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STUDIES

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

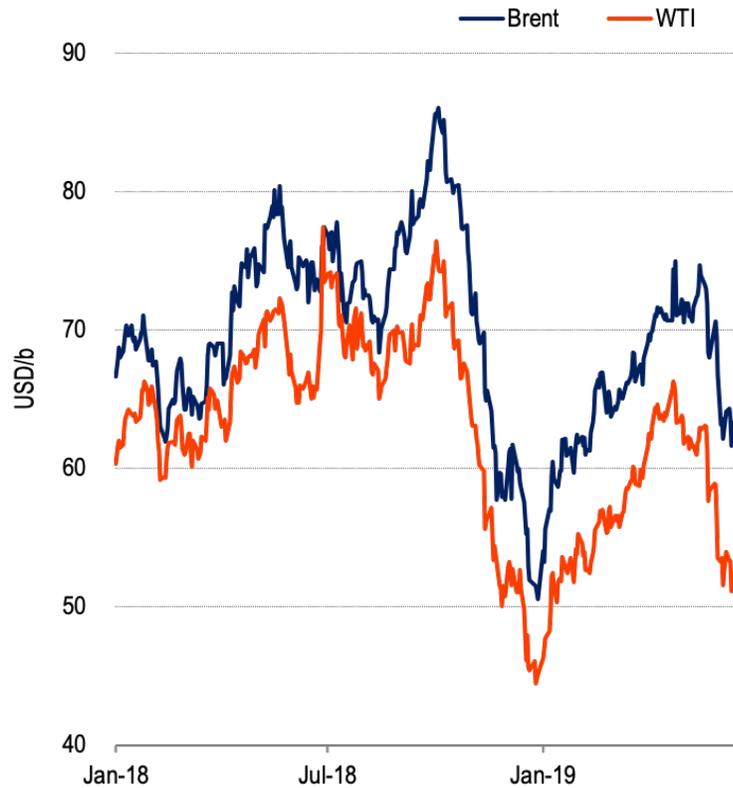
Bassam Fattouh and Andreas Economou
Oxford Institute for Energy Studies

Oxford Institute for Energy Studies, Oxford UK, 26 June 2019



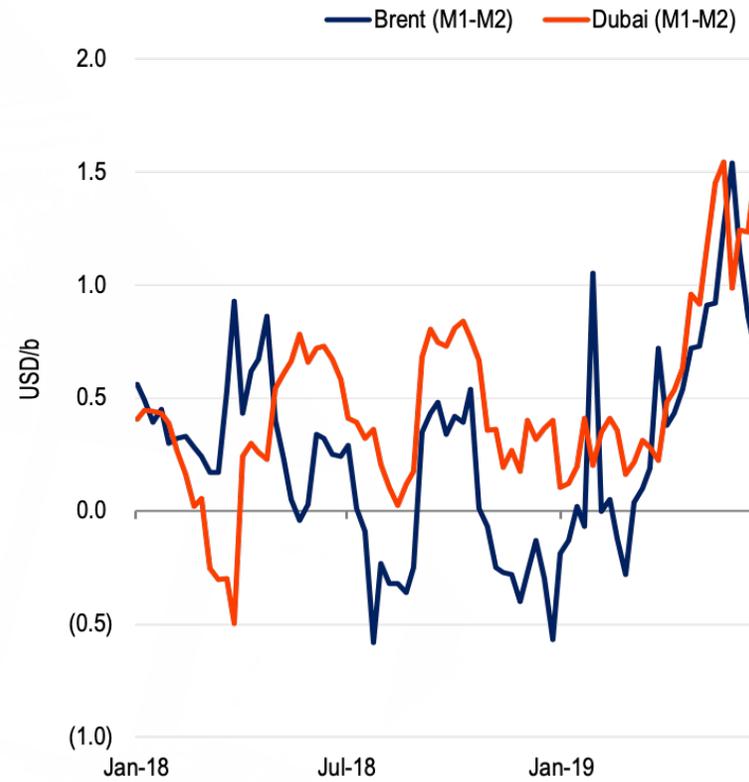
Tug of war

Daily spot prices, Jan 18 – Jun 19

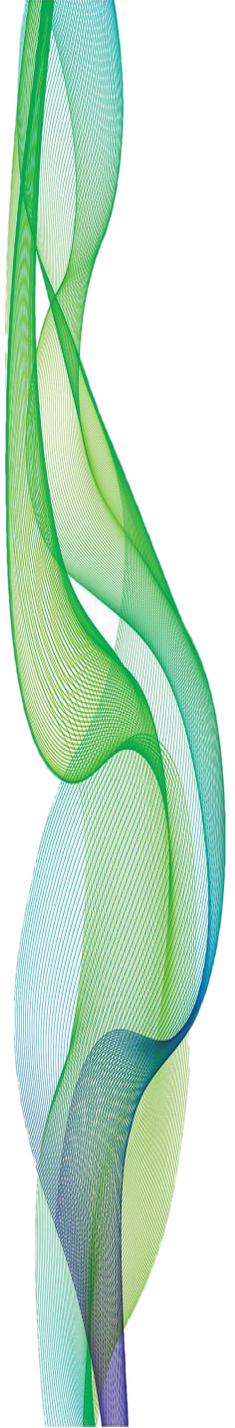


Since the start of 2019 the price trend has been upwards driven by supply outages, the Saudi cuts and rising geopolitical tensions. But the 10% price collapse in late-May from \$70/b to the low \$60/b shifted attention back to the demand side.

Time spreads, Jan 18 – Jun 19

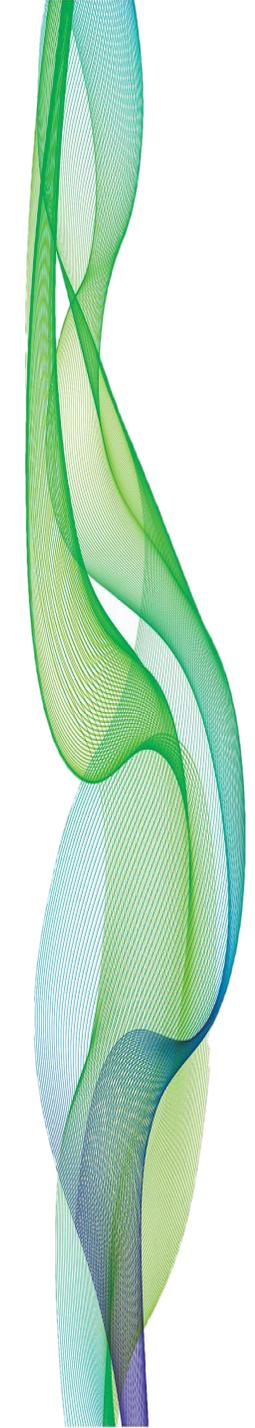


Market sentiment remains deeply divided with bullish views pointing towards a significant tightness in 2H19 due to supply losses (i.e. Iran, Venezuela) and bearish views citing downside risks to demand. Dislocation in expectations reflected in different signals from movements in price levels and time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





Not all oil price shocks are alike





Not all oil price shocks are alike

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.

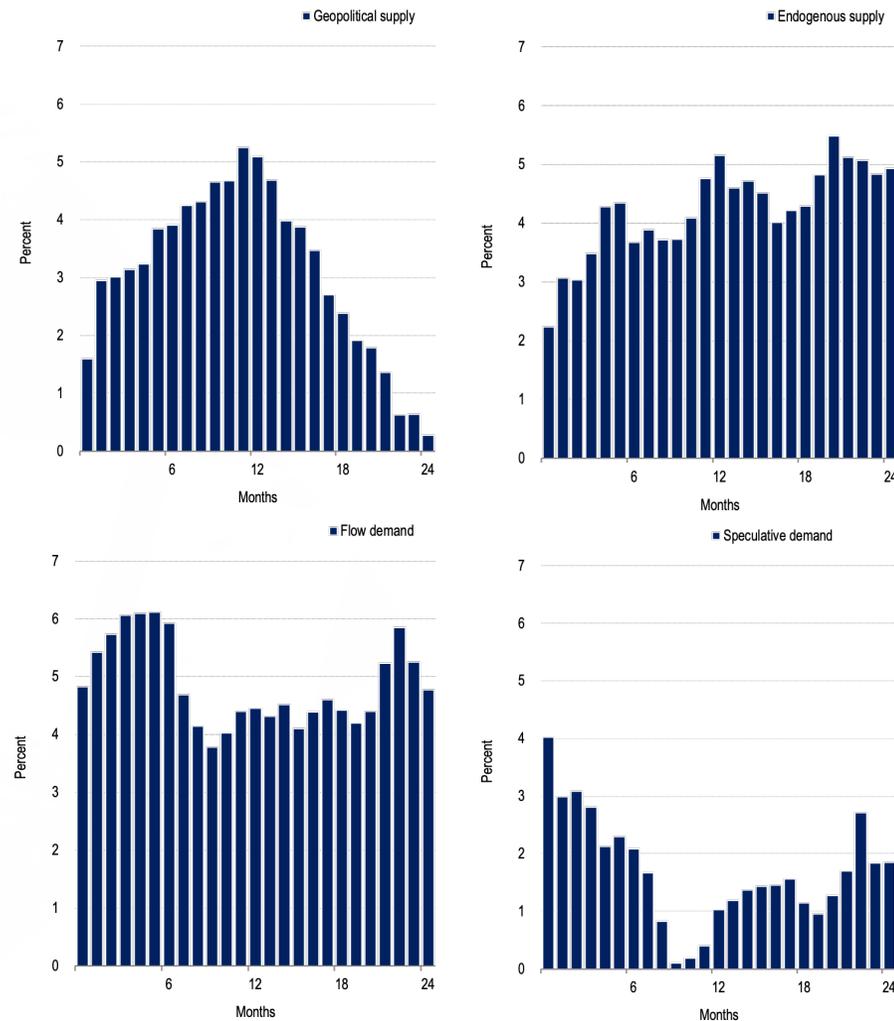
Flow demand shocks

- 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)



