

Digital Currency - Lessons from China

A close look at China's lead in the digital currency race and the countries primed to follow China's footsteps.

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Overview

Digital Currency has been a hot topic in recent years, with its growth driven by rapid advances in internet speeds, global connectivity and data storage capabilities. Whilst many different types of digital currencies have emerged, this report will focus on a specific sub-type of digital currency, Central Bank Digital Currency (CBDC). CBDC refers to a digital form of fiat money - a currency which is established as money by a country's government.

Although many countries have begun looking at developing their own CBDCs, China, which has recently rolled out its own national digital currency - the "Digital Yuan", now leads the CBDC race.

The focus of this report is, therefore, on the reasons behind China's successful CBDC development and the viability of CBDCs in the long term. This report will – (1) trace the development of the "Digital Yuan" in China; (2) examine the key takeaways from China's digital currency – such as, the requirements for a successful digital currency as well as the potential risks of adopting a digital currency; and (3) highlight countries which are primed to start a digital currency.

Foreword



This forward looking report traces the development of China's digital currency - Digital Yuan - and considers the implications of such a tool if the world's second largest economy were to adopt - and embrace - it. While other countries are also at varying stages of development for their CBDCs, China's early start provides valuable lessons. Concerns have surfaced in the areas of cyber security, privacy, legality and financial inclusion.

China, as the first mover in the CBDC world, has set the bar high in terms of successful development of a digital currency. Its success is attributable, in part, to (i) its careful recruitment of highly qualified individuals; (ii) its strategy in easing the transition from the use of physical currencies to digital currencies; and (iii) its extensive pilot programme and thoughtful selection of commercial giants as participants in the programme. We believe that China's digital currency development will be modelled after by countries intending to launch their own digital currencies.

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An Introduction to Digital Currency

What is digital currency?

Digital currency – otherwise called digital money, electronic money, electronic currency or cyber cash – is a term used to include the meta-group of sub-types of digital currency, including virtual currency, cryptocurrency, e-Cash and Central Bank Digital Currency (CBDC). It is a form of currency available only in digital or electronic form.

A key difference between digital currency and physical currency lies in their tangibility. Unlike banknotes and minted coins, digital currencies do not have a physical form – they are intangible and can only be owned and accessed using computers or mobile phones. This difference is instrumental in conferring digital currencies with numerous advantages unattainable by traditional payment methods. For instance, while the latter always involves banks or clearing houses, digital currency transactions can be made directly between transacting parties, rendering obsolete the need for intermediaries. This in turn facilitates instantaneous and more cost-efficient transactions.

Differences in tangibility aside, digital currency is intrinsically similar to standard fiat currency in that both may be used to purchase goods and services – although, the use of digital currency may be limited in certain contexts such as payment on gaming and gambling sites. In addition, just like physical currency, digital currency enables cross-border transactions as long as the transacting parties are connected to the same network required for transacting in the digital currency. It is therefore possible for Person A in Country A to make payment in digital currency to Person B in Country B.

How is digital currency being used around the world today?

Given the viability of digital currencies, it is no surprise that a myriad of different types of digital currencies have since emerged and thrived. Of the many different types of digital currencies which currently exist, a small handful have established themselves as the foremost digital currencies in use today. These include cryptocurrencies such as Bitcoin, Ethereum and Zcash.

CBDCs – otherwise called digital fiat currency or digital money – on the other hand, are not as widely used. CBDC is potentially a new form of digital central bank money or fiat money that can be distinguished from reserves or settlement balances held by commercial banks at central banks. There are, understandably, concerns associated with the use of CBDCs. However, interest in CBDCs has risen in recent years. In fact, the People’s Bank of China (PBoC) now leads the world in the development of national digital currencies – this year, screenshots emerged of a “Digital Yuan” interface being piloted at the Agricultural Bank of China (ABC), one of four state-owned banking giants. Moreover, in its 2019 White Paper, the PBoC noted that the “Digital Yuan” or Digital Currency Electronic Payment (DCEP) has potential to replace cash and make peer-to-peer transactions more secure and efficient¹.

Other major economies such as Japan and the United Kingdom (UK) have also formed working groups to explore the potential use of CBDCs in the foreseeable future. Significantly, the “Digital Dollar” idea, which first appeared in the original form of the “Take Responsibility for Workers and Families Act” in the United States (US), has been re-introduced under the Automatic BOOST to Communities Act (ABC Act). Under the ABC Act, Congress would authorise the Federal Reserve to create “Digital Dollar Account Wallets” to allow US residents, citizens and businesses located in the country to access financial services².

