

Application Study of "Blockchain + OTC Market" Model

Xuan Zhang *

School of Accounting, Anhui University of Finance and Economics, Bengbu, Anhui 233030, China

* Corresponding author Email: zhangxuan_me@163.com

Abstract: Blockchain technology has a broad application prospect and application value in the financial industry due to the characteristics of decentralization, programmability and information immutability, and the traditional financial industry is facing new opportunities and challenges. The application scenarios of blockchain technology in OTC market fund registration, electronic contract and data exchange and management are selected to analyze their respective status, application value and compliance, to summarize the application value of blockchain technology in OTC market, to effectively play the innovative effect of "blockchain + OTC market" in the financial industry, and to explore the new application path of blockchain technology.

Keywords: Blockchain Technology; OTC Market; Application Value; Compliance.

1. Introduction

In the era of rapid development of Internet technology, blockchain technology has a wide range of influence on the whole society, especially in the application of supply chain finance, product traceability, credit collection, data management, electronic contracts, etc., which strongly promotes technological innovation, organizational innovation and efficiency innovation in China and makes a significant contribution to the construction of modern society. Blockchain technology is one of the core technologies of financial technology, and the "blockchain + finance" model can effectively realize financial transformation in risk management, product innovation, investment research and other aspects, and better perform the functions of resource allocation, risk diversification, price discovery and macroeconomic regulation in the financial market.

Blockchain technology is based on distributed systems, cryptography, and peer-to-peer information interaction, and has features such as anonymity, immutability, and decentralization to effectively solve the trust problem in the financial sector. The core components of blockchain technology are the two links of transaction and verification. In the transaction link, it is assumed that the seller cedes a financial product of the blockchain account to the recipient, while the blockchain account system generates the private key, and both parties of the transaction form their respective corresponding public keys through elliptic cryptography of the private key. The public key of the recipient continues to form a new network address through cryptography to accept the financial product of the seller and publish it in the blockchain account system to wait for the verification work of the blockchain system. In the verification link, the blockchain technology uses consensus mechanism to prompt the various nodes of the blockchain to reach a consensus and ensure that the new block can be stored in each node of the blockchain to accept the corresponding confidential means.

With the maturity of blockchain technology, the technology, financial and regulatory authorities have realized that blockchain will be more convenient and efficient for the financial industry, and the strategic significance and commercial value of blockchain technology will greatly promote the development and application of "blockchain + finance" model. In view of this, in order to better utilize the

advantages of blockchain technology, it is necessary to explore the application value of "blockchain+OTC market".

OTC (over-the-counter) market are mainly markets where investment and financing activities are conducted in markets outside of stock exchanges, mainly including counter market, the third market and the fourth market. Although On-site trading market is characterized by high liquidity, low risk and high security, they also face numerous conflicts and challenges, such as compliance conflict, replacement cost challenge and blockchain performance challenge. However, with the development of information technology, securities trading can be related to pooling by means of electronic networks and then centralized electronic trading, making the physical boundary between the On-site trading market and OTC market more deflated.

China's OTC market mainly consists of the financial market quotation, information and trading system and the national securities automatic quotation system. After more than 30 years of development, China's OTC market has become an important component and underlying infrastructure of the multi-level capital market. With the development of the OTC market, enterprises at different stages of development can obtain the corresponding level of capital support, which has played an important role in high-quality economic growth and employment enhancement.

Based on the application value of blockchain technology in the financial industry, this paper focuses on exploring the practical application value of the "blockchain + OTC market" model to improve the infrastructure of China's financial industry and explore a new path for the "blockchain +" model.

2. Application of Blockchain in OTC Market

2.1. OTC Market Fund Registration

2.1.1. Current Situation Analysis

Since the 1990s, the development of the OTC market has greatly exceeded that of the On-site trading market in terms of scale and speed. After the 21st century, in the stage of China's rapid economic development, domestic investors' urgent demand for asset appreciation and preservation and safety products further promotes the development of the OTC market, which has gradually gained the favor of many investors due to the lower risk and high investment yield of

funds. In addition, the OTC market registration are self-built registration system, there is a lack of effective supervision, low transparency and other problems, while each information can be encrypted and stored on each node through the blockchain system, effectively ensure the transparency and regulation of information.

