Demand Shocks, Supply Shocks and Oil Prices: Implications for OPEC

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Since the start of 2019 the price trend has been upwards driven by supply outages, the Saudi cuts and rising geopolitical tensions. But the 10% price collapse in late-May from $70/b to the low $60/b shifted attention back to the demand side.

Market sentiment remains deeply divided with bullish views pointing towards a significant tightness in 2H19 due to supply losses (i.e. Iran, Venezuela) and bearish views citing downside risks to demand. Dislocation in expectations reflected in different signals from movements in price levels and time spreads.

Source: EIA, Argus, OIES
Not all oil price shocks are alike
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Treating supply-demand shocks as equal is misleading

- There is plenty of empirical evidence to suggest that supply and demand shocks are not alike and do not have the same impact on oil prices, neither in terms of magnitude nor in duration.

Decomposing the oil price to its key determinants:

**Geopolitical (or exogenous) supply shocks**
- Unexpected supply disruptions that are caused by geopolitical episodes.

**Endogenous supply shocks**
- Supply shocks that arise due to the output decisions of oil producers involving their ability and/or willingness to counter unexpected market imbalances by adjusting supplies.

**Flow demand shocks**
- Shocks to oil demand for immediate consumption associated with fluctuations in the global business cycle.

**Speculative demand shocks**
- Shocks to stock demand arising from the forward-looking behaviour of market participants, as well as shifts in precautionary demand.

Average response of the Brent price to a one-time oil supply and demand shock (IRFs)

Notes: All shocks are normalised to imply an increase in the oil price.

Source: OIES
Geopolitical supply shocks appear to have a significant impact on prices, but they tend to be resolved in the short-run by increased production elsewhere due to higher prices or spare capacity releases (see IRF). Historically geopolitical episodes failed to produce large and persistent price increases, especially during periods of weak demand and abundant spare capacity. Since 2016 the trend has been upwards, as the nature of disruptions became more persistent due to sanctions (progressively squeezing barrels out of the market), but in 2019 it has reversed.

Source: OIES
Endogenous supply shocks

Historical contribution of endogenous supply shocks on the Brent price changes, Jan 00 – May 19

Endogenous supply shocks are the most important and persistent contributors on the supply side (see IRFs). Historically, they exerted significant pressure on oil prices in both directions, most notably around the mid-2000s when stagnating global supplies were caught up by strong demand and more recently with the emergence of US shale glutting the market. OPEC’s attempt to counter the oversupply situation since 2017 has balanced the pressure on prices, albeit prices are more responsive during periods in which US growth unexpectedly slows down (e.g. 2016/19).

Notes: Cumulative contribution over time. The solid line shows how the oil price would have evolved, if all structural shocks but the shock in question had been turned off. The dashed lines show the cumulative change in the real Brent price caused by all structural shocks.
Flow demand shocks

Historical contribution of flow demand shocks on the Brent price changes, Jan 00 – May 19

On the demand side, flow demand shocks are associated with the most large and persistent impact on oil prices changes (see IRFs). The strong demand growth in the 2000s has helped push and sustain higher prices. The immense force with which flow demand shocks can unexpectedly hit the market is emphatically demonstrated in 2008, as almost $85/b out of the total $106/b oil price that collapsed within six months (between June to December 2008) can be attributed to negative flow demand shocks. Since late-2014, positive demand pressure on prices has been easing with the trend moving downwards and falling sharply in recent months.

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Speculative demand shocks

Historical contribution of speculative demand shocks on the Brent price changes, Jan 00 – May 19

Speculative demand shocks have no large systematic contribution to the evolution of the oil price (see IRF). Yet, they appear to aggravate volatility around any given trend and pose significant challenges for the formation of expectations by confusing the signals. Since May 2018, and the US withdrawal from the JCPOA, physical speculative demand has been maintaining some upward pressure on prices reflecting expectations of tighter market conditions, but in May 2019 this contribution turned negative signaling a downward revision in expectations.

