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Negative Oil: Coronavirus, a “black swan” event for the industry?

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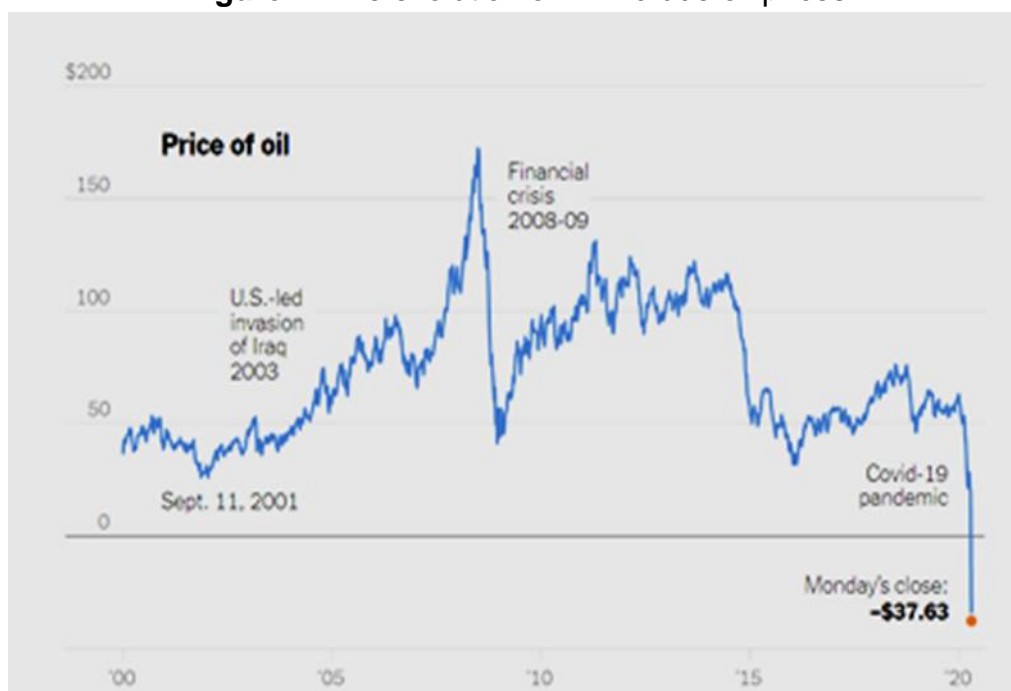
The global public health crisis caused by the coronavirus pandemic has created an unprecedented demand shock in the oil market, with unparalleled overabundance of supply, sapped demand and storage space (both onshore and offshore) promptly filling up. In short, the global oil market is going through an exceptional period of turbulence. For the first time in history, the prices of the U.S. crude oil futures fell to a negative territory.

What negative oil prices mean?

The negative crude oil prices underscored a truth about the oil market situation in times of heightened uncertainty over the covid-19. The world's major commodity is promptly losing all value since oversupply overwhelms the global crude tanks, pipelines and supertankers. In response, traders were left desperate to avoid having to take delivery of actual oil as nobody needs it and there are very few places to put it. The scenario that many oil executives feared is beginning to play out: with wide demand collapses, the amount of oil in storage has been increasing rapidly in the United States and around the globe. Storage space is filling up and there's nowhere to put oil.

What has happened on April 2020 is dominantly due to the fact that there are no buyers for the May contract. The West Texas Intermediate (WTI) crude oil prices, dipped 321% to -37.63 a barrel (see Figure 1) due to the acts of speculators in an environment of excess supply and lack of storage. In other words, traders could not find a refiner or storage tank with capacity to take delivery. In the oil market, where physical systems cannot be easily shut off, prices can go negative to incentivize suppliers to halt oil production. Crude oil sellers not only can no longer find buyers, but are even grappling with storing the surplus.

Figure 1. The evolution of WTI crude oil prices



Source: Redifinitiv.

