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An OPEC managed oil market?

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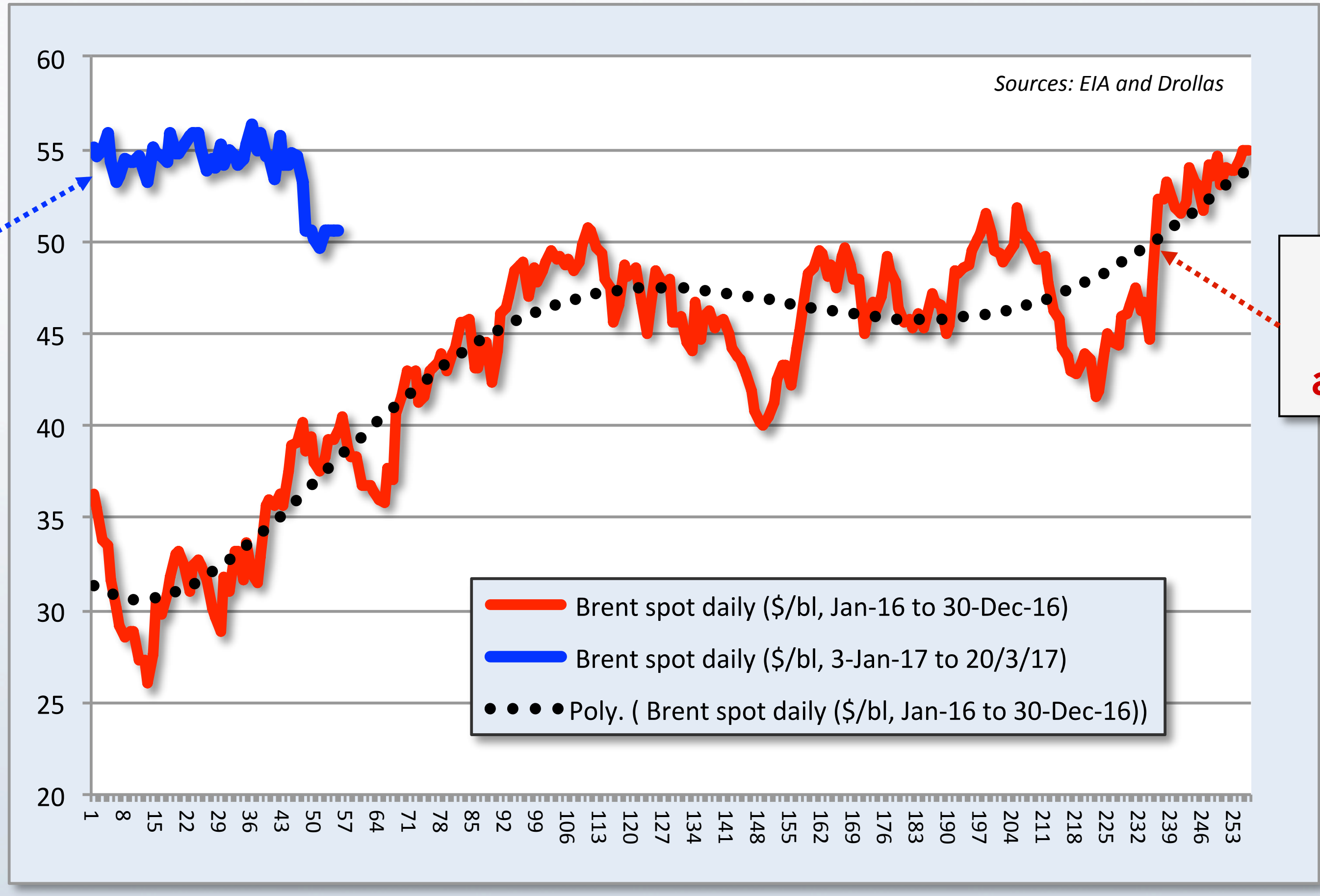
The current oil situation

- The Saudis have led OPEC into managing the oil market once again — the triumph of hope over experience perhaps?
- The oil price recovered to around $55/bbl due to the market's expectation that OPEC's cuts are here to stay, but on March 20th this year spot Brent was down at $50.67/bbl (WTI at $47.79/bl).
- Compliance with the targeted cuts has been impressive; however, a closer inspection reveals anomalies, oddities and red herrings.
- Previous experience tells us that such agreements tend to be eroded over time, even if it makes short-term sense for OPEC to persist collectively with the cuts.
- More importantly, there are now clear signs of an incipient resurgence in US oil production, led by the Permian Basin.
- Global oil inventory cover remains high in historical terms and will continue to act as a sea anchor on oil prices.
- The Saudis remain impaled on the horns of a nasty dilemma.

Comparing daily Brent prices in 2016 and 2017 (to 20/3/17)

