Energy February meet in June 2018. The withheld barrels under the current agreement would result in a sharp fall in oil prices, suggesting to maintain the recent price gains, they have to extend their output cut until the end of 2018; releasing rebalancing the market and supporting the oil price. Finally, our results show that for OPEC/NOPEC importance for the strong oil demand momentum experienced in 2017 to carry on into 2018 for prices well above our baseline or reference forecasts. The results also show the paramount price, with a sharp fall in Venezuelan output constituting the biggest geopolitical risk that could push factor putting a ceiling on the oil price, while supply disruptions could provide some support to the oil supported at around $65/b. Our results show that for 2018, US shale output growth will be the key in 2017 and even with no change in current market dynamics, the oil price will continue to be stronger than expected oil demand and the OPEC/NOPEC output cuts have tightened the oil market $75/b, with a 2018 average price of $67/b. The baseline forecast suggests that the momentum of for Brent to trade within a narrow price range, with a price floor at above $60/b and a ceiling of below at the time of the forecast or some other hypothetical events. Our reference forecast scenario projects but rather modelled projections of various oil price risks conditional on certain events that are known considering various forecast scenarios. Forecast scenarios are not predictions of what will happen, aforenamed risks underlying the world oil market using a structural model of the oil market and in this Energy Insight, we analyse how the oil price path could evolve in 2018 by evaluating the aforementioned risks about how the oil price path could evolve in 2018, with some revising upwards their forecasts to higher than $80/b while others are less convinced that the market fundamentals can sustainably about the potential impact of higher oil prices on global oil demand; US shale supply response to the recent oil price rise; the OPEC/NOPEC exit strategy from the output cut agreement reached in November 2016; the extent of supply disruptions amid a fragile geopolitical environment. Yet, there is few days and all the key international crude oil benchmarks flipping into backwardation. Still a wide uncertainty engulfing the oil market, with very divergent views among market observers.
The blame game

Oil prices in Q1 2018 rose on average by $32/b (or 89%) from the trough in Q1 2016, up from $35/b to $67/b, and are currently hovering around $75/b.

Largely supported by the strong cyclical performance of the world economy, OPEC succeeded in accelerating the market rebalancing by its high compliance due to voluntary and involuntary cuts; albeit some are blaming OPEC for overtightening the market and pushing prices “artificially Very High”.

On the one hand, the US president puts forth the risks of higher prices at the pump affecting consumer spending, as well as the rising costs of oil-based raw materials.

On the other hand, KSA expressed concerns that the pricing signals that come out of the recovery are so far not strong enough to stimulate global investment in upstream oil.

OPEC oil output policy will continue to be the key factor shaping expectations and influencing the price of oil in 2018.
Inventories in the eye of the beholder

OECD oil stocks are ineffective guide for OPEC policy

Although OPEC acknowledges that it is close to meeting its goal of returning OECD oil inventories to their 5-year average levels, KSA, Russia and the current President of the OPEC conference (UAE) have called this target ineffective on its own in guiding their output policy, though recognising that the market needs a simple, observable and measurable indicator.

Some of the problems are that this is not a well defined target in the sense that the 5-year average is a moving target, OECD oil stocks do not paint a clear global supply-demand picture, they are lagged and backward-looking indicators and don’t filter outliers.

Most importantly, stock movements are best seen as merely symptoms of a number of underlying oil supply and oil demand shocks, for example:

- Assume that OPEC has reached its inventory target however measured, but expects demand to slowdown; should it exit the output cut deal?
- Clearly the answer is “no” and hence, the level of inventories is a poor guide for OPEC policy decision in such situations.

Discussions of other measures to gauge the OPEC+ deal success include:

- Non-OECD oil stocks including oil stored at sea and in pipelines;
- 7- and 10-year average of oil stocks;
- Number of days of forward consumption; and
- Excluding the recent periods of high stock levels from the historical average.

