

Comparative analysis of Libra and my country's legal digital currency and the impact of legal digital currency on monetary policy

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Abstract: With the development of economic globalization, the use of digital currency has gradually become a trend of reconciliation between centralized government and decentralized technology. 2019 is the biggest opportunity for digital currency in nearly 10 years. In order to cope with the challenges brought by the development of digital economy and monetary financial system, this paper will make a comparative analysis of two kinds of Libra currencies and legal digital currencies in China. It also explores the influence of Libra currency and digital currency of the central bank on the monetary policy of the central bank. The results show that the issuance of legal digital currency will be conducive to price stability, currency security and RMB internationalization. The issue of Libra currency will be a huge blow to the current financial facilities and monetary system. Therefore, the central bank should adjust the money supply and strengthen the effectiveness of monetary policy.

1. Introduction

In recent years, digital currencies have been the focus of attention of monetary authorities in various countries. Starting from Bitcoin, various digital currencies have emerged in endlessly. The encryption protection of digital currency for personal privacy and its efficient and quick payment characteristics make digital currency a substitute for paper currency for transactions, and countries have also accelerated the pace of researching digital currency. In 2019, more than 70% of sovereign countries have actively studied central bank digital currency. The developed countries have more active research on digital currency. Some countries have developed digital currencies by central banks, such as China. Some countries give more space to digital currencies and encourage R&D of fintech companies and commercial banks, such as Singapore and the United States.

Since the advent of Bitcoin, many scholars have appeared in China to study digital currency, which has made great contributions to the development of digital currency. Many scholars have studied its impact on the current monetary system. Li Siyong (2019) analyzed the introduction of digital currency from the perspective of money supply, which may reduce the effectiveness of the central bank's control of the money supply ^[1]. Since the Libra white paper was released in June 2019, many scholars have put forward their own views on Libra currency on the modern currency system, monetary policy, and payment system. This article compares the Libra currency launched by Facebook with the legal digital currency launched by my country, and analyzes the impact of legal digital currency on my country's monetary policy from the aspects of price stability, RMB internationalization, and currency security.

2. Comparative Analysis of Libra and my country Central Bank Digital Currency

2.1 Libra Currency

The main problems that Libra wants to solve: First, there are currently more than one billion people who do not have bank accounts, do not have access to the modern financial system, and do

not enjoy the convenience brought by the modern financial system; Second, some current financial services are inefficient and expensive. It is not easy to access, and it is not global enough. Third, it is an implicit goal to ensure the dollar's dominant position in the global economy and strike other currencies that want to gradually become international.

Libra has proposed solutions to the pain points of the modern currency and financial system, and the founding members of Libra are 29 influential companies worldwide. The Libra Association, which is composed of multiple company organizations, is currently licensed. Only companies on the white list are allowed to join. In the future, non-licensed may be used. Any company can join. At present, the 29 founding members of Libra are MasterCard, PayPal, VISA, etc. in the payment industry, and Coinbase, Xapo, Bison Trails, etc. in the blockchain. Technology and trading platforms are: eBay, Spotify, Andreessen Horowitz, etc. These companies have influence all over the world.

Libra combines the hybrid architecture of the blockchain. The top-level clearing and settlement adopts the blockchain-similar to the alliance chain, and the bottom-level transactions are centralized. Backed by a "basket" of value asset reserves, mainly US dollars, supplemented by low-risk assets such as British pounds, yen and other sovereign currencies and securities, the Move programming language can be used to load smart contracts and transaction logic.

The advantages of Libra: First, the potential users are huge, and the main users of Libra are from platforms such as Facebook, Instagram, Whatsapp, etc., of which Facebook has more than 2 billion users. The second is suitable for cross-border payments or remittances. The third is that it may become a strong currency, several national fiat currencies, or even a super-sovereign currency. Once Libra becomes a strong currency, it will subvert the existing financial system and affect the national economy, politics and existing currencies. The system is hit hard.

