DOI: 10.54254/2754-1169/59/20231125

Investigation for Covid-19 Affecting the Commodity Futures

Aochen Zhang[1, a,*]

[1]Institute of Problem Solving, Rutgers University, 180 College Ave, New Brunswick, United States
a. az387@rutgers.edu
**corresponding author*

Abstract: This article details the impact of the COVID-19 outbreak on commodity markets in 2020. The difference between the three futures in the energy industry, metal industry, and agriculture is compared. Crude oil futures for the energy sector are highlighted. Using a detailed event that existed at that time to analyze, we found the problems of crude oil futures under uncontrollable disease disasters, analyzed the reasons, and gave corresponding solutions. Throughout the event, the price of crude oil futures fell into negative territory for a period of time, which has never been seen before. Therefore, there are deficiencies in the way of dealing with such situations. And there are many restrictions in a type of energy industry like crude oil, for example, there are problems with storage methods for crude oil. This is also the root cause of the negative value of crude oil futures. Commodities like this are relatively weak in responding to major disasters, which is one of the aspects that need to be paid attention to during the subsequent trading period.

Keywords: Covid-19, futures, crude oil

1. Introduction

In 2020, the COVID-19 pandemic has had a great impact on the entire futures market, and many investors have suffered immeasurable losses. The futures of precious metals, energy, and agriculture fluctuate significantly [1-2], and these three types of futures are representative products of the commodity futures market. The outbreak of the COVID-19 pandemic has also caused a non-negligible impact on the entire commodity futures market [3-5].

COVID-19 is a global disaster, and no effective treatment has been found in the early stages, which has caused many patients to suffer a lot. Especially for some elderly people with underlying diseases and some younger children. “Some people infected with the coronavirus have mild COVID-19 illness, and others have no symptoms at all. In some cases, however, COVID-19 can lead to respiratory failure, lasting lung and heart muscle damage, nervous system problems, kidney failure or death”. The serious consequences forced countries to introduce corresponding protective measures and keep people isolated at home [6-7].

Agricultural futures are also one that has to be mentioned. Agricultural products have always been one of the necessary things in people's lives, so agricultural products do not have high requirements for the market, but they often face price shocks. “Agricultural markets have an inherent tendency towards instability. This is mainly because the supply and demand market fundamentals of the agricultural sector are characterized by rigidity, as food is a basic necessity for consumers and agricultural production is seasonal.”

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Precious metals have long been one of the most popular commodities for investors, and for the same reason, precious metals futures have also attracted much attention. “Precious metals are metals that are rare and have a high economic value due to various factors, including their scarcity, use in industrial processes, hedge against currency inflation, and role throughout history as a store of value.”

Energy is also an indispensable part of life, but energy futures have been most affected by the epidemic, especially the crude oil futures market. Compared with crude oil futures, other types of energy futures, such as electricity futures, are relatively less affected.

2. Problem Research

During the epidemic, the flow of people decreased, and people were restricted to quarantine at home. This approach results in a reduction in energy demand, as well as a reduction in food demand. At the same time, speculation in energy and precious metals futures is also more common.

2.1. Agricultural Futures

In this case, agricultural futures are the more stable of these three futures. The crisis caused by the epidemic does not cause a global food crisis. The supply of major agricultural products is sufficient, which does not pose a direct threat to most countries, because the epidemic will not affect the natural resources needed for production.

However, the threat to some poor countries is not small. "However, the virus poses a serious threat to food security and livelihoods in the poorest countries, where agricultural production systems are more labor-intensive and there is less capacity to withstand a severe macroeconomic shock.". However, the indirect impact still exists, which is one of the reasons for the volatility in the agricultural product futures market. Among them, the problem of the supply chain is relatively large [8-9]. But the transformation in this area is also relatively successful [8-9]. “There are signs that businesses along the food chain are already adapting to shifts in demand, for example by switching production lines and increasing their capacity to manage larger inventories; moving to online platforms and direct delivery to households; and hiring temporary staff."

2.2. Metal Futures

Copper futures have also suffered a lot throughout the COVID-19 pandemic, and the reason for the high volatility is mainly because the world's top metal producers have restricted operations. At the same time, China, one of the largest importers, has also restricted imports due to the epidemic. “The news indicated that many of the distortions in the copper futures prices during the COVID-19 pandemic may have been generated by several labor (Figure 1), operational, and logistical restrictions in the production supply chain of the main producing countries.”

