the "normal" level of DUCs in today's horizontal world is actually higher than many think. More on this in a few weeks.

Myth #9: Electric vehicles present an imminent risk for global oil demand.
By definition, the rising adoption of electric vehicles is causing some displacement of oil demand: that is hardly a revelation. The "myth" – which the media, perhaps mesmerized by Elon Musk's latest tweets, likes to propagate – is that this displacement will be needle-moving for overall oil demand at any point over the foreseeable future. We have no doubt that EVs will be a fascinating long-term theme for investors to follow, but as we explained in March, EVs will play an irrelevantly small role in the oil market (or, for that matter, in the electricity market) well into the next decade. Combining EV sales in 2017 with all of the EVs sold in prior years, the cumulative impact on global oil demand currently stands at a mere 80,000 bpd. Taking our analysis through 2020 – the furthest

we can go without getting into the realm of total guesswork – we project a cumulative impact of maybe 270,000 bpd. That is to say, if our sales forecast (quadrupling by 2020) proves accurate, every EV sold worldwide, between 2012 and 2020, will have the aggregate effect of displacing 270,000 bpd of petroleum demand, which would shave off 0.25% from global oil demand in 2020. Beyond 2025, the picture will likely look quite different, but in the meantime, no one should be losing sleep over this issue.

Myth #10: The IEA forecast of 2018 supply growth exceeding demand growth is a bearish indicator.
Sometimes, the underlying data is entirely accurate and reasonable, but the way the data can be misinterpreted unfortunately causes confusion. Such is the case with some headlines that described the recent IEA 2018 global oil supply/demand forecast that suggested that 2018 global supply growth would exceed demand growth. We took numerous calls from investors panicked that "the IEA was forecasting that supply would exceed demand next year." That is **very different** from "supply growth exceeding demand growth." The IEA is making a legitimate point about growth (i.e., rate of change), but many misinterpreted the data to believe that it actually refers to supply and demand in absolute terms rather than growth **rate** terms. The mistake, in other words, is to neglect the "base" levels of current supply and demand. Let's look as some specific numbers: To summarize, the IEA said 2018 oil supply growth would exceed supply growth by only 0.1 million bpd. **If the market in 2017 is undersupplied by 1.3 million bpd (as our model suggests), then a 0.1 million bpd swing in the growth rates would mean the market would still be undersupplied by 1.2 million bpd in 2018!** Let's look at it another way. To achieve equilibrium (or a balanced oil market) in 2018, by definition, the market needs supply to grow 1.3 million bpd faster than demand in 2018. For example, at $65/bbl next year, we forecast global supply growth of 2.4 million bpd (or 2.5% y/y) in 2018. This is about 1.2 million bpd greater than global demand growth of only 1.1 million bpd (or 1.5% y/y). Again, this assumes oil prices surge to $65/bbl leading to rising U.S. supply and much slower demand growth.



Source: IEA, Raymond James research

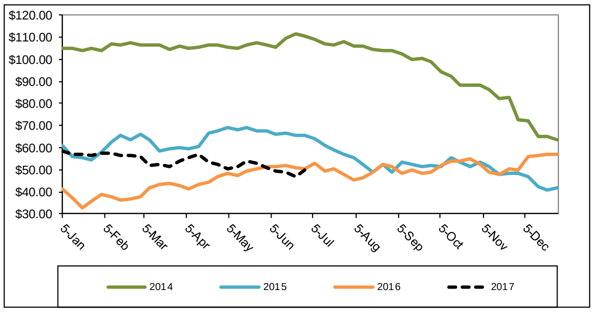
Conclusion: Ignore the noise and hyperbole – focus on the strong and improving oil fundamentals
For the past few months we have noticed an increasing disconnect between actual oil supply/demand fundamentals (which have been broadly encouraging) and market sentiment and headlines (which have been intensely negative). While a technical breakdown in the oil trading charts spurred the initial oil price sell-off, the surge in negative oil headlines that were trying to justify the downward move has added fuel to the bear fire. In today's report, we address some of the more common misperceptions (or myths) that we have heard from investors over the past few months. These misconceptions range from belief that U.S. oil inventories have somehow been bearish, to in our opinion flawed analysis of U.S. supply growth, to misinterpreting other data, and misunderstanding the timeframe in question. Again, all of these have contributed to a "negative feedback loop" on oil prices over the past few months. While increasingly lonely in our bullish oil price view, we are still convinced that oil prices are on track to set cyclical highs over the next six to 12 months, and we encourage our readers to stay focused on the real fundamentals and not get caught up in the day-to-day torrent of noise. Alternative facts and fake news tend to create headlines, but they are not an appropriate basis for making investment decisions. Also remember than when oil prices start to rise, a "positive feedback loop" usually emerges as trade publications scramble to explain and justify rising oil prices.

