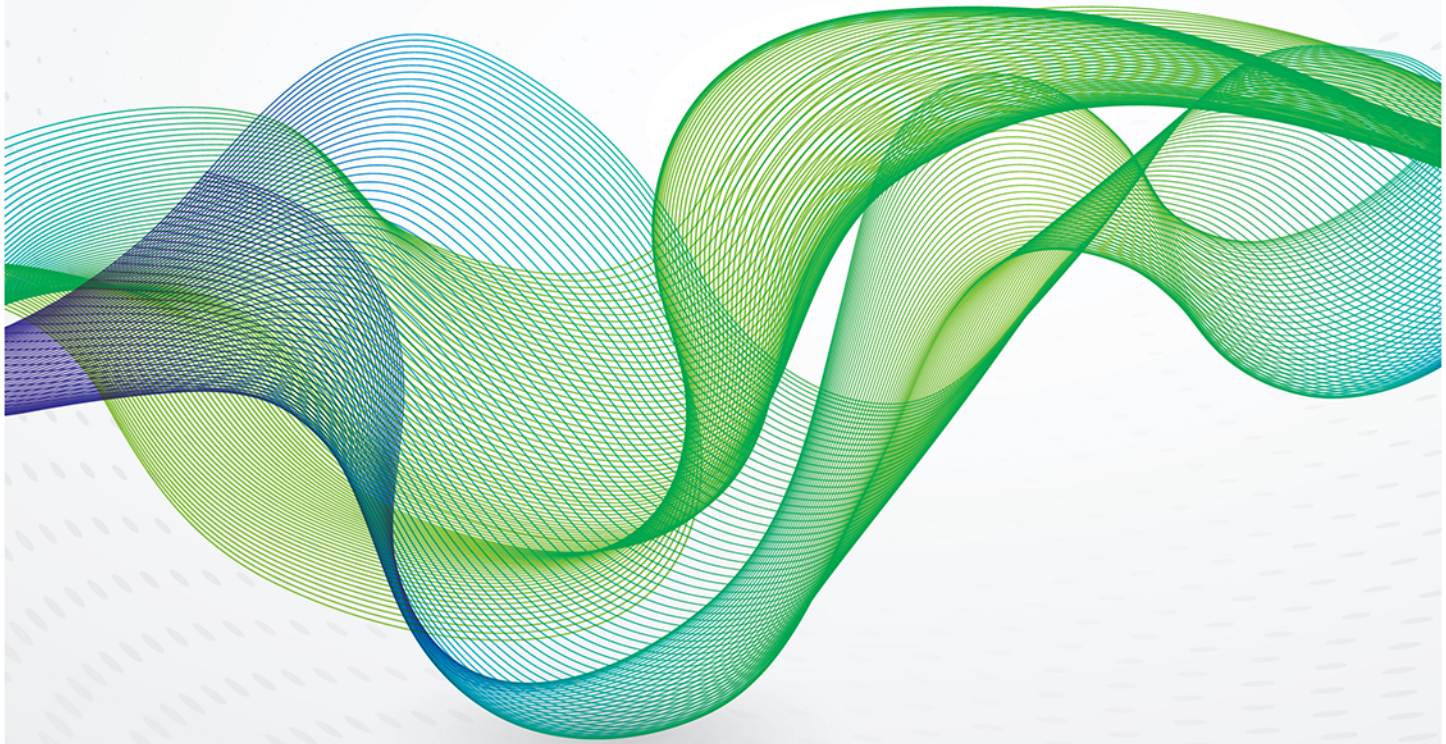
THE OXFORD INSTITUTE FOR ENERGY STUDIES
A RECOGNIZED INDEPENDENT CENTRE OF THE UNIVERSITY OF OXFORD

UNIVERSITY OF OXFORD

September 2020

After the Initial Oil Rebound:

What Next for Market Fundamentals and Prices?



OXFORD ENERGY COMMENT

Bassam Fattouh and Andreas Economou

Introduction

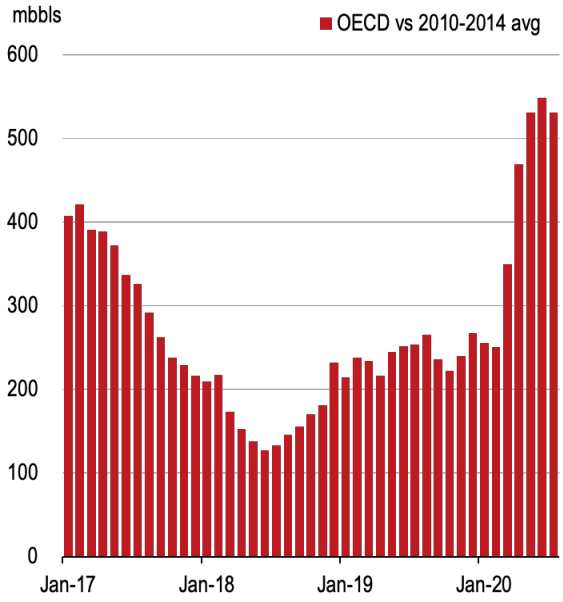
Following the sharp recovery in the oil price, which saw Brent increase by more than $16/b during the months of May and June 2020, the Brent price has been stuck in the narrow $40/b-$45/b range since July and despite the heightened uncertainty, volatility has been exceptionally low (Figure 1). On the one hand, this reflects the fact that the recent price recovery was driven by improved market fundamentals both on the demand and the supply side and hence the current price range is well supported.[1] After reaching a peak in April of 22.7 mb/d, the year-on-year contraction in global oil demand has eased to 10 mb/d in July, a rebound to 90% from pre-crisis levels. Also, between April and June, global oil supplies fell by 13.3 mb/d as a result of the historic OPEC+ cut agreement and OPEC+ high compliance as well as the sharp reductions in non-OPEC supply outside OPEC+ with the US and Canada accounting for most of this decline.

