Research in Economics and Management
ISSN 2470-4407 (Print) ISSN 2470-4393 (Online)
Vol. 6, No. 3, 2021
www.scholink.org/ojs/index.php/rem

*Original Paper*

# Digital Currencies and Relevant Policy Analysis

Lixing Zou[1]

[1] China Development Bank, China

Received: June 28, 2021 Accepted: July 17, 2021 Online Published: July 22, 2021

doi:10.22158/rem.v6n3p1 URL: http://dx.doi.org/10.22158/rem.v6n3p1

***Abstract***

*The paper collates the relations of digital currencies with the past forms of currencies, studies the operating mechanism of digital currencies, analyzes the influence of digital currencies on the financial order and economic pattern, and probes into how to drive the reform of global monetary system with pragmatic and innovative efforts. The paper highlights: First, the evolution and development of currency reflects the mankind's social and economic development level. Second, digital currency born with the advances of technology does not change the content of credit money. The credit money-to-digital currency shift must respect the operating mechanism of money and ensure that the physical market and the money market are balanced or roughly balanced. Third, with a complicated influence on the social economy, digital currency is unlikely to change the global monetary system and the international economic pattern easily. Fourth, the work of encouraging financial innovation and improving overall financial infrastructure should come with strengthened efforts to develop sound rules governing the market order in the context of digital economy, by guarding against the risks from "excessive monopoly" and "decentralization". Fifth, the paper calls for linking "trust, confidence and credit" of the human society organically with such intrinsic values as global development, global planning and global resources, and also leveraging such values to actively approach the "Earth-based" monetary system and its replacement of the "gold standard", the "silver standard" and the sovereign credit based monetary system which have been in long use.*

***Keywords***

*digital currency, "earth-based" monetary system, credit money, virtual currency, culture of money*

What is the relationship between digital and traditional currencies? How can digital currencies influence the prevailing monetary system? Will they take place of the currencies in general use? What kind of policy conditions are required for digital currencies to play a healthy role? To usher into the era of digital economy and use digital currencies, we must answer the above questions.

## 1. Connections of Digital Currencies with the Past

Money is a product of the commodity economy. It is the commodity chosen to function as the universal equivalent for all other commodities. A diverse culture of money has come into being in its long evolution process and mirrors the human civilization as a great symbol. At the end of primitive society, some special commodities were spontaneously separated from many ordinary ones when the needs of the buyers coincided with those of the sellers and vice versa, and acted as general equivalents (money), playing the important functions of value storage, measurement, and medium of exchange. Lots of commodities were used for money based on varied conditions in different countries and regions. With the development of society, the improvement of productivity, and the invention of advanced technology, money has evolved through bartering, physical money, commodity money, credit money and e-money, and extended to digital currency, equity money, and many other forms of currency. However, no matter how the history of money evolves, how the type of money changes, and how the use of money progresses, the important function of money does not change.

### *1.1 Natural Connections*

Since ancient times, people have been attempting to make some special commodities as currencies by using different materials and techniques. In the 7$^{th}$ Century BC, the Ancient Kingdom of Lydia cast golden coins which were widely used in the Mediterranean region, mainly the ancient Greece (Zhang et al., 1995a). In 334 BC, Alexander of Macedonia issued circular gold coins. In 775-768 AD, France issued Denier silver coins, marking that Europe began to use silver coins in the Middle Ages. Later in 1337 during the Hundred Years' War, the franc gold coins were created to pay the ransom to have the captured King John II of France released, and it has been continued to use till today (Zhang et al., 1995b). In 775 AD, Saxon Empire of Britain cast pound-weight silver coins, starting the period of pound. During the American Colonial Period, farmers used animal skin as currency to pay the wages. In 1792, half-dime silver coins were issued. The Islamic currency system, though derived from the Western currency culture represented by Greece and Rome, has its own characteristics: the coins are not decorated with human portraits, but with printed characters or texts from the Koran. In the contemporary world, there are Monetary Unions set up by several or a dozen of countries that use the same kind of currency. For example, the Dominican Republic, Grenada, Antigua and other island countries in the Organization of Eastern Caribbean States use East Caribbean dollars (Zhang et al., 1995c).

There are some special forms among varieties of currencies. For instance, people living in the Yap Island in the Pacific Ocean used to make stone discs brushed by the sea water their money. Later the concept of stone disc ownership was introduced, according to which people exchange the ownership for goods. This is a form of currency between commodity money and fiat money (N. Gregory Mankiw (American), 2000a). In Nazi concentration camps during World War II, cigarettes were also used as money (N. Gregory Mankiw (American), 2000b). Currencies differ in their forms due to the different

socio-economic environment and the level of productivity, however, their core functions are the same, i.e., to maintain the value, to serve as a measurement unit, and to function as a medium of exchange.

Traditional Chinese currencies have the Eastern characteristics and enrich the world's currency culture. China's currency dates back to about 4,000-5,000 years ago. In the ancient Chinese book *Guanzi*, the legend is the work of Guan Zhong in the spring and Autumn period, there is a sentence going in this way: "if the millet is of higher value, then the value of other things will decrease", in which the millet ("Su" in Chinese) is compared with other commodities, thereby becoming the embryonic form of currency. However, the millet had not become the universal equivalent yet. The earlier form of currency in China was the natural shell (Peng, 2007a). Later, imitations made of tortoise shells, stones and animal bones were used. In the late period of the Shang dynasty, people began to use bronze imitations, marking the emerging of metal currency. In the past several thousand years, villagers have not only traded with coins and silk, but also directly exchanged commodities. They exchanged salt, hemp, silk, wax, paint, fish, chicken or any grocery for their own convenience. During the exchanging process, they believed that jade could help to protect crops, pearls to prevent fire and gold to showcase nobility, evidencing the characteristics of natural economy.