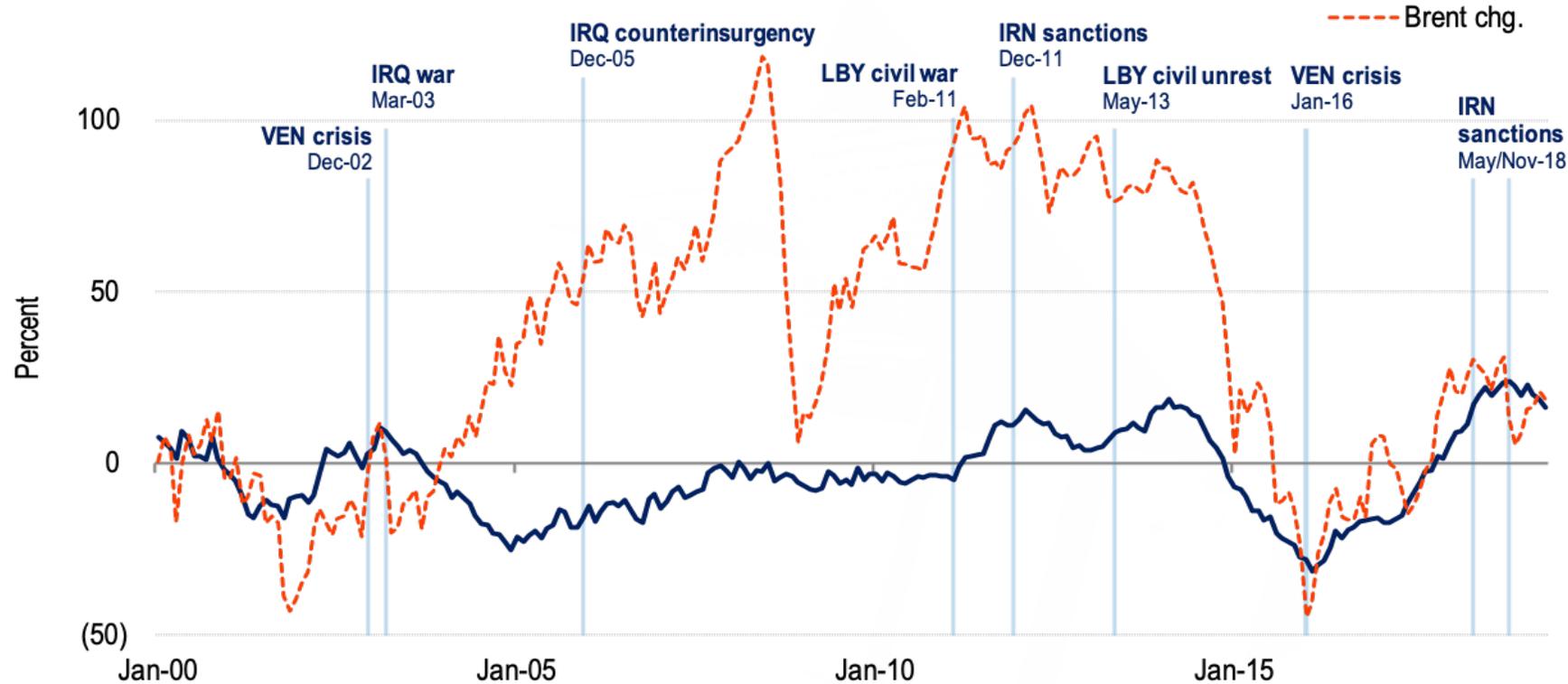
Notes: All shocks are normalised to imply an increase in the oil price.

Source: OIES



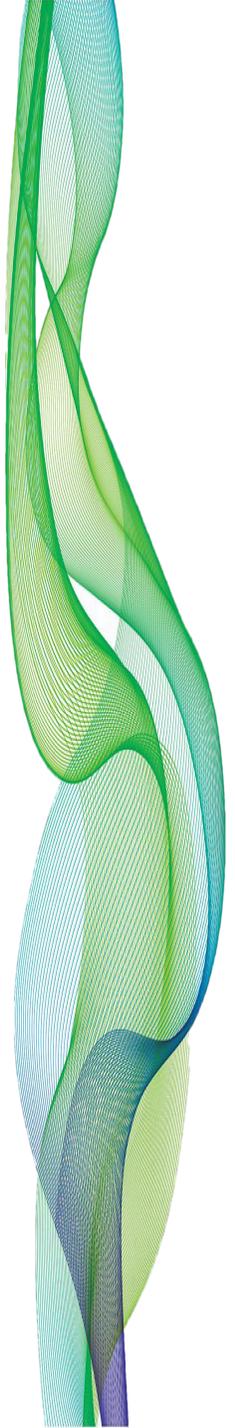
Geopolitical supply shocks

Historical contribution of geopolitical supply shocks on the Brent price changes, Jan 00 – May 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.

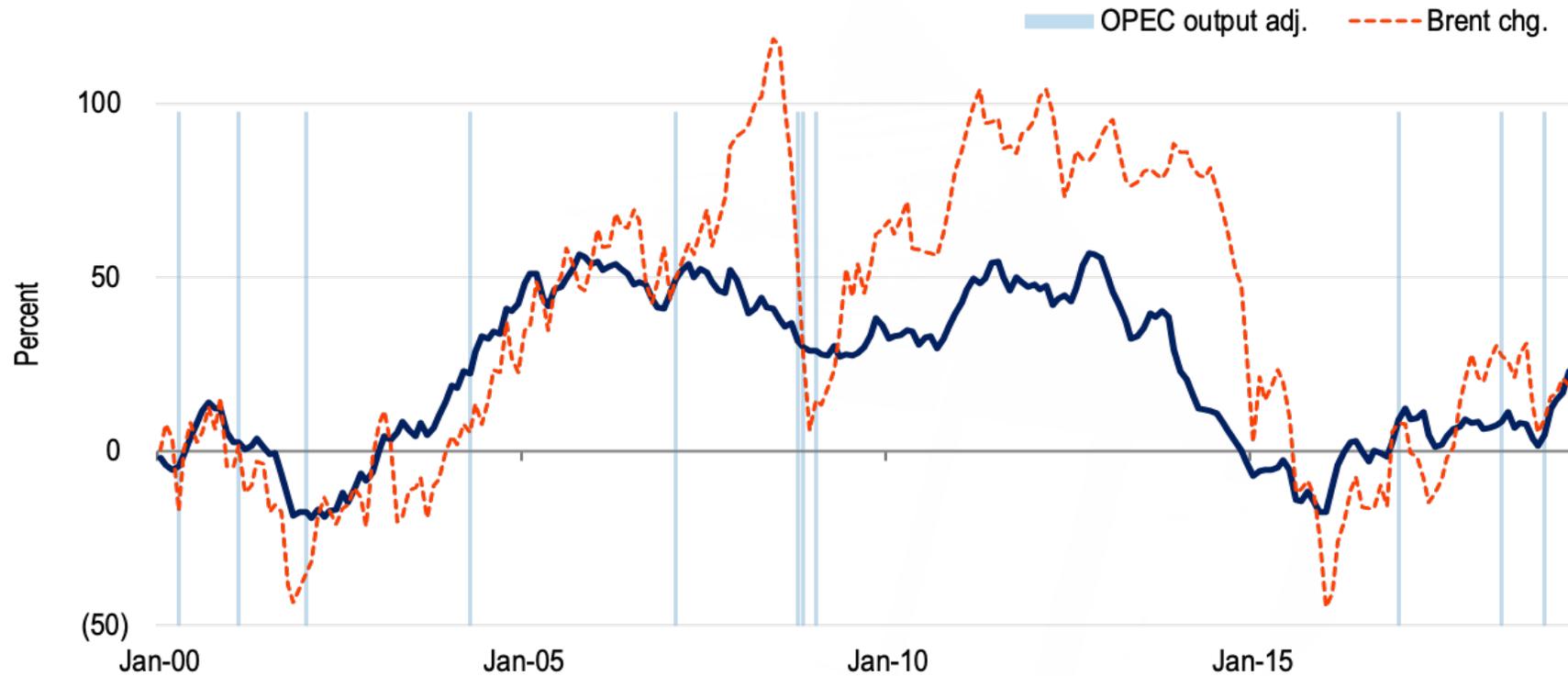
Geopolitical supply shocks appear to have a significant impact on prices, but they tend to be resolved in the short-run by increased production elsewhere due to higher prices or spare capacity releases (see IRF). Historically geopolitical episodes failed to produce large and persistent price increases, 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.