What is behind the oil price crash?

On the surface, this may be attributed to the global coronavirus scare and the resulting stringent containment measures, which has led people to consume less and travel less, thereby hitting hard economic activity and oil demand. Beginning first in China, the primary source of global oil market growth, travel restrictions and stay-at-home orders have now spread globally. As a result, global oil demand has fallen markedly (see Figure 2). This impact has also been compounded by the ongoing oil price war between Saudi Arabia and Russia, showing no signs of easing. In early March, OPEC¹ and non-OPEC allies, sometimes referred to as OPEC+,² failed to agree on wider supply cuts, despite the fact that the United States has been pressuring both sides to end this oil price war. The OPEC recommended supplementary production cuts of 1.5 million bpd beginning in April and extending until the end of the year, but the OPEC-allies of Russia rejected the additional cuts. Thus, the conditions just got worse with the onslaught of the coronavirus crisis. The increasing uncertainty is due to the many unknowable aspects around the spread of this novel virus (i.e., the virus properties are not fully understood and may change, the role of asymptomatic patients remains

¹ OPEC is an oil organization consisting of the world's biggest oil-exporting countries, namely Algeria, Angola, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia (the de facto leader), the United Arab Emirates (UAE) and Venezuela. OPEC was founded in 1960 and its stated mission is to manage the supply of oil in order to set the oil price in the global market and to prevent excessive volatility that might harmfully affect the economies of both oil producing and -purchasing countries. This organization is also a potential provider of information about the international crude oil market.

² OPEC+ includes the 14 member states of the Organization of Oil Exporting Countries (OPEC) plus the world's second-largest producer, Russia.

imperfectly understood, and the true rate of infections is still uncertain especially where testing is limited).

