Block Chain Algorithm Rationality on Financial Game Rules Impact Study

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Abstract. Algorithm is the cornerstone of blockchain application. Blockchain makes the trust relationship of human society based on algorithm rationality and has the advantages of abstraction, time dimension and point-to-point, which gradually changes the production relationship and affects all aspects of economic society. In the field of finance, blockchain will change the power contrast, transparency and supervision mode of financial game, which will make great changes in the financial industry. To grasp the essence of blockchain algorithm rationality is the key point to understand and deal with financial reform.

Keywords: Blockchain · Trust · Algorithmic rationality · Financial game rules

1 Algorithmic Rationality: The Essence of Blockchain Trust Mechanism

In psychology, trust is a kind of stable belief, which maintains the shared value and stability of the society. It is an individual & apos;s discourse, commitment and statement to others Trustworthy overall expectations. In management, trust refers to the belief that the trustor has given up the ability to supervise and control the trusted party, preferring to expose his weakness and be in a risk environment, and that the other party will not harm his own interests. Trust plays a very important role in the traditional economic society [1–3], but with the improvement of information technology and the arrival of digital economyCome on, the cost of "trust" is getting higher and higher. As Charlie manger said, "a better system is a seamless, non bureaucratic network of trust. There are not too many bizarre procedures, only a group of reliable people who have the right trust with each other. In the Internet economy [4, 5], third party Technology Trust has been adopted, such as Alipay has solved the problem of mutual trust in online transactions [6, 7], so it is considered to be the main factor of Taobao's success, but its application scope is limited to transactions on the platform, and the third party becomes the data [8, 9].

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2 Advantages of Algorithm Rationality

Algorithmic rationality, with the application of mathematical "axiomatization" and "Self Justification without proof", can obtain the greatest degree of recognition of human society, that is, "consensus". Consensus is a collection of trust, which can change the rules of social and economic operation.

(1) **Abstraction**

The advantage of abstraction is that it can span the physical world and the digital world and provide trust mechanism. The digital economy is characterized by the emergence of two parallel fields: the physical world and the digital world, which are linked through intelligent devices. The physical world and the digital world are mapping each other more and more. The video, audio, text and pictures produced in the physical world are recorded by electronic devices. No matter what format and content of electronic files, they are 0,1 combined sequences at the bottom of the computer, but the magnitude is different. They can be realized by AI algorithmNow its data value is realized; and through encryption algorithm, such as the current stable hash algorithm sha256, we can obtain the unique characteristic value - "digital fingerprint" of 64 numbers. Based on this basic law, asymmetric encryption technology, zero knowledge proof technology and so on are produced, and the results of these abstract operations affect the physical world. In other words, this kind of operation mechanism transforms all kinds of human activities into codes, and then into mathematical languages. Through stable, safe and reliable mathematical algorithms, the results are mapped to the code layer, and then affect the physical world.

(2) **Time series**

The one-way and irreversible feature of time ensures that there is no duplicate record (reverse) of transactions. Therefore, there is no difference between copies and originals in the blockchain. All documents are the only originals, because time cannot appear twice.Blockchain uses a lot of time stamp technology in business applications, that is, the time value collected on the authoritative time service platform is written into the block, the data block is labeled with time, and the "data + time" is broadcast to the whole network to make the whole network synchronous. The data block records the hash value of the previous block through the block header along the time axis, so that all blocks are concatenated, which can not be tampered with. As shown in Fig. 1.

(3) **Third party risk prevention**

The trusted third party deals with electronic payment information, which is inherently subject to the weakness of "trust based model". The credit based mode inevitably has a certain proportion of fraudulent customers. Compared with offline cash (physical cash) transaction, this transaction mode has a relatively weak function in preventing fraud. Therefore, it is necessary to create a more reliable online electronic payment system. The blockchain trust mechanism shut down the entrance of artificial evil from the third party, so as to minimize the possibility of human intervention and thus the possibility of evil.

3 The Influence of Algorithmic Rationality on Financial Game Rules

The Chinese government has repeatedly stressed the importance of growing and strengthening the digital economy. On May 21, 2018, the China Banking and Insurance Regulatory Commission issued the guidance on data governance of financial institutions in the banking industry, which clearly defined the principle of full coverage of data governance. For the first time, it proposed the concepts and guidance of data-driven and data value realization, which fundamentally laid the tone for the transformation of financial institutions in the banking industry. At present, many commercial banks have clearly put forward the strategy of benchmarking to fintech companies, blockchain As a big data technology, it will directly or indirectly have a profound impact on the financial business.

(1) **Changing the power contrast in the traditional financial game**

The trust of the other side of the game exists the problems of information asymmetry and power contrast between the two sides of the transaction. For this reason, financial regulators take information disclosure and consumer protection as their own duty to check and balance these asymmetric and mismatched states. The emergence of algorithmic rationality has changed the unbalanced status of the game brought about by partial information asymmetry in the way of distributed general ledger. The party in disadvantageous information can prevent the other party from doing evil to the greatest extent through various algorithms. Therefore, its risk control ability has been increased, the cost of adjusting as much as possible has been greatly reduced, and the risk pricing is more accurate.

