DIGITAL YUAN: DIGITAL CURRENCY OF CHINA AND ITS POSSIBLE GLOBAL IMPACT

E. DILIPRAJ

INTRODUCTION

Amidst the global COVID Pandemic, China silently rolled out its digital currency, thus becoming the first large economy in the world to venture into this new form of currency. China is not the first country to do so as Bahamas (the small Caribbean Island nation) had introduced Sand Dollar digital currency almost six months earlier than China. Known as the Digital Yuan/Renminbi, the People's Bank of China (PBoC) which is the Central Bank of the country refers to the new currency as Digital Currency/Electronic Payment (DC/EP). As of June 2021, this digital currency was in testing phase among the larger public in China, and the Central Bank is utilising methods such as lotteries to popularise as well as to circulate the digital currency among the general public.[1]

Although the idea of a virtual currency is not new to the world, Bitcoin being the most sought after virtual [Crypto] currency so far,

Dr **E. Dilipraj** is Research Fellow at the Centre for Air Power Studies, New Delhi.

1. Arjun Kharpal, "China to hand out $6.2 million in digital currency to Beijing residents as part of trial", *CNBC*, June 2, 2021, at https://www.cnbc.com/2021/06/02/china-digital-currency-beijing-to-hand-out-6point2-million-in-trial.html. Accessed on June 3, 2021.

countries around the world have been largely apprehensive about adapting this form of virtual currencies. However, China broke the ice and officially started distributing its digital currency in par 1:1 with its fiat currency. Although an article in *MIT Technology Review* of June 23, 2017 highlighted the issue,[2] the knowledge about testing of such a digital currency became public when reports emerged of a large-scale pilot test conducted in May 2020 in the cities of Shenzhen, Suzhou, Chengdu and Xiong'an, where part of salaries to government workers were transferred in the form of the new digital currency and the government had tied up with designated merchants to facilitate transactions using the currency.[3]

The PBoC's plan was not to create a new cryptocurrency, such as Bitcoin or Facebook's Diem project (formerly known as Libra project), but to partially digitise China's existing monetary base, or cash in circulation, leaving the other parts of the money supply—such as deposits held in bank accounts, and balances held by payment apps such as WeChat and Alipay untouched in their current format. Also, retail banks and fintech companies would continue to manage customer deposits in the same way, but the new digital currency could provide a neater way for banks to settle payments with each other, rather than through the existing clearing system. By rolling out its digital currency, China wants to create a centralised controlled digital economic ecosystem and thus establish itself as the pioneer nation in the field.

This paper would thus delve deeper into China's new digital currency to understand the technical aspects of it as well as to explore its prospective impact at the global level.

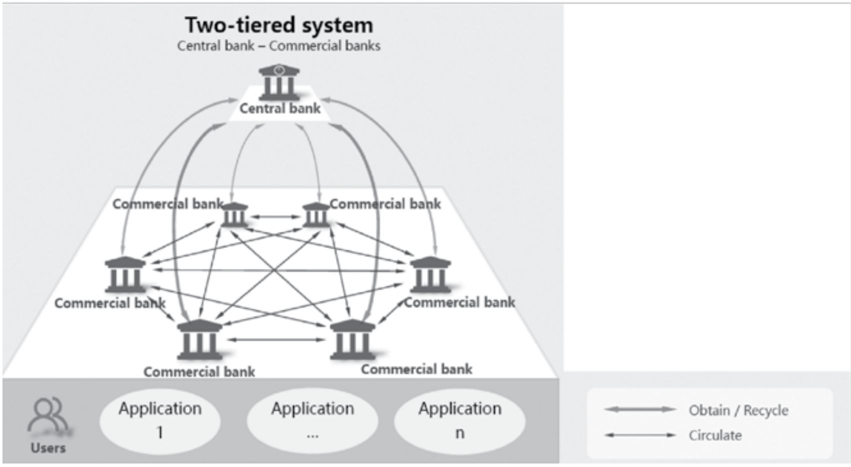
TECHNICAL CHARACTERISTICS OF DC/EP

While digital currencies are not a new concept, the major difference between the popular cryptocurrencies, such as Bitcoin, Ether and