Currency and production tools have been closely linked in the evolving process of Chinese currencies. For example, Bubi coins used in the Spring and Autumn Period and Warring States Period were derived from shovels. Some of the earliest Bubi coins, which are of a large size, look almost the same as the shovels for agricultural use. It is likely that people at the time used agricultural tools, such as shovels, knives and spinning wheels, as the unit of value measurement and for exchange. Gradually, these tools were made universal equivalents and evolved into official Bubi, Daobi (knife-shaped money) and Huanbi (ring-shaped money), showing the magic function of currency. The shapes of ancient Chinese coins are only a form of the ancient money, whereas the soul lies in their circulation, especially their purchasing power (Peng, 2007b). The value of all wealth shall be represented by currency as currency is the unit for measuring value. Meanwhile, currency is a means of payment, and people can only obtain commodities and labor services by using it as a medium of exchange. Currency, as a special commodity serving the exchanging function, has played a significant role in promoting the growth of currency economy. In particular, after the First Emperor of Qin stipulated that the legal coinage would be a round coin with a square hole in the center, symbolizing the round Heaven and square Earth and the connection between Heaven and Earth, the function of currency has been further expanded. In the book *On the God of Money* written by Lu Bao in the Western Jin Dynasty (in 265-317 AD), the author described the infinite power of money in real life. It is safe to say that currency economy has been occupying a dominant position in China in the past several thousand years, although natural economy has been existing and keeping growing alongside.

China is also the first country in the world to use credit money. In 1024, the 2$^{nd}$ year of Tiansheng period in the Northern Song Dynasty, China began to issue *Jiaozi*, a kind of paper note that could be redeemed, as credit money. Paper money, serving as an evidence for wealth ownership or for credit,

brought substantial changes to the nature of commodity money and marked a revolution in the history of currency development. The change in the nature of commodity money drove the development of credit organizations; with the further increase in the types of currencies, China's credit structure and credit institutions have become more diversified. Lending money, storing money or buying and selling money, each kind of business has its own independent organization, There are counter shops in Tang Dynasty, exchange shops in Song Dynasty, money shops in Ming Dynasty, ticket shops in Qing Dynasty, and hoards for the rich and powerful bureaucrats, as evidenced by different kinds of institutions functioning as banks in the Tang, Song, Ming and Qing dynasties, during which period officials and wealthy families even had their private places to store money (Peng, 2007c). Although China is one of the earliest cradles of credit economy featured by credit money in history, it mainly relies on currency money. Since modern times began, credit currency, with paper note as the main form, has gradually become the mainstream form of money in the world as the gold standard and silver standard systems collapsed. It is not until over a century ago that credit currency, with paper note as the main form, was widely used in China.

Credit currency, be it gold standard, silver standard, or fiat money printed in paper form, is a medium of exchange which is based on credit and is able to play the role of currency independently. Credit currency has become an important method to promote the growth of credit economy.

*1.2 Technological Advancements*

The advancements of science and technology have seen further deepening of technology's influence on the evolution of money. Credit money has become increasingly diverse to include banker's checks, stocks and e-currencies, and turned into a key feature of modern economic life.

In particular, the introduction of big data-based Virtual Reality (VR) and Augmented Reality (AR) technology into the market has added more complexity to the economic society. The virtual kingdom structured on the basis of VR and AR is, in all respects, becoming a crucial part of our real world. It is much easier to try an economic experiment in this networked VR world than before. For this reason, it is quite possible to see a large-scale, all-round economic experiment which will lead to the revolution of digital economy. And, the revolution of digital economy will exert very notable influence on currencies. A new real world will generate new currency demand. The digital economy has given rise to digital currency, a medium of exchange (alternative currency) in lieu of various forms of currencies through digital processing of currency with digital technology.

Digital currencies crystallize the superiority of blockchain technology: The traditional triple entry accounting system involves numerical and tedious procedures from centralized reconciliation at the clearing housing to reconciliation, payment and settlement. Consequently, the problem of repeated bookkeeping may occur. The blockchain is one kind of distributed ledger implementation that provides us with a random and parallel bookkeeping method: allowing us to randomly select public ledger custodians in the market on a conditional basis in light of specific needs. Such decentralization

contributes to freer and fairer productive relationships between people, but also increases market uncertainty.

Digital currencies also embody the advantages of Artificial Intelligence (AI): conventional technological advancements can create new streams of data to inform research and policy, but the key challenge lies in the fact that the data lacks tags. In the current context, tagged data is very scarce or simply unavailable (Ermon, 2021, April 14). Digital currencies, which also apply AI technology in addition to such modern technologies as blockchain, have the potential to address the scarcity of tagged data, better track market trajectories, assist machine learning and various applications, predict and draw the social and economic development pictures, thus fully reflecting the characteristics of digital economy (Landay, 2021, April 7). However, each country will still own monetary sovereignty for quite some time, and it is extremely complicated to internationally enable mutual operations over central bank-issued digital currencies.

*1.3 Real Economy as the Foundation*

**Digital currencies cannot go without the real economy.** Regardless of how advanced the technology is and the commodity market and credit market are, some laws governing the social economy always work. The virtual economy cannot be separated from the real economy at any time, as required by the law of social and economic development. Especially in the modern market economy, both the real and virtual economy starts and ends with money. Money, the general representative of wealth, links the two economic forms. By tangibility, there are physical and virtual currencies.