1) Information synchronization

Changing transaction information asymmetry, supply is the typical one Chain finance and asset securitization. In the traditional supply chain finance and asset securitization products, from KYC to credit audit, a lot of reconciliation and audit work is to judge the accuracy of customer information, which costs a high cost of financial institutions, and is afterwards data. The emergence of big data technology has greatly promoted the operation efficiency of this process. Blockchain is the improvement of big data technology. It transforms big data into trusted data through distributed general ledger technology, and solves the underlying asset quality problem from the architecture (mainly alliance chain). Specifically, it is to form a trusted alliance ecosystem between upstream and downstream enterprises. As an important part of the ecosystem, financial institutions participate in the whole process, and multi-party information is synchronous and tamper proof, which fundamentally solves the problem of information authenticity.

2) Automatic trading

Smart contract with tamper proof contract mode and automatic execution from another On the one hand, it balances the equal control status of both sides of the game, that is, the status of both sides of the game does not change before and after capital payment or product (service) delivery. In the supply chain finance with smart contracts, some

transactions maintain the value flow between upstream and downstream enterprises through smart contracts, namely Through the automatic execution of smart contract, the problem of "triangle debt" and "multi corner debt" is greatly reduced without any artificial change.

(2) **To change the reasonable black box rule in the financial game**

The banking industry is called the indirect financial institution because the bank has the power Separating the source of funds and the user of funds, the link between them is a reasonable and legal black box, and insurance institutions are similar operations. The reason why this reasonable black box rule has not been questioned is that financial institutions are generally trusted by the public based on expert system and the game of "big but not down". In the era of Internet finance, P2P in form can be achieved, but there are still black boxes in operation, and capital pool cannot be avoided.

1) Open source information

Open source includes the real-time recording and sharing of information on the blockchain Show. In the distributed business model, there is no centralized credit intermediary, all transaction information is open-source, that is, all participants are given the right to know, that is, the black box is completely opened, all revenue and expenditure, capital flow are open, and P2P is really achieved. For example, blockchain mutual insurance institutions publicize each received medical mutual aid fund for serious illness in blockchain. After the accident, the claims are shared equally from all accounts or according to certain rules. All revenues and expenditures are recorded on the blockchain. All participants can supervise and review all transactions in real time, making the black box become a transparent box.

2) Economic model open source

Breaking the black box not only depends on information open source, but more importantly, will operate The economic model, that is, the rights and obligations of all parties involved and their corresponding relations are open in a public chain with global consensus. For example, in Ethereum, the economic model is embedded in the public chain or baas layer through the way of smart contract, which cannot be tampered with and can be automatically executed to ensure the stable rights and obligations of all parties involved in the transaction.

(3) **Changing the rules of cat and mouse game**

The lag problem can be improved by the way of blockchain, which can partially change the dilemma of on-site supervision, and conduct real-time, efficient and low cost local penetration supervision.

1) Zero knowledge proof

Financial institutions deposit certificates through blockchain and broadcast the hash value to the nodes of regulators in real time. At the same time of isolating trade secrets, the method of zero knowledge proof is used to achieve automatic compliance. If the bank opens an account with a customer KYC records the whole process and records it

in the blockchain, so that the evidence can be solidified. When there is a consumption dispute, the bank can prove that it has not tampered with the original record at any time.

2) Fund traces

The "copy" function of the Internet is powerful. Due to the existence of timestamps, the "copy" is removed from the blockchain. At the same time, each transaction is truthfully recorded through the distributed GL Book technology. In March 2018, the Central Bank of China released the digital application mode of RMB, which is neither decentralized nor disintermediated. By using block chain encryption algorithm, the transfer of funds can be traced accurately. At present, it has been tested on the digital bill trading platform. Different from bitcoin, this centralized digital legal currency reduces the audit link, and more is used in the areas where fund flow information needs to be highly disclosed and supervised, such as targeted poverty alleviation, crowd-funding, charity, mutual aid, etc.

(4) **Change the pattern of financial game**

With the influx of financial technology companies, the territory of finance has been broken, and more and more funds are provided. Therefore, financial institutions have set up technology companies to compete with them, such as Ping'an technology of Ping'an group, Jianxin financial technology of China Construction Bank, etc. Joining the competition of science and technology is the first stage of the change of financial game. The regulatory agencies put forward that the full coverage of big data governance is a typical sign of this stage, which officially opened the era of digital finance.

4 Conclusion

Although blockchain has been popular in recent two years, at present, the prudent style and strong centralized trust background of financial institutions make the improvement of blockchain on financial process not bring the commercial effect matching the popularity. However, the trust based on algorithmic rational support of blockchain is bound to have the feature of "disintermediation". As a result, the rules of financial game have changed. Financial institutions have to reduce the intermediary business and introduce more financial science and technology service functions, and the financial science and technology service functions must also be iterated rapidly, which has become an important factor in the construction of social and economic ecology. In this process, algorithmic rationality is not only the technical essence of blockchain, but also runs through the whole process, providing guidance for the development of digital finance of financial institutions.

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