A Case Study of the Crude Oil Treasure's Wearing Incident on 20th April, 2020

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ABSTRACT
On April 20, 2020, eastern time, WTI crude futures fell into negative territory. The incident caused huge losses to Chinese investors due to improper practices by the Bank of China. Studying the incident of crude oil treasure's wearing helps China's financial industry avoid similar events in the future. The purpose of this paper is to analyze the cause of the incident. Among them, the problem of product design makes most investors crazy to buy crude oil treasure products. In addition, investors' lack of investment knowledge and blindly following the trend are the reasons for the occurrence of this event. Additionally, through the analysis of systemic and non-systemic risks before and after the event, we find that China's financial market still has some flaws. Thus, we provide suggestions for relevant departments, products, and investors.

Keywords: *Negative oil price, risk management, Crude oil futures, Crude Oil Treasure financial management*

1. INTRODUCTION

On April 20, 2020, oil prices went negative for the first time in history. According to the official settlement price of the Chicago Exchange (abbreviated to CME in the following explanation) on April 20th, WTI May 2020 contract (referred to as WTI 2005 in this article) closed at -13.10 USD/barrel and settled at -37.63 USD/barrel [1]. WTI is the most actively traded crude oil futures contract, with more than 1 million contracts traded daily. Its delivery point is in Cushing, Oklahoma [2]. As a result, a large number of customers with long positions in crude oil treasure, a financial product launched by Bank of China (abbreviated to BOC in the following explanation) in January 2018 and linked to WTI2005, suffered significant losses. According to Caixin, the BOC crude oil treasure has more than 60,000 customers, and the total loss caused by the incident is no less than 9 billion yuan [3]. The risk behind such huge losses was unknown to most of BOC's investors, most of whom held their positions until April 20 with the intention of buying WTI at the bottom. Afterward, online discussions about crude oil treasure raised questions about the product's design, the cause of its failure, and the potential risks behind it.

This paper will introduce the background of WTI crude oil futures prices in the first part. The second part will talk about the product's attributes, design, supervision, and operating mechanism, and analyze the failure reasons of crude treasure. In the third part, this article will analyze the crude oil treasure event from systematic and unsystematic risks. Finally, in the fourth part, we will put forward suggestions for similar products in the Chinese market in the future based on the above analysis

2. WTI NEGATIVE PRICE

At the beginning of 2020, the Covid-19 had exploded, and due to this reason people around the world had to stay at home, which weakens people's purchasing power. This situation brought a huge impact on various industries, crude oil futures industry was no exception. On April 16, 2020, the International Energy Agency (abbreviated to IEA in the following explanation) projected that global oil demand would be 9.3 million barrels a day lower than last year, and 29 million barrels a day lower in April than last year, to the lowest level since 1995. Global oil supply is likely to fall below 90 million barrels/day in the coming months, the lowest level since 2011 [3]. From the data, we can still find that the supply of outstripping demand created ever-larger inventories of crude oil. Crude oil inventories rose by more than 19 million barrels from April in 2020, the second straight week of record gains and the 12th straight week of increase. (IEA, 2020) Thus, for producers, this series of figures illustrates that there is not much room for them to store the oil. And for buyers, this means that once the contract is due, they had to receive the real crude oil. It was the supply greater than demand that leaded to a criminal drop in crude oil pressure, which shows in the figure 1. This figure illustrates that the price of crude oil descended sharply on April 20th, 2020.

One reason why oil prices dropped was the epidemic situation. As people just stay at home and they did not use cars, the demand for petrol and other products of crude oil, like pitch, decreased significantly which corresponds with the reduction of crude oil.

