

Analysis of risks and regulatory issues in the development of blockchain finance

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Abstract: *In recent years, a wave of blockchain technology development has been launched in China. Blockchain technology promotes the development of finance, but there are also technical risks, economic risks, artificial risks and legal risks, so it is necessary to supervise blockchain finance. The supervision of blockchain finance should rely on the "sandbox supervision" model, pay attention to the characteristics of blockchain, innovate traditional supervision, establish special supervision, and transform blockchain financial supervision into functional and technical supervision; at the same time, clarify supervision The main body, rationally divide supervisory powers, and accelerate the integration of technical and legal supervisory means from the aspects of basic legislation, supervisory law enforcement, industry law-abiding, and financial justice. The article focuses on blockchain finance, analyzes its development risks and practical problems according to its development characteristics, and based on this, puts forward suggestions for future development.*

Keywords: *Blockchain Finance, Regulatory Issues, Risk Prevention*

1. Introduction

Blockchain is a traceable chain data structure that combines continuously generated information blocks in chronological order. It is a distributed ledger that ensures that data cannot be tampered with and forged in a cryptographic way. Blockchain is an innovative application formed by the combination of asymmetric encryption algorithm, consensus mechanism, distributed storage, point-to-point transmission and other related technologies in new ways. The biggest advantage and direction of blockchain technology is "decentralization". Through the use of cryptography, consensus mechanism, game theory and other technologies and methods, point-to-point transactions based on decentralized credit can be realized in distributed systems where network nodes do not need mutual trust.

Consensus algorithm can be defined as a mechanism for blockchain networks to reach consensus. At present, widely used consensus mechanisms include proof of work (PoW), proof of equity (PoS), equity authorization proof algorithm (DPoS), practical Byzantine fault-tolerant algorithm (PBFT), etc. Different consensus mechanisms will have different effects on the overall performance of the blockchain system. Generally, the technical level of the consensus mechanism is evaluated by four performance indicators: security, scalability, performance efficiency and resource consumption.

Blockchain finance is the combination of blockchain technology and financial behavior, which is widely used in the financial field.

1.1 Securities Trading

When issuing and Raising Securities, securities trading is completed by forming intelligent contracts between distributed nodes. The smart contract is automatically matched between the securities issuing institutions and customers at the node, without the intervention of traditional securities brokers, fund custodians, registration and settlement institutions and other links, which can save human, material and time resources. At the same time, since the data in the blockchain cannot be tampered with, the data between each node is more secure and transparent. The application of blockchain technology in the securities field can not only effectively save resources, but also increase the transparency and security of transaction information.

1.2 Digital Currency

Digital currency, relative to real currency, is a network token in digital form that can realize the function of real currency. The digital currency transaction mainly relies on the decentralized blockchain consensus mechanism, allowing the two sides at the node to reach a transaction directly without the intervention of banks and other institutions, effectively reducing the transaction cost and making the transaction more flexible; At the same time, because the data cannot be tampered with at will, the security of the transaction has also been guaranteed. In 2015, the "electronic money system" of the Central Bank of Ecuador was officially put into operation and issued "Ecuadorian currency"; In the same year, Tunisia issued the national digital currency edinar; In 2017, Venezuela issued "petrocoins" backed by oil. China's central bank is also actively promoting the research of digital currency. In 2016, it began to organize seminars related to digital currency, and then established a research institute. The digital currency under development is called DC/EP, DC is digital currency, and EP refers to electronic payment.

