Central Bank Digital Currency: Is it Really Worth the Risk?
Stephen G. Cecchetti and Kermit L. Schoenholtz*

As we write in October 2021, central banks around the world are considering whether to issue retail digital currencies for individual use. According to the Atlantic Council’s tracker, five small Caribbean nations have taken the plunge, 14 much larger countries are running pilots (including China and Sweden), and dozens of others are studying the possibility.

At one level this seems odd. For residents of advanced economies, the transition from physical to digital payments instruments is essentially complete. Virtually all their financial transactions use privately run payments networks to transfer the digital liabilities of private commercial banks (see chart). For example, in the United Kingdom, where the total quantity of M3 is 148% of GDP, demand and time deposits—digital entries on the ledgers of banks—account for 97% of the total (or 144% of GDP). For the euro area, 91% of M3 is digital. And, in China, where broad money exceeds 200% of GDP, 96% of it is digital.

Figure 1: Fraction of broad money issued by commercial banks and the ratio of broad money to GDP (percent, year-end), 2020.

* This essay was written as contribution to the CEPR eBook Central Bank Digital Currency: Considerations, Projects, Outlook, edited by Dirk Niepelt and published on November 24, 2021. The full text is available here.
Central Bank Digital Currency: Is it Really Worth the Risk?

Sources: Bank of England (M3), People’s Bank of China (Money + Quasi Money), Bank of Canada (M3), Bank of Japan (M3), Swiss National Bank (M3), Eurostat (M3), Bank of Russia (M2), Federal Reserve (M2), and FRED.

So, as we look at the evolution of the financial system, we are led to ask the following question: Why would a central bank want to issue retail digital currency? Do the benefits outweigh the costs?

Before we get to that, we need to define what we mean by central bank digital currency (CBDC). Our view is that it is a universally accessible system in which individuals can hold unlimited amounts of interest-bearing central bank liabilities. To ensure that the system is not facilitating criminal activity, the system will be account-based in which holders are identifiable to the government.1 Assuring that private bank liabilities used for transactions are convertible into central bank money under virtually all conditions requires an elastic supply of CBDC. And, since wholesale central bank liabilities (financial intermediaries’ deposits) already are remunerated, it would be politically difficult to avoid paying interest on retail CBDC.

Potential Benefits of CBDC

Many of the costs and benefits arise from a combination of externalities, market power, and public goods that cause market failures. For example, network externalities lead the private payment system to be highly concentrated, allowing customer exploitation. Similarly, a currency with a stable value is a public good that is difficult for private agents to provide in all states of the world.2

From this perspective, the list of potential benefits is relatively long. Here we briefly describe eight key benefits:

- **Reduces costs of and improves access to domestic and cross-border payments**
  In many parts of the world, even the United States, domestic payments remain expensive. For cross-border remittance, the costs are even higher. Allowing individuals to clear payments directly over central bank balance sheets, either within their own country or through an inter-operable multi-country system, could reduce costs and improve access.

- **Broadens access to the financial system more generally**
  According to the World Bank’s Findex survey, in 2017, roughly half of the four billion adults (16+) in low and lower-middle income countries did not have an account at a financial institution. Even in the United States, the FDIC estimates that in 2017 one-fourth of households were “unbanked” or “underbanked.” By offering no-frills, low-cost accounts at the central bank, it should be possible to reduce the size of the unbanked and underbanked population.

- **Facilitates the distribution of government benefits**
  In the midst of natural disasters, governments can find it difficult to transfer resources to those in need. Distributing benefits during the pandemic was a particular challenge. If households and

---

1 We agree with Carstens (2021) that the important of identity verification strongly suggests that CBDC must be account-based rather than token based. Furthermore, we do not distinguish between accounts that are held directly at the central bank and those held by agents who aggregate accounts into what is in essence a narrow bank. See the discussion in Auer et al. (2021).

2 See the discussion in Cecchetti and Schoenholtz (2021).
businesses were to have accounts at the central bank (either directly or through an authorized agent), such transfers would be faster and more reliable.³

- **Relaxes the zero lower bound constraint on the policy interest rate**
  Absent paper currency alternatives with a zero nominal interest rate, the central bank could set deeply negative nominal interest rates. Furthermore, commercial banks would be able to follow suit.⁴

- **CBDC would substitute for undesirable cryptocurrencies and risky stablecoins**
  Today, there are thousands of private token-based currencies—commonly known as cryptocurrencies.⁵ There also are dozens of unregulated stablecoins backed by various combinations of assets. The value of these is now large and rising, with many having market capitalization above $1 million.⁶ Authorities fear that fluctuations in the value of these instruments could be sources of broader financial instability. CBDC could displace these, helping to promote financial resilience.

