

A Study of the Development of China's Digital Currency

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Abstract- Digital currency is the product of innovation in information technology. This new form of money triggered huge changes in people's lives, reducing information and transaction costs, eliminating time and geographical restrictions, and the limitations of paper money circulation expanded the space for transactions. It is convenient and accurate, making public life easier and faster. However, advantages and disadvantages exist side by side. As the most representative digital currency globally, cryptocurrency has the characteristics of decentralized issuance, total stability, and anonymous transactions, which have impacted. Under the view of experience brought by cryptocurrency in China, the study aims to research the development of digital currencies in China through a literature analysis method and a case study method. It is crucial to how China develops relevant policies and regulations to adapt to the current monetary environment. With the help of this study, a certain theoretical basis for the development of digital currencies is brought to light.

Key Words: Digital Currency, online payment, technological devices, Internet, cryptocurrency.

1. INTRODUCTION

Since the 1970s, when the digital age and technical innovation ushered in a new era, electronic commerce has been a discussion globally topic, with an increasing most of online users engaging in internet shopping. Cash transfers are unlikely to equalize to the electronic commerce sector's fast expansion. Consequently, as a complement to present fiat money, new digital currencies have been progressively gaining acceptance among the general population.

Digital money has been continuously developed for use with computers since the 1990s to satisfy the demands of effective e-commerce; complicated regulatory permissions are not required. However, it enables internet trade and has gradually acquired commercial acceptability [15]. Individuals, enterprises, and agencies have acknowledged digital money as an instrument for a viable economy, complementing the spread of electronic commerce in an expanding variety of business operations and serving as a standard option in countries such as Iceland [16].

As embodied by the digital economy, technical advancement has emerged as a vital accelerator of advancement as China's economy changes from fast expansion to high-quality development. As a result of the rapid expansion of digital technologies such as artificial intelligence and blockchain, many new models and businesses have emerged in the digital economy [8]. Recently, the introduction of digital payment, particularly mobile transactions in China, has offered the general population with more reliable and faster payment services, boosting the digital economy, assisting the general public in becoming accustomed to online payment, and growing interest for innovation and modern services.

As China's electronic commerce grows, the share of cash payments is decreasing. A study conducted by People's Bank of China in 2019 revealed that digital money transactions accounted for 66 percent and 59 percent of the overall transactions, respectively, while cash transactions accounted for 23 percent and 16 percent, and card transactions accounted for 7% and 23%. During the survey period, 46% of respondents did not make a single purchase using cash.

Since Bitcoin's inception, the private sector has developed several other so-called cryptocurrencies. As per preliminary data, over 10,000 distinct types of cryptocurrencies have gained acceptance, with a market capitalization of over USD1.3 trillion.

China views digital currency as a two-edged sword that threatens its economic independence while also providing chances to enhance China's digital economy, increase transaction efficiency, criminal combat activities, and enable online payments [4]. As a result, despite its skepticism and ambiguity concerning various cryptocurrencies, China aspires to be a worldwide leader in the line of digital money while maintaining government control and monitoring.

1.1 Significance of Research

While the digital currency has gained widespread global acceptability, different countries utilize it to varying extents. In 2013, the People's Bank of China (PBOC) produced China Monetary Policy Report, which claimed that electronic commerce might provide various benefits to the financial sector, including improved information integrity, reduced transaction costs, and financial effectiveness [11].

Digital money is currently utilized in China in a wide range of Internet-based transactions. According to a survey conducted by the China Internet Network Information Center in 2012, roughly 564 million Chinese Internet subscribers, with over 60 percent making mobile payments. Consequently, e-commerce now exceeds 800 billion yuan in value, with internet trading exceeding one trillion yuan in 2013. In 2014, the value of internet commerce increased by 48.7% to 2.8 trillion yuan.

1.2 Evolution of the Research into Digital Currency.

A number of previous researches on digital money concentrated on its features, legality, and risk management. As digital currency evolved, academic research about the impacts of substituting fiat currency with digital currency became more polarized. A variety of explanations for the need for digital currency have been proposed. The desire for digital money is motivated by improved technology, which is the most common reason [17]. Vigna [18] also associated technology improvements, conversion, and control to the creation of digital money. According

to Papadopoulos [10], depending on market choices, the volume of digital currency will continue to rise in the next years.

2. LITERATURE REVIEW

The concept of digital money has developed from the commencement of the digital revolution in the 1990s. Digital currency is defined by the Basel Committee on Banking Supervision (BCBS) as a prepaid payment interface for storing monetary value that may be transmitted using electronic gadgets connected to the internet [3]. Following that, reports from the European Central Bank (ECB) indicated that digital money is a virtual store of monetary value on a digital gadget that can be utilized to pay for goods and services without the intervention of a third party [7].

There are several categories of digital currency in the financial sector, each based on different sorts of sophisticated technology and processes. The IMF [13] classified digital money into two types based on variation in existing terminals: hardware-based digital currency and software-based digital currency. Commercial bank-issued cards frequently represent prepaid digital money, whereas software-based digital money is commonly used in internet transactions.