Raymond James Weekly Oilfield Review

For Week Ending: 6/30/2017

12 Month Oil Calendar Strip

Brent

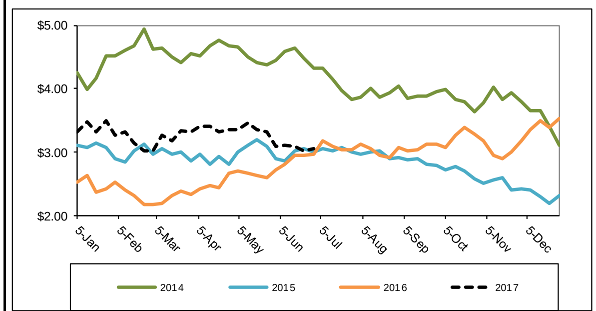


	This Week	Last Week	Beginning of Year	Last Year
Price	$49.92	$46.99	$58.34	$49.23
Percent Change		6.2%	-14.4%	1.4%

Source: Bloomberg, Raymond James

12 Month Gas Calendar Strip

Henry Hub



	This Week	Last Week	Beginning of Year	Last Year
Price	$3.07	$3.02	$3.33	$3.10
Percent Change		1.5%	-7.9%	-0.9%

Source: Bloomberg, Raymond James

	30-Jun-17 This Week	23-Jun-17 Last Week	1-Jul-16 Last Year	Change From: Last Week	Change From: Last Year
1. U.S.Rig Activity					
U.S. Oil	756	758	351	-0.3%	115.4%
U.S. Gas	184	183	88	0.5%	109.1%
U.S. Miscellaneous	0	0	1		
U.S. Total	**940**	**941**	**440**	**-0.1%**	**113.6%**
U.S. Horizontal	792	792	343	0.0%	130.9%
U.S. Directional	71	72	36	-1.4%	97.2%
U.S. Offshore	21	22	19	-4.5%	10.5%
U.S. Offshore Gulf of Mexico					
Fleet Size	94	94	110	0.0%	-14.5%
# Contracted	33	33	39	0.0%	-15.4%
Utilization	35.1%	35.1%	35.5%	0.0%	-1.0%
U.S. Weekly Rig Permits *	773	869	423	-11.0%	82.7%
2. Canadian Activity					
Rig Count	189	170	81	11.2%	133.3%
3. Stock Prices (6/30/17)					
OSX	130.8	127.9	166.5	2.2%	-21.5%
S&P 500	2,430.6	2,438.3	2,129.9	-0.3%	14.1%
DJIA	21,349.6	21,394.8	18,146.7	-0.2%	17.6%
S&P E&P Select Index	4,830.3	4,603.0	5,228.4	4.9%	-7.6%
Alerian MLP Index	297.5	285.4	315.7	4.2%	-5.8%
4. Inventories					
U.S. Gas Storage (Bcf)	2,816	2,770	3,179	1.7%	-11.4%
Canadian Gas Storage (Bcf)	525	505	640	3.9%	-18.0%
Total Petroleum Inventories ('000 bbls)	1,352,181	1,351,352	1,344,615	0.1%	0.6%
5. Spot Prices (US$)					
Oil (W.T.I. Cushing)	$46.18	$43.01	$45.41	7.4%	1.7%
Oil (Brent)	$47.92	$45.54	$46.76	5.2%	2.5%
NGL Composite	$22.91	$21.73	$19.59	5.4%	17.0%
Gas (Henry Hub)	$3.03	$2.93	$2.80	3.4%	8.2%
Residual Fuel Oil (New York)	$7.40	$7.06	$6.11	4.7%	21.2%
Gas (AECO)	$1.85	$1.71	$1.74	8.2%	6.3%
UK Gas (ICE)	$4.88	$4.61	$4.44	5.8%	9.9%

Sources: Baker Hughes, ODS-Petrodata, API, EIA, Oil Week, Bloomberg, Raymond James

