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The Effect of Pandemic on Crude Oil **Prices**

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Abstract

The Coronavirus (COVID-19) induced fear and instability around the world, wreaking havoc on the global economy and aggravating financial market volatility. In addition to the ongoing menace, the world witnessed a price war between Russia and Saudi Arabia as they failed to reach a consensus regarding the downward adjustment of oil supply. The oil prices went downhill on March 9, 2020, when Saudi Arabia flooded the market with oil, 49 days after the World Health Organization (WHO) released the first coronavirus monitoring study. As a consequence of elevated supply and almost negligible demand, oil prices declined drastically in the global markets. The oil prices continued plunging till 20th April 2020, when the price for oil futures entered negative territory, significantly impacting the major oil-exporting economies in the world. In light of this, the objective of the paper is to explore the effect of COVID-19 on crude oil prices and to study how and why the crude oil prices turned negative. The research also circles the impact of the fall in crude oil prices on the major exporting countries of the United States of America, Saudi Arabia, and Russia using comparative analysis.

Keywords: *Oil price war, Covid-19, negative oil futures, oil-exporting countries, crude oil*

1.0 Introduction

Since the early 1970s, the global energy markets have grown substantially, having a significant influence on the global economy and politics. Oil has historically been a major source of economic shocks, leading to large price swings in the global economy. Crude oil prices in the global market are affected by various macroeconomic and microeconomic variables. Nevertheless, there are other factors such as Energy Information Administration (EIA) reports, Organisation of the Petroleum Exporting Countries (OPEC) meetings, Geopolitical conditions, weather events, world events, and many more, that have an impact on the volatility of crude oil prices. One such world event occurred in March 2020, when WHO declared COVID-19 as a Pandemic (2021). The SARS-CoV-2 virus originated in the wet markets of the Wuhan Province of the People's Republic of China and rapidly spread across the globe. To stop the spread of the highly contagious virus, approximately 187 countries and regions adopted the measures of lockdowns, stay-at-home orders, curfews, quarantines, cordons sanitaires, and similar restrictions. Countries also restricted travel both internationally and domestically as early as March 2020.

With the pandemic came uncertainty for business and possible disruption of many businesses, leading to a serious economic impact on certain sections of the economy, especially the Oil and Refinery. The major use of crude oil is as a transportation fuel. However, it is also used as the base for many products such as wax, fertilizers, perfumes, etc. Due to the travel restrictions along with low levels of production, the requirement for fuel and raw materials fell considerably. All the factors resulted in the decline of demand for crude oil. It was also reported that after China reported its first death caused by the virus and the subsequent lockdown in January 2020, the demand for oil started to decline.

The second world event that affected the crude oil's price was a brief price oil-price war between the two major crude oil-exporting countries i.e. Saudi Arabia and Russia in the months of March-April 2020. The conflict between the two countries led to a substantial increase in oil supply in the global market. With low demand and continued increase in oil production, the prices were bound to fall. The price war compounded the effect of the ongoing crisis, leading to the plunging of oil prices to their lowest since 2002, falling below \$20 (Smith, 2020). The West Texas Intermediate (WTI) crude oil entered the negative territory briefly, in April 2020, for the first time in history. This was the result of a shortage of space to store the oil produced in the oil-producing and exporting countries. The price war came to an end in mid-April, when an agreement was signed between the OPEC and non-OPEC countries on 12th April 2020 to cut down on their oil supplies. This represented the largest cut in the history of the producer cartel.

For oil traders, the COVID-19 pandemic created uncertainty, but the oil price war between Russia and Saudi Arabia accelerated the process. The panic was visible in the futures market, where traders and importers couldn't determine whether or not to take delivery of the contract because storage capacity had been reached. Some oil producers even stored their excess oil in the sea tanks, by paying high leasing costs.

The impact of lower crude oil prices due to the pandemic on the oil importing and exporting countries was drastic. Many oil-importing countries benefited from the lower oil prices, however, on the contrary, MENA countries (the Middle East and North Africa) experienced an economic recession, due to unforeseen circumstances (Bildirici, 2020). The oil-exporting countries suffered a negative impact since they incurred huge losses due to low oil prices.

This research aims to study how the negative crude oil price of the WTI benchmark came to be a negative year on year and how the prices of Brent crude did not fall negative. The study expands its horizons to include the effect of oil price shocks on the world's major oil-exporting nations (USA, Saudi Arabia, and other OPEC countries, and Russia).

2.0 Basics of Oil Trade

2.1 About Crude Oil

The energy sector is a large and inclusive term that describes a nexus of companies entailing the production and distribution of energy needed to power the economy and promote the means of production and transportation (Chen, 2021). The energy industry produces many types of energy sources which can be broadly divided into the categories of renewable and non-renewable. Renewable sources include solar, wind, hydropower, and biofuels. On the other hand, non-renewable sources include petroleum products and oil, natural gas and gasoline, nuclear, electricity and diesel fuel, etc.

Many economists are of the perspective that crude oil is a principal commodity in the world as it is one of the primary sources of energy production. Crude oil is a naturally occurring petroleum product formed by hydrocarbon deposits and other organic materials. A variety of fossil fuels, crude oil is refined to give rise to viable products including gasoline, diesel, and various other forms of petrochemicals (Chen, 2021). As it is a non-renewable resource, it implies that it can't be replenished naturally at the current rate of consumption and is, therefore, a limited resource. Petroleum products propel vehicles of airways, railways along with cars and trucks, they are also used to heat buildings, and produce electricity. In the manufacturing sector, the petrochemical industry uses crude oil as a feedstock to make products such as plastics, paints, polyurethane, kerosene, asphalt, solvents, and other intermediate and final goods. The black gold is obtained through drilling, where it is generally encountered adjacent to other resources, such as natural gas which sits above the crude oil, and saline water which sinks below from underground reservoirs where ancient seas were once located.

2.2 Types of Crude Oil

Variations in colour such as those of black, dark brown, yellowish, reddish, tan, or even greenish indicate the distinct chemical compositions of different supplies of crude oil

(National Geographic Society, 2013). This variation occurs due to the different heat and pressure to which the plants, planktons, and algae in those ancient reservoirs were exposed. This results in a different hydrocarbon percentage in each variation. Oil having different compositions can be classified according to these into categories:

1. Geographic location

1.1. While oil is drilled all over the world, however, three primary sources of crude oil act as the reference points for ranking and pricing other oil supplies as well as a reference price for investors. These are :

1.1.1. Brent Crude is a blend that is drilled from 15 different oil fields between Scotland and Norway in the North Sea. These fields meet the demand for most of Europe (National Geographic Society, 2013)

1.1.2. West Texas Intermediate (WTI) is a lighter oil that is produced mostly in the U.S. state of Texas. It is “sweet” and “light”—considered top-notch quality. WTI supplies much of North America with oil (National Geographic Society, 2013)

