

Research on Digital Monetary and Financial Supervision from the Perspective of Digital economy

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Abstract. In the context of the digital economy, digital currency has always been one of the hotly discussed topics among scholars. This article takes digital currency financial supervision as the research object and explores its current development trend, which is of great innovative significance. Through research, we found that digital currency has its own unique concept, but it is also easily confused with concepts such as virtual currency and electronic currency. Secondly, on the basis of examining the experience of foreign countries in digital currency financial supervision, it is analyzed that digital currency financial supervision has difficulties in cross-border supervision, imperfect supervision systems and frequent terrorist financing phenomena. It urgently requires the joint efforts of multiple subjects, socialized co-governance and governance. Strengthen international exchanges and cooperation to better deal with this problem.

Keywords: Digital Economy, Digital Currency, Monetary Supervision.

1. Introduction

In 2009, Satoshi Nakamoto released the first Bitcoin software and launched the Bitcoin financial system, and digital currencies became one of the focal points of global discussion. At the same time, the 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Outline of the 2035 Vision Goals proposed to "prudently promote the research and development of digital currency", which reflects the unstoppable trend of currency digitalization.

It is worth noting that although the academic community has fully studied the international law regulation of digital currencies, especially Bitcoin, and the cross-border anti-money laundering of cryptocurrency, the research on financial regulation of digital currencies is still insufficient. Reviewing domestic literature, it can be found that: From the perspective of the evolution of the digital currency system, Professor Yang Song proposed to build a digital renminbi cross-border payment system and promote the establishment of a global digital currency basket [1]; From the perspective of legal order construction, scholars such as Li Shuai proposed the formulation of international regulatory agreements on digital currencies and relevant organic laws, timely adjustment of monetary policies, thus reducing the risk of international transactions of digital currencies, and formulating a legal framework for the development of digital currencies [2]. Many foreign scholars have also conducted research on digital currency: Scholars Carl and Rose proposed that excessive regulation of digital currency would be detrimental to the sustainable development of finance [3]. On the whole, the existing literature has carried out institutional pioneering research on the financial regulation of digital currency, but there is a lack of clear and strong academic consensus on some specific details, such as the cognitive differences on the legal attributes of digital currency, and the lack of consideration from a financial perspective on the supervision of digital currency.

Different countries have different positions on digital currencies, which makes it difficult to coordinate and unify the international financial supervision of digital currencies. In addition, the research on digital currencies is still in the basic stage, and its circulation will bring challenges to international financial supervision. Therefore, it is urgent to study the financial regulation of digital currency.

2. Basic issues of digital currency

2.1. The definition of digital currency

Regarding the specific definition of digital currency, there is still no consensus in theory and practice. On the one hand, some international institutions have a preliminary understanding: the European Central Bank believes that it is a currency developed by the online virtual community and limited to the virtual community; The International Monetary Fund classifies electronic money and virtual money together as broad digital money [4]. On the other hand, there are some differences in academic opinions: scholars such as He Dexu believe that digital currency is mainly displayed in electronic form, and can realize various circulation means of storage and transaction [5]; Li Jianjun and other scholars start from the specific connotation of digital currency and divide digital currency into wide-caliber digital currency and narrow-caliber digital currency [6]. Based on the above review, this paper defines digital currency as a new type of private currency supported by blockchain technology and formed based on node networks and digital encryption algorithms.

Different from other digital assets, decentralization, anonymity and digital algorithm encryption become the basic attributes of digital currency. First of all, decentralization is the fundamental attribute of digital currency, and digital currency embodies the reverse programming idea of decentralization from the very beginning [7]. Secondly, the core of digital currency anonymity is that it uses peer-to-peer (P2P) network, users do not need to reveal their identity information or transaction details, and this kind of e-cash transfer is not limited by time and space conditions [8]. Finally, under the framework of blockchain technology, users realize the holding and control of digital currency based on asymmetric cryptography, which is the encryption of digital algorithm.