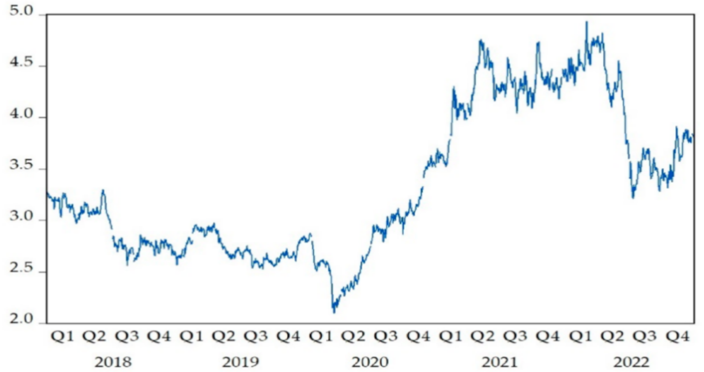

Figure 1: Copper futures daily price in U.S. dollars per pound during 2018-2022.

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2.3. Energy Futures

The third point, the study will focus on the research of energy industry futures, using crude oil futures as an example, and conduct corresponding case analysis. The entire energy industry faced a lot of shocks during the epidemic, the price recovery process also took much longer than expected. "A resurgence of a second wave of the pandemic that results in more lockdowns and less consumption, and delays in vaccine development and distribution, could lead to lower energy prices than forecast." As one of the indispensable energy sources in the world, crude oil can have an impact on the economy of a country. Crude oil futures are also one of the futures that consumers feel are relatively stable [10], but the COVID-19 pandemic has had a huge impact on crude oil futures, which has also led to losses in the entire crude oil futures market, and even CME has changed trading rules for this futures.

2.3.1. Crude Oil Treasure

Crude Oil Treasure was launched by the Bank of China in January 2018, providing trading services linked to overseas crude oil futures for domestic individual customers. Among them, the US crude oil variety is linked to the first line contract of Texas Light crude oil (WTI) futures on CME. The impact of the epidemic has led to a sharp reduction in global oil demand and a drop in prices; investors do not understand this product and can only follow the investment operations of bankers. On April 20, 2020, the official settlement price of the WTI May crude oil futures contract, CME, was the negative price, -37.63 US dollars per barrel. Both customers and the Bank of China suffered losses.

For a long time, oil prices have only seen small fluctuations. However, the advent of covid-19 has given oil prices a significant downward trend in 2020.

At the beginning of the pandemic, production did not decrease immediately, and the refineries shut down and no longer accept new output of oil, and pandemic around the world has also made ordinary people reduce the use of oil energy (Figure 2).

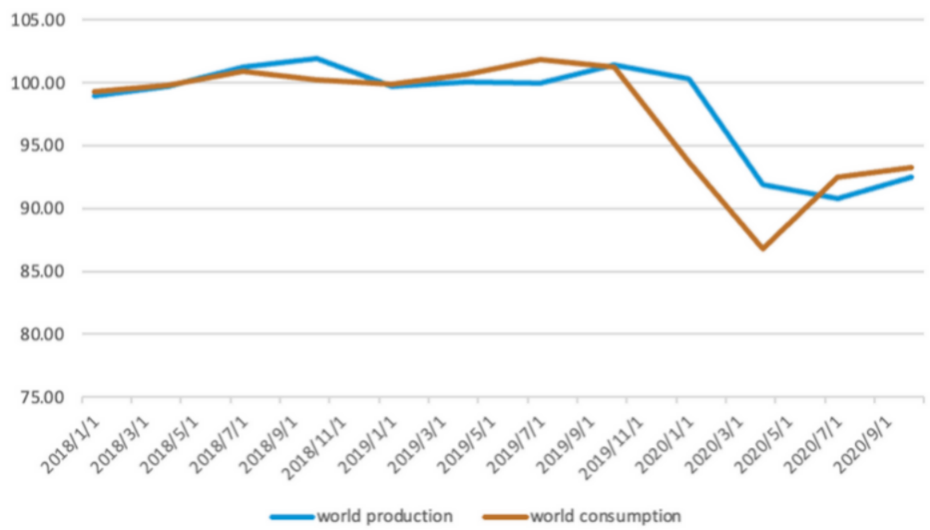

Figure 2: World liquid fuels production and consumption balance a million barrels per day.

For another, the chart shows the storage of onshore oil tanks in the United States, showing their peak after the outbreak (Figure 3).

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Figure 3: Onshore Oil Tanks.

Thirdly, we also find some data about the storage cost. The storage cost is much higher than the cost of oil itself, and a large number of selling makes the price of oil drop to a negative value.

Table 1: Tanker Price.

Date:	Tanker Price:
Feb. 2020	$25,000 per day
Apr. 2020	$30,000 per day

The combination of these impacts caused by the COVID-19 pandemic eventually caused the price of crude oil futures to fall below negative values. That's why the whole thing happened and caused so many losses (Table 1).

