After the Crash: Short-Term Oil Price Behaviour

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The Abdullah Bin Hamad Al-Attiyah International Foundation for
Energy & Sustainable Development

INTRODUCTION

AFTER THE CRASH: SHORT-TERM OIL PRICE BEHAVIOUR

Since the coronavirus pandemic has led to an unprecedented and ongoing collapse in oil demand, economic forecasting is almost impossible. However, this research report attempts to explore the various scenarios and how certain decisions by governments, especially in OPEC countries, could impact the timing and pace of the global energy and economic recovery.

What are the short-term oil price scenarios and how will they impact the long-term outlook? How has oil price behaviour been affected by the coronavirus crisis, shale, the end of the OPEC+ agreement, and the rise of non-oil alternatives?

Energy Industry Report

This research paper is part of a 12-month series published by the Al-Attiyah Foundation every year. Each in-depth research paper focuses on a prevalent energy topic that is of interest to the Foundation's members and partners. The 12 technical papers are distributed in hard copy to members, partners and universities, as well as made available online to all Foundation members.

EXECUTIVE SUMMARY

- The current coronavirus crisis, severe economic recession, and the end of the OPEC+ agreement, have combined to produce potentially the worst oil oversupply in history.
- The key part of the puzzle is oil demand loss, which could be as deep as 10 Mbbl/day in April, depending on the intensity of shutdown measures, the length of the outbreak in different countries before it is properly contained or eliminated, and follow-on effects from job losses, corporate bankruptcies and other economic damage.
- Prices have dropped sharply from $50 to around $25/bbl, but are likely to go lower still, potentially below $10/bbl, as storage fills up and high-cost producers are forced to shut-in.
- OPEC+ countries able to increase production will do so, recovering market share, while US shale and other high-cost non-OPEC producers must make the bulk of adjustment.

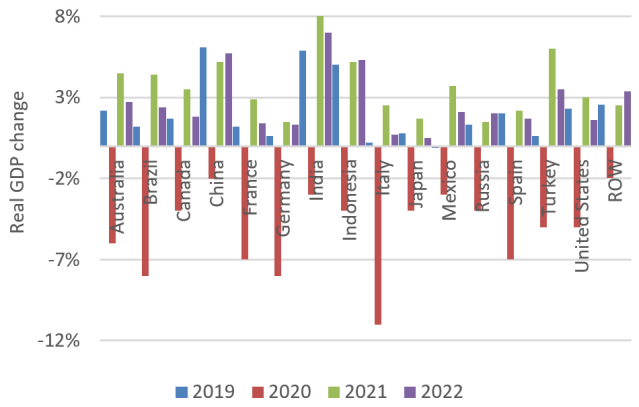
IMPLICATIONS FOR LEADING OIL AND GAS PRODUCERS

- Oil producers must be prepared for a potentially lengthy period of low oil prices, requiring cuts to oil production costs, and to government budgets.
- A renewed OPEC+ deal, possibly with the encouragement of the US, is possible, but not likely in the near-term.
- Nearly all major oil-exporting countries will run substantial current account and budget deficits at oil prices below $40/bbl, requiring budget cuts and possibly devaluations. Some politically weaker countries may see protests and internal disorder.
- This episode emphasises the need for economic, budget and export diversification, which will require greater amounts of external and/or domestic private sector funding.

THE CORONAVIRUS CRISIS HAS LED TO AN UNPRECEDENTED AND ONGOING COLLAPSE IN OIL DEMAND

Virus-affected countries have seen a sharp drop in economic activity, likely leading to steep falls in 2020 GDP (FIGURE 1). The instantaneous falls are sharper than the 2008-9 financial crisis or even the Great Depression.

FIGURE 1 FORECAST GDP CHANGES, SELECTED COUNTRIES [i]



Economic forecasting is almost impossible, given the unique nature of the crisis. However, most forecasts for now still see a rapid rebound later in 2020 and into 2021-22, as quarantine and movement restrictions are lifted. But as the likely timelines for an effective vaccine, treatments or "herd immunity" are much longer, there is no guarantee of this rapid rebound. Even if the disease is contained relatively quickly, as countries such as Japan, South Korea and Singapore, appear to have achieved, the massive government financial stimuli being applied may still be unable to prevent a knock-on recession.

Estimates of the oil demand drop remain unclear because of the rapidly unfolding nature of the crisis, and the uncertainty as to when it may ease. The loss of oil demand, though, is likely sharper than the decline in GDP would indicate, because the economic activities affected are big oil consumers: air travel (usually some 8 Mbbl/day of jet fuel, close to a worldwide shutdown), and passenger vehicles. Less affected, but still seeing a hit, are sea and road freight; these could be expected to suffer worse from a post-virus recession as goods trade declines.