2. Development Status of Blockchain Finance

The development of blockchain has a long history. It originated from bitcoin and is an important supporting technology of bitcoin. In November 2008, the original research document bitcoin: a point-to-point e-cash system was published, which has set off the first wave of technology. This article introduces the concept of e-cash system based on blockchain and many other technologies, It also marks the birth of bitcoin. At the beginning of 2009, the first creation block with serial number "0" was born, and then a new block was born, forming a blockchain, marking the birth of the blockchain. As a distributed data storage database, blockchain technology has the characteristics of encryption algorithm and point-to-point transmission, which makes it have significant advantages at the beginning of its birth. Its "decentralization" makes the technology itself highly reliable and anonymous. All these have promoted the popularization and promotion of blockchain technology. Blockchain finance is the application of blockchain technology in the financial field. In a narrow sense, blockchain finance specifically refers to the technical application of blockchain technology in the subdivided financial fields such as international exchange, securities trading and financial intermediary; In a broad sense, blockchain finance accommodates many fields closely related to economic and financial life, of which digital currency is the most widely concerned. Taking digital currency as an example, the mainstream currency is still bitcoin, but other digital currencies have been emerging in recent years; In addition to the application of money itself, digital currency also has many derivative functions, such as Ethereum and other underlying application development platforms. At present, blockchain finance has not been widely used and popularized in technology and application due to its technical uncertainty and high risk, and the technology cycle is still in the early stage of R & D and water testing. Taking the insurance industry as an example, blockchain technology hinders the development of how insurance companies define and divide the meaning of alliance; At the same time, blockchain technology has high cost, high risk and is difficult to be macroscopically supervised. Therefore, there are great obstacles to its spread in the financial industry.

3. Risks in Blockchain Finance

When blockchain technology is applied to the financial field, transaction information is more transparent and transaction data is more secure. It can provide a new development path for the financial industry and bring many innovative developments. While giving full play to the advantages of blockchain technology, the risks of blockchain technology cannot be ignored.

3.1 Technical Risk

As a science and technology that brings about change, blockchain technology still has some problems to overcome. For a blockchain structure, its security lies in the use of asymmetric encryption technology, many nodes and great difficulty in cracking; Its stability lies in the security technology, which makes the data not easy to be tampered with or damaged. At present, the overall technology and network R & D of blockchain is still in the construction stage. Therefore, the conditions for the combination of blockchain and financial field are not complete. Blockchain financial services have higher security and stability, but these advantages are subject to technological development. If the technological foundation is weak, its security will be relatively low. With the increase of nodes joining the blockchain for transactions, the computing power required by the database increases accordingly. When the computing

power fails to meet the requirements, the blockchain cannot be effectively maintained, and the ledger saved in the blockchain database is at risk of loss.

3.2 Economic Risks

In recent years, many countries and regions have tightened their efforts to promote blockchain technology, mostly considering the actual economic fluctuations brought by blockchain, such as economic and financial fraud such as MLM currency. However, at the same time, the supervision of blockchain is relatively backward, and there is no specific implementation experience. Most of them stay on the macro framework. It is difficult to timely and effectively supervise market manipulation, illegal fund-raising, virtual currency money laundering, etc. At the same time, many investors lack rational understanding, which is easy to produce group economic adverse events in digital currency trading.

3.3 Human Risk

Human risk refers to the problems of the blockchain caused by the wrong operation of the operators responsible for the transaction or management of the blockchain, which will bring inevitable risks to the financial services. Sometimes managers are unable to conduct a comprehensive review of the blockchain, and it is difficult to solve the technical loopholes and hidden dangers caused by technology upgrading. In the initial stage of technology development, the security of blockchain structure is relatively weak. If 51% of the nodes in the database are mastered by illegal actors, the transaction data and personal information in the database may be tampered with and forged at will, and illegal and criminal acts will follow, such as illegal fund-raising, money laundering and other criminal acts by using blockchain technology. At the same time, due to the tampering of data and information, financial security regulators cannot locate, track and investigate these illegal and criminal acts endangering financial security through the information in the blockchain system. The controllability of blockchain database will be reduced, and financial security cannot be further guaranteed.

