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CBDC

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Introduction

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CBDC explained

CBDC is ‘a digital form of central bank money that is different from balances in traditional reserve or settlement accounts’. Interest in this new form of money is increasing and central banks are researching and experimenting with underlying technology. At the same time, private experiments with new forms of digital money continue and the conceptual variety afforded by new technologies has meant that, although CBDC is well defined, this definition is not always well understood.

A CBDC is a digital payment instrument, denominated in the national unit of account, that is a direct liability of the central bank.

Today, central banks issue two types of money and provide infrastructure to support a third. **Physical cash and electronic central bank deposits**, also known as reserves or settlement balances, are issued. Physical cash is widely accessible and peer-to-peer. In contrast, central bank reserves are electronic and typically only accessible to qualifying financial institutions.

The third type of money is private money, principally available through widely accessible and electronic commercial bank deposits. Central banks support commercial bank money in various ways, by: (i) allowing commercial banks to settle interbank payments using central bank money; (ii) enabling convertibility between commercial and central bank money through banknote provision; and (iii) offering contingent liquidity through the lender of last resort function. Importantly, while cash and reserves are a liability of the central bank, commercial bank deposits are not. **CBDC would be a new type of central bank money.**

A general purpose CBDC would require an underlying system to provide and distribute it conveniently to the public. This system would comprise the central bank, operator(s), participating payment service providers and banks. A wider ecosystem supporting the system could then include data service providers, companies providing and maintaining applications and providers of point-of-sale devices to initiate and accept payments.

Motivations, Challenges and Risks

Motivations, Challenges and Risks

Payment Motivations and Challenges

1. Continued access to central bank money

In jurisdictions where access to cash is in decline, there is a danger that households and businesses will no longer have access to risk-free central bank money. Some central banks consider it an obligation to provide public access and that this access could be crucial for confidence in a currency. A CBDC could act like a 'digital banknote' and could fulfil this obligation.

2. Resilience

3. Increased payments diversity

4 .Improving cross-border payments

Cross-border payments are inherently more complex than purely domestic ones. They involve more, and in some cases numerous, players, time zones, jurisdictions and regulations. As a result, they are often slow, opaque and expensive. An interoperable CBDC (ie one that is broadly compatible with others) could play a role in improving cross-border payments.

5. Supporting public privacy

A key feature of cash is that no centralised records of holdings or transactions exist. Some have argued that the main benefit a CBDC could bring would be some level of anonymity for electronic payments. Full anonymity is not plausible. While anti-money laundering and combating the financing of terrorism (AML/CFT) requirements are not a core central bank objective and will not be the primary motivation to issue a CBDC, central banks are expected to design CBDCs that conform to these requirements (along with any other regulatory expectations or disclosure laws).

6. Encouraging financial inclusion

7. Facilitating fiscal transfers

For some jurisdictions, the Covid-19 pandemic illustrates the benefits of having efficient facilities for the government to quickly transfer funds to the public and businesses in a crisis. A CBDC system with identified users (eg a system linked to a national digital identity scheme) could be used for these payments.

Motivations, Challenges and Risks

Monetary Policy Motivations and Risks

Theoretically, a remunerated CBDC could pass on policy rate changes immediately to CBDC holders (which might also incentivise banks to pass on rates faster too). However, beyond the theory, there are challenges and risks. To be effective in transmitting policy rates, a remunerated CBDC would need to pay competitive rates and allow the public to hold significant amounts. This could exacerbate financial stability risks associated with disintermediating banks and making fund flows more volatile.

Beyond bearing interest, there has also been public discussion about CBDC use to stimulate aggregate demand through direct transfers to the public (so-called ‘helicopter drops’), possibly combined with ‘programmable monetary policy’ (eg transfers with an ‘expiry date’ or conditional on being spent on certain goods). However, a key challenge for these transfers is identifying recipients and their accounts. A CBDC is not a precondition or necessarily useful, while also potentially blurring the separation between monetary and fiscal policy in ways which should be better understood and mitigated. Although a CBDC (depending on its design) provides a range of monetary policy possibilities, further consideration would need to be given to practicalities. Monetary policy will not be the primary motivation for issuing CBDC.