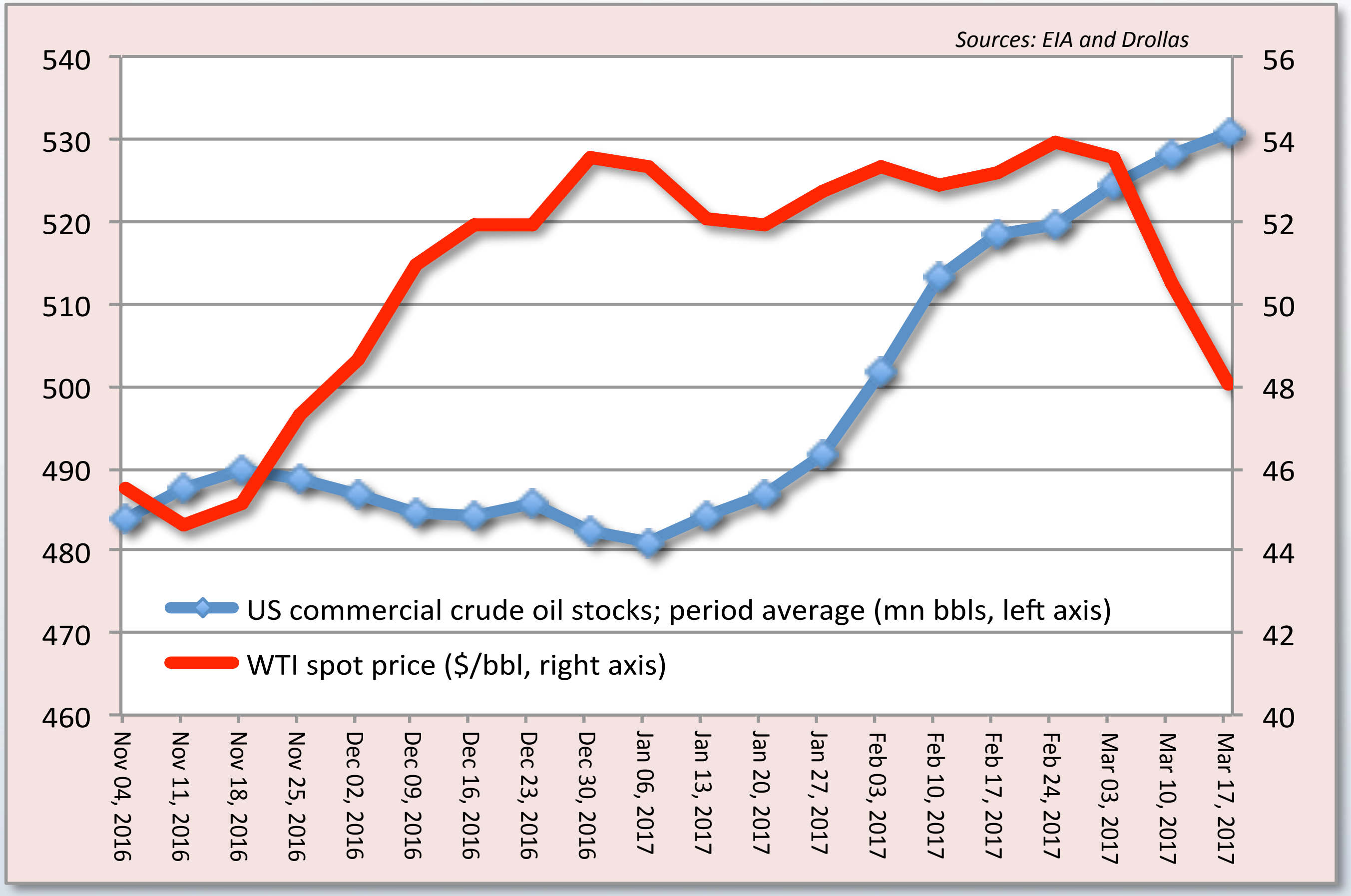
Settling at a ceiling?



After the Nov 30th agreement

In the second half of 2016 Brent oscillated around the $45/bbl level, but after OPEC's November 30th agreement the price rose rapidly above $50/bbl and settled around $55/bbl, where it was expected to stay, held there by the countervailing forces of OPEC's output restraint and the US shale industry's nascent recovery. However, the price dropped heavily on March 8th and is now hovering around the $51/bbl level.

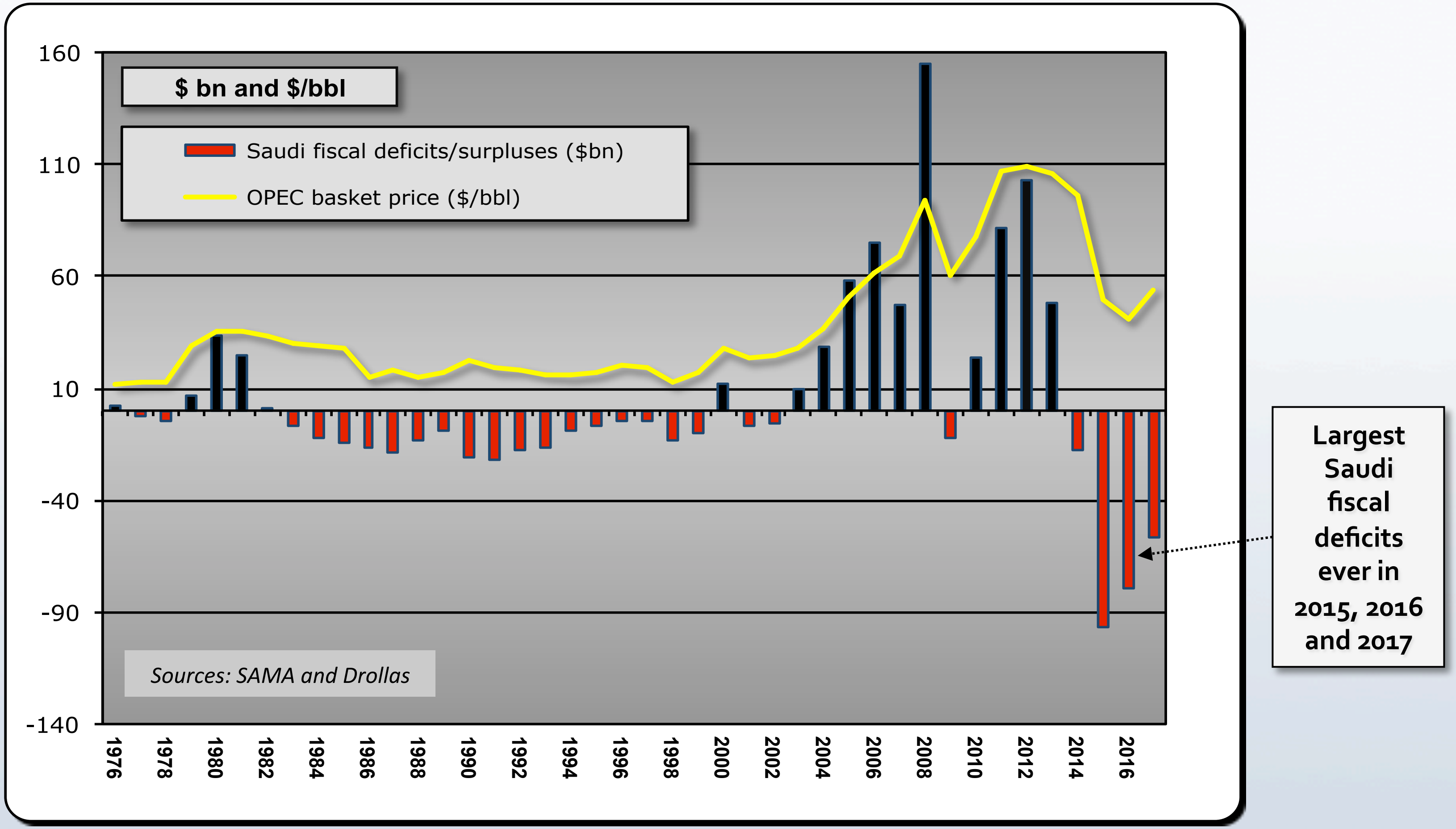
Weekly US crude oil stocks (period average) and WTI spot