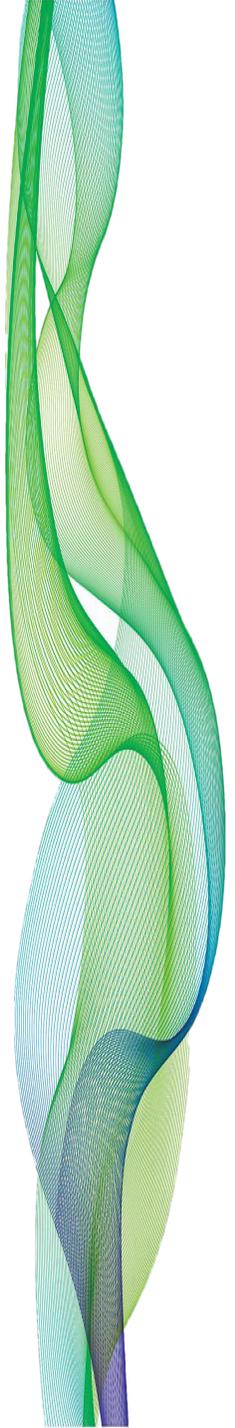
Endogenous supply shocks

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

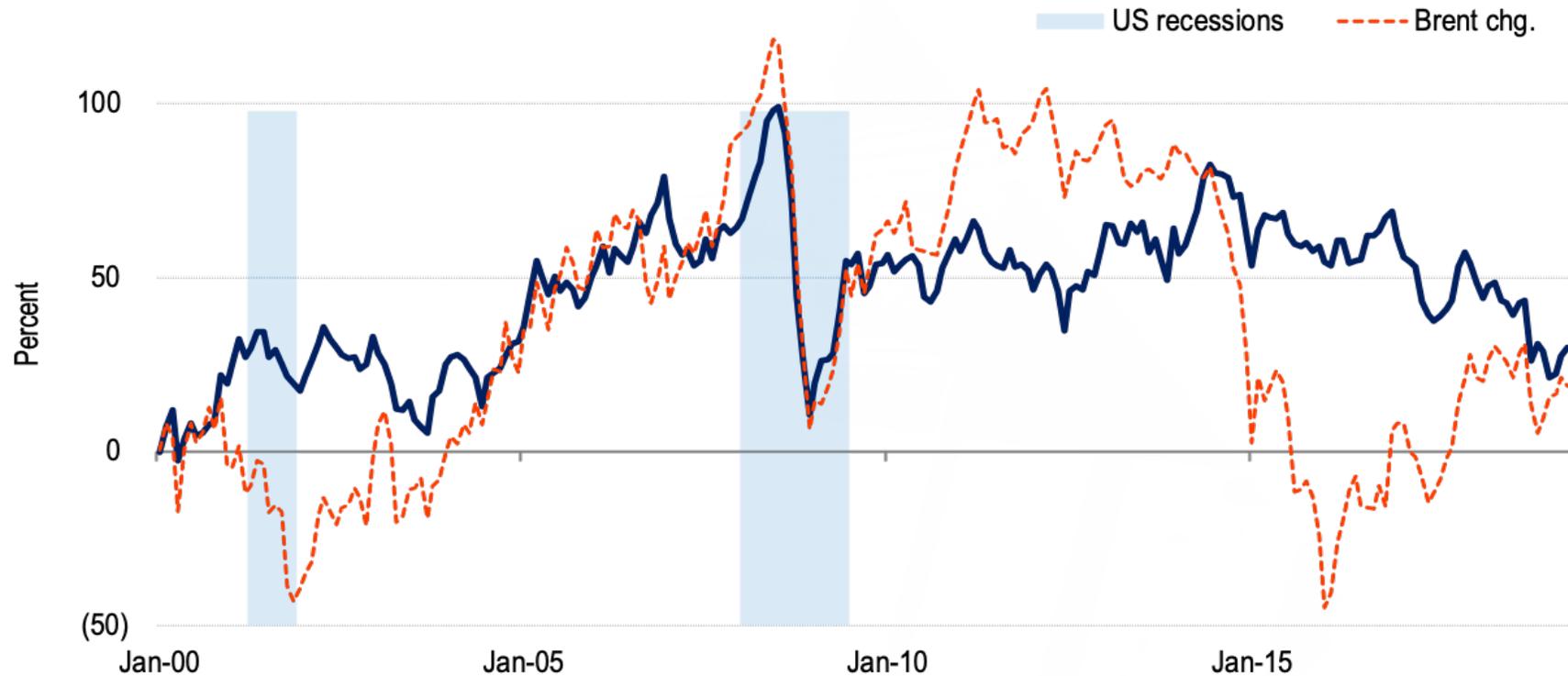
Endogenous supply shocks are the most important and persistent contributors on the supply side (see IRFs). Historically, they exerted significant pressure on oil prices in both directions, most notably around the mid-2000s when stagnating global supplies were caught up by strong demand and more recently 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).





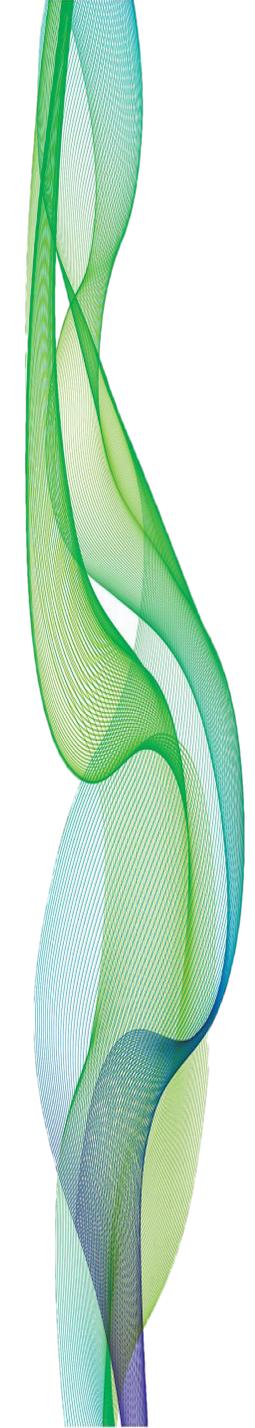
Flow demand shocks

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

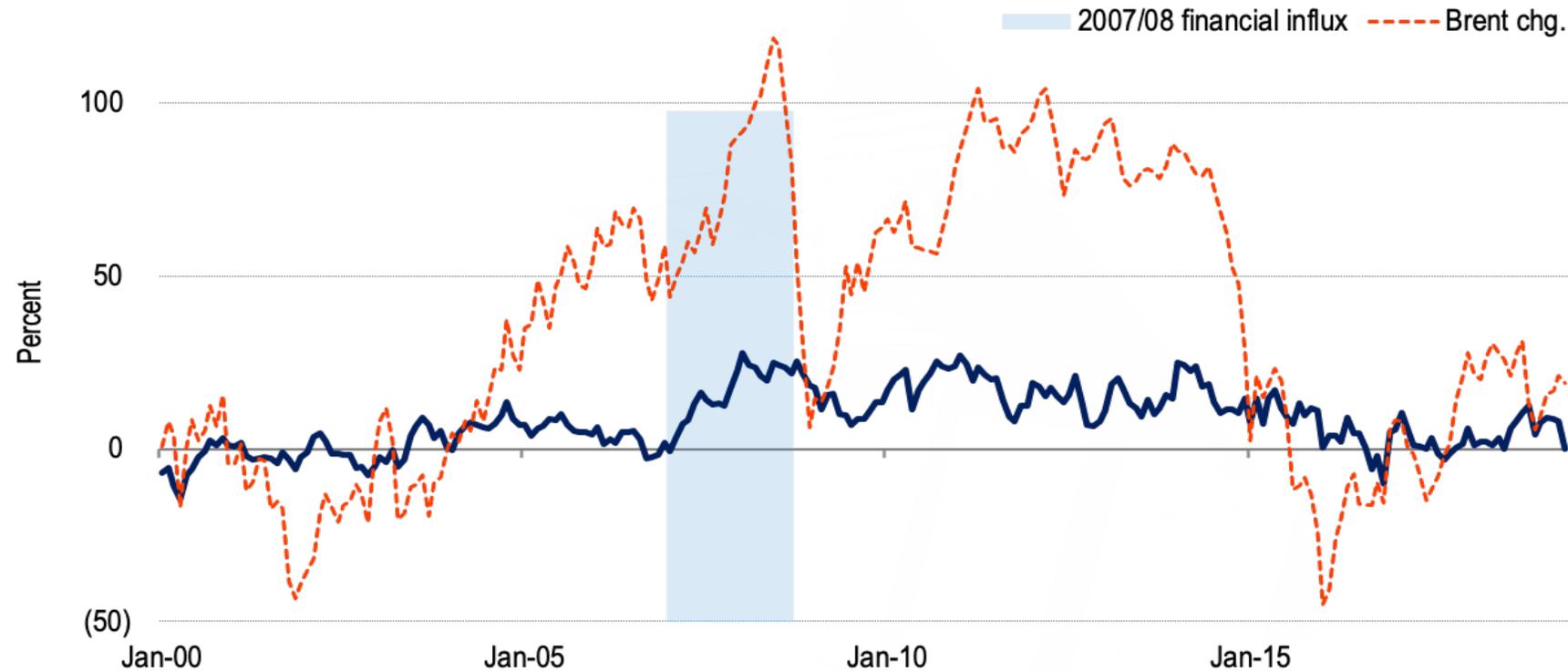
On the demand side, flow demand shocks are associated with the most large and persistent impact on oil prices changes (see IRFs). The strong demand growth in the 2000s has helped push and sustain higher prices. The immense force with which flow demand shocks can unexpectedly hit the market is emphatically 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.





