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2024

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Abstract

The chapter analyzes the implication of central bank digital currency (CBDC) issuance for financial stability and monetary policy. It was shown that widespread central bank digital currency adoption and usage may accelerate bank deposit to CBDC migration which could elevate liquidity risk in the banking sector, increase interest rate, reduce bank loan supply, lower bank profit, increase the likelihood of bank panic, and transmit financial stability risks to the financial system. Also, issuing a central bank digital currency can strengthen monetary policy transmission if there is effective coordination between the monetary policy rate and the central bank digital currency deposit rate. If done properly, changes in the central bank digital currency deposit rate will affect households and businesses and compel commercial banks to respond by adjusting their deposit rates too, thereby enhancing the interest rate channel of monetary policy.

Keywords: CBDC, interest rate, central bank digital currency, financial system, banks monetary policy, financial stability

1. Introduction

Historically, monetary systems have undergone several transformations. The first monetary system was the trade-by-barter system (Williamson and Wright, 1994). The barter system was abandoned due to its many problems such as the inability to make deferred payments and difficulty in storing of goods that were used as money (Williamson and Wright, 1994; Kregel, 2021). The weakness of the barter system led to the creation of fiat paper money. Recently, the use of technology to enhance digital payments has led to the creation of digital money which is categorized into two forms: private digital currency and public digital currency. An example of a public digital currency is a central bank digital currency.

A central bank digital currency (CBDC) is an electronic legal tender which serves as digital money (Auer et al, 2022). Interest in CBDC emerged in 2017. Since then, there are debates on how central bank digital currency will transform money (Bindseil, Panetta and Terol, 2021), and its effect on physical currency notes or cash (Taskinsoy, 2021). Lots of arguments have emerged about whether central banks should adopt a central bank digital currency or whether they should abandon the idea completely (Berentsen and Schär, 2018).

Those in support of central banks issuing a central bank digital currency often cite many benefits which include enabling efficient payments, enhancing the conduct of monetary policy, promoting financial inclusion, enabling efficient welfare disbursement to citizens, promoting financial stability and increasing seigniorage income (Nelson, 2021; Ozili, 2022; Kim and Kwon, 2019; Ozili, 2023a). Those against the issuance of a central bank digital currency often cite its disadvantages such as too much government control of citizens' money, increasing ability for government snooping and surveillance via central bank digital currency, and risks to financial stability (Hoffman et al, 2020; Ballaschk and Paulick, 2021; Samudrala and Yerchuru, 2021).

Notwithstanding the debates in support or against the issuance of a central bank digital currency, many central banks have begun to research the potential effect of central bank digital currency issuance on central banking objectives particularly financial, monetary and price stability. There are debates about the implication of CBDC for the conduct of monetary policy. Monetary policy entails the coordinated effort of the central bank to manage the amount of money in circulation in order to achieve low inflation and sustainable economic

growth (Lukonga, 2023), while financial stability refers to the absence of financial crises or a condition where the financial system can efficiently facilitate the allocation of financial resources, manage financial risks, and withstand shocks (Allen and Wood, 2006).

If central banks intend to use CBDC to enhance monetary policy and preserve financial stability, they need to carefully design the CBDC to have features that enable the attainment of specific financial stability and monetary policy objectives of the central bank while mitigating any unintended consequences. Although the likely effect of central bank digital currency on financial stability and monetary policy are known in theory, the actual outcomes in reality are still unknown because many central banks have not issued an operational CBDC at the time of writing this paper except for Nigeria and the Bahamas. Therefore, this paper offers some insight into the financial stability and monetary policy implications of CBDC issuance.

The discussion in this chapter contributes to the economic literature that examine the implication of digital innovation for monetary policy. This chapter focuses on the case of central bank digital currency and its implication for monetary policy. The chapter also adds to the existing literature that investigate the effect of digital innovation in preserving the stability of the financial system.