If Libra wants to truly achieve what it says in the white paper to become a borderless currency and provide financial infrastructure that serves billions of people around the world, it still faces many difficulties^[2]. The first is that the asset reserve basket is constantly changing, so the currency exchange rate is unstable and fluctuates, so it is not suitable as a trading medium. It is good for the capital strong countries to exchange Libra directly with their own currencies. The goods of the capital weak countries need additional Libra price. The second is to threaten the currency and economic stability of other sovereign countries: it will lead to the devaluation of currencies of weak countries. Due to the convenience of Libra currency and the stability of relative sovereign currencies, people will use their own currency to buy Libra, which makes their currency depreciated and has low recognition. . Libra will gradually replace the currency of the weak country when it encounters the currency of the weak country; it will take collusive measures when it encounters the currency of the strong country. The third is the international currency system disorder that Libra may cause, such as the exchange of currency printed by weak countries into Libra, which will need to be managed by an organization similar to the International Monetary Fund in the future. The fourth is that if there are credit products, there are problems with the distribution of funds and currency multipliers. At this time, Libra is not only M0, which needs to be controlled by institutions similar to the central bank. Fifth, the Libra Association is difficult to neutralize and serve the public, and it is difficult to assume the corresponding responsibilities-the central bank, the IMF, anti-money laundering, and counter-terrorism. Once something goes wrong, they may shirk their responsibilities to the association or other institutions within the association.

2.2 The legal digital currency issued by my country's central bank

In order to improve the operational efficiency of the retail payment system and meet the challenges brought about by the development limitations of the digital economy and the monetary financial system, the Central Bank of my country announced the preliminary design plan for the central bank's digital currency five years after research and development.

The Central Bank Digital Currency (DECP) is a centralized digital currency used to replace part of the RMB. The digital currency is the fiat currency and is also the liability of the central bank. The main problem to be solved by the central bank's digital currency is the high cost of the design,

production, management, and circulation of one of its banknotes, and it is inconvenient for users to carry and use banknotes. The second is to avoid the impact of the US dollar and other digital currencies on China.

The central bank's digital currency solution is: First, the central bank's centralized management, management of the same banknotes. Released with the People's Bank of China as the center and retrograde. The second is that the digital currency adopts a two-layer architecture, which does not change our current financial system. The third is the technology-neutral technical framework standard, which does not presuppose the technical route and does not necessarily adopt the blockchain. The technical routes of different institutions can fully compete. The fourth is to consider loading digital contracts that are conducive to currency functions, and report a cautious attitude towards smart contracts that exceed currency functions.

There are two main types of digital currency operating systems: one is a single-layer operating structure, and the central bank directly exchanges digital currency to the public; the other is two-layer investment and double-layer operation. The central bank does not directly face consumers and does not interact with business Institutional competition, make full use of the existing infrastructure at the lower level. The upper layer is commercial banks and other specific institutions where the central bank exchanges digital currencies, and the lower layer is commercial banks and other specific institutions to the public^[3]. At present, it has been determined that my country adopts a two-tier architecture. The upper layer is the People's Bank of China, the lower layer is the Industrial Bank of China, Agricultural Bank of China, Bank of China, and China Construction Bank, UnionPay, Alipay, Tenpay. The People's Bank of China first exchanges digital currency to the 7 designated institutions at the lower level, and the 7 designated institutions at the lower level then exchanges the digital currency to the public. The People's Bank of China and the public do not have direct contact.

It can be seen that the current central bank's digital currency design focuses on the replacement of M0. The first thing to put into digital currency is to supplement and replace the existing banknotes and coins in circulation to reduce the cost of currency issuance. At the same time, the bank as the central bank's digital currency needs to pay 100% of all deposit reserves, that is, the central bank's digital currency held by the public is still the central bank's liability. The current definition of multi-currency currencies (M0, ML, M2, etc.) is based on different attributes of bank accounts. At present, the digital currency of the central bank is equivalent to an electronic wallet, which does not pay interest and will not form substantial competition for bank accounts. In other words, the current bank account attributes have not been changed and will always exist. This ensures that the core structure of the existing two-tier money supply system will not change.