2.2. An analysis of digital currency and related concepts

In practice, the concept of digital currency is often confused with virtual currency, electronic currency (such as central bank digital currency), etc. Although the three are all non-physical currencies generated based on Internet technology, their specific connotations and properties are very different. The main differences are as follows: First, the underlying logic is different. Centralization is the basic characteristic of electronic currency and virtual currency. Digital currency uses blockchain technology, and the processing of transaction information is no longer limited to central nodes. Each block node can independently complete transmission and exchange. It can be seen that decentralization is the essential feature of digital currency. Secondly, the issuing entities are different. Electronic currency is an electronic form of legal currency. It is mainly issued by the central bank and its authorized institutions. Commercial banks and their online platforms provide trading venues. Virtual currencies are mainly electronic tokens issued by Internet operating companies and can only be used in specific network environments. Digital currencies can be divided into central bank digital currencies (issued by the central bank and guaranteed by national credit) and private digital currencies (issued by private individuals or even without issuing entities) according to their issuing entities. Finally, the trading model is different. Electronic currency is the digitization and electronicization of legal currency, and essentially adopts the transaction model of legal currency; virtual currency only exists in the virtual world and is only suitable for virtual market transactions; and digital currency uses a decentralized distributed "ledger". Transaction information is recorded through block nodes.

3. Legal analysis of digital currency financial supervision

3.1. The positive influence of Digital money and Financial Supervision

As the product of Internet technology innovation, digital currency has brought profound changes to the traditional business pattern while reshaping the industrial structure. On the one hand, according to the research of foreign scholars, Cassoni and other scholars believe that cryptocurrency innovates payment methods, promotes the flow of funds within the region, and is conducive to enhancing economic vitality [9]. John Barrdear and other scholars pointed out that digital currency is independent

of the national credit system and can effectively reduce transaction costs while protecting the privacy of financial traders in real time [10]. On the other hand, domestic scholars have also studied digital currency in an endless stream: Scholar Feng Jing mentioned that the circulation mode of "distributed ledger" makes the verification of transfer without going through a credit third party, including the central bank, which will greatly reduce economic and social costs [11]. Scholars such as Qi Ming believe that the decentralized characteristics and anonymity principle of digital currency can ensure the fairness and security of the operating mechanism of virtual currency and avoid inflation [12].

3.2. The negative influence of Digital money and Financial Supervision

The emergence of digital money has greatly reduced the transaction cost and improved the speed of money circulation, but its negative and potential effects can not be ignored. Throughout, the adverse effects of digital money on financial supervision are as follows: first of all, the nature of digital legal currency is difficult to define. Financial legal supervision needs to first clarify the legal nature of the regulatory object, and then make it clear in what framework and system it needs to be supervised. However, there are significant differences in the definition of the nature of digital currency in practice. Second, large fluctuations in the value of currencies undermine financial stability. The huge value fluctuation of digital currency attracts financial speculative behavior and is not conducive to financial stability. The core goal of financial supervision is to regulate the reasonable investment of financial subjects, predict and solve the financial crisis, and ensure the stability and security of the financial market. The emergence of digital money destroys this stability. Finally, money laundering and other criminal activities are rampant. Because of its decentralization and anonymity, digital currency can easily become a tool to commit financial crimes and escape financial control. At the same time, due to the different positions of countries on digital currency, there are great differences in supervision, which undoubtedly increases the difficulty of the supervision of digital currency financial crimes.

4. Extraterritorial experience of digital currency financial regulation

4.1. Extraterritorial experience in defining the legal nature of digital currency

As one of the representative countries, the United States defines the monetary attribute of digital currency. At the federal level. Special laws such as Securities Law, Securities Exchange Law, Investment Company Law and so on regulate digital currency. At the state level. Some states have incorporated digital money into their monetary circulation regulatory framework with reference to the provisions of the uniform Monetary Services Act [13]. The above measures show that the legal system of the United States confirms the status of digital currency as a payment tool.