Figure 2. Global oil demand growth

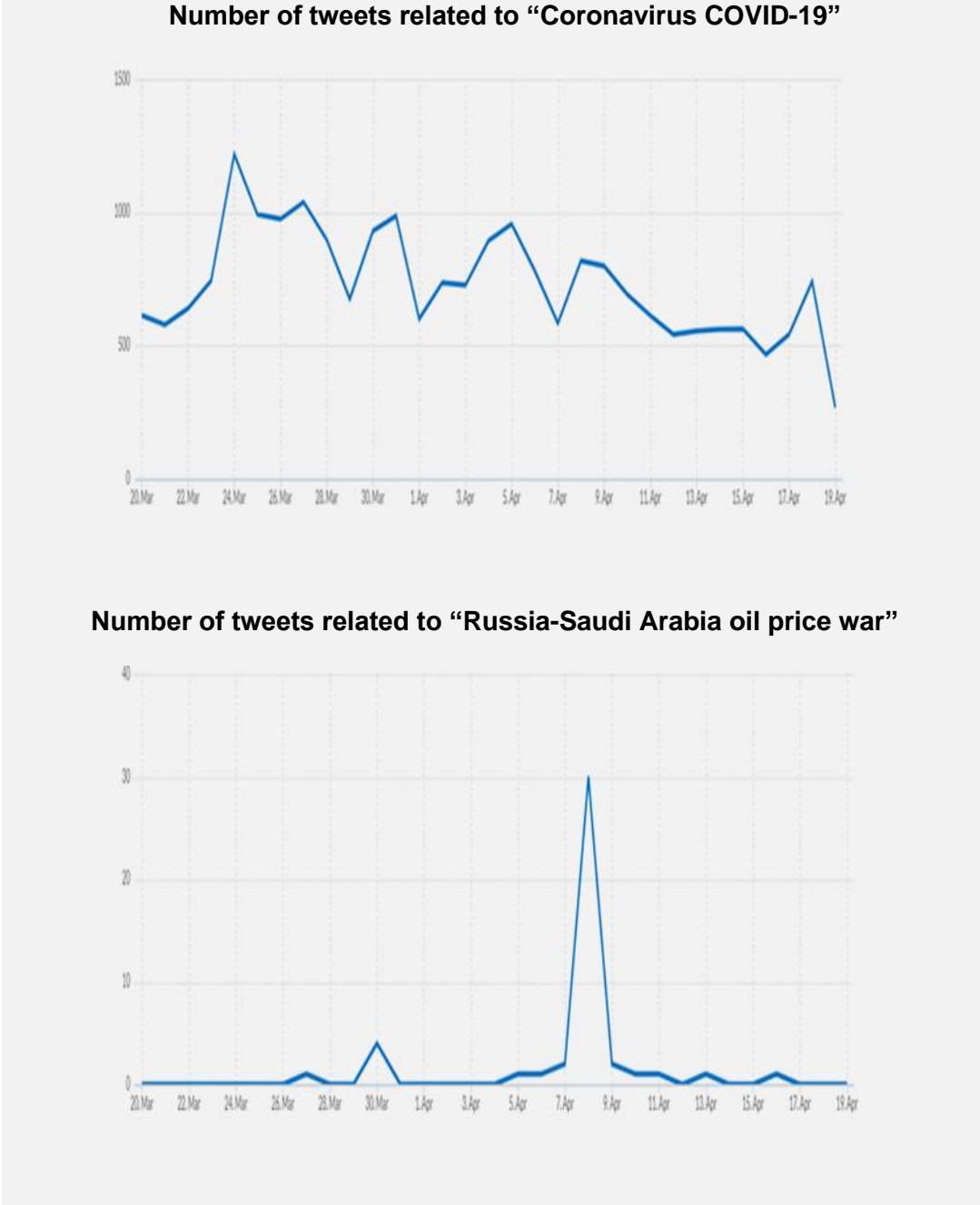


Source: Standard Chartered Research.

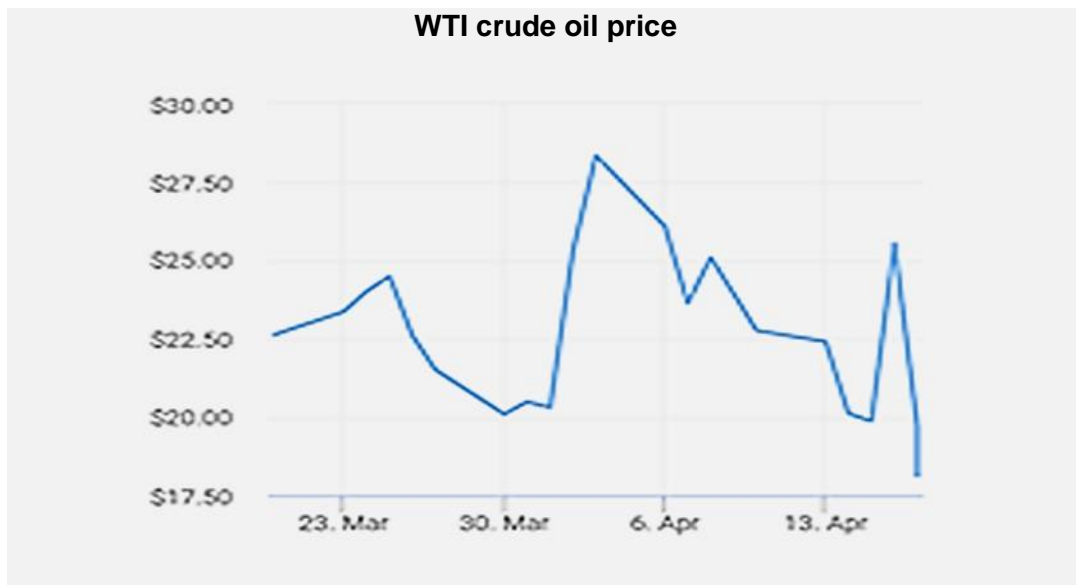
The rising fears and anxiety over the twin supply and demand shocks (i.e., oil price war and coronavirus outbreak, respectively), rattled markets. It seems, therefore, important to assess the impact of investor sentiment on oil price movements. When investors share their knowledge and opinions on energy markets in the social media, their comments and viewpoints can be an interesting source of information that can influence the markets, and thus can be considered as a valuable source of investment advice. In this way, advanced internet technologies and new big datasets may offer new opportunities for including previously unexplored sources to analyze from a new perspective the recent large changes in oil price. The use of sentiment information embedded in tweets would enable us to gauge the effects of mood states or sentiments on crude oil prices in the current unstable framework, as caused by the arrival of surprising news. Figure 3 describes the tweet count per day associated with the keywords “coronavirus COVID-19” and the concurrent “Russia-Saudi Arabia oil price war”, as well as the evolution of the WTI oil price. We clearly observe that this period of heightened uncertainty over the coronavirus crisis, exacerbated by the oil price war has been reflected in crude oil prices. Interestingly, we note that there are some periods where oil and the tweet counts per day related to the covid-19 and the recent oil price war between the biggest oil producers appear to be negatively correlated, and there are other periods where the relationship seems to be positive. The oil price is