The remaining sections of this chapter is structured as follows. The literature review is discussed and presented in section 2. The implication of CBDC for monetary policy is discussed in section 3 while the implication of CBDC for financial stability is discussed in section 4. And finally, the conclusion of the study is presented in section 5.

2. Review of the related literature

Existing literature provide discussions about CBDC. Alfar et al (2023) focused on the factors encouraging CBDC issuance and found that developing countries are more likely to issue a CBDC because it could assist developing countries in meeting their developmental needs, and CBDC issuance could be enhanced by the presence of effective regulation, sustained FDI inflow, and the presence of a young population. Wang (2023) focused on China's approach to CBDC and note that the factors encouraging CBDC issuance in China are mainly China's ability to regulate technology, and China's institutional development. Ozili (2023a) examined some motivations for CBDC issuance. The identified motivations for issuing a CBDC are to enhance monetary policy transmission, improve digital payment efficiency, and expand financial inclusion. Ozili (2023a) argued that CBDC issuance might be challenging because central bank digital currencies may not be able to meet the **varied** objectives of central banking at the same time. Therefore, the author cautioned central banks to first spell out their central banking objectives and what they seek to achieve with a CBDC, and then identify the optimal CBDC design features that can help to achieve their intended objectives. In support of Ozili (2023)'s argument, Chiu et al (2023) point out that there is a need for central banks to pay attention to how the competition for customer deposits may affect CBDC. They also argued that, if central banks introduce a deposit-like CBDC, the banks that have significant market power in the deposit markets will likely increase the deposit rate in order to retain customer deposit so that customer deposit will become available for bank lending. Their reasoning is that central bank digital currency issuance may not have an adverse effect on bank deposits.

Chiu and Davoodalhosseini (2023) focused on CBDC design and the potential macroeconomic effect. They argued that issuing a CBDC with cash-like properties might be better than issuing a CBDC with deposit-like properties, because a CBDC with cash-like properties would be better at promoting consumption and welfare. Moreso, a CBDC with cash-like properties can increase bank intermediation, enhance welfare, and bring benefits to the payment market. Rehman et al (2023) note some challenges of central bank digital currency issuance such as the political, technological, legal and financial fragility challenges. They conclude that central bank digital currencies may not lead to elevated inflation levels even though it might lead to financial instability. Keister and Sanches (2023) offer a contrary view. Keister and Sanches

(2023) argued that issuance of CBDC could lead to policy tradeoffs because CBDC may improve payments, but it can lead to significant disintermediation, increase in funding cost and decrease the level of investment. Skinner (2023) criticised CBDC by stating that CBDC enables the transfer of monetary power to the State which will empower the State while weakening the right of individuals to issue money. Buckley and Trzecinski (2023) argued that issuing a CBDC may be a good idea because it could enhance international trade and lead to faster financial transactions; however, they point out that CBDC issuance in the United States may weaken US dollar dominance and could fragment the international financial system leading to two or more currency blocs consisting of physical dollar and digital dollar.

Another set of studies focus on people's desire to use CBDC. For instance, Fujiki (2023) explored people's knowledge and willingness to use CBDC. It was found that about four percent of the respondents understand CBDC, and about ten percent of them are willing to adopt CBDC. Meanwhile, Ozili (2023c) showed that interest in CBDC information is driven by interest in cryptocurrency and sustainable development information. Furthermore, Baeriswyl (2023) argued that the public can use CBDC to improve digital payments resilience, and to promote payment systems diversity and sovereignty. They further argued that a CBDC could lead to risk transfer from commercial banks to central banks. However, they point out that the risk can be mitigated if central banks place quantity restriction on CBDC deposits to curtail bank-to-CBDC deposit migration, or if the central bank pays an unattractive interest rate on central bank digital currency deposits to curtail people's demand for CBDC.

