



Key themes

OPEC decides to cut supply by 1.2mbpd with 0.8mbpd cut by OPEC and 0.4mbpd by non-OPEC members

Shale requires USD67/barrel to maintain its operating expenses and capex

Permian continues to pump the bulk of shale output

Though DUC is high, incremental cost of extraction and pipeline capacity could be challenges

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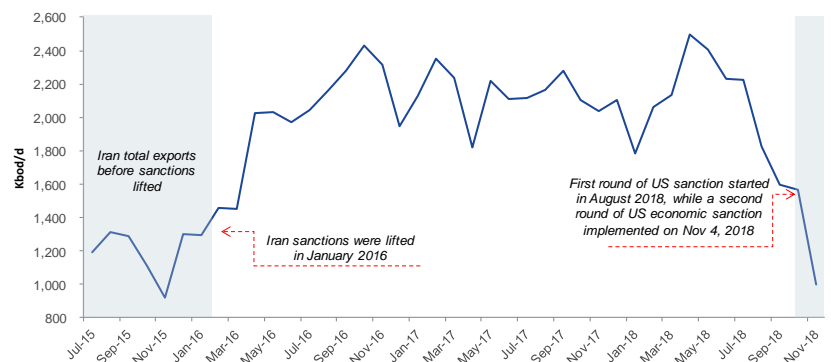
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Oil market update

OPEC at the driver seat, again

OPEC+ meeting: OPEC, in its joint meeting with non-OPEC members in Vienna on 7 December, decided to impose a cut of 1.2mbpd, effective from January 2019 for an initial period of six months. OPEC members will reduce their supply by 0.8mbpd and non-OPEC members by 0.4mbpd. The cut is greater than the approx. 0.5mbpd export cut exemption from Iran (~50% of expected 1mpbd cut for 6 months post sanctions). Hence, the oil supply–demand balance is likely to be maintained from Jan 2019 and over time we could see shortage increasing as Iran import waivers get over in April next year. The next OPEC meeting will be held in April 2019, which will help OPEC+ to take future course of action post the end of waiver period.

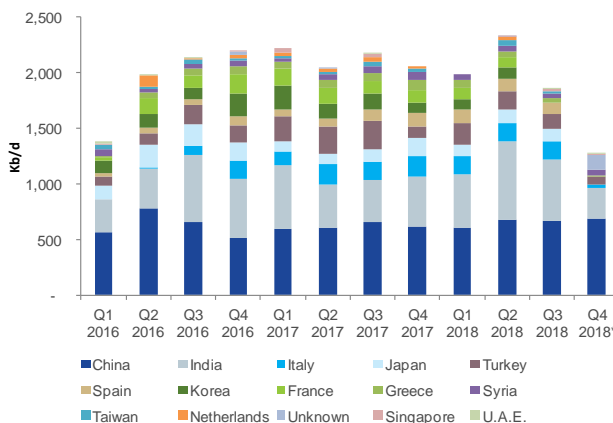
Figure 1 Monthly Iranian oil exports before and after sanctions



Source: Bloomberg, Al Rajhi Capital.

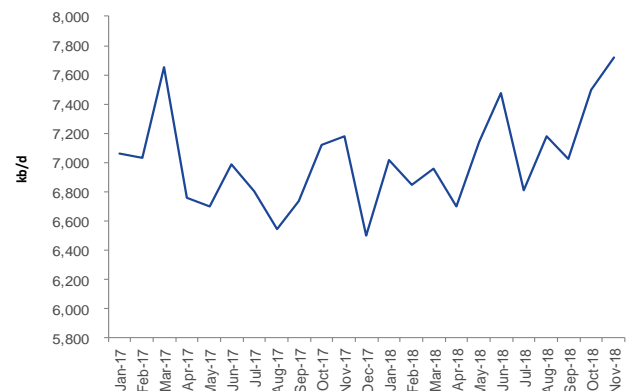
Shale output and cash flow required for zero FCF: Based on our calculations, shale firms require ~US\$67/barrel to meet their capex programs. Shale production has increased by 26% y-o-y in 2018 so far with ~60% of incremental supply in Shale coming from the Permian region, which could also increase incremental costs for extraction given undiversified growth coming

