COVID-19 and the Big Oil Price Crash: Exploring the Anatomy

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1 The Backdrop

In December 2016, at the OPEC ministerial meeting in Vienna, 24 ministers participated from OPEC and Non-OPEC oil exporting countries, and came out with a ‘Declaration of Cooperation’ (DoC) (OPEC Secretariat, 2017) to achieve oil market stability in the interest of all oil producers and consumers. The declaration was signed to arrest a rapidly tumbling crude oil price. In 2018, the crude price crossed the $70 a barrel mark as sanctions were imposed by USA on Iran and Venezuela, both of whom are major oil producers (EPW Engage, 2019). Since the beginning of 2020, however, the crude oil prices have fallen drastically due to the lethal double blow of collapse of DoC in the beginning of March due to defection of Russia to go for production cut (see Fig. 1) coupled with economic contraction caused by the outbreak of the novel coronavirus disease (COVID-19) arising from Wuhan in China.

In the quest for retaining market share due to substantial demand drop because of pandemic, Saudi Arabia wanted to go for production cut but Russia refused to comply with the same for the fear of losing its own market share which led to suspension of DoC. The Saudis retaliated and decided to pump crude at will. Eventually a price war got waged and led to a protracted disequilibrium in the crude oil market. Soon after the price of two crude benchmarks Brent and WTI tumbled to more than 50% over two weeks in March 2020. Daily Brent plummeted to $24.9/barrel (b) on March 18 from $51.9/b on March 2, while at the same time WTI fell to $20.4/b from $46.8/b over the same period. The market observed some extremely volatile price movements. Historical highs have also been recorded by OVX and VIX, the two benchmark
measures of implied volatility in crude oil markets and S&P 500\textsuperscript{1} respectively. As reported by Department of Energy, USA, the VIX index reached 82.7 on March 16, a notch higher than any point during the financial crisis of 2008–09, and on March 20, OVX reached 190, the highest value since its inception in May 2007 (see Fig. 2 for the variation in implied volatility measures).

Although Saudi Arabia and Russia eventually returned to the negotiating table in the month of April with pressure from USA and with mediation of G20, the damage had already been done by then. The 23 oil exporting countries decided to withhold

\textsuperscript{1}Implied volatility measures an asset’s expected range of near-term price changes. OVX measures the implied volatility of oil prices and is calculated using movements in the prices of financial options for WTI, the light, sweet crude oil priced at Cushing, Oklahoma. VIX measures the implied volatility of the Standard and Poor’s (S&P) 500—a stock market index of 500 large companies listed in the United States. Crude oil volatility is typically higher than the S&P 500’s volatility, generally because OVX represents changes in one commodity and VIX represents changes across a diverse group of 500 companies (see EIA, 2020).
collectively 9.7 million barrels a day of oil from global markets starting May 1 to the end of June (Said & Faucon, 2020a, b). Most of the experts and analysts, however, contended that the market is flooded with so much of surplus that the negotiated curtailment, albeit robust, would fail to offset the steep 30% drop in global fuel demand, with extended lockdowns, continued travel bans, insignificant vehicle usage and huge curb on economic activity (French & Moise, 2020). The final nail was put on the coffin after WTI crude oil futures plunged below zero for the first time on 20th April and made it a Black Monday. The price of a barrel of West Texas Intermediate crude to be delivered in May, which closed at $18.27 a barrel on 17th April, went to the sub-zero level and registered a historically low price of up to—$40 a barrel on 20th April (see Fig. 3) (Grubb, 2020). Spot prices also fell below zero, and panicky oil producers and traders dumped a large volume of futures contracts. That effectively implies that sellers literally have to pay the buyers to take barrels off their hands.

The volatile oil markets that resulted therefrom continued to threaten to bankrupt energy companies across the world, with shale coming out as the worst casualty; caused huge job losses and also battered the financial institutions that have been backing these industries. Furthermore, the coupling of unprecedented demand and supply shocks have tested the oil market and its storage capacity to the limits and eventually converted the oil crisis to a storage crisis. To understand all these issues and the imbalances that had been building in the system more deeply, it is crucial to look at the anatomy of the oil market more carefully as the impact of COVID-19 was unfolding (Fattouh et al., 2020). I intend to take this up in the next few sections.
2 Oil Market Dynamics in a Pandemic Struck World and Its Fallouts

2.1 Price War: A Miscalculated Masterstroke

Some experts and believers of mean field game theory\(^2\) views the price war launched by Saudi Arabia in March after Russia’s defection from the DoC as a ‘game theory masterstroke’ but unfortunately it was miscalculated and played at a wrong time when the bout of pandemic and the containment measures implemented globally has sucked out the effective demand for crude and precipitated a disaster for the industry globally with inherent fallouts on other associated sectors and the economies. The effective demand for crude comes from the end-use of petroleum products like petrol or gasoline, diesel, aviation turbine fuel etc. The demand for these products evaporated as flights got grounded, passenger travel came to a standstill, and lockdowns got implemented globally.