2.3.2. Time Line

- January 2018: A product launched by the Bank of China to provide domestic individual customers with trading services linked to overseas crude oil futures.
- March 2020: The international crude oil market suffers from severe oversupply and falling demand, especially due to the global economic recession triggered by the COVID-19 pandemic, resulting in a sharp drop in oil prices.
- April 8, 2020: The Chicago Mercantile Exchange (CME) says it is reprogramming software to deal with negative prices on energy-related financial instruments.
- April 15, 2020: CME issues a test announcement stating that all trading and clearing systems will continue to operate normally in the event of zero or negative prices.
- April 19, 2020: The Bank of China informed investors through SMS and APP instructions that it would start removing positions at 22 PM on April 20. After 22:00, investors can no longer trade.
- April 20, 2020: The delivery deadline of the May contract of WTI crude oil futures in the United States, the price of crude oil futures appeared abnormal fluctuations on the day, and the price of WTI crude oil futures once fell to negative (that is, to become negative oil prices). The details are as follows:
- At 22:00 Beijing time on April 20, the crude oil treasure system stopped trading, the WTI crude oil price was 11 US dollars/barrel, and the Bank of China issued TAS orders on the crude oil futures it held, which will be traded at the settlement price of 2:30 in the morning.
- Beijing time on April 20, 23:00- 2:00 the next day, the Wall Street bears took the TAS orders of the bulls, and the Bank of China's crude oil futures will be traded at 2:30 in the morning with the Wall Street bears at 2:30 settlement price.

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- Beijing time on April 21, 2:00-2:30, the Wall Street air Force smashed, crude oil futures trading prices hit lower and lower, at 2:08 below positive, at 2:29 fell to the lowest point in history - $40.32 / barrel.
- At 2:30 on April 21, Beijing time, the TAS order was executed, and all the crude oil futures held by the Bank of China and the Wall Street bears were traded at the settlement price of 2:30, -37 US dollars/barrel.
- April 20, 2020, 22:00+: WTI crude oil futures May contract prices continued to fall and broke negative for the first time, finally falling to -37.63 US dollars/barrel, the Bank of China in the 21st suspended trading for a day, the announcement said that the bank will confirm the settlement price of -37.63 US dollars/barrel.
- April 21, 2020: The "Crude Oil Treasure" trading product issued an announcement confirming heavy losses as the price of the WTI crude oil futures contract it held fell into negative territory, resulting in an almost total loss of the product.
- May 11, 2020: Bank of China APP launches Crude Oil Treasure online settlement agreement. Including the Bank of China to bear negative price losses, return the deduction margin, and compensate 20% of the principal.

2.3.3. Compare with Electricity Futures

Contrast that with another type of energy futures, electricity futures. It is not difficult for us to find some problems. Negative electricity futures prices are possible, but this is relatively rare and usually occurs under certain conditions, such as excess supply or abundant renewable energy. Negative electricity futures prices are possible, but this is relatively rare and usually occurs under certain conditions, such as excess supply or abundant renewable energy. But we just using daily data. Actually, in hourly data, the price of electricity is always negative. The risk exposure of electricity futures is related to the electricity market, mainly including factors such as electricity demand, supply, and price fluctuations. Investors trade in the electricity futures market and directly bear the risks related to the electricity market. In the Crude Oil Treasure incident, investors indirectly participated in the crude oil futures market by purchasing China's Crude Oil Treasure. Since China Crude Oil is a complex financial product, investors may fail to fully understand its inherent risks, resulting in huge losses when crude oil prices are negative. Trading electricity futures often involves leverage, allowing investors to control larger positions with less capital. This brings potentially high returns, but also higher risks. In the case of Crude Oil Treasure, China Crude Oil Treasure, as a financial product that tracks crude oil futures, may have used leverage tools internally. Investors may not understand their true leverage ratio and thus face greater risks. To sum up, there are obvious differences in the operation mode, risk exposure, leverage effect, and market supervision between power futures and crude oil treasure events. Investors should carefully evaluate risks when participating in these markets, and understand the characteristics of related products and markets.

3. Conclusion

Here is the conclusion of this case. This is the problem. There are obvious errors in product design, business strategy, and risk control, especially in the appropriateness and risk control of investors. Crude Oil Treasure has attracted a large number of investors with a leverage ratio of 1:100. This means that users only need to pay 1% of the contract value as a deposit to proceed with the transaction. However, in extreme market conditions, this high leverage ratio can double investors' losses.

Here are two methods to avoid this kind of situation. Trading platforms should strengthen education and training for users to enhance their awareness and understanding of market conditions and risks. The education and training for users is important. At the same time, during the trading

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process, prompt and warning functions should also be strengthened to remind users to pay attention to risks. Bidding mechanisms and technical support are also significant. For another, corresponding measures should also be taken in extreme market conditions to avoid rapid price fluctuations.

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