- US commercial crude oil stocks have been rising since the 13th of January 2017, largely due to a drop in refining throughputs (because of maintenance prior to turnarounds).
- The increase in WTI spot prices from late November onwards was due to the 30th November 2016 OPEC (and non-OPEC) pact to curtail production.
- Suddenly on Wednesday March 8th prompt futures prices began to fall, dragging down with them spot prices. This seems like a belated recognition of the high level of commercial US crude oil stocks (which had risen by 54 mn bbls from the 6th Jan '17 till the 17th of Mar '17).

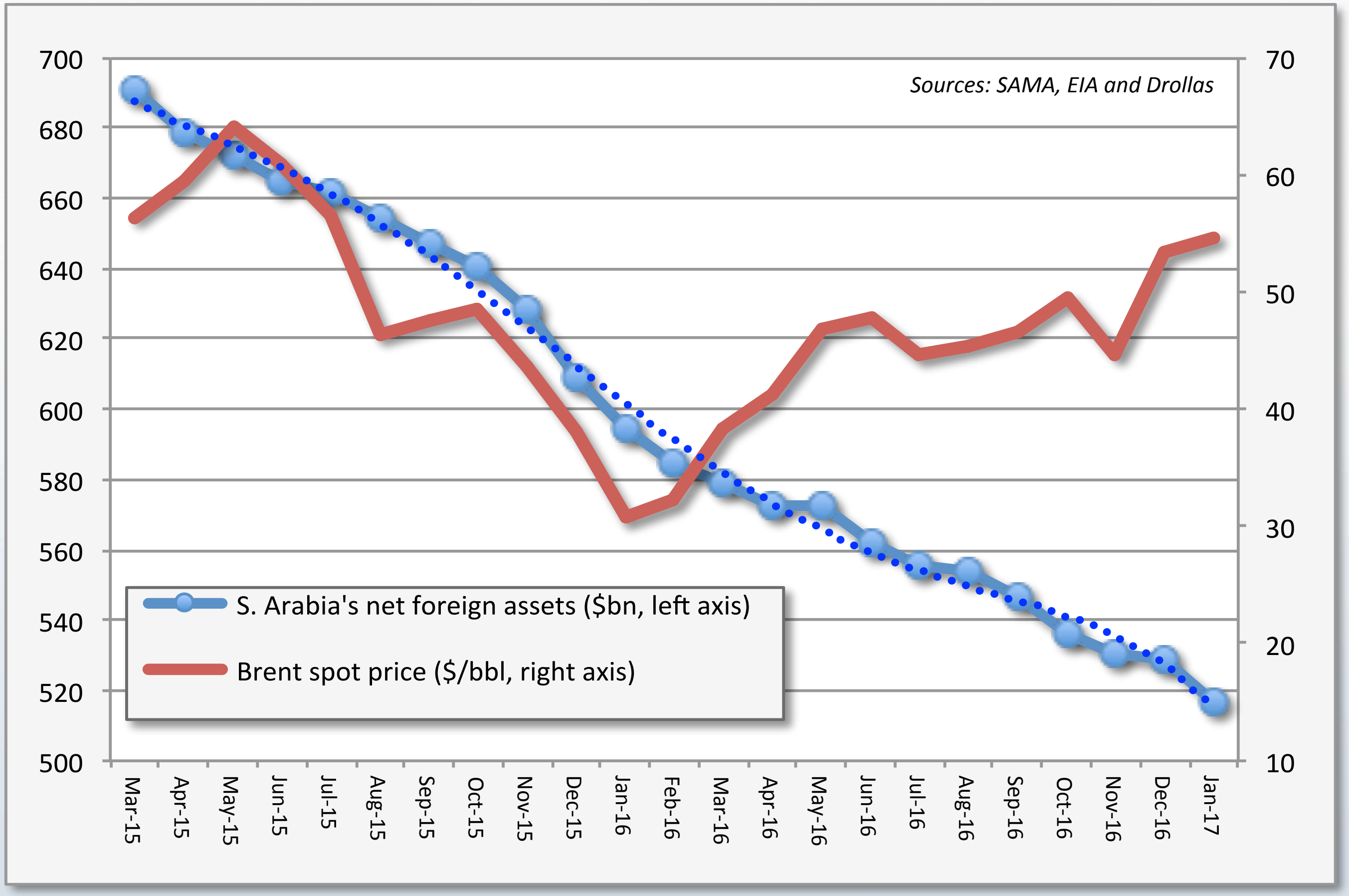
Saudi Arabia's worsening finances

Saudi Arabia's fiscal balances 1976 to 2016, with an estimate for 2017



The Kingdom is bleeding net foreign assets ($208bn between Mar-15 and Jan-17). Moreover, it sold $27.5bn of bonds internationally last year. S. Arabia still has $517bn of net foreign assets (at end Jan-17), but further depletion of these reserves, or taking on more debt, is very much on the cards, unless oil prices in 2017 rebound to the $75/bbl level, which is highly unlikely; the best the Kingdom can hope for is prices in the mid-$50s.