Figure 2 Iran's crude oil exports by destination



Source: Bloomberg, Al Rajhi Capital. * Till November 2018

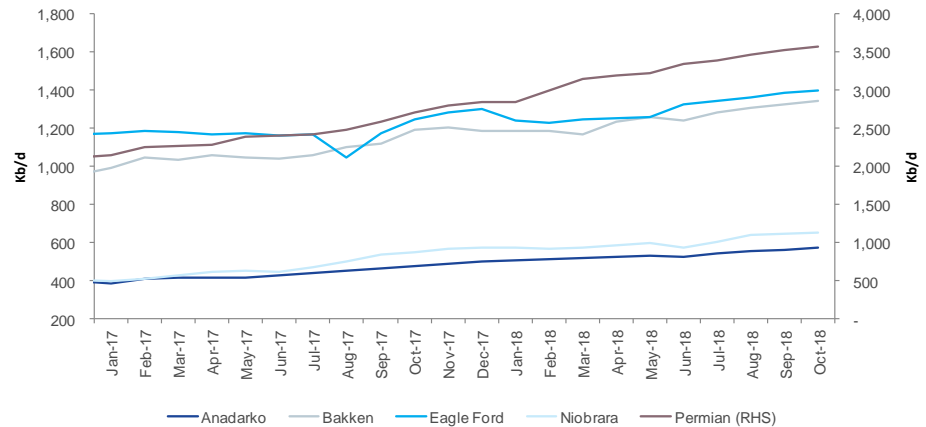
Figure 3 Saudi exports reach record high in Nov



Source: Bloomberg, Al Rajhi Capital



Figure 4 Production increasing across the shale regions



Source: EIA, Al Rajhi Capital

Figure 5 Inventories reaching towards optimal level in the US ...

	2014	2015	2016	2017	2018E*	2019E*
US Commercial inventories (mbbls)	1,134	1,287	1,334	1,232	1,221	1,308
Average US oil consumption (m b/d)	19.1	19.5	19.7	20.0	20.5	20.7
% of average US oil consumption	16.3%	18.1%	18.6%	16.9%	16.4%	17.3%
Average global oil demand (m b/d)	93.6	95.5	97.0	98.6	100.1	101.5
US inventory as a % of global demand	3.3%	3.7%	3.8%	3.4%	3.3%	3.5%

Source: EIA, Al Rajhi Capital. * EIA estimates

Figure 6 ... as well as in OECD

	2014	2015	2016	2017	2018E*	2019E*
OECD Commercial inventories (mbbls)	2,688	2,970	2,994	2,843	2,867	3,005
Average OECD consumption (m b/d)	45.6	46.4	46.8	47.2	47.6	48.0
% of average OECD consumption	16.1%	17.5%	17.5%	16.5%	16.5%	17.2%
Average global oil demand (m b/d)	93.6	95.5	97.0	98.6	100.1	101.5
OECD inventory as a % of global demand	7.9%	8.5%	8.5%	7.9%	7.8%	8.1%

Source: EIA, Al Rajhi Capital. * EIA estimates

mainly from one region. In 2018 so far, Permian pumped ~46% of total Shale supply (Figure 4). The number of DUC has reached at a high of 8,545 in Oct 2018, implying a possibility of future supply risk from Shale.

Factors that drove oil sentiments downward: Apart from temporary sanction waiver on Iranian imports, one of the main reasons for the decline in oil price was the surge in Saudi production in November based on Bloomberg data. As per Bloomberg, Saudi's monthly exports touched 7.7mb/d as compared to 7.1 mb/d on an average in the YTD. Not just the Bloomberg data, this was also reflected in the latest S&P Global Platts OPEC survey, which shows a massive 0.35mb/d monthly rise in production from Saudi Arabia and a 0.13mb/d increase from the UAE – both of whom set record highs – more than offsetting the impact from sanctions. Geopolitical concerns were also on the forefront especially for Saudi Arabia. Comments from US president, indicating a need for cuts for the global economy, also factored in the price movement.