3. CBDC and monetary policy

Monetary policy entails the coordinated effort of the central bank to manage the amount of money in circulation in order to achieve low inflation and sustainable economic growth (Lukonga, 2023). Central banks usually perform their monetary policy functions within a specific monetary policy framework. Many central banks hold the view that CBDC may enhance monetary policy because CBDC is considered to be a tool to broaden the monetary system, enhance payments, reduce the cost of issuing central bank money and increase seigniorage income. Since CBDC is a payment tool, CBDC issuance will not necessarily change

existing monetary policy frameworks, rather it will only lead to changes in payment flows and the change in payment flows will have spill over effects on the transmission of monetary policy (Lukonga, 2023). Generally, when CBDC is introduced, some households and businesses would want to migrate some of their cash and deposits to CBDC. If migration of cash and bank deposits to CBDC occur in large frequencies and volumes, it could weaken the effectiveness of monetary targets and weaken the lending channel and interest rate channel of monetary policy transmission. Cash to CBDC migration would affect monetary policy by increasing the fluctuation of money velocity and changing the revenue from seigniorage (Lukonga, 2023), while bank deposit to CBDC migration would affect monetary policy through the impact of CBDC on bank disintermediation and the fluctuation in commercial bank reserves with the central bank (Lukonga, 2023). If significant bank deposit to CBDC migration occurs, it would reduce commercial bank deposit liabilities, and lead to a reduction in commercial bank reserves in central bank balance sheet. It will also weaken the lending and interest rate channels of monetary policy transmission and reduce central banks' ability to manage the volume of money in the economy.

3.1. Renumerated CBDC

An interest bearing CBDC, or a renumerated CBDC, is one that pays interest on CBDC holdings. A renumerated CBDC can amplify the risks of bank disintermediation. Assuming there is widespread CBDC adoption, an increase in the interest rate paid on CBDC holdings will motivate more people and businesses to migrate some of their cash and bank deposit to CBDC so that they will benefit from the high CBDC deposit rate (Assenmacher et al, 2021). When this occurs, the CBDC which is held on central bank ledger will be unavailable to commercial banks for lending and will lead to bank disintermediation (Whited et al, 2022). The resulting disintermediation would significantly reduce the amount of credit that is available in the banking sector and would raise the cost of bank lending, and ultimately strengthen the lending channel of monetary policy transmission.

There is also the interest rate channel through which central bank digital currency can enhance monetary policy. A renumerated CBDC can enhance the interest rate channel of monetary policy transmission if commercial banks and other financial institutions consider the CBDC deposit rate to be the interest rate floor or the base interest rate in the financial sector. This means that formal lenders will increase their own interest rates paid on bank

deposits to match or exceed the CBDC deposit rate in order to retain customer deposits, cheap liquidity and increase lending from customer deposits. Therefore, each time the central bank raises the CBDC deposit rate, formal lenders would react by raising the interest rate paid on customer deposits to either match or exceed the CBDC deposit rate. Conversely, if the central bank decreases CBDC deposit rate, formal lenders would react by reducing the interest paid on customer deposit. This would enhance the effectiveness of the interest rate channel of monetary policy.

3.2. Non-renumerated CBDC

A non-renumerated CBDC is one that does not pay interest on CBDC holdings. Central banks that do not intend to use CBDC for the purpose of monetary policy will not pay interest on CBDC holdings. This may happen if the central bank is only interested in using CBDC as a tool to improve payment efficiency and to promote financial inclusion (Ozili, 2023d), but not for monetary policy purposes. Despite this, a non-renumerated CBDC could still affect monetary policy through increase in disintermediation risks because a non-renumerated central bank digital currency is a perfect or close substitute for non-interest-bearing demand deposits. Therefore, if many people adopt and use non-renumerated central bank digital currency and prefer to use it as a preferred means of payment, deposit substitution would occur and lead to deposit migration from commercial banks to the central bank. This, of course, would reduce bank liquidity and credit availability, and weaken central banks' ability to control monetary supply in the banking sector using the lending channel of monetary policy transmission. But this risk can be mitigated if the central bank use price and quantity controls to manage the disintermediation risks of CBDC and mitigate its effect on bank liquidity.