Smart cards are a type of digital money provided by banks and are commonly used in physical transactions. These include debit and credit cards, as well as internet banking on commercial bank systems. Without specific state regulations, non-financial entities can create a digital currency, allowing for the emergence of a new sort of currency. As a result, the second category, developed on the online platform by non-financial entities, is a sophisticated sort of digital money that has overtaken commercial bank' functions as third party in achieving peer-to-peer electronic transactions.

The second category is classified into two groups: the first is concerned with the worth of fiat currency obtained via an online platform that is not affiliated with a commercial bank. The other is concerned with the value of the new currency. Bitcoin is an excellent example of this, as it is a new type of currency that cannot be measured in fiat money yet has a monetary worth equivalent to that of a currency.

One of the most defining characteristics of digital money is that it may be exchanged anywhere globally without the need for complicated international borders restrictions. As an electronic commerce alternative, the online digital currency platform provides a simple way to do transactions without the need for additional validation or identification [1]. Traditionally, trading entails a financial institution serving as a reliable third party. The old currency system, on the other hand, imposed a minimum transaction size on trading volumes.

Learning spillover is another important aspect of the evolution of digital money [9]. This implies that technological improvements have a greater impact on digital currency than they do on fiat currency. Individuals benefit from the electronic currency by improving their internet skills and knowledge, resulting in improved financial management. The value of digital money will rise in tandem with the number of people using the Internet [5].

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fiat currency. In this scenario, software-based digital money enables people improve their Internet skills and knowledge, which will lead to improved financial management. The value of digital money will rise in lockstep with the number of individuals using the internet [5].

3. ASSUMPTIONS OF THE MODEL

To conduct monetary policy, central banks modify the money supply in general. It is necessary to evaluate fluctuations in the money supply to comprehend the implications of digital currency. In contrast, the money supply is assessed differently in various states and does not have a standard measurement. This model employs Chinese money measurement to demonstrate the influence of digital money on the country's economy. The Chinese government uses the P_0 , P_1 , and P_2 to estimate the money supply.

The People's Bank of China [11] gave the following definition: P_0 : cash possessed by institutions and people and notes and coins circulating in public. P_1 : limited money supply, which includes P_0 plus current deposits held by businesses and government agencies. P_2 : wide money supply, which comprises P_1 plus fixed deposits held by businesses and government organizations and household savings deposits.

The Chinese authority has not set a clear basis to differentiate digital currency from fiat money due to digital currency features. Consequently, comparing the value of fiat currency with digital money is untenable. To prevent inefficiencies when determining the quantity of digital currency, Valdes-Benavides & Hernandez-Verme [17] proposed utilizing velocity of money to examine its impact on China's financial system.

In earlier investigations, Liu [9] employed quantitative models to examine monetary velocity and digital currency to determine how digital currency could impact money velocity. Beirne & G. Fernandez [2] investigated markers suggested correlations for assessing the level of electronic currency. According to the three money categories P_0 , P_1 , and P_2 , which can be obtained by GDP/M_t , the velocity of money in China is designated as K_0 , K_1 , and K_2 . In this model, the dependent variables K_0 , K_1 , and K_2 are investigated separately with the independent variables. To predict how variations in the cumulative digital currency may impact the quantity of fiat money, four independent variables were selected: (1) the cash ratio, (2) the level of electronic currency, (3) the level of financial electronic, and (4) the interest rate.

3.1 Cash ratio $\frac{P_0}{P_2}$

As digital money advances, its impact on fiat currency may be noticed in a number of ways. Substitution effect, defined as a decline in cash usage, would greatly impact the financial sector. While electronic commerce makes it simpler for commercial players to trade and do investments, quick access to cash and the increased expectation of withdrawing cash erode the public's desire to keep money [6]. While a decrease in cash transactions would lead to a loss in money velocity, the corresponding effects of digital currency might compensate for this loss.

3.2 Electronic currency level ($\frac{P_1 - P_0}{P_2}$)

Qin [13] introduced the concept of money supply liquidity, described as P_1/P_2 , to evaluate the implications of digital currency. [14], on the other hand, utilized grey relational analysis to

conclude that, since digital money growth in China is still in its early phases, it would have a higher impact on current bank deposits, which will be more precisely measured by P1-P0. Therefore, the model uses M1-M0 as an alternative numerator instead of P1. P1-P0 divided by total broad money yields the electronic currency level (P2).

3.3 Financial electronic level ($\frac{P_2-P_0}{P_2}$)

Both money demand and the electronic financial level are harmed indirectly. Improved market velocity is the product of a more interconnected and managed financial system. When people diversify their asset distribution online employing digital money, they are less likely to maintain money in their bank accounts, preferring increased interest returns from internet investing over the reduced interest rates given by commercial banks. Consequently, as the financial electronic level advances, the velocity of money will continue to rise.

3.4 Interest rate

As monetary side of the economy was more unstable than the real side, Poole [12] argued that interest rate techniques are efficient at stabilizing economies. Central banks have opted to use interest rate guidelines rather than money supply measures to implement monetary policy in recent years. A lower interest rate as a consequence of monetary policy would reduce the incentive to keep money rather than invest or spend it, boosting the demand for money and, as a result, altering the money supply and velocity.