S. Arabia's net foreign assets, Mar-15 to Jan-17



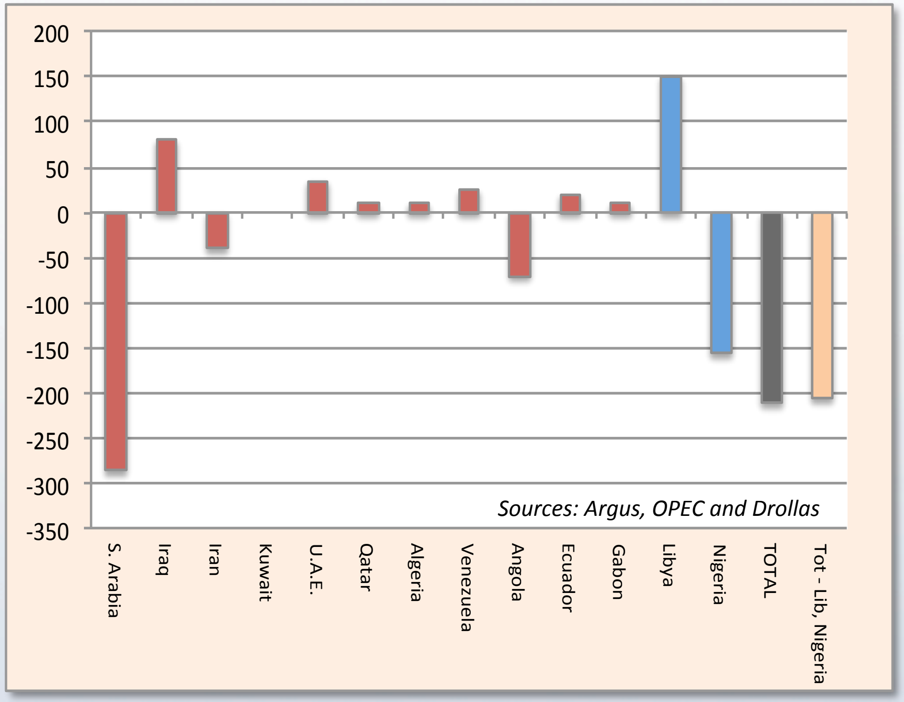
- The Saudi government financed its huge fiscal deficits in 2015 and 2016 [$97bn and $79bn respectively] mainly by running down its foreign assets.
- Saudi Arabia's net foreign assets have declined by $208bn in the period March 2015 to January 2017, at an average rate of $8.3bn per month. At $12bn, the Jan-17 decline was the largest for a year.
- Between Feb-16 and Dec-16 the net foreign assets' rate of decline dropped to $6bn per month due to the rise in oil prices and the Saudis' international sale of $27.5bn worth of bonds in 2016.

What happens to oil prices depends on …

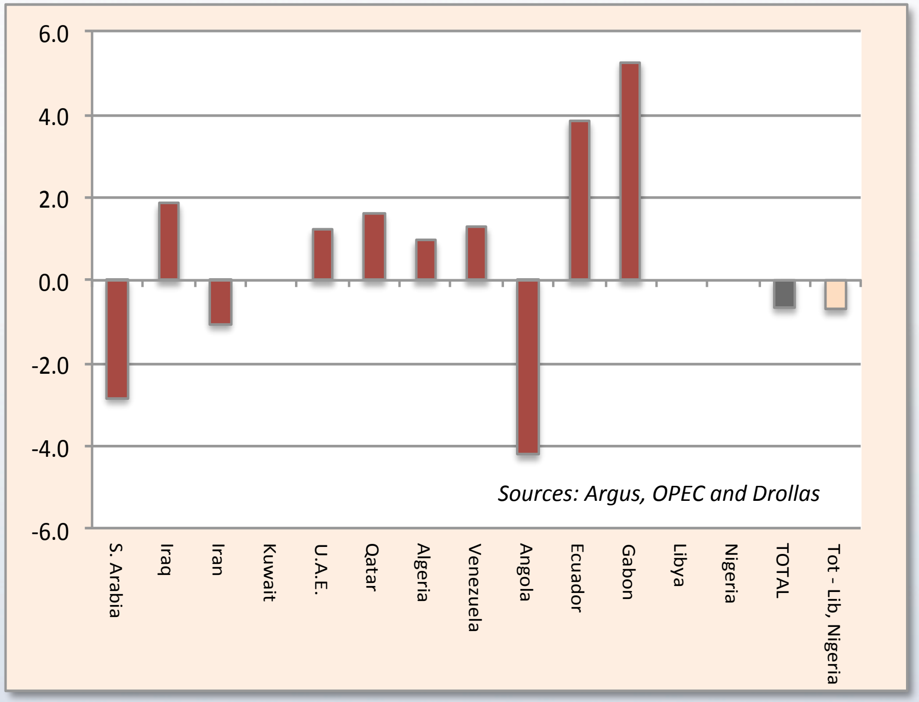
- … OPEC's overall level of compliance with the quotas agreed in Vienna on the 30th of November 2016;
- … the scale of the inevitable leakage over time;
- … whether the OPEC pact is extended in June this year;
- … the scale of the response of US shale production to higher crude oil prices;
- … the responsiveness of oil demand to higher oil prices, which also depends on the movement of the trade-weighted US Dollar and global inflation;
- … the speed of global economic growth, which will be affected by …
- … possible headwinds associated with Brexit, the EU's difficulties, Pres. Trump's policies and China's slowdown.

