Chapter 2

The Better Way for CME's Execution: Based on the Perspective of Industry's Best Practice Rule*

Rongbing Huang[†] and George Yuan^{‡,§,¶,||,**}

[†]*Deloitte China, 21F Bund Center, Shanghai 200002, China*

[‡]*Business School, Sun Yat-sen University,
Guangzhou 510275, China*

[§]*Center for Financial Engineering,
Soochow University, Suzhou 510275, China*

[¶]*Shanghai Lixin University of Accounting and Finance,
Shanghai 201209, China*

^{||}*Business School, Chengdu University, Chengdu 610106, China*
^{**}*george_yuan99@yahoo.com*

Abstract

The event of Chicago Mercantile Exchange's (CME) negative oil clearing price on April 20, 2020, in which commodity futures traded in a negative range, is significant to the financial community worldwide. Through discussions of the so-called "best practice" rule for professional behaviors in practice with a number of examples and standards established by professional organizations, it seems that a better option for CME's execution would have been to first seek feedback from stakeholders internationally within a reasonable transition period before implementing the proposed new trading (or updating) rule that came into effect in the month of April 2020.

Keywords: Best practice, consultation process, transparency, conflicts of interest, transition period

*Please note that the views expressed here are those of the authors, and do not represent the affiliated company or universities. The corresponding author is George Yuan.

2.1 The Impact of Negative Oil Clearing Price Event on April 20, 2020

At 2:30 a.m. EDT (Eastern Daylight Time) on April 20, 2020, the price of West Texas Intermediate (WTI) crude oil futures contract delivery on May 1 (denoted by “WTI2005”, with the last trading day on April 21, 2020) trading on the Chicago Mercantile Exchange (CME) plunged to a negative value, falling more than 300% at the closing trading time and closing at a settlement price of \$-37.63/barrel, a first in the history of futures pricing in CME.

The negative price of crude oil futures has brought a huge shock for the market. The crude oil market has never seen a negative oil price before, and the emergence of negative oil prices has refreshed investors’ awareness of risks in the futures market. At the same time, the emergence of negative oil prices led to a huge loss for the bulls holding the contract. A typical example that has attracted widespread market attention is that negative oil prices have caused heavy losses to Bank of China’s crude oil treasure customers. Bank of China’s “Crude Oil Treasure” (commonly referred to as “Yuan You Bao” by most investors) is a type of financial product issued to individual investors based on the WTI’s crude oil futures contracts. The event of negative oil price caused Bank of China’s WTI crude oil contracts to settle at \$-37.63/barrel, resulting in a “short position” and huge loss to both the investors and the Bank.

2.2 Key Factors Leading to Negative Oil Price Events

There have been a lot of news and analysis on the factors causing the negative oil price of WTI crude oil futures, which are briefly summarized as follows (see more from Yuan [12]):

- The sharp drop in crude oil demand caused by the economic shut-down due to the global spread of COVID-19, when combined with the inability to halt crude oil production (closing oil wells would cause huge losses), led to a market that over-supplied with an insufficient demand, resulting in negative prices.
- Significant increase in delivery cost: the supply of crude oil exceeded the demand, the storage cost of crude oil was greatly increased due to insufficient storage space, and the logistics cost of

crude oil transportation all led to a significant increase in delivery cost. Traders sold futures contracts to avoid spot delivery, which caused prices to collapse.

- The negative price was caused by the lack of market liquidity at a special time and took advantage of the new rule that was quickly brought into effect by CME in the month of April 2020.
- Possible market manipulation: short sellers took advantage of the special time atmosphere and asymmetrical information of revised trading rules to hunt bulls without any protection, resulting in a negative price.

In regards to the negative oil price, as will be discussed in the next section in relation to the so-called “best practice” rule in the financial industry, we believe that the proposed modification and quick implementation of CME’s trading rules were key factors in promoting the negative oil price. In general, there is no problem in adjusting or updating new trading rules or functions for its information technology (IT) trading system, but the quick proposal and implementation of CME’s new rule in such a short time created heavy shocks in the international community. The decisions made by CME during this event are against basic professional behavior as CME, one of the leading exchanges in the public sector, plays a significant international role and neglected the “best practice” rule by failing to implement a transition period or seek feedback from stakeholders for its new proposal to allow “negative oil price” on the IT trading system.