2.1.2. Application Value Analysis

Blockchain OTC market fund registration mainly refers to the registration of investors' digital identity, digital credentials and data information by direct marketing institutions and distribution agencies, etc., and provides investors' data information, data identity, registration credentials and other related contents to various transaction affiliates through the blockchain system. The blockchain OTC fund products mainly adopt the federation chain technology authentication system, with central authentication and authorized nodes for access control. When an investor subscribes to an OTC fund product, once the corresponding intelligent contract is generated on the blockchain, the investor information and contract information are locked into a non-modifiable state, and the subsequent processes are automatically executed. the specific application model is shown in Figure 1.

Investor: the investor uploads his identity information to the alliance chain, subscribes to the relevant fund products according to the fund quotation released by the fund manager, and waits for the identity verification and feedback of the subscription information from the relevant interested parties.

Fund manager: publish fund quotation data in the alliance chain and obtain subscription commission information from investors of direct marketing institutions and distribution agencies; generate subscription confirmation information based on the subscription commission information and upload it to the alliance chain, and synchronize fund registration information to the alliance chain through authority control and encryption means to ensure the query and verification work of information by relevant stakeholders.

Reseller: verify investors' identity information and transmit their subscription commission information to the alliance chain; obtain feedback from fund managers on investors' subscription information according to the alliance chain, and carry out relevant transaction review work, and finally notify investors of subscription results.

Regulator: the regulator is a special service node in the alliance chain, mainly supervising the legal compliance of each node of the alliance chain, reviewing and verifying the fund transaction registration information and transaction information.

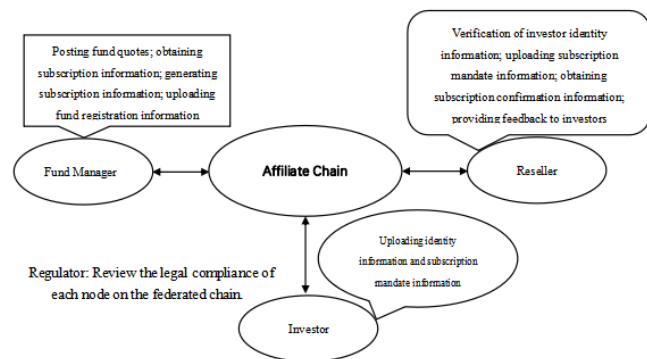


Figure 1. OTC market fund registration process

2.1.3. Compliance Analysis

There are many types of over-the-counter funds, mainly including equity funds, bond funds and hybrid funds within open-end funds, among which ETF funds and LOF funds can

be traded both over-the-counter and on-site, and they belong to both on-site funds and over-the-counter funds. Article 65 of the Fund Law stipulates that "subscription, redemption and registration of fund shares of open-end funds shall be handled by the fund manager or the fund service institution entrusted by the fund manager". It can be seen that fund managers or other fund service providers have a lot of room for operation in the registration processing of fund products, which also provides feasibility for the application of blockchain technology in the fund registration business in the OTC market to solve the problems of low transparency and time-consuming and laborious in the registration of OTC funds.

2.2. Electronic Contract

2.2.1. Current Situation Analysis

Electronic contract is mainly under the electronic information network, two or more parties through data messages, e-mail and other ways to clarify the rights and obligations between the parties of the electronic agreement. Compared with traditional paper contracts, electronic contracts have higher security and trustworthiness. With frequent changes in OTC market transactions, there are many contracts to be handled every day, and they face the following problems: firstly, there are many types of contracts, which need to be classified and managed; secondly, contracts need to be reviewed at various stages, which is time-consuming and laborious to handle manually; thirdly, there is a risk of tampering with contracts and "carrot seal" and other phenomena. The cryptography technology, peer-to-peer information exchange technology and tamper-evident feature of blockchain technology can effectively prevent the risk factors in contracts.

2.2.2. Application Value Analysis

Blockchain electronic contract, refers to a new type of electronic contract based on the traditional electronic contract, by adding blockchain technology to all aspects of contract signing, archiving and storage to improve security and validity. The electronic contract of each node of the blockchain must include information such as biometric information hash value, time stamp, etc. The information constituted is stored in the authoritative node, and all data information will not be lost and tampered with, which is an important information evidence.