While the market still needs such a visible – albeit imperfect – indicator, OPEC should retain the flexibility of considering alternative metrics.
Even if OPEC decides to include the 7-year or 10-year averages to the stock-cut target, the differences from the 5-year average are negligible; oil stocks are ranging between 60-80 mbbls in excess.

Excluding however periods of high stock levels from the 5-year average shows that stocks held are still relatively high. For March 2018, for e.g., excluding the 2015-16 period from the 5-year average raises the stocks overhang by 100 mbbls.
OPEC’s doubts about the ineffectiveness of the OECD oil stocks is validated when looking oil demand growth in non-OECD countries relative to the OECD. The former constituting 80% of global demand growth.

The current market tightness is largely supported by geopolitical disruptions in crude oil supply. If the latter ease, the market will return to an oversupply state; albeit more than halved since 2014.
Geopolitics and Oil Prices

Geopolitical risks begin to have an impact on prices

Our forecasts scenarios show that the latest $5/b oil price increase in April 2018 (as of the week-ending April 23, 2018) most likely reflected a geopolitical risk premium.

In fact, the baseline forecast projected that in the absence of any unexpected s-d shocks the price of oil would have fallen instead of increasing in April by $3/b, down to $63/b (from $66/b in March).

Simulating a number of different upside s-d shocks, all else remaining equal, the April price is more responsive to geopolitical risks in the form of either unexpected disruptions in crude oil production (possibly from Venezuela) and/or unexpected increases in the precautionary demand for oil triggered primarily by the US threats or renewed sanctions against Iran.

The latter shock is consistent with the heightened geopolitical uncertainty in the Middle East witnessed in April, following the US-led intervention in Syria and fears of spillover effects to the region, increased tensions between Saudi Arabia and the Houthi militias, as well as the US-threat to withdraw from the Iranian nuclear deal re-imposing sanctions that could lead to a loss between 0.2 – 0.4 mb/d of Iranian oil exports.

In a rising market, the impact of news about future supply disruptions on stock demand and oil prices is far more severe relative to a falling market.

This evidence underscores that the recent oil price increase did not only reflect a tightening of supply-demand balances with geopolitical risks having a bigger impact on prices in a tighter market.

<table>
<thead>
<tr>
<th>Forecast Scenarios</th>
<th>OPEC+ deeper cuts</th>
<th>Strong demand</th>
<th>Geopolitical risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEC production (US shale: +0.1 mb/d)</td>
<td>- 0.2 mb/d</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>World liquids demand (m-o-m)</td>
<td>-</td>
<td>+1.5 mb/d</td>
<td>-</td>
</tr>
<tr>
<td>Supply disruptions: (Venezuela and/or Iran)</td>
<td>-</td>
<td>-</td>
<td>-0.3 mb/d</td>
</tr>
</tbody>
</table>

Forecast scenarios of the Brent price for April 2018

Data: OIES
The spare capacity “cushion”

OPEC spare capacity

Although the OPEC output cuts restored most of the lost spare capacity of 2015-16, the spare capacity buffer remains significantly low in historical terms as the oil market grows larger.

Net differences between OPEC spare capacity and production growth since December 2016

Absent new upstream capacity additions, OPEC output cuts do not translate into proportional growth of its spare capacity as part of the withheld output will not be available to the market.
Hard choices for OPEC

Heightened uncertainty complicates OPEC’s policy choices

The heightened market uncertainty brought about largely by the potential of a renewal of US sanctions against Iran and an escalation of the trade tensions between the US and China, increase the range of uncertainties facing OPEC.

