The COVID-19 Pandemic, Price War and International Crude Oil Market Landscape[1]

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In recent years, the U.S. shale oil and gas revolution has reshaped the global energy supply landscape, exerted a huge impact on existing oil and gas pricing mechanism, significantly improved the United States' dominant role in the geopolitical game of international crude oil, and weakened the negotiation power of OPEC in formulating crude oil prices. Meanwhile, the U.S. shale oil and gas revolution has significantly eased the pressure of international crude oil supply, weakened the bargaining power of producing countries, and strengthened the negotiation power of consumer countries. Although the alliance between OPEC and Russia will delay the adjustment of global energy landscape, the political conflicts and differentiated interests in member countries, coupled with the rapid development of natural gas and renewable energy industry, will pose severe challenges to OPEC+ in maintaining its price influence. In addition, the COVID-19 pandemic has plunged the global economy into deep recession and led to a sharp decline in oil demand, which has profoundly altered the bargaining power of oil producing countries and consumer countries, and intensified the conflicts among oil producing countries in seizing the market. The oil price war between Saudi Arabia and Russia has exerted superimposed impacts on global oil market, intensified the situation of crude oil supply surplus, led to the collapse of oil prices, and affected the stability and security of global crude oil supply. However, with the conclusion of agreement on slashing oil production and the continuous recovering from the pandemic, crude oil demand will gradually rebound, but the supply and demand of the international crude oil market will be in a weak balanced state, with high uncertainty risks.

I. Motivation, Objectives and Behaviors of Main Oil Producing Countries

OPEC, Russia and the United States differ greatly in the dependence on crude oil. The industrial base of OPEC and Russia is weak, and their export and fiscal revenue are

[1] In *Understanding International Politics after Covid-19: Challenges, Issues, and Perspectives*, edited by Moqaddam and Esmaeili, Imam Sadiq University Press, Iran, 2020.

heavily dependent on crude oil export. Searching for stable export market and high crude oil prices are their priority objectives. And for the United States, with highly developed industries and technologies, it has become the largest crude oil consumer and the largest crude oil importer for a long time, pursuing energy independence and energy dominance and showing preference to relatively low oil prices. Therefore, OPEC, Russia and the United States have different strategic interests, production behaviors and game modes in the international crude oil market. OPEC and non-OPEC oil producing countries such as the United States and Russia have obvious differences in terms of crude oil production behaviors, which are embodied in:

Firstly, OPEC and Russian crude oil output needs to be coordinated and determined by the central governments of the member countries, while the crude oil output of the United States is decided independently by the oil producers according to the cost-benefit calculation. In OPEC member countries and Russia, petroleum resources are mainly held by national oil companies, while in the United States, international oil companies or private investors own most of the crude oil resources. Thus, the main objective of international oil companies and private companies is to increase the market value of shareholders and make investment decisions based on cost-benefit analysis while state-owned oil companies, in addition to pursuing profit goals, have other social goals, such as increasing employment opportunities, improving infrastructure, etc.

Secondly, shale oil and gas producers in the United States mainly accept price passively. The shale oil and gas producers in the United States respond to market prices rather than trying to influence prices by managing production. Moreover, the American Antitrust Law also prohibits oil and gas companies from entering into price and output agreements. However, OPEC members have a strong incentive to influence international oil prices by adjusting production. As a result, oil and gas producers in the United States spare no efforts to produce with full capacity, without any excessive production capacity.

Thirdly, non-OPEC countries have been at disadvantage in terms of oil production cost, but have led technological progress. Generally speaking, most low-cost

conventional petroleum resources are allocated in OPEC member countries, while non-OPEC oil resources are mainly distributed in areas with high exploration and production costs, such as deep water, offshore, alpine and other marginal areas, and pursue non-traditional resources such as oil sand and shale oil. However, the oil producers in the United States often promote the development of new technologies and lead technological progress to reduce oil and gas production costs.

In terms of strategic goals in the competition of international crude oil market, OPEC and Russia share some similarities, and they differ greatly from the United States. Due to the weak competition capabilities in manufacturing industry and the midstream and downstream sectors of and oil and gas industry, OPEC and Russia have similar goals, pursuing long-term high and stable international crude oil prices, and tending to maintain stable crude oil prices at a higher level by adjusting crude oil output, so as to realize the long-term stability of crude oil export revenue. However, in fact, even OPEC member states have different opinions with each other. For instance, Venezuela prefers short-term unsustainable high oil price, because it is eager to alleviate fiscal difficulties, but Saudi Arabia advocates maintaining international oil prices at a proper level to maximize the long-term crude oil export revenue, with the aim of maintaining the long-term stable development of oil sector because its fear for high oil prices, which may speed up the replacement of oil by renewable energy.