Two major traders, Trafigura and Vitol, have put instantaneous losses at up to 10 million barrels per day (bbl/day). Standard Chartered estimates a loss of 10.4 Mbbl/day in April, and an average drop of 3.4 Mbbl/day over 2020 as compared to 2019.

February demand in China was down 4 Mbbl/day from 13 Mbbl/day (31%), now likely to be gradually recovering. The epidemic now appears to have been mostly contained in China, though rigorous quarantine and monitoring procedures remain in place. However, even as Chinese factories get back to work, and other east Asian countries such as South Korea, Taiwan, Singapore and Japan appear mostly to have controlled the outbreak, key markets for their exports in Europe, North America and the Middle East are largely closed down.

The US and Europe plus Russia consume about 40 Mbbl/day, so a similar demand drop to China's would be 12 Mbbl/day. Most of these countries have not (yet) shut down to the degree seen in China, but this does not include lockdowns in other countries such as India and large parts of the Middle East; the continuing effects in China; and the loss of global air travel.

BREAKDOWN OF THE OPEC+ PACT

On Friday 6th February, Russia refused to agree to the proposal by Saudi Arabia to deepen cuts by a further 1.5 million bbl/day (1 million bbl/day to OPEC and 0.5 million bbl/day to Russia and the other non-OPEC pact members), and to extend it to the end of 2020. Russia might have agreed to an extension to the next planned OPEC meeting in June, but was already reluctant to continue, under pressure from Russian oil companies, and calculating that it had already given up too much market share to US shale oil producers.

Saudi Arabia promptly responded by slashing its official selling prices (OSPs) by $6-8/bbl, announcing it would raise supply from about 9.7 Mbbl/day in January 2020 to 12.3 Mbbl/day, and that it would increase its maximum sustainable capacity from 12 to 13 Mbbl/day over an unspecified time period (likely to take several years, and costed by former Energy Minister Khalid Al Falih at $20-30 billion).

Russia said it could increase output by 0.2-0.3 Mbbl/day immediately and 0.5 Mbbl/day over a period of time [ii]. Abu Dhabi National Oil Company (ADNOC) announced it would raise supply to 4 Mbbl/day in April from about 3.03 Mbbl/day in January. Kuwait could also increase production to a limited extent as the Neutral Zone with Saudi Arabia comes back into operation. Iraq has about 0.35 Mbbl/day of capacity at state-operated fields that could be activated, although this is limited by loading capacity. Oman will increase output from 970.5 kbbl/d in December 2019 to 1 Mbbl/day [iii].

Meanwhile, about 1 Mbbl/day of production in Libya remains offline because of a blockade of its ports by the Libyan National Army forces of General Haftar, although this could return in the case of a political deal.

Saudi Arabia's exports over the past year have averaged about 7 Mbbl/day but could gain 2.6 Mbbl/day from increased supply. A boost in gas supply from the Fadhili plant (replacing about 0.25 Mbbl/day of oil in power consumption [iiv]), higher associated gas production as oil production increases (another 0.2 Mbbl/day equivalent), and reduced refining runs [v], further increase potential exports.

This raises the question of whether Saudi Arabia will physically be able to find buyers for such volumes, even with its very aggressive pricing. Term buyers have commitments to other suppliers, and many refiners will already have bought supplies for April, so total buyer appetite may be in the range of 8 Mbbl/day. Even though Chinese demand may be recovering, US and European refineries are cutting runs in response to very weak demand, and India, Indonesia and others are likely to follow. Saudi exports averaged 7.26 Mbbl/d in February, but tanker exports in March have been in the range 7-7.3 Mbpd with around 0.2 Mbpd by pipeline to Bahrain. Not all Asian buyers have received the crude they requested, with Arab Medium and Arab Heavy apparently in short supply and Arab Extra Light and Arab Super Light available instead[vi]. Therefore, it may take a longer time for Saudi Arabia to actually ramp up exports to the aspired levels. However, the relative lack of supplies to Asia may also reflect Saudi Arabia's strategy to target Russian exports to Europe.

Saudi Arabia has also booked up many tankers (25 firm and 15 provisional, with total 80 Mbbl capacity), to execute its strategy, driving freight rates higher and making floating storage less feasible. Both Saudi Arabia and Iraq have announced they will not give freight discounts for higher shipping rates, making their OSP cuts less attractive.