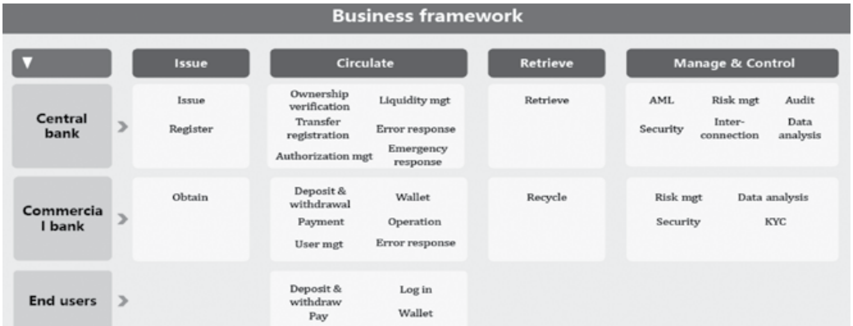
2. Will Knight, "China's Central Bank Has Begun Cautiously Testing a Digital Currency", *MIT Technology Review*, June 23, 2017, at https://www.technologyreview.com/2017/06/23/105752/chinas-central-bank-has-begun-cautiously-testing-a-digital-currency/. Accessed on June 3, 2021.
3. Jonathan Cheng, "China Rolls Out Pilot Test of Digital Currency", *The Wall Street Journal*, April 20, 2020, at https://www.wsj.com/articles/china-rolls-out-pilot-test-of-digital-currency-11587385339. Accessed on June 3, 2021.

the recently rolled out DC/EP of China is that the former operate in a decentralised pattern based on Blockchain technology and the latter is Centralised controlled. The DC/EP is designed to function in a distributed architecture but with a Centralised control which is very much in line with the country's overall policy of central authority. The business framework of the currency circulation is designed to be in a two-tiered system as depicted in Fig. 1, where the Central Bank remains the nodal agency and the other commercial banks take the second tier of the system before reaching the users. Both the Central Bank and Commercial banks have specific assigned roles and responsibilities in order to maintain this two-tiered business framework, whereas the users' role is limited to logging into the digital wallet and deposit/withdraw the currency in its digital form.[4]

Figure 1: System and Business Framework of DC/EP



4. Yao Qian, "Technical Aspects of CBDC in a Two-Tiered System", Paper presented in the 2nd Focus Group Digital Fiat Currency Meeting of ITU, July 18, 2018, USA, at https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20180718/Documents/Yao%20Qian.pdf. Accessed on June 9, 2021.



Source: Yao Qian, "Technical Aspects of CBDC in a Two-Tiered System", Paper presented in the 2nd Focus Group Digital Fiat Currency Meeting of ITU, July 18, 2018, USA, at https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20180718/Documents/Yao%20Qian.pdf. Accessed on June 9, 2021.

Also, the development of this digital currency is built with the concept of Controlled Anonymity where a user has voluntary anonymity at front-end but Real-identity would be visible at back-end, as depicted in Fig. 2. This simply means that all transactions of every user are linked with their real identity and thus under constant monitoring by the Central authority.