2.3 Applying the Best Practice Rule is the Core Requirement for Evolution of Corporate Governance in Practice

By following Stafford (see [1]), we know that a decade of economic turmoil, regulatory reform, and technological change has reshaped how corporations must do business today. Yet for directors, governance often proceeds in “business as usual” mode, so how can boards make use of new board mandates and technology to regain their oversight edge? In particular, it is always a challenging job to ensure transparent information and action in corporations’ new

reform policies to implement new regulatory requirements or compliances; to code new business processes or procedures; and to update or adjust any new trading rule for exchanges to public society, community, stakeholders, professional organizations, government/agencies, or related parties with a smooth transition in practice. These considerations are a key part of the evolution of corporate governance in practice.

Actually, during the evolution of corporate governance, **how** leaders understand and adapt governance to meet these new regulatory or compliance demands will in part determine how effective their companies are in the future. How companies approach corresponding new implementations and enforce regulatory compliance in corporate governance from the top-down (or bottom-up) so that their culture, technology, and processes fit better practices in compliance with industry standards, professional behavior, and ethics requirements is the so-called “best practice” rule in which corporate governance acts as a leading role model with industry benchmarks in practice.

In particular, those corporations, such as international exchanges, financial companies, and others with any nature of exposure to public communities, play a significant role as global financial intermediaries, by the nature of their businesses, and thus should subscribe to the “best practice” (rule) when it comes to implementing codes of professional integrity and ethics to act as role models in their practice.

Indeed, best practices are adopted by governments, too. For example, in order to conduct regulatory reform, the Australian government established the “best practice regulation handbook” in 2007 (see [2]); the government’s goal was to enhance the regulatory framework with a focus on improving the quality of analysis applied to regulatory proposals through introducing a seven-step key concept called “Consultation Process”.

On the other hand, in the professional industries for finance, trading, security, accounting, regulatory agency, and so on, each sector is always associated with the development of its “best practice” rule to all members with a focus on applying these rules as the baseline of their professional behaviors to maintain integrity in daily business. For example, since the establishment of the International Organization of Securities Commissions (IOSCO) in 1974, the body has conducted a number of guides for the best practice rules for its more than 200 members worldwide to follow-up or

use as a guideline for their daily business behaviors in principle. One of IOSCO's recent guidelines is the so-called "CR03/2015" for *Mechanisms for Trading Venues to Effectively Manage Electronic Trading Risks and Plans for Business Continuity, Consultation Report* which was released in April 2015. On June 22, 2015, in response to this proposal ("CR03/2015") and IOSCO's assessment (see [3]), another global industry association WFE (World Federation of Exchanges), which represents more than 250 exchanges and CCPs (central counterparty clearing house) of all sizes worldwide, including CME group, commented on best practices in the area of risk management and business continuity by confirming a united goal to establish an environment which "[enabled] fair, orderly and transparent markets, and [reduced] systemic risk" by applying the best practice rule.

Another example is as follows: in 2013, IOSCO established the "19 Principles for Financial Benchmarks (Benchmarks)", which were endorsed by the Financial Stability Board as being the standards of best practice for Benchmarks administration. As the Federal Reserve Bank of New York is a component of the United States (US) Federal Reserve System and administers the Benchmarks for public policy purposes, the Federal Reserve Bank of New York is committed to administering the Benchmarks in a manner consistent with the 19 Principles (established by IOSCO) as "best practice" rules for the financial sector. From the 19 Principles, *No. 11 Principle on the Content of the Methodology*, *No. 12 Principle on the Changes to the Methodology*, and *No. 13 Principle on Transition* clearly explain how to structure a "transition period" by seeking feedback from stakeholders with a reasonable consultation time period if there are any changes or updates for issues such as "Changes to the Methodology, or Trading Methodology, or Adding Function" in practice — such as the updates executed by CME in April 2020.

