

MARTINA FRASCHINI, LUCIANO SOMOZA AND TAMMARO TERRACCIANO – WRITTEN EVIDENCE (CDC0017)

CENTRAL BANK DIGITAL CURRENCIES INQUIRY

Martina Fraschini, Ph.D. candidate at the Swiss Finance Institute and HEC, University of Lausanne

Luciano Somoza, Ph.D. candidate at the Swiss Finance Institute and HEC, University of Lausanne

Tammaro Terracciano, Ph.D. candidate at the Swiss Finance Institute and University of Geneva

Executive summary:

- Consumers might have some benefits from lower transaction costs, faster payments, and increased competition.
- A CBDC would change the relationship between the BoE and the banking sector, with the latter becoming even more dependent on the BoE.
- The BoE would have a direct channel with consumers, thus being able to implement more effective and targeted monetary policies.
- A CBDC might blur the line between monetary and fiscal policy, gradually shifting responsibilities from HM Treasury to the BoE.
- Whether to introduce a CBDC is mainly a political decision over the role and powers of the BoE.

Definition and design

In this document, we use the following definition of CBDC: a digital payment instrument denominated in the national unit of account that is a direct liability of the central bank (BIS 2020). Today, only authorized financial intermediaries can hold reserves at the BoE. Such reserves are used to fulfill liquidity requirements, settle payments between banks, and for open market operations. Introducing a CBDC means, at a fundamental level, extending access to such reserves to individuals.

The infrastructure to provide such access can have very different configurations. For instance, it can be token- or account-based, it can have one layer or two layers of distribution, it can be centrally managed or based on DLT technology. These CBDC design choices have significant economic consequences.¹

While the debate over CBDC design is far from settled, it is reasonable to assume that CBDCs will be distributed through commercial banks. For central banks, to deal with retail customers directly implies an unsustainable organizational effort, both in terms of additional personnel and compliance (e.g., KYC regulation).²

A brief overview of the impact on consumers and banks

A CBDC might play two different roles for consumers.

First, it would provide consumers with a new mean of payment. In theory, a CBDC could provide anonymous offline payments by leveraging DLT technology. Since this might facilitate tax evasion and criminal organization, no central bank is planning on rolling out a fully decentralized and anonymous system. Nevertheless, a CBDC could rely on some form of tokenization, with the tokens being accessible only through certified accounts. Consumers might benefit from faster settlements and lower transaction costs, even if it is hard to give an exact estimate of these benefits. Depending on the level of coordination between central banks from different countries, a CBDC could also lower cross-border payments costs. It is worth noting that introducing a CBDC at the wholesale level, i.e., for bank settlements only, might achieve similar benefits in terms of speed and transaction costs.

Second, it would provide consumers with a new option for savings. An essential difference between bank deposits and CBDC is that commercial banks are subject to runs and bankruptcy, while central banks are not, at least not in the traditional sense. Nevertheless, the fact that commercial banks are subject to liquidity requirements and deposit insurance makes this difference merely theoretical. The consumer preference for CBDC or bank deposits for saving purposes will largely depend on the respective interest rates.

¹ For a comprehensive discussion over CBDC design choices, please see Auer, Bohme (2020)

² See Kaminska I., "CBDCs now seem a matter of when not if", Financial Times Alphaville, June 23rd, 2021.

Conversely, a CBDC would pose a significant challenge to the banking sector. On the one hand, a CBDC might increase competition for consumers, thus stimulating higher deposit rates and investments in innovation. Bank deposits are often considered an oligopolistic market, with consumers receiving artificially low deposit rate (see Chiu et al. 2020). On the other hand, the banking sector would risk losing funding, with a potentially negative impact on the credit market (e.g., see Fernandez-Villaverde et al. 2020). This dynamic highly depends on whether the central bank decides to refund the banks for the loss of funding (see Brunnermeier and Niepelt, 2019).

New monetary policy transmission channels

Most CBDC pilot projects will probably be limited in scope and scale. At least initially, a CBDC will likely be distributed through banks, will not yield any interest, and will come with a cap on the maximum deposit amount per person. Under these assumptions, a CBDC would not pose any significant problem to the banking sector while being almost irrelevant for monetary policy purposes. As mentioned, it might slightly increase deposit competition, foster innovation in payment technologies, and allow the BoE to collect payment data.

