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Private Money and Central Bank Money as Payments Go Digital: an Update on CBDCs

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Technology is driving dramatic change in the U.S. payments system, which is a vital infrastructure that touches everyone.¹ The pandemic accelerated the migration to contactless transactions and highlighted the importance of access to safe, timely, and low-cost payments for all. With technology platforms introducing digital private money into the U.S. payments system, and foreign authorities exploring the potential for central bank digital currencies (CBDCs) in cross-border payments, the Federal Reserve is stepping up its research and public engagement on CBDCs. As Chair Powell discussed last week, an important early step on public engagement is a plan to publish a discussion paper this summer to lay out the Federal Reserve Board’s current thinking on digital payments, with a particular focus on the benefits and risks associated with CBDC in the U.S. context.²

Sharpening the Focus on CBDCs

Four developments—the growing role of digital private money, the migration to digital payments, plans for the use of foreign CBDCs in cross-border payments, and concerns about financial exclusion—are sharpening the focus on CBDCs.

First, some technology platforms are developing stablecoins for use in payments networks.³ A stablecoin is a type of digital asset whose value is tied in some way to traditional stores of value, such as government-issued, or fiat, currencies or gold. Stablecoins vary widely in the assets they are linked to, the ability of users to redeem the stablecoin claims for the

¹ I am grateful to Alexandra Fernandez, Sonja Danburg, David Mills, and David Pope of the Federal Reserve Board for their assistance in preparing this text. These are my own views and do not necessarily reflect those of the Federal Reserve Board or the Federal Open Market Committee.

² See Jerome Powell, “Federal Reserve Chair Jerome H. Powell Outlines the Federal Reserve’s Response to Technological Advances Driving Rapid Change in the Global Payments Landscape,” Board of Governors of the Federal Reserve System news release, May 20, 2021, <https://www.federalreserve.gov/newsevents/pressreleases/other20210520b.htm>.

³ See Lael Brainard, “The Digitalization of Payments and Currency: Some Issues for Consideration,” remarks at the Symposium on the Future of Payments, Stanford University, California, February 5, 2021, <https://www.federalreserve.gov/newsevents/speech/brainard20200205a.htm>.

reference assets, whether they allow unhosted wallets, and the extent to which a central issuer is liable for making good on redemption rights. Unlike central bank fiat currencies, stablecoins do not have legal tender status. Depending on underlying arrangements, some may expose consumers and businesses to risk. If widely adopted, stablecoins could serve as the basis of an alternative payments system oriented around new private forms of money. Given the network externalities associated with achieving scale in payments, there is a risk that the widespread use of private monies for consumer payments could fragment parts of the U.S. payment system in ways that impose burdens and raise costs for households and businesses. A predominance of private monies may introduce consumer protection and financial stability risks because of their potential volatility and the risk of run-like behavior. Indeed, the period in the nineteenth century when there was active competition among issuers of private paper banknotes in the United States is now notorious for inefficiency, fraud, and instability in the payments system.⁴ It led to the need for a uniform form of money backed by the national government.

Second, the pandemic accelerated the migration to digital payments. Even before the pandemic, some countries, like Sweden, were seeing a pronounced migration from cash to digital payments.⁵ To the extent that digital payments crowd out the use of cash, this raises questions about how to ensure that consumers retain access to a form of safe central bank money. In the United States, the pandemic led to an acceleration of the migration to digital payments as well as increased demand for cash. While the use of cash spiked at certain times, there was a pronounced shift by consumers and businesses to contactless transactions facilitated by

⁴ See, for instance, Joshua R. Greenberg, *Bank Notes and Shinplasters: The Rage for Paper Money in the Early Republic* (Philadelphia: University of Pennsylvania Press, 2020).

⁵ Codruta Boar and Róbert Szemere, “Payments go (even more) digital” (Basel: Bank for International Settlements, January 2021), https://www.bis.org/statistics/payment_stats/commentary2011.htm.

electronic payments.⁶ The Federal Reserve remains committed to ensuring that the public has access to safe, reliable, and secure means of payment, including cash. As part of this commitment, we must explore—and try to anticipate—the extent to which households’ and businesses’ needs and preferences may migrate further to digital payments over time.