4. CBDC and financial stability

Widespread CBDC adoption could lead to significant financial stability risks in the absence of regulatory price and quantity controls on CBDC usage. Widespread adoption of a renumerated CBDC could encourage more people and businesses to migrate some of their cash and bank deposit to CBDC to benefit from attractive CBDC deposit rates (Hoffmann, 2023). The resulting disintermediation could lead to disorderly disintermediation and lead to

heightened liquidity risks. Sustained disintermediation will also reduce the amount of credit available to banks and raise borrowing costs for households, firms and government (Hoffmann, 2023). This would reduce both loan demand and loan supply, decrease bank profit, reduce bank liquidity and increase the risk of bank panic when banks are not able to pay their depositors, leading to increased bank fragility or financial stability risk (Hoffmann, 2023; Kim and Kwon, 2019). However, both the commercial bank and the central bank can take certain steps to mitigate CBDC-induced financial stability risks. Commercial banks can mitigate CBDC-induced financial stability risks by raising the interest rate paid on customer deposits to make them more attractive to bank depositors, thereby retaining customer deposits, retaining deposit funding, reducing liquidity and credit risks, decreasing bank fragility and reducing financial stability risks (Hoffmann, 2023). Commercial banks can also mitigate the decline in customer deposits caused by CBDC disintermediation by borrowing from the interbank market to augment any shortfall in customer deposits, but such borrowing may come at a high cost for banks. Alternatively, the central bank can mitigate financial stability risks by introducing regulatory price and quantity controls on CBDC. For instance, the central bank can (a) introduce daily or weekly limits on the number of bank deposit to CBDC deposit migration that can be made, (b) introduce daily CBDC transaction value limits to mitigate sudden high-value disintermediation that could threaten bank liquidity position, and (c) consider introducing differentiated limits (Ozili, 2023b).

5. Conclusion

In this chapter, I analyzed some implications of the issuance of CBDC for financial stability and monetary policy. It was argued that central bank digital currencies have a place in the digital ecosystem but their implications for financial stability and monetary policy need to be explored carefully. Regarding financial stability, the paper showed that bank deposit to CBDC migration, if significant, could lead to bank deposit disintermediation and elevate liquidity risk, increase interest rate, reduce bank loan supply, decrease bank profit, and increase the risk of bank panic, thereby transmitting financial stability risks. But central banks can mitigate this effect by introducing regulatory price and quantity controls on CBDC usage. Regarding monetary policy, I showed that a renumerated CBDC may strengthen monetary policy

transmission if there is effective coordination between the monetary policy rate and the central bank digital currency deposit rate. If done properly, changes in the CBDC deposit rate will affect households and businesses and compel commercial banks to respond by adjusting their deposit rates too, thereby enhancing the interest rate channel of monetary policy.

While the implications of CBDC for financial stability and monetary policy are important, there is also a need for policymakers to pay attention to public attitudes and privacy concerns about central bank digital currency and consider its implications. Public attitudes toward CBDC may affect CBDC adoption especially if there are many negative sentiments about CBDC in society. Negative public attitudes toward CBDC can lead to low CBDC adoption and become a setback for monetary policy transmission. Central banks can counter such negative sentiments by embarking on an extensive sensitization campaign aimed at creating positive attitudes about CBDC among citizens. Privacy concern is also an issue that central banks must address. People may be concerned that central banks will use central bank digital currency to monitor citizens' financial activity which would violate their right to privacy. Central banks can address this issue by developing a strong legal framework for CBDC. The CBDC legal framework should specify the type of user data that a central bank can have access to and the type of user data that the central bank cannot access without the individual permission and consent.

Future studies can examine central bank digital currency and its broader macroeconomic implications such as trade and exchange rate. Further research is also needed to provide an in-depth understanding of how privacy concerns by users might affect CBDC adoption.

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