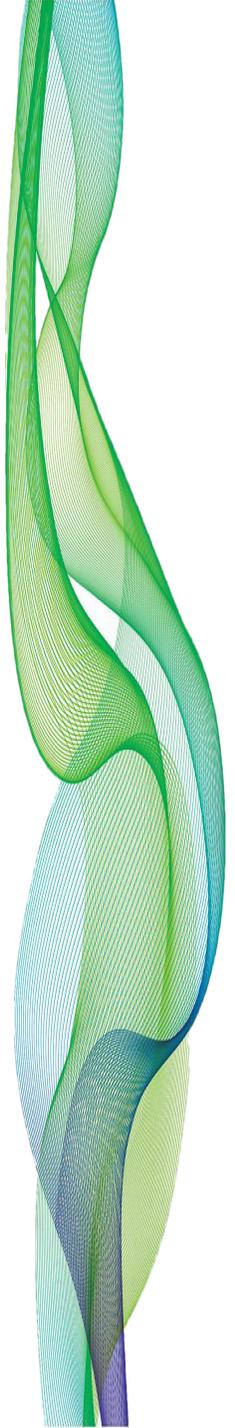
Speculative demand shocks

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

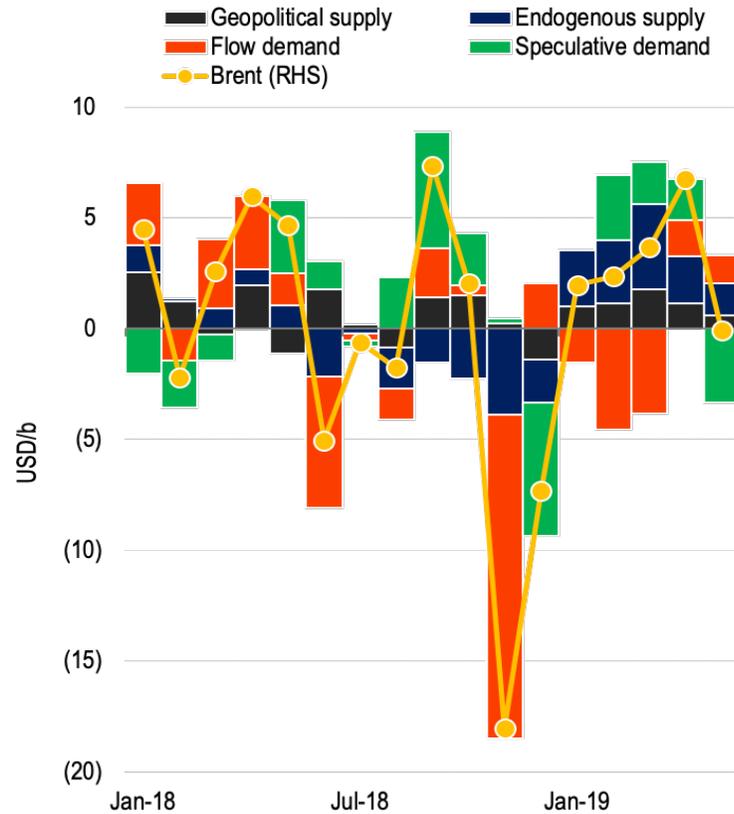
Speculative demand shocks have no large systematic contribution to the evolution of the oil price (see IRF). Yet, they appear to aggravate volatility around any given trend and pose significant challenges for the formation of expectations by confusing the signals. Since May 2018, and the US withdrawal 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.





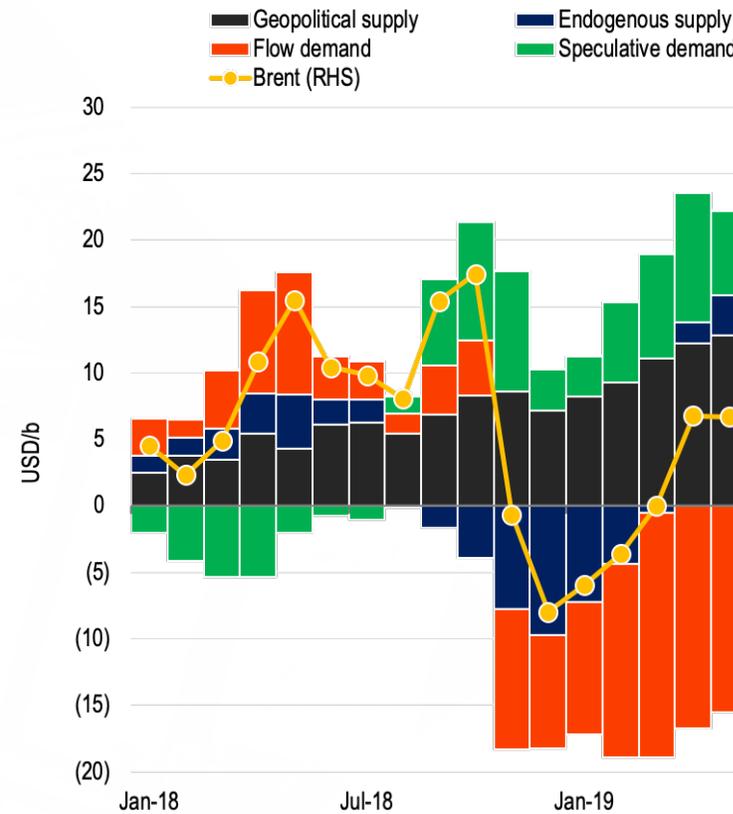
Oil price drivers in 2019

Oil price drivers (m/m change), Jan 18 – May 19

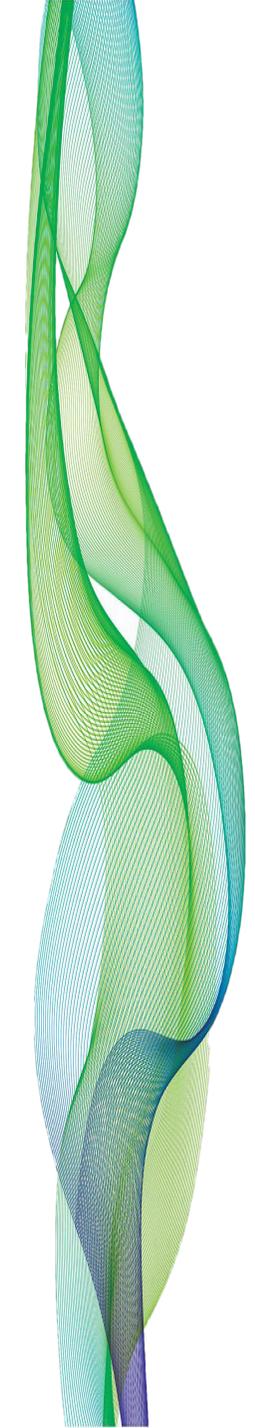


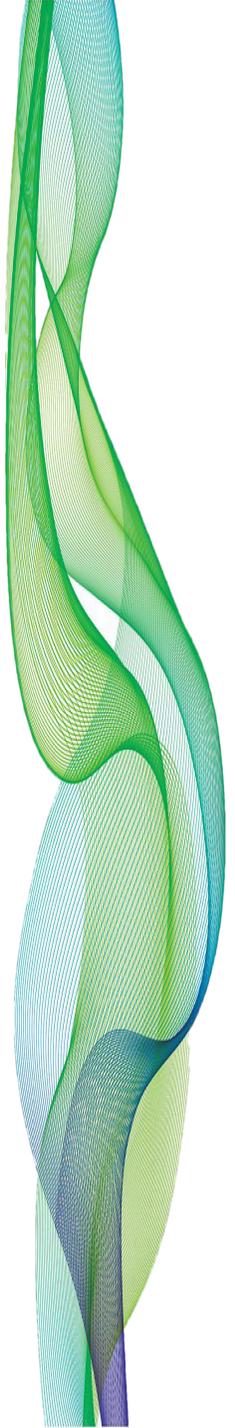
Since December 2018, the monthly Brent price increased by \$13/b (to May 2019), mainly supported by OPEC cuts (\$12/b) and to a lesser extent by geopolitical disruptions (\$6/b) and physical speculative demand (\$3/b).

Oil price drivers (cum. contribution), Jan 18 – May 19



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.

