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**CBDC:**  
Expanding  
Financial  
Inclusion  
*or Deepening  
the Divide?*

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Exploring Design Choices that  
Could Make a Difference

**Executive Summary**

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# Executive Summary

## CBDC: Expanding Financial Inclusion or Deepening the Divide?

In recent years, policymakers around the world have been exploring Central Bank Digital Currency (CBDC). CBDC has the opportunity to play an important role as a public good, serving the public interest both as a *public money* (with value maintained by the central bank) and as a *public money technology* (with core infrastructure also maintained by the central bank or another public entity). Retail CBDC is the only digital, user-accessible money form that is a liability of the central bank. Because of these unique attributes, some commentators have suggested retail CBDC has the potential to expand financial inclusion.

However, few if any proponents have offered practical insight into how CBDC will promote greater access to financial services, especially amongst the unbanked or underserved. Assertions that CBDC could strengthen inclusion are difficult to prove because CBDC is not a specific payments instrument with common attributes across countries but rather reflects a broad range of instruments that could differ significantly in features and functions based on policy choices and the market environment in which it is issued. Moreover, we cannot answer whether a central bank should issue CBDC as a means of promoting financial inclusion until we consider carefully how the design of a retail CBDC will derive value from these attributes that could make it more accessible to all.

Consequently, this paper will not focus on whether a central bank should offer a CBDC to improve access to financial services but rather how a CBDC could be designed to support that same policy goal. After we understand the design and policy options, we will be better equipped to investigate the costs and benefits associated with those features of a CBDC and determine whether it makes economic sense for a central bank to issue CBDC as a means of promoting inclusion and what preconditions may be necessary for success.

In this paper, we ask what are the features of currency technologies, the aspects of peoples' lives, and the intersections of the two that CBDC designers need to understand most in order to create a digital currency that expands financial inclusion and operates in the public interest, rather than one that exacerbates or even creates a new digital divide for currency?

We approach this question differently from most existing literature on CBDC by focusing on users, especially society's most vulnerable, and investigating the problems that arise when using existing digital payment systems, such as mobile money, e-money, cards, and apps. We also consider users' experiences with cash, a type

of non-intermediated money that is perhaps the most inclusive payment instrument available today, in order to examine the differences between the two forms.

This project is an interdisciplinary effort with a three-pronged, iterative methodology, consisting of *design research* to identify the important open technical design choices and ways forward for CBDC; *infrastructure research* on existing money technologies to understand the broader public–private dynamics in which CBDC financial inclusion issues are centered; and *fieldwork* conducted with teams of research partners to understand the financial experiences of people in four low- and middle-income countries (India, Indonesia, Nigeria, and Mexico) to understand the ways existing money technologies are failing them or helping them flourish. To test initial findings and seek advice on avenues to pursue, we hosted three roundtable events throughout the course of this 15-month long project with a wide variety of stakeholders, including central bankers, regulators, global standards-setting bodies, international development organizations, technologists, academics, and consumer advocates.

To structure our analysis, we identified five differences in affordances between intermediated and non-intermediated currency. Affordances refer to what a user can do with a technology and the kinds of activity that object or platform enables and constrains.

Crucially, we argue, any digital currency is only as good for inclusion as the intermediaries through which people use it. Designing a CBDC that merely replicates the features of existing digital payment systems would not make a meaningful difference for financial inclusion.

## Currency Affordances: Insights from User Research

In the following section, we identify key differences in affordances between cash—which is not intermediated—and existing digital money technologies such as bank deposits, e-money, faster payments, and cards, which are. We touch on some of the findings from our fieldwork that illustrate how these affordance differences impact financial inclusion and user well-being. We also raise some design considerations for CBDC. Much more detail on each of these affordances, including narratives from our fieldwork and technical implications for CBDC design, can be found in our full report.

**Custody:** Today’s monetary landscape requires users to either custody funds themselves (in the form of cash) or deposit funds with an intermediary. Depositing funds with a custodial intermediary is typically viewed as more secure than holding cash and it enables funds to be transmitted electronically. However this also requires trusting intermediaries that, as our fieldwork demonstrates, may be plagued with problems. As a result, people default to cash. Especially for those who have very little money, cash affords much-needed control and certainty. CBDC designers should consider how to preserve the benefits of self-custody, which, for state-issued currency, is currently impossible in the digital realm. They can consider a wider range of custody designs opened up by new possibilities with digital currency technology.