Inventories and demand: The resulting surge in supply led to rising inventories. In the US, commercial inventories continued to edge up gradually to 16% of demand in the US (annualized last month data). While there is no clear metric for global inventories, OECD countries saw its inventories increasing from 7.6% mid-year to 7.9% of global demand in October. The increase in inventory is reflective of slow demand and excess production especially that we saw a waiver from Iranian sanctions. This could eventually reverse by mid-2019. As for the demand, transport industry constitutes ~50% of the demand for oil. Globally car sales were down 14% y-o-y and ~-8% y-o-y in the month of September and October, respectively. In China, which has ~47% of total vehicle sales market share, sale of electric vehicles was up 53% y-o-y in China during the first 10 months of 2018 while cars sales were overall down by 0.4%. However we believe demand weakness is temporary due to trade concerns and regulatory concerns.

Conclusion: OPEC's role continues to be of paramount importance as it clinched an agreement to cut oil supply. Despite the delay in achieving the cut it shows OPEC still has the ability to control balance in the global market. With a possible 1mbpd reduction in supply from Iran from May next year, OPEC will be comfortably able to release the required level



from the 1.2mbpd of production cut so that prices could be well maintained. The number may vary over the next months because of operational challenges but we believe the average cut should be around 1.2mbpd in the said duration. Despite the increase in DUC wells, increase in US production could be gradual, as seen in the past, given there are reports of limitations with regard to pipeline capacities and cost of extraction. Based on our calculations, shale firms require ~US\$67/barrel to meet their capex programs (see next section) , so it is important to understand that Shale’s goals are also aligned with OPEC. Hence Shale firms may adjust their plans to increase production accordingly.

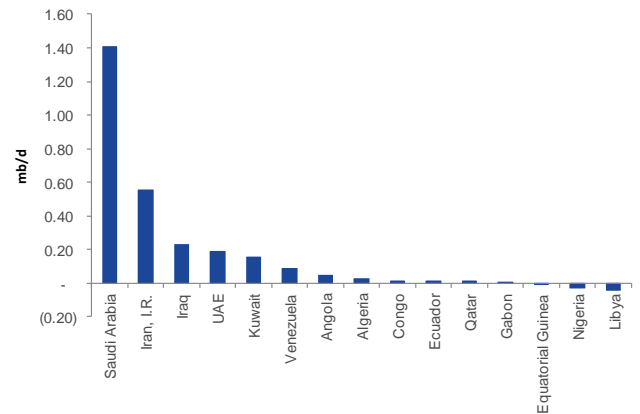
Overall, in a nutshell, oil prices will continue to be volatile but the direction is likely to be tilted slightly upwards as OPEC will continue to manage the prices, in our view. In the past, strong unity and record compliance among OPEC and their allies (especially Russia), coupled with rising demand have helped them to achieve their objectives.

Figure 7 OPEC production increasing



Source: OPEC, Al Rajhi Capital

Figure 8 OPEC spare capacity (as of October 2018)