Physical currencies (or commodity currencies), e.g., oil, coal, gold and silver which have acted as money, exist in the real economy. They carry a key characteristic—having intrinsic value. We call currencies with intrinsic value physical or traditional currencies.

Virtual currencies (or credit money) like marketable securities, credit cards and e-money are relevant to virtual economy. They are designated by the government or government authorized agencies but have no intrinsic value. We call them virtual or fiat currencies, i.e., currencies issued on the basis of credit.

Digital currencies are virtual currencies consisting of data and identification codes. They, unlike physical currencies that play a real role in the economy to create social wealth such as goods and services, are only an electronic copy of marketable securities. All marketable securities, including digital currencies, are in virtual form and derivatives of physical currencies. They cannot exist independently of the real economy.

Currently, digital currencies are used mainly as a payment method. However, functioning as a payment method is just the body of money, while credit or wealth is its soul. The changes in payment method, from check and e-payment to digital currency, engender a new series of operations for the final payment, which is actually not final payment at all, because they (no matter how fast the payment method becomes, whether the check is payable in one month, or the transfer is made instantly in the case of e-payment or digital currency payment) simply order the financial institution to transfer money from your account to the individual or company you have indicated as the beneficiary. This is, at least,

different from the meaning of money. There is no point in providing many convenient payment methods for an account not backed by credit or wealth.

The real economy is the source of digital currencies. In turn, digital currencies play a certain role in driving the real economy, including promoting optimal allocation for higher efficiency of the real economy, encouraging innovative enterprises to improve the governance model, and enabling the central bank's macro regulation to function. Besides, digital currencies can improve the financial structure and stimulate the development of the financial sector. However, just like other virtual currencies, the excessive expansion of digital currencies can make finance grow faster than the real economy, leading to a bubble economy, aggravating systemic risks and damaging social stability.

Looking ahead to the development trend of currency, as along as the real economy and market are in existence, there will definitely be transactions and currencies; with the advancement of technology, the form and use of currency will change significantly, but its important function will always keep unchanged. The Chinese RMB, the U.S. dollar, the British pound, the euro and other payment methods we are very familiar with are being replaced by more and more technologically advanced ones. But three points are worthy our attention: First, the starting point is not the same. The U.S. made more than one third of payments without cash as far back as the end of the last century. Although the U.S. is currently not growing mobile payment transactions at the same speed as China year over year, we cannot therefore take it for granted that it lags behind China in technology-based payment methods. Second, payment methods are not the same as money. Improvements in payment methods increase the liquidity of money and the ease of converting assets into money, but they do not change the soul of money. Third, there is almost no reason to maintain different units of account in different countries in the future. The deepening of globalization calls for a universally recognized international currency.

So to speak, the development of currency reflects the continuous evolution of human social economy over natural economy, monetary economy and credit economy and the corresponding development levels (Wang, 2006). The sound development of social economy requires a healthy culture of currency. In addition to a set of advanced conditions, the development of money also needs to take into account productivity as well as rules and regulations that cater to the specific needs of productivity (Peng, 2007d).

## 2. Operating Mechanism of Digital Currencies

The operating mechanism of money deals with two important economic and financial equilibriums:

First, the equilibrium in economics. From the economics point of view, we know that the total demand shall be equal to the total supply in the case of benign development. In other words, the actual total demand of the market of real money balances (liquidity preference-money supply, or LM) must be equal to the total supply of the market of goods and services (investment-savings, or IS). This is the famous IS-LM model (N. Gregory Mankiw (American), 2000c). Since liquidity and money are involved, we also need to examine the second equilibrium.

The second one is a financial equilibrium. From the perspective of finance, the associated factors that influence the money supply include monetary base, currency in circulation, aggregate reserves of commercial banks, and the money multiplier (Hubbard, 2014).

Both equilibriums tell us that money supply is closely related to the income level, a basic principle of money operation that still plays an important guiding role in the money market and the market of goods and services after the emergence of digital currencies in spite of great economic and financial changes in our current society, highlighted by the fact that the money multiplier still provides the link between the monetary base and the money supply, including the supply of digital money.

In the digital economy, the core determinant of monetary base is still GDP (the total market value of all goods and services produced), and the speed of increasing money supply (the rate of monetary base issuance) needs to be linked with GDP. The monetary form can show the value of real economy. The picture of the market of goods and services, including digital goods and services, can still be painted by the IS curve; and the quantity and flow of value in the real economy, including digital currencies, can still be described by the LM curve. In the IS-LM model, the market of goods and services and the market of money balance are in equilibrium only when the volume of currency issued is consistent with the development level of the real economy.

After the introduction of digital currency, whether issued or exchanged, digital currency that moves into circulation can have a direct influence upon the structure and speed of currency in circulation, which in turn affects the relationship between the level of savings, monetary base and money supply in economic activities, the effectiveness of the money multiplier and the whole market at large. Developed countries have seen a waning of the money multiplier effectiveness in recent decades, which fell from 3 in 1994 to 1.8 in 2014; what's more, the money multiplier has also shown a general trend of decreased effectiveness in emerging countries due to adopt a wide range of advanced methods. However, the money multiplier is still in play, especially the Accounting Mechanism (AM) is playing an enhanced role. Therefore, the function and application of digital currencies is equivalent to the addition of a new window for central banks to conduct open market operations, a move that inevitably influences T-accounts, i.e., the recording of credits and debits.