On the other hand, the narrow price range and low volatility reflect a market that is not yet ready to move to a higher price range as the V-shaped recovery in demand seems to have now stalled as concerns over the recent resurgence in Covid-19 cases have resurfaced in many parts of the world. Also, output reductions have reached a peak in June as Saudi Arabia, UAE and Kuwait ended their voluntary extra supply cuts of 1.1 mb/d and as OPEC+ ease their cuts starting August and some of the shut-in production in North America has been making its way back to the market since June in response to higher prices. In addition to these demand and supply dynamics, the existing buffers in the form of relatively high OPEC+ spare capacity and the large build-up of crude and products stocks constitute additional caps on the oil price. In July, preliminary estimates suggested that OECD commercial stocks stood nearly 530 million barrels (mbbls) above their 2010-2014 average, more than double the 252.3 mbbls surplus a year ago (Figure 2).

Figure 1: Daily Brent price

Source: EIA, OIES.

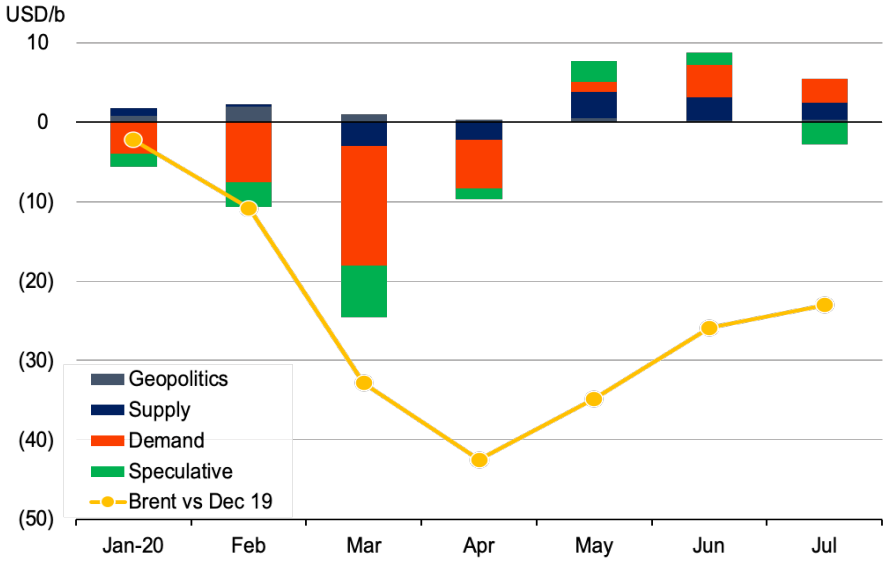
Figure 2: OECD surplus stocks



Source: OIES.

[1] See Fattouh, B. and A. Economou (2020), 'Is the worst of the oil crisis behind us?', Oxford Energy Comment, Oxford: Oxford Institute for Energy Studies.

Figure 3: Oil price drivers

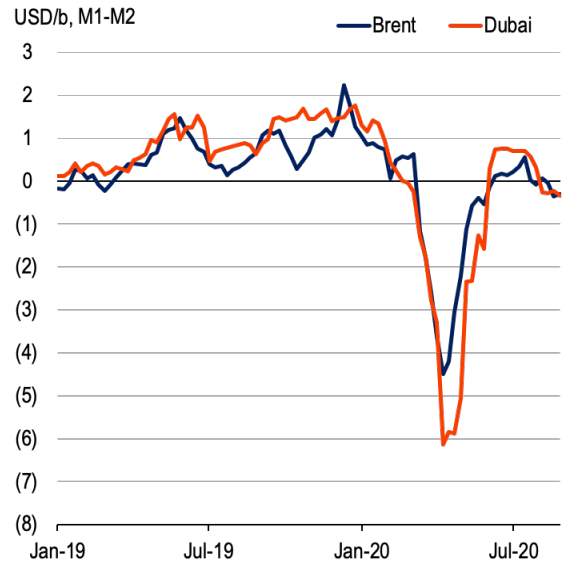


Source: Oxford Economics/Energy Quants, OIES.

Demand recovery in stages

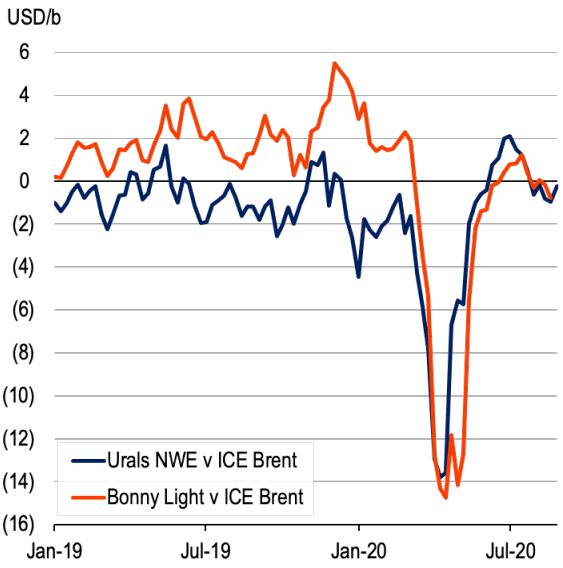
Of these, the pace in oil demand recovery remains the key factor shaping oil price outcomes. In fact, between January and April, oil demand accounted for $32.7/b or 77% of the total oil price decline of $42.5/b (Figure 3). As lockdowns started easing, the initial V-shape recovery in oil demand helped restore some of these losses, contributing to $8.3/b or nearly 45% of the total price increase of $19.5/b between May and July. However, since then, the demand rebound seems to have come to a sudden halt and while this has not impacted the price level as opposing forces exert pressure on the oil price, the Dated Brent and Dubai term structure shifted from backwardation to contango recently (Figure 4) and crude price differentials such as Russian Urals and Nigerian Bonny Light have been trading at a discount to their respective benchmarks after trading at a premium (Figure 5). This reflects the fact that this recovery is far from linear and will most likely go through multiple stages.