It may not be appropriate to gauge the behaviour of bigger oil producers based on just one situation or a one-off event but it is important to understand if there has really been any observed change in their behaviour in the more recent years and the factors pertaining therewith. Geopolitical challenges have always been a disruptive factor when it comes to dealing with Middle East and North African countries. But there are number of structural or deeper global policy related factors that have exacerbated the recent increase in volatility in demand for oil. Some of these major factors are –(1) the uncertainty in the pace of energy transition as more stringent climate or environment related regulations started coming in place; (2) environmental, social and governance (ESG) issues are increasingly getting internalised in mainstream investment decision-making (Eccles, 2020) and the risks of stranded assets looms large\(^3\); (3) stakeholder interests starts getting more prominence and influence the decisions in the board rooms of corporation (Paine, 2014). It is quite obvious that due to the compound effect of all these factors, investments in fossil fuel industry have been showing a jittery trend causing the volatility.

Given this increased volatility in oil demand, the big low-cost producers like Saudi Arabia and Russia, with the intent of optimising their oil revenues, has to keep on juggling between their conflicting price and market-share aspirations. In order to serve these interests in the best possible manner, they often tend to choose the path of monetising their reserves as quickly as possible, produce more and offer more

\(^2\)The behavioural psyche of the dominant producer within OPEC like Saudi Arabia who waged a price war could find explanations with the recent advances in game theoretic approach to model behaviour of oil producers. The recent advances known as mean field game theory has been advocated and applied by French mathematicians Pierre-Louis Lions, Jean Michel Lasry and Olivier Guéant in their recent paper focusing on oil production (Lions et al., 2020).

\(^3\)Stranded assets are “assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities” (for more details on different perspectives on stranded assets see Caldecott 2017).
discounts to squeeze out relatively high-cost producers.\textsuperscript{4} This is exactly what seems to have happened in the current situation when both Saudis and Russians decided to pump more oil, brought down the price, and eventually roiled the high cost shale producers of USA.

Russia defied from the production cuts, proposed by the Saudis, as its market share concerns were much different than those of the Saudis and other major oil exporters. Russia’s exports are usually confined to a few discrete markets, with most of its shipments cruising to Europe and a smaller percentage is transmitted by pipeline to China (Jaffe, 2020). Hence, the immediate impact of pandemic would not only be felt on Russia’s chief export outlets, but it would also make Russia more vulnerable to competition from other suppliers seeking to sell in Europe, including the U.S. shale exporters. Saudi Arabia, on the other hand, has a better and bigger network of global customers including useful oil storage arrangements that enhance its operational flexibility. Russia’s defection from the deal was also reportedly stoked by U.S. sanctions on completing Nord Stream 2 gas pipeline in the Baltic Sea and sanction on Rosneft because of trading Venezuela’s crude.

With Saudi Arabia also adopting a strategy of pumping oil at will and continuing to increase supplies, post Russia’s non-compliance, situation invariably turned out to be worse in the pandemic-stricken world already grappling with excess supply of oil. Collection of oil revenues plummeted, making any attempts towards economic diversification within oil producing economies difficult, created challenges for upstream investments and made it difficult to raise or sustain their production capacity (Halff, 2020). Thus, managing producer-producer relations turned out to be critical. Saudis and Russians eventually decided to come back to the negotiating table. The pressure from USA threatening to impose a tariff on Saudi and Russian crude exports to USA in absence of a deal and mediation of other G20 members made the deal happen. However, the demand shock arising from containment measures pertaining to COVID-19 had more than offset the promised cut and the crude price slid to a historic low on 20th April, when the futures contract of the US benchmark crude Western Texas Intermediate (WTI) for May delivery plunged into the negative territory for the first time. An explanation for this historic crash has been given in the following sub-section.