In this regard, the race to create the future of money is already on, with China currently leading the pack in the CBDC race.

¹ Pan, D. (2020, May 19). CoinDesk 50: How the People's Bank of China Became a CBDC Leader. Retrieved from <https://www.coindesk.com/coindesk-50-how-peoples-bank-china-became-c-bdc-leader>

² De, N. (2020, April 16). 'Digital Dollar' Reintroduced by US Lawmakers in Latest Stimulus Bill. Retrieved from <https://www.coindesk.com/digital-dollar-reintroduced-by-us-lawmakers-in-latest-stimulus-bill>

The Development of the “Digital Yuan” in China

Why did China start planning for the “Digital Yuan”?

One reason why China wants to have its own digital currency is the ability for regulatory authorities to better track how money is used by its citizens and in turn, a revolutionisation of the ability of China’s regulatory authorities to scrutinise the nation’s payment and financial system. As noted by Xu Yuan, a senior researcher with Peking University’s Digital Finance Research Centre, the emergence of a digital currency will enable payment transactions to be made online, making all cash flow in society traceable. As more business activities are now conducted online such that cash flow information and credit data are stored on databases, the credit structure of the overall society becomes easier to determine. Crucially, the database can be checked in real time and can play an integral role in keeping checks against citizens who have committed money laundering, tax evasions or other related offences³.

Another equally, if not more, important reason for the development of the “Digital Yuan” is the rise of Bitcoin – China has itself acknowledged that the rise of cryptocurrencies like Bitcoin has spurred a call to action to really take control of the money supply and different currencies that are entering the modern world. As Lucy Gazararian – co-chair of the blockchain committee of the FinTech Association of Hong Kong – notes, the rise of Bitcoin is a real trigger because central banks soon realised that the technology underpinning cryptocurrencies could be modified for the fiat world. Central banks also appreciate that this is an exceptional new innovation that has the ability to upgrade payment infrastructure⁴.

³ Yeung, K. (2020, May 13). What is China's cryptocurrency alternative sovereign digital currency and why is it not like Bitcoin? Retrieved from <https://www.scmp.com/economy/china-economy/article/3083952/what-chinas-cryptocurrency-sovereign-digital-currency-and-why>

⁴ Chan, V. (2020, July 29). Why this expert says China desperately needs a digital currency. Retrieved from <https://fortune.com/2020/07/30/china-digital-currency-yuan-cbdc/>

What exactly is the “Digital Yuan” and how does it work?

The “Digital Yuan” is China’s version of a sovereign digital currency and will be used to stimulate everyday banking activities including payments, deposits and withdrawals from a digital wallet. It is set to be a part of the most liquid form of money supply that includes notes and coins in circulation in the society, known as M0, but in a digital form. It will be issued and backed by the PBoC. Once launched, consumers may download an electronic wallet application authorised by the PBoC which can be linked to a bank card to (i) facilitate payments or receipts of digital yuan using a mobile device with merchants or (ii) make transfers with an ATM machine or other users. The money from the linked bank account will then be converted into digital cash on a one-to-one basis. An alternative option which does not require a bank account to hold and facilitate transactions in the digital yuan also exists.

Significantly, unlike other existing online payment platforms such as Alibaba’s Alipay and Tencent’s WeChat Pay, the DCEP system allows transactions to be made even in the absence of internet connection. This function, termed “touch and touch”, enables users to simply touch their mobile devices together in order to make a transfer. This leaves no payment record with third parties or the banking system.

Tracing the development of the “Digital Yuan”

In recent years, the high penetration rate of smartphones, and therefore electronic payments, has resulted in a significant decrease in the use of physical cash. Coupled with the success of e-commerce platforms such as Alibaba, the PBoC began exploring the concept of a national virtual currency in 2014. After China’s State Council included blockchain technology in its 13th Five Year Plan in 2016, the PBoC established in 2017 the Digital Currency Research Institute, which is responsible for China’s digital currency development and testing, to further its efforts in the development of the “Digital Yuan”. In December 2019, Mu Changchun – Director of the Institute, noted that the new sovereign digital currency would be “a digital form of the yuan”. There would be no speculation on the value of the “Digital Yuan” and according to the Shanghai Securities News, it would not need the backing of a basket of currencies.