1.1.3. Dubai Crude, alias Fateh or Dubai-Oman Crude, is a light, sour oil that is found in Dubai, part of the United Arab Emirates. Oman has recently entered the race. Dubai and Oman crudes are used as a reference point for pricing Persian Gulf oils that are mostly exported to Asia (National Geographic Society, 2013)

2. Sulfur content

2.1. Regarded as an impurity, sulfur corrodes the metal while refining and causes pollution.

2.2. The blend of 0.5% sulfur is called “sour,” while the mixture with less than 0.5% sulfur is “sweet.” (National Geographic Society, 2013)

2.3. Sweet oil is usually much more valuable than sour because it does not require as much refining and is less harmful to the environment. (National Geographic Society, 2013)

3. API gravity

- 3.1. The American Petroleum Institute (API) is an association for firms in the oil and natural gas industries. API gravity is a measure of the density of oil compared to water (National Geographic Society, 2013)
- 3.2. Light oil or conventional oil is categorized to have an API density of at least 22° while heavy oil is a low-density oil with its upper limit at 22°.
- 3.3. With a greater yield of hydrocarbons, light oil is preferred, as heavier oils require more refining due to the presence of sulfur and other impurities. (What Is Heavy Oil and How Is It Formed? n.d.)
- 3.4. Light crude oil produces a higher percentage of gasoline and diesel fuel when converted into products by an oil refinery and thus receives a higher price than heavy crude oil on commodity markets. Heavy crude oil has a more adverse effect on the environment since its refinement requires the use of advanced methods and the use of contaminants. (Light vs Heavy Crude Oil - Commodities Glossary - IndexMundi, n.d.)

2.3 How Oil is Traded in the World

Generating an estimated \$3.3 trillion in revenue annually, the Oil and Gas industry is one of the largest sectors in the world. Oil is pivotal to the global economic framework, especially for its largest producers: the United States, Saudi Arabia, Russia, Canada, and China (Evangeline, n.d.). Reflecting strong demand for crude oil, the global purchase of crude oil was valued at US\$1.056 trillion in 2019 where major importing countries included China, India, Japan, South Korea, Netherlands, Germany, USA, Spain, Italy, France, etc.

These exporting and importing countries enter into a contract for trade purposes. The oil market participants closely watch the two major oil contracts. The reference for oil futures in North America which trades on the New York Mercantile Exchange (NYMEX) is the West Texas Intermediate (WTI) crude. Trading on the Intercontinental Exchange (ICE) is North Sea Brent Crude in Europe, Africa, and the Middle East. Moving in somewhat unison, WTI is susceptible to economic developments in the US, while Brent responds more to those overseas.

Investors usually deal in two types of contracts - futures contracts and spot contracts. The spot contract price reflects the price of oil at the current market price while the future price reflects a price set for a set amount to be traded on a predetermined date in the future.

Future contracts are usually used by traders and investors. Futures prices for crude oil can be higher, lower, or equivalent to spot prices. Two terms used to describe the relationship between spot prices and futures prices are backwardation and contango (Chen, 2021). Contango implies the futures price is above the expected spot price and backwardation refers to a market where the futures price is below the expected spot price. (Kowalski, 2020)

3.0 Geopolitics

3.1 OPEC Countries

Another noteworthy oil source is the OPEC Reference Basket which is the average price of petroleum for its member countries. Many of the largest oil-producing countries across the globe are part of a cartel called the Organization of the Petroleum Exporting Countries (OPEC). This intergovernmental organization was first founded at the Baghdad Conference of September 1960 with its headquarters in Geneva, Switzerland which was later shifted to Vienna, Austria in 1965. The organization was originally co-founded by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela. Over the years the organization was joined by many countries and some even left. Currently, the 13 member countries are Algeria, Angola, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, The United Arab Emirates, and Venezuela (Exarheas, 2021). The other top non-OPEC oil-exporting nations namely Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan, and Sudan allied with OPEC in 2016 to form an even more influential and mighty entity named OPEC+ or OPEC Plus.

The goal of OPEC is to coordinate and synchronize petroleum policies among member countries to ensure fair and stable prices for producers, a reliable, economic, and consistent supply of petroleum to consumers, and a fair return on investment for those who invest in the industry. The cartel's purpose is to exert influence over the price of crude oil, a vital fossil fuel. OPEC Plus regulates about 90% of proven oil reserves and over 50% of global oil supplies. Because of its dominant status, the alliance directly impacts oil prices, at least in the short term. Its capacity to control the price of oil is diluted in the long run since individual nations have different incentives than OPEC Plus as a whole. (OPEC: Brief History, n.d.) OPEC Plus member countries negotiate as to how much oil to produce as a cartel, which has a significant impact on the ready availability of crude oil on the global economy at any given time.

As a result, OPEC Plus has a significant impact on the overall oil market price, which is understandably preferred to hold relatively high to maximize profits. Saudi Arabia and Russia, two of the world's largest oil exporters with the ability to raise production, are strong supporters of increasing supply as it will increase revenues.

3.2 Reversal of Fortune-USA

Oil was for the first time commercially extracted in the United States. Thus, The US was the largest producer of oil and controller of oil prices until the mid-20th century. The Vietnam war and the economic boom period of the 1950s and 1960s acted as a catalyst for American reliance on imported oil. OPEC formed in 1960, was presented with increased leverage to influence oil prices and thus, took over, ruling the oil markets and oil prices in years following. In the 1990s and early 2000s, The United States was struggling with declining domestic production as the existing wells were not able to meet the growing demand. However, with the discovery of shale oil in the US and advances in drilling techniques the US has since then re-emerged as a top energy producer (Sharma, 2021). The cost of fracking was also justified by higher oil prices per barrel.

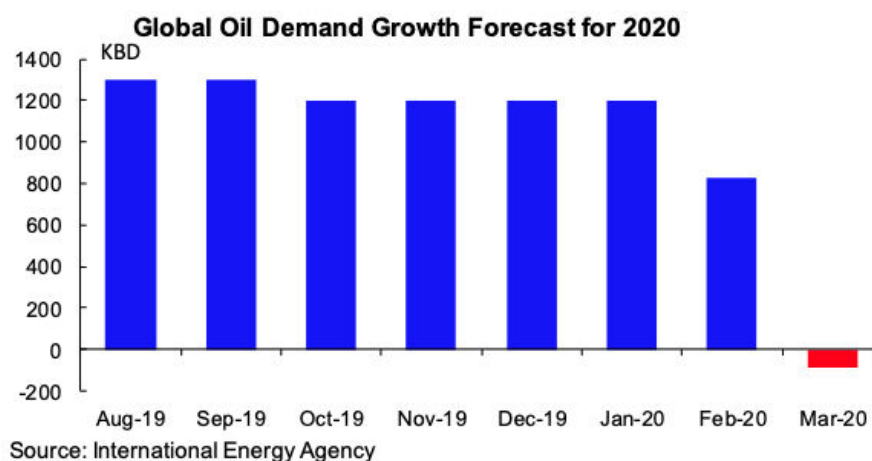
Due to the variety of sectors in the United States, oil prices have a two-way effect on the economy. If it becomes economically feasible for oil companies to exploit higher-cost shale oil reserves, high oil prices can stimulate job growth and investment. High oil prices, on the other hand, increase transportation and production costs for companies and customers. Lower oil prices harm unconventional oil production, but they help manufacturing and other industries where fuel costs are a major concern.