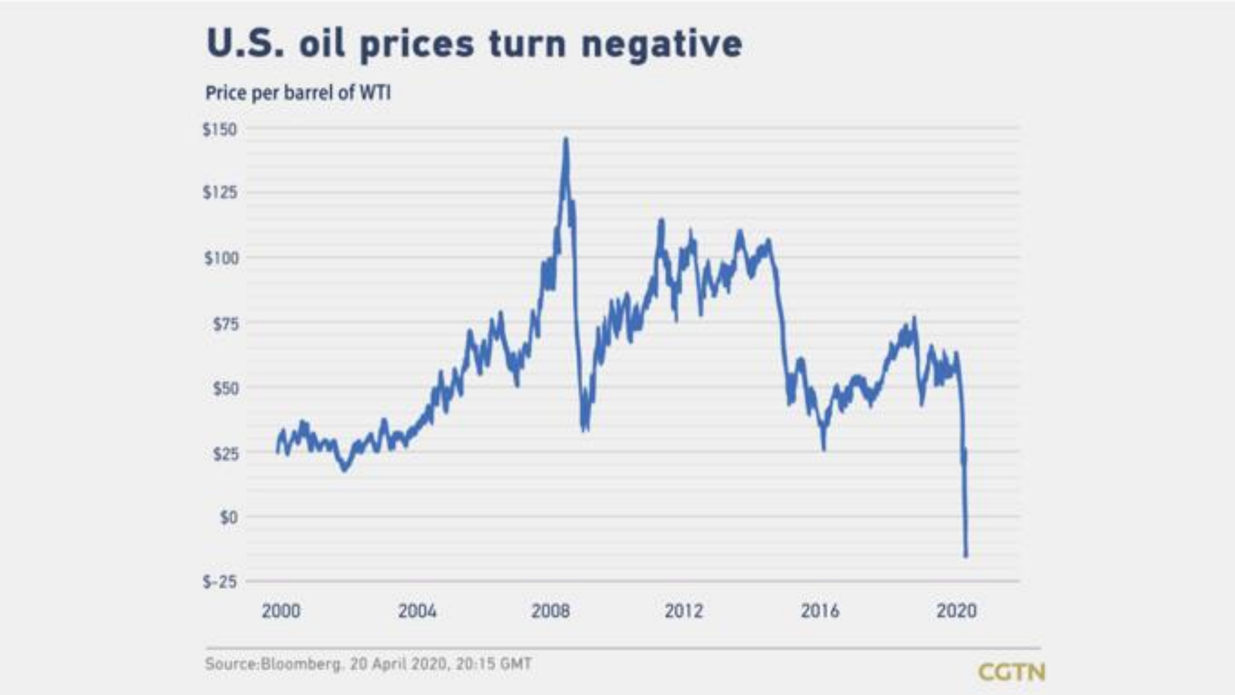

Figure 1 The price of WTI crude oil [4]

Take China as an example, it was 50572 tons of crude oil that China totally imported in 2019, however, there was only 36752 tons of crude oil that China imported in 2020 [5]. It is obvious that the purchasing power decreased.

Another explanation behind the trend that oil price decreased was the higher storage costs. As the supply exceeded the demand, sellers had to stockpiling oil, but the storage room was limited. Cushing's crude oil storage capacity accounts for about 13 percent of the nation's storage capacity. However, on April 10, 2020, U.S. crude oil stocks surged by a record 19.2 million barrels, according to data services firm Genscape and the Energy Information Administration. As of April 17, 2020, stocks in the Cushing area increased to 61 million barrels, a 9% weekly increase [3]. At this rate, Cushing would soon be full, which means that there won't be enough room to store crude oil. It is this huge amount of inventory that causes expensive storage costs. Additionally, buyers did not want to receive the real crude oil, and sellers reluctant to keep paying the expensive storage cost that may become unaffordable for them one day. So, in order to sell out crude oil futures, they decreased the price continuously even though the price dropped to a negative value. What is more, people who took short position sold a sheer volume of futures contracts at once, then the price of contracts was forced down artificially, and this can impose pressure on people who took long position, forcing the latter to sell their futures at a lower price so that the former was able to close position and make the most profits with the minimum costs.

2.1.Analysis of Crude Oil Treasure

2.1.1. Product attributes

Crude oil treasure is designed by directly linking the price of overseas futures contracts and is issued to individual investors. It is a book entry product (the investor registers the bond held by him in a securities account and the investor obtains only a receipt or statement to prove his ownership) which traded on the Counter. BOC not only provides quotations for crude oil products contracts, but also conducts counterparty transactions directly with customers to maintain the liquidity of the crude oil products market. Meanwhile, market makers need to provide margins and risk management and clearing service for the customers [6]. All in all, BOC offers a stage for the Chinese investors to buy the crude oil products overseas.