Nevertheless, central banks spent the last decade seeking new ways to conduct unconventional monetary policy. Once a CBDC is widespread, the BoE could use it for monetary policy purposes through three main channels.

First, the BoE could act on CBDC deposits interest rates. Today the BoE only has an indirect influence over deposit rates, while with a CBDC it could directly influence them. Banks would have to choose between responding to the CBDC interest rate or losing depositors. Through this channel, the BoE could affect demand for savings and thus consumption. Such policies could be pursued by acting on both the interest rate and the maximum CBDC deposit amount.

Second, the BoE would have much more control over the banking sector. By offering CBDC retail deposits, the BoE would drain them from the banking sector, and it could decide at which conditions to inject them back. Bank deposits have zero maturity and are subject to liquidity requirements. The effects of substituting them with long-term central bank loans would depend on the conditions on such loans set by the BoE. In any case, the role of the BoE in the banking sector would become more pivotal, as banks would either have to compete with it or rely on it for funding.

Third, a CBDC would facilitate the implementation of helicopter money policies. In normal circumstances, a central bank creates a new liability (i.e., central bank reserves) to buy assets so that both assets and liabilities increase simultaneously. On the other hand, helicopter money refers to the creation of central bank liabilities unbacked by assets. In other words, the central bank increases its liabilities without increasing its assets. This policy is economically equivalent to the government paying subsidies and the central bank monetizing government debt. Helicopter money policies are typically advocated to stimulate the economy during a recession, and a CBDC would allow the BoE to pursue them without coordinating with HM Treasury.

To summarize, a CBDC would give the BoE the ability to pursue more effective monetary policies. Furthermore, the data gathered thanks to the CBDC would allow the BoE to target its policies better and evaluate their effects.

Interaction with quantitative easing

In October 2021, the total assets on the BoE balance sheet reached 1'015 bn £, up from 79 bn£ in October 2006.³ This massive increase is the result of the expansionary monetary policies that followed the sovereign debt crisis and the Covid-19 pandemic. When the BoE decides to purchase additional securities from the private sector, it settles the transaction by issuing new liabilities in the form of central bank reserves. Since only banks can hold them, the direct result of unconventional monetary policies is an unprecedented amount of central bank reserves sitting on the banks' balance sheets. To understand why this is important, one should consider how a CBDC would be accounted for on the BoE balance sheet.

When somebody withdraws money at an ATM, the bank purchases banknotes from the BoE, which deducts the nominal amount from the commercial bank's reserve. In other words: the BoE transforms one liability (bank reserve) into another (banknote), and the commercial bank reduces both assets and liabilities by the amount of the withdrawal. Purchasing CBDC would follow the same mechanism, accounting-wise. When purchasing CBDC on behalf of a customer, a commercial bank loses a liability (deposit) and an asset (central bank reserve). If the bank has excess reserves in the first place, this operation is close to neutral.

³ Source: Tradingeconomics, and Fred-St. Louis FED

The difference between ATM withdrawals and CBDC purchases lies in the scale. While there are significant costs and risks in hoarding physical cash, there would be no practical problem with holding large deposits in CBDC.

Therefore, introducing a CBDC while the central bank reserves flood the banking system might lead banks to simply transfer deposits to the central bank while unloading said reserves. This switch would effectively replace banks with retailers on the liability side of BoE. To give a sense of the quantities at play, UK depository institutions hold a total of 2 094 bn £ in retail deposits.⁴ Roughly speaking, given the current BoE balance sheet, if the demand for CBDC is lower than 40% of total deposits, the switch is almost neutral for the banking sector. If it is higher, it will reduce funding for the banking sector, and the BoE will have to think about how to compensate it.