Source: IEA, Al Rajhi Capital

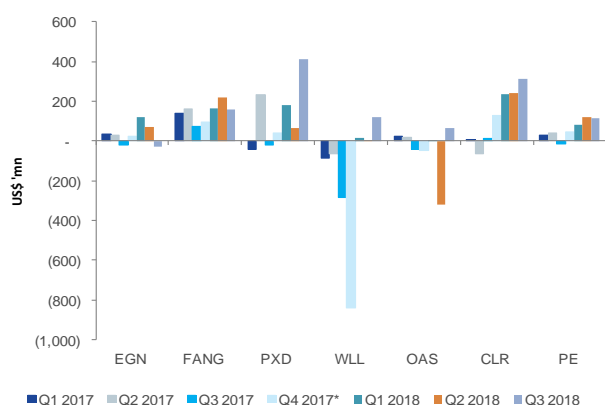


Shale health check up

1. Shale profits and stock performance:

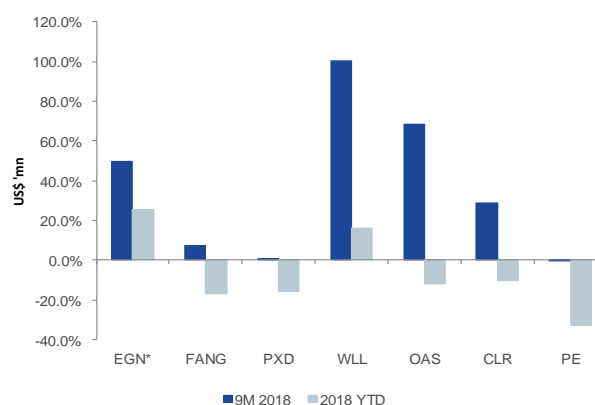
We note that most of US shale firms, under our study, have continued to witness an annual improvement in net profit in 2018 so far, largely driven by higher oil price and increased production. Accordingly, average ROA rose to ~5.4% in Q3 2018 from 4.2% in Q2 2018 and a just 0.1% in Q4 2017 (Figure 20). At the same time, the stock performance of most of the companies (under our sample) posted positive returns during 9M 2018. However, the decline in oil prices, mostly on account of increased supply amid weak demand has dragged the stock prices in Q4 so far with most of shale producers witnessing negative returns in 2018.

Figure 9 2017/18 net profit performance of shale firms*



Source: Company data, Al Rajhi Capital. * Adjusted for one-time impact of non-cash tax benefit resulting from the Tax Cuts and Jobs Act

Figure 10 Stock performance of shale firms – 2018 YTD

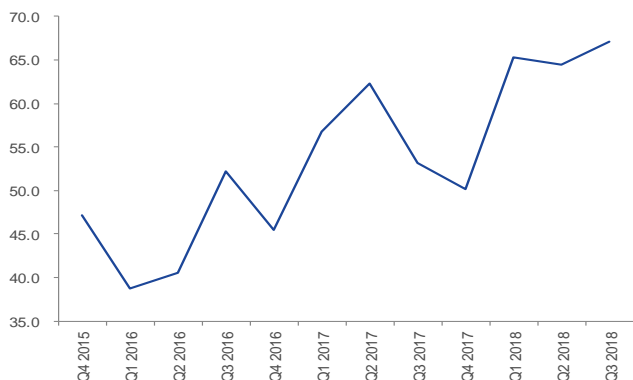


Source: Bloomberg, Al Rajhi Capital * EGN till Nov 29, 2018 only as the company is recent acquired by FANG.

2. Cash required to meet expenses increased on higher capital expenditure amid higher oil prices and stable operating efficiencies in 2018 so far

Despite largely stable operating efficiencies of most US shale producers, our calculations show that “**Cash required per barrel**” increased to **US\$67 bbl in Q3 2018** from ~US\$50/bbl in Q4 2017 (Figure 11 and 12), primarily on account of increased capital spending amid firm oil prices. Within the Permian basin, Concho Resources has one of the lowest requirements of cash per barrel of ~US\$51/bbl.

Figure 11 Average “cash required per barrel” for major US shale producers (US\$/bbl)- for FCF less interest and tax expense***



Source: Company data, Bloomberg, Al Rajhi Capital. Weighted average required cash per barrel based on production of major US shale producers to start generating positive free cash flow. Ex-one-time impact of non-cash tax benefit resulting from the Tax Cuts and Jobs Act in Q4 2017.

Figure 12 Cash required per barrel for major US shale producers (US\$/bbl) - for FCF plus interest and tax expense

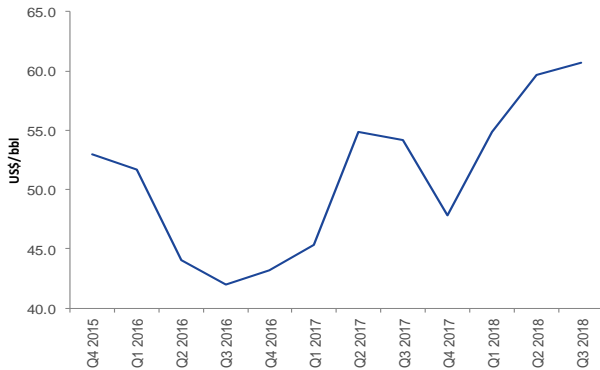
	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Weight*
Concho Resources Inc.	81	62	40	48	77	51	51	20%
Energen Corp.	88	86	65	48	59	68	76	7%
Diamondback Energy	42	42	53	53	61	65	61	8%
Pioneer natural Resources	58	82	63	58	69	75	82	22%
Whiting Petroleum Corp.	34	46	31	32	43	49	46	0%
Oasis Petroleum Inc.	47	57	51	51	67	53	78	9%
Continental Resources Inc.	45	47	46	38	52	62	62	6%
Parsley Energy	69	73	101	97	100	92	94	20%
Weighted average**	57	62	53	50	65	64	67	