Figure 4: Time spreads



Source: Argus, OIES.

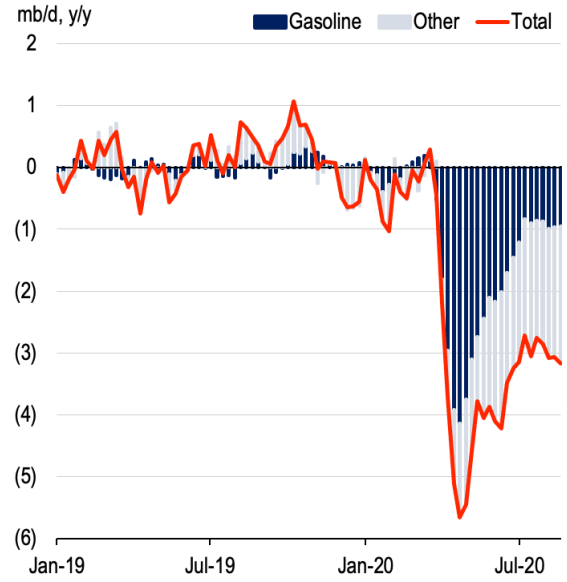
Figure 5: Price differentials



Source: Argus, OIES.

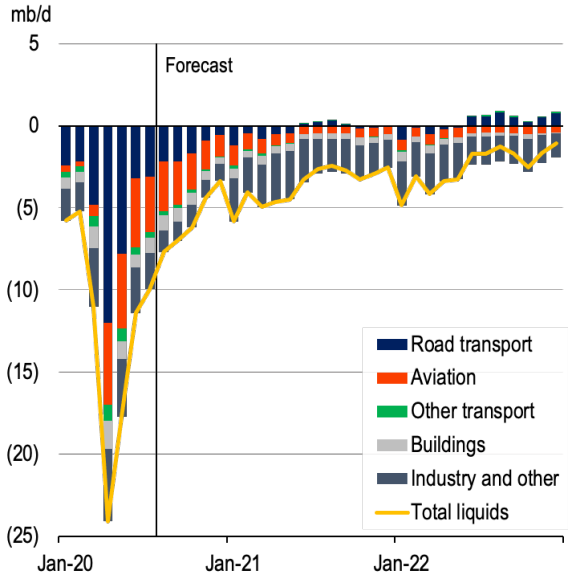
This is perhaps best illustrated in the case of US gasoline and total US oil demand (Figure 6). After a y/y decline of 5.7 mb/d in the month of April, the y/y decline in oil demand eased to 3.9 mb/d ending-May and 2.8 mb/d ending-July. This represents the V-shape stage of the recovery. But since July, the y/y declines have stalled at 3.1 mb/d (as of August 21). This represents the straight or horizontal line-shape stage of the recovery. This example applies to other contexts such as India where the federal lockdown initially planned to end on 31 August has been extended but does not apply to all countries and to all fuels. The recovery will take different shapes across countries and across the various parts of the barrel, with jet fuel demand expected to recover at the slowest pace (Figure 7).

Figure 6: US oil demand, 4-week avg



Source: EIA, OIES.

Figure 7: Global oil demand vs Dec 19



Source: Oxford Economics/Energy Quants, OIES.

A key question currently confronting the market is the time that it will take, or even whether, global oil demand will reach its pre-virus level. There is growing consensus that the next stage of the recovery towards the pre-virus levels may turn out to be slower than originally expected as uncertainty about the second wave of the virus persists and restrictions are reintroduced. This even applies for gasoline, which has performed strongly in the initial rebound stage. Also, even if global oil demand reaches its pre-virus level of demand, many are of the view that COVID-19 had profoundly changed consumers' behaviour and accelerated the pace of the energy transition away from fossil fuels, which will cause oil demand to shift to a slower growth path.

However, the jury is still out there.[2] For instance, there is a strong belief that oil consumption related to mobility and car ownership will fall sharply as more people decide to work from home. On the other hand, the pandemic could induce a drop in the use of public transport and a preference for more private passenger vehicles. People could also avoid planes in favour of cars. Furthermore, while there may be a change in people's purchasing habits through digital platforms, reductions in shopping trips could be offset by higher delivery truck miles. In short, while COVID-19 may have accelerated shifts in consumers' behaviour, it is still too early to tell how durable these changes will be and whether new work and driving habits on their own will result in a massive reduction in oil demand.

Here policy is key as governments could choose to 'ride the wave' of enforced changes in consumer behaviour and go for 'green recovery' initiatives, for instance by accelerating the electrification of the