China's current central bank digital currency design should focus on M0 instead of M1 and M2. This is because M1 and M2 are now electronic and digital. Because it is originally based on the existing commercial bank account system, there is no need to use digital currency for digitization. The central bank's digital currency is an alternative to M0, so interest is not calculated on cash, it will not trigger financial disintermediation, and will not have a big impact on the existing real economy.

The advantages of the central bank's digital currency are first of all guaranteed by the central bank's credit, with unlimited legal compensation capacity, and the highest security stability. The second is that no account is required, as long as there is a digital wallet. The third is dual offline, digital currency is different from the current electronic currency, value transfer can be achieved without Internet. The fourth is that it can be monitored anonymously: for users and commercial institutions, it is similar to paper money. But due to e-wallet and identity binding plus data online. Regulatory departments can use big data to locate money laundering terrorist activities according to users.

The central bank and Facebook have different mindsets. There are also differences in experience, responsibility for governance, and thinking about designing a complete structure in advance. Libra's vision is extremely ambitious, but Facebook and the remaining 28 founding members have limited capabilities and are far from ready. Libra has a great impact on the current financial, economic and

political structure, and it is too difficult to land. Even if the push is successful, it may be a shrinking version. The plan of the central bank is very different from Libra in nature, and it is a plan to replace the paper RMB. Due to policy advantages, the advancement may be much faster than Libra, and China has been studying digital currency since 2014, and it has been five years of development. In order to meet the challenges raised by Libra, the central bank has also accelerated the research process of digital currency. According to the Libra white paper, Libra currency will be launched in 2020, which also reminds the central bank to speed up the research process of digital currency.

3. Impact of Libra Currency and Central Bank Digital Currency on Central Bank's Monetary Policy

Monetary policy is a macro and long-term economic policy rather than a micro and short-term economic policy. The goals of my country's monetary policy are price stability, full employment, economic growth, and balance of payments. The ultimate goal of monetary policy is to maintain the stability of currency value and to promote economic growth. The primary goal of monetary policy is price stability. The key to price stability is currency stability. The purpose of currency stability is to promote healthy, coordinated, and stable economic development. Economic development must be based on currency stability.

3.1 The impact of digital currency on base currency

Legal digital currency does not affect the amount of basic digital currency, but it will affect the form of basic currency. The current money supply is:

Narrow money supply (M1) = cash in circulation (C) + demand deposits (D)

Broad money supply (M2) = M1 + quasi-currency (unit time deposit + resident savings deposit + other deposits + securities company customer deposit + housing provident fund center deposit + deposit of non-deposit financial institutions in deposit financial institutions)

After the issuance of legal digital currency, the money supply is:

Narrow money supply (M1*) = cash in circulation (C) + current currency deposits + digital currency demand deposits

Broad money supply (M2*) = M1 + (unit's base currency time deposit + unit's digital currency time deposit) + (personal base currency savings deposit + individual digital currency savings deposit) + (security client's base currency deposit + Securities customers' digital currency margin)

Digital currency can change the internal composition of currency. Under the condition that the demand deposit reserve ratio remains unchanged, the demand deposit reserve decreases due to the reduction of demand deposits. Similarly, if the digital currency deposit reserve remains unchanged, then the increase in the digital currency deposit portion will also lead to an increase in the digital currency deposit reserve.

3.2 Analysis of the impact of digital currency on currency multipliers

The money multiplier refers to the multiple relationship between the money supply and the base currency. Simply put, the money multiplier is the amount of money generated by a reserve. The basic calculation formula of the currency multiplier is:

$$K = M1 \div MB \quad (1)$$

Among them, M1 is the narrow money supply, MB is the base currency.

The deformation calculation formula of currency multiplier is:

$$K = (R_c + 1) \div (R_d + R_e + R_c) \quad (2)$$

Among them, Rd is the statutory reserve ratio, Re is the excess reserve ratio Rc is the ratio of cash in deposits. The currency multiplier (K) depends on the fixed deposit reserve ratio (R_f), demand deposit reserve ratio (R_d), excess reserve ratio (R_e) and cash leakage rate (R_f), cash demand deposit ratio (C/D), fixed-term demand deposit ratio (M2/M1) and other factors.