GLOBAL STORAGE WILL FILL QUICKLY IF THIS IMBALANCE PERSISTS

Current global storage of crude oil and products is about 7.2 billion bbl, of which 1.3-1.4 billion bbl is on tankers at sea. This is estimated at 62-76% full[vii], leaving another 1.7 billion bbl of available space. 0.5 billion bbl of this is in China, 1.2 billion bbl in the US, and only a small amount in the rest of the world. Saudi Arabia's production increase has used up most of the available tanker fleet, although if seaborne oil trade declines, that might free up some space. Some old tankers could possibly be brought back into service.

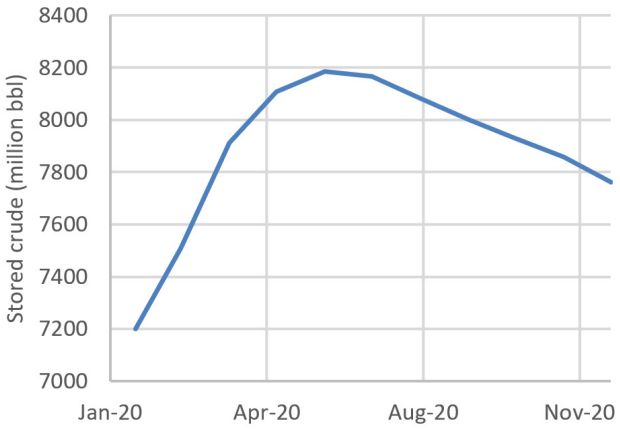
However, much of the theoretically available storage is likely to be unusable for operational reasons, located in inconvenient places,or designed for the wrong grades. Practically usable capacity may be around 80% of the total.

New storage can only be built slowly. For instance, Brooge, an operator in Fujairah, UAE, announced in January, plans for a 22 million bbl addition, with construction starting at the end of 2020[viii]. Assuming this is not delayed by the virus and financial issues, it would not add materially to capacity before late 2021,and would still hold only some 3 days of world oversupply.

The spot cost of renting a Very Large Crude Carrier (VLCC), with capacity of about 2.2 Mbbl, has risen to $200-300 000 per day. Allowing for insurance and finance, this implies a storage cost of $2.8-4.2/bbl per month. Longer leases are cheaper, but still require a contango of about $15/bbl over a year to be profitable.

In the week of 9-15th March, storage was accumulating at 3 Mbbl daily. As the increased OPEC production reaches the market, this rate of accumulation is likely to accelerate. In the case that there is no OPEC deal, but the virus outbreak is managed effectively, inventories could peak at close to effective capacity by June before gradually diminishing.

FIGURE 2 STORED CRUDE (NO OPEC DEAL, EFFECTIVE PANDEMIC MANAGEMENT)[ix]



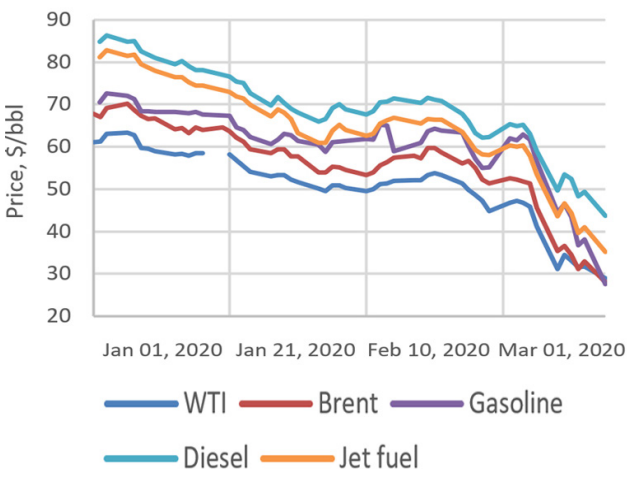
PRICES HAVE DROPPED SHARPLY

As FIGURE 3 shows, Brent crude prices have fallen more steeply than WTI, because the additional OPEC production will target the international market where Brent is the main marker. After a long period of trading at a discount, WTI has at least briefly returned to a premium to Brent.

A survey of traders suggested average prices in the second quarter would be $20 per barrel, Standard Chartered saw a low, well below $20/bbl with an average of $23/bbl in 2Q and $27 in 3Q, Goldman Sachs predicted $20, Citigroup $17 and Energy Aspects $10.