2.1.2. Product design

A very important part of the product design, especially the derivative design is the design of the contract. It depends on the last trading day and the way of the contract delivery. According to an April 22 announcement by the BOC, crude oil treasure is the "first contract of WTI crude oil futures linked to CME by U.S. crude oil". The so-called "first line contract", presumably refers to the WTI crude oil futures front-month contract [6]. Crude oil treasure issues one product contract each time, and the contract is named by the combination of "trading variety, trading currency, two-digit year and two-digit month." After the expiry of the associated futures contract that BOC can issue the crude oil treasure product contract. After the previous contract expires, the next contract is issued. The original crude oil treasure transaction is similar to the derivative transaction, and the customers of crude oil treasure can open and close their positions bilaterally [6]. If a customer of crude oil treasure does not balance his position at the end of a certain contract, then BOC will "remove the position or roll over the gap when the contract expires in the manner specified by the customer in advance on the expiration date as agreed in the agreement". As for the last trading day, the BOC's announcement described that April 21 is the last trading day of the month of the May U.S. crude oil contract, and the trading deadline is 22:00 in Beijing time. In addition, it is stipulated that the last trading day of the crude oil treasure contract ends at 22:00 in Beijing time [6]. Taking into account the time difference, the close of the crude oil contract corresponds to the opening trading session of the U.S. futures market on April 20 at 10 a.m.

2.1.3. Product regulation

The WTI 2005 U.S crude oil contract of crude oil treasure would be settled or moved on April 20 according to the settlement price of -37.63 USD/BBL of the May WTI crude oil futures contract on April 20 in the United States time [6]. The settlement price for WTI crude oil futures used the last three minutes of trading on the exchange's floor from 14:28 to 14:30 ET to set the daily settlement price [6]. That was more than four hours after the end of the last trading day of the U.S. crude oil 2005 contract and this is also the main point of the dispute between BOC and its customers. Incident ferment to May 5, BOC announced that it is willing to bear the negative price of losses and at 22: 00 on April 20 evening compensation 20% of the margin solution. It can be seen that BOC finally adopted the price at the last trading moment of the last trading day as the settlement price of the crude oil treasure product contract. Because of the lack of market liquidity in the last two days of the future contract, traders will face the transaction risk of whether they can finish the position or move the position in a short time. The transaction is also vulnerable to large price shock cost, and at the same time, they will face the risk that the market price is easier to be manipulated.

2.1.4. Operation mechanism

Lastly, in order to prevent this accident to happen again. In its risk hedging strategy, BOC seems to choose the derivatives and contracts with the most closed price and hopes to find the scheme with the least price deviation between the two contracts in its hedging strategy. However, this risk hedging strategy seriously ignores the liquidity risk of the future trading, the cost, profit, the loss of the future contract transfer and the trading risk and the contract delivery risk caused by the long-short game in futures trading [6]. The last trading day in April that WTI regulates is on April 21. To hedge the risk exposure of crude oil products in the United States, BOC should complete the transfer operation in early April when selecting the hedging strategy using WTI crude oil futures instead of being limited by the design of crude oil products in the last two trading days of WTI 2005 contract.