Although Saudis and Russians eventually were forced to return to the negotiating table and play the balancing role and stick to the negotiated output cut, there is absolutely no second thought that the cut did not in reality serve the interests of the producers in the best possible manner. Furthermore, how much does the production eventually drop at a given price depends on a host of companies taking decisions to prune supply and is also contingent upon interplay of multiple factors. These factors include: respecting fiduciary duties to shareholders; meeting executive compensation targets; covenants with creditors; hedging obligations; and above all, movements

\textsuperscript{4}I have argued earlier that it is not correct to think that Saudi Arabia, the dominant producer within OPEC always act as a residual swing producer and respond to the call or the amount of oil demanded from it (after accounting for NOPEC production and inventory adjustment), unless doing so serves its interests in the best possible manner (see Bandyopadhyay, 2008).
in prices (Brower, 2020). In other words, the actual production restriction eventually enforced by a falling price would in more likelihood be an outcome of market rationing supply, and may not necessarily be concomitant with the collective action of OPEC plus cartel. In other words, even though a full compliance eventually plays out or if the big producers actually go for deeper cuts than proposed, still there would be no guarantee or room for complacency that oil market would balance unless one really gets a clearer picture on how fast the world is moving on the trajectory of recovery from the pandemic, which has rightly been dubbed as a black swan and that continued to lead the oil market into a tailspin causing announcements of more force majeure, continued filing of insolvency and repeated shutdowns in the oil and gas sector.

As an illustration, Fig. 4 juxtaposes the call on OPEC\(^5\) and overproduction in the second quarter as predicted by three key agencies IEA, DOE and OPEC in the month of April 2020. Figure shows that OPEC over-production in the second quarter had been predicted to lie anywhere between 6.5 million and 17.7 million barrels a day a lion’s share of which was invariably expected to go into storage.

Although the production restriction through an OPEC plus deal did calm the turbulence in the oil market afterwards, but the calming process was only temporary and was battered time and again. There is no second thought that time was not really

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\(^5\)International Energy Agency (IEA) and Energy Information Administration, Department of Energy, USA (EIA) tend to assume the existence of an equilibrium price path. After calculating the world oil demand and non-OPEC output, the latter is subtracted from the former after allowing for stock adjustment. This gives the oil demanded from OPEC (often referred to as “call on OPEC”). For more details see Bandyopadhyay (2008).
ripe for such a hostile quest for market share for both Saudis and Russians at the first go that has exacerbated unneeded excesses, tested storage capacity to its limits, and made the entire oil and gas sector bleed worldwide. This also created challenges for the weaker OPEC producers in terms of expenditure cuts and made even the Saudis and Russians vulnerable economically by stressing their budgets as the entire world is grappling with the lethal double bout of health and financial crisis and as the protracted global recession hardly showed any immediate sign of respite.

2.2 Bruising America’s Hype on Shale and Energy Dominance

The U.S. turned out to be the world’s largest oil producer in 2019, overtaking Saudi Arabia and is primarily attributable to explosion of shale fracking (Champion, 2020). The report brought by Energy Information Administration (EIA), DoE in April 2020, however, hinted clearly to the fact that US might soon lose that position as the largest exporter and would start importing more oil than it produces, with production expected to drop by some 500,000 barrels per day in 2020, despite the renegotiated agreement that has been reached between OPEC and Non-OPEC members (EIA, 2020b).

Although U.S. shale industry had a wild run over the last decade from 2010 onwards and continued to register record production levels, but their ‘growth-at-all-costs’ business model was clearly unsound and led them to deeper financial trouble (Denning, 2020). In fact, what Paul Stevens talked about in an interesting Chatham House Report way back in September 2010 (Stevens, 2010), when shale was just on its way to ride the boom actually turned out to be true as shale returned to bust at the beginning of 2020. The report also had caste serious doubts over the industry confidence in the ‘revolution’, on grounds of environmental concerns, high depletion rates and questioned the replicability of the same elsewhere. The biggest worry that Prof. Stevens had raised was about investor uncertainty that could reduce investment in future gas supplies. The scenario of investment in shale plays indicates that although initially investors have preferred the lure of shale development risk to that of conventional exploration risk as it appeared as a good bet to them but eventually the hopes got reversed. The faster returns that came initially was largely triggered by high initial production rates for wells. Trading off the risk of exploration of dry holes with shale development at large scale may have seemed a good bet then but has eventually proved otherwise.