Gasoline and jet fuel have fallen sharply because of lower road and air traffic. With the near shutdown of international and much domestic aviation, jet fuel will likely drop further. Diesel, used for commercial goods, has fallen less steeply. Simple refining margins have dropped sharply, from about $13/bbl in January to less than $4/bbl by 16th March (based on the 3:2:1 crack spread). Gasoline refining margins have gone negative, suggesting refiners will cut runs and reduce their crude intake.

FIGURE 3 2020 DAILY PRICE OF CRUDE OILS AND PRODUCTS[x]



VERY LOW PRICES WILL FORCE SHUT-IN OF SOME PRODUCTION

In the short term, producers will be forced to shut-in production when the marginal operating costs exceed realised prices. However, even this may not cause instant shut-ins. Shutting down a well or platform runs the risk it may not be technically or economically viable ever to restart it. Producers may have contractual commitments (to customers, shippers, drillers, employees and so on) that they cannot immediately break. Prices could therefore fall below marginal operating costs for a time.

Given time, producers may also be able to cut jobs and costs, reduce wages, renegotiate contracts, improve efficiency and take other actions to remain commercial at lower prices. For instance, the US's Parsley Energy is seeking 25% cost reductions from suppliers[xi], although service companies are under their own heavy economic pressures.

Therefore, production shut-ins will not necessarily take place in a systematic order of cost. Some producers with low costs may still be forced to cut output because of difficulty in accessing buyers.

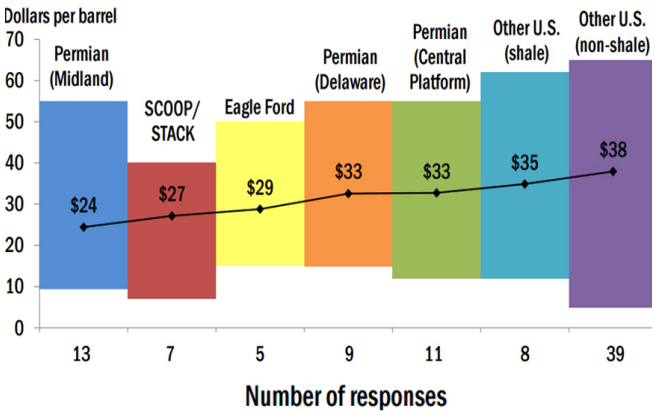
There is also a question as to how much production might be permanently lost to shut-ins. This depends on the duration, and on the level of prices afterwards. But mature offshore fields with platform shut-downs, heavy oil thermal recovery operations, and wells with low production rates and high water-cuts, may not be economic to restart. This would affect, in particular, Canada, the US onshore and Gulf of Mexico shelf, the North Sea, and parts of Russia.

Some reductions in marginal production have already begun in response to the price drop. For instance, Enquest announced it would not restart its 6 kbbl/day Heather and Thistle fields in the North Sea.

Canadian oil sands are is at risk because of low demand for its heavy crude and high operating and transport costs. Prices for Western Canadian Select, a heavy grade, fell to US$7.47/bbl on 18th March[xii]. Major firms such as Suncor, Canadian Natural Resources and Cenovus have operating costs in the range C$8.15-28.20 (US$5.67-19.60). Oil sands operations are hard to turn on and off, so producers may have to operate at a loss and hope others shut in output first.

Other than Canada, shale producers are likely to be the hardest hit. Not all shale is high cost, but a large proportion is. Marginal operating costs are high because of relatively low-productive older wells with increasing water- and gas-cut. Even within a single shale play, operating costs vary from $10-55/bbl (FIGURE 4). However, it appears that a large proportion of production would have to be shut-in at a WTI price below $24/bbl.

FIGURE 4 OPERATING COSTS PER SHALE BASIN[xiii]



VERY LOW PRICES WILL FORCE SHUT-IN OF SOME PRODUCTION

The key questions are how much worldwide production will be cut, and how quickly. Wood Mackenzie calculates 10 Mbbl/day is uneconomic to operate below $25/bbl Brent, and 4 Mbbl/day under $35/bbl[xiv]. However, they include government taxes and royalties, whereas these well may be waived to protect production. Excluding taxes, the volumes at immediate risk are about 16 Mbbl/day at $15/bbl, 7 Mbbl/day at $25, and 2.5 Mbbl/day at $35.