The difference between having banks and having retailers on the BoE liability side is substantial. When tapering asset purchase programs, the BoE must reduce both the asset and the liability side at the same time, i.e., sell assets in exchange for reserves. Tapering is relatively easy when the counterpart is the banking sector, but it is uncharted territory when the counterpart is retailers. British retailers tend to be inelastic on their deposits (Chiu et al. 2015), and thus, tapering the BoE balance sheet might become significantly more complicated. To summarize: introducing a CBDC while pursuing quantitative easing policies might render such policies quasi-permanent, or at least extremely hard to roll back.

For more information regarding the mechanism described in this section, please refer to Frascini, Somoza, Terracciano (2021). Together with this document, we provided the latest version of the paper with a mathematical formulation of the model, its solution, and an in-depth discussion of its assumptions and equilibrium conditions.

Accountability and central bank independence

BoE independence is granted based on an ex-ante agreement over monetary policy objectives. Its mandate is to find the best technical solutions to achieve monetary and financial stability. Nevertheless, it is arguably hard to remain in the technical realm while conducting unconventional monetary policy. These policies directly affect the government's cost of funding and can be perceived as providing explicit support to government policies.

⁴ Source: Bank of England

Therefore, to maintain the BoE independence, unconventional monetary policies must remain an exceptional and temporary measure.

In this context, a CBDC would expand the BoE toolbox even further by creating a direct channel between consumers and the BoE. With such monetary powers, the public might expect the BoE to take more and more responsibilities, as it could respond to shocks and crises faster and more effectively than fiscal authorities. The line between fiscal and monetary policy would be arguably difficult to draw.

To ease these concerns, various precautions can be taken, e.g., restrict the amount of CBDC that consumers can hold, make it non-interest bearing, and distribute it through the banking system. Nevertheless, these measures might not be sufficient as the pressure to use the CBDC for monetary policy purposes during a financial crisis could be hard to resist.

Furthermore, the BoE would play an even more pivotal role in the British banking sector. It would effectively compete with banks for deposits and potentially decide how to redistribute them to the banking sector, adding a further political dimension.

The debate over the introduction of a CBDC should start from an assessment of the BoE mandate and whether the UK parliament wants the BoE to play an even more significant role in the British economy. Introducing a CBDC is, fore and foremost, a political decision over the role and powers of the BoE.

The Swiss Federal Council CBDC report

While most central banks are launching CBDC pilot projects it is worth reiterating that political institutions should take the decision. For instance, in December 2019, the Swiss Federal Council issued a report on the potential introduction of a CBDC in Switzerland.⁵

While acknowledging the potential benefits of a CBDC, the report concludes that the potential risks outweigh the benefits:

“The analysis conducted for this report shows that CBDC for the general public meets these expectations only partly or not at all, that the repercussions can be far-reaching depending on the design, and that there are better solutions for most of the areas considered.

⁵ Federal Council report in response to the postulate 18.3159, Bern, 13.12.2019.
Link: www.news.admin.ch/news/message/attachments/59639.pdf

(..)

The Federal Council takes the view that universally accessible CBDC would not bring any additional benefits on the whole for Switzerland at the moment. The SNB shares this assessment and sees the newly arising risks to monetary policy and financial stability, in particular, as a major challenge.”

References:

Auer, Raphael, and Rainer Bohme, 2020, The technology of retail central bank digital currency, BIS Quarterly Review, March.

BIS, Bank for International Settlements, 2020, Central bank digital currencies: foundational principles and core features.

Brunnermeier, Markus K, and Dirk Niepelt, 2019, On the equivalence of private and public money, Journal of Monetary Economics 106, 27–41.

Chiu, Jonathan, Mohammad Davoodalhosseini, Janet Jiang, and Yu Zhu, 2020, Bank market power and central bank digital currency: Theory and quantitative assessment.

Chiu, Ching-Wai Jeremy, and John Hill, 2015, The rate elasticity of retail deposits in the United Kingdom: a macroeconomic investigation.

ECB, 2020, Report on a digital euro, European Central Bank Report.

Fernandez-Villaverde, Jesus, Daniel Sanches, Linda Schilling, and Harald Uhlig, 2020, Central bank digital currency: Central banking for all?, Technical report, National Bureau of Economic Research.

Fraschini, Martina, Luciano Somoza, and Tamarro Terracciano, 2021, Central Bank Digital Currency and Quantitative Easing.

15 October 2021