Motivations, Challenges and Risks

Financial Stability Risks

Potential Disintermediation of Banks

Depending on the design and adoption of a CBDC, there may be broad market structure effects. There is a risk of disintermediating banks or enabling destabilising runs into central bank money, thereby undermining financial stability. Today, the public can (and have in the past) run into central bank money by holding more cash, but such runs are very rare, given the existence of deposit insurance and bank resolution frameworks that protect retail depositors. There is, however, a concern that a widely available CBDC could make such events more frequent and severe, by enabling “digital runs” towards the central bank with unprecedented speed and scale. More generally, if banks begin to lose deposits to CBDC over time they may come to rely more on wholesale funding, and possibly restrict credit supply in the economy with potential impacts on economic growth.

Protecting Monetary Sovereignty

Significant adoption of money not denominated in the sovereign currency could limit the impact of monetary policy or the ability to support financial stability. A risk of stablecoins, so-called ‘cryptocurrencies’ and foreign CBDCs is that domestic users adopt them in significant numbers and use of the domestic sovereign currency dwindles. In extremis, such a ‘digital dollarization’ could see a national currency substituted by another with the domestic central bank gradually losing control over monetary matters.

By offering an efficient and convenient CBDC itself, a central bank may reduce the risk of alternative units of account dominating. Alternatively or additionally, a central bank could work with domestic private payment providers to ensure that the domestic payment system is as efficient and fit for purpose as possible.

Motivations, Challenges and Risks

Balancing Motivations and Risks

A changing payments landscape and technological developments can, in extremis, challenge the ability of central banks to deliver on their public policy responsibilities. Yet they also present new opportunities to make improvements and address long-running issues.

A central bank's decision to embark on issuing a CBDC will require assessing the value of opportunities to further pursue its objectives, balanced against any risks. The most valuable opportunities that encourage issuance will be where a CBDC can support a central bank's public policy objectives. Other opportunities abound (eg reducing illegal activity, facilitating fiscal transfers or enabling 'programmable money'), yet unless these have a bearing on a central bank's objectives, they will be secondary considerations.

Finally, central banks serve jurisdictions with hugely differing financial systems, economies, societies and legal structures. The motivations and risks balanced by different central banks will vary significantly. However, given that central banks have common objectives, common principles and requirements for a CBDC are possible.

Issuing a CBDC

Three foundational principles

Central banks have a common mandate for monetary and financial stability in their jurisdictions and have been providing trusted money to the public for hundreds of years as part of their public policy objectives. Their policy choices reflect their jurisdiction's specific requirements and circumstances at a point in time. Policy choices can therefore differ and change. Yet there are three common foundational principles for a central bank's consideration of CBDC issuance that flow from their common objectives.

'Do no harm'. New forms of money supplied by the central bank should continue supporting the fulfilment of public policy objectives and should not interfere with or impede a central bank's ability to carry out its mandate for monetary and financial stability. For example, a CBDC should maintain and reinforce the "singleness" or uniformity of a currency, allowing the public to use different forms of money interchangeably.

Coexistence. Central banks have a mandate for stability and proceed cautiously in new territory. Different types of central bank money – new (CBDC) and existing (cash, reserve or settlement accounts) – should complement one another and coexist with robust private money (eg commercial bank accounts) to support public policy objectives. Central banks should continue providing and supporting cash for as long as there is sufficient public demand for it.

Innovation and efficiency. Without continued innovation and competition to drive efficiency in a jurisdiction's payment system, users may adopt other, less safe instruments or currencies. Ultimately this could lead to economic and consumer harm, potentially damaging monetary and financial stability. The payments ecosystem is comprised of public authorities (in particular the central bank) and private agents (eg commercial banks and payment service providers). There is a role for the public and private sectors in the supply of payment services to create a safe, efficient and accessible system. Private economic agents should generally be free to decide which means of payment they use to conduct their transactions.