likely to react significantly but differently to sentiments related to the dual demand and supply shocks.³

Figure 3. Twitter counts related to the “coronavirus COVID-19” and the “Russia-Saudi Arabia oil price war” per day and WTI crude oil prices



³ More information about the impact of investor sentiment related to the coronavirus outbreak and the recent oil price war will be available for interested readers upon request. Selmi et al. (2020) fetch the streaming tweets related to these two unusual shocks and examine these tweets by means of machine learning tools to examine the predictive power of different twitter indicators on oil prices.



What does oil below zero mean for the industry?

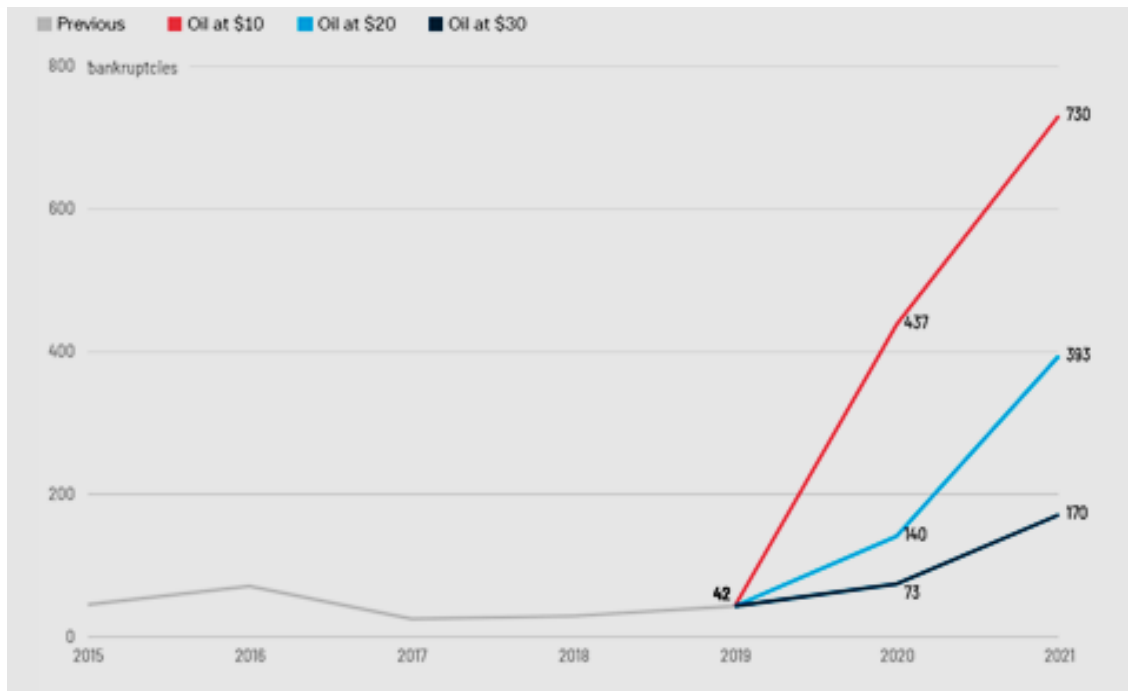
The price at which the crude oil should be sold is crucial for the U.S shale sellers. For the U.S. companies, anything less than \$40 a barrel is precarious for the sustainability of their operations. If the price of the crude oil decreases markedly below that mark, some producers may decide to stop pumping and in turn some oil companies may head for bankruptcy. Accordingly, the Head of shale research at Rystad Energy⁴ asserted “\$30 is already quite bad, but once you get to \$20 or even \$10, it’s a complete nightmare.” This highlights how indispensable it is for the U.S. firms that oil remains at least around \$40 a barrel, otherwise they would be unable to survive and many of these U.S. companies could go bankrupt.