T-accounts provide the basis for the operation of all financial institutions. A central bank issues additional digital currencies to inject more liquidity into the market, improve the monetary structure and enhance the operating efficiency of the monetary mechanism. As a result, the central bank has its T-account show an increase on the liability side, while the T-account of a commercial bank or an enterprise has a new entry of financial asset in the form of digital currency on the asset side. This complex process can be shown by a condensed T-account (see Table 1): in the liability column of the commercial bank's or enterprise' account, the digital currency is converted into working capital similar to demand deposit, which we may call new-typed demand deposit.

**Table 1. Balance Sheet of Digital Money**

| Central bank account | |
|---|---|
| Assets | Liabilities |
| GDP-linked monetary base (Central bank reserves) | Amount of digital currencies |

| Commercial bank or corporate accounts | |
|---|---|
| Assets | Liabilities |
| Amount of digital currencies | New-typed demand deposit |

Obviously, the central bank's assets are increased by the addition of a certain amount of digital currencies into its liabilities. In line with the accounting principle, the digital technology has improved the operating mechanism of money in the above-mentioned credit creation and operational conversion process, but the law governing the functioning of money has no fundamental change. Digital currencies accelerate the currency circulation and also raise the income level given the money supply and price. However, when the level of money supply increases as usual, it is actually very easy for digital currencies to hike the level of inflation. This suggests that the money supply, including the supply of digital currencies, is closely related to the income level.

In theory, central banks can also establish platforms for payment and settlement in digital currencies that all the people have around-the-clock access to, further mirroring the technological prowess. It should be noted that digital currencies we are talking about here are a legal tender issued by central banks or central bank-authorized agencies, and are a kind of credit money created on the basis of the financial institutions' credit. Currency substitution as a result of technological advances does not change the content of credit money. It must respect the operating mechanism of money and ensure that the physical market and the money market are balanced or roughly balanced.

## 3. Influence of Digital Currencies on the Financial Order

### *3.1 Digital Currencies Have Complex Influence on the Social Economy*

First, digital currencies bring about higher payment efficiency and financial inclusiveness, make transactions in the real economy and our daily lives more convenient and also speed up the circulation of currencies, but they increase the inflationary pressure. The extensive use of digital currencies and other e-payment methods can reduce the average amount of money people hold and accelerate the

circulation of currencies, which may lead to changes in the nominal GDP on a pro rata basis (N. Gregory Mankiw (American), 2000d). That being so, the use of digital currencies is actually the expansion of currency issuance in a new form. It may quicken inflation and eat into the actual value of money in hand. So, pursuing "convenient" has a cost.

Second, digital currencies help to track the trajectory of currency circulation and improve monetary policy regulation measures, the prerequisite of which is improving the central bank's working mechanism and paying attention to the integration of Central Bank Digital Currency (CBDC) with digital technology and the innovation of CBDC. Digital RMB will replace RMB banknotes in certain scenarios, but the withdrawal of RMB banknotes from the market is impossible (Yao, 2020). Therefore, the measures of money need to be adjusted and refined accordingly, with the traditional measures (C, M1, M2, M3, and L) factoring in digital currencies.

Third, the issue of Digital Services Tax (DST) emerges in the context of digital currencies. Technology and finance companies may get extra profits on the information asymmetry caused by high technology; government or government authorized agencies which issue digital currencies may receive a revenue similar to seigniorage (the right to a percentage of the bullion—gold or silver used to make coins). This new tax dividend will have an impact on both the domestic market and international trade. "The United States is committed to working with its trading partners to resolve its concerns with digital services taxes," U.S. Trade Representative Katherine Tai said months ago (U.S. Trade Representative Katherine Tai., 2021, March 27).

Fourth, digital currencies give rise to the issue of digital capital revenue. For example, in the consumer market, consumers are the source of relevant figures, but they are widely scattered in society, making it difficult to link the consumers with specific figures one-to-one. In this sense, consumer figures are public figures that should be protected, and the capital revenue derived from such public digital capital should belong to the public. However, the revenue is currently being held and developed by and benefiting only a few companies. This causes the problem of digital capital revenue.

Fifth, digital currencies add uncertainty to the market. Take the foreign exchange market as an example. The RMB exchange rate formation regime, which deals with the closing exchange rates and changes in a basket of currencies, easily has broad changes. For instance, the RMB exchange rate soared by 2,000 basis points during September 1-11, 2020, but it immediately met with a drop of 1,200 basis points during September 12-19, 2020. The widespread use of digital currencies is likely to further increase market uncertainty.

Sixth, digital currencies increase systematic risk exposure. Digital currencies have the potential to create credit, thus damaging the effectiveness of the central bank's monetary policy; digital currencies are being utilized in an increasingly wider range of scenarios for their low cost, flexibility and convenience, which may even create conditions for illegal activities such as money laundering, thus weakening the central bank's control over the payment system; the speculation on digital currencies which are not subject to effective regulation often leads to dramatic price fluctuations, thus making it

more difficult to maintain financial stability. Central banks may have to perform some commercial banking functions for digital currencies and thus engage in unnecessary competition with commercial banks. What is mentioned above will deal a blow to the existing financial system.

*3.2 It Is Uneasy for Digital Currencies to Change the International Economic Pattern*

Financial power, including digital currencies, is indispensable to the rise of a major country, but what is of the essence still lies in the real economy's ability of original innovation and its industrial dominance. The real world is backed by the real economy, and the virtual economy is only a representation of the real world. In 2020, global GDP amounted to USD84.2 trillion, while financial assets and financial derivatives were valued at USD260 trillion and USD464 trillion, respectively. Despite the fact that massive wealth in the real world exists in the form of financial assets and that the wealth created by economic development is shown as a huge increase in financial assets, what the international community really cares about is not financial assets or financial derivatives but the real economy. A country hinges its long-term strength on the power of the real economy mainly. Only a strong industrial dominance can unleash reliable financial power, and only a robust real economy can have mighty finance.