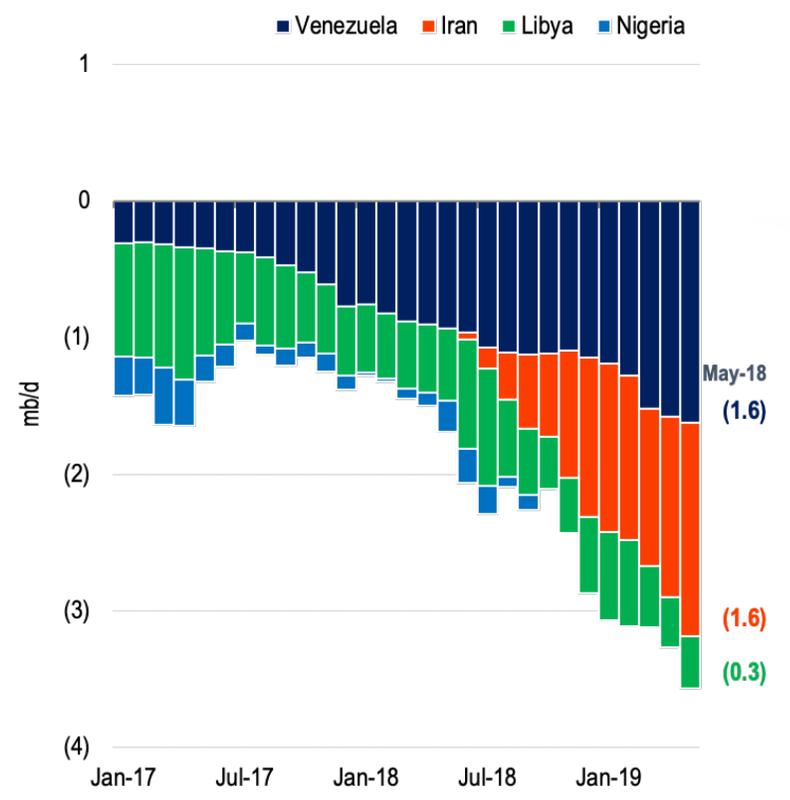


 | Oil price risks ahead



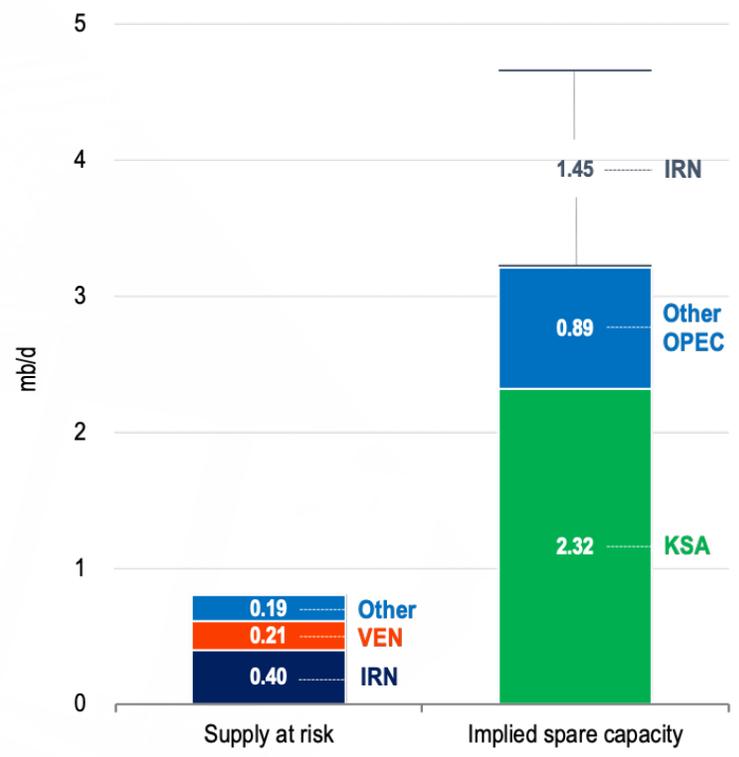
Geopolitical shocks can't maintain a sustained price rise on their own

OPEC supply disruptions, Jan 17 – May 19

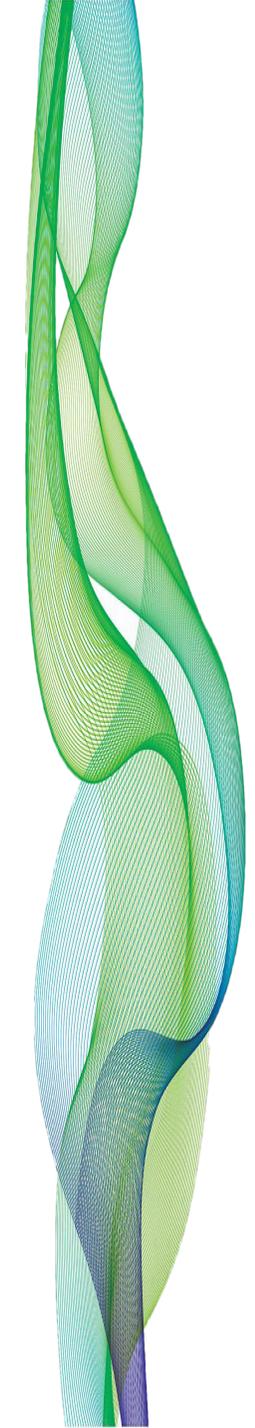


Geopolitical supply disruptions in May continued their gradual increase reaching 3.5 mb/d. Iranian output has now collapsed by 1.6 mb/d relative to a year ago, while Venezuelan output fell to a historical low of 0.81 mb/d.

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



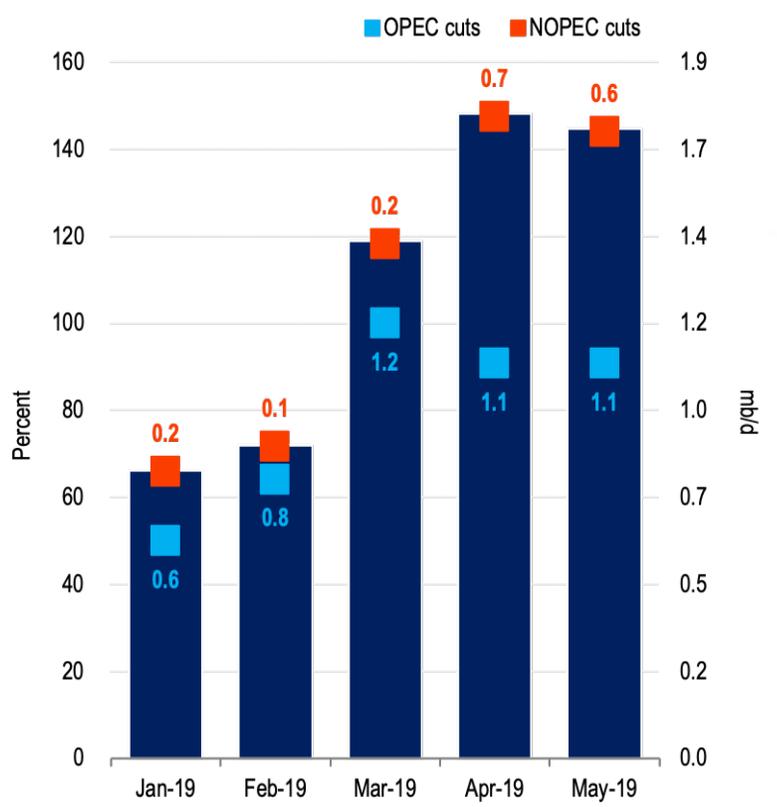
In the absence of a major geopolitical event and given expected trends, the supplies at risk for the remainder of the year, estimated at 0.8 mb/d, can be matched by OPEC spare capacity.





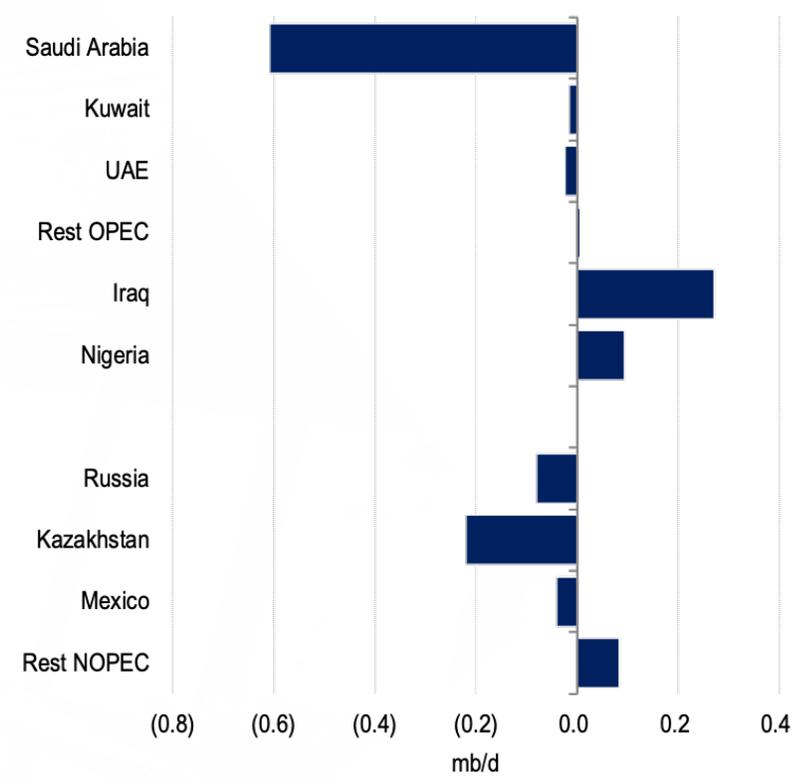
Overcompliance and flexibility to increase output w/out exiting the deal

OPEC+ output compliance, Jan – May 19

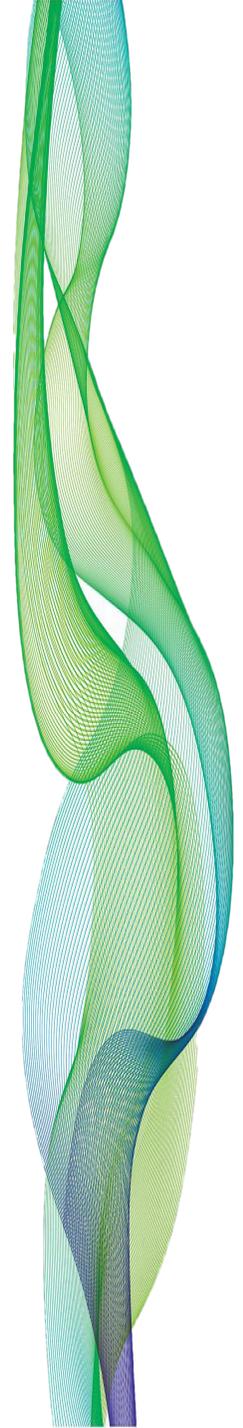


Overcompliance in May 2019 from OPEC+ producers rose to 145%, as producers continued to hold back production by about 1.7 mb/d, 0.5 mb/d more than pledged.

