THE ACTUALITY OF RETAIL CENTRAL BANK DIGITAL CURRENCY

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Annotation: Digitalization is reshaping economic activity, shrinking the role of cash, and spurring new digital forms of money. Central banks have been pondering whether and how to adapt. One possibility iscentral bank digital currency (CBDC)—a widely accessible digital form of fiat money that could be legal tender. While several central banks have studied the adoption of CBDC and have undertakenpilots, many have not actively explored it and remain skeptical.

Keywords: digital currency, central bank, currency, technology, transaction, tool, method, investment.

INTRODUCTION

This discussion note proposes a conceptual framework to assess the case for CBDC adoption fromthe perspective of users and central banks. It abstracts from cross-border considerations by assuming that CBDC is for domestic use only. This note discusses possible CBDC designs, and explores potential benefits and costs, with a focus on the impact on monetary policy, financial stability, and integrity. This note also surveys research and pilot studies on CBDC by central banks around the world. The main takeaways are as follows:

- The impact of CBDC introduction will hinge on its design and country-specific characteristics. Critical features will be anonymity (the traceability of transactions), security, transaction limits,and interest earned. The role of cash and commercial bank deposits in payments will also matter.
- CBDC could strengthen the benefits and reduce some of the costs and risks to the payment system and could help encourage financial inclusion. However, demand will not necessarily be very high and will depend on the attractiveness of alternative forms of money. Moreover, thereare other payment solutions to help central banks more fully achieve their goals relative to money. CBDC will have to contend with operational risks arising from disruptions and cyberattacks.
- Token-based CBDC—with payments that involve the transfer of an object (namely, a digital token)—could extend some of the attributes of cash to the digital world. CBDC could provide varying degrees of anonymity and immediate settlement. It could thus curtail the developmentof private forms of anonymous payment but could

increase risks to financial integrity. Design features such as size limits on payments in, and holdings of, CBDC would reduce but not eliminate these concerns.

MATERIALS AND METHODS

1. **The impact of digitalization is widespread and profound.** It is changing the nature of jobs, education, commerce, innovation, and product life cycles. Demographics are accelerating thesedevelopments. Millennials now outnumber baby boomers (Tilford 2018) and are steering the economy toward their world—one in which digital platforms are central, and nearly second nature.

2. **Payments, and more fundamentally money, are also undergoing tremendous change [2].** Technology, new employment arrangements, and the growing decentralized service economy, as well as evolving social attitudes, are driving efforts to build new and more decentralized forms of money. These offer peer-to-peer transactions, micropayments, and easy-to-use interfaces integratedwith social networks. Payments are increasingly being diverted toward privately run solutions. Even cryptocurrencies such as Bitcoin, Ethereum, and Ripple—still early in their development cycle—offer competing forms of money.

3. **Deep and pressing questions arise.** Is there a role for cash, or a cash-like form of money, inthe digital world? Should central banks offer new forms of money? If so, what are the implications for monetary policy and financial intermediation, stability, and integrity?

4. **Central banks are taking these questions seriously.** Several are actively investigating the possibility of a central bank digital currency (CBDC). This new central bank liability would be a widelyaccessible digital form of fiat money, intended as legal tender. One day, it could fully replace physical cash. CBDC seems to be a natural next step in the evolution of official coinage (from metal-based money, to metal-backed banknotes, to physical fiat money).

RESULTS AND DISCUSSION

CBDC could be account- or token-based, the former involving the transfer of a claim on an account and the latter of a token between wallets. A transaction in account-based CBDCwould resemble today's transactions between commercial bank depositors, except accounts would be held with the central bank. A payer would log in to an account at the central bank—for example,through a web page or an app on a handheld device—and request a transfer of funds to a recipient's account, also at the central bank (Figure 1). The central bank would ensure settlement byupdating a master ledger, but only after verification of the payer's authority to use the account, sufficient funds, and authenticity of the payee's account. The exchange of information would therefore be substantial [3].