In the course of economic development, financial power and industrial innovation power support, promote and also restrain each other. After the end of World War II, with the rally of the Deutsche mark, Germany steadily resumed development, and gradually became the leading country in the euro area. But fundamentally, the development of both Germany and the U.S. relied primarily on the growth of their industrial innovation power. In particular, riding on the wave of a new round of technological revolution, growing high-tech industries stronger and bigger offers the real power to change the world pattern. Germany's Industrie 4.0 is indicative of the fact that its research teams are developing a stream of revolutionary technologies, ranging from highly sophisticated technologies to processes and technologies in daily use, such as the production of injection-molded glass objects. The U.S. has been committed to financial innovation, with a particular focus on financial system innovation in alignment with changing circumstances, which has played a crucial role in maintaining its financial empire. Actually, the U.S., with a well-established system of research-oriented universities and industrial laboratories, R&D institutions, and natural science foundations, attaches even greater importance to the original and innovative development of high-tech industries. While pursuing innovative development, developed countries put part of their efforts (not the main efforts, not to mention all the efforts) on developing digital currencies, basically in a prudent way. This is worth thinking about.

*3.3 Develop a Correct Understanding of "What Has Changed" and "What Remains Unchanged" in the International Financial System*

The great economic revolution in today's world has undoubtedly provided important opportunities for China's development. The country is growing its financial power quickly. Total assets of Chinese banks swelled a lot, from RMB366.1 billion in 1983 to RMB78 trillion in 2008 and further to RMB319.7 trillion in 2020. Starting from scratch in the early days of reform and opening-up, China's capital

market has expanded significantly to become the third largest worldwide, accounting for 7.5% of the global value. In contrast, Indian capital market which was born in 1875 has so far ranked only fifth in the world. We have to admit that China's capital market is rising as an awesome force. China's foreign exchange reserves totaled USD3.18 trillion as at the end of June 2012, one third of the global total, forging an influential force of strategic importance managed by the country.

However, there has been no fundamental change in the U.S. financial hegemony. The U.S. dollar still has ascendancy over foreign exchange transactions, with 86.3%, 84.9% and 88% of global transactions settled in USD in 1998, 2010 and 2020, respectively, while the share of RMB was merely 0, 0.3% and 4%.

The U.S. dollar remains the dominant international reserve currency, with the share of U.S. dollar reserves held by central banks standing at 59%, 65.3%, 61.7% and 59.02% in 1995, 2008, 2011 and 2020, respectively.

The U.S. capital market continues to exist as the most influential market. The New York Stock Exchange alone recorded USD10.3 trillion in securities transactions in 2002, and the volume enlarged to USD30.9 trillion in 2020, 40% of the market capitalization of global equities.

The U.S. still has unshakable influence in the International Monetary Fund (IMF). After the IMF reformed the Special Drawing Rights (SDR) in 2016, the value of the SDR is based on a mixed basket of five major fiat currencies, including the US dollar (41.73%), the euro (30.93%), and the Chinese RMB (10.92%).

The U.S. places a high premium on maintaining its currency's global hegemony in the digital economic era. Digital currencies may change the format of dollar hegemony by tokenizing and replacing part of the greenbacks with digital dollars. However, the core interests of dollar hegemony cannot be easily changed but may even be enhanced. The Digital Dollar Foundation pointed out in its white paper in May 2020, "a digital dollar ... representing a direct liability of the Federal Reserve"; and "a tokenized digital dollar would serve as a new and more dynamic format of central bank money" (The Digital Dollar Project white paper co-published by Digital Dollar Foundation & Accenture, 2020, May 28). On April 29, 2021, Federal Reserve Chair Jerome Powell stated that the U.S. would not compete with China in developing CBDC; and the U.S. Securities and Exchange Commission (SEC) said the digital RMB China was planning would not replace the U.S. dollar. Under such circumstances, China should study more about the rationale behind dollar hegemony and the basic conditions required for becoming a dominant international financial power.

*3.4 It Is Quite Possible That Digital Currencies Will Strengthen Dollar Hegemony*

Digital currencies worldwide are likely to strengthen dollar hegemony in a period of time. First, the U.S. manipulation of other countries' currencies by taking advantage of its currency's number one position is based on the modern monetary theory and the support of digital technology. It receives money tax by issuing a large number of dollars, and exports financial products to get dollars back at a lower cost; second, the U.S. makes investments in the US dollar across the world to vigorously support

the development of digital technology industry and particularly some original technology firms, a move that can bring back dollars with a higher profit; third, with the intensification of global capital flows, the U.S. uses its currency in exchange for goods. Countries around the world compete to sell goods to the U.S., the world's largest consumer market. In this way, the U.S. gains access to cheaper goods and services; fourth, the U.S. encourages global ownership of dollar assets, a way to maintain the status of the dollar consciously and unconsciously; fifth, the scale and ratio of global debts in USD are climbing, further increasing the dependence on the dollar; and sixth, countries in the world have some common ground in maintaining the status of the dollar because the dollar system binds the world together. And replacing this system is costly. The Americans tend to have a prospective, strategic vision and still have the ability to strike strategically against forces that threaten their country's hegemony. But hegemonic life also has a cycle, this is the law of nature. What the U.S. can only do is to lengthen this cycle.