Actual cuts v. pledged targets in May 2019



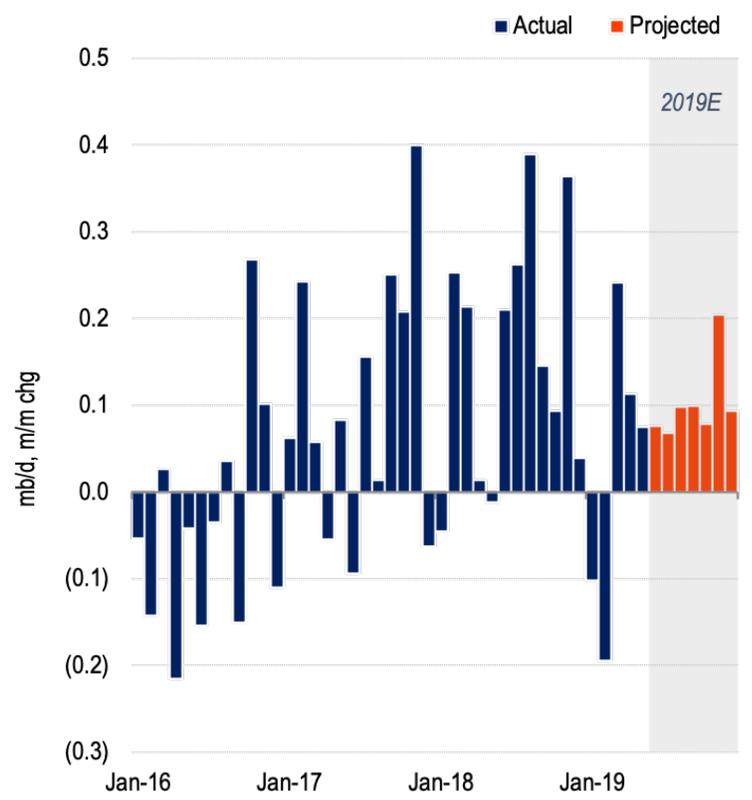
Saudi Arabia continues to restrain production, since March 2019 by about 0.6 mb/d less than pledged, even though it increased exports by 0.2 mb/d. Despite high compliance, total “cheating” in May reached 0.45 mb/d.





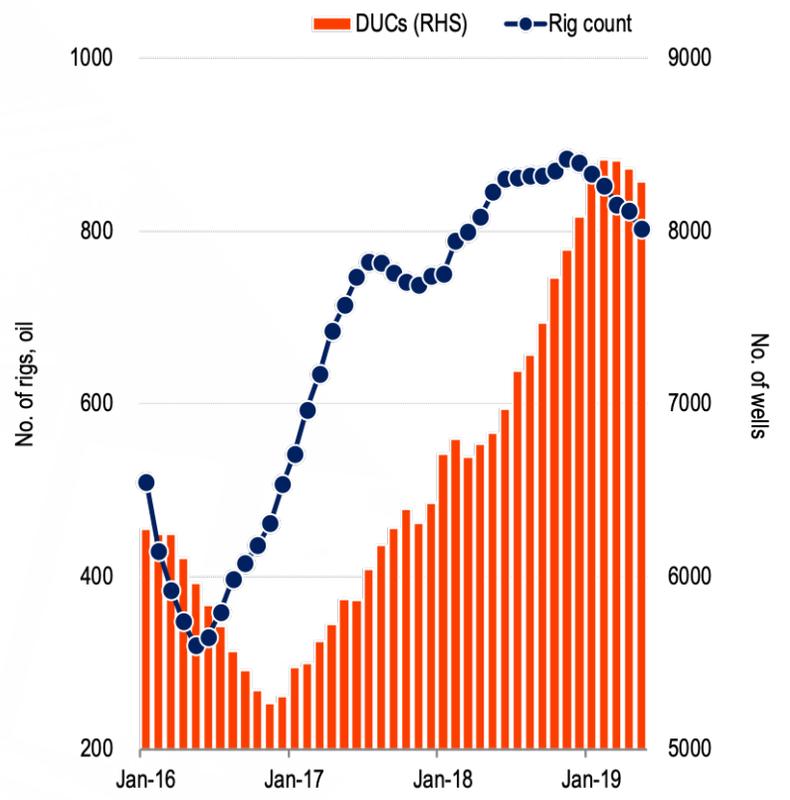
Could US shale surprise again on the upside?

US crude production, Jan 16 – Dec 19E

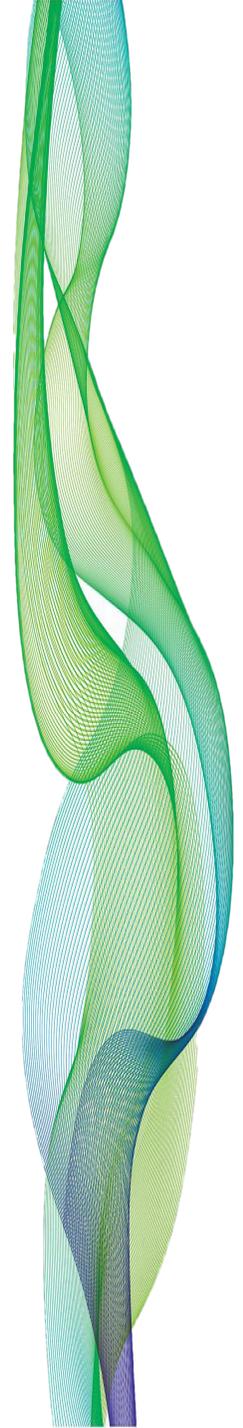


US crude production at the start of 2019 fell by 0.3 mb/d, before returning to growth. Lower oil prices and pipeline constraints remain a concern for the remainder of the year, but growth in 2019 is expected to reach a healthy 1.2 mb/d.

US drilling activity, Jan 16 – May 19



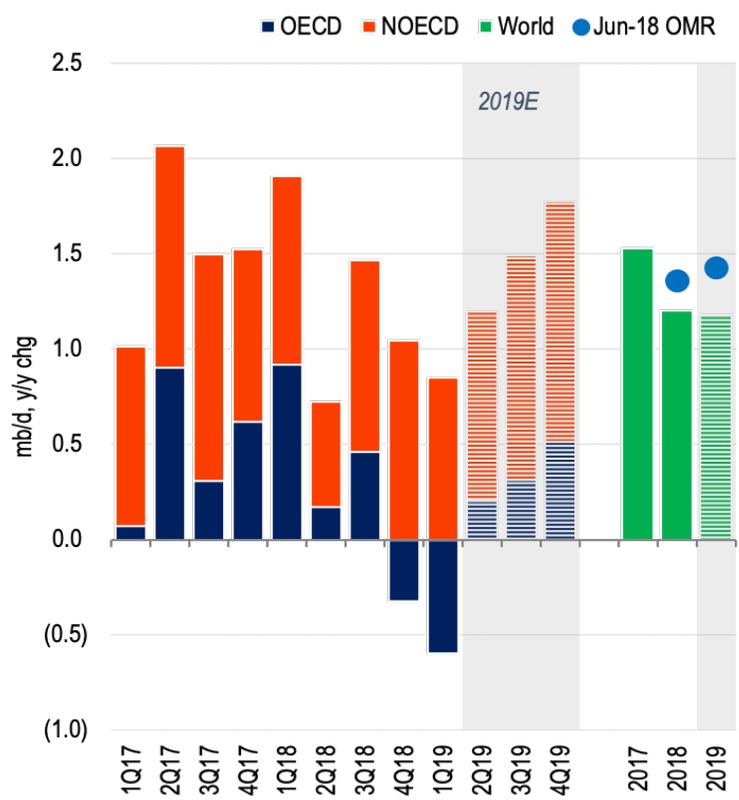
The US rig count continued to fall, much in line with recent price swings, but the record-high number of drilled but uncompleted wells (DUCs) and the increased pipeline capacity could provide a boost in 2H19 despite fewer rigs in service.





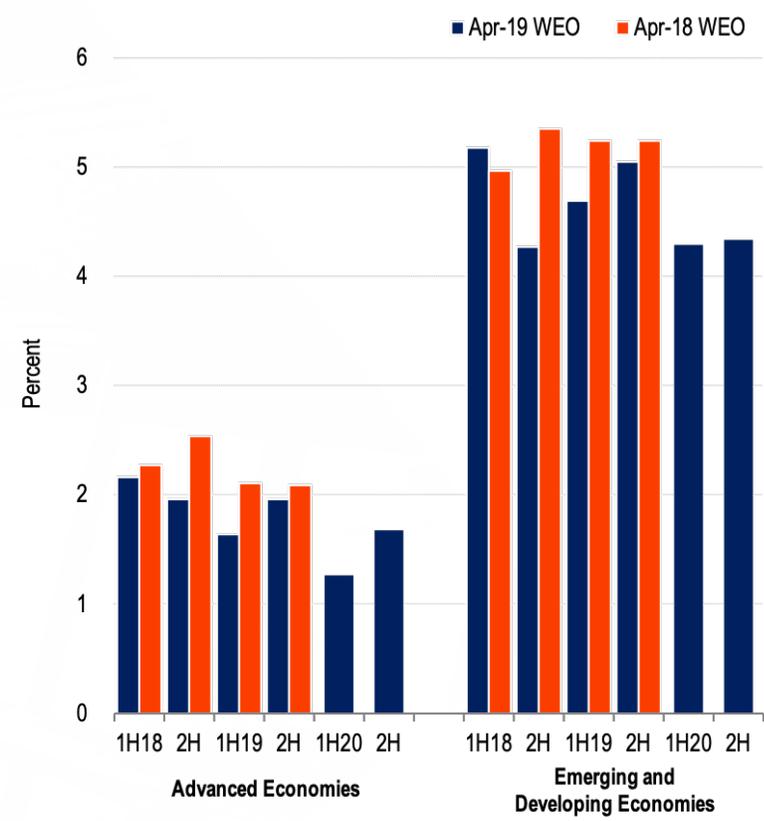
Prospects of oil demand growth weakening

Global oil demand growth, 1Q17 – 4Q19E

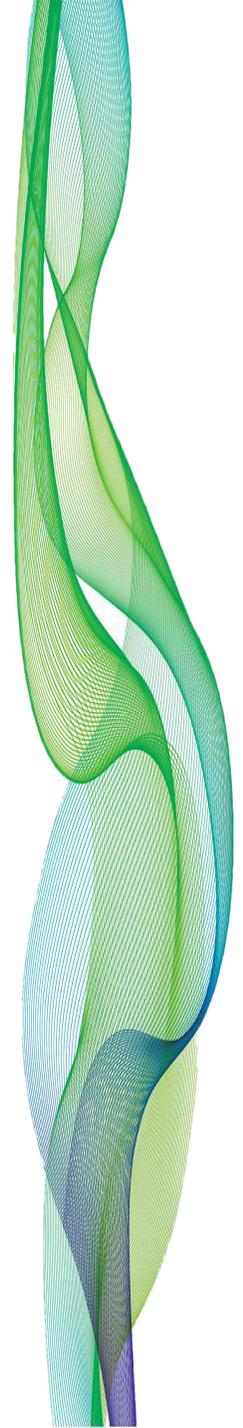


Global demand for 2019 has been revised downwards to 1.2 mb/d y-o-y, 0.25 mb/d lower than a year ago, mainly due to global economic growth concerns and escalating trade tensions.