2.2. Reasons for loss

Looking at the case of crude oil treasure, many fatal mistakes lead to the catastrophe, two main reasons caused this incident —— the lack of knowledge of the investors as well as the falsely managed program. Before the incident happened, the number of users in crude oil treasure was around 13.7 thousand. As most people dreamed of getting rich by buying oil while its price was low and selling at its peak, they did not understand the possible risk in future trading. Here is an example of what happened, around 4000 users had American oil contracts and owned around 1.42 million barrels. If the damage was calculated with a price of $-37.63, they would lose around 210 million yuan while still having to pay the BOC 370 million back [7]. Many other banks are signing the contract 1 week before the last day of settlement day, however, the BOC did that on the last day which ultimately leads to the incident from happening. According to the rules of the contract, it stated that the last day to extend the contract is 3 days before the 25th and 4 days if on weekends. Although the people of BOC did it on the 20th, it was still the last trading date [8]. There happened to be a weekend that brings the closing date of a contract extension to the 20th, resulted many not being able to extend their contracts. Many investors thought that it would be simply losing all their money in their investment instead of going negative. It was this thought that resulted in much more damage than the event itself should of cause. Experts suggest that there are already signs of the price of oil dropping to negative. As shown in figure 2, prices have continued to fall even as oil prices have fallen into negative territory. The fatal mistake the BOC did was that many other banks signed contracts way before the date of the trading day. However, BOC did it the day of the trade resulting in loads of contracts in hand turning into the garbage with no value. As the CBT forecasted in April that the price of oil has the potential of dropping to sub-zero due to the Covid-19 pandemic. Other banks had already taken safety measures to ensure that such events would not happen by either extending the contract to the future few months or having a system that automatically liquidation the account. However, due to the poor planning of BOC, it was not possible. This is because no one would want to buy the contract from the investor during the time of oil price down, and people had no plan of getting the oil and storing it.

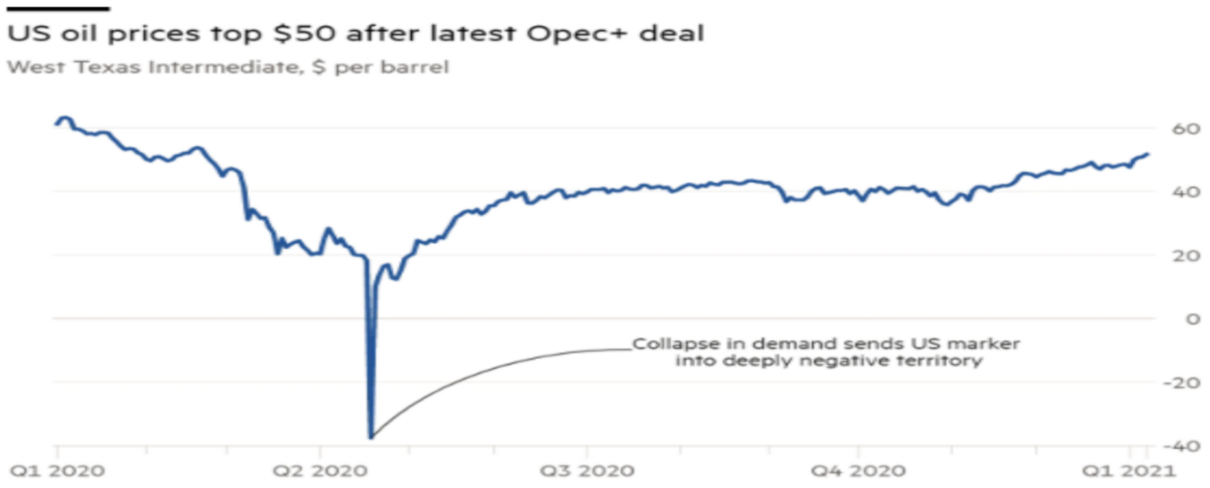

Figure 2 The price of WTI crude oil [9]

3. CRUDE OIL TREASURE RISK ANALYSIS

3.1. Systemic risks

Systemic risk often affects all financial assets in the market, which is universal. Systemic risks are hard to eliminate because they are always there and beyond anyone's control. For example, the economic cycle, the country's macroeconomic policy changes. Therefore, this risk cannot be offset or mitigated by diversification. There are several systemic risks behind the crude oil treasure event, from central banks to the OPEC meeting, that is affecting the investment environment and the oil futures market.

3.1.1. Crude oil Treasure's Systematic risks

3.1.1.1 Coronavirus

Global demand for crude oil has plummeted under the influence of the Covid-19. The self-quarantine required by the outbreak has left fewer cars on the road, factories shut down and oil demand reduced. Almost all the economies in the world are in recession in 2020, and the global economy will contract by 3.5% in 2020 [10]. At the same time, the outbreak has led to a prolonged downturn in various industries, with global oil demand forecast to fall from 8.1 million b/d in 2020 to 91.1 million b/d [11].