With the emergence and application of digital currencies, digital currencies, including those in which the U.S. plays a part, are likely to occupy an important position in the global currency structure, but the change is limited to the form of money only. The global monetary system is unlikely to change easily, and the international economic pattern is more unlikely to change easily just because of the emergence of the digital currency form. Some basic conditions are necessary for a country to exert significant influence in international finance: it must have a well-developed real economy and highly innovative industries, as well as distinctive ability of original innovation; its commodity market and financial market must open to the rest of the world; its real and virtual economy must reinforce each other; and it must have a far-sighted global strategy in place. The U.S. regards China as its biggest "challenge" and "issue". Actually, the internationalization of RMB is very difficult, and the Chinese currency is far from a challenge to the U.S. dollar. The gap between China and the U.S. does not lie entirely in their economic size and GDP, but more in their original innovation ability and industrial dominance, as well as overall development quality. China has benefited from the current international systems, including the financial system, and is committed to protecting and improving these systems. The internationalization of RMB acts as an important improvement and supplement to the international financial system, and digital currency innovation is also a positive supplement to this system. China, like other countries in the world, is actively exploring effective development paths and transaction models to promote the healthy development of a community with a shared future for mankind.

## 4. Digital Currency Policy Analysis

Push financial system and monetary system reforms in a pragmatic and innovative way. What is the positioning of RMB when China is further stepping up reform and opening-up, further integrating itself into the international community and playing a more important role in the integration of global economy? Will an internationalized RMB replace the U.S. dollar? Will digital currencies developed innovatively become a new international currency?

Speaking from the law governing global development, the irresistible trend of global economic integration calls for a global monetary system, as well as a global-unified trading medium and unit of account. The global monetary system established after the end of the World War II has played a significant role in driving the world's development, and it is now playing and will continue to play a vital part in the days to come.

Also, according to the law governing global development, taking the credit of a country as a global currency is defective and cannot satisfy the long-term development needs of global economy. The dollar, based on the credit of the U.S., has long been a global currency. This needs to be improved in terms of design and application; the euro which is based on the credit of European countries is unlikely to become a global currency; RMB substitution for the dollar and the euro to serve as a global currency is also impossible.

Digital currencies innovatively developed with high-tech are only a novel form of virtual currencies. Without intrinsic value, virtual currencies are easily decoupled from the real economy. Therefore, even if digital currencies are legalized by the government or government authorized agencies, they can only supplement the existing credit money, and are unlikely to be chosen as a new international currency.

Bitcoins seem to be valuable in a niche market, but they are only virtual currencies capped at 21 million. Each Bitcoin is mined with specific algorithms and economy consume whopping energy, and Bitcoins which have nothing to do with the real. Choosing Bitcoin as a global currency is all but impossible.

A three-pronged approach may be adopted to drive the reform of global monetary system with pragmatic and innovative efforts.

*4.1 Have a Proper Positioning*

RMB internationalization is improvement and supplementation to the current international monetary system, yet the space for supplementation is broad and relevant demand is also enormous. It is important to powerfully advance the construction of financial infrastructure for regional and global connectivity, particularly the infrastructure for regional financial cooperation, to highlight the role of RMB in regional cooperation; to place more emphasis upon the study of modern monetary theory and practice (Kong, 2021); and to think over the direction, path of and conditions for the healthy development of digital currencies and internet finance. Specific measures include:

Guide the public to have a proper view of digital currencies through publicity. At present, blockchain, Bitcoin and ICO have almost become a focal topic; various types of tokens and virtual currencies under the banner of digital currency, such as "Malcoin", have misled investors. In response, we should keep a clear head to put forth guiding and restrictive policies: say no to the transactions of RMB against virtual currencies like Bitcoin; oppose speculative products that give people the illusion of making great fortune overnight; and be very cautious in applying the concept of currency.

Correctly design the positioning of digital currencies. Leveraging the prowess of advanced technologies and other monetary advantages, digital currencies can be the alternatives to the money we

are using to a certain extent and on a certain scale. According to the central bank's monetary policy, the increase in digital currencies will certainly lead to a decrease in traditional paper money, but it is impossible for digital currencies to completely replace traditional paper money in a considerable period of time.

Strengthen the database infrastructure. Efforts should be made to apply the blockchain technology, select classifiers with advanced learning capabilities through cryptographic algorithms, consensus mechanisms and specific data storage, reasonably set evaluation functions and optimize features, and structure a reliable new model of public data, so that each node in society can realize the safe transfer of numbers between network nodes without going through a third party and without a prior knowledge, thus creating technical conditions for the stable and healthy development of digital currencies.

Also take digital planning into consideration. The application of digital currencies should embrace a holistic view, in addition to considering the market's driving force. Overriding consideration needs to be given to applying digital technology to strengthen the database infrastructure and thus make market transactions more convenient, stable and secure; it is also necessary to fully consider the constraints from inflation, competition, financial risk, digital sovereignty and real economy at the time of issuing digital currencies.

Further improve digital regulations. China should develop a whole set of DST regulations, and standardize the DST payers, the scope of business required to pay DST and the DST rate; enact sound rules on the market order in the digital economy, prevent digital rent-seeking, digital rent and digital crime, and safeguard digital property rights and sovereignty. For one thing, China should encourage and support the development of digital industry; for another, the country should prevent the digital industry imposing more costs on traditional industries. It should encourage and support the extension and growth of international digital chains in China, while protecting China from being played for a sucker. These are necessary measures to defend national sovereignty and security amidst the trend of global flow of data.