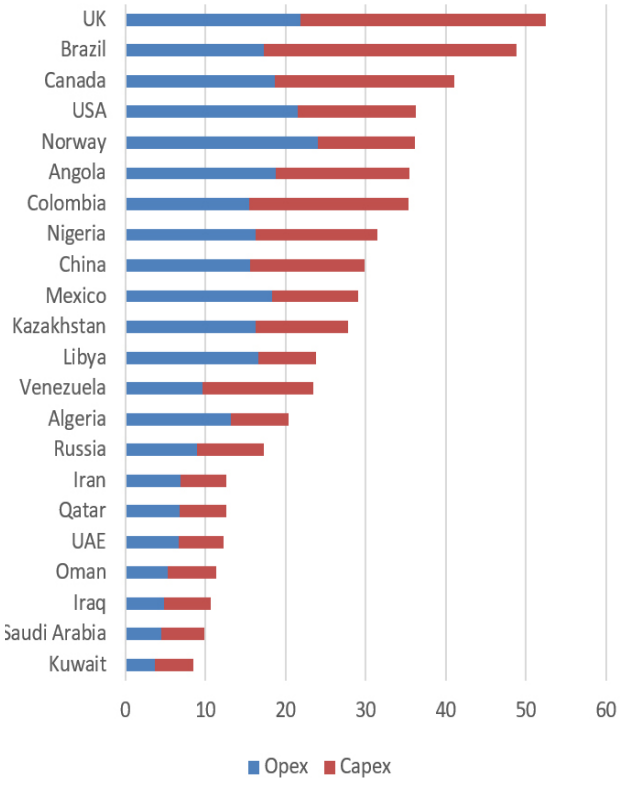
US SHALE PRODUCTION IS LIKELY TO DROP SHARPLY IF LOW PRICES PERSIST

More significantly for the longer term, project cancellations and capex cuts have begun. Equinor has announced a delay of the final investment decision (FID) on its Bay du Nord project in Newfoundland (300 MMbbl reserves). DNO has cut its rigs in Kurdistan's Tawke field from four to one[xv], also hampered by late payments from the government, which will probably worsen as the fiscal crisis deepens. Norwegian independent producers Aker BP and OKEA have postponed all new FIDs[xv], Australia's OilSearch is cutting spending by 40%, and Total is reducing investments by 20%[xvii]. Saudi Aramco has reduced its 2020 spending plans by $10 billion, approximately a quarter, although a large part of this is probably in downstream given the announced plans for production capacity growth[xviii]. Overall, at a Brent crude price of $30/bbl, $131 billion of project FIDs, out of $190 billion expected in 2020, could be cancelled[xix].

Russia requires significant reinvestment in further drilling in mature fields, the Arctic, East Siberia and shale/tight formations to keep production growing. Lukoil has suggested that at low prices, Russian oil output would go into decline from 2022-23[xx].

FIGURE 5 shows capital and operating costs per barrel for major oil-producing countries. This, of course, is highly simplified since different basins and fields within the same country have very different costs. However, it does indicate that the Gulf countries have uniquely low costs; Russia, North Africa and Venezuela are somewhat higher; and the non-OPEC producers plus some sub-Saharan African OPEC members are higher still.

FIGURE 5 CAPITAL AND OPERATING COSTS BY COUNTRY ($/BBL)[xxi]

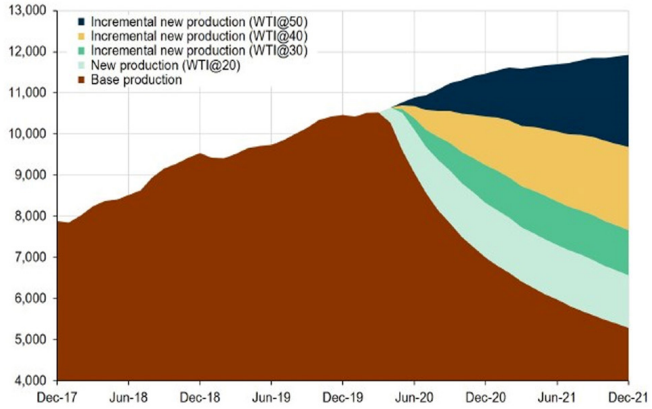


Conventional non-OPEC decline rates may be around 5.1% annually, or 3.6% per year with proper maintenance and reinvestment[xxii].

Because of its high decline rates, US shale is most exposed to near-term declines. Many

companies, such as the large firms Chesapeake, Ultra and Whiting, were already in financial trouble, and access to new capital, whether debt or equity, is almost impossible. Seven of the largest oil producers in Texas – EOG, Occidental, Pioneer and others – have already collectively cut $7.6 billion from their 2020 capital budget, and more reductions are likely . Decline rates are rapid without investment in drilling new wells (FIGURE 6). At West Texas Intermediate (WTI) prices of $20/bbl, output would drop from about 10.5 Mbbl/day to about 6.5 Mbbl/day by the end of 2021, an annual decline rate of about 24%.