Since so many sectors contribute to it and there is no single dominant industry, the US economy can take a lot of blows and keep going. The same cannot be said for some other oil-producing countries, such as Russia or Venezuela, whose fortunes are linked to oil prices. In other words, the US economy has the flexibility to adjust to extended periods of high or low oil prices. Even though the United States is the largest producer, the top exporters are mostly members of OPEC, which means they remain a key player in the oil price setting phase. (Chen, n.d.)

3.3 Saudi-Russian Oil Price War

“Covid-19 is an unseen beast that seems to be impacting everything in its path,” Mohammad Barkindo, secretary-general of the Organization of Petroleum Exporting Countries (Smith, 2020), said in a speech at the online gathering.

The global markets had been volatile since the beginning of the year 2020, they entered into turmoil when the COVID-19 pandemic hit the global economy, leading to an economic depression. With the transportation industry at a halt and the global economy shut down, the world witnessed a drastic drop in demand for crude oil. China, where the virus emerged originally, was the first country to declare lockdowns, and it accounts for 14% of the global oil demand. The demand had reduced by 29 million barrels per day, from 100 million barrels in 2020 (Oil Crash Explained: How Are Negative Oil Prices Even Possible?, 2020) i.e. almost 30%. The demand was so low, that the production at the lowest possible level also resulted in a glut in the market. Cutting production or completely shutting down an oil well is an expensive and arduous process, disincentivizing the oil-producing countries to shut down their operations entirely. The diminishing demand compelled the oil-exporting countries to take measures to maintain the price stability in the market.



Source: (International Energy Agency, 2020)

Saudi Arabia, the most powerful member of the cartel, proposed a cut of additional 1.5 million barrels per day (Tan, 2020) in oil production, beginning from April 2020 to the end of the year, to all its allies, Russia is one of them. However, they failed to reach a consensus when Russia refused to comply and instead decided on increasing its oil production (Shrivastav, 2021).

As a result, Oil exporting countries, led by Saudi Arabia, continued producing oil and flooded the market. It pumped a record of 12 million barrels per day, resulting in the sinking of the export prices for crude oil (Statista, 2020). Brent benchmark crude futures recorded a fall of 24% after Saudi Arabia announced a discount in oil prices of \$6 to \$8 per barrel to consumers in Asia. DOW futures also saw a drop of 1000 points after this decision of Saudi Arabia. The oil prices declined almost 30% as a consequence (NPR Cookie Consent and Choices, 2020). Saudi kept the production high for most of April, which led to a glut in the market. According to the Energy Information Agency (EIA), the US was also producing 12.3 million barrels per day up to 12th April 2020, making it the largest producer in the world, which further destabilized the price in the global market (Abdi & ETEnergyWorld, 2020).

Brent crude prices fell from \$60 a barrel in February to two-decade lows of \$20 a barrel as it hit \$23.03 per barrel. While WTI crude- the main benchmark for oil in the US fell as low as \$19.50 per barrel. These declines were the consequence of the ongoing Saudi Arabia- Russian oil price war. (Tan, 2020)

Bilateral talks between global oil producers i.e OPEC and other alliances including Russia, Azerbaijan, Malaysia, and Mexico, ended in agreement on 12th April, with decisions to cut down on their oil supply, so as to stabilize the price of crude oil in the global market. The tentative deal came after pressure from the US, which feared the loss of thousands of jobs in the industry. The prices continued crashing even after the agreement, because the production cuts would not kick in until 1st May 2020. All the participants in the deal agreed to reduce their overall crude oil production by 9.7 mb/d, for the period of May and June 2020. It was followed by a cut of 7.7mb/d for the next six months i.e. 1 July to 31 December 2020. For the subsequent period of sixteen months i.e from 1st January to 30th April 2022, they planned a total downward adjustment of 5.8 mb/d. The baseline for the calculation of adjustment was decided to be the oil production of October 2018. The validity of the agreement was till 30 April 2022. However, the extension of the agreement would be considered by the end of 2021. (OPEC: The 10th (Extraordinary) OPEC and Non-OPEC Ministerial Meeting Concludes, 2020)

4.0 The Negative Price of WTI Crude Oil

4.1 How did Crude Oil Price Turn Negative

The WTI is the crude oil that serves as a major global oil benchmark. It is sourced primarily from Texas and is regarded as one of the highest qualities of oil in the world. In April 2020, it witnessed a historic drop in its price, when the price for crude oil entered the negative territory. This came as a consequence of the decreased demand due to the pandemic and the geopolitical conditions around the world.

The crude oil is traded based on futures contracts and spot contracts in the global market. Futures contracts are the legal agreements to buy or sell a certain commodity at a predetermined price at a specified time in the future (Crude Oil, 2021). The negative price of crude oil is basically, the negative price of oil futures contracts.

Convergence, a process that links future markets with the underlying physical commodity, acts as a key concept in bringing about success in future markets. The linking of such physical commodities and markets is accomplished by a delivery mechanism. This takes place after the futures contract expires in the market (Fielden, 2014). On the expiry date of the contract, a market participant for WTI has three options (ET EnergyWorld, 2020):

1. It can be closed off by the physical delivery of the oil barrels to the buyer.
2. It can be reversed out by settling the contract by selling it to another buyer in exchange for money.
3. It can be rolled over, by closing the current contract by buying one for the following month.

Negative oil prices are observed when the price of an oil futures contract falls below zero. In simple terms, negative prices are when the exporting countries are willing to pay importing countries to take the commodity off their hands. This is due to the lack of storage space with the exporting country.

Three factors lead to a commodity entering a negative territory (Cliffe, 2020)

1. Demand for the commodity should fall
2. Supply should be greater than demand
3. The storage capacity of the commodity should be running out.

In the case of oil, the world witnessed all three factors globally, in April 2020. As the COVID-19 pandemic coincided with the bitter price war among the major oil-exporting countries, it led to a downfall of demand for crude oil in global markets.

The world did not see a cut in the supply until May 2020, which was the expiry date of May 2020 futures. This came after the agreement between all oil-exporting countries to cut down the oil production by 9.7 million barrels per day on 12th April 2020.

The prices for crude oil turned negative for the first time in history on 20th April 2020 i.e. a day before the May 2020 delivery (21st April 2020). This meant that anybody who held the futures contract would have to take the delivery of oil after 21st April 2020 or sell the contract to another buyer at the current price in the market. (Cliffe, 2020)

As the deadline approached closer, the prices began plummeting. This happened mainly due to the following reasons (Misra, 2020):

1. Importing countries
 - 1.1. They were running out of space, as their existing oil reserves couldn't be consumed due to lockdowns.
 - 1.2. It was a preferred option to take a hit on the contract price, rather than paying for transportation along with the rent for storage.
2. Exporting countries
 - 2.1. They chose to get rid of the oil at unbelievably lower prices due to lack of storage space.
 - 2.2. The other option with oil-exporting countries was to shut down the oil well which would be a costly and cumbersome process.
3. Investors and Traders
 - 3.1. As the delivery date approached, investors grew paranoid and began a massive sell-off to take the contracts off their hands.