Source: Company data, Bloomberg, Al Rajhi Capital. * Weights are based on production. ** Calculated based on weighted average production of major shale producers under our sample. Ex-one-time impact of non-cash tax benefit resulting from the Tax Cuts and Jobs Act in Q4 2017.

Excluding the impact of interest and tax expenses on the free cash flow, our calculations show the similar trend as well with average cash required per barrel rising for most of the companies being covered in the study (Figure 13 and 14).



Figure 13 Average “cash required per Barrel”** for major US shale producers to generate FCF positive



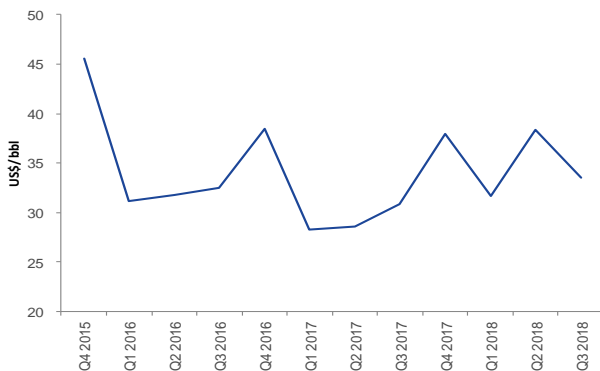
Source: Company data, Bloomberg, Al Rajhi Capital. Weighted average required cash per barrel based on production of major US shale producers to generate positive cash flow.

Figure 14 “Cash required per barrel” for major US shale producers (US\$/bbl)

	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Weight*
Concho Resources Inc.	41	50	43	52	55	46	52	20%
Energen Corp	79	80	65	43	50	62	75	7%
Diamondback Energy	38	41	52	52	52	64	54	8%
Pioneer natural Resources	57	71	61	55	64	72	74	22%
Whiting Petroleum Corp.	33	45	59	41	36	43	40	0%
Oasis Petroleum Inc.	35	48	47	49	60	63	68	9%
Continental Resources Inc.	37	44	39	26	42	52	51	6%
Parsley Energy	59	64	97	94	90	82	85	20%
Weighted average**	45	55	54	48	55	60	61	

Source: Company data, Bloomberg, Al Rajhi Capital. * Weights are based on production. ** Calculated based on weighted average production of major shale producers under our sample.

Figure 15 Average “cash required per Barrel”** for major conventional producers to generate FCF positive



Source: Company data, Bloomberg, Al Rajhi Capital. Weighted average required cash per barrel based on production of major conventional producers to generate positive cash flow..

Figure 16 “Cash required per barrel” for major conventional producers (US\$/bbl)

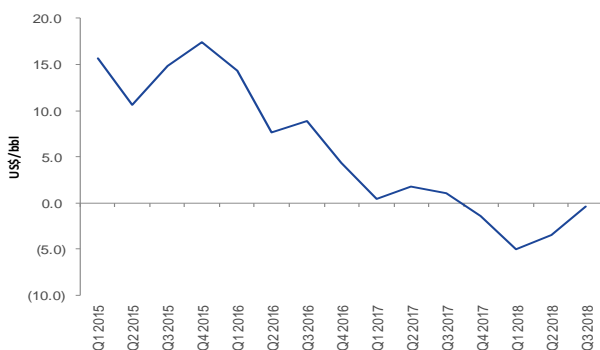
	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Weight*
BP PLC	36	39	33	43	40	41	44	23%
Chevron Corp	42	28	37	40	28	31	27	19%
Exxon Mobil Corp	21	26	28	29	28	45	36	24%
Husky Energy Inc	17	26	18	32	15	11	20	2%
Imperial Oil Ltd	27	42	22	34	31	50	28	2%
Statoil ASA	17	14	44	42	12	44	29	13%
TOTAL SA	22	27	19	39	48	32	29	18%
Weighted average**	28	29	31	38	32	38	33	

Source: Company data, Bloomberg, Al Rajhi Capital. * Weights are based on production. ** Calculated based on weighted average production of major conventional producers under our sample.

