



農銀國際

ABC INTERNATIONAL

ABCI SECURITIES COMPANY LIMITED



ABCI Policy Insight

Research on legal digital currency by PBOC

ABCI Research
Andy Yao Shaohua, PhD
May 14, 2020



Research on legal digital currency by PBOC

Summary

- The Digital Currency Research Institute of PBOC announced on Apr 20 that PBOC will conduct the first closed test for its legal digital currency (DC/EP), which has been studied for six years, in Shenzhen, Suzhou, Chengdu and Xiong'an.
- DC/EP mainly targets to replace M0 (cash in circulation) and not M1 (M0 + corporate demand deposits) and M2 (M1 + corporate time deposits + resident savings deposits + other deposits). Thus, the main function of DC/EP will be on payment.
- DC/EP can significantly reduce M0's issuance and transaction costs. The marginal cost of issuing DC/EP is negligible, so the replacement of cash by DC/EP can substantially reduce issuance costs for PBOC. DC/EP can also reduce users' transaction costs. DC/EP can complete payments even when both the receiving and paying parties are offline. In theory, DC/EP can eliminate the transaction cost between individuals and corporates.
- PBOC's DC/EP issuance adopts the "central bank-commercial bank / other operating institutions" double-layer operation system and the "one currency, two libraries, three centers" operating framework.
- PBOC has not confirmed on the technology used for DC/EP at present. Decentralized account technology, such as blockchain, is only one of the options among many. Since cash is anonymous, risks of money laundering and terrorist financing are implied. The issuance of DC/EP, while ensuring a level of anonymity, can eliminate risks of money laundering, terrorist funds, tax evasion, and online gambling.
- According to the information released by the Digital Currency Research Institute, the introduction of DC/EP will have minimal impacts on China's monetary policy as a whole. First, the DC/EP simply replaces the cash in M0; it is interest-free, and it does not replace M1 and M2. Second, DC/EP is intended to replace traditional legal currencies, such as cash in small, high-frequency transactions in retail businesses, and help facilitate payments at a low cost. Therefore, DC/EP must set limits on large payments. Meanwhile, DC/EP is domestic-oriented – it is not intended for cross-border payment and settlement.
- If DC/EP is able to replace some of the demand and time deposits in M1 and M2 aside from the cash in M0 and is interest-bearing, it will become an important price-based monetary policy tool. Under such circumstances, DC/EP will affect the existing monetary policy framework and lessen the functions of commercial banks in the financial system.



The latest development of legal digital currency by PBOC

The Digital Currency Research Institute of PBOC announced on Apr 20, 2020, that PBOC will conduct the first closed test for its legal digital currency (DC/EP), whose development has spanned over six years, in Shenzhen, Suzhou, Chengdu, and Xiong'an. In Suzhou, the local government will pay half of the transport subsidies to civil servants with the digital currency. The government employees will load the central bank's digital currency APP in May 2020. In Xiong'an New District, a satellite city in Beijing, most of the participating companies are retail companies, including Starbucks, Qingfeng Steamed Dumping Shop, McDonald's, and Subway. The closed test of digital currency marks the first official launch of a statutory digital currency application by an important central bank. In addition, PBOC stated that its digital currency is expected to be used in the 2022 Winter Olympics.

PBOC has always been at the global forefront in the research and implementation of digital currency. As early as Jan 2014, PBOC's then-governor, Zhou Xiaochuan, proposed to conduct a feasibility study on the issuance of legal digital currency. In response, PBOC established a special research group for digital currency and following that, the Digital Currency Research Institute, in Feb 2017. In Mar 2018, in PBOC's teleconference on national currency, gold, and silver, the steady promotion of the central bank's digital currency research and development was proposed. During the Two Sessions in 2018, Zhou Xiaochuan stated that China's digital currency would be named as DC/EP. DC stands for Digital Currency, and EP stands for Electronic Payment. In Aug 2019, PBOC held a video conference and called for the acceleration of China's legal digital currency R&D as well as tracking the development trend of domestic and foreign virtual currencies. In Jan 2020, the PBOC said it had completed the top-level design, standard formulation, functional R&D, and joint debugging testing for digital currency. The central bank's work meeting held in the same month emphasized the steady advancement in R&D for the legal digital currency.

Central banks around the world have shown strong interest on the subject of digital currency. In Jan 2020, the Bank of Japan, the European Central Bank, and the Bank of England formed the Central Bank Digital Currency Group to jointly evaluate the possibility of central bank digital currencies. The team also includes the Bank of Canada, the Swiss National Bank, the Bank of Sweden, and the Bank for International Settlements. At present, many countries have made substantial progress in the development of central bank digital currency or expressed interest in it. European Central Bank President Christine Lagarde said at a press conference in Dec 2019 that the Central Bank's Special Committee on Digital Currency has been established to accelerate efforts to study the phenomenon of digital currency and is expected to reach a conclusion in mid-2020. In addition, the social media giant Facebook released a white paper on the digital currency, Libra, in June 2019. The stability of Libra's currency depends on its anchored basket of short-term government bonds and bank loans. Facebook's vision is to establish a global financial infrastructure and super-sovereign digital monetary system.