According to the Energy Information Administration (EIA), the storage site at Cushing Oklahoma has a working capacity of 76 million BDP, which was filled up to 55 million BDP.



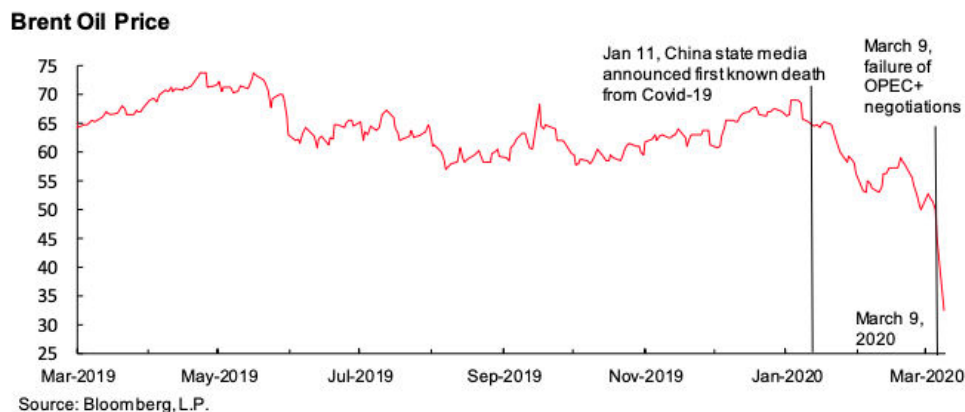
Source: (New York Times, 2020)

The WTI crude touched a negative \$40 before closing at \$37.63 per barrel on Monday. i.e. 20th April 2020- this had never happened since NYMEX oil futures began trading in 1983 (ET EnergyWorld, 2020). It can be recorded as the worst day of the oil market. However, this historic drop was witnessed for a brief period and the prices soared quickly. US crude oil for the June futures contract rose \$20, thereby entering a super-contango futures market.

4.2 Why Brent Did Not Suffer The Same Fate As WTI

WTI crude and Brent Crude oil are the two major grades of crude oil. They have been used as global benchmark oils for future markets for decades. Brent crude oil sets the standard for almost 2/3rd of the oil production in the world. It may be seen as a more reliable indicator for global prices. The Intercontinental Exchange (ICE) Brent futures are traded in 1000 Bbl (British Barrels) contracts.

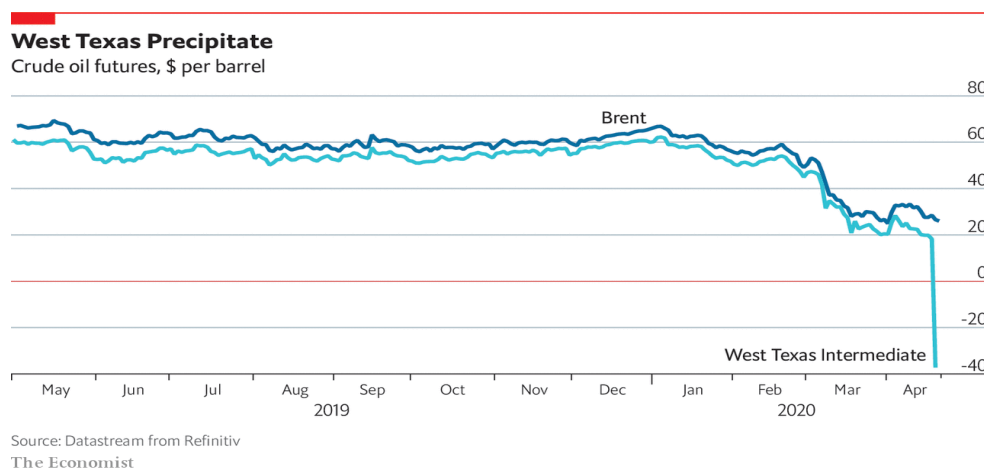
Brent and WTI crude oil grades not only differ in their contents and specifications but also in the manner they are traded in the futures market. WTI contracts are settled with physical barrels whereas Brent crude is settled with cash (ET EnergyWorld, 2020). When the WTI contract expires, the quantity of the oil that existed only on paper is now transformed into physical barrels that are used or stored at the storage facility at Cushing, Oklahoma.



Source : (Bloomberg, L.P, 2020)

In the case of Brent crude oil, The delivery mechanism allows market participants who hold a buy or sell position of the futures contracts in the market, to exchange them for the underlying physical commodity. However, it is not practical to deliver 1000 Bbl lots of Brent crude oil, thus making delivery mechanism and convergence a complicated process in this case. To overcome this complication, the Brent ICE futures contract is made “cash-settled” against an index price. This means that market participants who hold a position in a futures market can exchange their outstanding future contracts which have ceased to trade, for cash, based on the index price. (Fielden, 2014)

Another reason for Brent not following WTI to negative indexes is that Brent crude is seaborne, can be transported via pipelines, and be stored in the floating storage, unlike WTI crude, which stores oil at its hub in Cushing, Oklahoma.



Source: (The Economist,2020)

This contributes to the fact that, in April 2020, WTI witnessed a 300% drop (Lee, 2020), when oil prices plunged from \$17.85 to \$-37.63, while Brent crude only observed a decline of 3.4% (Nawaz, 2020).

5.0 Comparative Analysis Between Major Oil Exporting Countries

The USA, Russia, and Saudi Arabia are the biggest oil-producing countries in the world. There is a constant tussle between them for the share in the global market. To overcome this tussle, Saudi Arabia along with other OPEC countries allied with non-OPEC countries including Russia, which was named as OPEC+ alliance. Thus, making the USA their biggest sole competitor. However, as the pandemic struck on the global economy, Russia and Saudi Arabia entered into a feud, resulting in the plunging of oil prices drastically. The pandemic along with the price war had a significant impact on all the major oil-producing and exporting countries.

The aim is to perform a comparative analysis on how these countries were impacted by the crisis individually.

5.1 Saudi Arabia

Saudi Arabia is one of the largest oil-exporting countries in the world. It possesses 17% of the world's petroleum reserves. The economy of Saudi Arabia is highly dependent on the revenue from the oil industry, which accounts for 50% of the GDP. The exports from this sector account for 70% of the total exports (Statista, 2020). Saudi Arabia has relied on oil reserves since the 1950s, this has resulted in a cut down in government expenditures and drawdown from the central reserves, due to constraints on oil export revenues.