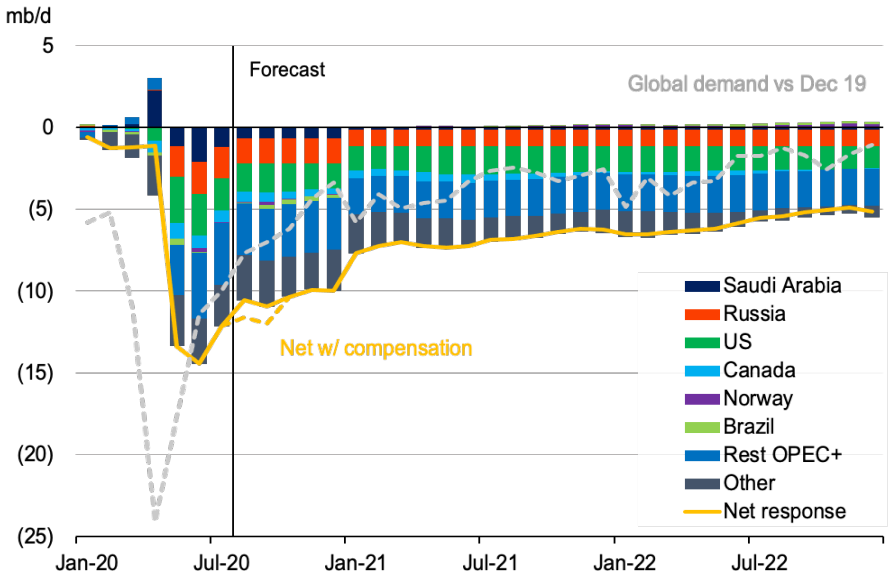
[2] For different views on the impact of COVID-19 on the energy transition, see Oxford Energy Forum, COVID-19 and the Energy Transition, Issue 123, available at https://www.oxfordenergy.org/wpcms/wp-content/uploads/2020/07/OEF123.pdf

vehicle fleet and/or the adoption of hydrogen in trucking. But history shows that factors such as scale, legacy assets, and path dependency imply a slow change in the energy mix. It is true that current stimulus packages will be increasingly directed towards greener projects compared to previous stimulus programmes, but it is also true that the environment has become more challenging for many players. The IEA notes that 'the speed and scale of the fall in energy investment activity in the first half of 2020 is without precedent'; 'many companies reined in spending; project workers have been confined to their homes; planned investments have been delayed, deferred or shelved; and supply chains interrupted'. COVID-19 has also hit households very hard, particularly those in low income brackets, and thus governments will be reluctant to shift the cost of decarbonization to consumers. And although governments have introduced massive stimulus packages and have increased their debts ratio to stimulate the economy, concerns about 'fiscal imprudence' may result in shifts in policy that weaken the stimulus. Furthermore, COVID-19 has exposed the weaknesses of existing frameworks of global cooperation and coordination.

The Supply Side in Focus

Given the wide uncertainty surrounding the medium and long-run prospects of oil demand and the slowdown in the momentum behind short-term oil demand, the role of the supply side in supporting the oil price becomes even more important in the current context. In fact, our results show that between May and July supply side factors contributed $8.4/b to the total price recovery – by as much as oil demand did (see Figure 3) – while in June global oil demand surpassed global supply for the first time since the beginning of the crisis as global oil production reached its peak decline at 14.5 mb/d relative to its pre-pandemic levels in December 2019 (Figure 8).

Figure 8: Global supply response vs Dec 19



Source: OIES.

The historic OPEC+ agreement in April to cut output has been the key factor shaping the supply side. While the increase in supply due to the breakup of the OPEC+ agreement contributed to the price fall and accelerated its decline in March and April,[3] the severity of the price fall had the effect of focusing the minds of the world's largest producers on the importance of cooperation in the face of such a severe

[3] See Fattouh, B. and A. Economou (2020), Oil Supply Shock in the Time of the Coronavirus', Executive Summary, available at https://www.oxfordenergy.org/wpcms/wp-content/uploads/2020/03/Executive-Summary-Oil-Supply-Shock-in-the-time-of-the-Coronavirus.pdf

shock and unlike the 1997-1998 and the 2014-2016 price cycles when it took years for the producers to reach an agreement to cut output, producers' response was much faster during this cycle.

All oil exporters are aware of the fact that in the face of ex-ante excess supplies, reliance on price/market mechanisms to correct the current market imbalance and clear the expected large build-up in inventories will take a long time, and producers' cooperation to restrict supplies is the most effective way to rebalance the market and reverse the price decline. Every producer seems to agree to this general principle. Disagreements usually arise over which countries should shoulder the burden of the cut. It has long been the case that non-OPEC countries leave it to OPEC to implement cuts. In turn, many within OPEC would like to leave it to Saudi Arabia to shoulder the burden.[4]

But following the price collapse in 1985, no one should realistically expect Saudi Arabia to unilaterally balance the market. At that time Saudi Arabia's attempts to defend the marker price resulted in a huge loss of market share: the demand for Saudi oil declined from 10.2 million b/d in 1980 to 3.6 million b/d in 1985. This decline in production volumes and loss of market share proved to be very costly for Saudi Arabia and still shapes Saudi oil policy today. Since then, through public announcements and its actions, Saudi Arabia has insisted on the principle of collective cuts. Also, with the share of OPEC in global oil supplies declining over time, there was emphasis that additional producers need to join output cut agreements. Thus, this principle of collective cuts did not only apply to OPEC, but also to non-OPEC, particularly to big producers such as Russia. This has been the main motivation behind the creation of OPEC+ and concluding the OPEC+ charter in 2019. The fact that G20 Energy Ministers have also agreed in April to take 'corrective' measures to rebalance the market extends the principle of collective action beyond OPEC+ and underlines the recognition of the world's three largest suppliers, the US, Saudi Arabia and Russia, that in the face of a severe shock it is in their mutual interest to act strategically and cooperate. Sustaining this cooperation on the upside, particularly between Saudi Arabia and Russia has always been a challenge, as these producers have different trigger points for the 'optimal exit' from the current cuts, but the renewed cooperation between the two producers since April this year and the fact that the current OPEC+ agreement extends until the end of April 2022 implies that both countries have the incentive and the framework to continue cooperation on the upside and not risk the rebalancing process.