FIGURE 6 SHALE OIL PRODUCTION IN DIFFERENT PRICE SCENARIOS [xxiv]



*All scenarios assume Henry Hub Gas and Mont Beulieu weighted average NGL prices of 1/20 and 0.35 of WTI oil price

Most shale companies' financial hedges will expire by the end of 2020 (only about 2% of production is hedged into 2021), and many companies, such as Occidental, have employed collar hedging strategies that do not give protection below $45/bbl. Companies in bankruptcy will likely be merged or acquired, and their debt will be wiped out, so their existing production will continue. However, most new investment will cease under the new owners, probably supermajor oil companies or consolidated private equity or wealthy individuals, until prices recover sufficiently.

TALK OF COOPERATION AMONG PRODUCERS HAS RETURNED, INCLUDING TEXAS AND THE US

US lawmakers and oil companies, including Harold Hamm, Chairman of Continental Resources and a friend of Donald Trump, have complained that Russia and Saudi Arabia are "dumping" crude[xxv], and have called for import restrictions or tariffs to protect domestic US producers. To support oil producers, the administration has decided to fill the Strategic Petroleum Reserve, buying 77 million barrels.

Donald Trump has discussed oil prices with Saudi crown prince Mohammed bin Salman, and the US ambassador has spoken to energy minister Abdelaziz bin Salman, since the start of the crisis.

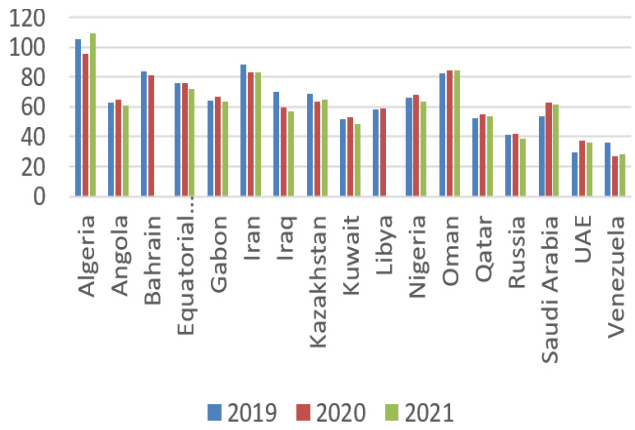
One of the three commissioners of the Texas Railroad Commission (TRC, the state's oil regulatory body), Ryan Sitton, wrote in an op-ed that Texas should cut production by 10% (about 0.5 Mbbl/day) in coordination with Saudi Arabia and Russia's doing the same. Sitton was invited to OPEC's next meeting[xxvi]. It's unlikely for practical and legal reasons that the proposal will go anywhere, and the TRC chairman has indicated he does not agree with it[xxvii], but it is indicative that the unthinkable has become conceivable, and it could threaten some kind of US-OPEC cooperation.

It is also possible that the US could put political pressure on Saudi Arabia to cut back, but this would be a big political win for Russia. In a cooperative agreement, Russia would also want something in return, for instance relief from American sanctions.

MOST OIL-PRODUCING COUNTRIES RUN SIZEABLE DEFICITS AT THESE PRICES

At low oil prices, oil exporters are vulnerable to running twin deficits – on the current account, and the government budget. Countries with currency pegs (all the GCC) could be vulnerable to balance-of-payments problems and pressure to devalue (FIGURE 7). Countries with floating currencies will see exchange rate depreciation, reducing living standards but lowering costs for their domestic oil industries, as in the case of Russia.

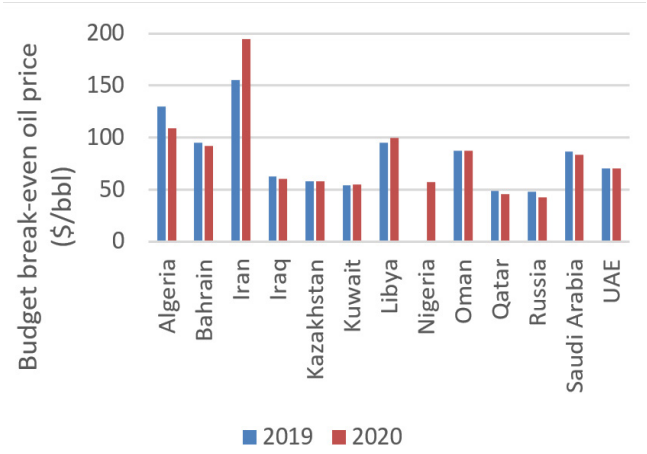
FIGURE 7 OIL EXPORTERS' EXTERNAL BREAK-EVEN PRICE [xxviii]



Those with large foreign currency reserves can defend their peg for longer. In the GCC, Oman and Bahrain look particularly exposed. Oil producers with relatively high production costs (again, Oman and Bahrain, as well as Ecuador, Gabon and others) are also under pressure because the rent remaining for government diminishes quickly as the oil price approaches production costs.