It has approximately \$500 billion in its sovereign wealth fund. The drawdown from central reserves in 2020 is expected to be more than \$30 billion. It is indebted for almost \$19 billion to local and international investors (A Crude Future? COVID-19s Challenges for Oil Demand, Supply and Prices, 2020).

The Saudi government increased the rate of Value added tax (VAT) from 5% to 15% with effect from 1st July 2020. It also suspended the cost of living allowance of the state workers from 1st June 2020. The government asked the agencies to cut down their budgets by 30%. The kingdom reported a budget deficit of \$9 billion in the first quarter of 2020. Oil revenues in the quarter also observed a drop of 24% from last year, to \$34 billion. (Thomas, 2020)

As per the figures released after the second quarter of the year, Saudi Arabia's economy contracted 7% year on year (y-o-y) in this quarter. The Kingdom's private sector recorded negative growth of 10.1%, while the public sector witnessed negative growth of 3.5%. Kingdom's petroleum refining industry recorded a 14% year-on-year drop.

Its oil revenue in the first half of the year fell 35% from the previous year, while non-oil revenue fell 37%. This resulted in the current account deficit of \$18 billion i.e 12% GDP in Q220, in comparison with the surplus of 5.8% of GDP earlier year. (Watkins, 2020)

On the religious front, the kingdom suffered a setback when the decision was taken to close off the holy pilgrimages to Mecca and Madina. It is expected to cut capital expenditures and put a hold on the major programs to diversify the country's dependence. (Thomas, 2020)

On 2nd April 2020, a telephonic conversation took place between the then US President Donald Trump and Saudi Crown Prince Mohammed Bin Salman in which the President advised the Crown Prince to cut down on their oil production or he (The President of the United States) would have no alternative, but to withdraw the US troops and military equipment from the kingdom.

Ten days later, the OPEC+ agreement to cut production by 9.7 million barrels per day was signed between the alliances. (A Crude Future? COVID-19s Challenges for Oil Demand, Supply, and Prices, 2020) Saudi Arabia accounted for 26% of the output cut from this deal. (Elagina, 2020).

5.2 Russia

Russia is the third-largest producer of oil worldwide, accounting for 12% of global crude oil production (Munk School of Global Affairs and Public Policy & University of Toronto, 2021). The country is rich in natural resources and focuses its energy production in the West Siberia and Volga-ural oil and gas provinces. The country's economy is highly dependent on energy revenues, it was the second-largest oil producer worldwide in 2019.

The daily oil refinery capacity of Russia is 6.7 million barrels and its oil refining depth rate is 82.76%. The oil sector accounts for 30% of the Russian GDP. Russia held approximately \$124 billion in its sovereign wealth fund. (Elagina, 2020) As a result of the economic impact of COVID-19 and the failure of the OPEC deal, the global stock markets witnessed a crash on 9th March 2020, also referred to as Black Monday 2020. Russia's giant oil corporations recorded an almost 22% plunge in their prices. (Statista, 2021)

Russia's economic ministry claimed the contraction of 9.6% in GDP in April-June 2020. After the growth of 1.6% in the first quarter, the Russian economy recorded a fall of 8.5% year on year in the second quarter of 2020 (Ostroukh, 2020). Russia's Federal Statistical Service claimed that only the agriculture sector recorded growth in the second quarter, while the commodity, retail, transport, and service sectors were negatively impacted. The transport sector and service sector observed a decline of 79% and 37.2% respectively. (Agence France-Presse, 2020)

Russia entered into an agreement on 12th April 2020 with Saudi Arabia and other OPEC+ nations to cut down on their oil supply. Russia accounted for 26% of the total cut of oil production in the OPEC+ agreement in May and June 2020 (Elagina, 2020). This agreement came to be, as a consequence of the diminishing demand and oil prices in the global economy. On 21st April, the WTI crude marked the historic event, when the oil prices turned negative for the first time. Although Russia's crude oil- Urals is dependent on the Brent benchmark, it was affected as the spillover rippled through the global markets. Ruble, Russia's currency, observed a 3% devaluation against the US dollar, settling at 77 rubles (Cordell, 2021).

5.3 USA

In 2018, the United States overtook Saudi Arabia as the world's biggest crude oil producer, a position it held in 2019 and 2020. Crude oil produced in the United States and other countries is obtained by US oil refineries. It produces 15% of all crude oil in the world. As against those of OPEC countries, the US economy is not solely dependent on the oil industry. The oil and natural gas industry in the United States employs 10.3 million people and accounts for approximately 8% of the country's GDP. (Oil & Natural Gas Contribution to U.S. Economy Fact Sheet, n.d.)

Crude oil is supplied to the global market by a variety of firms. Crude oil is extracted in 32 states and coastal waters off the coast of the United States. In 2020, five states produced about 71 per cent of total US crude oil output, with Texas accounting for 43 per cent (Where Our Oil Comes from - U.S. Energy Information Administration (EIA), n.d.). From 2009 to 2019, annual production grew nearly every year, hitting its highest level ever in 2019. In 2020, crude oil output in the United States fell by about 8%, the largest annual drop on record. In 2020, crude oil production in the United States averaged 11.3 million barrels per day (b/d), dropping 935,000 b/d (or 8%) from the previous peak of 12.2 million b/d in 2019.

Crude oil production in the United States peaked at 12.8 million barrels per day in January 2020. In March 2020, crude oil prices decreased because of the sudden drop in petroleum demand that resulted from the global response to the coronavirus (COVID-19) pandemic. Crude oil prices fell in March 2020 as a result of the global response to the coronavirus (COVID-19) pandemic, which resulted in a sudden decline in petroleum demand. (U.S. Crude Oil Production Fell by 8% in 2020, the Largest Annual Decrease on Record - Today in Energy - U.S. Energy Information Administration (EIA), 2020). The US Consumption of petroleum and related products fell by 13% in 2020 as compared to 2019 and 2018. (Use of Oil - U.S. Energy Information Administration (EIA), n.d.)

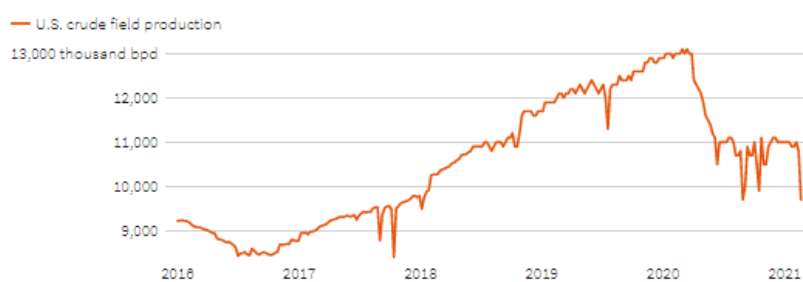
The First Quarter of the year marked the decline of 5% in GDP (Real) at an annual rate, signalling the recession for the upcoming year. As per the figures released by the government, the United States recorded a decline of 32.9% in GDP (Real) in the second quarter of the year 2020 (Cox, 2020). The US economy suffered its worst period in the second quarter of the year. Economists claim that neither “The Great depression” nor “The Great Recession” recorded such sharp contraction in the economy. (Cox, 2020) Between November 2019 and the end of April 2020, over 300 drilling rigs in the United States were shut down. Oil and gas firms in the United States have slashed their capital spending by nearly \$100 billion, with Exxon alone slashing its spending by 30%, mostly in the Permian Basin. Although the United States has been producing crude oil above its domestic needs and has had a motor gasoline surplus since late 2014, to follow the trend of domestic demand and refinery configurations in the United States, it had to import crude oils with higher specific gravity.