The positioning and operating system of the digital currency by PBOC

According to the information by the Digital Currency Research Institute of PBOC, DC/EP mainly replaces M0 (cash in circulation) and not M1 (M0 + corporate demand deposits) and M2 (M1 + corporate time deposits + resident savings deposits + other deposits). Thus, the main function of DC/EP will be on payment. In China's current financial system, M1 and M2 have already implemented digital account management and further digitization of these money supplies is therefore unnecessary.

The issuance of DC/EP mainly replaces the cash of M0 and therefore is not interest-bearing. DC/EP belongs to M0, which is legal in any scenario. Its payment function is superior to third-party payment transfer. For example, users of WeChat payment and Alipay are not able to transfer payments to each other. DC/EP can significantly reduce M0's issuance and transaction costs. China's M0 is RMB 7.7tr at end-2019. Assuming that the cost of cash issuance is 1%, the cost of M0 using cash is ~RMB 770bn. The marginal cost of issuing DC/EP is next to none, so the replacement of cash by DC/EP can substantially reduce the issuance costs. DC/EP can also save transaction costs for users. DC/EP can complete payments even when the receiving and paying parties are both offline. Given the mobile phones of both parties are charged and equipped with the DC/EP wallets, the transfer can be completed offline as long as the two terminals are in physical contact with each other even when no network is available. The total transaction volume of China's non-cash payment market (except for fund transfers) is ~RMB 280tr in 2019. The non-cash payment processing fee of banks or third-party payment institutions is ~0.38%, so the overall transaction cost is as high as RMB 1.06tr. In theory, DC/EP can eliminate transaction cost between individuals and companies and provide incentives for users to retain such currency.

PBOC's DC/EP adopts the "central bank-commercial bank / other operating institutions" double-layer operation system and the "one currency, two libraries, three centers" operating framework. The first layer of the two-tier operating system is the direct interaction between the PBOC and commercial banks/other operating agencies, and the second layer is transactions between commercial banks/other operating agencies and market participants such as individuals and enterprises. On the first layer, the PBOC issues and returns DC/EP through commercial banks/other operating agencies; on the second layer, commercial banks/other operating agencies that obtain the DC/EP distribute and circulate the currency in the market. In the operating framework of "one currency, two libraries, and three centers", "one currency" refers to DC/EP, "two libraries" refers to the bank libraries for PBOC and the commercial banks, and "three centers" are DC/EP registration center, certification center, and big data analysis center. The registration center is responsible for recording the registration of the entire process of issuance, transfer, and return of DC/EP; the certification center is responsible for centralizing the identity of DC/EP users, which is the key to maintaining the anonymity of DC/EP transactions. One of the main issues for DC/EP is to strike a balance between anonymity and regulatory needs for anti-money laundering and anti-terrorist financing. The big data analysis center collects and evaluates the data generated from payment behaviors and



detects any illegal uses of DC/EP through monitoring the indicators.

PBOC has not confirmed the technology used for DC/EP. Decentralized account technology, such as blockchain, is only one of the many options available. Since cash is anonymous, risks of money laundering and terrorist financing are implied. The issuance of DC/EP, while ensuring a level of anonymity mechanism, can effectively minimize risks of money laundering, terrorist funds, tax evasion, and online gambling.

The impact of PBOC's digital currency on monetary policy

According to Digital Currency Research Institute of PBOC, the introduction of DC/EP will have minimal impact on China's monetary policy as a whole.

First, the DC/EP only replaces the cash in M0 - and it does not generate interest, nor does it replace M1 and M2. China's M0, as a percentage of GDP, has been declining, and M0 / GDP was only 7.8% at end-2019. The main reason for the decline in M0's share of GDP is the rapid growth of third-party payments, with mobile payments and third-party payments replacing cash. DC/EP does not generate interest, which is essentially a liability of the central bank. However, the deposits of commercial banks belong to M1 and M2, and are the liabilities of commercial banks. The account holders enjoy interest income, and commercial banks need to fulfill the legal reserve requirements. The interest-free aspect of DC/EP would exclude it as a new price-based monetary policy instrument and therefore, it would not disrupt the existing monetary policy framework.

Second, according to the public statements from the Digital Currency Research Institute, DC/EP is intended to replace traditional legal currencies, such as cash, in small and high-frequency transactions in retail business- the goal is to facilitate payment at a low cost. Since the level of security in DC/EP is higher than in bank deposits, DC/EP must set limits on large payments so as to increase the cost of bank deposits converting to DC/EP. This would reduce to the impact on commercial bank deposits.

