

Historical Review, Research Status Quo and Development Trend of Digital Currency Development

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Abstract: This paper briefly reviews the development history of digital currency, introduces the digital currency related research status and development trend, the basic concept, main types and characteristics of digital currency are analyzed, and the potential risk, the development of digital currency, digital currency influence on the financial system, can provide reference for digital currency research.

Digital currency, simply put, is a value scale and circulation carrier based on digital technology, network transmission and non-physical form. Broad digital currency includes electronic currency, virtual currency and so on. In the narrow sense, digital currency specifically refers to the electronic cryptocurrencies created, issued, and circulated on the Internet based on cryptographic technology and blockchain technology.

1. A Historical Review of the Development of Digital Currency

Digital currency is the most concerned and controversial issue in the fintech field. At present, digital currencies are mainly divided into two types: the first is cryptocurrency or cryptographic assets, which are payment, functional and securities types, and the second is blockchain as a financial infrastructure to carry legal tender and its transactions, including central bank digital currency and stablecoin. Different digital currencies face very different economic and regulatory problems.

On July 15, 2019, the IMF released a special report, "The Rise of Digital Currency". Based on the type of payment means, the report first proposes a classification framework of digital currency according to the four attributes of digital currency. Specifically, the report divides digital currencies into five categories: first, central bank currencies. It includes the daily use of cash, coins, and the central bank digital currency (CBDC), which has been widely discussed in recent years. The central bank digital currency replaces the cash, which is the electronic currency issued by the central bank directly to the public. As the debt of the central bank, it belongs to a form of legal tender, and can pay the interest to the holder. By contrast, the cash interest rate is always 0. The second is the cryptocurrencies. Directly issued on the blockchain, it can be divided into management type (also known as the algorithm stable currency), and public type (such as bitcoin and Ethereum) according to whether the algorithm is adopted to maintain the exchange rate stability of the currency value relative to the legal tender. The third is the b-money issued by the bank, such as the deposits in the bank. The fourth is the electronic currency e-money issued by the private sector. It can be issued as a token or account and settled in a centralized or decentralized manner. For example, Morgan coin, which does not enjoy deposit insurance, Alipay and wechat Pay for centralized settlement, Paytm in

India, M-Pesa in eastern Africa, blockchain-based Gemini, Paxos, TrueUSD, USDC, etc. Fifth, the i-money with investment attributes issued by private investment funds. The report classifies Libra as an investment currency, regarded as a mortgaged currency, redeemable at a floating value, and essentially as a share of a private investment fund. Apart from the significant difference of exchanging fiat currency at variable prices, investing currency is almost equivalent to electronic currency.

Brunamel et al. discussed the impact of digitization on money: on the one hand, the multiple functions of money may be split off, resulting in more intense competition between currencies that undertake specific functions. On the other hand, the combination of digital currency and the platform ecology may recombine currency functions. Payment and a series of data services package, make different platforms more differentiated, but also limit interoperability. Digital currencies could have a significant impact on the international monetary system. Countries with a high degree of social or digital integration with their neighbours may face "greenback" in a digital sense. The ubiquity of systemically important platforms may lead to digital currency zones beyond borders. The central bank digital currency ensures that money issued by the public sector remains an important unit of bookkeeping.

2. Current Status and Development Trend of Digital Currency Research

2.1. Development and Risks of Electronic Currency Issued by the Private Sector

Adrian (2019) believes that electronic currency is a digital equivalent of prepaid cards, and its value is fully supported by fiat tender. China's electronic currency transactions reached \$18.7 trillion, surpassing all transactions handled globally by Visa and MasterCard. The widespread adoption of electronic currency is mainly due to its value relative to fiat currency stability, convenience, low transaction costs, trust, and network effects (Adrian, 2019).

The potential risks of e-currency are mainly reflected in liquidity risk: overdue payment; default risk, where the e-currency provider makes risky investments or other business to compensate for losses; market risk; e-currency provider; exchange rate risk; the value of collateral is affected by currency fluctuations if it includes assets denominated in foreign currency (Adrian and Mancini-Griffoli, 2019).

2.2. Overview of Cryptocurrency Development and the Attitudes of Major Countries

Cryptocurrencies are mainly divided into three types: payment, securities and functional. The formation of the cryptocurrency market has spawned centralized trading platforms and decentralized trading platforms. The former allows fiat currencies to buy and sell various cryptocurrencies and allow transactions between different cryptocurrencies. Existing centralized trading platforms in some countries (such as China, China) are heavily regulated in Malta, Japan, South Korea, Singapore, Hong Kong, China and the United States. Users of the latter can directly exchange cryptocurrencies from peer-to-peer sources, and in some cases are automatically liquidated by specially-developed programs (smart contracts), completely without the need for intermediaries.

Due to the heavy speculative color and large value fluctuation of cryptocurrencies such as Bitcoin and Ethereum, stablecoins with relatively stable value are gradually developing. Stablecoins are typically linked to existing currencies (or a basket of currencies) and backed by matching collateral, using algorithms to control supply to stabilize value (BIS, 2019a). Stablecoin stablecoin includes online and offline collateral. However, stablecoin holders have no legally enforced right to repay and take credit risk if the issuer fails to redeem the stablecoin redemption (Deutsche Bundes bank, 2019).