In this way, both the International Federation of Accountants (IFAC) and Chartered Institute of Public Finance and Accountancy (CIPFA) also provide a good example on how to arrange the consultation process with a reasonable buffer transition time (from June 2013 to September 17, 2013) by seeking recommendations and suggestions for "Good Governance in the Public Sector — Consultation Draft for an International Framework" released in June 2013 (see [4]).

Of course, there are many other “best practice” rules established by IOSCO that are accepted by regulatory agencies and professional organizations; for example, “Prohibiting Market Manipulation” was adapted by US regulatory agencies of Commodity Futures Trading Commission (CFTC), and Securities and Exchange Commission (SEC) Regulation, too (see [5] for more related information).

Thus, it is crucial for the CME group, as members of WFE, to follow these best practices when introducing or updating new trading rules by planning for a consultation process with its stakeholders (indeed globally) by at least providing “transparent information” and allowing time for “translation period” to avoid “conflicts of interest” when applying or updating its function in the IT trading system. It seems that a better option for CME’s execution would have been to first seek feedback from stakeholders internationally within a reasonable transition period before implementing the proposed new trading rules that became effective in the month of April 2020.

The action executed by CME in April 2020 sets up a bad example for the global exchange sector. In the next section, we elaborate by looking at other methods used by financial sectors under the same conditions of the COVID-19 strain since December 2019.

2.4 CME’s Quick Action in Applying New Trading Rules Promoting the Occurrence of Negative Oil Price Events

2.4.1 *The timeline on CME’s modification effectiveness of trading rules and the emergence of negative oil prices*

Due to the large-scale outbreak and intensification of the spread of COVID-19, the crude oil futures market increased in volatility; CME responded by raising the circuit breaker price threshold from 7% to 15% on March 19, 2020 (Eastern Time). On April 3, 2020, CME announced the “change for the code of the IT system to allow ‘negative oil price’ declarations and transactions to become effective from April 5 or April 8, 2020”; CME communicated with the CCPs and member units (also possibly including regulatory agencies of CFTC and SEC, too), while the market was repeatedly reminded of the

possibility of negative oil price appearances. On April 15, 2020, CME conducted the function testing for its IT trading systems with negative price, and shared its testing report with the member units to verify what would happen to the market under negative oil prices. On April 20, there was a negative oil price on WTI2005 (crude oil futures contracts with maturity in May) and CME didn't intervene in the transaction; after the market closed on April 20 at 2:30 p.m. (Eastern Time), CME said that after the emergence of negative oil prices, the market operated normally. At 5:00 (EDT) on April 21, WTI2005 were finally pulled back to \$10/barrel for delivery. After the negative oil price incident, in response to doubts in the market, CME responded on April 30, 2020 that the WTI2005 prices reflected the fundamentals of physical crude oil, and that they had notified the regulators and the market in advance before the WTI crude oil price fell to a negative value in early April so that customers could manage the risk in volatile prices while ensuring the convergence of futures and spot prices.

As we can see from the above timeline, CME modified the code of the IT system **on April 3, 2020**, to allow “negative oil price” declaration and transaction, and the code became effective **on April 5, 2020**. **The entire time span for CME to modify and implement the new trading rules^a was only a couple of days — it is our opinion that this was definitely too short.** It was impossible to conduct any possible study on the impact of the changes in the trading rules or receive any opinions through a consultation process. CME's action to modify its IT trading system with a new function from the previous non-support of “price declarations below 0” to supporting “negative oil price” declarations and transactions falls under the categories of *No. 11 Principle on the Content of the Methodology* and *No. 12 Principle on the Changes to the Methodology* under the framework of the 19 Principles for best practices elaborated in the previous section; and thus, the action on *No. 13 Principle on “Transition”* should have been considered. Note that the modification of the trading rules (allowing for “negative oil price” declarations and transactions) is a major change in the trading mechanism; it would have been expected that the new trading rules would

^aspeaking loosely, “the updating the function of existing rule”.

only take effect after a full impact assessment and complete consensus after consultations with stakeholders' opinions and feedback. On this topic, CME asserted that the possibility of trading negative prices for crude oil futures had been notified to the regulators and the market in advance before the price truly fell to a negative value, but this possibility was announced after the new trading rules had been officially adopted, and the negative prices appeared in a short period of time after the new rules had taken effect. We conclude that the action executed by CME in April 2020 set up a very irresponsible example for the global exchange sector.