According to Hensarling, Mchenry, & Carolina [19], the interest rate would be an excellent indicator of monetary policy since the introduction of digital money complicates currency measurement, reducing the impact of changing the money supply. Liao & Tapsoba [8] on the other hand, they claimed that interest rate liberalization hindered money velocity. As a result, the interest rate has been transformed into a price indicator of money, which might affect the velocity of money in this model.

4. CONCLUSION

Based on the attributes of digital currency, this study provides an in-depth analysis and summary of the latest development status and operation mechanism of domestic and foreign digital currencies. Even though it is early to predict if digital money will completely substitute fiat currency, there is no doubt that the velocity of fiat money will increase, and prevalent digital currency will have a substantial effect on Chinese businesses in the future. The varying aspects of Chinese monetary categorization consider three groups of money velocity, which has been considered an approach to understand the relationship between digital and fiat currency supply and prevent interpretation issues in the classification and measurement of digital currency. As per the model assumption, fluctuations in the cash ratio, digital currency level, electronic financial level, and interest rate will depict the collective digital money, generating variations in the velocity of money.

REFERENCES

- [1] Al-Laham, M., Al-Tarawneh, H., & Abdallat, N. (2009). *Development of Electronic Money and Its Impact on the Central Bank Role and Monetary Policy*. 11.

- [2] Beirne, J., & G. Fernandez, D. (2020). *Macroeconomic stabilization in the digital age*.
- [3] Berentsen, A. (1997). Monetary policy implications of digital money. In *MPRA Paper* (No. 37392). University Library of Munich, Germany. Retrieved from University Library of Munich, Germany website: <https://ideas.repec.org/p/prapa/mprapa/37392.html>
- [4] CCB, C. central bank. (2020). No timetable to launch digital currency. Retrieved November 22, 2021, from http://www.xinhuanet.com/english/2020-05/26/c_139089462.htm
- [5] European Central Bank. (2012). *Virtual currency schemes*. Frankfurt am Main: European Central Bank.
- [6] Hensarling, J., Mchenry, P. T., & Carolina, N. (2018). *HOUSE COMMITTEE ON FINANCIAL SERVICES*. 68.
- [7] IMF, I. M. F. (2017). *Monetary and Financial Statistics Manual and Compilation Guide*. INTERNATIONAL MONETARY FUND. <https://doi.org/10.5089/9781513579191.069>
- [8] Liao, W., & Tapsoba, S. (2014). China's Monetary Policy and Interest Rate Liberalization: Lessons from International Experiences. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2445459>
- [9] Liu, Y. (2010). *The Effects of Monetary Policy Shocks in China 1997 to 2005*. 239.
- [10] Papadopoulos, G. (2007). Electronic Money and the Possibility of a Cashless Society. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.982781>
- [11] PBOC, P. B. of C. (2013). Definition of money. Retrieved November 23, 2021, from <https://www.investopedia.com/terms/p/peoples-bank-china-pboc.asp>
- [12] Poole, W. (1970). Optimal Choice of Monetary Policy Instruments in a Simple Stochastic Macro Model. *The Quarterly Journal of Economics*, 84(2), 197. <https://doi.org/10.2307/1883009>
- [13] Qin, R. (2017). *The Impact of Money Supply and Electronic Money: Empirical Evidence from Central Bank in China*. 60.
- [14] Shao, F. (2019). The Empirical Research on the Impact of Digital Currency on Monetary Liquidity and Currency Multiplier. *Proceedings of the 2019 International Conference on Economic Management and Cultural Industry (ICEMCI 2019)*. Presented at the Proceedings of the 2019 International Conference on Economic Management and Cultural Industry (ICEMCI 2019), Shenzhen, China. <https://doi.org/10.2991/aebmr.k.191217.146>
- [15] Sloan, J. (2000). A Survey of Electronic Cash, Electronic Banking and Internet Gaming. Retrieved November 23, 2021, from <https://www.fincen.gov/sites/default/files/shared/e-cash.pdf>
- [16] Smith, A., & Weismann, M. F. (2014). Are You Ready for Digital Currency? *Journal of Corporate Accounting & Finance*, 26(1), 17–21. <https://doi.org/10.1002/jcaf.21999>
- [17] Valdes-Benavides, R. A., & Hernandez-Verme, P. L. (2014). Virtual Currencies, Micropayments and Monetary Policy: Where Are We Coming from and Where Does the Industry Stand? *Journal For Virtual Worlds Research*, 7(3). <https://doi.org/10.4101/jvwr.v7i3.7064>
- [18] Vigna, M. J. C. and P. (2015, January 23). Bitcoin and the Digital-Currency Revolution. *Wall Street Journal*. Retrieved from <https://online.wsj.com/articles/the-revolutionary-power-of-digital-currency-1422035061>
- [19] Wessel, V. L. and D. (2018, May 21). Digital currencies: Five big implications for central banks. Retrieved November 23, 2021, from Brookings website: <https://www.brookings.edu/blog/up-front/2018/05/21/digital-currencies-five-big-implications-for-central-banks/>