The 3 Cs: Cut, Comply and Compensate

But the historic size of the cut would not have had its desired impact on prices and balances without the high compliance shown by OPEC+. In fact, in the first phase of the agreement between May and July, OPEC+ producers achieved a high compliance rate of 97% (Figure 9).[5] But high compliance will remain key throughout the entire duration of the agreement. Our analysis shows that on an annual basis, lower compliance, which for scenario purposes assume that it gradually declines towards 70% in 2021 before the producers exit the agreement altogether in May 2022, results in lower price by $3.1/b in 2020 and $7/b in 2021, compared to our baseline case of 100% compliance throughout (Figure 10). This will not only result in Brent failing to break the $50/b mark on a sustained basis all the way through 2022 but moving forward the stocks overhang will persist for longer suppressing price prospects even further. This explains the recent emphasis on the importance that all OPEC+ producers fully comply to the agreed quotas.

Achieving such high compliance without accounting for losses due to geopolitical disruptions – Venezuela, Iran and Libya have all been excluded from the OPEC+ agreement – and without GCC3 (Saudi Arabia, UAE and Kuwait) cutting above their quota and thus compensating for the rest of OPEC+ non-compliance (notwithstanding the GCC3 cut in June which was temporary), has been a key feature of the recovery phase so far.[6] This is despite the large size of the cut, the large number of producers

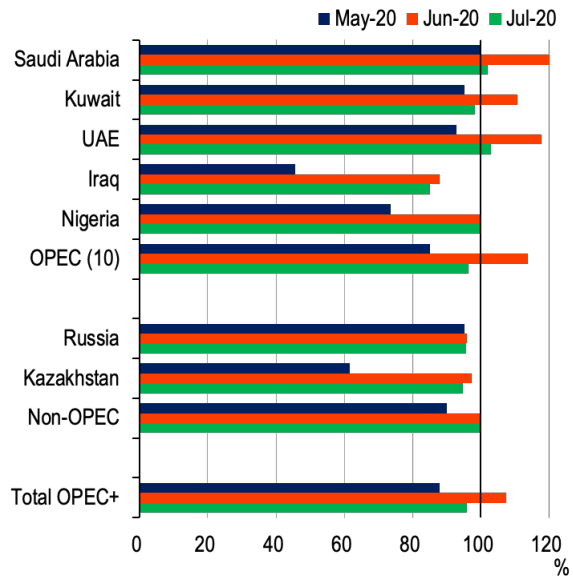
[4] Mabro, R (1998), 'The Oil Price Crisis of 1998', SP10, Oxford Institute for Energy Studies, available at http://www.oxfordenergy.org/wpcms/wp-content/uploads/2010/11/SP10-TheOilPriceCrisisof1998-RMabro1998.pdf

[5] This includes the additional cut of GCC3 in June and Mexico's numbers. Without the extra cut by GCC3, the compliance falls to 95%, which is historically very high.

[6] Smith, G. (2020), 'Saudi Oil Prince Prevails Where Others Failed With OPEC+ Cheats', Bloomberg, 20 August.

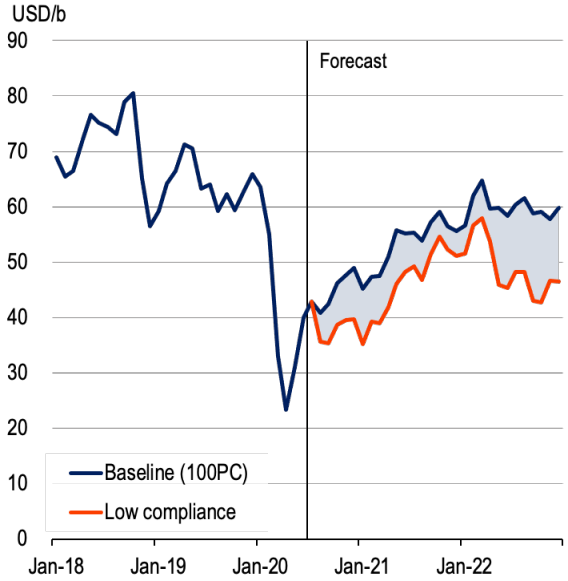
under the umbrella of OPEC+, and the increasing difficulties in verifying the compliance of individual producers as illustrated in the wide divergence in secondary sources' estimates of compliance rates due to different methodologies, different conversion rates and different definitions of crude versus condensates.[7] This high compliance is also remarkable given that OPEC+ has no formal enforcement mechanism.

Figure 9: OPEC+ output compliance



Source: OIES.

Figure 10: OPEC+ compliance risks



Source: Oxford Economics/Energy Quants, OIES.

This success could be attributed to Saudi Arabia's clear signal that it will not tolerate any non-compliance as the cost of Saudi Arabia achieving full compliance on its own while the rest do not fully complying is high enough to induce a shift in its output policy. In fact, with the arrival of the new Saudi energy minister Prince Abdulaziz Bin Salman two trends have become clear within the Kingdom's oil policy decision-making: a more proactive approach for managing the market and lower tolerance for producers' non-compliance with the agreed quotas. These two trends became highly visible even before the spread of COVID-19 during the OPEC+ meeting in December 2019. Concerns that oil demand growth may weaken in Q1 2020 prompted Saudi Arabia to act and OPEC+ did succeed in deepening the cut by 0.5 mb/d to the surprise of many in the market. Saudi Arabia agreed to lower its quota from 10.31 mb/d to 10.14 mb/d and to continue with the voluntary cut of 0.4 mb/d introduced by the previous Energy Minister Mr. Khalid Al-Falah on the condition that there is 'full conformity by every country' participating in the deal, sending a clear signal that it would no longer tolerate non-compliance. Also, during this meeting, non-OPEC members in OPEC+ were allowed to exclude condensate from the production data they submit[8] but agreed in return to use secondary sources rather than direct communication to assess compliance with targets.