Third, some foreign countries have chosen to develop and, in some cases, deploy their own CBDC. Although each country will decide whether to issue a CBDC based on its unique domestic conditions, the issuance of a CBDC in one jurisdiction, along with its prominent use in cross-border payments, could have significant effects across the globe. Given the potential for CBDCs to gain prominence in cross-border payments and the reserve currency role of the dollar, it is vital for the United States to be at the table in the development of cross-border standards.

Finally, the pandemic underscored the importance of access to timely, safe, efficient, and affordable payments for all Americans and the high cost associated with being unbanked and underbanked. While the large majority of pandemic relief payments moved quickly via direct deposits to bank accounts, it took weeks to distribute relief payments in the form of prepaid debit cards and checks to households who did not have up-to-date bank account information with the Internal Revenue Service. The challenges of getting relief payments to these households highlighted the benefits of delivering payments more quickly, cheaply, and seamlessly through digital means.

Policy Considerations

In any assessment of a CBDC, it is important to be clear about what benefits a CBDC would offer over and above current and emerging payments options, what costs and risks a

⁶ Kelsey Coyle, Laura Kim, and Shaun O’Brien, *Consumer Payments and the COVID-19 Pandemic: The Second Supplement to the 2020 Findings from the Diary of Consumer Payment Choice* (San Francisco: Federal Reserve Bank of San Francisco, February 2021), <https://www.frbsf.org/cash/publications/fed-notes/2021/february/consumer-payments-covid-19-pandemic-2020-diary-consumer-payment-choice-supplement-2/>.

CBDC might entail, and how it might affect broader policy objectives. I will briefly discuss several of the most prominent considerations.

Preserve general access to safe central bank money

Central bank money is important for payment systems because it represents a safe settlement asset, allowing users to exchange central bank liabilities without concern about liquidity and credit risk. Consumers and businesses don't generally consider whether the money they are using is a liability of the central bank, as with cash, or of a commercial bank, as with bank deposits. This is largely because the two are seamlessly interchangeable for most purposes owing to the provision of federal deposit insurance and banking supervision, which provide protection for consumers and businesses alike. It is not obvious that new forms of private money that reference fiat currency, like stablecoins, can carry the same level of protection as bank deposits or fiat currency. Although various federal and state laws establish protections for users, nonbank issuers of private money are not regulated to the same extent as banks, the value stored in these systems is not insured directly by the Federal Deposit Insurance Corporation, and consumers may be at risk that the issuer will not be able to honor its liabilities. New forms of private money may introduce counterparty risk into the payments system in new ways that could lead to consumer protection threats or, at large scale, broader financial stability risks.

In contrast, a digital dollar would be a new type of central bank money issued in digital form for use by the general public. By introducing safe central bank money that is accessible to households and businesses in digital payments systems, a CBDC would reduce counterparty risk and the associated consumer protection and financial stability risks.

Improve efficiency

One expected benefit is that a CBDC would reduce or even eliminate operational and financial inefficiencies, or other frictions, in payments, clearing, and settlement. Today, the speed by which consumers and businesses can access the funds following a payment can vary significantly, up to a few days when relying on certain instruments, such as a check, to a few seconds in a real-time payments system. Advances in technology, including the use of distributed ledgers and smart contracts, may have the potential to fundamentally change the way in which payment activities are conducted and the roles of financial intermediaries and infrastructures. The introduction of a CBDC may provide an important foundation for beneficial innovation and competition in retail payments in the United States.

Most immediately, we are taking a critical step to build a strong foundation with the introduction of the FedNowSM Service, a new instant payments infrastructure that is scheduled to go into production in two years. The FedNow Service will enable banks of every size and in every community across America to provide safe and efficient instant payment services around the clock, every day of the year. Through the banks using the service, consumers and businesses will be able to send and receive payments conveniently, such as on a mobile device, and recipients will have full access to funds immediately.