3.1.1.2 OPEC meeting

In response to the current relative excess oil capacity, OPEC (the Organization of Petroleum Exporting Countries, a group of oil-exporting governments that aims to control the production and price of crude) decided to reduce the supply of crude oil. OPEC called on all its members to sign a production cut agreement to stabilize the price of crude oil. This is because in economics, when the demand for goods decreases, if you want to keep the price constant, you have to reduce the supply.

But Russia, for its own sake, rejected the Saudi proposal. In turn, Saudi Arabia retaliated against U.S. shale gas and Russia by increasing production. So, on March 9th, the day after Saudi Arabia announced it would pump more oil, American stock markets were shut for the second time in their history and countless financial institutions sold their positions. This in turn led to the third and fourth US stock market circuit breaker. This is also an opportunity for domestic investors, who believe that the price of a necessity such as crude oil will recover in the future. It is this kind of thinking that makes more and more domestic institutions and individual investors pay attention to the products linked to crude oil futures.

3.1.1.3Monetary Policy of the People's Bank of China:

After the central bank cut interest rates at the beginning of 2020, it cut interest rates by 0.5 to 1 percentage points on March 13 again. This time, the targeted reduction of deposit reserve funds released 550 billion yuan of long-term funds. Such behavior encourages banks to lend to the real economy. Then, in April the central bank decided to cut the required reserve ratio for several banks by 1 percentage point, releasing a total of about 400 billion yuan of long-term funds [12]. The move is another sign that the central bank wants to expand the Chinese economy and increase the liquidity of money in the market. As a result, a large number of investors will take the opportunity to invest personally.

3.2. Unsystematic risks

Unsystematic risk usually refers to the factors affecting a particular asset or group of specific assets that can be avoided. It is independent of economic, political, and other factors that affect all financial variables. It was the existence of a large number of non-systemic risks that finally caused crude oil treasure to suffer huge losses, which will be analyzed in the following paragraphs.

3.2.1. Crude Oil Treasure:

3.2.1.1 Product design

Firstly, crude oil treasure is directly related to WTI oil futures, which means it is a high-risk product. And crude oil treasure’s convenient trading mode and low entry threshold are not consistent with the high-risk characteristics of futures. Secondly, according to the contract, it was crude oil treasure that set the final settlement date on the last trading day before the maturity of the product (April 20, US time). As a result, crude oil treasure had to face the extreme scenario of liquidity drying up in the market and negative prices.

3.2.1.2 Trading hours

The trading hours of BOC 's crude oil treasure are from 8:00 to 22:00. After 22:00 to the opening period of the next day, customers will not be able to trade [13]. The trading time cannot cover the trading time of US WTI crude oil futures, and as a product linked to US crude oil futures, its trading time cannot completely cover, then the price fluctuation caused by this period will bring unimaginable losses.

3.2.1.3 Hyperbole

Crude oil treasure's tagline is “Crude oil is cheaper than water”. And the so-called "people who don’t have investment experience can also buy" and “the change of the product does not stay leverage” slogans had been emphasized [14]. Several advertisements and promotional videos on the network are excessively exaggerated the income that crude oil treasure can brin. But there had little publicity about the risks of the product and U.S. oil futures. This will give investors a misunderstanding of the high-risk products they are buying.

3.2.1.4 Sales management

BOC will sell crude oil treasure products in the form of giving away physical objects in the process of selling the derivative products. According to the China Banking and Insurance Regulatory Commission, the age of crude oil treasure’s customers does not meet the entry requirements. Secondly, in the process of opening an account for investors, the risk assessment interface in the APP is too one-sided [14].

3.2.2. Risks brought by the regulation of Bank of China:

3.2.2.1Bank of China‘s poor risk management services

As early as April 3, the CME announced a change in its IT system code to allow reporting and trading of negative prices, effective April 5, but this did not impress the BOC [6]. Moreover, the BOC did not inform domestic investors of this news. In addition, the BOC did not adequately monitor the customers' margin account after the closing of the transaction at 10:00 on April 20, 2020, Beijing time. As a result, when the customer's account amount is insufficient to maintain his position, BOC did not prompt through the website, APP, SMS, and telephone, nor did he carry out corresponding forced liquidation operations [15].