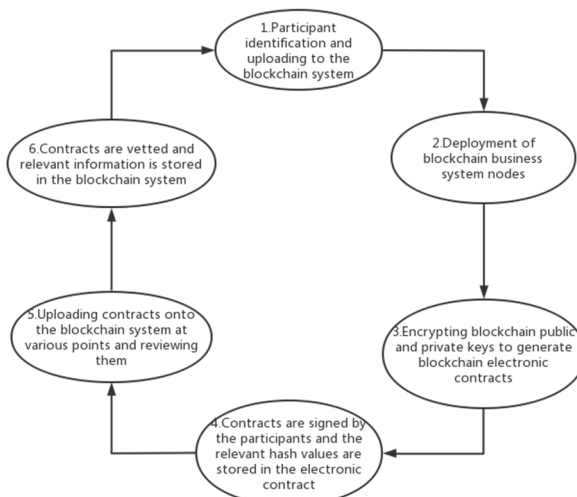


Figure 2. Blockchain electronic contract operation process

Electronic contract signing system generally supports contract deposition and operation process deposition. The contract deposition is mainly to record the information related to the signing subject and time stamp of the electronic contract; the operation process certificate is also to record the various information of the investor or participant in the running operation, and to deposit and save. The specific process is shown in Figure 2.

2.2.3. Compliance Analysis

According to the relevant provisions of the Electronic Contract Formation Process Specification, "electronic contract formation system refers to the contracting party with identity authentication, negotiation and consultation, contract electronic signature, contract storage and call and other functions to achieve online formation of electronic contracts and processing of information systems." According to the provisions of the Electronic Signature Law of the People's Republic of China regarding data messages, the authenticity and integrity of data related to electronic contracts must be guaranteed before the contract can take effect. The decentralization and tamper-evident nature of blockchain technology and the characteristics of cryptography-based, distributed ledger system determine its application prospects in the OTC market and promote the new development of electronic contracts.

2.3. Data Exchange and Management

2.3.1. Current Situation Analysis

In the age of modern Internet technology, the management and exchange of data and information are "core secrets", and how to ensure the security, authenticity and integrity of electronic documents in the process of exchange and management is a key issue in economic activities. The daily review and exchange of product documents between the company, fund managers and custodians are frequent, and the authenticity and reliability of the data in each process must be guaranteed. The interchange and management of data through the blockchain system helps to enable precise tracing back to a certain link in case of deviations in products or data, effectively resolving unclear responsibilities or other disputes.

2.3.2. Application Value Analysis

The data management and exchange of the "blockchain + OTC market" model mainly uses smart contract technology to transmit and manage data, so as to ensure the fairness, security and authenticity of the data exchange process and avoid unnecessary disputes and risks. Data exchange and management in the blockchain smart contract technology mainly involves two aspects, as shown in Figure 3.

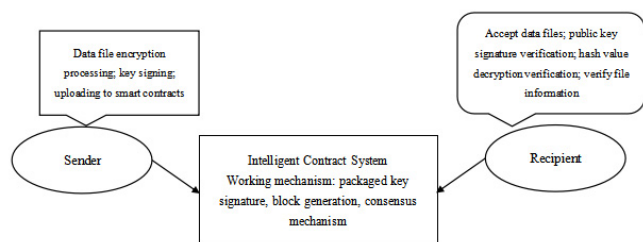


Figure 3. Data exchange and management process

The one is the sender. The sender, on its own blockchain node, hashes the data file to form information such as key signature and timestamp, and transmits it to the blockchain smart contract for storage;

The other is the receiver. The recipient gets the required data file in the blockchain smart contract, uses the public key to verify the sender's signature, obtains the hash value for decryption, and checks it against the relevant information in the smart contract to ensure the authenticity and security of the data file.

2.3.3. Compliance Analysis

According to the relevant provisions of the Contract Law of the People's Republic of China, the contract can tangibly express the content contained and can be readily retrieved and used data messages, considered to meet the requirements of laws and regulations of the written form. Blockchain technology is committed to the integrity, authenticity and reliability of data in the process of data exchange and management, and does not change the relevant information of contract data. It uses blockchain node technology for encryption processing in data transmission to further guarantee the security of data messages, and does not introduce new risks, which is in line with the legal provisions.

3. Risks of "Blockchain + OTC Market" Model

3.1. 51% Arithmetic Attack Risk

The main purpose of the consensus mechanism of blockchain technology is to ensure the security of transactions and theoretically guarantee the data of each node on the blockchain system is tamper-proof, while the consensus mechanism follows the law of majority, that is, the data can be tampered or falsified as long as more than 51% of the nodes reach consensus among themselves. Therefore, once that arithmetic power holds more than 51% of the number of nodes, the data in the blockchain will have the crisis of being tampered. However, in practical application, the number of nodes in the blockchain system is so large that it is difficult to control more than 51%.