Global economic growth, 1H18 – 2H20E



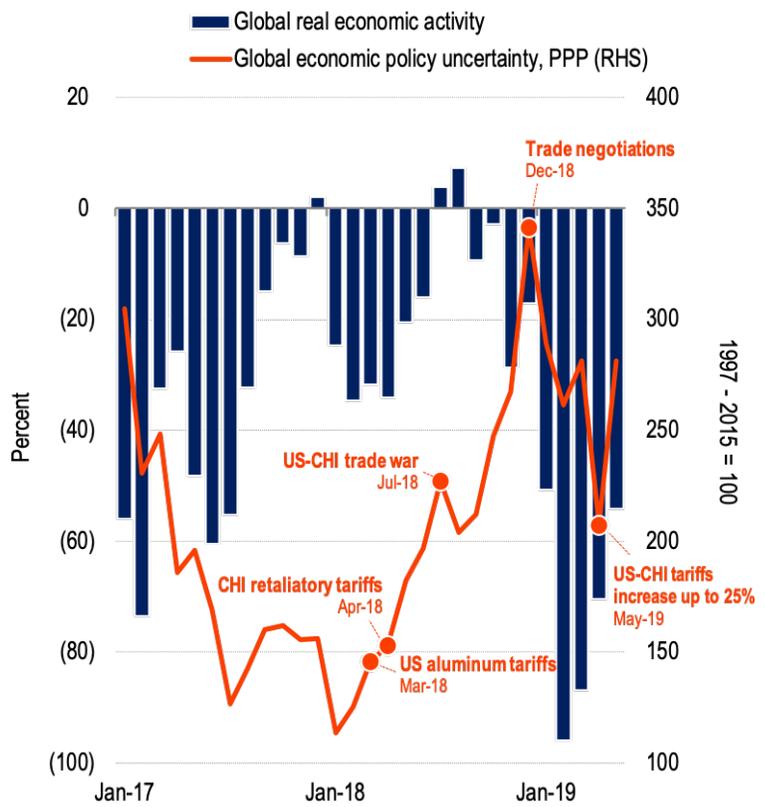
Global growth forecast for 2019 is revised downwards for a third time since last year, from 3.9% to 3.3%. IMF projects a decline in growth for 70% of the global economies with considerable uncertainties in the short term.



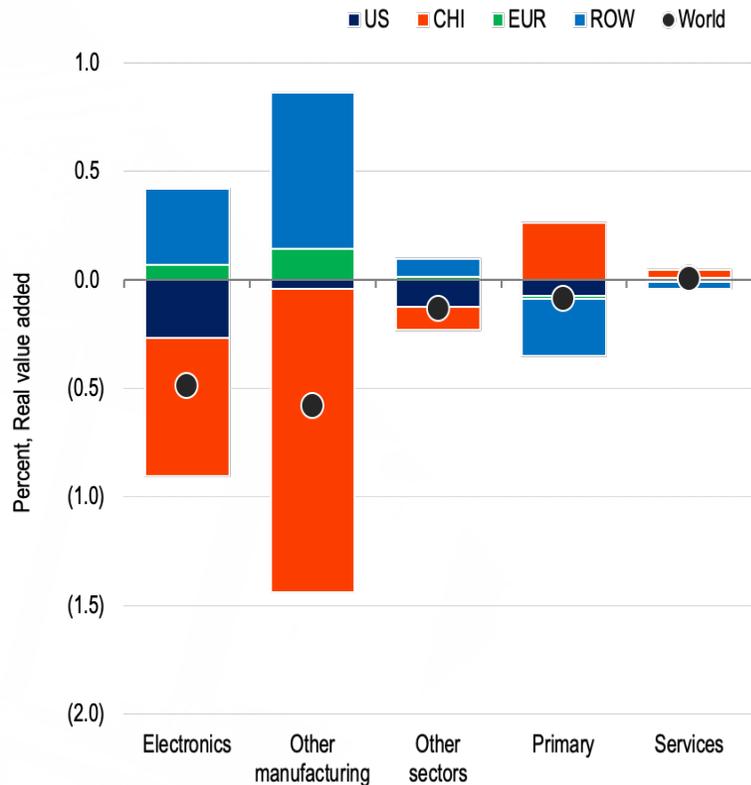


Trade tensions weigh heavily on growth prospects in 2H19

Global economic activity and policy uncertainty, Jan 17 – May 19

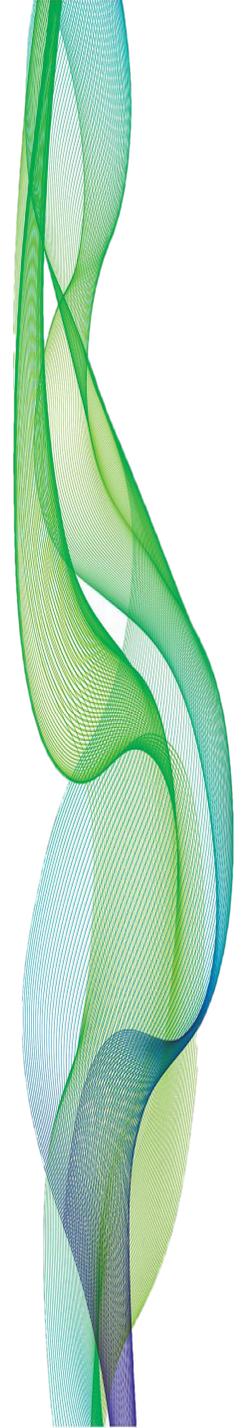


Sectoral effects from a 25% hike in tariffs affecting US-China trade (IMF calculations)



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.

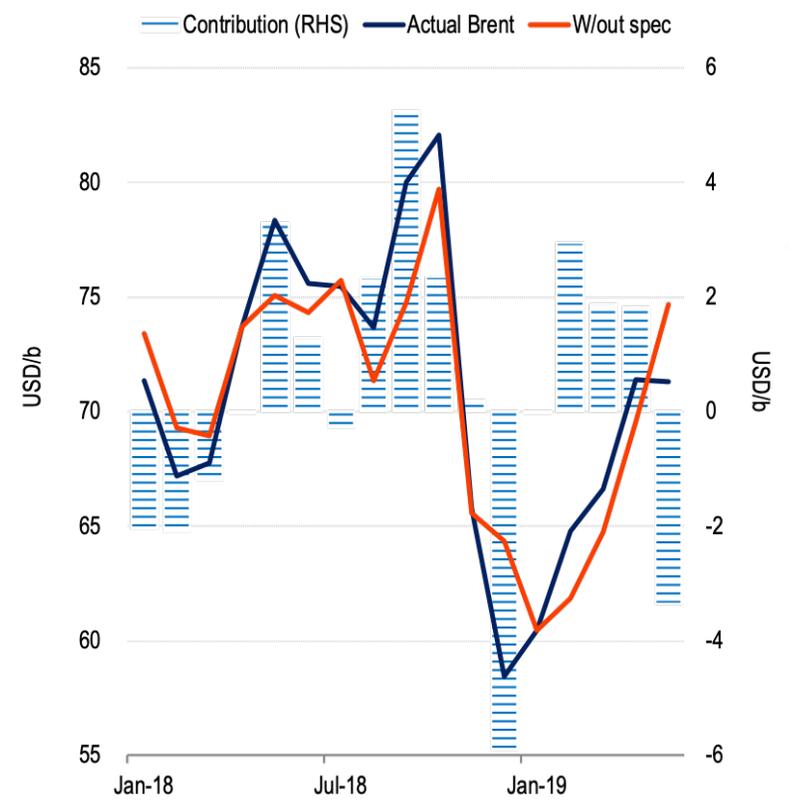
Based on IMF calculations, failure to resolve the trade dispute, will leave both the US and China worse off and negative effects will spillover to third countries, world trade, investors confidence and financial market sentiment.