Crypto currencies have no geographical restrictions, and do not need to be bound to any existing banking system, nor do they require any third-party trusted institutions (such as central banks, card issuers, or mobile operators) to participate in the authentication. Cryptocurrencies are issued on public computer networks, and their transactions are conducted through cryptosystems, where any

member of the network can participate in bookkeeping and anyone can see the cryptocurrency transactions. Cryptocurrencies can be used as a means of payment and settlement, but they may also facilitate money laundering or terrorist financing. In 2017, the US government closed AlphaBay (AlphaBay) because it believed the site used cryptocurrency for drugs and illegal guns.

Cryptocurrencies will weaken the ability of central banks to implement monetary policy. According to Raskin and Yermack (2016), the challenge of circulating cryptocurrencies to a central bank is similar to the competition of foreign currencies. In 2018, the Brookings Institution released a report called "The Central Bank in the Digital Age", which reviewed the attitudes of major countries towards the development of cryptocurrencies (Prasad, 2018). One is the different degrees of prohibition. In 2017, China introduced policies to ban all cryptocurrency transactions, such as Bitcoin, in China, and India did not authorize any institution to engage in cryptocurrency transactions. Second, active control. Japan and Canada have established laws and regulations on the trading and use of cryptocurrencies. The United States recognizes cryptocurrencies as financial assets, but must comply with tax laws and anti-money laundering regulations. Third, passive tolerance. Most countries do not prohibit or encourage the use of cryptocurrencies, and do not recognize their legal status as a means of payment. Fourth, the issuance of cryptocurrencies. Venezuela issued its first official cryptocurrency, the — petrocoin (Petro), in February 2018, and declared it a legal tender in April.

2.3. The Impact of the Digital Currency on the Financial System

Digital currencies affect the effectiveness of payment systems, financial markets, the monetary policy of the central bank, and capital flows.

Payment system. New technologies make payment systems faster and less expensive, making finance more inclusive. However, decentralized payment systems may have counterparty risk (Prasad, 2018; Wadsworth, 2018).

market mechanisms. The new technology overcomes the problem of financial intermediary information asymmetry and makes the banking business model face challenges. As the cost of financial intermediary declines, large financial institutions will become less important, and small and medium-sized banks will gain a more level playing field (Prasad, 2018; Yanagawa and Yamaoka, 2019).

The status of the central bank and the effectiveness of monetary policy transmission face challenges. As digital currency technology develops, banks and other financial institutions may overcome technical barriers to internal payment clearing and liquidity management, thus weakening the central bank settlement and liquidity management functions (Prasad, 2018; Deutsche Bundes bank, 2019). In high-inflation countries, their own currencies could be replaced by foreign digital currencies, weakening the control of their central banks' monetary policy (Prasad, 2019).

Affect capital flows. The Token settlement of payment transaction settlement can promote trade financing and inclusive cross-border payments (Deutsche Bundes bank, 2019). However, more convenient digital cross-border payment channels make capital flows more difficult to regulate and control, especially the financial markets of underdeveloped emerging market economies are more difficult to cope with capital flows and exchange rate fluctuations, more vulnerable to developed economies monetary policy transition spillover effects and international investors adjust the portfolio of contagion effects (Prasad, 2018).

Cryptocurrencies remain a speculative asset today, and face many controversial issues and regulatory challenges. Nevertheless, economic issues related to cryptocurrencies still have some academic value, including cryptocurrency pricing mechanisms, the feasibility and limitations of distributed autonomous organizations, the mechanisms and behaviors of participants in the primary and secondary markets, the dangers of cryptocurrency speculation and bubbles, and cryptocurrency regulation. The study of these issues is of reference value for understanding stablecoins and central bank digital currencies.

The most closely watched group in the stablecoins is Libra. In fact, the current popularity of fintech is partly related to the Libra projects. Libra 1.0 plans to achieve ultra-sovereign currencies

based on the Token paradigm to build a simple global currency and a financial infrastructure to empower billions of people. Libra's maximum shift from 1.0 to 2.0 is in the hyper-sovereign currency positioning. Libra2.0 is dominated by single currency stablecoins, supplemented by super-sovereign currency. For the monetary authorities, the legal and compliant single currency stablecoin is mainly a payment tool, and there will be no monetary creation, and it will not affect the monetary sovereignty, and the financial risks are controllable. The regulation of the single currency stablecoin in major countries will gradually improve. A single currency stablecoin will expand the use of domestic currencies abroad, strengthen the status of strong currencies, and erode the status of weak currencies. Although Libra2.0 includes ultra-sovereign currency plans, and ultra-sovereign currency plans have outperformed Libra1.0 in economic design, regulatory complexity, and business startup strategy, the ultra-sovereign currency will be at a marginal position in Libra2.0. The actual application of a hyper-sovereign currency will depend entirely on market demand and how many resources the Libra Alliance invests. It is foreseeable that Libra2.0 will greatly ease the regulatory and commercial resistance faced by the Libra project and accelerate its development process. If Libra succeeds, it will replace weak currencies, unconvertible currencies and developing country currencies. To cope with the challenge of Libra, China still needs to accelerate capital account convertibility, improve the financial system, make the RMB a part of a strong currency, and be free from erosion and substitution.

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