Oil Supply Shock in the time of the Coronavirus

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Combination of demand and supply shocks having severe impact on prices and spreads

Brent spot price

Source: OIES, EIA

Time spreads

Source: OIES

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Extreme price movements and heightened volatility

Biggest one-day percent drops in WTI

West Texas Intermediate (WTI) had its third-worst day in history on March 18, measured by one-day percent decline.

<table>
<thead>
<tr>
<th>Date</th>
<th>Percent Decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 17, 1991</td>
<td>-30%</td>
</tr>
<tr>
<td>March 9, 2020</td>
<td>-25%</td>
</tr>
<tr>
<td>March 18, 2020</td>
<td>-20%</td>
</tr>
<tr>
<td>September 24, 2001</td>
<td>-15%</td>
</tr>
<tr>
<td>January 7, 2009</td>
<td>-10%</td>
</tr>
<tr>
<td>December 20, 2000</td>
<td>-5%</td>
</tr>
<tr>
<td>September 23, 2008</td>
<td>0%</td>
</tr>
<tr>
<td>December 17, 1998</td>
<td>5%</td>
</tr>
<tr>
<td>November 15, 2001</td>
<td>10%</td>
</tr>
<tr>
<td>April 23, 2003</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: CNBC

One day percentage change in WTI

<table>
<thead>
<tr>
<th>Date</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar. 19 2020</td>
<td>23.8%</td>
</tr>
<tr>
<td>Dec. 22 2008</td>
<td>17.8%</td>
</tr>
<tr>
<td>Sep. 22 2008</td>
<td>15.7%</td>
</tr>
<tr>
<td>Mar. 23 1998</td>
<td>15.3%</td>
</tr>
<tr>
<td>Aug. 04 1986</td>
<td>15.1%</td>
</tr>
<tr>
<td>Sep. 16 2019</td>
<td>14.7%</td>
</tr>
<tr>
<td>Aug. 06 1990</td>
<td>14.5%</td>
</tr>
<tr>
<td>Dec. 31 2008</td>
<td>14.3%</td>
</tr>
<tr>
<td>Feb. 19 2009</td>
<td>14.0%</td>
</tr>
<tr>
<td>Jan. 22 1991</td>
<td>13.5%</td>
</tr>
</tbody>
</table>

Source: CNBC

▲ Oil surges 23% to post best day ever, rebounding from Wednesday’s steep losses

▼ Oil falls 24% in 3rd worst day on record, sinks to more than 18-year low

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Forward curve flips into contango and freight rates jump

ICE Brent forward curves

Mideast Gulf westbound VLCC rates

Source: Argus
Physical differentials weaken as some buyers struggle to place their barrels

Urals NWE v Dated Brent

[Graph showing price movements over time]

Bonny Light v Dated Brent

[Graph showing price movements over time]

Source: OIES, Argus
An oil demand crisis
Demand factors key in shaping prices

Oil price drivers in Q1 2020E

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Annual oil demand to contract in 2020, but strong rebound in 2021

Global oil demand growth by scenario

Source: OIES
Even in the absence of the imminent oil supply shock, prices would have tested the low-$20/b

Global growth risks: Brent price forecast scenarios

Source: OIES
The oil supply shock
Saudi Arabia opens the floodgate

OPEC(10) crude production adjustments as of April 2020

Source: OIES

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Non-OPEC+ potential to increase output is limited

Non-OPEC(+) crude production adjustments as of April 2020

- Non-OPEC (+) 17.9 mb/d
- Azerbaijan 0.01 mb/d
- Kazakhstan 0.00 mb/d
- Mexico 0.03 mb/d
- Oman 0.06 mb/d
- Russia 0.23 mb/d
- Others 0.01 mb/d

Source: OIES
Saudi Arabia’s constant red line
Manage the market but only through collective action

Formation of OPEC+
Collective action should include non-OPEC producers (i.e. Russia)

Recent trends
More proactive approach and lower tolerance for non-compliance

Pro-active in face of acute demand shock
JTC first recommended 0.6 mb/d and then increased it to 1.5 mb/d for rest 2020 with main purpose to moderate the build-up of stocks

Russia showed no intent to deepen the cut (internal dynamics, concerns about losing share to US shale, free ride, cuts in current context will have no impact)
Awe campaign of maximum impact

**Saudi Arabia OSP, Arab Light**

**Saudi Arabia oil supply/demand profile**

Source: OIES, Oilytics

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Oil prices could test new lows before recovering

OPEC+ exit: Brent price forecast scenarios

USD/b

Jan-17 Jan-18 Jan-19 Jan-20 Jan-21

Source: OIES

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Oil price behavior under different proposals

OPEC+ proposals: Brent price forecast scenarios

USD/b

Source: OIES

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Short-term revenue calculus

OPEC+ proposals: KSA gross revenues

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Supply restriction only effective mechanism to balance the oil market in the short-term

OPEC+ policy reversal: Brent price forecast scenarios

Source: OIES

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If OPEC\(^+\) delivers a new output cutback agreement, the imbalance can correct

**OPEC\(^+\) policy reversal: Global balance**

- **Stock Chg + Misc (RHS)**
- **Supply**
- **Demand**

Source: OIES
If not, the current crisis could turn out to be one of the sharpest downturn cycles in the oil market history.
Reliance on price/market mechanism
Capex has already been falling prior the recent price crash

US shale capex revisions for 2020

Source: RBN Energy
US shale expected to carry the burden of adjustment, but is it enough?

US shale drilling activity

![Graph showing US shale drilling activity with data from January 2018 to January 2021. The graph includes bounds, reference, and previous month lines. The data source is OIES.]

US shale supply

![Graph showing US shale supply with data from January 2018 to January 2021. The graph includes bounds, reference, and previous month lines. The data source is OIES.]

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Non-OPEC supply outside the US will play a role, but only post-2021

Source: OIES

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Brent to deteriorate sharply in 2020 and only to gradually recover in 2021

Brent price outlook

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Market out of balance with extreme surpluses in 2020

Global supply/demand balance

Source: OIES
Energy Insight: 28
Bassam Fattouh, Director OIES & Andreas Economou, Research Associate, OIES

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.