Figure 2: Financial Trading Info

	Identity info	Financial trading info		Derivative info	Info access
		Trading elements	Trading scenarios		
Central bank	●	●	●	●	All clients
Counterparty	○	●	●	○	Counterparty
Agents	○	●	○	◉	Own clients
Commercial bank	●	○	○	◉	Own clients

● Accessible info
○ Inaccessible info
◉ Partially accessible info

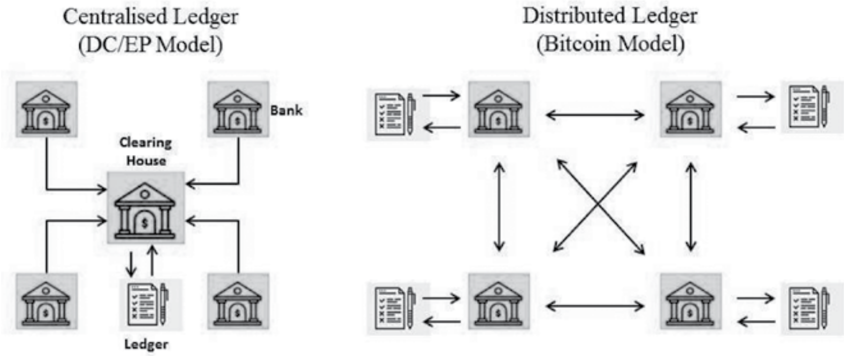
Source: Yao Qian, "Technical Aspects of CBDC in a Two-Tiered System", Paper presented in the 2nd Focus Group Digital Fiat Currency Meeting of ITU, July 18, 2018, USA, at https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20180718/Documents/Yao%20Qian.pdf. Accessed on June 9, 2021.

Therefore, although from the user's perspective it may seem to be a Privacy rich setting as they are allowed to use Pseudo names for transactions, the Central bank will have complete oversight on all aspects of the currency movement thus ensuring Central control over the new digital currency.

CRYPTOCURRENCIES VS. DC/EP

The term "Cryptocurrency" usually refers to digital currencies, such as Bitcoin that are implemented with Distributed Ledger technology (refer to Fig. 3), such as Blockchain, and more importantly, not controlled by a central entity. In that sense, the Digital Yuan does not qualify as a cryptocurrency as it is centrally controlled (refer to Fig. 3) and its transactions may or may not be encrypted at the back-end. This is the reason why China has not addressed its new virtual currency as cryptocurrency and refers to it only as Digital Currency.

Figure 3: Difference between Centralised Ledger and Distributed Ledger Transaction Model of Digital and Cryptocurrencies



The second major difference is the valuation of the currency. Unlike the cryptocurrencies, such as Bitcoin whose values are highly unstable, DC/EP has price stability as it is valued at par 1:1 with its physical fiat currency. Therefore, this saves the currency from unstable currency market fluctuations and helps maintain a stable value in parity with its physical fiat currency.

Another major difference is the aspect of currency backing. Bitcoin cryptocurrency is not backed by any specific currency or precious metal and its valuation is purely based on speculative interests. However, the Facebook's Diem cryptocurrency is reported to be backed by a basket of currencies including the US Dollar, Euro, etc.[5] Therefore, compared to these, China's digital currency will be purely Renminbi-backed. This would allow the Chinese Government

5. Yang, "Diem will increase dollar liquidity and the euro will become relatively uncompetitive", December 7, 2020, at https://mengyanyang.medium.com/diem-will-increase-dollar-liquidity-and-the-euro-will-become-relatively-uncompetitive-b5d01ed95e15. Accessed on June 12, 2021.

to completely control and monitor the movement and usage of their digital currency within as well as outside their physical borders and also maintain a stable market value for the currency.

Considering these stated major differences, it can be said that the Chinese digital currency cannot become a direct competitor to cryptocurrencies, such as Bitcoin, Diem and Ether. Also, the Chinese government is yet to take more policy decisions on issues such as "to whom is it available; the degree of anonymity; whether there will be peer-to-peer transferability or whether all transactions will go through the central bank; the degree to which the digital currency replaces physical cash; and the limits placed on its issuance."[6] The availability of this digital currency to international users would potentially happen only around 2025. Additionally, the possibility of utilising this digital currency by international users as an investment/ trading option would be revealed only after the Chinese Government completes its initial trails and takes their policy decisions. Hence, the cryptocurrency investment/trading market would remain undeterred till such decisions are announced by China.