Issuing a CBDC

Core CBDC features

| Instrument features | |
|------------------------|---|
| Convertible | To maintain singleness of the currency a CBDC should exchange at par with cash and private money. |
| Convenient | CBDC payments should be as easy as using cash , tapping with a card or scanning a mobile phone to encourage adoption and accessibility. |
| Accepted and available | A CBDC should be usable in many of the same types of transactions as cash, including point of sale and person-to-person. This will include some ability to make offline transactions (possibly for limited periods and up to predetermined thresholds). |
| Low cost | CBDC payments should be at very low or no cost to end users , who should also face minimal requirements for technological investment. |
| Institutional features | |
| Robust legal framework | A central bank should have clear authority underpinning its issuance of a CBDC. |
| Standards | A CBDC system (infrastructure and participating entities) will need to conform to the appropriate regulatory standards (eg entities offering transfer, storage or custody of CBDC should be held to equivalent regulatory and prudential standards as firms offering similar services for cash or existing digital money). |

Issuing a CBDC

Core CBDC features

| System features | |
|------------------------|---|
| Secure | Both the infrastructure and participants of a CBDC system should be extremely resistant to cyber attacks and other threats. This should also include ensuring effective protection from counterfeiting. |
| Instant | Instant or near-instant final settlement should be available to end users of the system. |
| Resilient | A CBDC system should be extremely resilient to operational failure and disruptions , natural disasters, electrical outages and other issues. There should be some ability for end users to make offline payments if network connections are unavailable. |
| Available | End users of the system should be able to make payments 24/7/365 . |
| Throughput | The system should be able to process a very high number of transactions . |
| Scalable | To accommodate the potential for large future volumes , a CBDC system should be able to expand. |
| Interoperable | The system needs to offer sufficient interaction mechanisms with private sector digital payment systems and arrangements to allow easy flow of funds between systems . |
| Flexible and adaptable | A CBDC system should be flexible and adaptable to changing conditions and policy imperatives. |

CBDC Design and Technology

CBDC Design and Technology

Design Choices

1. Instrument designs

Two fundamental and complementary design features for a CBDC are whether and how to: (i) make it interest-bearing; and (ii) impose a cap or limit on individual holdings. Many central banks are considering issuing a CBDC that is “cash-like”. CPMI-MC explored the implications of alternative choices, noting that interest could play a role in controlling demand for CBDC and facilitate pass-through of interest rate decisions.

2. Ledger designs

In a CBDC system, a payment is a transfer of a central bank liability, recorded on a ledger. In designing a CBDC ledger, five key factors: (i) structure; (ii) payment authentication; (iii) functionality; (iv) access; and (v) governance. Each design factor will have a bearing on how a CBDC system meets the core features set out earlier. A ledger’s structure could be centralised, decentralised (eg through use of distributed ledger technology) or a combination (eg a centralised ledger could record only the total CBDC issued, with individual balances stored locally on a smartphone or card).

A centralised ledger would require an intermediary to manage and transfer the liabilities, making anti-fraud and security features easier to incorporate, whereas a decentralised ledger could have the potential to make peer-to-peer and offline payments easier. A combination could be developed but the resulting complexity could create a significant burden on the functioning of a system.

3. Incentive designs

Issuing a CBDC would require capital expenditure and impose running costs (just as for the production of cash today). Deciding who should pay will have implications for ecosystem efficiency, competition, innovation and inclusiveness. Directly recovering costs from the public users would be transparent but could be a disincentive to adoption. Assigning a public good and/or seigniorage earned by the central bank could reduce or eliminate the need for charges. Charging service providers would require them to have a viable business model to recover their costs.

References to read

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