OPEC's compliance : Jan, Feb '17 avg v. targets

Compliance in thousand bbls per day

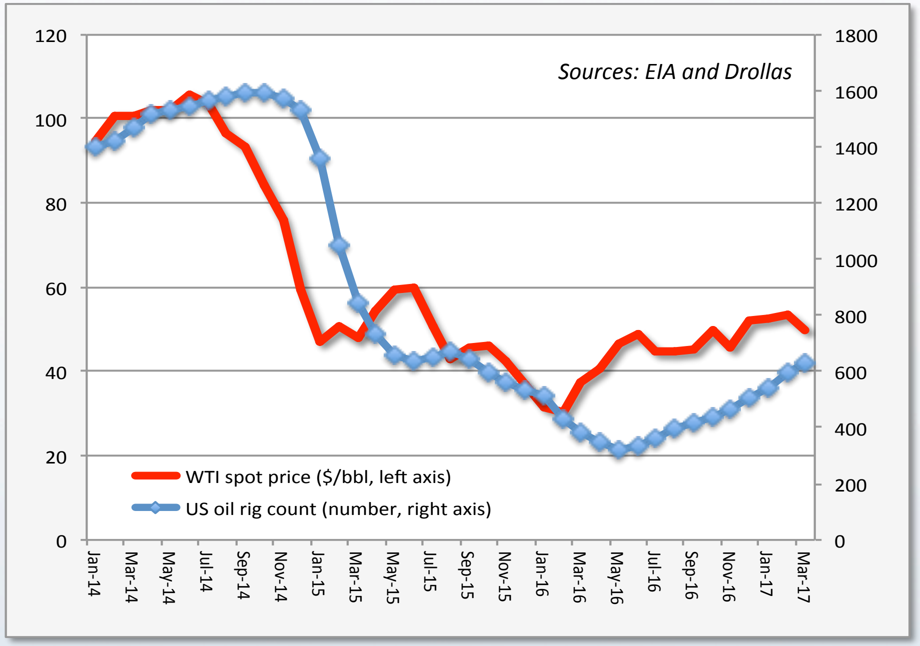


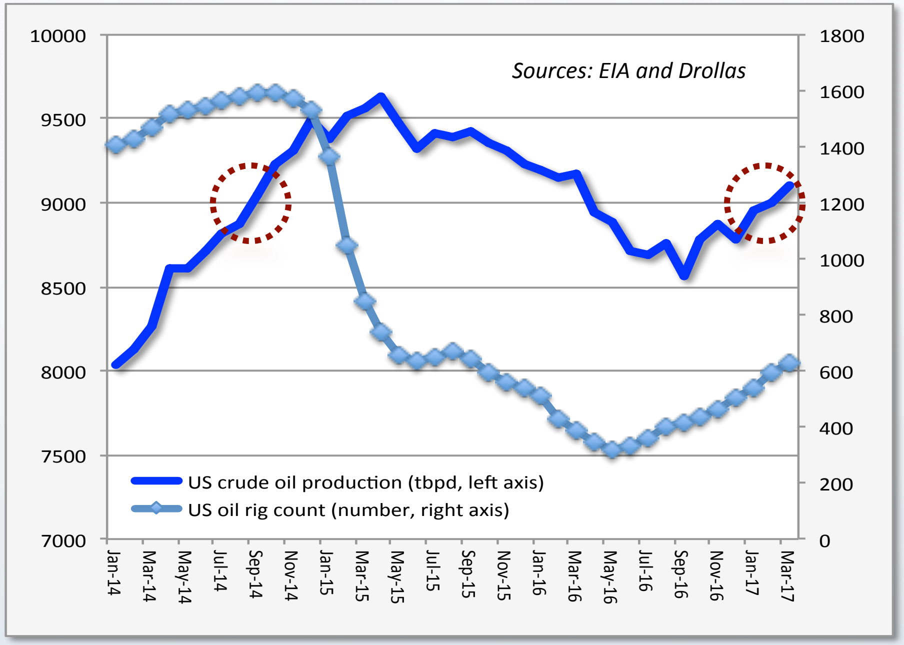
Compliance in percentage terms



- The OPEC eleven as a group [less exempted Libya and Nigeria] are complying remarkably well with their agreed target output level (205 tbpd, or 0.7% below the collective target).
- However, this is mainly because of Saudi Arabia's over-compliance, which averaged 285 tbpd, or 2.8%, in Jan and Feb 2017. Angola and Iran also over-complied, but for different reasons (production difficulties and an over-generous target respectively).
- In truth, seven of the OPEC member-countries have failed thus far to meet their targets by varying degrees (Iraq, the UAE, Qatar, Algeria, Venezuela, Ecuador and Gabon).