WHY CHINA NEEDS A DIGITAL CURRENCY?

Digitalisation has become the motto of the 21st century and hence, it is a natural evolutionary process for adoption of digital currencies. Besides this, China has its own compulsions which require the country to adapt to digital currency in order to maintain fiscal growth and development.

Domestic Compulsions

As the country with the largest population, it is becoming increasingly difficult for the centrally controlled Chinese Government to monitor and track all the physical currency existing in their economy. A centrally controlled digital currency would enable the government to track all transactions and help curb tax evasion, money laundering, corruption, illegal gambling and even terror financing, besides enabling the government to effectively implement Direct Benefit Transfers to the digital wallets of the target citizens.

6. Chris Devonshire-Ellis and Dorcas Wong, "When Can I Buy, Use and Trade China's Digital Yuan?", *China Briefing*, May 12, 2021, at https://www.china-briefing.com/news/when-can-i-buy-use-and-trade-chinas-digital-yuan/. Accessed on June 13, 2021.

Beyond this, the effect of replacing cash in the longer term could be used to improve the efficiency of transactions across the financial system within the country and even outside, if required. Moreover, in the current scenario, the handling charges of paper money eats up 1 to 2 per cent of the country's GDP. Therefore, considering the humongous GDP of China which is currently at $16.64 trillion[7] and growing, the country is hoping to save 1 to 2 per cent of it in the future for other development purposes by turning towards digital currency.

International Compulsions

One of the major motivations for China to undertake any fiscal revolutions at the international level is with the intention of de-dollarisation. China has long contested with the US to dethrone the dollar as the global currency and place its currency on the throne. Currently, the US dollar remains unchallenged as the supreme currency of the global economy with 59.4 per cent of all foreign exchange reserves in the world against a miniscule 2.45 per cent share of Chinese Renminbi.[8] However, China is the country with the largest Foreign Exchange reserves with the total value of $3.21401 trillion[9] and the major share of this amount is in US dollars. Therefore, in a way, Chinese stockpiling of US dollars as foreign reserves is one of the main reasons that the US dollar still remains in top position as the global foreign reserve currency. By this virtue, China holds the key for American dollar supremacy in physical currency environment. However, in the digital world order of the 21st century, China wishes to dominate the global currency market with its digital currency and dethrone the dollar.

The China-Russia nexus in the attempt to challenge the US unipolar regime is widely known, and these two countries also collude in the de-dollarisation efforts. For instance, the use of US dollar in China-Russia transactions has declined from 90 per cent

7. *World Economic Outlook Database*, International Monetary Fund, April 2021.
8. "Currency composition of official Foreign Exchange Reserves", IMF Data, June 30, 2021, at https://data.imf.org/?sk=E6A5F467-C14B-4AA8-9F6D-5A09EC4E62A4. Accessed on July 2, 2021.
9. "Official reserve assets (2021)", China State Administration of Foreign Exchange, June 2021, at http://www.safe.gov.cn/safe/2021/0202/18181.html. Accessed on July 3, 2021.

in 2015 to half that in 2020, an annual decline of 10 per cent per annum.[10] At this rate, it is predicted that all transactions between China and Russia would be either done in Euros or even using their respective digital currencies by 2025. Russia has already permitted to circulate legally digital financial assets, including cryptocurrencies, from January 1, 2021,[11] and is in the process of developing and testing its digital currency called 'Digital Rouble'.[12] Therefore, as many countries' Central Banks adapt to digital currencies in the long run, they could create a different mechanism for cross-border transactions between countries, in order to bypass the existing SWIFT method which is the backbone of US global financial dominance, thereby undermining the dollar's global supremacy. This is a long and tedious process and since the US Federal Reserve has also already started developing a plan that could result in the issuance of a digitised version of the US dollar in the coming years, the competition is going be stiff.