The break-up of the OPEC+ agreement in March showed in a dramatic way that without a collective action on cuts, Saudi Arabia is willing to shift oil policy until players are ready to enter into an agreement. Once the agreement has been reached, Saudi Arabia offered to cut an additional 1 mb/d in June to encourage other OPEC+ participants to comply and to compensate for the fact that the agreement was reached in mid-April when some of the crude allocations for the month of May have already been made

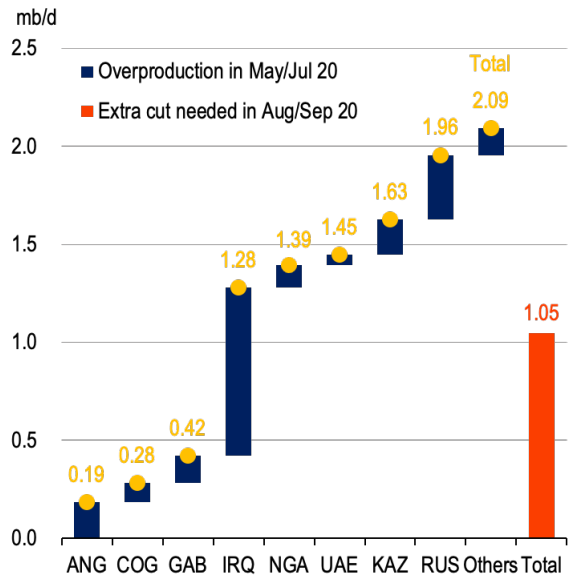
[7] Eklavya Gupte (2020), 'Nigeria's Agbami key sticking point in OPEC+ compliance', S&P Global Platts, 11 August https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/081120-nigerias-agbami-key-sticking-point-in-opec-compliance

[8] OPEC has always excluded condensates from its members' production volumes and thus this move corrected for this anomaly.

thus distorting compliance figures. But this additional cut was temporary and limited in duration to one month and in July Saudi Arabia restored its output to the agreed quota level signaling that these additional measures should not be considered as permanent or be counted on to balance the market as was the case previously. The monthly meetings of OPEC+ Joint Ministerial Monitoring Committee (JMMC) and the introduction of the compensation regimes are additional signals of the importance that Saudi Arabia attaches to compliance and its determination to lead on this front.[9] In his speech at the JMMC in August, Prince Abdulaziz Bin Salman emphasised the '3Cs': Cut, comply, and compensate as this not only ensure fairness, but it will also accelerate the market rebalancing process.

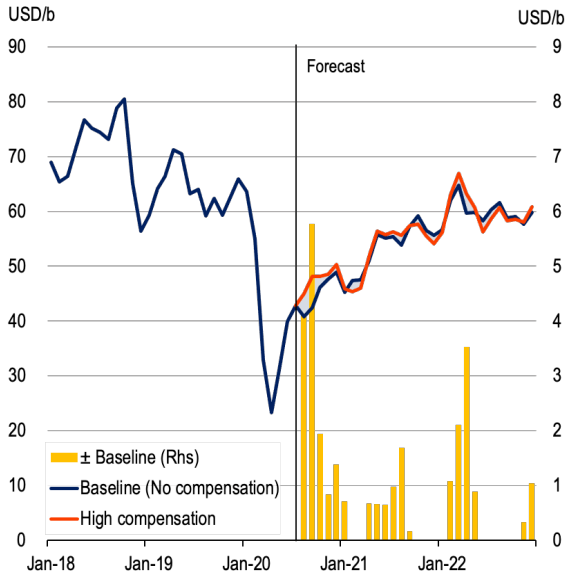
The other unique feature of this cycle is the introduction of a new compensation regime for those OPEC+ members who have produced above their quotas in the first stage of the OPEC+ agreement between May and July to compensate for their over-production during the months of August and September, that according to our estimates totaled 2.09 mb/d (Figure 11). Our results show that if the compensation regime is not fully implemented during the months of August and September, this will cause a loss of revenues for the entire group as prices will be lower by $4/b and $6/b, respectively, compared to a scenario in which there is full compensation (Figure 12). More importantly, the compensation regime also has a signaling role: it sends a credible signal about OPEC+ willingness and ability to navigate through this shock. Without such credibility, the oil price would have fallen under the renewed demand pressures. It is also used as an additional mechanism to put pressure on producers to achieve full compliance. Even in the scenario that most countries will not fully compensate for their overproduction, the compensation mechanism has the effect of pushing producers to fully comply with the OPEC+ agreement and hence reinforcing the credibility of the OPEC+ signal.

Figure 11: OPEC+ overproduction



Source: OIES.

Figure 12: OPEC+ compensation impact



Source: Oxford Economics/Energy Quants, OIES.

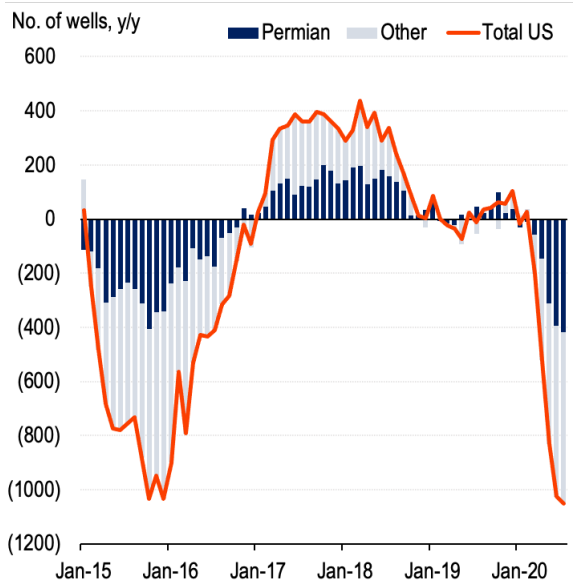
US Shale Expectations

The other factor shaping the supply picture is US shale. Unlike the 2014-2016 cycle, which came at the back of a sustained period of Brent prices above $100/b, the financial position of all players is relatively weaker and therefore the supply contractions/production shut-ins have been deeper and faster in this cycle. One of the premises underlying the 'lower for longer' oil price or even 'the lower forever' scenarios has been the robust performance of US shale and its responsiveness to price signals particularly on the upside. Following the sharp contraction in US shale production which reached 6.7 mb/d in May,

[9] Smith, G. (2020), 'Saudi Oil Prince Prevails Where Others Failed With OPEC+ Cheats', Bloomberg, 20 August.