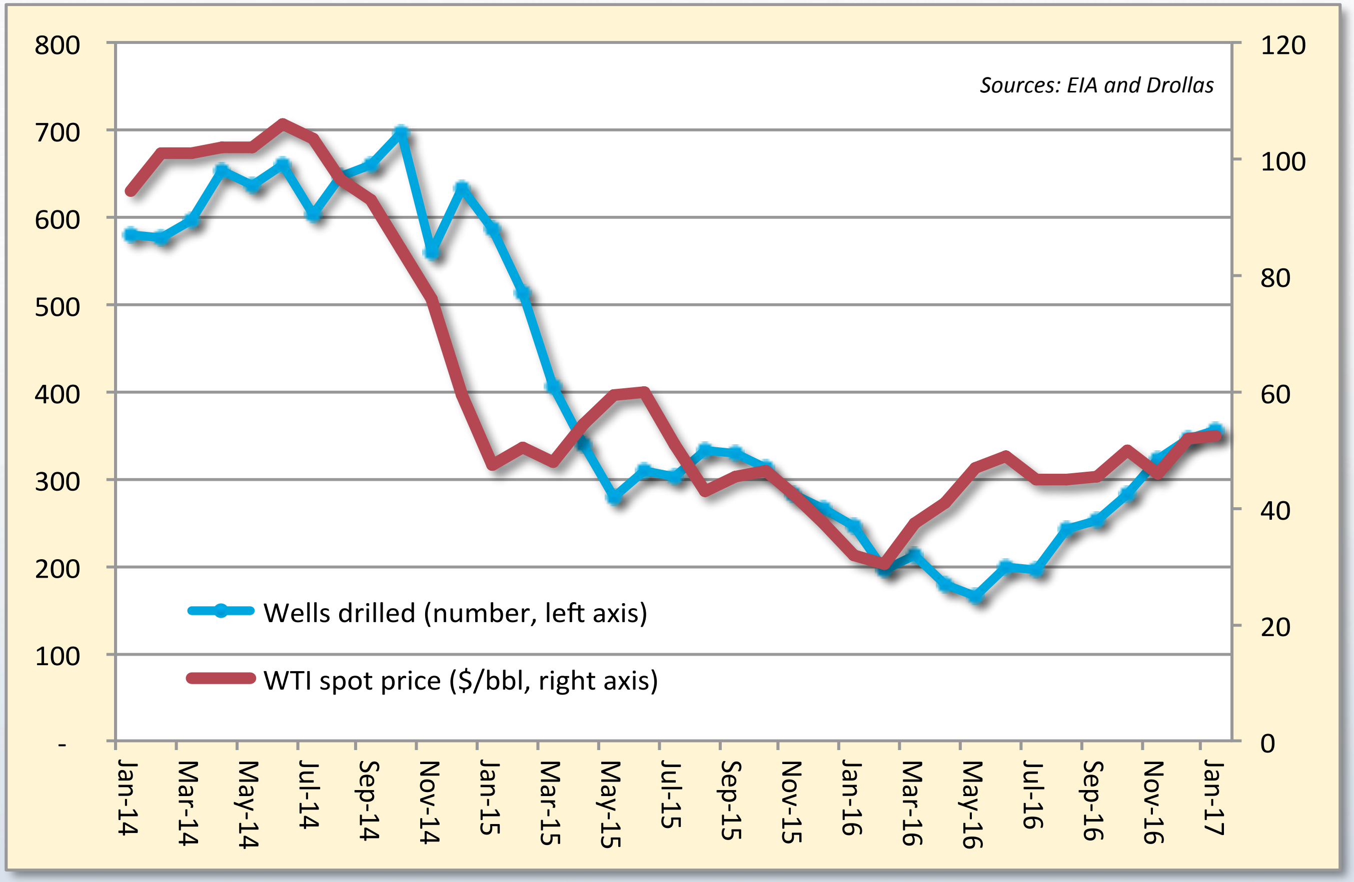
WTI, rigs and US crude output : Jan-14 to Mar-17





- The price of oil provides the key stimulus to oil production in the US, acting through its effect on the rigs targeting oil with approximately a six-month lag (see the left-hand graph above).
- In turn, the changing number of oil rigs has an impact on US crude oil production – again with a lag (see the right-hand graph).
- US crude production in Mar-17 exceeded the level attained in Sep-14, but with 1,000 fewer rigs, highlighting the rapid gains that have been achieved in US rig productivity.

Permian Basin wells drilled & WTI spot : Jan-14 to Jan-17



- The Permian Basin is the largest oil producing region in the United States. It contains conventional and tight oil formations that have yielded around 29bn bbls thus far, with an estimated 43bn bbls left.
- Average well productivity in the Permian has risen 5-fold since early 2012. There are 1,757 drilled but uncompleted wells in the Permian, up 42% from the low point in June 2016.
- *"The Permian is as bountiful as the giant Ghawar field [in Saudi Arabia] and can expand from 2 mbpd to 5 mbpd even if the price of oil never rises above $55/bbl"*, says Scott Sheffield, CEO of Pioneer Natural Resources.

Well breakeven prices in the US

Sources: Rystad Energy and Drollas

	2014 $/bbl	2015 $/bbl	2016 $/bbl
Permian Midland	85	51	38
Permian Delaware	63	47	33
Niobrara	56	43	35
Eagle Ford	75	51	39
Bakken	58	37	32

The Permian oil formations are mainly in Texas and partly in New Mexico. The Niobrara basin is mainly in Colorado and Wyoming, with a small part in Nebraska, while the Eagle Ford formation is entirely in Texas. The Bakken is principally in North Dakota with a small part in neighbouring Montana.

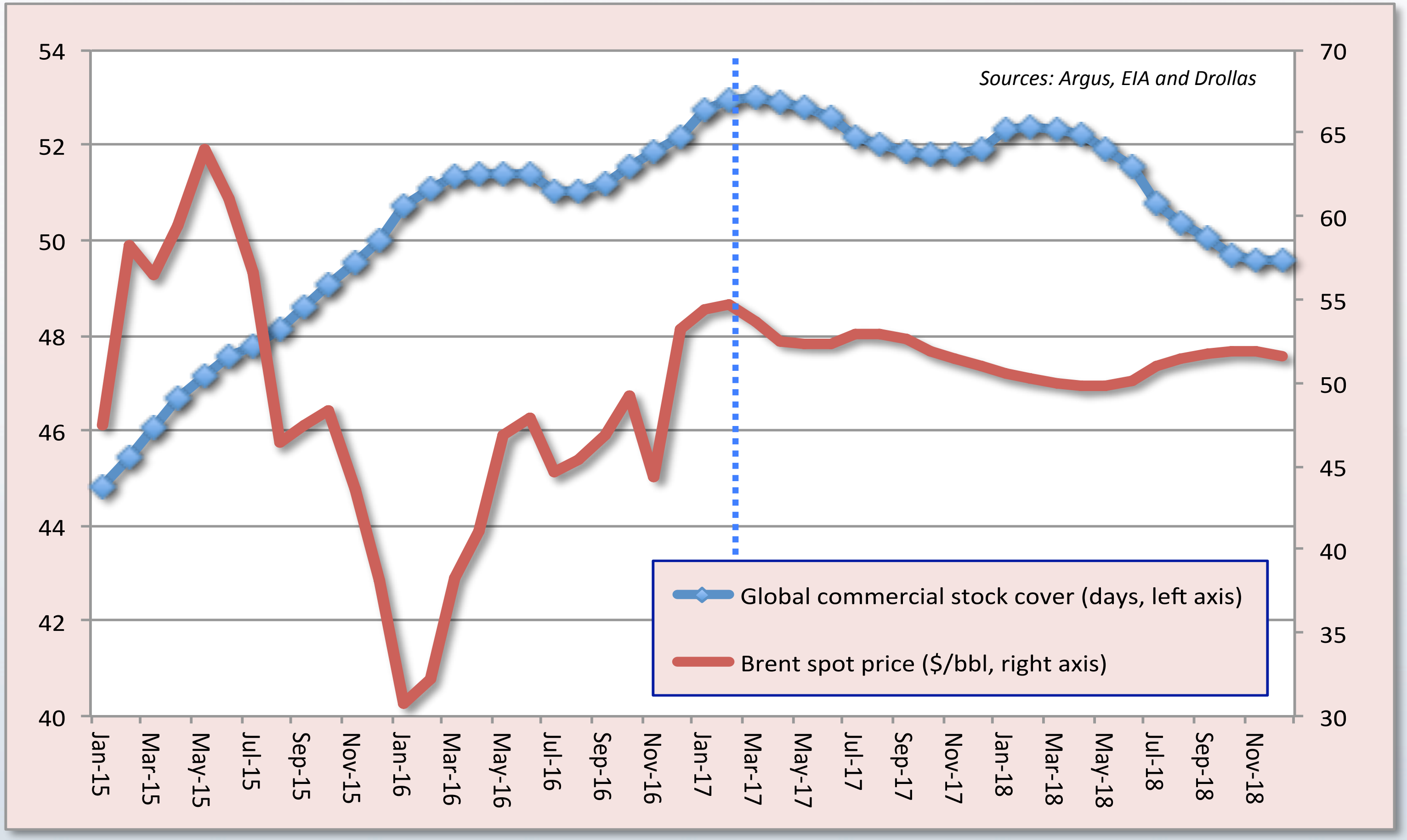
Representative fully-built-up costs of developing oil fields