Compared with other forms of currency, the biggest advantage of digital cash is that people do

not hold new credit instruments such as paper money, bank cards, current passbooks, and electronic money. In this way, the replacement trend of digital currency for bank cards, cash and current passbooks will accelerate. The ratio of total deposits to digital cash will drop significantly, and even tend to 1. When digital cash makes payment transfers, it will not be out of the entire banking system at all, and the amount of cash leakage will tend to 0. After the digital currency hairstyle, the assets are realized. The speed will be accelerated and the excess reserves will be reduced. Cash ratio (k) refers to the ratio of cash in circulation to demand deposits of commercial banks. The level of cash ratio is positively related to the size of currency demand, so all factors that affect currency demand can affect the cash ratio. After the issuance of fiat digital currency, the currency circulation speed is accelerated, and the cash ratio (C/D) should be reduced. In summary, the issuance of legal digital currency increases the volatility of my country's currency multipliers and increases the uncertainty of my country's currency multipliers.

3.3 The impact of digital currency on monetary policy

The ultimate goals of monetary policy are price stability, full employment, economic growth, and balance of payments. There are contradictions between the above-mentioned objectives, and they cannot all be developing at the same time. The two goals of stabilizing prices and full employment often conflict, and if we want to reduce the unemployment rate and increase the number of people employed, we must increase monetary wages. If the increase in monetary wages is not high, there is no obvious promotion effect on employment promotion. If money wages are increased too much, prices will rise. There are also contradictions between price growth and economic growth and the balance of national revenue and expenditure. There are also contradictions between full employment and economic growth.

Price stability is the primary goal of the central bank's monetary policy. Price stability is mainly due to the stability of the renminbi's currency value. Especially today, if you want to achieve RMB internationalization, currency stability is extremely important. From the perspective of inflation, the issuance of digital currency is a way for the central bank to solve the shortcomings of cash. The central bank can take advantage of the small fluctuations in the value of digital currency to promote digital currency, stabilize currency value and stabilize prices.

Currency security has always been a major concern of the state. The transfer of physical cash notes often loses monitoring and is prone to problems such as money laundering, counterfeiting, bribery, and tax evasion. Due to the traceability and monitorability of digital currency transactions, the issuance of central bank digital currency will be conducive to currency security and rectify problems such as money laundering, counterfeiting, and tax evasion.

In terms of the nationalization of the renminbi, after the renminbi is included in a basket of special drawing rights, a large amount of hot money flows into China, and the central bank's control of the renminbi needs to be strengthened. After the issuance of legal digital currency, due to the supervision of digital currency, the central bank can control the amount of inflows and outflows of money at home and abroad, which can promote the internationalization of the renminbi.

After the initial issuance of legal digital currency, it will certainly experience a period of coexistence with paper money. People of different knowledge levels, ages, and work areas have different degrees of acceptance of digital currency, so the degree of replacement cannot be determined. Therefore, in a short period of time, the demand for traditional currency and digital currency may fluctuate greatly, affecting the stability of currency demand.

Since my country's digital currency adopts a two-layer structure and the central bank issues digital currency, the central bank can adjust the money supply more conveniently and quickly, which will strengthen the effectiveness of monetary policy.

4. Summary

The evolution from paper currency to digital currency is an inevitable trend of economic growth, technological progress, and currency development. From the generation of private digital currency, to the extensive research of central bank digital currency, to the ban of private digital currency by

central bank digital currency and the replacement of traditional legal digital currency, it is an inevitable result of currency competition.

Since the digital currency issued by the central bank has national credit endorsement, the promotion should be more convenient. The issuance of legal digital currency will be conducive to price stability, currency security, and RMB internationalization. The emergence of Libra currency reminds our central bank that it should accelerate the issuance of digital currency. The issuance of Libra currency will be a huge blow to the existing financial facilities and monetary system. There is still a long way to go before it is fully implemented. Libra's own capacity is limited, and cooperation with central banks and governments in various countries will face many challenges in the future.

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