3.2. Cyber Security Risk

The risks of "blockchain + OTC market" are not only from its own technical and operational risks, but also the cyber security issues are gradually exposed. On June 17, 2016, the bitcoins raised by The DAO were hijacked and appeared to be hijacked multiple times in a single transaction. This fully exposed the technical vulnerability of blockchain technology, and the cyber security issue should not be underestimated, otherwise it will cause drastic impact on the whole financial market.

3.3. Risk of Regulatory Deficiency

From Internet Finance to the banning of P2P platforms, the combination of finance and technology is constantly impacting the boundaries of the law. The development of "blockchain + OTC market" model, on the one hand, lacks the supervision of intermediaries under the traditional model, and blockchain technology may be used by lawless elements, such as illegal fund raising and illegal financing; on the other hand, blockchain technology is not restricted by geography, and lawless elements use its characteristics to hide the source of funds for illegal money laundering activities. The network is not an extra-legal place; therefore, regulatory authorities need to strengthen the supervision of financial networks and provide proper guidance to blockchain.

4. Conclusion and Recommendations

In order to better utilize the application value of "blockchain + OTC market" model, this paper studies the current development status, technical application value and compliance reality of OTC fund registration, electronic contract and data exchange and management, and finds that they face 51% arithmetic attack risk, cyber security risk and risk of regulatory deficiency in real application, which is of great significance for the relevance analysis of blockchain technology application in the financial sector.

As an emerging technology, the integration of "blockchain+" model and financial industry changes the paradigm of traditional financial industry development and promotes a new round of technological and industrial changes. The application of blockchain in the financial field is still at the stage of innovation and exploration, and its decentralized, non-tamper able and programmable characteristics make it have a wide application prospect in the financial field. Based on this, this paper has the following recommendations:

First, implement a sandbox regulatory mechanism. In May 2016, the Financial Conduct Authority of the United Kingdom proposed a regulatory sandbox program, which aims to create a safe and efficient "testing ground" to support the development of financial start-ups through experimentation. The "blockchain + OTC market" model is a disruptive innovation to the existing financial industry and needs to be strictly regulated by corresponding laws and regulations. Since "blockchain+" is still in the exploration stage, it is not realistic to build a complete legal and regulatory system. Therefore, it is a correct path to introduce a sandbox regulatory mechanism and explore the regulatory direction while blockchain technology is developing.

Second, construct nodal insurance system. The application of "blockchain + OTC market" model will generate 51% arithmetic attack risk and network security risk, causing the loss of economic interests of each node or participant in the blockchain system, therefore, an insurance system can be implemented for all participants in each node of the

blockchain system, which can ensure that each node can disperse potential risks and also provide a final measure of protection for victims.

Third, improve the regulatory framework and narrow the regulatory gap. The development of blockchain technology also brings conflicts with the existing legal system, which makes it impossible to effectively regulate the "blockchain+" model. Therefore, it is necessary to build a perfect regulatory legal system framework to eliminate regulatory loopholes from the system, so that the regulatory gap can be narrowed to the greatest extent and create a safe, efficient and convenient environment for the survival of the "blockchain+" model.

References

- [1] Wan Guohua, Sun Ting. Research on the Ideal, reality and Regulatory countermeasures of "Blockchain + Securities" [J]. Shanghai Finance, 2017 (06): 58-64 + 57.
- [2] Zhang Yinghong. The risk and legal response of the "blockchain + securities" model [J]. Hebei Finance, 2018 (07): 3-7 + 15.
- [3] Li Lihui. Viable, credible and reliable, the path of financial application of blockchain technology [J]. Cards World, 2016 (08): 16-18.
- [4] Yuan Yong, Wang Feiyue. Blockchain: The State of the Art and Future Trends [J]. Acta Automatica Sinica, 2016,42 (04): 481-494.
- [5] Wu Yue, Chen Daozhi. Analysis of the application of blockchain technology in the securities industry [J]. Modern Business, 2019 (27): 124-125.
- [6] Zhang Liqing, Wu Tong. The Application of Blockchain in Finance: Theoretical Basis, Practical Difficulties and Solutions [J]. Reform, 2019 (12): 65-75.
- [7] Zha Haifeng. Application of Escrow Settlement Business Under Block Chain Technology [J]. Journal of Heilongjiang University of Technology(Comprehensive Edition), 2020,20 (05): 117-122.