**Access:** Cash transactions can be conducted by anyone via the mere physical exchange of currency, whereas making payments digitally today depends on external infrastructures and on intermediaries for access, including authentication and authorization. Digital funds are less accessible and thus less inclusive than cash. Identification remains a problem for many, and those without ID typically rely on informal solutions, which may entail exploitative social dynamics. In some countries, consumers who lack the full suite of identity documentation to open a traditional bank account may instead open a low volume, low transaction value account under regulations that permit simplified customer due diligence (sometimes called “tiered KYC”) and require little identity documentation. But these accounts can be limited in how well they meet user needs due to restrictions on the value or volume of payments they can make. New digital identity programs may help, but consent and privacy need careful consideration. Reliable communications infrastructure remains a problem, so capability for offline transactions should be a priority.

**Finality:** Cash transactions settle instantly, but digital transactions entail processes of authentication, authorization, and settlement. There are many opportunities for things to go wrong. Errors and delays—and not being able to control or anticipate them—disproportionately affect those whose financial well-being is already precarious. A CBDC that makes funds available for reuse immediately would offer an advantage to users, but achieving finality at scale requires high-performance and fault-tolerant systems. Reversibility is also an important consideration. For those living in extreme poverty, success or failure in reversing payment can be the difference between eating and going hungry. Designing the process of dispute arbitration is an important challenge for CBDC design.

**Data:** Cash transactions typically do not produce data trails, whereas digital transactions do. Data leaks can have serious consequences, particularly for the most vulnerable. Increased datafication of users’ routines and behaviors is a lucrative enterprise but puts users at risk of exploitation—including furthering indebtedness through behavioral micro-targeting—often without their consent. Encumbering CBDC with restrictions on how it may be spent may reduce users’ control over their own money, particularly those who receive government benefits. Data-sharing can also have significant benefits to both system operators and users, such as better traceability and leveraging data to gain access to more services. Striking a balance between risks and rewards of data usage is critical to the design of CBDC. Smart decisions about privacy can yield many benefits, including building public trust and avoiding centralization of data vulnerable to attacks.

**Distance:** Cash transactions typically cannot be transmitted over distance, whereas digital transactions can, including remittances. Remittances are an important use case for CBDC. All of the problems that people encounter in other payment domains—such as lack of identification, connectivity issues, fees, settlement time, lack of recourse when things go wrong, and lack of privacy—are present and exacerbated in the context of remittances. There are several architectural options presently being considered for

cross-border CBDC, which might or might not address a subset of these issues. More research needs to be done to understand how these options impact user experience.

## Looking Ahead

The question of trust is at the core of the decisions people make about their money, and will likewise be a key factor in any successful CBDC. We argue that in order for a CBDC to be *trusted*, it must first be *trustworthy*. Especially considering the rise of authoritarian regimes around the world, the acceleration of the surveillance state, and the increasing challenge of regulating the technology industry, it is far from self-evident that citizens *should* trust a CBDC. In order to be trustworthy for all, CBDC must be trustworthy to the most vulnerable.

Stakeholders should look for answers to address these concerns across the affordances of currency we identified. In our fieldwork, we have surfaced some ways that existing intermediated money forms are failing these tests. CBDC represents an opportunity to rethink the existing intermediary ecosystem. But doing so also comes with its own risks: if not designed well, it may offer no improvement on today's digital divides in financial services and could even make things much worse for users.

More research will be required to better understand user practices and possible ways forward for CBDC design. Throughout the course of our research, we have identified a range of issues that warrant deeper exploration:

- Evaluation research of the successes and shortcomings of the public adoption of existing CBDCs
- Systems design research on the technical trade-offs of key CBDC design decisions, such as transaction speed with reversibility and programmability, and offline access with security
- Privacy research on management of user data, with the goal of striking a safe and effective balance between operational issues, security concerns, and data ethics
- Research from a technical perspective about how specific innovations from decentralized cryptocurrency intermediaries might be deployed in relation to a CBDC
- Policy research on the role(s) of public, private, and civil society entities in the CBDC ecosystem, operations, and governance
- User experience research on cross-border CBDC payments—an important use case that is fraught with problems for the most vulnerable
- Public opinion research on trust, misinformation, and communication related to CBDC considering levels of distrust worldwide in existing institutions