- **Helps counter tax evasion and criminal uses of currency**
  Identification of the holders of account-based CBDC would improve tracking of financial transactions both domestically and internationally. This could enhance authorities’ ability to ensure tax compliance as well as prevent money laundering and terrorist finance.

- **Prepares for competition from other official suppliers of CBDC**
  For all but the largest jurisdictions, issuance of CBDC could help limit the further substitution from domestic currency into currencies such as the U.S. dollar, the euro, or the renminbi. By issuing their own attractive and convenient digital currency, smaller countries could guard against the potential loss of monetary sovereignty.

- **Reduces the cost of deposit insurance.** To the extent that CBDC displaces insured deposits in private banks, it could reduce the need for government-supplied deposit insurance.

### Possible Costs of CBDC

Balancing these potential benefits are five costs:

- **Disintermediation of depositories and the risk of creating a massive state bank**
  While inertia (combined with interest rate increases and service improvements) might keep funds in the banking system for some time, financial strains eventually would prompt uninsured (and possibly insured) deposits to flee private banks for the central bank.⁷ As funds shift, sources of...

---

³ Included in this category are direct money-financed fiscal expansions in which central bank money is transferred directly to individuals—what is known as “helicopter money.” See Prasad (2021) and Cecchetti and Schoenholtz (2016).

⁴ See Bordo and Levin (2017). Note that, in the absence of paper currency, the chief alternative to using a negative-interest rate currency for transactions is barter, a deeply inefficient technology, or using a foreign currency that introduces exchange rate risk.

⁵ See Carstens (2021) for a description of the difference between token- and account-based digital currencies.

⁶ [https://coinmarketcap.com/](https://coinmarketcap.com/) accessed on 13 October 2021. Total market capitalization of cryptocurrencies now exceeds $2 trillion and that of stablecoins is well over $100 billion.

⁷ We would also expect to see investors flee nonbank intermediaries that offer uninsured liquid liabilities, such as money market funds and some open-end mutual funds, putting the proceeds into their CBDC account.
private credit will dry up, driving the central bank to become a commercial lender. Over time, this state bank will be tempted to substitute for the discipline of private lenders and markets, inviting political interference in the allocation of capital and slowing economic growth.\textsuperscript{8}

- **Currency substitution from less trustworthy jurisdictions**
  Highly trusted central banks that operate in relatively stable political and financial jurisdictions likely will receive inflows from abroad. Given the current high foreign demand for U.S. paper currency, imagine what would happen if the Fed offered universal, unlimited accounts.\textsuperscript{9} The consequences could be catastrophic for the financial and monetary systems of emerging market and developing economies.

- **Loss of privacy**
  The flipside of improved tax compliance is a loss of privacy. CBDC is traceable, allowing governments to monitor virtually all individual transactions. In democratic societies, it will be essential to have credible safeguards to ensure that this information is not used by malevolent official sector actors.

- **Compliance with Know Your Customer (KYC) and Anti-Money Laundering (AML) rules**
  Someone will have to ensure that the users of CBDC are law abiding. Such KYC and AML monitoring is costly. As regulated guardians of the private payment networks, commercial banks currently perform these tasks. In a CBDC regime, who will supply these costly services? One approach is to create “intermediated CBDC,” in which regulated brokers (or banks) charge a fee to provide individual account services, guard privacy, monitor compliance, and aggregate balances into accounts at the central bank.

- **Diminishes payments competition and discourages entry of efficient private providers**
  By supplanting private liabilities, CBDC will reduce the competition in payments and issuance of other private liabilities that generally serve as money. The result could be a lack of innovation and an increase in costs to individuals.

**Key Questions to Resolve Before Issuing CBDC**

Before issuing CBDC, a central bank should carefully weigh these costs and benefits. Critically, policymakers need to ask if there are other, less costly ways to achieve the benefits. We see the following questions:

- **Are there ways to improve the payment system?** We already see public and private sectors moving to provide cheaper, faster, more reliable, and more accessible systems that operate both within and across borders.\textsuperscript{10}

- **Are there ways to improve access?** Here, we find the case of India is instructive. Started in 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) provides no-frills bank accounts without charge, with
\[\text{Key Questions to Resolve Before Issuing CBDC}\]

Before issuing CBDC, a central bank should carefully weigh these costs and benefits. Critically, policymakers need to ask if there are other, less costly ways to achieve the benefits. We see the following questions:

- **Are there ways to improve the payment system?** We already see public and private sectors moving to provide cheaper, faster, more reliable, and more accessible systems that operate both within and across borders.\textsuperscript{10}

- **Are there ways to improve access?** Here, we find the case of India is instructive. Started in 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) provides no-frills bank accounts without charge,

---

\textsuperscript{8} The central bank could recycle funds to the private sector through enhanced lending operations. But since central banks only lend on a collateralized basis, the haircut and margin structure of their collateral frameworks will provide powerful tools for indirect intervention in credit allocation.