3.4 Legal Risk

Legal risks are mainly reflected in the supervision of blockchain finance. The main functions of blockchain applied to the financial industry are distributed bookkeeping, smart contract and its encryption characteristics. The previous supervision was still a centralized and separate supervision mode, but did not pay close attention to the technical characteristics of blockchain and put forward targeted supervision. The defect of traditional supervision is that it can only carry out basic investigation and cannot intervene in the technical level to monitor the transaction information. Due to the lack of technical supervision, the supervision is not in place. At the same time, in the point-to-point transmission and consensus mechanism of blockchain finance, users mainly focus on the data transmitted in the form of digital code, and the real identity information of participating nodes or users holding the string of codes may be ignored and cannot be verified. This feature of blockchain is easy to be used by criminals, such as illegal fund-raising, money laundering and other criminal crimes, which makes it more difficult to detect cases and determine the identity of suspects, making the judicial supervision of blockchain finance difficult.

4. Improve the Financial Supervision Path of Blockchain

4.1 Innovate the Traditional Financial Supervision Mode

Traditional financial supervision needs to innovate, change the idea of separate supervision, and enhance the functional, technical and intelligent supervision for blockchain. On the one hand, it is necessary to realize the transformation from centralized and separate supervision mode to multi center functional supervision. The existing separate supervision mode does not adapt to blockchain finance, and the supervision cannot be coordinated. Blockchain finance is different from traditional financial supervision. Blockchain finance makes cross integration between various financial businesses, and its mixed operation makes it difficult to determine the regulatory authority, resulting in the absence of supervision. The transformation of the existing centralized and separate supervision mode to multi-central functional supervision can solve the problem of the absence of supervision. The supervision no longer pays too much attention to the classification of financial services according to business, but should pay attention to the possible polycentric phenomenon, and implement supervision according to the basic

functions of the business to avoid confusion or lack of supervision. On the other hand, technical supervision systems and measures should be added. Simply carrying out institutional supervision cannot avoid technical risks. Technical supervision should be used to deal with technical risks and solve the security problems brought by human risk to the block chain financial system. Therefore, we should accelerate the research and development of blockchain technology, add technical instructions to the blockchain financial system and implement intelligent supervision.

4.2 Establish Specialized Blockchain Financial Supervision

Specialized supervision is an effective way to avoid financial risks of blockchain. Specialized blockchain financial supervision should adopt a combination of technical and legal supervision means according to the characteristics of blockchain finance. Blockchain finance lacks a centralized control system, adopts encrypted distributed accounting technology, weakens regional management, and has strong anonymity, making it difficult for transactions on the blockchain to be monitored. We can learn from the foreign "regulatory sandbox" model to conduct regulatory testing on China's blockchain. For example, we shall not promote technological innovation to the public without the approval of the legal regulatory authorities. This model enables the first mock exam of the chain chain financial service providers, and enables the regulators to monitor the service contents and related subjects, and to establish a more perfect supervision system according to the "sandbox model".

4.3 Choice of Regulatory Strategy

In order to regulate the regulation of blockchain finance and solve the above regulatory problems, we should first clarify the regulatory path and put forward targeted regulatory strategies. The deep integration of blockchain technology and the financial field may bring new changes to the financial field - different types of financial business innovation and cross integration between different fields. Therefore, blockchain financial supervision also needs to "suit the remedy to the case", which is the best way to make up for the weakness that the traditional supervision model cannot be well applied to blockchain finance. The disadvantages of centralized and separate supervision mode have been shown. For blockchain finance, innovative supervision mode should be adopted, such as more technical supervision to achieve breakthroughs in technology and prevent financial problems caused by technical risks; Adopt targeted specialized supervision system, clarify the supervision subject, and prevent the absence of supervision. Secondly, establish a reasonable supervision system to realize the effective integration of legal supervision and technical supervision, so that blockchain finance can be supervised within a relatively perfect supervision system, and effectively solve the problems among supervision objects, supervision subjects and supervision methods. For example, make targeted adjustments to the regulatory objects, implement professional supervision, and make it clear that in the case of mixed operation, a special regulatory body shall be established according to the proportion of business.