As a result of the pandemic, a fifth of global fuel demand was lost, and several shale firms went bankrupt, while others structured mergers to offload debt. Two big questions arose as a result of this. The first is the economic feasibility of extracting shale oil, and more importantly, how to keep a stake in shale oil despite the lack of revenue. (Jefferson, 2020) The sharp drop in activity in the United States, combined with high shale decline rates and investor pressure to retain discipline overgrowth, means that shale will not recover to its previous levels in the United States. Private companies are expected to increase oilfield production, though not to the extent that output in the United States is significantly increased. As businesses emphasize shareholder returns, it is expected that US spending will remain about \$60 billion in 2020, unchanged from the previous year. (Hiller, 2021)

Oil producers in the United States reduced production, but not quickly enough. At the end of 2020, American production will have dropped to less than 11 million barrels per day, down from 13.3 million barrels per day at the end of 2019. Many firms have already reported significant losses, and analysts predicted that many more will file for bankruptcy protection in the coming months. It was said that if the price remains \$20 a barrel for a while, 80 per cent of the hundreds of independent oil companies in the state would be forced into bankruptcy and 250,000 workers would lose their jobs (Assets, 2021).

Pandemic ends U.S. oil output's climb

U.S. oil production largely rose over the last five years, reaching a record high of 13.1 million barrels per day, until the coronavirus pandemic last year. Many U.S. oil executives do not see production rebounding to pre-pandemic levels.



Source: U.S. Energy Information Administration data

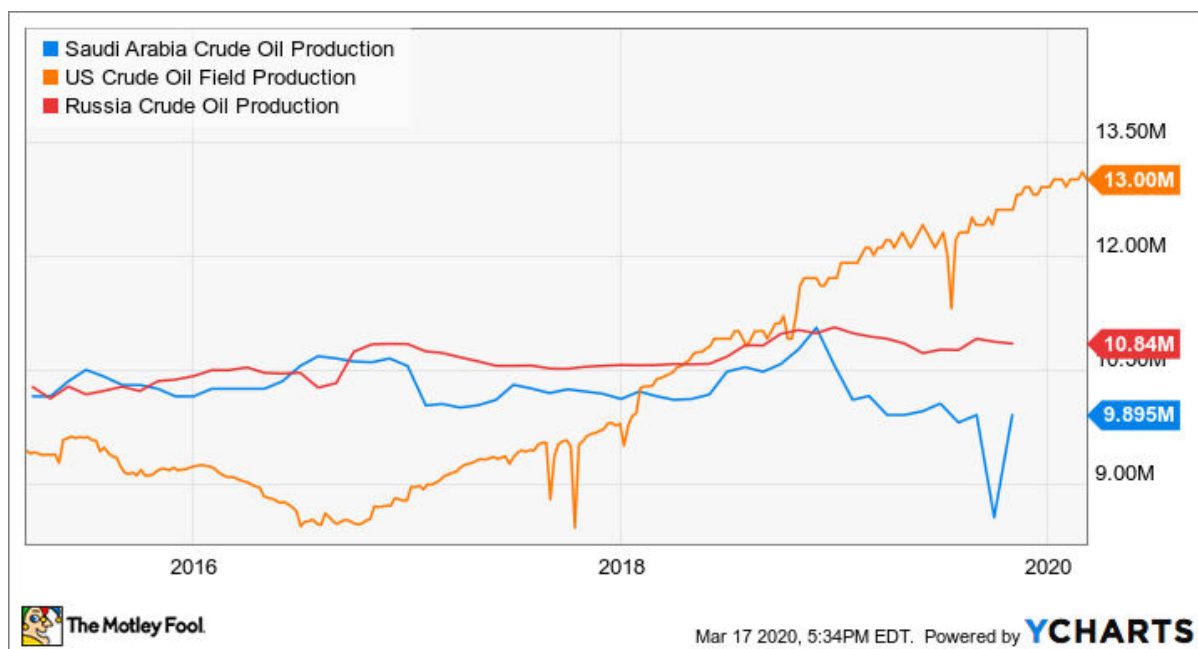
Source: (EIA, 2021)

According to energy analysts, the world's storage capacity is estimated to be 6.8 billion barrels, with about 60% of that capacity being used. Since so few people commuted or flew, refineries were reluctant to convert oil into gasoline, diesel, and other goods, and foreign trade has slowed dramatically. Companies stored oil on barges and in every nook and cranny, they could find. Some of the oil gluts can be seen in Cushing, Oklahoma, a key storage centre where oil traded on the US futures market is shipped. According to Rystad Energy, Cushing had just 21 million barrels of free storage left in April 2020, despite its capacity of 80 million barrels. Cushing, on the other hand, was still not at 50% in February 2020. (Reed & Krauss, 2020)

5.4 Derivation From Comparative Analysis

Saudi Arabia and Russia are strongly dependent on the oil and gas industry unlike The United States, which has a rather diversified economy. However, the fall in oil prices in April 2020 influenced the US market significantly, in comparison to Russia and Saudi Arabia.

Many companies in the US filed for bankruptcy, but the same effect was not observed in Saudi Arabia and Russia. This is primarily because Saudi Arabia and Russia have state-owned oil companies, whereas the US, being a capitalist economy, provides no government backing to the oil companies in the country. Saudi Aramco whose sole owner is the Government of Saudi Arabia, and Transneft, the state-owned monopoly of Russia which is the holding company of Rosneft, Lukoil, Surgutneftegaz, Gazprom Neft, and Tatneft are the major oil-producing companies in the respective countries. In the United States, companies depend majorly on the investor's finance and debts from financial institutions and banks. As the oil prices in the economy plunge, the effect is observed in the stock markets too i.e the investors and traders start pulling out their investments from the commodity, by investing in other avenues. Lower stock prices of oil companies result in higher interest rates for bank loans. This leads to year-on-year bankruptcy in the oil businesses.



Source: (Hall, 2020)

As per the data of 2020, the United States was the largest oil producer, Saudi Arabia, and Russia being the 2nd and 3rd largest producers respectively.