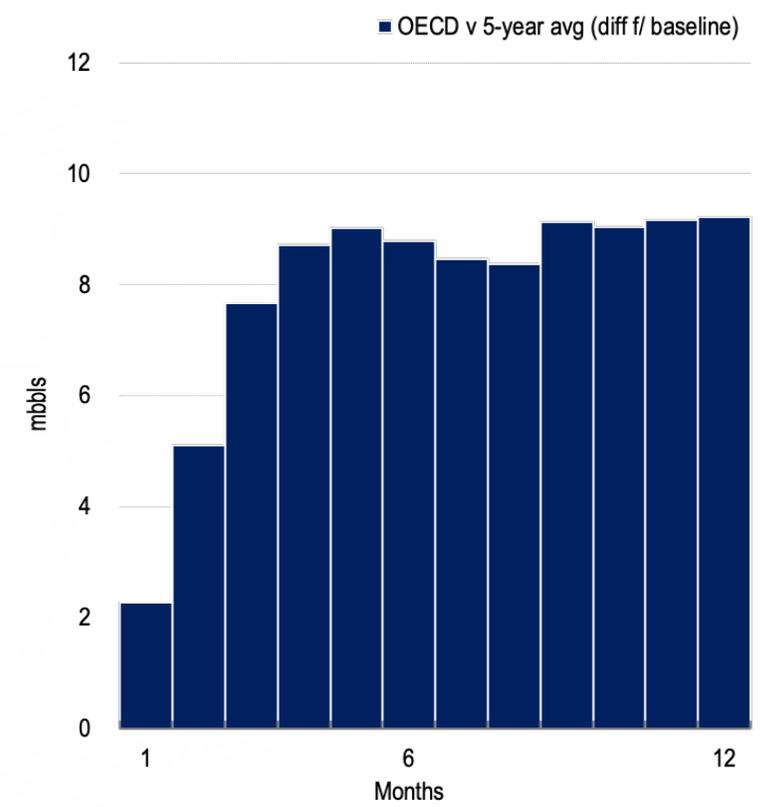


Speculative pressures aggravate volatility

Speculative pressures on Brent, Jan 18 – May 19



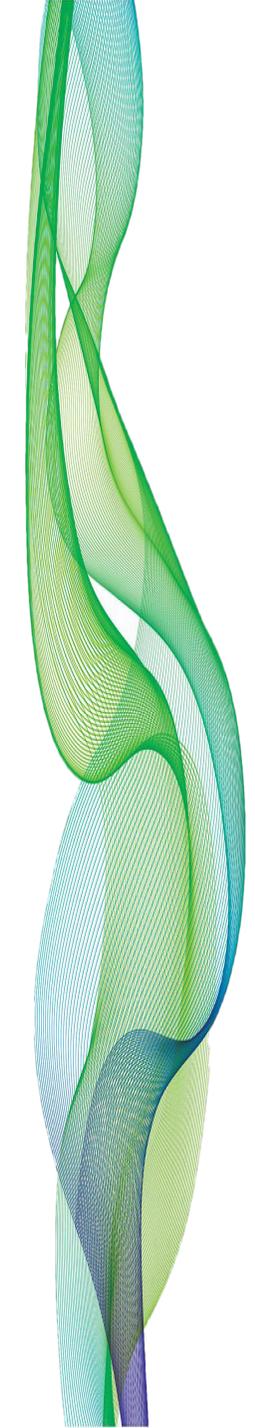
Impact on OECD stocks by a hypothetical 0.3 mb/d rise in precautionary demand



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).

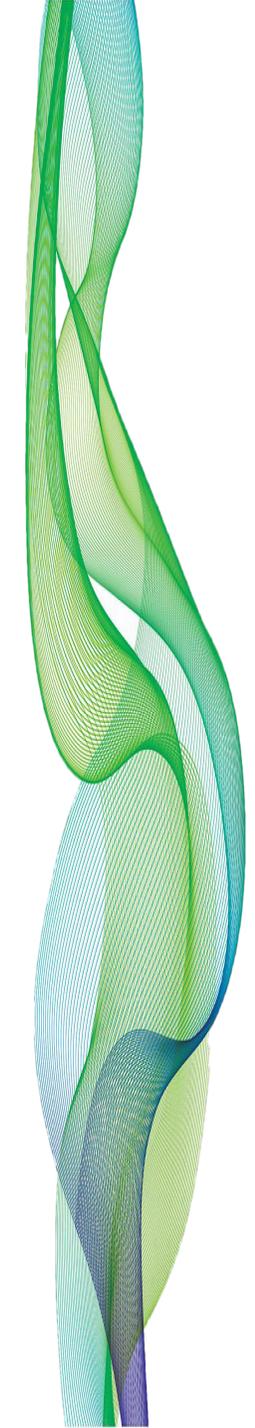
Fears about future supply-demand tightness increase precautionary demand and push prices higher. Unless such losses materialise, they could present OPEC with more problems looking into 2020 if these inventories are released back into the market.

Source: OIES





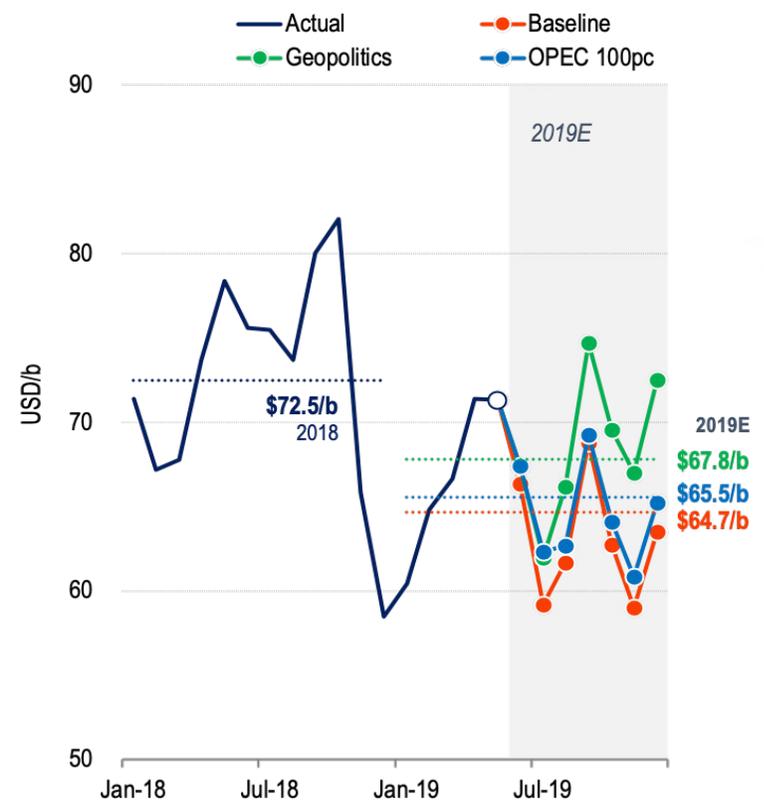
What this means for OPEC and Saudi Arabia?





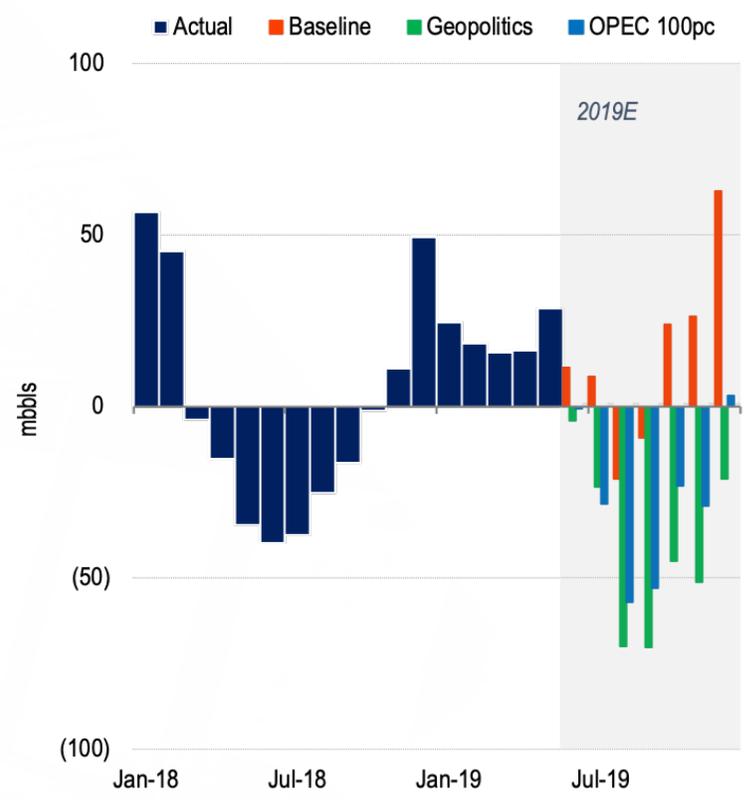
OPEC choices are rather limited

Brent price forecast scenarios, Jan 18 – Dec 19E

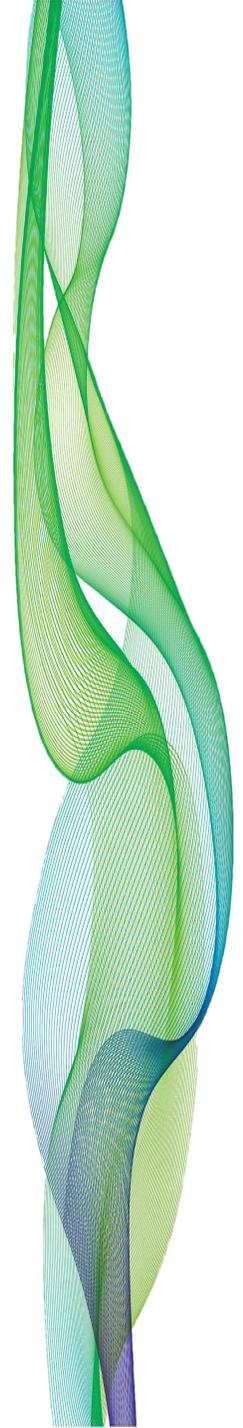


An extension of the current cuts till the end of 2019 is already priced in. This is the most comfortable option that OPEC could eventually adopt and even if the market tightens in the 2H19, Saudi Arabia retains its flexibility to fill the gap while preserving the agreement.

OECD stocks v 5-year avg in OPEC choices scenarios, Jan 18 – Dec 19E



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.



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Oxford Institute for Energy Studies

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