According to Rystad Energy estimates, there are various possible scenarios (see Figure 4):

- In a \$30 oil environment, 243 U.S. industries could go bankrupt by 2021, 73 companies in 2020 and 170 firms in 2021.
- At \$20 a barrel, 533 (i.e., 140 in 2020 and 393 in 2021) U.S. oil exploration and production companies will file for bankruptcy by the end of 2021.
- At \$10/barrel, there would be more than 1,100 bankruptcies, 437 U.S. companies in 2020 and 730 companies in 2021.

⁴ Rystad Energy is an independent energy research company offering data, tools, analytics and consultancy services to clients.

Figure 4. Negative oil prices and US oil industry (A doomsday scenario)



Source : Rystad Energy.

If prices don't regain stability, the huge fears are that the U.S. oil industry would be unable to bounce back swiftly. The longer oil remains very low, the more risk that when demand rebounds, oil production won't.

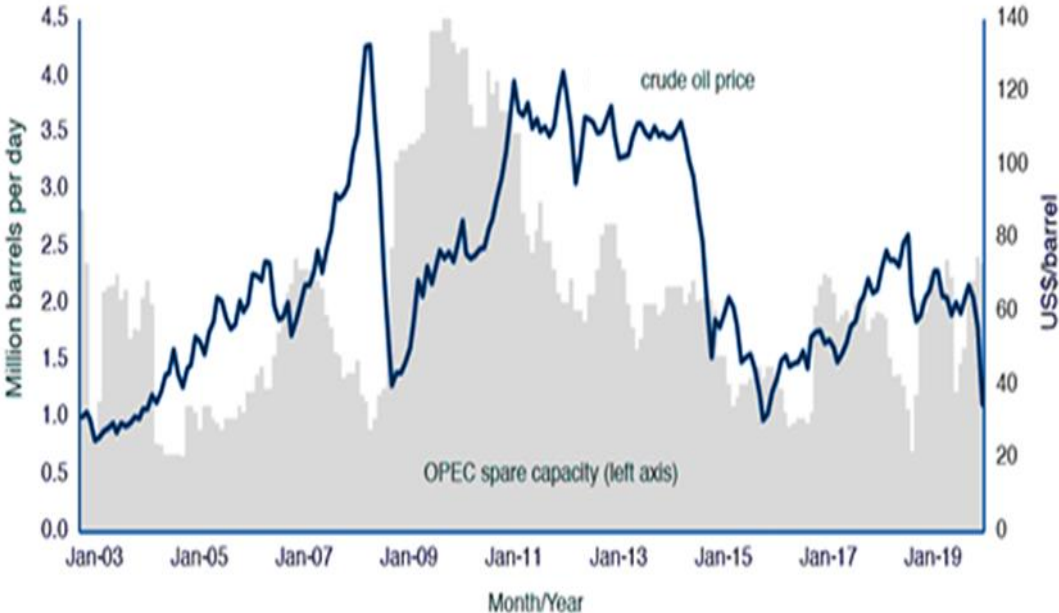
How will the main players act?