2.4.2 CME not applying best practice by planning the consultation process through a lack of disclosure and transparency of information which may have resulted in conflicts of interest

The function of good governance in the public sector is to ensure that entities act in the public interest at all times consistent with the requirements of legislation and government policies, avoiding self-interest and, if necessary, acting against a perceived organizational interest (see [6]).

IOSCO's given principles for governance are intended to ensure that the public sector has appropriate governance arrangements in place in order to protect the integrity of the Benchmark determination process and to address conflicts of interest (see [6] or [7]).

Although the US Commodity Futures Trading Commission (CFTC) rules, which became effective on August 15, 2011, prohibit manipulation of commodity markets (see [5]), they cannot prevent traders from taking advantage of loopholes and information asymmetry for their own benefits. CME allowed such an opportunity because of its rapid implementation of new trading rules. The modification and quick enforcement of trading rules permitted parties to manipulate the market by using information asymmetry and led to the conflicts of interest between related parties. Shortly after the new rules came into effect, there was a negative oil price event, which seems closely linked to the asymmetric information misused among different related parties; although there is no evidence available, the lack of disclosure and transparency of information for the change in trading rule may have resulted in conflicts of interest for related parties involved in the negative price trading on April 20, 2020.

2.4.3 *Significant changes in administrative regulations, rules, and trading mechanisms require extensive consultation*

We would like to first point out that significant changes in administrative regulations, rules, and trading mechanisms require extensive consultation. It is a common practice in the industry to go through the consultation phase or to set up adequate transitional arrangements.

Based on best industry practices, the possible impact of the modification of the trading rules needs to be fully evaluated and disclosed. The changes to the rules and the possible impacts must be transparent to all related parties, and sufficient transition time is required before the rules come into effect, so that all related parties can adequately prepare for the change of rules and avoid information asymmetry among different related parties.

Significant changes in administrative regulations, rules, and trading mechanisms usually affect the interests of various stakeholders. It is common practice in the industry to set up a consultation stage or transition period to fully listen to feedback and also publish quantitative calculations or impact analysis for stakeholders to fully understand the possible impacts of the revised rules or mechanisms; after forming a consensus based on the feedback of various stakeholders, the changes would formally take effect.

Reforming the rules to follow good industry practices help avoid potential conflicts of interest as much as possible. For good practices in reform of rules, we can refer to the relevant literature (see [2]), which illustrate the regulatory reform process (see [8]) as we discussed in the previous section.

In the following example, we look to a similar situation affected by the spread of COVID-19 handled by the banking sector in which best practices allowed for a new translation period by the Basel Committee's Basel Agreement III market risk module. We also look to the example of the application of best practices by the International Accounting Standards Board (IASB) in dealing with the amendments to accounting standards to take effect.

Example 1: The revision of Basel III market risk module by the Basel Committee

After the financial crisis that was triggered by the subprime mortgage crisis in 2009, the Basel Committee discovered from the

financial crisis that the original capital requirements of the banks’ trading book were insufficient to absorb losses. The Basel Committee on Banking Supervision (BCBS) issued a revised opinion on market risk capital requirements (Basel 2.5). However, because the entire framework still had shortcomings, BCBS decided to comprehensively revise the capital requirements framework of the trading account and introduced the FRTB (Fundamental Review of the Trading Book: A Revised Market Risk Framework) to solicit feedback from various stakeholders. After several rounds of consultations and quantitative impact studies, FRTB finalized the draft in January 2019, and the Basel Committee formally published the “Minimum capital requirements for market risk”, requiring banks to fully implement it by January 2022. From the solicitation draft published in 2012 to the formal finalization of the draft in 2019, FRTB has gone through several rounds of consultations and quantitative calculations, and has reserved corresponding transitional arrangements for the banks to fully implement (see [9]) with the specific timeline as shown in Fig. 2.1.