Opponents of fracking also highlighted problems faced by the communities because of nearby fracking activities, including contamination of groundwater, air pollution and negative health consequences, and increase in the number of earthquakes in drilling areas. Climate concerns about methane leakage from well sites, pipelines, and processing facilities, as well as from burning fossil fuels, in general, also play a big role in calls for a fracking ban (CFR, 2020). Concerns have been
reportedly raised especially with respect to water stress and associated business risks for fracking in water deficient regions in a WRI report (Reig, 2014) and concerns for risks to air quality and water quality through contamination has been brought out by General Accounting Office Report on Shale Development (GAO, 2012). Incidentally, the Democratic Party’s presumptive 2020 presidential nominee, former Vice President Joe Biden, also promised to stop issuing permits for new oil and gas drilling on federal lands and waters. But he stopped short of supporting a full ban on fracking in the United States (CFR, 2020).

Fracking is complex and a highly cost intensive activity in the US. There is also a wide variation across the wells in terms of performances and yields. Given the high degree of variability, the more expensive wells that do not perform well can compound losses. A typical expectation from an investment in shale fracking is a 10% return on capital (Michot, 2020). This is based on the assumptions that companies can re-invest out of returns net of investor obligations (interest on debt and dividends). However, for that to happen, the shale producers need a total cost structure (capex plus opex plus total return) that pays back annual capex as well as ongoing booked finding and development expenses and does not exceed commodity price. However, that has not been met in 2018 and 2019, when costs remained marginally below the trading price of the benchmark light sweet crude, West Texas Intermediate (Michot, 2020).

After a decade of ups and downs, 2019 turned out to be the crucial year as investors began to shy away from investing in the shale industry triggered by falling yield and paltry returns. The challenge is exacerbated by mainstreaming of Environmental, Social and Governance (ESG) issues in investing decision with signs of more divestment in the fossil fuel sector in the offing and the rise of conscious capitalism (Mackey and Sisodia, 2013). Changes in decision making have undergone a sea change in boardrooms, as socially conscious investors and shareholders increasingly demand to know whether company profits are coming at the expense of other stakeholders namely environment, workers’ well-being, health and safety issues or the overall health of society (Paine, 2014). Drillers have already started to face high-level scrutiny on the impact of fracking on climate change that influenced the investment decision-making at big banks. Major U.S. lenders started to prepare to become operators of oil and gas fields across the country for the first time in a generation to avoid losses on loans to energy companies on the fear that they would soon go bankrupt. JPMorgan Chase & Co, Wells Fargo & Co, Bank of America Corp, and Citigroup Inc are each in the process of setting up independent companies to own oil and gas assets (French et al., 2020). With crude price on an unabated rout and downslide, maintaining a breakeven for the shale producers turned out to be an insurmountable challenge (Adams-Heard & Crowley, 2020).

As reported on April 09, even US shale giant like Occidental had been looking for the U.S. government to “provide liquidity to the energy industry through this period of unprecedented demand destruction and unsustainable pricing until normal economic conditions return,” according to the letter linked in an April 7 email and reported by
Bloomberg News.\(^6\) Moody’s also downgraded Occidental Petroleum’s credit rating to junk (Adams-Heard & Crowley, 2020a). Whiting Petroleum, a notable exploration and production company also filed for bankruptcy protection on April 1 (Eaton & Scurria, 2020). Callon Petroleum Company and Chesapeake Energy operating in the Permian basin also reportedly hired restructuring advisors. Furthermore, Shale driller Unit Corp., based in Oklahoma, also planned to file for bankruptcy in the wake of collapsing crude prices (Gladstone et al., 2020). The shale industry countered a lot of challenges plagued by leveraged balance sheets and dwindling shareholder returns over the past decade.

A more recent estimate made by Morgan Stanley indicates that the industry needs $51 per barrel just to fund their capex budgets this year, let alone pay off debt or send money to shareholders.\(^7\) Another estimate from University of Chicago indicates profitable drilling and fracking a new need something in the neighbourhood of $40 per barrel (Bornstein, 2020a). Yet another estimate by the U.S. Federal Reserve Bank of Dallas indicates that exploration and production firms need an average West Texas Intermediate (WTI) price of $30 a barrel to cover operating expenses for existing wells and $49 a barrel to profitably drill a new well (Federal Reserve Bank of Dallas, 2020). With WTI now creating history by reaching a negative value of up to -$40 a barrel for the expiring basket of WTI crude futures for May delivery, there was no second thought that only a generous bailout from the Government could actually save the industry. As revenue plummeted and assets deteriorated in value, some companies expressed their inability to repay their debts (French & Moise, 2020).