Japan also recognizes the status of digital currency as a payment tool in legislation. The "Capital settlement algorithm (Amendment)" defines the virtual currency and makes it clear that the virtual currency is essentially a digital asset and can be used for transfer and payment [14]. The Financial Commodities Trading Law also puts forward regulatory requirements for the issuance, trading and investment of digital currencies, and distinguishes digital currencies involving the nature of securities. The payment Services Act requires digital currency transaction service providers to be registered to qualify and comply with customer authentication, anti-money laundering and anti-terrorist financing.

4.2. The extraterritorial experience of the digital currency regulatory system

The financial regulatory system in the United States is characterized by a fragmented and overlapping multi-polar regulatory agency and a two-line regulatory system between the state and the federal [15]. At the federal level, the specific regulatory agencies are mainly the US Financial Crimes Enforcement Bureau, the SEC and the US Commodity Futures Trading Commission, which define digital currencies separately and adopt a separate regulatory model of governance. At the state level, most of them follow the federal government's governance system, and some state governments have their own digital currency regulations.

Japan adopts a typical "issuance industry regulation model," which treats the issuance of digital currencies as a separate industry and prudently regulates it. In terms of digital currency regulation, Japan has taken the lead in legalizing some digital currency payment means and promulgating relevant laws and regulations. Japanese regulators regulate the operation of digital exchanges with the Virtual Currency Exchange Act. In addition, the Japanese government has also stipulated the obligations of digital currency traders in the tax law, including transaction income tax, capital gains tax, etc. This series of measures to protect the rights and interests of investors while promoting the digital currency market towards norms and stability.

4.3. The extraterritorial experience of digital currency anti-money laundering and consumer protection problems

In response to the challenges of anti-money laundering and consumer rights protection, the United States has mainly adopted the following legislative responses: formulating guidelines for digital currency taxation rules, building a regulatory demonstration framework, and launching comprehensive management of virtual currencies in some states. Within the framework of the anti-money laundering governance of digital currency in the United States, the relevant normative documents respectively put forward the requirements of anti-money laundering and consumer rights protection for trading platforms, small commercial banks and digital currency traders.[16]

In view of the anti-money laundering supervision of digital currency, the EU requires member states to incorporate anti-money laundering norms into their national laws from the aspects of the subject of anti-money laundering obligations, the scope of money laundering financial crimes, international judicial assistance, and the punishment of money laundering crimes. At the legislative level, in 2016, the European Union issued the "Exchange Program on strengthening Action against terrorist financing" to bring digital currency into the financial regulatory system. At the level of consumer protection, the European Banking Authority pointed out that digital money has a high degree of anonymity and is likely to be used for money-laundering crimes. On the issue of money laundering, the draft EU Anti-money laundering Directive No. 6 emphasizes that member States should pay attention to the crime of money laundering brought about by virtual currency.

5. The predicament and Challenge of Digital Monetary and Financial Supervision

Digital money brings more reliable and convenient trading methods to the financial market, on the contrary, it also brings new regulatory challenges and risk prevention and other problems. The international liquidity characteristics and decentralized nature of digital currency are at odds with the relatively conservative and localized monetary supervision practices of various countries, and the different positions of various countries on digital currency also make the cross-border regulatory cooperation of digital currency a major challenge. At the same time, the anonymity and high liquidity of digital currency also virtually increase the risk of financial criminal activities such as anti-money laundering and anti-terrorist financing.

5.1. Different countries' positions on digital currency create cross-border regulatory problems

The differences in the regulatory attitudes of various countries towards digital currencies come from different national conditions and the ambiguous boundaries of digital currencies themselves [17]. On the one hand, the traditional financial regulatory framework is often based on the central bank, financial regulators and other relevant government departments to supervise financial institutions and credit money in the market. In other words, the object of monetary and financial supervision under the traditional credit monetary system is the only one, and the emergence of digital currency makes the regulatory boundary blurred. On the other hand, different countries adopt different regulatory positions and policy orientations based on their own national conditions, resulting in the fragmentation and inconsistency of regulatory frameworks around the world. Such as the huge differences in financial regulatory laws and regulations, the scope of responsibilities and powers of regulators, and the focus

and priority of regulatory policies, these elements constitute the cross-border regulatory challenges of digital currencies.