(including 6-7% cost of capital)

NORWAY	Statoil's J. Sverdrup Phase 1	$14/bbl
NIGERIA	Shell's Bonga South West	$27/bbl
ANGOLA	Total's Kaombo field	$42/bbl
BRAZIL*	Libra sub-salt oilfield	$20/bbl
US SHALE	N. Dakota (Bakken)	$32/bbl
UK N. SEA	Athena oilfield	$35/bbl
	Culzean gas & condensate field	$13/bbl
CANADA	Oil sands (plus upgrading)	$50/bbl

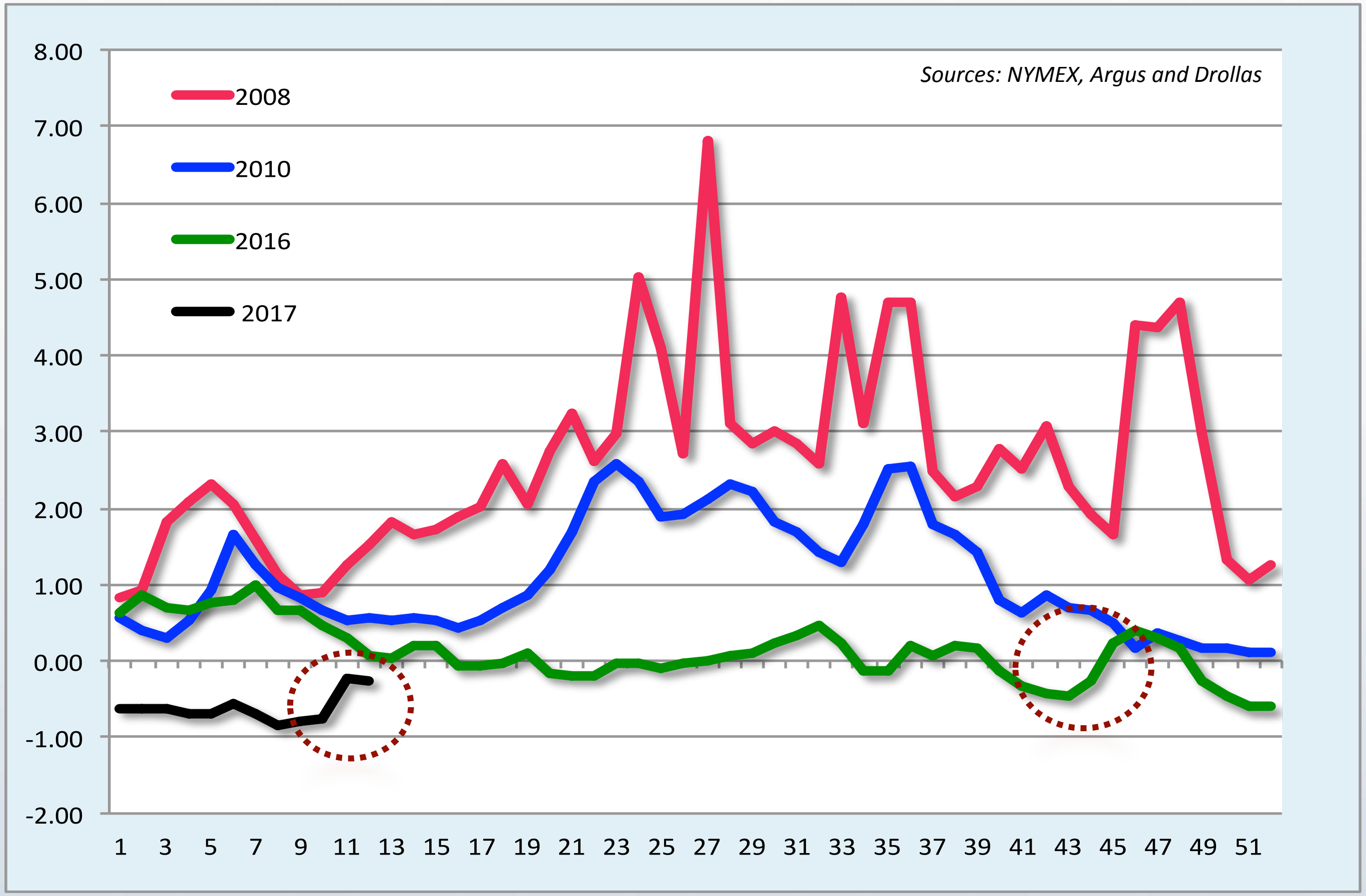
* The Libra field has 10 billion barrels of recoverable oil and is likely to cost $200 bn over 35 years to develop fully. It is situated 200 km offshore in water 2,000 meters deep. The field lies at a depth of 3,500 meters below the seabed. It now takes 30 days to drill a well in the deep offshore versus 120 days in 2010.