3. Hedging losses continued in 2018

Most of US shale producers (under our sample; except Pioneer Natural Resources) continued to incur hedging losses in 2018 compared to gains in Q3 2017 (-\$0.4/bbl loss in Q3 2018 vs. gain of \$1.1/bbl in Q3 2017). This compares meekly with the numbers for FY15 and FY16 at ~US\$15/bbl and ~US\$9/bbl, respectively.

Figure 17 US shale producer's average realized gain / losses



Source: Company data, Bloomberg, Al Rajhi Capital. Calculated is based on weighted average production of major shale producers under our sample.

Figure 18 US shale producer's average realized gain / losses (US\$/bbl)

	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018
Concho Resources	31.0	19.8	18.4	4.7	3.0	6.9	2.5	(4.3)	(8.7)	(6.6)	(2.7)
Energen Corp.	1.5	(5.5)	(1.2)	(4.2)	(2.0)	0.0	1.2	(2.0)	(3.3)	(3.3)	(0.3)
Diamondback Energy	2.0	(0.2)	(0.1)	(0.9)	(0.4)	0.9	1.3	(0.9)	(4.8)	(6.0)	(4.8)
Pioneer natural Res.	17.3	9.0	13.6	10.4	0.8	1.6	1.9	0.3	(4.5)	4.1	10.8
Whiting Petroleum	5.5	3.9	5.3	2.8	0.2	0.7	0.7	(0.3)	(3.2)	(6.9)	(7.9)
Oasis Petroleum	18.9	8.1	3.3	1.6	(1.9)	(2.1)	(2.9)	(1.6)	(7.0)	(10.9)	(10.8)
Continental Res.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Parsley Energy	16.7	5.2	4.0	2.7	(1.5)	0.0	(0.3)	(3.1)	(3.7)	(4.2)	(1.3)
Weighted average*	14.4	7.6	8.8	4.4	0.5	1.8	1.1	(1.4)	(5.0)	(3.5)	(0.4)

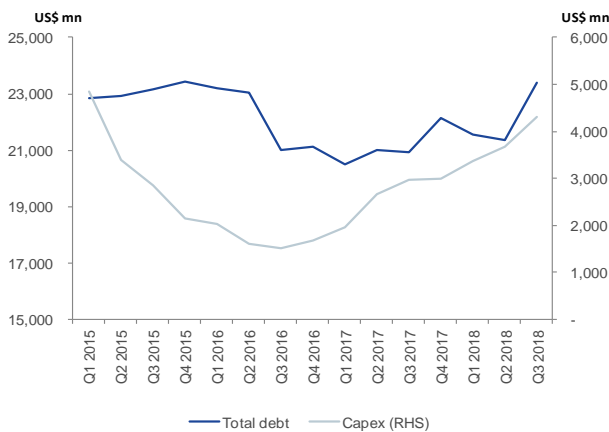
Source: Company data, Bloomberg, Al Rajhi Capital. * Calculated is based on weighted average production of major shale producers under our sample.