Going by the record of Haynes and Boone’s over the entire five-year period ending August 31, 2020, 244 producers have filed for bankruptcy involving more than $172 billion in aggregate debt with over $50 billion so far in 2020. Of these filings, as many as 36 U.S. oil and natural gas companies filed for bankruptcy in 2020 itself till end August as the industry continues to grapple with depressed prices for the commodities (Haynes & Boone, 2020).

In fine, the oil crash triggered by the double blow has literally turned the much-hyped America’s energy independence dream riding on shale industry to bubble. According to David Victor, the co-chair of the Brooking’s initiative on Energy and Climate Change, the shale rocks laden with oil and gas may not go away completely, it is only that ‘the pecking order in the patch will change’. He seems to go along with the Darwinian principle and believes that the bigger and more financially solvent players who have better control over financial risks will survive the storm and define the new normal for the industry (Victor, 2020). Amy Jaffe from the Council of Foreign Relations, however, strongly contends that U.S. shale is uniquely resilient “as the pressure for production comes from the artificial means of hydraulic fracturing which can be turned off and on easily” (Jaffe, 2020a). He further underscored that whenever

\(^6\)https://oilprice.com/Latest-Energy-News/World-News/Shale-Giant-Calls-For-Federal-Help-As-Oil-Prices-Fail-To-Bounce-Back.html for more details (accessed on 2 September 2020).

\(^7\)https://oilprice.com/Energy/Energy-General/The-Great-US-Shale-Decline-Has-Already-Begun.html.
the capital, equipment, and workers are there to produce it, it can be restored quickly in a matter of days or months.

With the Black Swan not expected to provide respite very soon, it remains to be seen how the situation really pans out and the cloud starts progressively receding as lockdowns get gradually lifted worldwide. Despite the high hopes expressed by the likes of Amy Jaffe, the shale patch, however, continued to look vulnerable beginning with Whiting Petroleum, the first company to file for Chap. 11 bankruptcy (Eaton & Scurria, 2020). Even the prominent ones like Noble Energy (NBL), Halliburton (HAL), Marathon Oil (MRO) and Occidental (OXY) ended up losing more than 66% of their market cap in just a few short months. Even majors such as Exxon (XOM) have lost as much as 40% of their value (Kern, 2020).

### 2.3 Deep Contango, Black Monday and Storage Crisis

In a world that was at a standstill with the pandemic starting to rule the roost; with the hostile quest for market share of Saudis and Russians that added to the excesses of crude that nobody wanted; and with large importers like China on a staggered recovery (Meidan, 2020), a huge storage crisis loomed large with hardly any places left to store oil. Refineries, storage facilities, pipelines and even ocean tankers filled up rapidly since billions of people around the world started getting confined in their homes to contain the spread of COVID-19 (Said & Faucon, 2020a, 2020b). Furthermore, refineries expressed unwillingness to refine crude oil into gasoline (petrol), diesel and other products because of progressive stalling of commuting and grounding of flights, and international trade registered a sharp decline. Oil was already getting stored on floating barges as land-based storages were getting overstressed leading to higher costs.

Going by the jargon of commodity market trading, the rout of the pandemic and other factors made the market flip from backwardation to a contango structure in a forward curve (Kaminska, 2020). A contango structure usually shows up in a commodity market when the price of commodities in futures contracts exceeds the cash price of same commodities in the spot market. The reverse situation is known as backwardation. Contango provides traders the opportunity to buy oil at a cheaper price now and then sell it off at the futures market at a higher price at some agreed point of time in the future. However, when it comes to crude oil, the profitability in trading depends largely on whether the cost of storing oil is lower than the profit generated by the trade attributed to the contango. If the cost is lower, the contango tends to encourage hoarding. In an oversupplied market, a supplier whose stocks are building because of a dip in demand needs to discount his product to encourage

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8 In addition to futures contracts, another way for market participants to invest in crude oil is through the buying and selling of options contracts. Options allow for investment exposure with limited potential for losses and provide an insurance-like instrument against adverse commodity price movements. See [https://www.eia.gov/finance/markets/crudeoil/financial_markets.php](https://www.eia.gov/finance/markets/crudeoil/financial_markets.php) (accessed 28 August 2020).
someone who doesn’t really need to buy to actually make him do so. The inducement to the discretionary buyer is reflected in the spot price trading at a discount to the forward. If the surplus supply persists, prices will continue to slide further, and the contango steepens further creating more distress in the market. And this is where the market reached in April 2020.