Global commercial stock cover and Brent : Jan-15 to Dec-18



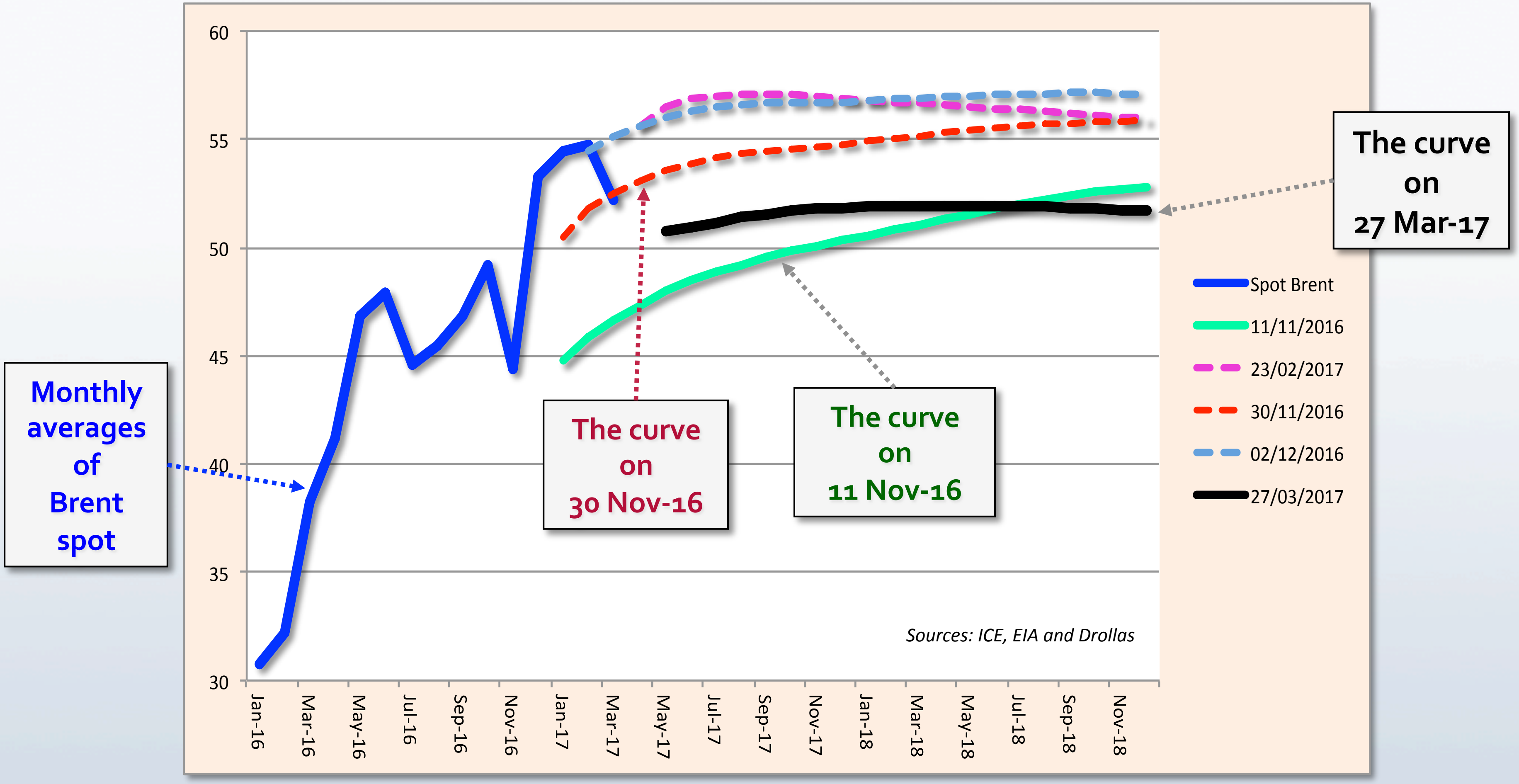
- Global commercial oil inventory cover has been rising continuously since 1Q14; it is likely to reach a peak in March 2017 and then decline in stages, provided OPEC continues to implement its output cuts.
- As commercial inventory cover heads downwards oil prices tend to rise; cover is expected to decline below 50 days' worth by the end of 2018, which would still be about 4 days more than the normal level of cover, hence the overall lack of upward price mobility.

The intensity of speculation on NYMEX regarding WTI



Many believe that the recent surge in oil prices is due to speculators. According to my measure of speculation, the intensity of speculation was very high in 2008 (note that a $\log_e$ scale is used here), less so in 2010. In comparison, the intensity has been much lower in 2016 and thus far in 2017, although it jumped just recently with the price fall, as it had done prior to the OPEC agreement in late November 2016.

Where the ICE futures market thinks Brent is heading



What is obvious from the curves is that they vary considerably, both in initial and terminal values. The reason they vary is because of the different conditions obtaining in the oil market when the expectations underpinning the curves were formed. For example, the difference between the 11/11/16 curve and the 30/11/16 curve is due to OPEC's Vienna agreement. Notice that the latest curve (27/3/17) has a front-end value between the Nov 11th and Nov 30th curves.

Concluding remarks

- The Saudis remain in a difficult position.
- By cutting output – especially without much help from others – US shale production will take off once more.
- If the Saudis try again to fight for market share, they will have to change drastically their spending habits.
- ‘Fracking’ has been the game-changer and tight oil’s breakeven costs have fallen substantially.
- Growing oil demand could help oil prices higher, but environmentalism is trying to reduce the use of hydrocarbons everywhere.
- Oil (and gas) prices are unlikely to stray far from current levels over the next few years, barring supply disruptions or a further tightening of OPEC’s output.