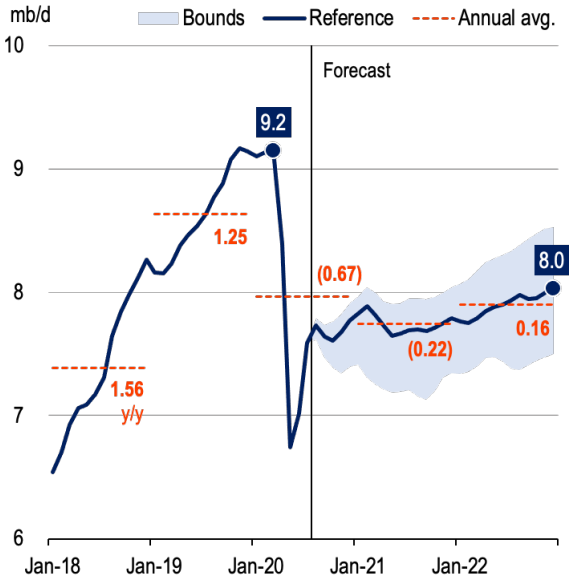
down by 2.4 mb/d in only two months (from 9.2 mb/d in March), some of the output losses are expected to be restored as shut-in wells come back into production. But as in the case of demand, the second stage towards full recovery to 2019 production levels may prove to be a very lengthy process and the recent data points support this hypothesis. The oil rig count fell in July to 181, a 600 y/y decline or 77% decline from last year. Not a single play has been spared including the Permian where the latest drilling report shows that the y/y decline in the rig count in the Permian has been severe at 72% or down by 316 rigs compared to a year ago. The number of wells completed in the Permian stood at 98, a y/y decline of 417, with severe declines in other plays as well, such as Eagle Ford (Figure 13). With access to external finance restricted, cash flow under severe pressure and the negative view of investors about the sector, expectations that the US shale will turn around quickly and sharply are misplaced. Our model shows that even by the end of 2022, US shale will not have reached its previous peak, standing at 1.1 mb/d lower than December 2019 (Figure 14). The entry of US shale and its robust performance proved to be a turning point for market expectations. The possibility that the recovery in US shale will not follow the same path as in the previous cycle is yet to be fully incorporated into the market narrative, though the sharp cuts in investment and capex across the oil industry, including in low cost producers, are contributing to the re-emergence of the underinvestment and the supply gap theory and the oil super-cycle views.[10]

Figure 13: US shale basins well completions



Source: EIA, OIES.

Figure 14: US shale supply



Source: Oxford Economics/Energy Quants, OIES.

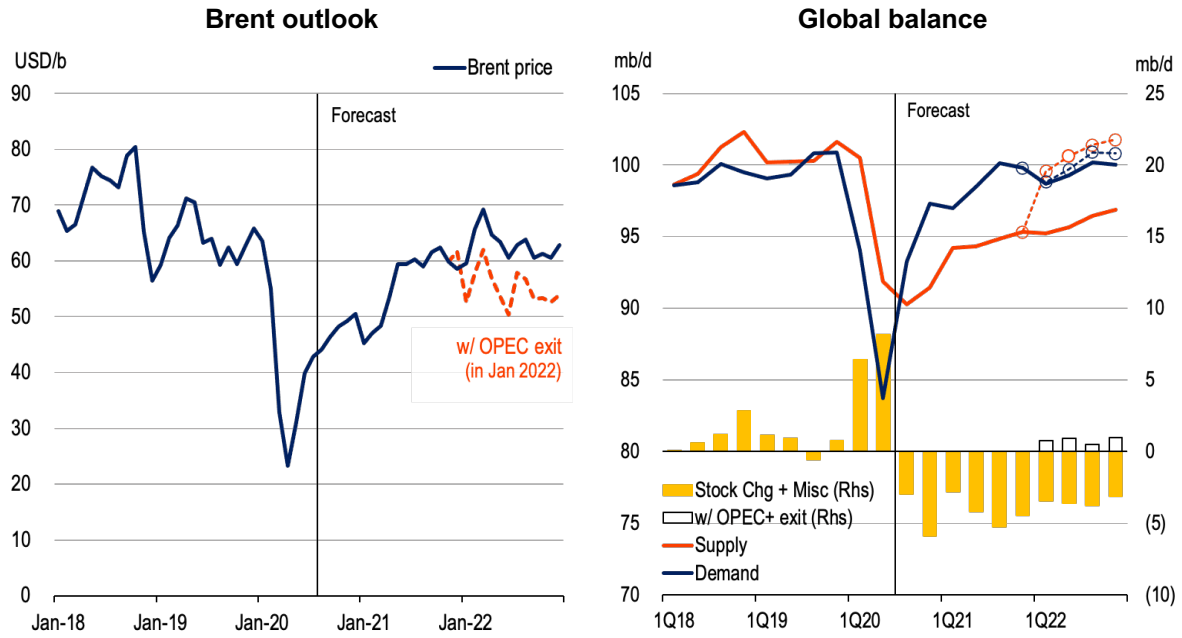
OPEC+ Balancing Act

Looking ahead, the pace of demand recovery and OPEC+ responses are the key dynamics that would shape market outcomes and will determine in which direction and how fast the oil price will break away from the current range. In Figures 15 and 16 below, we assume OPEC+ stick to their current deal and achieve 100% compliance, but we consider two demand scenarios: one in which oil demand recovers to its pre-virus level by mid 2021 and one in which this does not occur until the end of 2022. In the stronger demand scenario (see Figures 15), OPEC+ face the decision of whether to ease the cut to put a cap on the oil price or maintain the cut to accelerate the drawdown in inventories as soon as 2021. The decision will be shaped by views on non-OPEC and particularly US shale supply response to a