In the international crude oil market competition, the U.S. has been committed to achieving energy independence and energy dominance, reducing domestic energy consumption costs, creating jobs in domestic energy and manufacturing industries, thus preferring lower international crude oil prices. The U.S. is the largest crude oil consumer, with a small crude oil export volume and highly developed technology, manufacturing, petrochemical and other industries. Therefore, the strategic considerations of the Trump administration for promoting the development of the American oil industry include: Firstly, making use of the advantages of American's rich oil and gas resources, reducing the dependence on imported energy, expanding the export of fossil energy, and enhancing energy dominance; secondly, increasing employment in the fossil energy industry to gain the support of voters; thirdly,

protecting the interests of the conservative interest groups of the Republican Party; fourthly, reducing the cost of domestic energy use, attracting the return of large American enterprises, and promoting the re-industrialization of the United States; fifthly, reducing the fiscal subsidies for renewable energy and reducing the fiscal burden. As such, the Trump administration has spared no effort to suppress high international crude oil prices, which is manifested in three aspects: Firstly, due to fear for high international oil price, the U.S. government has loosed the enforcement of Iran's crude oil export ban and granted temporary exemption to Iran's eight major crude oil importing countries and regions. Secondly, the U.S. government has repeatedly asked Saudi Arabia to increase crude oil production, and used the murder of Saudi journalist Jamal Khashoggi at the Saudi consulate in Istanbul to force Saudi Arabia to comply. Thirdly, on Twitter, Trump repeatedly criticized OPEC for being the culprit to push up international oil prices.

II. COVID-19 Pandemic, Saudi Arabia - Russia Oil Price War and Production Reduction Agreement

The COVID-19 pandemic has exerted a severe impact on the flow of people and goods all over the world. To prevent the further spread of the pandemic, many countries have taken tough measures such as closing borders, lockdown of cities and terminating production, therefore resulting in a sharp decline in economic activities and a sharp fall in stock prices. The global economic recession and travel ban certainly exerted a significantly negative impact on the demand of oil, especially fuel, which has mirrored the reality of global crude oil supply surplus, and intensified the contradictions and conflicts among oil producing countries in competing for market share.

Within the OPEC+ alliance, Saudi Arabia and Russia have different interests and goals. Due to the short-term demand decline caused by the slowdown of global economic growth, the OPEC represented by Saudi Arabia wants to further reduce production to cope with the decline of oil prices triggered by the declining demand. In contrast, non-OPEC oil producing countries under the framework of OPEC+ agreements, such as Russia, worry that the production reduction agreement will reduce market share and government revenue, and are deeply dissatisfied with

American shale oil companies' practice of seizing international market share when OPEC+ slashes production. This added uncertainty to the OPEC+ production reduction agreement and carried a foreshadowing of the failure of production reduction negotiations between Saudi Arabia and Russia.

In order to alleviate the negative impact of COVID-19 pandemic on international oil prices, Saudi Arabia has advocated continuous production cut and price protection, while Russia is unwilling to continue to slash production because of its fear of losing market share. After the failure of negotiation, Saudi Arabia and Russia have launched a price war, and both of them announce to increase production and seize market share, resulting in a sharp drop in international oil prices. The extremely low oil prices not only lead to the decline in the export and fiscal revenue of oil producing countries, but also result in the reduced scale of exploration and development investment in the oil industry. Some high-cost companies will go bankrupt due to huge losses, thereby affecting the future crude oil production capacity and the stability of global oil supply.

Low oil prices have posed serious challenges to the financial and economic capacity of Saudi Arabia and Russia. The export and fiscal revenue of Saudi Arabia and Russia are highly dependent on the oil industry. However, Saudi Arabia's crude oil production cost has maintained at a low level of only USD 9 per barrel, while Russia's cost was USD 19 per barrel, which is at disadvantageous situation. But Russia's economic diversification is significantly better than that of Saudi Arabia, and its budget-balanced oil price was USD 42 per barrel, while Saudi Arabia USD 80 per barrel. Based on the Brent crude oil price of USD 35 per barrel, both Saudi Arabia and Russia will run fiscal deficits in 2020. Saudi Arabia has been running a budget deficit since 2014, when crude oil prices plummeted and Saudi Arabia's fiscal deficit rate was 5.6% in 2019. Affected by low oil prices, its fiscal deficit rate is expected to rise significantly in 2020. As for Russia, its budget surplus rate was 1.8% in 2019. Due to the large difference between the current oil price and the budget-balanced oil price, it is expected that its budget will change from surplus to deficit in 2020.