The negative price requires urgently exploring the technical mechanisms of the oil market, most of the time unknown to the general public.

Several studies have demonstrated the OPEC's ability to reduce oil price volatility in times of rising uncertainty over unusual events (for instance, Fattouh 2006; Stanley 2020). One can cite many examples, including the growing production accompanied with the abnormal buildup of global oil demand in 2003-2004, the production cuts over the global economic crisis of 2007-2008 as well as the supply disruptions in 2011-2012 (see Figure 5). Stanley (2020) argues that the reduction in oil price volatility caused by managing OPEC's spare capacity prompts between \$170 and \$200 billion of annual economic benefits for the global economy. Overall, the spare production capacity of OPEC countries plays a vital role in the world oil market. It is greatly significant for OPEC's ability to offset oil demand and supply shocks and stabilize the oil market price. But this OPEC's mission is likely to be one part of a wide variety of remedies that may be used in situation of emergency to safeguard against unforeseen oil price risks. These incorporate both private and public mechanisms such as precautionary inventories, hedging provided via the financial markets, long-term contracts and government stockpiles. The OPEC's main objective is to preserve the stability of the oil market by intervening as a swing producer to offset unusual shocks to supply and

demand, rather than simply lessening the costs associated with the price shocks after they have happened.

Figure 5. OPEC’s spare capacity and crude oil prices



Source: Energy Information Administration (EIA).

When faced with a pronounced adverse shock to demand and unparallel uncertainty, such as the current one, there are very limited effective solutions available. In circumstances of global recessions characterized by a falling oil demand and a rising global oil supply, it would be difficult for OPEC to defend a high price for too long. The demand shock due to the coronavirus and its resulted stringent containment measures becomes so large that the organization can’t do it alone. In these exceptional conditions, a balanced market needs a coordinated global production cut, a policy that seems hard to be achieved at this point⁵. Also, the oil producing countries and the oil importing countries should find some kind of collaboration in order to reach an equilibrium price. The currently low prices are not in anyone’s interest. Accordingly, the oil producing countries must be able to keep their production capacity when the time comes (i.e., at the time of recovery). And the importing countries need a “fair” price for oil to avoid falling into the oil trap.

⁵ OPEC members and allied partners, referred to as OPEC+, failed to agree on extending the production cuts beyond March 31.

Recall that the price of oil is an important vehicle for inflation (or deflation). Given low inflationary pressures characterizing many countries, it is prominent to avoid the collapse of the oil industry. It must be added that the fall of oil has other devastating consequences. Indeed, this unprecedented decline in the price of oil puts several producing countries in precarious situations, due to the collapse of their revenues resulting from economic and financial instability in times of covid-19. Today, these countries need their oil resources to respond to these exceptional economic risks caused by the pandemic. If some countries succeed even partially to manage the adverse effects of the pandemic due to the solidity of their foreign exchange reserves, it is obvious that if the situation persists, the consequences can only be more dramatic (riots, strikes, immigration, etc.).

Further reading

Fattouh, B (2006). *Spare capacity and oil price dynamics*. Middle East Economic Survey 49(5).

Selmi, R., Bouoiyour, J. and Hammoudeh, S., (2020). “*Oil Prices and the Twin Demand and Supply Shocks: A Twitter Sentiment Analysis of Coronavirus and the Russia-Saudi Arabia Oil War.*” This preprint will be available for interested readers upon request. Corresponding author: refk.selmi@esc-pau.fr

Stanley, A (2020). *The World Needs OPEC, but OPEC Can't Go It Alone*. KAPSARC Working paper.