4. Shale producers raises debt to fund their capex programs

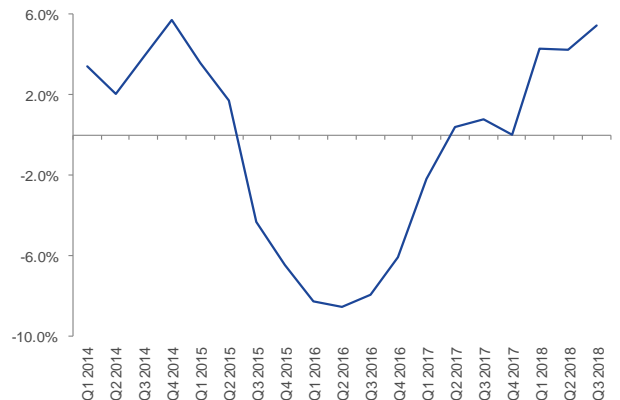
Capital expenditure by the US shale producers in our study has started to rise after bottoming out in the second half of 2016, primarily attributable to improved oil prices amid rising oil demand. The combined capex of the US shale producers (under our sample) increased ~50% y-o-y in 2018 so far, putting the shale producers deeper in debt (Figure 19), which could weaken their own financial health in case of decline in oil prices amid rising interest rate environment.

Figure 19 Total debt begins to rise as capex increases



Source: Company data, Bloomberg, Al Rajhi Capital

Figure 20 Weighted avg. ROA improved *



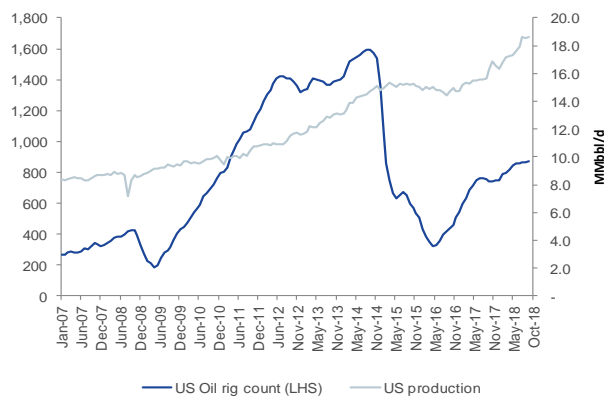
Source: Company data, Bloomberg, Al Rajhi Capital. * Adjusted for one-time impact of non-cash tax benefit resulting from the Tax Cuts and Jobs Act for Q4 2017.

Figure 21 Market shares

	Dec-16	Mar-17	Jun-17	Sep-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18
OPEC	39.1%	38.5%	38.7%	38.8%	38.3%	38.4%	38.2%	37.9%	38.0%	38.0%	37.8%	37.6%	37.9%	37.8%	37.6%
OECD	13.1%	13.6%	12.6%	12.1%	12.2%	13.0%	12.9%	12.8%	12.7%	12.1%	12.2%	12.4%	12.5%	12.4%	12.7%
US non-conv.	6.1%	6.6%	6.7%	7.2%	7.8%	7.7%	7.9%	8.1%	8.2%	8.3%	8.4%	8.5%	8.7%	8.8%	8.8%
Others	41.7%	41.3%	42.0%	41.9%	41.7%	40.9%	41.1%	41.2%	41.0%	41.5%	41.5%	41.4%	40.9%	41.1%	40.9%

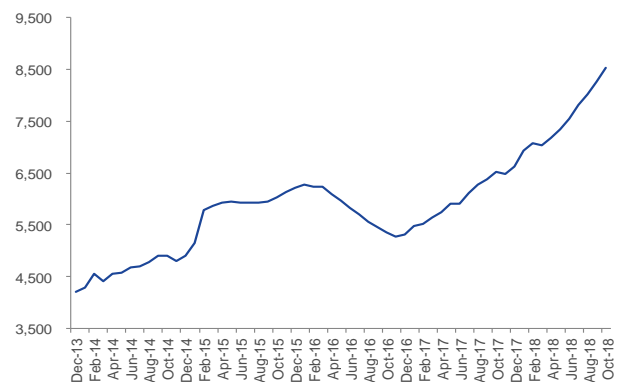
Source: OPEC, EIA, IEA, Al Rajhi Capital