In order to realize the mutual cooperation between technical means and legal means, it is necessary to deeply integrate legal supervision and technical supervision from the aspects of basic legislation, supervision and law enforcement, industry law-abiding and financial justice. First, establish the legal status of blockchain finance and establish reasonable rules for market access, market operation and market exit. Secondly, set up a special functional department of blockchain financial supervision, improve the team quality and supervision ability, strengthen the pertinence and professionalism of supervision, clarify the boundaries of supervision functions and powers, and solve the confusion or absence of supervision subjects. Moreover, it is necessary to strengthen the industry self-discipline of blockchain financial institutions, promote the formation of industry self-discipline with special legal supervision, and promote the innovation of Technology Supervision in the industry. Finally, financial judicial supervision should pay attention to the technical characteristics of blockchain and improve the efficiency and final effectiveness of judicial supervision.

5. Suggestions on the Development of Blockchain Finance

Since the development of blockchain technology, it has also experienced several important breakthroughs. Today's world is in the explosive period of blockchain application. China and many international countries are formulating policies and plans to promote and reasonably control the rational development of blockchain technology. Internationally, a common agreement and general standard are being negotiated and formulated; In terms of domestic regulators, opportunities and risks go hand in hand, and blockchain pays more attention to its compliance in the process of development. In the future,

blockchain will be applied in many industries, and new business models will continue to emerge. In order to better carry out its supervision, the following are some development suggestions.

5.1 Strictly Crack Down on False Concept Speculation and Reasonably Supervise the Application of Electronic Cryptocurrency

In recent years, the concept of blockchain has emerged one after another in China, in which there is no lack of fraud. China should verify, clarify and risk supervise the specialized companies or relevant departments of the company involved in relevant business, and inquire or even suspend the trading of hyped companies involved in fraud; At the same time, supervise the company to give reasonable risk warning to the blockchain, prohibit misleading investors, and take severe punishment measures to control their risks; At the same time, strictly supervise individuals and financial institutions engaged in token issuance and other activities, verify and return illegal trading places such as bitcoin, and reduce the market risk of digital currency.

5.2 Promote the Systematization and Integrity of Blockchain Financial Supervision

China's supervision and treatment of blockchain is still partial and temporary, and it is urgent to form an overall and systematic supervision system. In terms of standard setting, we should further promote international exchanges and cooperation on the basis of our own standards, learn advanced experience and lessons, and strengthen the fight against international illegal transactions in the process of integration; Under the current pattern of separate supervision, we should integrate the traditional blind areas of supervision and promote the effective implementation of rights and responsibilities; In terms of legal legislation and research, we will promote innovative attempts in the regulatory system, strengthen research and governance for new situations, new situations and new technologies, and effectively manage blind spots.

5.3 Reasonably Promote Technological and Mode Innovation

Technology is still the core vitality of blockchain finance. After strict control, we should strengthen its technological innovation and promote the R & D and application of core key technologies such as consensus mechanism, cryptography algorithm, cross chain technology and privacy protection; At the same time, we should also strengthen its model innovation, promote the cooperation between blockchain technology related enterprises and enterprise business departments and commercial banks and related enterprises, and innovate the blockchain financial service model.

5.4 Carry out Talent Reserve and Tap Excellent Talents

The development of blockchain technology is inseparable from excellent professionals. At the same time, it involves many disciplines, spanning both theory and practice, and puts forward further high requirements for talents. There is still a shortage of talents in the field of blockchain segmentation and related research in my country, and most of these talents are currently working in various third-party institutions that provide blockchain technology services. Enterprises and official institutions should be reasonably guided to cultivate and reserve professional and technical talents in this field, organically integrate academia and industry, and at the same time cultivate expert talents in marketing, credit, risk, etc., and focus on cultivating compound talents who understand both business and technology, in order to build the core competitiveness of technology and talents.

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