3.2.2.2 Bank of China's poor risk management

Firstly, facing many long entries into the market, BOC did not prevent its number. Secondly, Chinese banks failed to take any effective measures to unwind their positions when oil prices fell by more than 20%, leaving many crude oil treasure investors with huge losses. This shows a lack of consideration for extreme outcomes. Instead, after learning of the Chicago Mercantile Exchange Holdings Inc's changes to its system, the BOC still said it "actively contacted the CME on the evening of April 20 to confirm the settlement price and the validity of the relevant settlement arrangements". It can be seen that its risk management loopholes.

Secondly, BOC was the only bank to record a huge loss compared to the other banks who had moved or liquidated their clients' positions a week earlier. At that time, the price of crude oil was between $21 and $20 a barrel.

Judging from the trading dates of various banks, both China Construction Bank and Industrial and Commercial BOC set the last trading date on the account crude oil contracts at a week before the trading time of the United States WTI and Brent crude oil futures. This period avoids negative prices and the extreme scenario of liquidity drying up near the time of trading. Obviously, facing a special case, other banks retained enough time to move and warehouse, etc.

From the perspective of margin setting, the official website of China Construction Bank shows that "margin ratio of account crude oil (similar to BOC crude oil products, which are financial derivatives directly linked to US crude oil futures) is divided into initial margin ratio, early warning margin ratio, and strong settlement margin ratio. The initial margin of this business is 100%, the early warning margin is 60%, and the strong equalization margin is 50%"[15]. But BOC sets a lower margin requirement, and only forcibly balances it if the margin falls to 20%. If BOC is the same as CBB, it will be strongly guaranteed to rise, then the loss of the final customer will be greatly reduced.

3.2.2.3 Unsafe internal control and management of Bank of China

According to the Administrative Punishment Decision Book, BOC has an unreasonable performance appraisal and incentive mechanism [16]. This can easily lead to the salesperson's behavior in violation of the appropriateness obligation to make a profit. At the same time, BOC 's internal control management also omitted the global marketing department's sales management of private products, resulting in internal control management loopholes." It was problems within the Chinese banks that led to such heavy losses.

3.2.2.4 From the perspective of investors:

Investors lacked professional knowledge of futures and lack an in-depth understanding of the trading rules of crude oil products. Most investors did not have a thorough understanding of the risks in the future, did not understand the unreasonable product design, and exaggerated form of advertising. At the same time, they were not aware of the risks in the oil market and moved or liquidated their positions on time. An investor with a basic knowledge of futures should be aware that the poor liquidity of the contract trading near the delivery month may lead to the risk that the closing price will fall too much, and the position will not be liquidated. Instead, they will remain bullish until the end of the trading day in which they hold the position.

3.2.2.5 From a regulatory perspective

In the process of product approval, the relevant regulatory authorities did not find that the design of the product was unreasonable.

4. THE SUGGESTIONS

4.1. Regulations on Virtual trading structured derivatives

During the case of crude oil treasure, the miss management and regulation of the program played a big role in people losing a huge amount of money. Thus, regulations on the quality of such financial products should be highly changed and modified since the failure of crude oil treasure. Additionally, BOC did not have a viable plan to prevent the risk of the price dropping to negative. For example, the most important plan in such a product would be the risk management plan, it is highly needed in order to make a stable program and maintain a stable market in circulation.

Meanwhile, the regulation on false advertisement should also be prevented. In the case of crude oil treasure, the advertisement only showed one case that was successful and failed to even mention any type of risk involved. Such advertisements should never have been out into the market and onto platforms where investors could see them. This is because, it let investors overlook the fact of the high risk but only focus on the profit. With the increase in regulation of false advertisement, the case of crude oil treasure could be heavily prevented.

4.2. Workers' Cultivation

BOC should focus on professional education to its workers that can largely reduce the percentage of a disaster event like the crude oil treasure. The employees should have a clear sense of their products and it is their responsibility to inform the investors of all the potential risks. BOC can also set a high level in hiring employees with good expertise.

