

# Central bank digital currency has its uses, but can it replace cryptocurrency?

*CBDCs can provide an alternative to digital wallets and cryptocurrencies, but there are trade-offs to be considered*

**SASHI SIVRAMKRISHNA**

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My **previous article** delineated some key differences between modern money and cryptocurrencies. Accompanying the headline-capturing rise and fall in price of cryptocurrencies like Bitcoin, there has been increasing discussion over another form of money: central bank digital currencies (CBDCs), which are sometimes naively seen as analogous to cryptocurrencies. CBDCs are essentially modern state money – cash – *in a digital form* and their relationship to cryptocurrencies as a payment instrument is primarily whether or not they utilize cryptography and blockchain technology to ensure privacy. What makes CBDCs even more important to macroeconomists are their implications for monetary policy, financial institutions utilizing financial technologies (fintech), and commercial banking.

Our story begins with the creation of cash or currency notes in a modern economy. The use of terms like ‘helicopter money’ or ‘printing money’ gives an impression that it something dropped from

the sky or handed out by the government or the central bank. This is misleading. Modern money is in fact spent into existence by the state (the government and its central bank) electronically or digitally through the commercial banking system, and finally as credit of net financial assets in the deposit account of the non-banking private sector (NBPS) held in commercial banks.

At the same time, the increase in financial liabilities (deposit accounts of the NBPS) of commercial banks are matched with a credit in reserve accounts held at the central bank. Commercial banks also implicitly promise to convert the deposit accounts of the NBPS into *tangible* cash or currency notes – the financial liabilities of the state – at *par* and on demand. This happens when the NBPS ‘withdraws’ cash from their deposit accounts held at commercial banks, swapping one form of modern money or financial liabilities (the deposit account) into another form (cash). The reasons to hold and use cash are privacy, general acceptability and convenience for small transactions and emergencies. Interestingly, and as an aside, the etymology of the term cash is said to be *kasu* or small value copper coins used as loose change in medieval southern India.

In recent years, particularly after the global financial crisis of 2008, countries have struggled to overcome recession. Hesitancy to adopt expansionary fiscal policy led them to rely more on monetary policy, especially unconventional instruments like quantitative easing and negative interest rate policy (NIRP). The existence of cash particularly inhibits implementation of the latter. The logic of NIRP is that a central bank by charging commercial banks an interest on reserve account balances, could incentivize them to

reduce these balances by making it very cheap for investors to borrow. At the same time, deposit-holders can be incentivized to spend rather than paying banks an interest on deposits. However, this can happen only if the option to convert their deposit accounts into cash is blocked. Sweden, which had made a big push for a cashless economy since 2007, was in a better position to implement NIRP post-crisis, which it did in 2009. Other countries including Denmark, Japan and the UK too experimented with NIRP but with limited success. Nonetheless, the push towards a cashless economy for implementation of NIRP as well as other reasons like curbing the black economy has prompted many governments to advocate the use of digital means of payment.

Any trade leads to the necessity of the settlement of an obligation by the purchaser of a good or service. Final settlement is possible either through cash or the transfer of a deposit account, which are financial liabilities of the central bank or a commercial bank, respectively. The latter has seen an evolution of instruments to carry out such transfers including cheques, bank transfers, credit and debit cards, payment gateways and increasingly digital mobile wallets. Among these, and along with the growth of smartphone usage, e-commerce and online bill payments over the last decade, digital mobile wallets and internet-based payment platforms have experienced phenomenal growth. For instance, in China, the share of cash in total retail payments came down from 60% to 30%, replaced entirely by the growth of digital instruments. The share of cards has remained at about 40% between 2013 and 2020. Although the trend in other countries is not as stark as in

China, it seems inevitable that digital instruments will replace widespread use of cash.

While this development is a step towards a cashless economy and opens up the possibility to pursue NIRP during a crisis, it is nonetheless becoming a cause of concern for governments. As large tech companies and e-commerce giants introduce their own digital wallets, they begin to bring a whole set of smaller businesses under their patronage. Just as e-commerce companies like Amazon have come to dominate the retail industry, it is now becoming apparent how digital payment companies may begin to exert their influence over e-commerce businesses. But there is an even greater fear: given their access to information on monetary transaction of consumers, these institutions will be in a position to disrupt the financial system as it exists today. A large mobile wallet provider, for instance, could know the medicines purchased by individuals and thereby be in a better position than an insurance company to decide the premium payable on a health insurance policy.

This emergence of 'technological innovations in the financial services sector, with ever increasing reliance on information technology' (**RBI**) or 'fintech' is likely to result in systemic disruptions and simultaneously a greater degree of centralization over financial decision-making. It may be futuristic but not inconceivable that these new generation of financial institutions actually come to dominate the economy by deciding which businesses to finance, which individuals and households get access to loans, and so on, based on an ocean of micro-level data.

Meanwhile, the payments system has also been witnessing another disruption with the rise of cryptocurrencies. As examined in my previous article, these cryptocurrencies completely eliminate the need for an intermediary or a centralized authority be it a bank or even digital wallets using cryptography and blockchain technology. Any transfer of money is then fully out of the radar of the authorities thereby providing the privacy that cash does.

An ideal CBDC as an alternate to digital wallets and cryptocurrencies aims to combine their best features. However, there are trade-offs. CBDCs, to reiterate, are cash – the financial liability of the central bank – in a digital form, which can then be transferred to another entity. However, if complete privacy that cash offers has to be preserved then some form of cryptography is required. Unfortunately, as things stand presently, the energy required to operate computers that run such technologies is massive, making it an expensive proposition as compared to paper currency. Moreover, crypto-technology assumes the availability of the Internet. In a country like India this limitation will mean the continued need for cash. Instead of going the cryptocurrency way, CBDCs could instead be introduced using traditional database architectures like the United Payments Interface (UPI). While the privacy of cash is foregone, they will compete with and give central banks access to information that is now captured by private institutions.

Even as governments continue to design appropriate CBDCs that reconcile these trade-offs as well as tackle issues pertaining to scale, security and control over their creation, their introduction will

have implications not only for the future of private fintech companies but also for another key pillar in the existing financial architecture: commercial banks, an aspect that I will discuss in my next article.

**SASHI SIVRAMKRISHNA** is an economist, economic and environmental historian, and documentary filmmaker. Twitter: @Sashi31363. Views are personal.