Going down the memory lane in 2008 the economy was a similar victim of a massive oil demand destruction and the contango was so deep that the spare capacity for all on-the-ground storage facilities got completely exhausted. However, the profit that could be derived out of trading in crude futures was more than adequate to pay for the cost of buying charter tankers for storing oil offshore and still end up with a handsome amount in hand. But this time the situation turned out to be starkly different as there was a serious crisis of physical storage capacity to park the excess global oil supply. As reported by Reuters, the increased demand for storage had placed significant upward pressure on land storage costs worldwide and also raised the rate of crude oil maritime shipping, which is usually considered as an alternative to on-shore storage (Kumar & Hiller, 2020). The supply demand imbalance in the face of lockdown announcements worldwide deepened the contango as inventories continued to build and traders increasingly started resorting to floating storage. The excess supply from OPEC producers further caused a substantial increase in Very Large Crude Carriers (VLCC) rates as the producers especially Saudi Arabia started sending oil to USA. Chartering costs for VLCC had more than doubled since February (IEA, 2020). Serious concerns arose with respect to storing different qualities of crude oil at many sites as special tanks were required for some products. The storage concerns continued to put pressure on front prices and the shape of the forward curve in the next few months till the pandemic curve flattens.

An extreme manifestation of the stressed market situation triggered by the storage challenges was observed when the price of May 2020 WTI crude contract went to sub-zero level reaching a historical nadir of—$40 a barrel. This essentially implies that anyone who is trying to sell a barrel of crude would have to end up paying a buyer to offload it. This is because, WTI futures contracts that need buyers to take possession of oil in May were expiring on April 21, but because of market flooding with surplus oil coupled with lack of effective demand, nobody really wanted oil as there was a severe crunch of space to store it. This led to steep price slide to sub-zero level on April 20, a day before the expiry of the contract.

However, there is also a need to provide a quick clarification that albeit the sub-zero price is a manifestation of severe storage crisis, it is purely related to storage capacity in Cushing, a landlocked terminal, located in Oklahoma, USA and only pertains to the 2020 WTI Crude futures contract for May delivery. As on April 21, contracts for June delivery were still trading for about $22 a barrel, albeit down by 16% for the day. The positive pricing of other crude oil benchmarks with the Brent contract for June 2020 delivery closing at $19.33/b on April 21; positive prices for

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9The contango gets deepened when the near-term futures prices are way lower than longer-dated ones.
10https://www.iea.org/reports/oil-market-report-April-2020.
other longer-dated WTI prices, and positive spot prices for other U.S. crude oils reinforced the fact that the slide was predominantly triggered by the stress created due to timing of the May 2020 contract expiration of WTI crude futures plus the storage concerns (IEA, 2020).

To be more precise, one needs to be actually thorough with the terms and conditions contained in the settlement procedures11 of the May 2020 WTI crude contract to gauge the real reason behind the recent crude slide. On expiration, the holder of a WTI contract had two options to meet the contract’s physical delivery requirement. A contract holder could settle the position by entering into an Exchange for Physical (EFP) contract with a counterparty which involves transfer of the contract in exchange for cash or other futures contracts with later expiration dates. Alternately, settlement could occur if a contract holder takes physical delivery of the crude oil. As per the contract’s specifications, delivery of the physical crude oil volumes must occur at a pipeline or storage facility in Cushing. Furthermore, the delivery should also occur within a specific time, which is currently set no earlier than the first calendar day of the contract month and no later than the month’s last calendar day.12

Under normal circumstances in Cushing, buyers can easily have the oil transferred into a storage facility or pipeline that they own or lease or can transfer ownership of the crude oil elsewhere in the pipeline and storage system after taking due consent of the sellers. However, COVID-19 have precipitated an extraordinary situation. As a result of complete drying up of demand, the piling surplus of imported oil plus domestically-produced crude oil volumes had to go straight into storage. Thus, on 17th April i.e. just three days before the Black Monday, 76% of Cushing’s storage capacity was already full. Figure 5 shows the steep rise that happened in 2020.