5.2. The decentralized nature of digital currencies creates difficulties in the construction of regulatory systems

As mentioned above, the decentralization of digital currency makes it difficult for the traditional financial supervision mode to adapt to the operation of the digital money market, which leads to many difficulties in the regulatory system. Under the regulatory system of a country, because the central authority does not have the function of issuing private digital currency, and the transaction information is distributed in various network nodes, as a result, regulators are unable to track and identify digital currency issuance and transactions [18]. In contrast, traditional regulators rely on the central bank or financial institutions to supervise and manage credit currency, and the diversification of issuers inevitably increases the complexity of digital currency supervision. In addition, the international nature of digital currency transactions is contradictory to the regional legal effect of state power organs, which means that the construction of the international supervision system of digital currency is lack of maneuverability in fact.

5.3. The anonymity of digital currency promotes cross-border money laundering and terrorist financing

Under the traditional regulatory system, the object of supervision by the regulator is relatively limited, so the main account can be locked quickly after the illegal subject is clear, to avoid further expansion of losses. In turn, the anonymity and decentralization of digital currencies allow participants in digital currency transactions to transact without revealing their true identities, which will facilitate cross-border money laundering and terrorist financing activities. First, the anonymity of digital currencies makes it easy for transaction participants to hide their trading behavior and fund flows, thus hindering regulators from tracking and monitoring fund flows. This transaction model makes the traditional regulatory model, which relies on intermediaries to report suspicious transaction information, difficult to apply to digital currency regulation. Second, the anonymity of digital currencies makes it easier for money launderers and terrorists to move money internationally and disguise the source of their illicit funds through digital currency transactions. Traditional financial regulation cannot track cross-border digital currencies in a timely manner, nor can it effectively restrict and control the international circulation of digital currencies. Finally, the rise of digital currency financial transactions has also brought new technical problems, and regulators are unable to break through the blockchain to obtain trader identity information, and the effectiveness and accuracy of supervision are greatly reduced.

6. Digital currency financial supervision system construction and solution path

6.1. The main body of the regulatory body is diversified

The development of digital currency depends on the innovation of blockchain technology and the reconstruction of monetary internal system, which not only has an impact on the governance system, but also puts forward new requirements for the traditional regulatory framework [19].

At the level of regulatory system, the government can set up special legal regulators to supervise all aspects of the digital currency ecosystem (such as trading platforms, digital wallet service providers, digital asset management companies, etc.). In addition, legislation should be strengthened to provide the legal legitimacy of digital currency supervision in financial governance for the current financial regulatory institutions (such as central banks, securities regulators, banking regulators, etc.).

In terms of organizational form, the agency should break away from the traditional organizational form of a single public power structure and build a comprehensive national modulation institution covering supervision, law enforcement, standardization, decision-making and other functions. The focus of the supervision of digital currency is data, and the government should establish a cooperation mechanism

for the supervision of digital currency in order to realize the overall planning and sharing of digital currency data among departments. Each regulator participates in the supervision of the digital money market according to its own responsibilities and professional fields to realize the diversification of the regulatory body.

6.2. Socialized co-governance model

The socialized co-governance model aims to realize the supervision of digital currency through multiple governance subjects, participatory decision-making and network governance structure. The idea of this supervision model is to cooperate and coordinate among multiple subjects such as the government, non-governmental organizations and civil society, so that all sectors of society can jointly participate in public affairs management and decision-making. in order to achieve common governance goals and solve social problems [20]. This socialized governance model can achieve the balance and coordination of the interests of all parties, so as to promote the healthy development of the digital money market.

The government can encourage the digital currency industry to establish self-regulatory organizations and industry associations (such as digital monetary associations similar to computer associations, banking associations and financial securities industry associations) to regulate market behavior through industry self-discipline and self-supervision, in order to improve the efficiency and flexibility of supervision.