Figure 22 US shale rig count and production*



Source: Baker Hughes, EIA, Al Rajhi Capital. * Crude and other condensates

Figure 23 Rising DUC wells



Source: EIA, Al Rajhi Capital



OPEC compliance level

Figure 24 OPEC compliance to agreement

	2017 Compliance												2018										Avg.
	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Algeria	78%	78%	78%	58%	58%	58%	38%	58%	58%	178%	158%	98%	138%	98%	218%	198%	98%	78%	58%	58%	38%	38%	92%
Angola	142%	129%	142%	117%	181%	117%	104%	91%	117%	91%	181%	206%	232%	232%	296%	322%	309%	386%	360%	360%	322%	322%	219%
Ecuador	88%	88%	108%	69%	69%	69%	31%	31%	31%	69%	31%	108%	108%	146%	108%	108%	69%	69%	69%	69%	69%	108%	78%
Equatorial Guinea*	NA	NA	NA	NA	83%	250%	167%	167%	83%	0%	83%	83%	83%	83%	83%	167%	83%	167%	167%	250%	167%	250%	131%
Gabon	22%	22%	78%	22%	22%	22%	-200%	244%	133%	-89%	-89%	22%	-89%	22%	-89%	133%	356%	22%	244%	22%	133%	133%	60%
Iran, I.R.***	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iraq	53%	67%	62%	67%	39%	29%	34%	34%	15%	77%	62%	34%	39%	48%	58%	72%	43%	10%	0%	-42%	-52%	-42%	29%
Kuwait	98%	98%	106%	98%	90%	98%	105%	105%	98%	105%	98%	105%	105%	105%	105%	98%	98%	90%	29%	21%	44%	60%	90%
Qatar	127%	193%	127%	93%	60%	93%	127%	127%	227%	127%	93%	127%	93%	227%	160%	160%	127%	93%	93%	127%	193%	127%	134%
Saudi Arabia	153%	116%	126%	120%	128%	102%	106%	120%	118%	102%	122%	118%	116%	120%	128%	128%	106%	17%	40%	26%	5%	-22%	96%
UAE	38%	60%	74%	60%	60%	60%	53%	60%	60%	60%	81%	103%	117%	153%	103%	103%	103%	81%	24%	24%	-27%	-142%	56%
Venezuela#	18%	18%	39%	49%	71%	28%	39%	81%	134%	186%	313%	481%	481%	544%	628%	692%	744%	807%	849%	860%	839%	848%	380%
OPEC 12	105%	90%	100%	95%	95%	77%	75%	86%	87%	101%	120%	132%	138%	152%	165%	174%	158%	121%	119%	118%	117%	105%	112%

Source: IEA OMR, OPEC OMR, Al Rajhi Capital. Note: OPEC figures are crude oil only. * Equatorial Guinea joined OPEC on 25th May, 2017. *** Iran was given a slight increase. # If Venezuelan compliance were 100%, OPEC overall compliance would have 61% only in July.

Non-OPEC compliance level

Figure 25 Non-OPEC compliance to agreement

	2017 Compliance												2018										Avg.
	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Azerbaijan	34%	83%	207%	85%	85%	56%	53%	215%	61%	37%	65%	10%	-3%	22%	55%	80%	35%	61%	116%	113%	50%	87%	77%
Kazakhstan	42%	-138%	-324%	-218%	-54%	NA	NA	162%	-111%	54%	-583%	-564%	-520%	-763%	-677%	-675%	-797%	-670%	-767%	196%	-532%	-292%	-347%
Mexico	73%	79%	71%	77%	79%	91%	112%	195%	401%	231%	266%	285%	213%	245%	283%	264%	285%	305%	308%	342%	333%	346%	223%
Oman	103%	86%	101%	99%	91%	95%	100%	97%	80%	79%	109%	63%	100%	100%	100%	98%	92%	85%	81%	81%	87%	85%	92%
Russia	39%	40%	59%	77%	91%	93%	92%	104%	106%	97%	90%	88%	88%	86%	82%	83%	83%	50%	0%	2%	-51%	-65%	60%
Others***	14%	-40%	-28%	86%	-13%	-55%	-69%	59%	46%	48%	-2%	24%	54%	97%	-3%	-75%	-43%	-83%	20%	-69%	104%	153%	56%
Total	47%	38%	51%	70%	74%	66%	68%	126%	142%	111%	90%	88%	81%	82%	84%	76%	75%	63%	44%	79%	32%	42%	78%

Source: IEA OMR, Al Rajhi Capital. *** Bahrain, Brunei, Equatorial Guinea, Malaysia, Sudan and South Sudan.



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