However, accounting for the outbreak of COVID-19 in December 2019 as it continues to spread around the world (even today as of August 12, 2020) and considering the virus’s impact on the global banking system, the Basel Committee supervision agency **on March 27, 2020** postponed the implementation of Basel III for **one year until January 1, 2023** (see [10]). This is one typical example established by the Bank for International Settlements (BIS) on how to handle a transition period under duress of unexpected events in contrast to CME’s reaction to the pandemic in April 2020 though

Fig. 2.1. Timeline of reform about Basel III’s market risk.

under even more pressure than CME from the outbreak of COVID-19 in December 2019!

Example 2: The amendments to the International Accounting Standards Board (IASB) standards on financial instruments

The financial crisis in 2009 exposed the deficiencies of IAS 39—Financial Instruments: Recognition and Measurement (IAS 39) in the classification of financial assets, impairment provisions, and hedge accounting. IASB has revised the standard since 2009, and six consultation drafts, one supplementary document, and one discussion draft were issued successively. After six years of feedback and revision, it officially issued International Financial Reporting Standard No. 9 — Financial instruments (IFRS 9) in July 2014. From the reform of IAS 39 to the formal implementation of IFRS 9, IASB has gone through many rounds of consultations and revisions before its final iteration; in addition, the full implementation of IFRS 9 also sets a corresponding transition period (see [11]). This is another example of how to deal with the amendments to accounting standards before they take effect in practice.

2.4.4 *CME's lack of stakeholder feedback resulting in no consensus forming*

The stakeholders involved in the crude oil futures market in CME include crude oil producers (drillers, refiners, and physical crude oil shippers), crude oil demand parties, and investors (including institutional investors and retail investors, such as individual investors, ETFs, commercial banks' crude oil investment accounts for individual customers, and on-site and off-site funds for individual customers), the regulatory agencies such as CFTC, clearing companies, and third-party service agencies. These steps were remedial measures taken after the hasty coming into force of the new trading rules, a method inconsistent with the industry practice of fully consulting and forming a consensus among all stakeholders before the new rules come into force.

Although CME communicated and tested with clearing companies and member units after the new trading rules came into

effect and prompted the possibility of negative oil prices, CME's stakeholders are not only clearing companies and member units but also individual investors and commercial banks' crude oil investment accounts for individual customers, and their comparative limited access to information, especially in allowing commodity futures to trade in a negative range, disrupting a common sense of previous trading cognition. It takes time for investors to understand the risks contained in the new rules. The new trading rules came into effect on April 5, and the negative oil price appeared on the market on April 20. This was different from CME's modification of the trading rules and its rapid effect, which led to a huge difference in risk perception of different stakeholders under the new trading rules. From April 20, we examine the event of negative pricing along with the time interval of oil prices and trading volume (see the volume in Table 2.1).^b Due to asymmetric information, we see how different information allows certain traders to take advantage of new trading rules in a very short period of time, while other traders have not yet realized the huge risk under the new trading rules (instead of operating under the new risk from the trading rules modification, some traders operate under a cognitive bias towards the previous transaction risk until the market presents an extremely negative price). This reflects that the new trading rules came into effect too quickly with an absence of necessary consultations and transitional arrangements for adoption of the new rules. The modification and quick entry of the new trading rules greatly exacerbated the occurrences of the negative price.

2.5 Summary

The negative oil price event has brought unprecedented impact and shock to the financial market, which has refreshed the traders' understanding of the risk of the crude oil futures' market. Allowing commodity futures trading in a negative range breaks through the common sense of previous futures' market transactions and is a

^bPlease note that the trading data used in this table may be slightly different from others due to the difference of the time-buckets, time frequency, and related other criteria, but this difference will not impact the conclusion and question we address here.

Table 2.1. Trading volume on April 20, 2020.