Another major aspect for China to turn towards digital currency is linked with its Belt and Road Initiative (BRI) plan. There is no doubt that the Chinese BRI has become a huge attraction for countries around the world as 143[13] countries have so far signed the Memorandum of Understanding with China as partners in the BRI plan. With the advent of the digital Yuan, China might slowly infuse this digital currency into the economy of its BRI partners and create a market for its digital currency globally. Additionally, such infusion of its digital currencies into foreign markets would also reduce these countries' dependencies on the dollar for transactions between them, as they could also use the Chinese currency for the same. Besides, while many countries are already facing the Chinese debt trap due to

10. Chris Devonshire-Ellis and Dorcas Wong, "When Can I Buy, Use, and Trade China's Digital Yuan?", *China Briefing*, May 12, 2021, at https://www.china-briefing.com/news/when-can-i-buy-use-and-trade-chinas-digital-yuan/. Accessed on July 5, 2021.
11. "Digital Currencies to Be Permitted in Russia from 1st January 2021", *Russia Briefing*, August 4, 2020, at https://www.russia-briefing.com/news/digital-currencies-to-be-permitted-in-russia-from-1st-january-2021.html/. Accessed on July 4, 2021.
12. "A Digital Ruble Consultation Paper", *Bank of Russia*, October 13, 2020, at https://www.cbr.ru/eng/analytics/d_ok/dig_ruble/. Accessed on July 4, 2021.
13. "International Cooperation—Profiles", Yidaiyilu.gov.cn, Belt and Road Portal, at https://eng.yidaiyilu.gov.cn/info/iList.jsp?cat_id=10076&cur_page=1. Accessed on July 5, 2021.

BRI, the increased circulation of digital currencies into their markets would only complicate their cases, thus giving a clear superiority for China in the global order. Therefore, the Chinese calculation in this direction is that this digital currency might act as a tool for China to undermine the global influence of the US and establish itself as the global financial hegemon.

POSSIBLE IMPACT OF DIGITAL YUAN AT THE GLOBAL LEVEL

Apart from wanting to pose a challenge to dethrone the US dollar as the global reserve currency in the long term, it is expected that China would vigorously promote its digital currency internationally, especially among its BRI partner countries in the short term. Just as it is funding physical infrastructure projects today through its Belt and Road Initiative, China could invest in point-of-sale terminals, ATMs, mobile apps, and other financial infrastructure that creates a complementary "digital Belt and Road". Individuals sending or receiving remittances and businesses with large import or export ties to China, for example, could be made to transact in the digital yuan. And by stipulating that importers receive payment in the digital yuan, or requiring contractors for the real-world BRI to repay loans using it, China could both increase demand for its national currency as well as bring more users into a network that it can closely monitor. Additionally, Chinese finance and technology firms at the forefront of the digital Belt and Road may help increase the country's revenue from facilitating cross-border payments in their digital currency.

The success of China's digital currency could have a domino effect on other countries which have already conducted basic research and feasibility studies in their respective nations in the field of digital currency. As mentioned earlier, Russia, a close associate of China, is in the process of developing its digital currency. Similarly, the Central Banks of England, Canada, Sweden, Japan, Singapore and also the European Union have all worked at various levels in the last 5-6 years in the field of digital currency. As a result of such work, it can be assumed that all these countries have also developed certain levels of familiarity with digital currency and its associated merits and demerits. Furthermore, some of these countries have also worked on the possibilities of using digital currency to bypass the US dollar-dominated SWIFT method for cross-border transactions. For instance, the Monetary Authority of Singapore has conducted advanced study and research under the 'Project Ubin' to understand the use of digital currency for domestic transactions, cross-border transactions and interaction with international systems.[14] Therefore, the success of China's digital currency would impart a great level of confidence in many countries to roll out their own digital currencies in the future. However, the widespread rollout of digital currencies across the world would complicate the financial crimes situation especially from the cybersecurity perspective, and countries around the world would be required to spend considerable resources in order to safeguard and secure their digital vaults and data from cybercriminals.