Improve the digital risk prevention and control mechanism. It is necessary to prevent the risks arising from the digital monopoly as well as those that may arise from the digital "decentralization". Centralized management by the central government and third-party transmission may give rise to systemic risks due to the excessive concentration of power; blockchain and AI that replace third-party institutions with algorithms can better solve information problems by virtue of advanced encryption algorithms, consensus mechanisms and data storage methods. However, "decentralization" may also incur systematic risks because of the complexity, diversity and multi-layered nature of society, as well as the innate requirements of human society for order and authority. In this case, China needs to conduct in-depth research, improve the technical level of scripting at the macro level, act upon the central government's requirement of "steadily advancing the research and development of digital currencies", and work against the systemic risks arising from the "excessive centralization of power" and "decentralization" (Zou, 2019).

Step up international cooperation and exchanges. The EU draft AI regulation (2021) bans AI for mass surveillance and social credit schemes; Russia says its law will never consider Bitcoin as a legal entity in the jurisdiction of the Russian Federation. The policies of these countries are worthy of our analysis and reference. And, we may also reference the regulatory measures of other industries. A research conducted by Stanford University questioned the current evaluation process of medical AI devices, arguing that training AI algorithms with historical data has deviations from the changing real world (Stanford Institute for Human-Centered Artificial Intelligence, 2021, April 5). This sheds light on the possibility that AI regulatory deviations exist not only in biomedicine but also in finance, a point deserving our great attention.

China is still a developing country in the 21st century. In the complex, changing and sensitive international environment, China should put stability and security at the top agenda of its financial strategies and policies, "cope with shifting events by sticking to the fundamental principle and promote development with pragmatic and innovative efforts", and enhance the capacity of finance to serve the real economy. The country should fundamentally address the current self-insufficiency in most strategic raw materials and core technologies, root out high-cost financing, low-efficient investment and mismatch between assets and liabilities, strictly prevent finance circulating and growing by itself, and rigorously control systemic financial risks.

*4.2 Systematic Approach Towards Global Cooperation and Development*

Especially under the situation that the current COVID-19 epidemic situation is superimposed with various unfavorable factors and brings great uncertainty to the global economy and society, it is necessary to adhere to the systematic concept, Properly handle the five major relationships ideologically and promote the healthy development of social economy.

First, the relationship between emergency measures and long-term strategy. The series of emergency measures taken to deal with the COVID-19 epidemic need to be gradually transformed into a long-term policy of normalization of epidemic prevention. We need to follow the law of ecological balance, thoroughly study the operation mechanism of the social-economic-natural complex ecosystem, properly handle the interaction between each economic entity in the ecosystem and human society, and coordinate short-term emergency measures with long-term development policies in policies to promote the coordinated development of the global society, economy and nature.

The second is the development of national and global cooperation. National development must be open development; Global cooperation must be based on multi-culture. All countries should safeguard the international environment and be responsible for the healthy development of the world. In the process of innovation and development, in the process of dealing with bilateral and multilateral relations, in the process of innovating and promoting the reform of the global monetary system, and in the process of exploring the new global currency, we must consider the core interests of other countries and regions and firmly support economic globalization and multilateralism.

Third, the relationship between digital technology and traditional industries. While vigorously supporting the development of digital science and technology industry, we should also vigorously support the use of advanced technology to actively assist and support the development of traditional industries. Different stages of development, different development environments and different groups of people require different industrial structures and different service modes. Even in developed countries, the traditional economic model and traditional credit currency have vitality and characteristics and cannot be completely denied or replaced. Technology and finance's innovation should not only promote the development of the digital industry, but also promote the upgrading of traditional industries and promote the deep integration of the digital economy and the real economy.

Fourth, the relationship between financial innovation and financial supervision. New forms of finance emerge one after another, providing new services for the social economy, and also bringing some unprecedented problems, which have a profound impact on the economic and financial operating environment. The healthy development of the financial industry and the steady supervision are facing new challenges. Financial innovation requires a strong sense of social responsibility and the need to strengthen the prevention of risks that may arise from the adoption of financial innovation models. We need to support measures and capacity-building for the integrity and stability of the financial system, promote fairer market competition, encourage innovation, reflect the organic unity of cutting-edge scientific and technological exploration and traditional technological exploration, and reflect the rational combination of scientific exploration spirit and social health and morality.

Fifth, the relationship between real economy and virtual economy. The fight against the epidemic requires timely increase of funds, but the "degree" must be grasped and should not be exceeded. The development level of virtual economy is constantly improving, but it must reflect and adapt to the development level and demand of real economy, maintain the balance between capital power and industrial power, and make financial services and real economy mutually promote and develop healthily.

*4.3 Actively Explore the "Earth-based" Medium of Exchange*

From the perspective of a community with a shared future for mankind, our world is based on the Mother Earth's intrinsic values, and the global economy is actually put into the context of "Earth-based". Relying on the intrinsic values which bind people together, including global development, global planning and global resources, and aiming to maintain and promote the sustainable development of a community with a shared future for mankind, it is perfectly possible for us to figure out a "Earth-based" monetary system which will replace the "gold standard", "silver standard" and sovereign credit based monetary systems in long use.

We may proceed from solving the pressing issue of capital required for international equity investment and probe into an international equity currency that is based on the real economy. The equity currency we are discussing is specially designed with what is essential to a community with a shared future for mankind (that is, the wealth, planning and potential of the planet humans live on) as the subject. It

presently acts as a supplement to the monetary base and government bonds and is part of the investment portfolio theory and practice. In the future it can be conveniently geared to the “Earth-based” monetary system.