Date	Trading volume	Trading volume with negative price	Last trading closing price	Proportion of trading volume with trading closing price determined on April 20	Proportion of negative prices traded on April 20
4/20/2020	247,947	4,814	−37.63	0.142%	1.94%
Trading volume in the last 3 minutes on April 20	Closing price based on the last 3 minutes of trading	Volume percentage of closing price determined in the last three minutes (based on three trans- actions) of April 20	All transactions with negative volume on April 20	Proportion of negative price on April 20	Trading volume on April 20
352	−37.63	0.142%	4,814	1.94%	247,947

Source: Bloomberg.

significant change in trading rules. Based on industry’s best practices as discussed above, from the government to various professional organizations internationally in the field, significant changes in trading rules usually require fully seeking the opinions and feedback of stakeholders and setting a long transition period that allows for a full evaluation of the impact of significant changes in trading rules in which the changes and possible impacts are transparent to all related parties; this, along with a sufficient transition time before the rules come into effect, provides all related parties with preparation adequate for the implementation of the new rules and avoids information asymmetry among different related parties.

However, CME did not follow best practices by not planning a consultation process, lacking disclosure and transparency of information to stakeholders internationally, and allowing the new trading

rules to take effect quickly. As a result, some traders did not fully understand the potential risks under the new trading rules. Although CME has communicated and tested with the clearing companies and member units after the new trading rules became effective, and prompted the possibility of negative oil prices, this is a remedy after the new trading rules have become effective. In view of the insufficient risk education under the new trading rules, different traders had different perceptions of the risks contained in the new trading rules. Some traders still carried the same risk bias cognition from before the modification of the trading rules over to the new rules. There is a big deviation which provides the space for some traders to use the new trading rules. Since the modification and quick implementation of these new trading rules was followed within half a month with the appearance of negative oil prices, we conclude that CME's modification of the trading rules took effect too quickly without properly consulting the feedback of various stakeholders and appropriate transitional arrangements, which to a large extent promoted the emergence of the negative oil price.

This negative oil price event has provided a vivid risk education course for market participants. When they participate in financial market transactions, market traders need to keep a high vigilance on the revision and quick entry into force of major market transaction rules, and have a full understanding of the risks involved.

The event of CME's negative oil clearing price on April 20, 2020, in which commodity futures traded in a negative range, is significant to the financial community worldwide, and even touches the fundamental issues of basic fair value of human rights by devaluation of labor's production (see [12] for more discussion in detail). By examining the so-called "best practice" rule for professional behaviors in practice, it seems that a better option for CME's execution would have been to first seek feedback from international stakeholders within a reasonable transition period before implementing the proposed new trading rule that became effective in the month of April 2020. Thus, as one of the most important financial intermediaries globally, CME should play a leading role by applying the best practices in financial industries, which is not how they acted in April 2020.

Before closing the discussion in this chapter, we like to recall that on May 7, 2020, the CFTC commissioner Mr. Dan M. Berkovitz stated, "The CFTC and the CME should continue working to analyze

the causes of the divergence in the May contract. Based upon that analysis, CME and the CFTC should take whatever measures may be appropriate to ensure that trading in the WTI futures contract is orderly and supports convergence of the futures and physical markets.” (see [13]) This is exactly one of the many fundamental issues we must face today after the event of April 20 with negative price happened, by understanding what went wrong with the current running engine operated by CME in practice.

The irony is that on August 13, 2020, CME made the following new announcement:

“Further to Clearing Advisory 20–171 dated April 21, 2020, CME Clearing will revert its options pricing and valuation methodology, currently based on the Bachelier model, effective for trade date on Monday, August 31, 2020. Products will transition from Bachelier back to Whaley or Black 76, depending on the products” (of 62 kinds of options, see [14] for more in details).

This action means that CME now only allows positive prices for underlying, so they (CME) moved back to positive (prices) from allowing negative prices on April 13, 2020 for underlyings. This was another bad behavior as the transition time allowed was only 17 days (including weekend time).

Finally, we would like to mention here that as of August 4, 2020, Bloomberg Business Week (see [15] for more details) reported that a small group of traders (called Vega Capital London Ltd.) in London made a fortune on oil's unprecedented plunge into negative territory (related to CME's movement by allowing negative prices in April 2020). They are now being scrutinized by regulators. Currently US Commodity Futures Trading Commission, the United Kingdom's Financial Conduct Authority, and CME Group Inc., owner of the Nymex exchange where the trading took place, are examining whether Vega's actions may have breached rules on trading around settlement periods and contributed to oil's precipitous fall, according to people with knowledge of the probes. Lets see what would come out soon.

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