Both Saudi Arabia and Russia have sufficient official foreign exchange assets, which can provide a buffer to the declined export revenue caused by the collapse of oil

prices in the short term. At present, Saudi Arabia's official foreign exchange assets have amounted to about USD 1.4 trillion, including USD 500 billion of foreign exchange reserves and USD 900 billion of sovereign wealth funds. And Russia's official foreign exchange assets have amounted to USD 730 billion, including USD 580 billion of foreign exchange reserves and USD 150 billion of sovereign wealth funds. Obviously, from the perspective of capital strength, Saudi Arabia is more able to withstand low oil prices than Russia. Yet, in spite of sufficient foreign exchange reserves as a buffer, Saudi Arabia and Russia need to reduce fiscal expenditure and borrow more foreign debt, so as to withstand the test of low oil prices for a long time. Saudi Arabia's economy is excessively dependent on oil, and the sluggish oil market will lead to declining willingness to invest and increasing costs of external financing. Russia's economic development is subject to the US sanctions and unstable geopolitical factors, and enterprises' financing in the international market will continue to be under strict restrictions.

For Saudi Arabia and Russia, the potential benefits of the price war include exerting huge impact on the oil industry of other countries represented by the U.S. shale oil industry, and forcing some high-cost enterprises out of business due to huge losses, so as to improve their position in the supply side, and increase crude oil export revenue by raising the prices in the future to make up for the current decline in export revenue. But it depends on the U.S. shale oil industry's ability to adjust to low oil prices. Generally speaking, both Saudi Arabia and Russia have suffered from the price war. The potential gains such as increased market share and improved supply position are far lower than the losses arising from declined export and fiscal revenue caused by the collapse of oil prices.

Due to the price war between Russia and Saudi Arabia, along with the precipitous fall in global oil demand during the COVID-19 outbreak, crude oil prices dropped by 2/3 in Q1 2020, and reached the lowest level in recent two decades. With the shrinking of global demand, crude oil prices will remain at a low level, exerting a significantly negative impact on those high-cost oil and gas companies such as shale oil enterprises in the United States, which will be forced to cut investment, and some of which will even exit from the market due to losses. This will be detrimental to stabilizing crude

oil production capacity in the future. Due to the sharp decline of oil demand triggered by COVID-19 pandemic and global economic recession, crude oil demand and prices are lack of elasticity and the low oil prices fail to lead to obvious increase in oil demand, so the price war is not beneficial to the three major suppliers of Saudi Arabia, Russia and the United States. Thus, Saudi Arabia and Russia resume negotiation again under the mediation of the United States. On April 2, 2020, U.S. President Donald Trump expressed the hope that Saudi Arabia and Russia would cut oil supply. And Saudi Arabia called for an emergency meeting of oil producing countries, while Russia's Energy Minister also said that Russia may participate in the oil production reduction negotiation again. In addition, Brazil, Norway, Canada and other oil producing countries may also slash oil production, which will further support oil prices. If Saudi Arabia and Russia fail to reach an agreement on oil production reduction, the United States will impose tariffs on imported crude oil to protect the interests of its shale oil industry, a situation obviously not the hope of Saudi Arabia and Russia. To stabilize oil prices, Saudi Arabia, Russia, the United States and other oil producing countries need to have 10-million-barrel daily cut in production. Saudi Arabia and Russia will account for the largest share in oil production reduction, and international oil companies in the U.S. will also slash oil production.

On April 13, 2020, Saudi Arabia, Russia and other major oil producing countries in the world reached an agreement on a phased reduction in oil production. They plan to reduce production by 9.7 million barrels per day from May to June 2020, 8 million from July to December 2020, and 6 million from January to April 2021. Saudi Arabia and Russia will each cut from a baseline of 11 million barrels per day, while other countries will cut from a baseline of their respective output in October 2018. Specifically, Saudi Arabia and Russia will cut production by 2.5 million barrels per day, with their daily output dropping to 8.5 million barrels. The OPEC+ agreed to reduce output by 9.7 million barrels a day, not based on the output in April 2020, but on an agreed baseline level. For example, Saudi Arabia and Russia will cut from a baseline of 11 million barrels per day, while other countries will cut from a baseline of their respective output in October 2018. In April 2020, the crude oil output of OPEC+ certainly reached a record high due to no agreement on slashing oil production and the price war. As a result, the actual or effective scale of oil production reduction of the agreement reached 10.7 million barrels compared with the oil output in April.