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Since December 2018, the monthly Brent price increased by $13/b (to May 2019), mainly supported by OPEC cuts ($12/b) and to a lesser extent by geopolitical disruptions ($6/b) and physical speculative demand ($3/b).

That said, weaker than expected global demand trimmed over $8/b out of the Brent price in 2019 and continues to pose the most significant challenge for price prospects. Accordingly, the downward revision of market expectations in May pushed prices lower by $3/b.

Source: OIES
Oil price risks ahead
Geopolitical shocks can’t maintain a sustained price rise on their own

OPEC supply disruptions, Jan 17 – May 19

Geopolitical supply disruptions in May continued their gradual increase reaching 3.5 mb/d. Iranian output has now collapsed by 1.6 mb/d relative to a year ago, while Venezuelan output fell to a historical low of 0.81 mb/d.

Supplies at risk v. implied OPEC spare capacity, (OPEC spare capacity estimates as of May 2019)

In the absence of a major geopolitical event and given expected trends, the supplies at risk for the remainder of the year, estimated at 0.8 mb/d, can be matched by OPEC spare capacity.

Source: IEA, OIES
Overcompliance in May 2019 from OPEC* producers rose to 145%, as producers continued to hold back production by about 1.7 mb/d, 0.5 mb/d more than pledged.

Saudi Arabia continues to restrain production, since March 2019 by about 0.6 mb/d less than pledged, even though it increased exports by 0.2 mb/d. Despite high compliance, total “cheating” in May reached 0.45 mb/d.
Could US shale surprise again on the upside?

US crude production at the start of 2019 fell by 0.3 mb/d, before returning to growth. Lower oil prices and pipeline constraints remain a concern for the remainder of the year, but growth in 2019 is expected to reach a healthy 1.2 mb/d.

The US rig count continued to fall, much in line with recent price swings, but the record-high number of drilled but uncompleted wells (DUCs) and the increased pipeline capacity could provide a boost in 2H19 despite fewer rigs in service.
Prospects of oil demand growth weakening

Global oil demand growth, 1Q17 – 4Q19E

Source: IEA, IMF, OIES

Global demand for 2019 has been revised downwards to 1.2 mb/d y-o-y, 0.25 mb/d lower than a year ago, mainly due to global economic growth concerns and escalating trade tensions.

Global economic growth, 1H18 – 2H20E

Source: IEA, IMF, OIES

Global growth forecast for 2019 is revised downwards for a third time since last year, from 3.9% to 3.3%. IMF projects a decline in growth for 70% of the global economies with considerable uncertainties in the short term.
Trade tensions weigh heavily on growth prospects in 2H19

The unresolved US-China trade tensions and the resulting increase in tariff barriers, dampens growth prospects for the remainder of the year and is now the greatest risk to the outlook.

Based on IMF calculations, failure to resolve the trade dispute, will leave both the US and China worse off and negative effects will spillover to third countries, world trade, investors confidence and financial market sentiment.

Source: Kilian (2009), Davis (2016), IMF, OIES
Speculative pressures aggravate volatility

Speculative pressures on Brent, Jan 18 – May 19

So far in 2019, expectations of tighter market conditions alone pushed monthly Brent prices higher by about $2/b on average, similar to 2018. That said, the reversal of these expectations has been far more disruptive as evident in December 2018 (-$6/b) and May 2019 (-$3/b).

Impact on OECD stocks by a hypothetical 0.3 mb/d rise in precautionary demand

Fears about future supply-demand tightness increase precautionary demand and push prices higher. Unless such losses materialise, they could present OPEC with more problems looking into 2020 if these inventories are released back into the market.

Source: OIES
What this means for OPEC and Saudi Arabia?
OPEC choices are rather limited

An extension of the current cuts till the end of 2019 is already priced in. This is the most comfortable option that OPEC could eventually adopt and even if the market tightens in the 2H19, Saudi Arabia retains its flexibility to fill the gap while preserving the agreement.

OPEC has a strong record playing the balancing act under favourable market conditions. But should global economic prospects deteriorate further, then its choices will become starker and the balancing act will become extremely challenging.

Source: OIES
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.