Promote competition and diversity and lower transactions costs

Today, the costs of certain retail payments transactions are high and not always transparent to end users.⁷ Competition among a diversity of payment providers and payment

⁷ Marie-Hélène Felt, Fumiko Hayashi, Joanna Stavins, and Angelika Welte, *Distributional Effects of Payment Card Pricing and Merchant Cost Pass-through in the United States and Canada*, Federal Reserve Bank of Boston Research Department Working Papers No. 20-13 (Boston: FRB Boston, 2020), <https://www.bostonfed.org/publications/research-department-working-paper/2020/distributional-effects-payment-card-pricing-merchant-cost-pass-through-united-states-canada.aspx>.

types has the potential to increase the choices available to businesses and consumers, reduce transactions costs, and foster innovation in end-user services, although it could also contribute to fragmentation of the current payments system. By providing access to a digital form of safe central bank money, a CBDC could provide an important foundation on which private-sector competition could flourish.

Reduce cross-border frictions

Cross-border payments, such as remittances, represent one of the most compelling use cases for digital currencies. The intermediation chains for cross-border payments are notoriously long, complex, costly, and opaque. Digitalization, along with a reduction in the number of intermediaries, holds considerable promise to reduce the cost, opacity, and time required for cross-border payments. While the introduction of CBDCs may be part of the solution, international collaboration on standard setting and protections against illicit activity will be required in order to achieve material improvements in cost, timeliness, and transparency.⁸

We are collaborating with international colleagues through the Bank for International Settlements, Committee on Payments and Market Infrastructures, and the G7 to ensure the U.S. stays abreast of developments related to CBDC abroad. We are engaging in several international efforts to improve the transparency, timeliness, and cost-effectiveness of cross-border payments. It will be important to be engaged at the outset on the development of any international standards that may apply to CBDCs, given the dollar's important role as a reserve currency.

Complement currency and bank deposits

⁸ See Bank for International Settlements, Committee on Payments and Market Infrastructures, *Enhancing cross-border payments: building blocks of a global roadmap Stage 2 report to the G20* (Basel: BIS, July 2020), <https://www.bis.org/cpmi/publ/d193.pdf>; and Financial Stability Board, *Enhancing Cross-border Payments: Stage 3 Roadmap* (Washington: FSB, October 13, 2020), <https://www.fsb.org/wp-content/uploads/P131020-1.pdf>.

A guiding principle for any payments innovation is that it should improve upon the existing payments system. Consumers have access to reliable money in the forms of private bank accounts and central bank issued currency, which form the underpinnings of the current retail payments system. The design of any CBDC should complement and not replace currency and bank accounts.

Preserve financial stability and monetary policy transmission

The introduction of a CBDC has the potential to have wide-reaching effects, and there are open questions about how CBDC could affect financial stability and monetary policy transmission. Some research indicates that the introduction of a CBDC might raise the risk of a flight out of deposits at weak banks in favor of CBDC holdings at moments of financial stress.⁹ Other research indicates that the increase in competition could result in more attractive terms on transactions accounts and an overall increase in banking system deposits.¹⁰ Banks play a critical role in credit intermediation and monetary policy transmission, as well as in payments. Thus, the design of any CBDC would need to include safeguards to protect against disintermediation of banks and to preserve monetary policy transmission more broadly. While it is critical to consider the ways in which a CBDC could introduce risks relative to the current payments system, it may increase resilience relative to a payments system where private money is prominent.

Protect privacy and safeguard financial integrity

The design of any CBDC would need to both safeguard the privacy of households' payments transactions and prevent and trace illicit activity to maintain the integrity of the

⁹ Christian Pfister, *Monetary Policy and Digital Currencies: Much Ado about Nothing?* Banque de France Working Paper 642 (Paris: Banque de France, 2017), <https://publications.banque-france.fr/sites/default/files/medias/documents/dt-642.pdf>.