In this context, Russia undertook more responsibility for production reduction. Saudi Arabia's crude oil daily output amounted to 10.33 million barrels and 9.8 million

barrels in 2018 and 2019 respectively, while Russia's reached 11.49 million and 11.58 million. Saudi Arabia's baseline output is higher than its production in 2019, while Russia's output is basically stable. According to the average output in 2018 and 2019, the daily output of Saudi Arabia and Russia is about 10 million barrels and 11.5 million barrels respectively, which means that Saudi Arabia and Russia will actually reduce output by 1.5 million and 3 million barrels per day respectively. For sure, Saudi Arabia has made great contribution to the previous agreements on oil production reduction, and implemented more production cuts. This is also an important reason why Saudi Arabia's crude oil production is lower than that of Russia. As a result, Saudi Arabia's interests were ensured to a certain extent in this round of production reduction arrangement, and Russia made greater concessions and contributions.

In fact, American shale oil companies have joined them in implementing production reduction. Unlike state-owned oil companies such as Saudi Aramco and Rosneft, American oil companies are private enterprises. Although the U.S. government lacks the mechanism to intervene in the production of enterprises, the decline of oil prices will lead to the production reduction of independent oil companies through market mechanism. However, investors generally believe that the scale of production reduction is significantly smaller than that of shrinking demand, and there existed uncertainty for oil producing countries to fully implement the production reduction agreement.

III. The Impact of COVID-19 Pandemic on International Crude Oil Market Landscape

With the spread of COVID-19 outbreak across the world, coupled with Saudi Arabia's oil price war with Russia, the international oil market has encountered unprecedented challenges and oil prices sharply plummeted. Brent crude oil price fell from the high level of USD 70 per barrel at the beginning of 2020 to a record low of USD 19.3 per barrel on April 21, 2020, and the WTI crude oil prices fell from USD 63 per barrel in early January 2020 to USD -37.6 per barrel on April 20, 2020, turning negative for the first time in history. Later, due to the rapid resumption of work and production in China, the gradual control of COVID-19 pandemic in Europe and the United States, and the rapid decline of crude oil output from oil producing countries, international crude oil prices showed a trend of stable recovery, with Brent and WTI crude oil prices rebounding to above USD 30 per barrel.

The COVID-19 pandemic has exerted significant impact on the demand and supply of international crude oil market. Since it is difficult to be effectively control COVID-19 pandemic in a short period of time, it is expected that global economic activities and crude oil demand will recover after one or two years. In the situation where global oil supply become more sufficient, the risk of oversupply will increase. Meanwhile, the collapse of international crude oil prices has exerted a significant negative impact on the production and operation of oil companies and subsequent investment. Some independent oil producers go bankrupt due to the rupture of capital chain, which will lead to the decline of future crude oil output and weaken the crude oil supply capacity. If the demand for crude oil recovers in a short period of time, there will be a shortage of supply. Generally speaking, the COVID-19 outbreak has exacerbated the oversupply in the international crude oil market, consolidated the buyer-dominated market. This is conducive to reducing the import costs of crude oil importing countries, rather than increasing the export and fiscal revenue of OPEC+ and other oil producing countries.

Although the pandemic has exerted a severe impact on the international crude oil market, it is still difficult to assess its ultimate impact on the international crude oil market landscape. In the case of oversupply, oil importing countries will take a dominant position temporarily, but with the acceleration of production reduction by oil producing countries, the supply and demand of crude oil will be balanced, and the dominant position of consumer countries will be weakened. Moreover, China, India, Japan, South Korea and other consumer countries in Asia lack necessary policy coordination and market conditions, so it is difficult to improve their negotiation power in international crude oil market in the short term. The U.S. shale oil industry has suffered a heavy blow from low oil prices. However, as the largest crude oil consumer and producer, its dominant position in the international energy pattern will be enhanced, but the position of Saudi Arabia and Russia in the field of international crude oil supply will be lowered. As the largest crude oil importer, China needs to be alert to the risk of sharp price rise caused by sharp decline of crude oil supply in the future. Meanwhile, the collapse of international oil prices will also trigger the decline of prices of fossil fuels such as natural gas and coal, inhibiting the development of renewable energy. However, during the COVID-19 pandemic, the international communities have enhanced their reverence for the nature and awareness of sustainable development concept, which is conducive to promote the development of renewable energy industry. The details are as follows:

First, the pandemic has exacerbated the financial difficulties of the U.S. shale industry. According to Moody's Analytics, oil and gas companies in North America will face USD 200 billion of maturing debts in the next four years, including USD 40 billion that will be due in 2020. And the price war has further exacerbated the shale industry crisis, making financial losses for most shale oil companies in the United States for the collapse of oil prices. It is estimated that the average break-even price of shale oil in the United States is about USD 40 per barrel, and only five companies including ExxonMobil, Chevron, Occidental Petroleum and Crownquest can maintain the new shale drilling cost at USD 31 per barrel. Compared with the sharp drop in oil prices caused by the increased oil production of OPEC in 2014, now the U.S. shale industry is facing greater difficulties, mainly because the impact is generally from the demand side. Although shale companies can use hedging tools of financial market to avoid short-term risks, the global economy is facing the risk of recession. Coupled with the impact of the COVID-19 pandemic in the world, investment in shale industry will shrink and shale oil output will decline. In addition, although the Trump administration proposed a series of measures to help the domestic shale industry, the actual implementation was resisted by the Democratic Party, and these measures failed to solve the fundamental problems faced by the US shale industry.

Secondly, the pandemic has inflicted significant damage on countries that rely on oil exports for taxes and foreign exchange. Due to the high financial dependence on oil, the economic impact of the pandemic and resultant price collapse on oil producing countries will become apparent immediately. Oil producing countries usually make annual financial budgets based on the average price of Brent crude oil in the previous year. Given that the average price of Brent crude oil in 2019 was USD 64 per barrel, many Gulf Countries formulated their 2020 budget based on the oil price range of USD 55-60 per barrel. At present, the oil price is far lower than the budget equilibrium price, and the fiscal deficit of these oil producing countries is expected to increase significantly. Moreover, due to the spread of COVID-19 pandemic, their economic activities will be restricted and more financial difficulties will be posed. As

such, some oil producing countries in Africa, the Middle East and South America, which are more vulnerable politically and economically, will face serious economic difficulties, such as economic recession, declining export and fiscal revenue, rising fiscal deficit and exchange rate devaluation.

Thirdly, the pandemic has consolidated the buyer-dominant market and enhanced the bargaining power of East Asian countries in the international oil and gas market. For a long time, China and other East Asian countries have been forced to accept the "Asian premium" and pay higher oil and gas import costs due to their rigid oil and gas demand and weak bargaining power. The U.S. shale oil and gas revolution has basically transformed the global crude oil market from the seller-dominant market to the buyer-dominant market. When the crude oil demand of developed countries basically reaches the peak, China becomes the main driving force behind the growth of global crude oil demand. Currently with the shrinking of global oil demand caused by the COVID-19 pandemic, the competition among oil producing countries has been intensified in East Asian market. And Asian countries will have more negotiation power in the international crude oil market, and win more favorable trading conditions, reduce or even eliminate "Asian premium".

Fourthly, the pandemic has increased the volatility of global crude oil supply and prices, and increased the risks of crude oil supply uncertainty and financial market turbulence. The main manifestations include: Firstly, the pandemic and sharp drop in oil prices will lead to declining investment for upstream exploration and development, and some oil companies with high costs will exit the market due to continuous losses, thus will inevitably lead to a decline in crude oil production and price rise in the future. One of the main motives for the price war between Saudi Arabia and Russia is to make use of their advantages in low production cost, make some high-cost producers such as the U.S. shale oil companies out of business, force them to cut investment or reduce production capacity, and gradually raise oil prices after the high-cost producers exit from the market. Secondly, this will exacerbate the economic difficulties of some oil producing countries, trigger social instability and political unrest, and increase the risks of crude oil supply interruption. The collapse of oil prices will lead to a sharp drop in the export and fiscal revenue of oil producing countries such as Iran, Iraq, Syria and Venezuela, inhibiting their economic development, further increasing the risks of social conflict and political instability, and interrupting crude oil production and transportation. Thirdly, this will trigger shocks in the global economy and financial markets. Crude oil is the king of

international commodity, with multiple attributes of commodity, finance and geopolitics. The collapse of crude oil prices is usually accompanied by intertwined and interacted loss of market confidence, the collapse of stock market, the expectation of economic panic and geopolitical game.