Country	Million barrels per day	Share of the world total
United States	18.60	20%
Saudi Arabia	11.01	12%

Russia	10.50	11%
Canada	5.29	6%
China	4.93	5%
Iraq	4.16	4%
United Arab Emirates	3.79	4%
Brazil	3.78	4%
Iran	2.81	3%
Kuwait	2.66	3%
Total top 10	67.52	72%
World total	94.24	100%

Frequently Asked Questions (FAQs) - U.S. Energy Information Administration (EIA), 2021

6.0 Impact

6.1 India

The current situation not only creates more fiscal space but also provides monetary authorities with an opportunity to tackle the economic slowdown. In the oil market, the dollar is the most widely used invoicing and payment currency. A drop in oil prices would result in a drop in the price of tradable goods, lowering the real exchange rate. In the short term, lower oil prices will lead to a strengthening of the rupee, whereas in the medium term, lower production costs would lead to lower domestic inflation. As a result of lower inflationary pressures, the monetary authority might be able to lower the policy rate even further while still attracting capital inflows.

The Indian economy is suffering from a decline in demand and industrial growth has slowed to its lowest level in several years. Furthermore, the coronavirus has disrupted supply chains in the manufacturing industry. In this sense, the drop in crude oil prices provides fiscal, external, and monetary relief to the Indian economy. There will be some negative consequences for India's petroleum exports, which are one of the country's most important exports and remittances. The prospects of India's downstream oil marketing enterprises are doubtful to change in the foreseeable future. Ever since the high value of Rs 170.75 on June 3, 2019, the stock of Indian Oil Corporation Ltd (IOCL) has dropped roughly 53% of its valuation on the National Stock Exchange (NSE). (Bhattacharjee, 2020)

Oil prices will not rise due to a price war between Saudi Arabia and Russia, as well as a drop in demand from major oil-importing countries such as China and India. It's a blessing in disguise for India's economy, which is currently experiencing a serious recession and is looking for a fast fix. (Online, 2020)

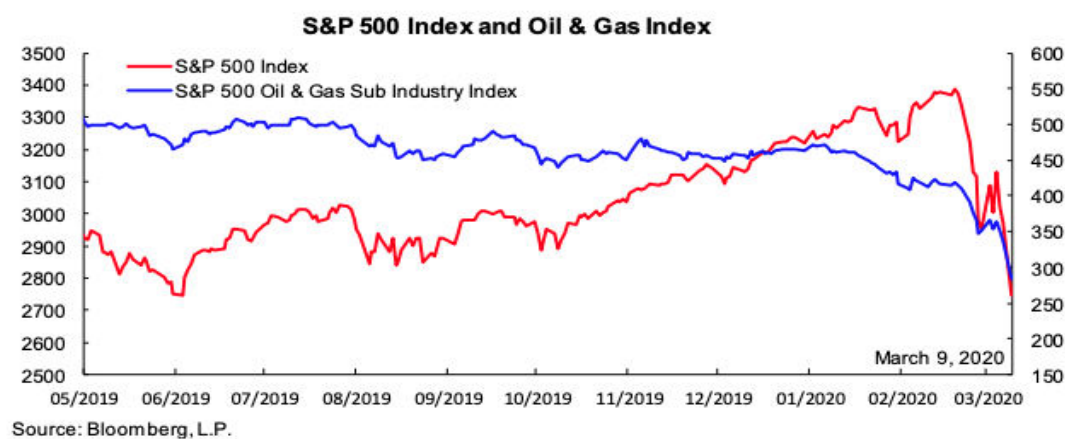
The second wave of the virus was reported to have started in April 2021 in India with a much higher number of cases. As the country deals with bleak conditions, the demand for petroleum products remains low. Thus with India being the third-largest importer of Crude oil the prices as observed of the WTI benchmark and Brent Crude remain low in the range of \$60-\$70. If the situation doesn't get in control, it may lead to further reductions in the price. (Reuters, 2021)

6.2 Stocks

As Saudi Arabia and Russia prepared for a global price war, oil prices plunged, sparking a global equity sell-off that saw the Dow Jones Industrial Average drop more than 2,000 points at its low, sending shock waves across financial markets already rattled by the coronavirus' spread.

Equities in the United States and the rest of the world fell by around 7%. Shares in US shale companies took the brunt of the blow, with some shale stocks losing up to 50% of their value. However, a decrease in oil stocks overall indicates that the market expects a long-term decline and that the oil price war would disproportionately impact higher-cost output.

Oil futures tumbled, with the U.S. benchmark, April West Texas Intermediate crude US: CL, declining 24.6 per cent to \$31.13 per barrel. Brent UK: BRNK20, the global benchmark, plunged 24.1 per cent to \$34.36 per barrel in May. Both grades were trading at their lowest levels since early 2016, with the biggest one-day percentage declines since the Gulf War in 1991. Oil makes up more than 3% of the S&P 500, and banks have exposure to the sector through loans. Meanwhile, the drop in oil prices put pressure on yields recording historic lows, which is unfortunate news for financial stocks. (Watts, 2020) The VIX index, which measures market volatility, reached new highs for the first time since the financial crisis more than a decade ago. These moves indicated that investors were more concerned about a recession and increased their quest for protection. (Arezki & Yuting Fan, 2020)



Source: (Bloomberg and, L.P, 2020)

6.3.0 Oil Exporting And Importing Countries

6.3.1 Exporting Countries

According to the International Energy Agency's market report for April, the oil demand tumbled quickly as a result of the shutdown of economies. The importing countries turned away the shipments due to the storage glut. This led oil-producing countries to pay midstream companies to take the oil off their hands. The negative impact of low oil prices reflects immediately on exporters and in some cases, it is intensified by global financial market pressures.

A fall in oil prices puts exporting countries in a disadvantageous position. Tax Revenue from oil supply is observed to be the main source of finance for government spendings, in many oil-exporting economies. A fall in oil prices leads to a budget deficit as the governments of such oil-producing countries cut their public spending or increase their taxes. Low crude oil prices jeopardize the economic stability of the exporting countries, especially the ones entirely dependent on oil revenue. These countries could witness additional political turmoil or shortages for basic requirements.

The Russian economy is highly dependent on the oil and gas industry and gains almost 70% of its tax revenue from the same. The oil sector accounts for 30% of Russia's GDP and 1.5% of the workforce depends on it. The plummet in crude oil price in April 2020, led to the rapid devaluation of its currency- Rouble, also contributing to recession (Edwards, 2020).

Saudi Arabia generates almost 50% of GDP and 70% of export earnings from the oil industry, alone. Hence, low prices are bound to affect the economy of the country. However, since it has substantial foreign currency reserves, it can endure a temporary fall in prices (Edwards, 2020).

The energy sector in the US contributes 8% to GDP. The damage to the oil industry resulted in significant job losses and a negative impact on consumer spending. It is derived that almost 6% of the employment disappeared due to a fall in the price of crude oil (Edwards, 2020). Companies in the oil sector of the country lost more than 2/3rd of their value, ExxonMobil, a DOW member, also recorded a decline of 38%. Many of them filed for bankruptcy as they took a substantial amount of debt before the crisis (Albershausen, 2021). Other oil-exporting countries such as UAE and Kuwait also have large foreign exchange reserves, giving them an appetite for this short-term decline in prices. Unlike them, countries like Venezuela, Iraq, Nigeria, and Iran have little room to manoeuvre, as they are highly dependent on oil revenues to balance their budget. This problem is amplified by existing political issues, corruption, and sanctions in the country.