As for the government budget, most countries have reduced their break-even price slightly since 2019 (FIGURE 8), by cutting spending and boosting alternative sources of revenue, such as value-added taxes (Iran's break-even increased because of the collapse in its oil exports due to sanctions). Nevertheless, the break-even for nearly all significant exporters is around $50/bbl, with some significantly higher.

FIGURE 8 OIL EXPORTERS' GOVERNMENT BUDGET BREAK-EVEN PRICE [xxix]



Budget deficits can be dealt with for a time by incurring debt (while borrowing costs remain low) and drawing down sovereign wealth funds. Currency devaluation or depreciation reduces the size of the government budget in dollar terms. Otherwise, spending commitments, particularly salaries and pensions, tend to be "sticky" and hard to reduce without political opposition. Energy subsidies are easier to tackle, to a degree, although many of the large exporters such as Saudi Arabia, Iran and the UAE have already carried out significant subsidy reforms.

However, external and budget break-evens do not determine what the oil price will or should be. Countries may still judge that higher output at lower prices serves their interest better.

Countries' economies do not collapse just because they run deficits. But if the period of low prices is extended, it is possible that politically weak countries, such as Libya, Venezuela, Nigeria or Iraq, could experience severe disorder and conflict that would reduce their oil production, and so boost prices for others. Before the coronavirus outbreak, Algeria, Sudan, Iran and Iraq had seen major protests in 2019, even changes of leadership.

Inter-state conflict also does not automatically follow low oil prices. The Iran-Iraq war came at a time of record high prices, while Saddam Hussein's decision to invade Kuwait was partly motivated by the severe economic stress of low prices. Nevertheless, with current Gulf tensions between Iran, its neighbours, and the US remaining high, this is an area where a conflict could break out. The presumed Iranian missile and drone attack on Saudi Arabia's Abqaiq facility in September 2019 is one recent example of how this could interrupt oil supplies.

THE LONGER-TERM OUTLOOK DEPENDS ON MAJOR PRODUCERS' STRATEGIES

For now, Saudi Arabia and its Gulf allies, the UAE and Kuwait, appear ready to fight a price war. Having initially targeted Russia, the main loss of production is likely to be from US shale and some higher-cost non-OPEC producers.

It has been suggested that this could represent a change of strategy from Saudi Arabia. After fighting for market share during 2014-16, it pursued price defence in 2017-19 via the OPEC+ alliance. However, it may now be looking to faster monetisation of its reserves, to limit competition in a world of possibly declining long-term demand. The coronavirus crisis may well have brought forward "peak oil demand", which many forecasters had put at some point in the 2030s.

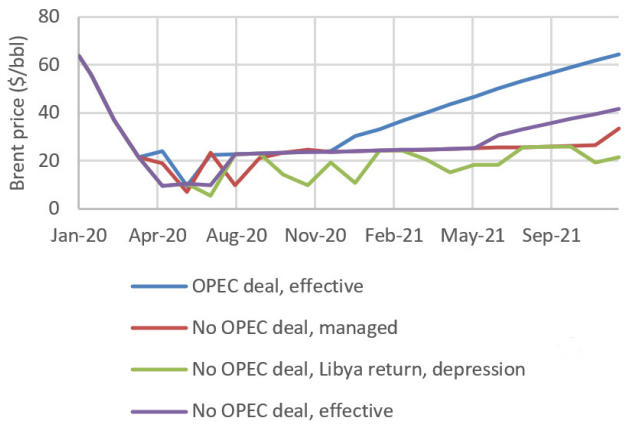
So far, electric vehicles (EVs) have had only a marginal effect on oil demand, displacing about 96 kbbl/d globally by light vehicles and about 250 kbbl/day by buses (mostly in China) in 2019[xxx]. The International Energy Agency's scenarios, often considered conservative, have from 3-9 Mbbl/day of oil displaced by EVs by 2040. So far, improvements in internal combustion engine (ICE) efficiency have been more important in reducing oil consumption.