DIGITAL CURRENCY IN INDIA

Since July 1, 2015, when the Union government launched the 'Digital India' programme, digitalisation of financial transactions has become a trend among the Indian population, at least in the urban sectors. However, the COVID pandemic's disruption to the normal life forced crores of people across the country to adapt to digital means of financial transactions for everyday purposes. Moreover, despite repeated warnings from the Reserve Bank of India, cryptocurrencies, such as Bitcoin have been an attractive investment base in the country especially among the younger generation. Therefore, with respect to acceptance among the population, the existing situation is favourable in the country if India decides to introduce its digital currency.

It is in this situation, reports suggest, that a Bill is being moved in the Indian Parliament for the introduction of Digital Currency in the country as well as regulation/restriction of other cryptocurrencies. Since the complete text of the bill is not available, only certain pieces of information are available in the public domain. For instance, the Lok Sabha Bulletin Part II indicates that the Bill will establish a 'facilitative framework' for creation of an official digital currency

14. "Project Ubin: Central Bank Digital Money using Distributed Ledger Technology", *Monetary Authority of Singapore*, at https://www.mas.gov.sg/schemes-and-initiatives/Project-Ubin. Accessed on July 7, 2021.

to be issued by the Reserve Bank of India. The Bill also proposes to prohibit all private cryptocurrencies, and related activities in India (such as mining, buying, holding, selling, dealing in, issuance, disposal or use).[15]

Before developing the country's digital currency, the nation has to dedicate substantial time and effort to conduct deep tech research and development in the digital currency field and acquire Intellectual Property Rights in the same. It should be noted here that China, during the development phase of 5 years of its digital currency, had conducted a deep tech research and generated numerous Intellectual Property Rights. For instance, there were 81 Patents filed to the State Intellectual Property Office in this field till June 2018 related to Digital Currency.[16] These IPRs and the associated deep tech would help the country to mature the technology apart from gaining commercial gains at a later stage, without which the country has to depend on borrowed technologies and incomplete knowledge resources. Such R&D efforts would also help enhance the capability and capacity of the technical community of the country besides creating a deeper understanding about the technology.

CONCLUSION

As major countries around the world are still mulling over the idea of digital currency, China has started to circulate its digital yuan among its population for regular usage. By doing so, China has definitely taken a great lead ahead of all other major economies of the world in the digital currency front. Irrespective of its success or failure, the Chinese experience with its digital currency would be closely watched by countries around the world in order to learn lessons from it.

Irrespective of digital yuan playing a role in dethroning the US dollar as the global reserve currency, widespread circulation and utilisation even within China could be considered a success for the

15. Prashant Phillips and Gaurav Tiwari, "Decrypting cryptocurrencies for India; what could proposed regulations hold for the new-age currency", *Financial Express*, June 7, 2021, at https://www.financialexpress.com/market/decrypting-cryptocurrencies-for-india-what-could-proposed-regulations-hold-for-the-new-age-currency/2266678/. Accessed on July 1, 2021.
16. Nicholas Moore, "PBOC files blockchain patent for digital wallet", *CGTN*, June 30, 2018, at https://news.cgtn.com/news/3d3d414d7a41444e78457a6333566d54/index.html. Accessed on July 13, 2021.

programme as this would contribute towards the country's efforts in achieving its technological dream of becoming the world leader in science and technology.

In the post-COVID world order, the usage of digital currencies would become a major trend across the world and the Chinese Yuan would enjoy a large share of the attention. As China is the largest trading partner of most of the countries around the world, including India, countries need to be cautious about the Chinese digital currency flow into their respective economies. In other terms, the Chinese digital currency would not only be monitored centrally by the Chinese Government, but must also be tracked by all other Governments across the world.