6.3.2 Importing Countries

The price of crude impacts the oil-importing countries materially. The lower crude oil price is favourable to the oil-importing countries as the terms of trade and balance of payments tend to rise. Continued volatility and risk in the global markets result in cheaper oil prices. For oil-importing developing countries, a reduction in oil price also supports economic growth and improves external and fiscal balances, thus, reducing macroeconomic vulnerabilities that occur due to the price volatilities.

Fall in oil prices benefits countries that import significant amounts of oil for their consumption, because of the drop in import prices. It also leads to a reduction in the budget deficit. For countries like India, China, and Japan, which are major oil importers, this situation proved beneficial. However, for MENA countries, it might not be as beneficial, since they would observe reduced Foreign Direct Investment, tourism, grants, and remittances from exporting countries. Among the net oil-importers- Egypt, Lebanon, and Jordan, the recession will affect already high levels of public debt. (Arezki, 2020)

6.4.0 Environment

Crude oil prices affect carbon emissions significantly. As the prices of crude oil plunge, consumption of oil increases, resulting in higher carbon emissions in the environment. Whilst the disaster struck the global oil markets, the world observed a contrasting reaction in renewable energy markets.

1. For decades, the energy sector has been a cash cow for the global economy. However, in 2020, the world witnessed its worst performance in the S&P index 500. In April, after the price turned negative, it rebounded to \$20 per barrel, which was still short of \$50 to turn a profit on their oil well. This led the companies to slow down on their growth, as they lacked the capital for survival itself. The low oil prices mean low stock prices, which in turn means higher interest loans i.e higher cost of capital. This resulted in many companies going bankrupt, which prompted others to seek an alternative to green energy sources (Worland, 2020).
2. The oil industry and automobile industry are closely related. Low oil prices mean cheaper petrol and gas at the pumps, leading the consumers to spend more on transport and emissions-intensive goods. However, with the worldwide lockdown due to the pandemic, the consumers couldn't take advantage of such low oil prices. The businesses, on the other hand, could take the strategic decisions and such low oil prices incentivized them to incline more towards fuel-based automobiles and reduced their inclination towards electric vehicles. Nevertheless, the low oil prices cannot stop the energy transition, they can only affect the speed of such transition.

7.0 Solutions And Recommendations

Development finance can enable oil-dependent countries to help facilitate their transition by seizing the opportunity of a green recovery in the following ways :

1. Assist oil-producing countries in planning for and transitioning to cleaner, more diverse energy and industrial policies: While the current crisis has provided a catalyst for oil-dependent economies to diversify their development policies toward cleaner and more sustainable ones, there are no blueprints for doing so. Each country will need a carefully tailored national transition plan that takes into account the opportunities and constraints (including in the areas of skills, technology, and

resources) of the particular context, among other things. The “Building Back Better” approach should be adopted, which will help reduce n harmful environmental pollutants and provide better opportunities in terms of financial aid (2020).

2. Encourage alignment of development finance with the SDGs: In response to the consequences of COVID-19 and the continuing structural decline in fossil fuel usage and investment, developed oil-producing countries should try to accelerate economic diversification. On the other hand, countries would have difficulty attracting high-quality funding as investors shift their funds to safer havens. There is an incentive for global policymakers to promote alignment of development finance with the SDGs, as trillions of dollars are invested in low-yielding financial instruments, and investors seek environmental and social returns in addition to financial gains. Strengthening standards, providing effective resources for alignment and risk sharing, and levelling the playing field through appropriate legislation could help countries raise funds to support safer and more diverse activities. (2020)

8.0 Conclusion

This paper has devoted a significant amount of space to understand crude oil - qualities, importing-exporting countries, and their trade, as well as demand factors. We found that regions that control key economic levers around the world wield pricing power over oil. In the recent few years due to development in technology, the USA has emerged as the largest producer of crude oil overtaking Saudi Arabia and other OPEC nations. Since Opec nations control a significant amount of resources they still can influence the oil price. The OPEC countries especially Saudi Arabia have tried to supersede the USA in terms of production by introducing various policy measures. In this already volatile market, where the price is not simply determined by the market forces of demand and supply, the COVID-19 pandemic brought uncertainties that influenced the oil prices. With half of the world’s population under lockdown and curfews along with the aviation, railways, and shipping industries at a halt, the world saw the global demand for crude oil fall. Since the oil production couldn’t be stopped completely the oil-exporting countries suffered a huge loss. Saudi Arabia and Russia couldn’t reach a consensus regarding the cut in oil production which led to the Brent crude falling to \$20 a barrel in late April, the lowest in two decades. While WTI crude- the main benchmark for oil in the US fell into the negative territory. Frustrated investors sent energy-related stocks

slumping throughout 2020. Prices fell so much that some traders paid buyers to take oil off their hands due to lack of storage space.

The oil supply and demand shocks associated with COVID-19 are likely to be short-lived but their effects on many sectors and countries, which are still grappling with the pandemic such as India, are persistent. Demand and supply will gradually return to pre-pandemic levels, depending on the duration and severity of the interruption. Governments must not only devise strategies to mitigate the negative effects of COVID-19's supply and demand shocks but also assist oil-producing countries in planning for and transitioning to cleaner, more diverse energy and industrial policies. Along with this, development finance should be used to achieve the SDG Goals.

In oil-importing and oil-exporting nations, the COVID-19 pandemic would have various consequences. The persistence of oil prices is critical for assessing policies to combat inflation in oil-importing countries. When precious metals prices, such as gold and palladium, are under pressure, they can run into issues with inflation-targeting policies. Oil-exporting countries, such as Russia and OPEC, must pursue policies to restore oil prices to levels seen before COVID-19, as oil revenues are a large part of their economies. Oil-exporting countries will suffer significant losses if oil prices do not recover to pre-pandemic levels.

The USA, however, will not face the adverse effect of oil prices not restoring to pre-pandemic levels in comparison to OPEC Plus countries as many other factors are contributing to its economy. But the oil industry in the USA will surely feel the negative impact as it appears highly likely that fracking will be abandoned in large numbers, wells will be closed if they are deemed unprofitable in the long run, and US shale oil production will be severely curtailed. Based on cost and perceived market weakness or ambiguity, most of the proposed additional oil exploration and production are likely to be abandoned.

Several factors stemming from the COVID-19 pandemic, that have decreased oil demand drastically, will only allow for a slow rise, preventing major oil price rises due to demand decline for at least three or four years. Given the ongoing weakness in the transport industry and the sluggish return to pre-pandemic commercial and industrial operation constraining road transport and maritime oil production, a range of \$40 to \$60 per barrel appears to be feasible, though the indications point to an outcome towards the bottom of that range. It's difficult to solve the oil industry's problems quickly. The oil infrastructure is complex, and shutting down the taps is difficult.

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