¹⁰ John Barrdear and Michael Kumhof, *The Macroeconomics of Central Bank Issued Digital Currencies*, Bank of England Working Paper No. 605 (London: BOE, July 18, 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2811208.

financial system, which will require the digital verification of identities. There are a variety of approaches to safeguarding the privacy of payments transactions while also identifying and preventing illicit activity and verifying digital identities. Addressing these critical objectives will require working across government agencies to assign roles and responsibilities for preventing illicit transactions and clearly establishing how consumer financial data would be protected.

Increase financial inclusion

Today 5.4 percent of American households lack access to bank accounts and the associated payment options they offer, and a further 18.7 percent were underbanked as of 2017.¹¹ The lack of access to bank accounts imposes high burdens on these households, whose financial resilience is often fragile. At the height of the pandemic, the challenges associated with getting relief payments to hard-to-reach households highlighted that it is important for all households to have transactions accounts. The Federal Reserve's proposals for strengthening the Community Reinvestment Act emphasize the value of banks providing cost-free, low-balance accounts and other banking services targeted to underbanked and unbanked communities.¹² And a core goal of FedNow is to provide ubiquitous access to an instant payments system via depository institutions.

CBDC may be one part of a broader solution to the challenge of achieving ubiquitous account access.¹³ Depending on the design, CBDC may have the ability to lower transaction

¹¹ Federal Deposit Insurance Corporation, *How America Banks: Household Use of Banking and Financial Services* (Washington: FDIC, October 19, 2020), <https://www.fdic.gov/analysis/household-survey/>; and Federal Deposit Insurance Corporation, *FDIC National Survey of Unbanked and Underbanked Households* (Washington: FDIC, 2017), <https://www.fdic.gov/analysis/household-survey/2017/index.html>.

¹² See, for instance the Bank On National Account Standards, <https://2wvkof1mfraz2etgea1p8kiy-wpengine.netdna-ssl.com/wp-content/uploads/2020/10/Bank-On-National-Account-Standards-2021-2022.pdf>.

¹³ See Jesse Leigh Maniff, *Inclusion by Design: Crafting a Central Bank Digital Currency to Reach All Americans*, Payments System Research Briefing, Federal Reserve Bank of Kansas City (Kansas City: FRB Kansas, December 2, 2020), <https://www.kansascityfed.org/documents/7583/psrb20maniff1202.pdf>; and John Crawford, Lev Menand, and Morgan Ricks, "FedAccounts: Digital Dollars," *George Washington Law Review*, Vol. 89, p. 113, January 28, 2021, <https://www.gwlr.org/wp-content/uploads/2021/01/89-Geo.-Wash.-L.-Rev.-113.pdf>.

costs and increase access to digital payments. In emergencies, CBDC may offer a mechanism for the swift and direct transfer of funds, providing rapid relief to those most in need. A broader solution to financial inclusion would also need to address any perceived barriers to maintaining a transaction account, along with the need to maintain up-to-date records on active accounts to reach a large segment of the population.¹⁴

To explore these broader issues, the Federal Reserve is undertaking research on financial inclusion. The Federal Reserve Bank of Atlanta is launching a public-private sector collaboration as a Special Committee on Payments Inclusion to ensure that cash-based and vulnerable populations can safely access and benefit from digital payments.¹⁵ This work is complemented by a new Federal Reserve Bank of Cleveland initiative to explore the prospects for CBDC to increase financial inclusion. The initiative will identify CBDC design features and delivery approaches focused on expanding access to individuals who do not currently use traditional financial services.

Technology Considerations

Multidisciplinary teams at the Federal Reserve are investigating the technological and policy issues associated with digital innovations in payments, clearing, and settlement, including the benefits and risks associated with a potential U.S. CBDC. For example, the TechLab group at the Federal Reserve Board is performing hands-on research and experimentation on potential future states of money, payments, and digital currencies. A second group, the Digital

¹⁴ For more information, see the Federal Reserve Community Reinvestment Act Proposed Rulemaking at <https://www.federalreserve.gov/consumerscommunities/community-reinvestment-act-proposed-rulemaking.htm>.