The coronavirus pandemic has arguably served as a catalyst for accelerating contactless payments, and in turn the effort to move to a digital currency, because of concerns that physical cash can transmit Covid-19. In this regard, as of April 2020, the PBoC confirmed that some state-owned banks are conducting internal trials of the digital currency in four Chinese cities – Shenzhen, Suzhou, Chengdu and Xiong’an – and is considering its usage during the 2022 Winter Olympics in Beijing. The PBoC has also begun selecting the first merchants for testing the DCEP. These include Starbucks, McDonald’s, and other major firms such as ride-hailing company Didi Chuxing, food delivery giant Meituan Dianping and streaming platform Bilibili. The choice behind these entities can be explained by the fact that their users make transactions worth several billion dollars daily. For example, Didi Chuxing has a client base of about 550 million while Meituan Dianping currently has almost 450 million customers and about 6 million companies using it to sell their products. Such volumes can significantly accelerate the popularity and subsequent adoption of the digital yuan.

The goal of China’s pilot programme is to test for the digital currency’s theoretical reliability, system stability, functional availability, process convenience, scenario applicability and risk management⁵. However, it is unclear how long the testing period of the digital yuan will last. Jianing Yu, president of Huobi University, also noted in a conversation with Cointelegraph that China may still be far from completing testing and that in any case, “these current tests are actually still in the research stage, not preparing for immediate launch”. Therefore, as of now, it remains unclear what China’s next step will be. It is also worth bearing in mind that user adoption of any currency is going to take time. However, this does not in any way detract from the fact that we now live in a digital economy and that, therefore, the adoption of a digital currency is only a matter of time. It also remains true that China now leads the world in the CBDC race.

⁵ Magas, J. (2020, July 19). Digital Yuan CBDC Momentum Grows as More Chinese Firms get to testing. Retrieved from <https://cointelegraph.com/news/digital-yuan-cbdc-momentum-grows-as-more-chinese-firms-get-to-testing>

Lessons Learnt from China's Digital Currency Development

What are the requirements for a successful digital currency?

To successfully launch a digital currency, central banks need to be well-versed with the relevant technology and must have in place advanced technologies, a reliable team of professionals as well as secure and reliable infrastructure. This is not least because the entire economy of the country will be dependent on such a system and it is not impossible that hackers will attempt to penetrate the system in place. In this regard, countries which intend to introduce digital currencies have much to learn from China's digital currency development. For a start, the PBoC has in place a specialist research team to discuss technical and regulatory issues in relation to the development of a state digital currency. Prominent members of the Digital Currency Research Institute include Mr Mu Changchun – Director of the Institute. Mr Mu's financial background commands respect in the corporate world and places him in a good position to lead the Institute to launch the digital yuan. Shanghai Securities Daily has itself noted that Mr Mu's appointment as Director brings hope that the Chinese national cryptocurrency will make an official appearance in the near future.

Further, China's efforts at testing the reliability of its newly developed digital currency system certainly contributes a great deal to its success. As noted by Matthew Graham, CEO of Sino Global Capital, a private equity firm in Beijing, China has substantial research and development efforts and has placed the project high on its priority list⁶. Moreover, China's choice of institutions for its digital currency trials is highly strategic. By including commercial giants such as Didi Chuxing and McDonald's in its trial programme, data collected can better and more accurately reflect areas for improvement in the existing system. This will go a long way in fine-tuning the reliability of the DCEP system which will in turn ensure the success of the digital yuan. Countries seeking to launch a successful digital currency should consider adopting China's approach towards trialling the digital currency system.

⁶ Silver, A. (2020, April 22). People's Bank of China kicks off digital currency trials. Retrieved from <https://www.zdnet.com/article/peoples-bank-of-china-kicks-off-digital-currency-trials/>

In addition, arguably, the biggest hurdle that any country will face in rolling out digital currencies is getting its citizens to use the very currency. As with all else, change takes time. However, the more necessary the change is, the lower the levels of inertia to change. In this regard, China's choice of means of integration of the digital currency into the economy is one very important reason for its successful digital currency development – and is something that countries wishing to introduce a digital currency should seriously consider. Indeed, the Chinese authorities have chosen the easiest way

to integrate the digital currency into the economy – implementation through the social and budgetary sphere. For instance, as of May 2020, officials working in Suzhou started receiving half of their transport subsidies not in traditional renminbi (RMB) but in digital yuan⁷. Crucially, in order to receive these subsidies, recipients are required to install a special application – an electronic wallet that can be linked to an existing bank account – on their smartphones. Coupled with the possibility of using this new digital currency for payment at popular chains like McDonald's, Starbucks and Subway in China, the Chinese authorities are ingeniously easing the transition from traditional cash or payment methods to digital currency.

