Comparing Means of Payment: What Role for a Central Bank Digital Currency

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Overview

Research Question

• How does general-purpose CBDC compare with existing central bank payment services? Phrased another way, what is the potential benefit of a CBDC as a means of payment?

Framework for Comparing Means of Payment

• Measure cash, RTGS, RTGS+, and CBDC along seven broad categories

Results

• Though a CBDC will never be able to fully replicate all characteristics of existing services simultaneously, in certain circumstances, it has the potential to be an improvement over existing modes of payment
Central Bank Payment Services

• Central banks typically issue money in the form of banknotes and bank deposits

• Financial institutions are able to move these funds from one institution to another through central bank-operated payment services
  • The Federal Reserve maintains several services to facilitate wholesale and retail payments, include a check-processing service; FedACH®; and the Fedwire® Funds and National Settlement Services
  • In August 2019, the Federal Reserve announced that it would develop the FedNow℠ Service, a new interbank 24x7x365 real-time gross settlement (RTGS) service with integrated clearing functionality to support instant payments in the United States
Central Bank Digital Currency

CBDC would be a new type of central bank money
  • “digital payment instrument, denominated in the national unit of account, that is a direct liability of the central bank”

Because no clear consensus exists on the key design characteristics of a CBDC, proponents of CBDC tend to envision a CBDC that can provide a long list of benefits

Our analysis limits these potential benefits to those directly related to a payments system
Framework for Comparing Means of Payment

Measure payment mechanisms along seven broad categories:

- **Accessibility** (consumer access to payment mechanism)
- **Anonymity** (private identity for transactions)
- **Bearer instrumentality** (instrument payable to anyone in possession of it)
- **Independence** (degree of intermediation)
- **Operational efficiency** (for scoring: central bank costs)
- **Programmability** (automatic execution of operations as part of core platform)
- **Service availability** (available 24/7/365)
Comparison of Central Bank Payment Mechanisms

Incorporating all possible design features, CBDC scores:

• higher than cash and RTGS on programmability and potential operational efficiency
• lower than cash on anonymity and independence
• close to RTGS and cash on service availability and accessibility
• equal to cash on bearer instrumentality

The points, however, do not consider tradeoffs between categories. A single CBDC design would not be able to receive all these scores simultaneously.
CBDC Design Choices Matter

- Cash equivalent CBDC
- Account-based CBDC
- Hybrid CBDC
A cash equivalent CBDC is one in which the CBDC is designed as a bearer instrument with offline capability.

Cash equivalent CBDC scores:

- lower than cash, but higher than RTGS, on anonymity and independence
- Higher than cash, but lower than RTGS, on operational efficiency
- A CBDC cash equivalent could potentially have the same level of programmability as an RTGS system that allows for external APIs
Account-based CBDC

An account-based CBDC is the effective equivalent of providing the public with direct access to central bank accounts (could be built on a new platform)

Account-based CBDC scores:
• lower than cash, but higher than RTGS, on anonymity and degree of independence
• higher than RTGS on programmability and operational efficiency (assuming new platform)
Hybrid CBDC

A hybrid CBDC is one in which CBDC is issued by the central bank and intermediaries handle payments.

Hybrid CBDC scores:

- higher than cash and RTGS on programmability and operational efficiency
- lower than cash, and equal to RTGS, on independence and anonymity
Conclusion

• CBDC will never be able to fully replicate all characteristics of cash and RTGS simultaneously
• In certain circumstances, CBDC has the potential to be an improvement over both existing modes of payment
• Because there are tradeoffs, central banks will need to decide which features a CBDC should improve upon and choose the archetype that can best achieve these goals