[10] Irina Slav (2020), JP Morgan Predicts $100 Oil, oilprice.com, Jun 19, 2020, https://oilprice.com/Energy/Energy-General/JP-Morgan-Predicts-100-Oil.html

higher oil price. If OPEC+ expects US shale to respond strongly to prices above $50/b, then OPEC+ could increase output and market share and maintain a cap on the oil price. In fact, considering that OPEC+ producers decide to exit the current agreement sooner in January 2022, we observe that prices may be sustained in the $50/b-$55/b range in 2022. In terms of producers' revenues, for those who are able to increase production, this may be equivalent to the alternative of restricting output and allowing prices to go higher.[11] In terms of market outcomes though, this will cause inventories to shift from steep deficits to surpluses and hence, to decline at a slower rate than a case in which the cuts are maintained until the end of 2022, prolonging the stocks overhang.

Figure 15: Oil market dynamics under strong/fast oil demand recovery scenario

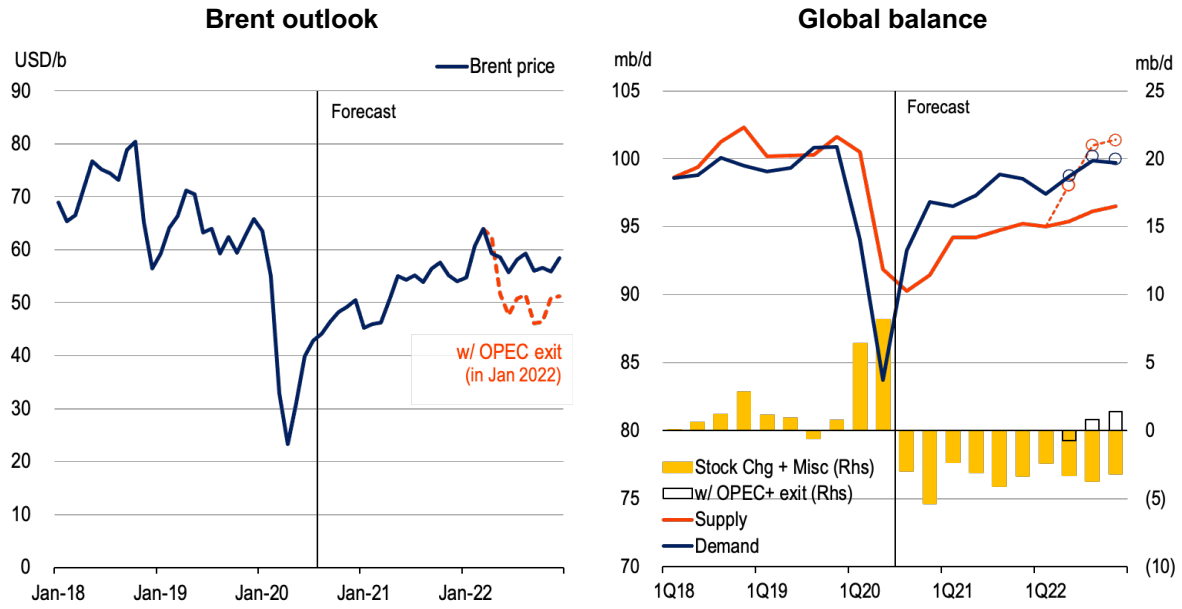


Source: OIES.

In the scenario of weaker oil demand recovery, for instance due to a second wave of mobility restrictions or deeper recession risks (Figure 16), the challenges facing OPEC+ will amplify. OPEC+ producers will face the decision of whether to deepen their current cuts, extend the current cuts beyond December 2020, or enter the third stage of the OPEC+ agreement in January 2021 as agreed. Each of these decisions has its own advantages and disadvantages and OPEC+ will again find itself faced with tough choices trying to balance the various trade-offs. Of these, the trade-off of whether to ease cuts and ensure compliance or deepen the cuts and risk lower compliance will be one of the key determinants of OPEC+ policy looking forward. But as shown in Figure 16, even in the absence of near term downside risks, as the output cut deal progresses near its expiration and in a scenario in which oil demand fails to make a material recovery at or near its pre-virus levels by 2022, OPEC will continue to face tough choices as exiting the output cut deal as agreed after April 2022 will not only shift the market into surpluses, but it will also drag prices to the high-$40/b anew.

[11] See Fattouh, B. and A. Economou (2020), 'Is the worst of the oil crisis behind us?', Oxford Energy Comment, Oxford: Oxford Institute for Energy Studies.

Figure 16: Oil market dynamics under weak/slow oil demand recovery scenario



Source: OIES.

Conclusion

In short, the pace of demand recovery and OPEC+ responses are the key dynamics that will shape market outcomes and determine in which direction, and how fast, the oil price will break away from the current range. Our model indicates that the breakout will occur in Q4, but it will be gradual and limited on the upside. Also, the market seems more prepared to move to a higher rather than to a lower price range and has been waiting for some positive signals on the demand side, particularly from the US and India. A key reason for this 'upward' bias is that there is a belief that generalised lockdowns similar to what we have seen in March and April are not likely and therefore demand will recover even though at a slower pace. In the background, the view that the oil industry cannot increase investment and bring new supplies in this price environment and that it will take time for US shale output to recover to its previous peak are also gaining traction. Also, the market has a pessimistic view on the return of some of the disrupted supplies from countries such as Iran, Venezuela and even Libya. But a key premise underlying the upward bias is that OPEC+ cohesiveness and high compliance will be maintained, and this represents a fundamental shift from previous cycles.