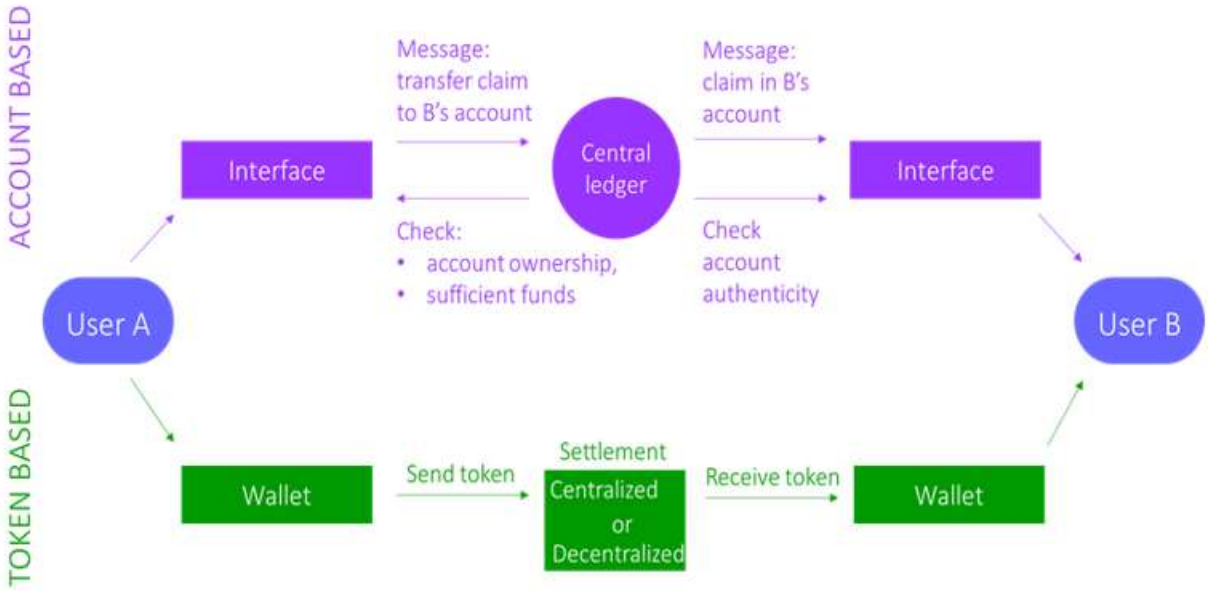

Figure 1. Account- and Token-Based CBDC, Basic Mechanics

Transacting in token-based CBDC would involve more steps than exchanging cash butwould offer the convenience of not having to meet in person. Unlike cash—the prime example of a traditional token-based form of money—CBDC tokens would be too complex to be distinguished from counterfeits by parties to the transaction. Settling a transaction using token- based CBDC would require external verification of the tokens. As a result, transactions might not beentirely anonymous, like cash. The extent of anonymity would depend on whether wallets are registered and transaction information is recorded.

Users will seek a form of money that maximizes private benefits and minimizes associated costs and risks.[11] Related criteria are listed below (Figure 2). Emphasis is placed on themeans of payment and store of value functions of money, for which criteria are more diverse. The relative weight of each criterion below will vary by country and user.

Figure 2. User Criteria to Judge Different Forms of Money

	Means of payment	Store of value
Maximize benefits	• *Liquidity:* Payment on demand • *Scalability:* Payment of any size (no limits) • *Acceptance:* Person to person, person to business, business to business to and fromany device; no network limitation • *Extra services:* Preferential access to otherfinancial services	• *Returns:* Nominal interest payments

	(loans, advice, etc.)	
Minimize costs	• *Transaction:* Ease of use; fees • *Disclosure:* Degree of anonymity	
Minimize risks	• *Settlement:* Lag between agreeing to a transaction and actual receipt of funds	• *Theft:* Ability to reverse fraudulent transactions, exposure to fraud/cyber risk • *Loss:* Ability to claim ownership or recover access if lost • *Default:* of the money issuer

One important criterion stands out: the ability to make anonymous transactions. Regarding money, anonymity covers the extent to which identity and transactions are, or can be, disclosed to transaction parties, third parties, and the government. There are legitimate reasons people may prefer at least some degree of anonymity—potentially when it comes to everyone except the government, and regarding the government unless a court order unlocks encrypted transaction information. It is a way to avoid customer profiling—commercial use of personal information, for example, to charge higher mortgage rates to people who purchase alcohol. Another advantage of anonymity is limiting exposure to hacking.