¹⁵ Federal Reserve Bank of Atlanta, “New Committee to Advance Safe, Efficient, Inclusive Payments,” news release, May 12, 2021, <https://takeonpayments.frbatlanta.org/news/pressreleases/2021/05/12/new-committee-to-advance-safe-efficient-inclusive-payments>.

Innovations Policy program, is considering a broad range of policy issues associated with the rise of digital payments, including the potential benefits and risks associated with CBDC.

To deepen our research on the technological design of a CBDC, the Federal Reserve Bank of Boston is partnering with Massachusetts Institute of Technology's (MIT) Digital Currency Initiative on Project Hamilton to build and test a hypothetical digital currency platform using leading edge technology design options.¹⁶ This work aims to research the feasibility of the core processing of a CBDC, while remaining agnostic about a range of policy decisions. MIT and the Boston Fed plan to release a white paper next quarter that will document the ability to meet goals on throughput of geographically dispersed transactions with core processing and create an open source license for the code. Subsequent work will explore how addressing additional requirements, including resiliency, privacy, and anti-money-laundering features, will impact core processing performance and design.

Banking Activities

Research and experimentation are also occurring at supervised banking institutions to explore new technology to enhance their own operations and in response to demands from their clients for services such as custody of digital assets. While distributed ledger technology may have the potential to improve efficiencies, increase competition, and lower costs, digital assets pose heightened risks such as those related to Bank Secrecy Act/anti-money laundering, cybersecurity, price volatility, privacy, and consumer compliance. The Federal Reserve is

¹⁶ See Eric Rosengren, "Central Bank Perspectives on Central Bank Digital Currencies," remarks at the panel discussion of the Program on International Financial Systems, Harvard Law School, May 12, 2021, <https://www.bostonfed.org/news-and-events/speeches/2021/central-bank-perspectives-on-central-bank-digital-currencies.aspx>; Jim S. Cunha, "Boston Fed's Digital Dollar Research Project Honors 2 Hamiltons, Alexander and Margaret," Federal Reserve Bank of Boston, February 25, 2021, <https://www.bostonfed.org/news-and-events/news/2021/02/how-did-the-feds-digital-dollar-project-get-its-name-project-hamilton.aspx>; and Lael Brainard, "An Update on Digital Currencies," remarks at the Federal Reserve Bank of San Francisco Innovation Office Hours, August 13, 2020, <https://www.federalreserve.gov/newsevents/speech/brainard20200813a.htm>.

actively monitoring developments in this area, engaging with the industry and other regulators, and working to identify any regulatory, supervisory, and oversight framework gaps. Given that decisions at one banking agency can have implications for the other agencies, it is important that regulators work together to develop common approaches to ensure that banks are appropriately identifying, monitoring, and managing risks associated with digital assets.

Public Engagement

In light of the growing role of digital private money in the broader migration to digital payments, the potential use of foreign CBDCs in cross-border payments, and the importance of financial inclusion, the Federal Reserve is stepping up its research and public engagement on a digital version of the U.S. dollar. Members of Congress and executive agencies are similarly exploring this important issue. As noted above, to help inform these efforts, the Federal Reserve plans to issue a discussion paper to solicit public comment on a range of questions related to payments, financial inclusion, data privacy, and information security, with regard to a CBDC in the U.S. context.¹⁷ The Federal Reserve remains committed to ensuring a safe, inclusive, efficient, and innovative payments system that works for all Americans.

¹⁷ See Jerome Powell, “Federal Reserve Chair Jerome H. Powell Outlines the Federal Reserve’s Response to Technological Advances Driving Rapid Change in the Global Payments Landscape,” Board of Governors of the Federal Reserve System news release, May 20, 2021, <https://www.federalreserve.gov/newsevents/pressreleases/other20210520b.htm>.