The current price war and a long-term strategy of high volumes at lower prices are probably not linked, but they are compatible. Saudi exports of 7 Mbbl/day at $50/bbl would earn $350 million daily, while 10.5 Mbbl/day (from 13 Mbbl/day total production and allowing for higher associated gas output) at $30/bbl would earn $315 million. The loss of 10% of revenues is much less than would be suffered by US shale, Russia, or most other OPEC partners. The estimated cost to add 1 Mbbl/day of capacity, $20-30 billion, would be repaid within two to three years from increased exports, even at $30/bbl oil prices. Meanwhile, world demand would be higher because of lower prices, possibly by as much as 4%, and the economic viability of electric vehicles and other non-oil technologies would be delayed.

CONCLUSIONS

Scenarios for oil price depend on the loss of demand and OPEC action (FIGURE 9). The most optimistic scenario includes a return to the OPEC+ production limits and effective containment of the viral outbreak, with a maximum loss of 11 Mbbl/d demand in April 2020, and recovery of normal demand by October. A middle case involves no return to the OPEC+ deal, and a slowly-managed pandemic, with demand loss 10 Mbbl/day in April, 3.9 Mbbl/day in December, and averaging 5.7 Mbbl/day during 2020. A downside case has no return to the OPEC+ deal, a return of Libyan production, and a deep economic depression, with lost demand remaining at 2 Mbbl/day during 2021.

FIGURE 9 BRENT PRICE SCENARIOS[xxxi]

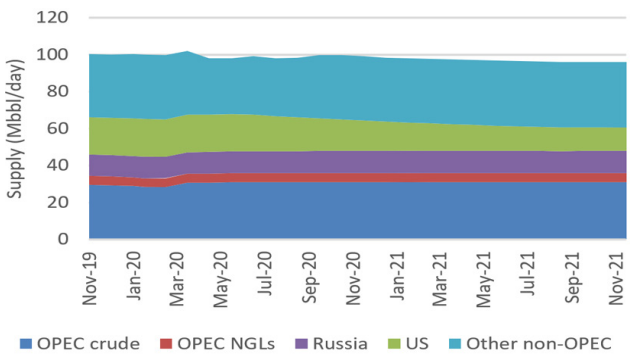


In all these cases, a deep slump during April-July is unavoidable, due to the demand destruction of the virus, which OPEC cuts are insufficient to counteract. The Brent price oscillates between the price to shut-in substantial supplies, around $10/bbl or even below, and the long-term price minus storage costs, around $20-25/bbl. In the longer term, a return to the OPEC deal plus effective management of the pandemic, with stronger demand growth stimulated by lower prices, is enough to lead to rising prices back toward $60/bbl by the end of 2021. If there is effective management but no OPEC deal, prices start rising later in 2021 and reach $40/bbl by year-end. In the case of a managed outbreak, storage remains nearly full, demand weak and the price rises only gradually toward $30/bbl. Finally, with "depression" demand, the price continues oscillating between $10-25 throughout 2021 as storage repeatedly threatens to fill.

FIGURE 10 shows world oil production in the case of effective prevention of the outbreak, and no return to the OPEC+ deal. US production declines sharply, while non-OPEC production must be shut-in at times during the first half of 2020. But by late 2021, the market needs a sharp revival in US production and/or an increase from OPEC to meet a growing supply-demand gap.

Nevertheless, oil revenues will continue to be significantly lower than most oil producing countries had expected. They will have to accelerate their plans of economic diversification and development of non-oil revenue and export sources. But this will require external financing, given other calls on the government budget and likely drawdown of part of sovereign wealth funds.

FIGURE 10 PRODUCTION OUTLOOK (EFFECTIVE OUTBREAK PREVENTION, NO OPEC+ DEAL)



APPENDIX

i. https://cebr.com/reports/a-world-recession-is-now-almost-a-certainty-with-global-gdp-set-to-decline-twice-as-much-as-during-the-financial-crisis-the-challenge-now-is-to-prevent-the-recession-from-turning-into-a-1930s-style/

ii. https://mobile.reuters.com/article/amp/idUSKBN20Y-2TJ

iii. https://www.spglobal.com/platts/en/market-insights/latest-news/oil/031720-oman-to-increase-oil-production-to-maximum-1-million-bd-capacity-sources

iv. https://aawsat.com/english/home/article/2186021/saudi-oil-exports-top-10-million-bpd-may

v. https://www.reuters.com/companies/2222.SE

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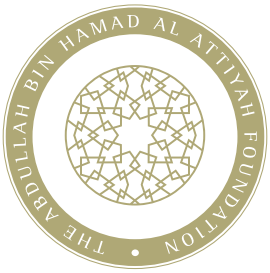

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