### Assumptions

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Reference (OPEC+ exit)</th>
<th>Reference (No exit)</th>
<th>Exit + Bear demand</th>
<th>Exit + No Geopolitical</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEC+ production (as of July 2018)</td>
<td>+ 1.8 mb/d</td>
<td>-</td>
<td>+ 1.8 mb/d</td>
<td>+ 1.8 mb/d</td>
</tr>
<tr>
<td>US Shale production (year-end)</td>
<td>+ 1.5 mb/d</td>
<td>+ 1.5 mb/d</td>
<td>+ 1.5 mb/d</td>
<td>+ 1.5 mb/d</td>
</tr>
<tr>
<td>World liquids demand (y-o-y)</td>
<td>+ 1.5 mb/d</td>
<td>+ 1.5 mb/d</td>
<td>+ 1.0 mb/d</td>
<td>+ 1.5 mb/d</td>
</tr>
<tr>
<td>Supply disruptions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VEN: 0.2 mb/d / IRN: 0.3 mb/d</td>
<td>- 0.5 mb/d</td>
<td>- 0.5 mb/d</td>
<td>- 0.5 mb/d</td>
<td>-</td>
</tr>
</tbody>
</table>

- The oil price will average in 2018, if the OPEC+ exit is supported by strong demand amid the further deterioration of the geopolitical context. $\$63.5/b$
- The oil price is projected to fall to year-end, if the OPEC+ exit is met by weaker-than-expected global demand, despite higher geopolitical tensions. $\$31.6/b$
- Will be the annual oil price loss in 2018 relative to the reference exit case, if OPEC+ were to exit the deal but geopolitical disruptions eased. $\$9.62/b$
- Unless OPEC deepens its cuts, the potential of renewed US sanctions to Iran is the most visible upside risk for an $\$80/b oil price year-end. $\$80/b$

### Price impact of the OPEC+ exit under alternative scenarios

- Forecast scenarios as of March 2018
- Data: OIES

- Actual Brent
- Reference (OPEC+ exit)
- Exit + Bearish demand
- Exit + No geopolitical disruptions
- Reference (No exit)
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Andreas Economou, Research Associate, OIES

April 2018

Oil Price Paths in 2018: The Interplay between OPEC, US Shale and Supply Interruptions

Abstract

2018 started on a positive note for oil markets with Brent prices breaking through $70 a barrel for a few days and all the key international crude oil benchmarks flipping into backwardation. Yet, there is still a wide uncertainty engulfing the oil market, with very divergent views among market observers about how the oil price path could evolve in 2018, with some revising upwards their forecasts to higher than $80/b while others are less convinced that the market fundamentals can sustainably support a price above $70/b, expecting a lower path in the mid $60/b. The key uncertainties behind these divergent views mainly pertain to different views about:

- The OPEC/NOPEC exit strategy from the output cut agreement reached in November 2016;
- US shale supply response to the recent oil price rise;
- The potential impact of higher oil prices on global oil demand;
- The extent of supply disruptions amid a fragile geopolitical environment.

In this Energy Insight, we analyse how the oil price path could evolve in 2018 by evaluating the aforementioned risks underlying the world oil market using a structural model of the oil market and considering various forecast scenarios. Forecast scenarios are not predictions of what will happen, but rather modelled projections of various oil price risks conditional on certain events that are known at the time of the forecast or some other hypothetical events. Our reference forecast scenario projects for Brent to trade within a narrow price range, with a price floor at above $60/b and a ceiling of below $75/b, with a 2018 average price of $67/b. The baseline forecast suggests that the momentum of stronger than expected oil demand and the OPEC/NOPEC output cuts have tightened the oil market in 2017 and even with no change in current market dynamics, the oil price will continue to be supported at around $65/b. Our results show that for 2018, US shale output growth will be the key factor putting a ceiling on the oil price, while supply disruptions could provide some support to the oil price, with a sharp fall in Venezuelan output constituting the biggest geopolitical risk that could push prices well above our baseline or reference forecasts. The results also show the paramount importance for the strong oil demand momentum experienced in 2017 to carry on into 2018 for rebalancing the market and supporting the oil price. Finally, our results show that for OPEC/NOPEC to maintain the recent price gains, they have to extend their output cut until the end of 2018; releasing the withheld barrels under the current agreement would result in a sharp fall in oil prices, suggesting that OPEC/NOPEC should be very wary about unwinding the output cut agreement when they next meet in June 2018.