Although there was still some unfilled physical storage space available, some of those had already been leased out or otherwise committed, thus restricting the uncommitted storage availability. Given the high demand for storage, anybody who intends to store oil would have to shell out a much higher rate to storage operators to make headway through the uncommitted storage space.

The unavailability of uncommitted storage or exorbitant storage cost coupled with deepened contango since early March 2020, as explained before, made it really challenging for some market participants to take physical delivery. However, if they continue to own the contract when trading stops, they’ll be required to take that delivery at higher prices, failing which there could be serious consequences.13

11For more details see: https://www.cmegroup.com/trading/energy/crude-oil/light-sweet-crude_quotes_settlements_futures.html (accessed on August 23, 2020).
12The explanation and illustration draws largely on the information and details contained in https://www.eia.gov/petroleum/weekly/includes/analysis_print.php (accessed on August 20, 2020).
13In case of a failure to accept physical delivery the specific costs that an owner of crude future has to incur depends on the specific contractual arrangements entered into by the contract holder and the Futures Commission Merchant (FCM)—the entity responsible for executing the buying and selling of futures contracts on behalf of a client. The possible costs may involve a combination of direct monetary penalties, reputational consequences, the liquidation of the collateral deposited by the client in the margin account with the FCM, the revocation of trading privileges,
This essentially implied that they had to settle the May 2020 WTI contract financially by selling the contract to another market participant even if that amounts to selling at rock bottom prices or even negative prices to other traders to exit their contracts and avoid physical settlement. The extreme market environment that resulted therefrom made several participants sell their contract at negative prices. In other words, this is equivalent to paying the other party to take possession of the contract before expiration. This is also in line with the traders’ sentiments who usually buy oil futures contracts as a way of betting on price movements, without any intention of taking physical delivery of barrels. However, the worst was still not over for the oil price. Unlike financial assets bonds and stocks, commodities are usually considered as spot assets and must clear the supply and demand. The rising glut of oil made global storage capacity (onshore plus offshore) gradually reach its limits and created more volatility. Oil tanks had either been filled up or booked out by traders, while the amount of crude and fuel stored on vessels at sea surged. The seaborne crude had reported stocks at 175 m barrels, up from 100 m in late March (Sheppard et al., 2020).

Since WTI crude futures for May delivery traded negative in May 20, more than 40% of the June contract was reportedly liquidated with a fear of another disastrous slide of crude future prices futures contract of WTI crude for June delivery. Holdings of the July contract had been stable, while those on September futures jumped by almost 20% (Raimonde, 2020). With nowhere to store the oil, supply had no other

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and the costs of any legal settlements resulting from the breach of contractual obligations. (see-7/200422/includes/analysis_print.php (accessed on 05 September 2020).
option but to be shut-in down in-line with the expected demand losses and the drastic output cuts globally.

Energy companies worldwide also started receiving force majeure notices from customers as the persistent lockdown made it increasingly challenging to run factories and commercial establishments further affecting energy demand. Many refiners also decided to stall their operations because of lack of effective demand. There was an impending fear that if pipelines get jammed and refineries shut down then building up of inventories, strategic or otherwise, would become more challenging due to inadequate storage capacities. In effect, the oil market crisis precipitated an unprecedented storage crisis. With rising prices and profitability of storage, it rather made more sense to own oil storage space than to own a crude futures contract.

3 Conclusion

The IMF’s chief economist Gita Gopinath pointed out - “Given the fact that COVID-19 has precipitated a crisis like no other, and there is substantial uncertainty about its impact on people’s lives and livelihoods, a lot actually depends on the epidemiology of the virus, the effectiveness of containment measures, and the development of therapeutics and vaccines, all of which are hard to predict at this moment” (Gopinath, 2020).

In our economics textbook we get to learn about pathological cases of demand and supply. We now have a live example of a pathological glut and went through all the noises and chaos that it created. On one hand demand for oil literally had a free fall as people were not buying petroleum fuels like gasoline or petrol or jet fuels despite lower prices for these products. This was driven by the minimum essential travel demand that existed coupled with grounded flights. Furthermore, in the new normal that people started to get acclimatized to, the chance of oil demand reviving to its pre-pandemic level soon appeared rather bleak. Probing on the supply side, the oil supply continued as it is very costly to shut down a producing well. In fact, for many producers, it almost turned out to be an all or nothing choice—shutting down is not an easy option and not practical. This is especially true for high-pressure, high-temperature wells that are harder to cap and halting production from them is more permanent and expensive and may lead to irreversible losses. Thus, in the bigger interest of the medium to long term allowing them to operate is the only way to go ahead (Wharton School of Business, 2020). Therefore, the only option that remained was to keep pumping even at a rock bottom price. Consequently, all unneeded oil went into reserve, strategic or otherwise, till the time such space existed for storing beyond which shutting in by refineries and capping of wells eventually becomes inevitable.