** Note: Weekly rig permits reflect a 1 week lag*

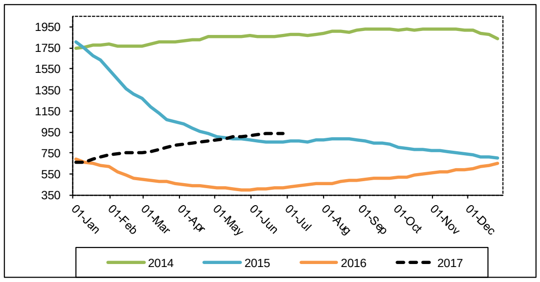
U.S. Rig Count Breakdown

	6/30/2017	6/23/2017	W/W Δ	YTD Δ	YTD % Δ	Y/Y Δ	Y/Y % Δ
Total Count							
U.S. Rig Count	940	941	(1)	282	43%	509	118%
By Basin*							
Permian	365	364	1	103	39%	213	140%
Eagle Ford	92	92	0	43	88%	58	171%
Cana Woodford	81	82	(1)	21	35%	42	108%
Bakken	52	52	0	19	58%	26	100%
Marcellus	43	43	0	6	16%	22	105%
Haynesville	41	40	1	13	46%	23	128%
Utica	27	27	0	8	42%	15	125%
DJ Basin	25	26	(1)	2	9%	12	92%
Pinedale	15	15	0	6	67%	9	150%
Mississippi Lime	10	10	0	4	67%	5	100%
Powder River Basin	10	10	0	1	11%	9	900%
San Joaquin Basin	10	10	0	7	233%	6	150%
Piceance Basin	9	9	0	5	125%	6	200%
Arkoma Woodford	9	8	1	5	125%	7	350%
Uinta	7	7	0	3	75%	3	75%
Granite Wash	7	7	0	-8	-53%	4	133%
Barnett	5	5	0	3	150%	2	67%
Fayetteville	1	1	0	0	0%	1	NM
Other	131	133	(2)	41	46%	46	54%
Drill For							
Oil	756	758	(2)	231	44%	415	122%
Dry Gas	83	82	1	26	46%	50	151%
Wet Gas	101	101	0	26	34%	45	81%
Miscellaneous	0	0	0	(1)	0%	(1)	-100%
Trajectory							
Horizontal Oil	648	648	0	220	51%	376	138%
Horizontal Gas	144	144	0	40	38%	84	140%
Horizontal	792	792	0	260	49%	460	139%
% Horizontal	84%	84%	0%	3%		7%	
Vertical/Directional Oil	108	110	(2)	11	11%	39	57%
Vertical/Directional Gas	40	39	1	12	43%	11	38%
Vertical/Directional	148	149	(1)	22	17%	49	49%

Source: Baker Hughes, Inc, Raymond James research

Includes all trajectories

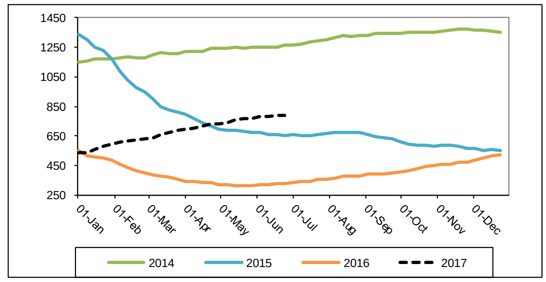
Total U.S. Rig Count



	This Week	Last Week	Beginning of Year	Last Year
Rig Count	940	941	658	421
Percent Change		-0.1%	42.9%	123.3%

Source: Baker Hughes

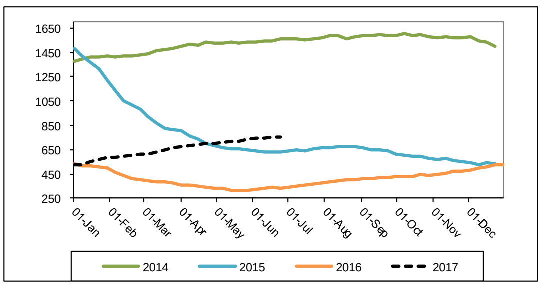
Horizontal Rig Count



	This Week	Last Week	Beginning of Year	Last Year
Rig Count	792	792	532	325
Percent Change		0.0%	48.9%	143.7%

Source: Baker Hughes

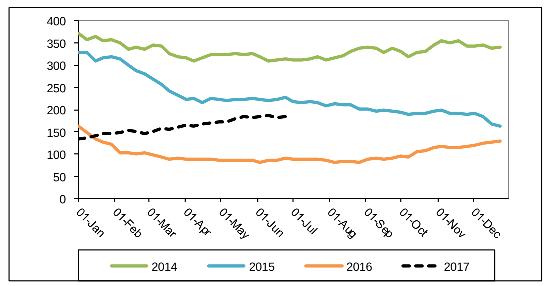
Oil Rig Count



	This Week	Last Week	Beginning of Year	Last Year
Rig Count	756	758	525	330
Percent Change		-0.3%	44.0%	129.1%

Source: Baker Hughes

Gas Rig Count



	This Week	Last Week	Beginning of Year	Last Year
Rig Count	184	183	132	90
Percent Change		0.5%	39.4%	104.4%

Source: Baker Hughes

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Underperform (Sell)	4%	1%	13%	5%	0%	0%

* Columns may not add to 100% due to rounding.

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