4.3. Add additional information to the product

Since many customers' perception of crude oil treasure is not a high-risk offshore linked product, many people do not have the idea to stop bullish even when WTI has a downward trend. Therefore, it is suggested that banks and financial institutions, when launching new financial derivatives, publish more information about futures linked to the derivatives on their websites and apps, such as basic knowledge required to purchase futures, background introduction of the futures, historical data, and real-time updated data, and news related to the futures. This allows more individual investors to know more and cut losses when it becomes clear that they are not able to hold the product.

4.4. Integrated financial market supervision system

Now, China still implements the concept of separate industry and separate product supervision. With the development of mixed operation, the intensification of financial competition, the increasing complexity of financial products, especially the acceleration of the innovation of various structured derivatives, the requirements for the ability of financial supervision have become higher. Such separate structures tend to make finance inefficient. Therefore, it is necessary to strengthen the cooperation and cooperation between different regulatory departments, promote and perfect the integrated financial market regulatory system, improve the regulatory methods by using regulatory technology, and enhance the regulatory capacity and effectiveness.

In addition, with the gradual opening of China's financial market, more and more institutions and enterprises enter the overseas market for investment. The latter financial business may involve financial institutions and regulatory authorities in multiple economies, which poses more challenges for China's cross-market supervision. Therefore, in addition to improving China's regulatory laws and regulations, we should also promote international regulatory cooperation, to develop bilateral and multilateral cooperation [17].

4.5. Education for investors:

Financial institutions should encourage the financial institution to carry out essential education on investors.

Firstly, it is essential to propagandize investment opportunity and prospect and elementary knowledge. More important, disclose market risks for investors, training them how to control risks and analyzing possible setbacks and troubles that they may face. Secondly, education needs to be pointed; for novices, training tasks can be informing investors important knowledge, laws and regulation, trading procedure, risk features, and so forth; for experienced investors, further training tasks can be learning trading strategies, risk management, and market analysis. For example, as a financial power, the United States attaches great importance to investor education. In 1994, The United States established "The Office of Investor Education and Assistance" to promote the knowledge and skills of investment and financial management on a large scale without any interest, and to provide Investor consultation [18].

4.6. Improvement of BOC's regulation:

For clerks in the BOC, they have performance appraisal. Due to this reason, some clerks may deliberately hide or play down some risks in order to attract more customers, and this may cause customers to suffer from risks without awareness. To address this problem, BOC should train its employees well and enable them to have a good level of professional quality, so that customers can be telling the authentic degree of risk and avoid unnecessary loss.

5. CONCLUSION

This paper studies the loss event of the BOC 's crude oil treasure. Introducing the basic background, we find that a combination of factors has contributed to the negative oil price, including the increasing storage costs of WTI crude oil in the United States, the decline in oil due to the OPEC meeting, and the decrease in oil demand due to the novel coronavirus. All of these things helped create a bullish sentiment, and then the central bank's repeated interest rate and reserve requirement changes in the first half of 2020 gave Chinese individual investors more opportunities. By analyzing the data, we find out the important reasons behind the losses of the BOC.

For crude oil treasure, its product positioning, product contract design, warehouse transfer rules design, the way of publicity, and so on have many problems. These design flaws and mismatched positioning of high-risk products caused most investors to miss the understanding of high-risk products, which were so crazy to buy up. Here, we suggest that similar future-linked products in the future can provide customers with more background introduction of future-linked products and historical information for reference, to give customers a better understanding of risk matching with products.

For the BOC, its risk management is very problematic, not only ignored the regulation changes issued by the Chicago authorities but also did not think that WTI crude oil could continue to fall when it was already in a downward trend. Such risk control lapses caused the BOC to miss out on helping clients move or close their positions in advance. Moreover, the irrational setting of contracts and margin at crude oil treasure shows that the BOC lacks risk control and management.

The lack of professional futures knowledge, including investors, and improper scrutiny of the regulatory agencies, are indirect reasons for the huge losses of crude oil treasure. This makes us realize that with the growing development of China's financial derivatives market, more and more products are coming to the public. To avoid such incidents in the future, we need to strengthen and attach importance to the education of basic knowledge of investors. At the same time, we will strengthen supervision and jurisdiction over all kinds of financial derivatives and promote an integrated financial market supervision system as soon as possible. Only in this way can we ensure the stability of the capital market and improve the efficiency of supervision.

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