\textsuperscript{9} Judson (2017) estimated that roughly 60 percent of what was then $1.5 trillion of U.S. currency was held abroad.

\textsuperscript{10} To take just one example, the euro area has the TIPS system, with a processing time of 10 seconds at a cost of €0.002 per transaction. Over the next few years, the ECB will extend this to other currencies.
using the country’s universal biometric personal identification to lower compliance costs. The lesson we take away is that improving access requires government involvement and subsidies.11

- **How can we improve the efficient distribution of government benefits?** Governments already have information on their citizens’ financial accounts both for tax purposes and for the payment of benefits. Why can’t they use it?

- **Are there other means to enhance the effectiveness of monetary policy at the zero lower bound?** Over the past decade, central bankers devised a broad array of policy tools to allow them to ease policy further when the nominal interest rate hits zero. Would there be sufficient public support for deeply negative interest rates on widely held central bank and private bank liabilities to make the tool usable? Are there additional tools to employ? If not, should fiscal expansion be preferred to deeply negative interest rates?

- **How can we make cryptocurrencies and stablecoins safe?** This is a key question regardless of whether central banks issue digital currency. As these become potential sources of financial instability, governments will have to act. Strategies include outright bans, registration requirements, standardized disclosures, and regulation of exchanges and broker-dealers, to name just a few.

- **What is the best way to counter tax evasion and criminal use of money?** Account-based CBDC will surely make it more difficult for criminals to transact and for people to evade taxes. Absent CBDC, are there efficient ways to identify and prevent these actions under the evolving payments framework?

In every one of these cases, we see alternatives that limit disintermediation, currency substitution, and the intrusion of governments into privacy of individuals, while preserving incentives for welfare-enhancing financial innovation. So, if central banks eventually move to issue digital currency, they will need to state their objectives clearly and explain why CBDC is the lowest-cost and least-risky means of achieving those goals. Ultimately, their decisions will shape the financial system of the future.

**References**


11 See Cecchetti and Schoenholtz (2017) for a more detail on the India program.
Central Bank Digital Currency: Is it Really Worth the Risk?


Central Bank Digital Currency: Is it Really Worth the Risk?

Short biographies:

Stephen G. Cecchetti is Rosen Family Chair in International Finance at the Brandeis International Business School, Research Associate at the NBER, Research Fellow at the CEPR, and Vice-Chair of the Advisory Scientific Committee of the European Systemic Risk Board. From 2008 to 2013, Cecchetti served as Economic Adviser and Head of the Monetary and Economic Department at the Bank for International Settlements. From 1997 to 1999 he was Director of Research at the Federal Reserve Bank of New York. In addition, he has served on the faculty of The Ohio State University and the New York University Leonard N. Stern School of Business.

Kermit L. Schoenholtz is Clinical Professor Emeritus at New York University's Leonard N. Stern School of Business, where he taught courses on money and banking and on macroeconomics and directed NYU Stern’s Center for Global Economy and Business. He also serves on the Financial Research Advisory Committee of the U.S. Treasury’s Office of Financial Research. Previously, he was Citigroup’s global chief economist 1997 until 2005. Schoenholtz joined Salomon Brothers in 1986, working in their New York, Tokyo, and London offices, eventually becoming chief economist at Salomon and Salomon Smith Barney, prior to the formation of Citigroup.

Answers to survey questions

1. Suppose central banks in developed economies introduce retail CBDCs. Does the typical CBDC resemble deposits or cash (taking into account features like interest, privacy, risk of “loss,” …)? [deposits, cash, …]

   A deposit

2. Suppose central banks in developed economies introduce retail CBDCs. Who interacts with users? The central bank or commercial banks in some form of public-private partnership? [central bank, commercial banks, …]

   Commercial banks or licensed nonbank agents

3. Suppose central banks in developed economies introduce retail CBDCs. Does this undermine monetary sovereignty in emerging economies? [yes, no, …]

   Yes

4. Suppose the central bank in a developed economy introduces retail CBDC. Does this reduce the political support for cash? [yes, no, …]

   No

5. Suppose the central bank in a developed economy does not introduce retail CBDC and cash use declines, reducing the general public’s exposure to central bank money. Is there a risk that the general public loses trust in central bank money? [yes, no, some, …]

   No