Third, in theory, DC/EP can be used for cross-border payments to promote RMB internationalization, which requires a series of institutional arrangements. Cross-border payment, while necessary, is not a sufficient condition for RMB internationalization. At present, the biggest obstacle in internationalizing RMB is that the currency has yet to realize free convertibility under the capital account. Zhou Xiaochuan therefore pointed out that the use of DC/EP in China would mainly be domestic-oriented, rather than cross-border payment and settlement.

Finally, if DC/EP is able to replace some of the demand and time deposits in M1 and M2 and bear interests, it will become an important price-based monetary policy tool. Under such circumstances, DC/EP will affect the existing monetary policy framework and lessen the functions of commercial banks in the financial system. Since DC/EP is issued by PBOC, its credit rating must be higher than the commercial banks. If it becomes an



農銀國際

ABC INTERNATIONAL

ABC SECURITIES COMPANY LIMITED

interest-bearing asset, a considerable proportion of deposits in commercial banks would be converted into DC/EP. The loan business of commercial banks, as a result, will be adversely affected while volatility in financial system will increase. In view of these impacts, we believe DC/EP will not become an interest-bearing currency in the foreseeable future.



Disclosures

Analyst Certification

I, Yao Shaohua, Andy, being the person primarily responsible for the content of this research report, in whole or in part, hereby certify that all of the views expressed in this report accurately reflect my personal view about the subject company or companies and its or their securities. I also certify that no part of our compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this report. I and/or My associates have no financial interests in relation to any listed company (ies) covered in this report, and I and/or My associates do not serve as officer(s) of any listed company (ies) covered in this report.

Definition of equity rating

Rating	Definition
Buy	Stock return rate \geq Market return rate (10%)
Hold	- Market return rate (-10%) \leq Stock return rate < Market return rate (+10%)
Sell	Stock return < - Market return (-10%)

Notes: Stock return rate: expected percentage change of share price plus gross dividend yield over the next 12 months

Market return rate: average market return rate since 2008 (HSI total return index 2008-19 CAGR at 10%)

Time horizon of share price target: 12-month

Stock rating, however, may vary from the stated framework due to factors including but not limited to: corporate governance, market capitalization, historical price volatility relative to corresponding benchmark index, average daily turnover of the stock relative to market capitalization of the stock, competitive advantages in corresponding industry, etc.

Disclaimer

This report is for our clients only and is for distribution only under such circumstances as may be permitted by applicable law. It has no regard to the specific investment objectives, financial situation or particular needs of any specific recipient. It is published solely for informational purposes and is not to be construed as a solicitation or an offer to buy or sell any securities or related financial instruments. No representation or warranty, either expresses or implied, is provided in relation to the accuracy, completeness or reliability of the information contained herein. This report should not be regarded by recipients as a substitute for the exercise of their own judgment. Any opinions expressed in this report are subject to change without notice and may differ or be contrary to opinions expressed by other business areas as a result of using different assumptions and criteria. The analysis contained herein is based on numerous assumptions. Different assumptions could result in materially different results. The analyst(s) responsible for the preparation of this report may interact with trading desk personnel, sales personnel and other constituencies for the purpose of gathering, synthesizing and interpreting market information. ABCI Securities Company Limited is under no obligation to update or keep current the information contained herein. ABCI Securities Company Limited relies on information barriers to control the flow of information contained in one or more areas within ABCI Securities Company Limited, into other areas, units, groups or affiliates of ABCI Securities Company Limited. The compensation of the analyst who prepared this report is determined exclusively by research management and senior management (not including investment banking). Analyst compensation is not based on investment banking revenues, however, compensation may relate to the revenues of ABCI Securities Company Limited as a whole, of which investment banking, sales and trading are a part. The securities described herein may not be eligible for sale in all jurisdictions or to certain categories of investors. The price and value of the investments referred to in this research and the income from them may fluctuate. Past performance is not necessarily indicative of future results. Foreign currency rates of exchange may adversely affect the value, price or income of any security or related instrument mentioned in this report. For investment advice, trade execution or other enquiries, clients should contact their local sales representative. Neither ABCI Securities Company Limited nor any of its affiliates, directors, employees or agents accepts any liability for any loss or damage arising out of the use of all or any part of this report. Additional information will be made available upon request.

Copyright 2020 ABCI Securities Company Limited

No part of this material may be (i) copied, photocopied or duplicated in any form by any means or (ii) redistributed without the prior written consent of ABCI Securities Company Limited.

Office address: ABCI Securities Company Limited, 13/F Fairmont House, 8 Cotton Tree Drive, Central, Hong Kong.

Tel: (852) 2868 2183