Let us touch on the basic idea of how to design the above-mentioned international equity investment capital: In the first step, the wealth, planning and potential of the planet humans live on will be organically linked with trust, confidence and credit of the human society. What is trust? The greatest trust is the possibility that people work together, make progress together, and create wealth and civilization together; humans have an instinct to “share destiny” and thus can create wealth together, which is the basis of mutual trust. What is confidence? The greatest confidence lies in the ability to be far-sighted instead of short-sighted and to plan for development instead of making a quick buck; humans derive their confidence from the ability to sum up experience and plan for the future. What is credit? Having resources and potential delivers the greatest credit; humans share the earth’s resources and have infinite innovation abilities, and they can jointly maintain, develop and enjoy the earth’s resources, with vast potential to be tapped in the process of co-building the homeland, which is the condition for humans to create credit. In the second step, cash flows from “trust, confidence and credit”, i.e., intrinsic values such as the “wealth, planning and potential” of a community with a shared future for mankind, will be securitized through financial innovation and legalized as an international equity currency. In the third step, this international equity currency can be firstly used in a region, a country or an industry as a “risk-free capital security” and as an international equity financing instrument at the same level as currency and government bond (Chen, 2020) before gradual promotion to other regions, other countries and other industries. In the fourth step, the international equity currency will firstly work in the real economy by increasing equity investments; the more equity investments, the more income and jobs, and then play a part in the financial market by influencing and regulating interest rates and promoting the balanced development of the physical and money markets for its inverse proportion to the traditional currency demand. In conclusion, the theory and practice of a “Earth-based” monetary system based on a community with a shared future for mankind is probably the right direction to spur the reform of financial and monetary systems in a pragmatic and innovative way.

All in all, digital currencies, a great symbol of humans’ innovation-driven development, remain subject to the requirements and constraints of such laws as the operating mechanism of money. The challenges and opportunities of “multiple coincidences of diverse wants” (Stephen [American], 2006) which are emerging in the international community inspire far-sighted people to explore the future of mankind and of currency. We need to work together with the international community to strengthen the research on the theory and practice of a “Earth-based” monetary system based on a community with a shared future for mankind and promote global sustainable development.

**References**

Chen, Y. (2020). *Credit and Capital*. *China: Journal of Financial Research*, *4*, 2-10.

Ermon, S. (2021, April 14). *AI for Sustainable Development.* HAI Events, Stanford Institute for Human-Centered Artificial Intelligence.

Hubbard, G. [American]. (2014). *Money, Banking and Financial Markets* (pp. 393-397). China: Tsinghua University Press.

Kong, D. (2021). *Will Fiscal Monetization Become a New Normal of Macro Control in Most Countries*. Spring Conference of Mogan Mount Research Institute.

Landay, J. (2021, April 7). *Smart Interfaces for Human-Centered AI*. HAI Events, Stanford Institute for Human-Centered Artificial Intelligence.

N. Gregory Mankiw (American). (2000a). *Macroeconomics* (4th ed., p. 145). (Liang Xiaomin. Tran.). China Renmin University Press.

N. Gregory Mankiw (American). (2000b). *Macroeconomics*(4th ed., p. 144.). (Liang Xiaomin. Tran.). China Renmin University Press.

N. Gregory Mankiw (American). (2000c). *Macroeconomics* (4th ed., pp. 235-251). (Liang Xiaomin.Tran.). China Renmin University Press.

N. Gregory Mankiw (American). (2000d). *Macroeconomics*(4th ed., p. 149). (Liang Xiaomin.Tran.). China Renmin University Press.

Peng, X. W. (2007a). *The History of Chinese Currency* (p. 1). China: Shanghai People's Publishing House.

Peng, X. W. (2007b). *The History of Chinese Currency* (p. 10). China: Shanghai People's Publishing House.

Peng, X. W. (2007c). *The History of Chinese Currency* (p. 17). China: Shanghai People's Publishing House.

Peng, X. W. (2007d). *The History of Chinese Currency* (p. 15). China: Shanghai People's Publishing House.

Stanford Institute for Human-Centered Artificial Intelligence. (2021, April 5). *How medical AI devices are evaluated: limitations and recommendations from an analysis of FDA approvals.* Nature Medicine,

Stephen, G. C. [American]. (2006). *Money, Banking and Financial Markets* (p. 14). China: Peking University Press.

*The Digital Dollar Project white paper co-published by Digital Dollar Foundation & Accenture*. (May 28, 2020). Retrieved from https://www.digitaldollarproject.org/

U.S. Trade Representative Katherine Tai. (2021, March 27). *U.S. remain subject to potential action Six countries while broader international tax negotiations continue, from http://www. cri.cn.*

Wang, Q. Z. (2006). *Study of Chinese Ceramic Coins and Inscriptions* (p. 389). China: Shanghai Ancient Books Press.

Yao, Q. (2020). Thoughts on Key Issues of Central Bank Digital Currency. In *Beijing: Comparative Studies* (Issue 111) (the 6th Issue in 2020).

Zhang, C. et al. (1995a). *World Coins* (p. 2). China: Hebei People's Publishing Office.

Zhang, C. et al. (1995b). *World Coins* (p. 8). China: Hebei People's Publishing Office.

Zhang, C. et al. (1995c). *World Coins* (pp. 8-9). China: Hebei People's Publishing Office.

Zou, L. X. (2019). Research on Systematic Science Method and Systematic Risks. *China: Journal of Dongbei University of Finance and Economics, 2*, 67-74.