Potential risks of a digital currency

Whilst the introduction of a digital currency could bring a number of potential benefits to payment, clearing and settlement systems, it could also pose several risks and challenges. An initial exploration and experimentation conducted by the Bank for International Settlements (BIS) identified a number of legal, technical and operational issues that central banks and other relevant parties must consider⁸.

First, cyber-security is one of the most important operational challenges for central bank systems. Cyber-threats, such as malware and fraud are risks for nearly every payment, clearing and settlement system. They pose a particular challenge for a general purpose CBDC which is open to many participants and therefore many points of attack. The potential effect of fraud in the context of a digital currency system could be more significant because of the ease with which large sums may be transferred via electronic means.

⁷ Axelrod, A. (2020, May 15). How National Digital Currencies Will Change Our Lives. Retrieved from <https://www.finextra.com/blogposting/18765/how-national-digital-currencies-will-change-our-lives>

⁸ Committee on Payments and Market Infrastructures (2018, March). Central bank digital currencies. Retrieved from <https://www.bis.org/cpmi/publ/d174.pdf>

Second, privacy issues are also another paramount concern. The use of central bank and commercial bank deposits usually provides some level of privacy (for individual banks and agents, respectively). In a similar vein, the use of cash provides anonymity to all users. In stark contrast, according an appropriate degree of privacy to users in a digital environment is a very real challenge. Ensuring sufficient privacy in a CBDC context entails careful and difficult public policy design choices for a central bank. It is therefore no surprise that critics of CBDC suggest that a digital currency could pose a threat to citizens' privacy when deployed by authoritarian governments – a state-operated payments system would enable the government to track all of its citizens' purchases.

Third, although not applicable to all countries, there may be legal considerations associated with the development of a digital currency. Indeed, not all central banks have the authority to issue digital currencies and expand account access. The issuance of such authority may require legislative changes and may therefore not be feasible, in the short term at least. Other pivotal, and fundamental, legal questions include whether a CBDC constitutes a legal tender – i.e. a legally recognised payment instrument to fulfil financial obligations – and whether existing laws pertaining to transfers of value and finality are applicable.

Fourth, concerns have also been raised that the introduction of a digital currency could spell bad news for financial inclusion. As Ola Nilsson, a specialist in consumer policy at the Swedish National Pensioners' Organisation, explained to European CEO magazine, a cashless society may disadvantage those who live in rural areas, the disabled and the elderly⁹. He also noted that a completely cashless society may mean that older people will no longer be able to do things in everyday life that they have always managed before – this includes buying a ticket for the bus or train or even paying for a coffee at a cafe. However, Nilsson has also himself acknowledged the possibility of creating a digital currency that is accessible to all – this is especially feasible if the digital currency is developed with vulnerable groups in mind.

⁹ Gifford, C. (2020, June 10). The risks (and benefits) of Sweden's proposed e-krona. Retrieved from <https://www.europeanceo.com/finance/the-risks-and-benefits-of-swedens-proposed-e-krona/>

Fifth, central banks must also take account of AML/CFT concerns and requirements if they were to issue a digital currency. Issuing a digital currency which does not adequately comply with these and other supervisory and tax regimes is not advisable. To date, it is unclear how AML/CFT requirements can be implemented practically for anonymous forms of CBDC. Forms of CBDC that can be easily transferred across borders or used offshore are especially likely to present significant challenges in this respect. Therefore, as noted by the Bank for International Settlements, the reputational risk to the central bank from a general purpose CBDC must be considered.

Finally, more generally, the robustness of possible new technologies in ensuring a sound risk management framework is uncertain. Given that central bank services are essential to the smooth functioning of an economy, very robust requirements for reliability, scalability, throughput and resilience are integral. Central banks therefore typically have very rigorous operational requirements for their systems and services. The Bank for International Settlements rightly notes that some of the proposed technologies for issuing and managing CBDC (such as DLT) are still relatively untested, and even the private sector is in the early phase of developing and applying for DLT for commercial use. Many questions surrounding operational risk management and governance need to be answered before deployment can be envisioned.

Countries Primed to Start a Digital Currency

Sweden

Few countries have embraced the drive towards a cashless society with as much enthusiasm as Sweden. Sweden's Riksbank data shows that only one percent of the Swedish gross domestic product (GDP) existed in banknotes in 2018. Further, more than fifty percent of banks in Sweden do not have physical cash in their vaults. Payments also usually take place with credit, debit cards or mobile payment apps. For this reason, it does not come as a surprise that a study conducted by Niklas Arvidsson and Jonas Hedman, researchers at the KTH Royal Institute of Technology and Copenhagen Business School respectively, found that Swedish retailers could stop accepting cash as early as 2023¹⁰. These render Sweden one of the least cash-dependent countries in the world¹¹. It is therefore only appropriate that the Scandinavian country soon becomes one of the first nations to start a digital currency.