In addition, central banks will prefer forms of money that support, or at least do not undermine, three other public policy goals: financial integrity, financial stability, and monetary policy effectiveness. In turn, each of these further supports the three functions of money. Financial integrity covers, among other things, anti–money laundering and combating the financing of terrorism (AML/CFT) rules, including customer due diligence measures and additional measures aimed at fighting corruption and fostering good governance.

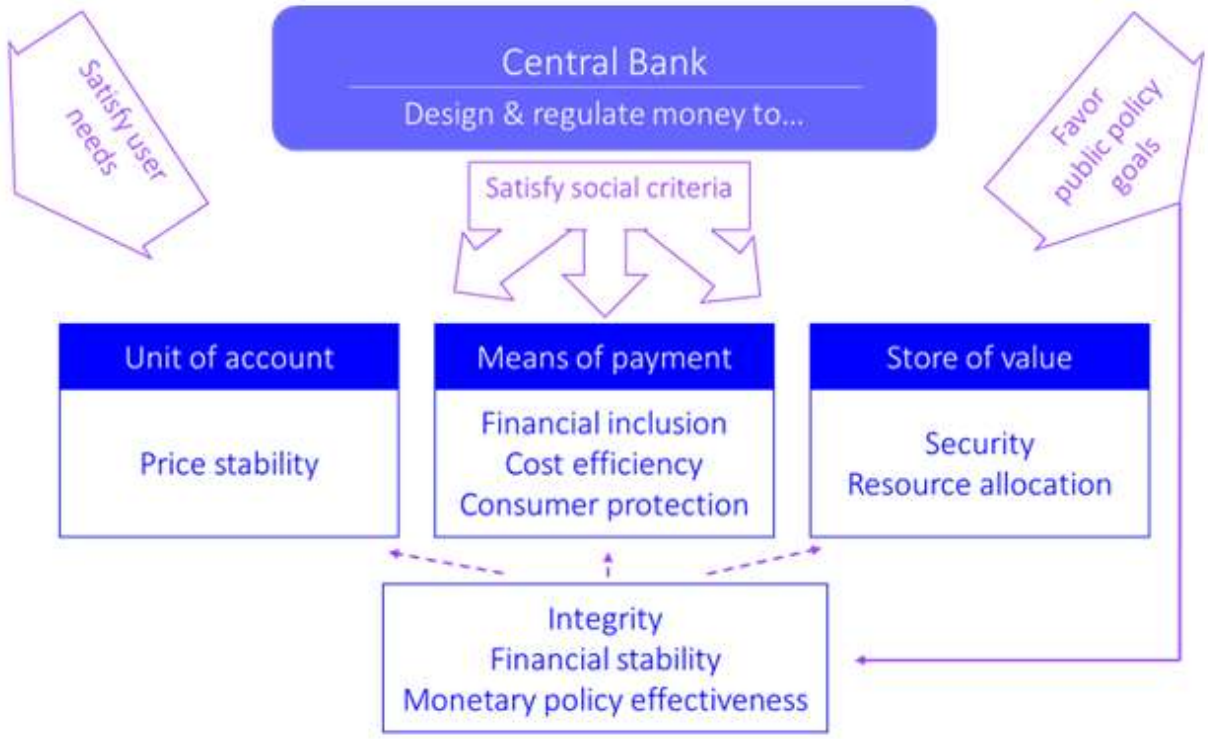

Figure 3. The Central Bank's Criteria to Evaluate Different Forms of Money

CONCLUSION

The trend is already evident in some countries and is expected to become more widespread. Sweden is probably the most striking example. In other countries, cash in circulation as a share of GDP has actually increased in the past decade, as documented in Bech and others (2018). However, a second look reveals that such movements are largely cyclical and can be partly explained by low interest rates. As shown in Box 2, the preference for cash has mostly been decreasing or has remained unchanged except in reserve currency countries (Switzerland and the United States). In addition, the demand for cash is likely to diminish as older generations give way tomore technology-adept generations. Merchants and banks in both advanced and developing economies are also trying to discourage cash transactions, given the related costs.

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