Self-discipline organizations reshape the governance structure of monopoly supervision of traditional public power institutions by participating in digital monetary policy formulation and market supervision, realize the interaction between the government and the people in the aspects of information sharing and risk prevention, and pursue the science and democracy of decision-making. At the same time, the establishment of digital currency regulatory compliance companies, entrusted by financial institutions, focus on standardizing the legitimacy of private digital currency transactions.

Financial technology companies will involve business such as payment, loan, investment and insurance, while causing problems such as data privacy and consumer protection to the financial industry, financial technology companies will also bring technological innovation and new regulatory methods to the financial market. In a word, the core of the socialized supervision mode of digital money is to give full play to the role of co-governance of multiple social subjects and avoid one-way regulation by the government.

6.3. Attach importance to international cooperation in regulation

Digital currencies facilitate global flows of capital and make cross-border financial regulation more difficult. In particular, in some countries with unstable political and economic environments (such as developing countries along the Belt and Road), weak regulation will affect the stability of the financial system. Therefore, international cooperation and inter-regional assistance in the regulation of digital currencies is a major focus of the construction of the regulatory system at this stage.

National regulators should jointly establish an information sharing mechanism, timely and effective sharing of information on the development of the digital currency market, regulatory policies and risk assessment, and consult and cooperate on matters involving common interests. In addition, national regulators can jointly develop digital currency market standards and norms, and establish cross-border payment risk assessment and monitoring mechanisms to deal with problems such as money laundering crimes and irregular cross-border capital flows.

Finally, the regulators of various countries can jointly establish a market emergency response mechanism to timely respond to possible risks and problems in the market and jointly maintain the stability and order of the financial market. Strengthening international cooperation on digital currency will help break through the geographical limits of the power of sovereign state regulators, effectively extend the scope of supervision, improve regulatory capabilities, and promote technical research and regulatory innovation in digital currency. In addition, in the field of technical application, a unified

financial monitoring system (such as artificial intelligence monitoring system) can be established to identify large suspicious transactions, and targeted risk management and control and international cooperation.

6.4. The ways to deal with the Supervision of Digital money and Finance in China

China's digital currency adopts a relatively conservative regulatory strategy, completely banning digital currency transactions and banning financial institutions from participating in ICO business. However, the development trend of currency digitization will undoubtedly bring many problems to monetary and financial supervision. Only by perfecting the framework of digital monetary and financial supervision and formulating corresponding norms and standards can we achieve the same frequency with the times and be in line with the development of the world.

In dealing with the issue of financial supervision of digital money, the regulatory framework of digital currency should be established and improved. This regulatory framework requires the legislature to issue laws and regulations to clarify the legal nature of digital currency, and formulate different regulatory schemes according to the different private and legal attributes of digital currency (for example, central bank digital money can be incorporated into the original credit currency supervision system).

At the same time, financial regulatory departments and legal regulatory departments should cooperate with each other in order to form a joint force of cross-disciplinary supervision and jointly maintain the order and stability of the digital money market. Secondly, strengthen the regulation of the digital currency trading platform, make the digital currency trading platform as much as possible, and set procedural requirements for the registration of the digital currency trading platform (for example, the establishment of the platform must be approved by the central bank and examined by the State Council, and set up employment qualification requirements).

Finally, the establishment of digital currency supervision technology system, the use of artificial intelligence, big data analysis, block chain and other advanced technical means to strengthen the monitoring, analysis and evaluation of the digital money market, in order to deal with market risks and challenges.

7. Conclusion

Generally speaking, compared with existing research, this article has improved on the financial supervision of digital currency. It not only sorted out and summarized the current advanced experience of typical countries outside the region, but also discussed China's response strategies in terms of improving the path. At this point, It's a big innovation. It should be clear that countries have different attitudes and positions towards digital currency financial supervision. This article only proposes general strategies from a macro perspective. The specific implementation in each country still needs to be adjusted according to the national conditions of each country. Finally, this article hopes that the results of this article can provide a basis for subsequent research on digital currency financial supervision.

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