By destroying the effective derived demand, the pandemic has also altered the market dynamics for fuels and led to a deep slide in the crude prices globally roiling all crude benchmarks and WTI futures contract slid to a negative zone for the first time in history. Although other benchmarks like Brent or Dubai crude did not slide
that low, but with global oil slosh and storage crisis their prices were also hovering at a rock bottom level. The turn of events rattled the trust on a crude benchmark like WTI. The betting behaviour of the traders in the commodity futures market continued to rule the roost and drove the price to an unhealthy zone irrespective of where the fundamentals lie. Albeit triggered by a contango structure betting in a dangerously inelastic oil market coupled with a severe storage crisis created a huge disconnect with the very foundation and fundamentals of oil and gas economics, which is obviously a matter of concern.

The entire crisis also blatantly exposed the vulnerabilities of American energy dominance that has been riding on shale for a decade. What one could expect at the most is a leaner shale industry with stronger players who could manage to sail through the crisis with or without a stimulus package from the government. The sudden drop for shale from the cliff is also a great lesson for other shale players worldwide in terms of generating consciousness about the hollowness and shaky foundation on which the US shale revolution was based, although it made USA one of the largest exporters at the end of 2019 surpassing the Saudis and the Russians. In fact, the shale industry could manage to sail through the last decade only because of the reasonably high oil and gas price that could help them to reach their breakeven easily but the situation does not appear to remain favourable any more. The era of free riding on the high oil price is almost over. Sooner the industry come to terms with this reality, the better it is for its business strategy and future course of action.

The untimely and undesirable brawl for market share and price war between Saudis and Russians might appear to be a strategic move but there is hardly any doubt that it eventually turned out to be a miscalculated blunder. The compound effect of the pandemic and price war rattled the economics of oil and gas industry in an unprecedented manner. Breaking-out of competition is not new in the world oil market and we have observed that consecutively in 1985, 1999, 2008 and 2014. In most of these cases, however, it took quite some time before some coordinated OPEC agreement started having some real effect in the oil market (Bornstein, 2020a). This time the big producers proposed to cut daily output in a span of one month. Be it under pressure of US or G20; be it due to a steeply cratering demand that made fulfilment of their own aspirations challenging; be it due to their own plus other weaker producers’ finances being under severe stress; this time OPEC plus could actually agree to deeper cuts to balance the market. However, the continued drop in consumption does not seem to provide any respite so soon in the changing normal and turmoil in the oil markets shall continue to rule the roost for the financial year 2020–21.

Leaving aside the more specific fallouts, there is hardly any second thought that with an energy sector that has been bruised by a historically steepest slide in crude prices, it is very unlikely for the earlier “normal” to return. Given the critical role that oil plays in driving the global economy and in terms of providing an important source of revenue for the government; providing an important avenue for investments by pension funds or hedge funds, everything will now have to adjust to this ‘new normal’ irrespective of the plights and challenges that may arise therefrom. As noted in a recent research paper to guide the policymakers that came out in April
27. Altman notes, “the linchpin for a strategy to move out of lockdown seemingly rests on increased testing and contact tracing, possible return-to-work permits based on immune status, repurposed or new therapeutics” (Altman, 2020). Assuming the policymakers follow all these carefully while going for a staggered lifting of lockdown across the world and people progressively resumes travel, a lot will still depend on how behaviour of commuters changes for short distance travel or for long haul in a post-COVID world and with a second wave of infection that may still loom large.14 Given that we are now getting acclimatised with remote working, telecommuting and videoconferencing; people would think twice before travelling and even the organisations would carry out cost-benefit analysis to examine whether the need for physical travel could actually be reduced in the post-COVID world. That may inherently reduce the demand from one of the biggest contributors for oil demand, transport sector. The requirement of cooling and heating offices shall also reduce concomitantly. In other words, the volatility and the roller coaster ride in oil sector is only expected to continue further.

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