In fact, as of February 2020, Riksbank has been assessing e-krona, a new form of digital currency which aims to take the country one step closer to the creation of the world's first central bank digital currency. This pilot programme will be in operation for one year, until February 2021. Riksbank notes that the e-krona could eventually be used for banking functions, such as payments, deposits and withdrawals, from a digital wallet¹². It is clear then that Sweden is well suited to launch a digital currency and that, in this regard, China is hot on Sweden's heels in the race to create the world's first CBDC.

¹⁰ Leary, K & Gohd, C. (2017, October 11). Sweden could stop using cash by 2023 | World Economic Forum. Retrieved from <https://www.weforum.org/agenda/2017/10/sweden-could-stop-using-cash-by-2023/>

¹¹ Gifford, C. (2020, June 10). The risks (and benefits) of Sweden's proposed e-krona. Retrieved from <https://www.europeanceo.com/finance/the-risks-and-benefits-of-swedens-proposed-e-krona/>

¹² PYMNTS. (2020, February 21). Sweden's Central Bank Floats E-Krona As Digital Currency. Retrieved from <https://www.pymnts.com/news/b2b-payments/2020/swedens-central-bank-floats-e-krona-as-digital-currency/>

The Bahamas

The Bahamas' digital currency pilot project went live in Exuma on 27 December 2019. Residents of the island were allowed to enrol in the Central Bank of The Bahamas' "Project Sand Dollar" – they received mobile wallets the Bahamian government sees as facilitating the future of payments on the island chain. As noted by bankers, the "Sand Dollar" is a digital fiat currency – it is a digital version equivalent in every respect to the paper currency¹³. This is a major step toward the Bahamas' long-term goal of launching a fully-fledged CBDC. John Rolle, the governor of the Central Bank of the Bahamas (CBOB), has also reportedly confirmed that the Bahamian digital dollar initiative will be introduced across all islands in the second half of 2020¹⁴. Once fully launched, residents can pay retailers through wallet-linked QR codes, with banks moving funds in digital form. The central bank believes this could ultimately cut currency printing costs and transaction fees while enhancing financial inclusion.

While the sand dollar faces restrictive limits from the government – for instance, businesses cannot hold more than B\$1 million in their digital wallets and cannot transact more than one-eighth of their annual business through wallets in any given month – the central bank "will vary these limits over time as may be necessary". It also remains the case that the Bahamas is increasingly ready and well-suited to start a digital currency of its own.

¹³ Central Bank of the Bahamas. (2019, December 24). Project Sand Dollar. Retrieved from <https://cdn.centralbankbahamas.com/documents/2019-12-25-02-18-11-Project-Sanddollar.pdf>

¹⁴ Partz, H. (2020, February 14). Bahamas Digital Dollar to Roll Out Across All Islands in H2 2020. Retrieved from <https://cointelegraph.com/news/bahamas-digital-dollar-to-roll-out-across-all-islands-in-h2-2020-governor-says>

Conclusion

Digital currencies present many advantages and are also a means to prevent cryptocurrencies like Libra, a digital currency put forward by social media giant Facebook, from undermining central banks' control over money creation. On this note, it is no longer a question of whether governments will introduce CBDCs, but rather when CBDCs will be introduced. For instance, the Bank of France has put out a call for applications from firms interested in experimenting with the use of a digital euro for interbank settlements, while the Dutch central bank has announced that it wants to play a "leading role" in the research and development of both its own CBDC and a digital euro.

Whilst a cashless society will in many ways prove to be a more convenient one, there are inevitably risks associated with a cashless society. Therefore, in developing CBDCs, central banks must engage in careful planning to ensure that the introduction of digital currencies strengthens rather than weakens the financial system. In this regard, China – the first mover in the CBDC world – has set the bar high in terms of successful development of a digital currency. Its success is attributable, in part, to – (i) its careful recruitment of highly qualified individuals; (ii) its strategy in easing the transition from the use of physical currencies to digital currencies; and (iii) its extensive pilot programme and thoughtful selection of commercial giants as participants in the programme. China's digital currency development will likely be modelled after by countries intending to launch their own digital currencies.

Finally, countries like Sweden and the Bahamas are already well-equipped and well-positioned to adopt a digital currency of their own. With China's success in digital currency development, it is also likely that many other countries will gradually begin launching digital currencies of their own. Therefore, there is no reason to seriously doubt that digital currencies will be the future.