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CBDC: A Solution in Search of a Problem?

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The payment system is changing in profound ways as individuals demand faster payments, central banks including the Fed respond, and nonbank entities seek a greater role in facilitating payments. In all this excitement, there are also calls for the Federal Reserve to “get in the game” and issue a central bank digital currency (CBDC) that the general public could use.

Chair Powell recently announced that the Federal Reserve will publish a discussion paper on the benefits and costs of creating a CBDC. This topic is of special interest to me, since I have worked on monetary theory for the last twenty years and researched and written about alternative forms of money for the last seven.¹ My speech today focuses on whether a CBDC would address any major problems affecting our payment system. There are also potential risks associated with a CBDC, and I will touch on those at the end of my remarks. But at this early juncture in the Fed’s discussions, I think the first order of business is to ask whether there is compelling need for the Fed to create a digital currency. I am highly skeptical.²

In all the recent exuberance about CBDCs, advocates point to many potential benefits of a Federal Reserve digital currency, but they often fail to ask a simple question: What problem would a CBDC solve? Alternatively, what market failure or inefficiency demands this specific intervention? After careful consideration, I am not convinced as of yet that a CBDC would solve any existing problem that is not being addressed more promptly and efficiently by other initiatives.

¹ For example, in 2016, my coauthors and I published a research paper that examined how the use of a privately issued currency backed up by shares of a broad stock market index could replace publicly issued fiat currency. See David Andolfatto, Aleksander Berentsen and Christopher Waller, “Monetary Policy with Asset-Backed Money,” *Journal of Economic Theory* 164 (July 2016): 166–86.

² These views are my own and do not represent any position of the Board of Governors or other Federal Reserve policymakers.

Before getting into the details, let me start by clarifying what I mean by “CBDC.” Put simply, a CBDC is a liability of the central bank that can be used as a digital payment instrument. For purposes of this speech, I will focus on *general purpose* CBDCs—that is, CBDCs that could be used by the general public, not just by banks or other specific types of institutions. A general purpose CBDC could potentially take many forms, some of which could act as anonymous cash-like payment instruments. For this speech, however, I will focus on account-based forms of CBDC, which the Bank for International Settlements recently described as “the most promising way of providing central bank money in the digital age.”³ Any such general purpose, account-based CBDC would likely require explicit congressional authorization.

Central Bank Money versus Commercial Bank Money

It is useful to note that in our daily lives we use both central bank money and commercial bank money for transactions. Central bank money (i.e., money that is a liability of the Federal Reserve) includes physical currency held by the general public and digital account balances held by banks at the Federal Reserve. The funds banks put into these accounts are called reserve balances, which are used to clear and settle payments between banks.⁴ In contrast, checking and savings accounts at commercial banks are

³ See Bank for International Settlements, *Annual Economic Report* (Basel: Bank for International Settlements, June 2021), <https://www.bis.org/press/p210623.htm>. Note that any CBDC would require some kind of supporting technology. For example, many commentators have considered the possibility that a CBDC could operate using a “distributed ledger.” Additionally, an account-based CBDC could potentially take different forms. For example, the infrastructure for an account-based CBDC could be designed so that the Federal Reserve would interact directly with the general public, or it could be designed so that banks or other service providers would maintain all customer relationships with the general public. My comments today focus on the policy issues associated with providing a CBDC rather than on technologies or infrastructure that would be necessary to support a CBDC.

⁴ The Federal Reserve also provides accounts and payment services to the United States government, certain government-sponsored enterprises, designated financial market utilities, foreign central banks, and certain international organizations.

liabilities of the banks, not the Federal Reserve. The bulk of transactions, by value, that U.S. households and firms make each day use commercial bank money as the payment instrument.

Federal Reserve Accounts and Commercial Bank Accounts

Under current law, the Federal Reserve offers accounts and payment services to commercial banks.⁵ These accounts provide a risk-free settlement asset for trillions of dollars of daily interbank payments. Importantly, the use of central bank money to settle interbank payments promotes financial stability because it eliminates credit and liquidity risk in systemically important payment systems.⁶

Congress did not establish the Federal Reserve to provide accounts directly to the general public; the Federal Reserve instead works in the background by providing accounts to commercial banks, which then provide bank accounts to the general public. Under this structure, commercial banks act as an intermediary between the Federal Reserve and the general public. The funds in commercial bank accounts are digital and can be used to make digital payments to households and businesses, but commercial banks promise to redeem a dollar in one's bank account into \$1 of U.S. currency. In short, banks peg the exchange rate between commercial bank money and the U.S. dollar at one-to-one. Due to substantial regulatory and supervisory oversight and federal deposit insurance, households and firms reasonably view this fixed exchange rate as perfectly credible. Consequently, they treat commercial bank money and central bank

⁵ For this purpose, I use the term "commercial bank" broadly to include banks, thrifts, credit unions, and other depository institutions.

⁶ See, for example, Committee on Payment and Settlement Systems, *The Role of Central Bank Money in Payment Systems* (Basel: Bank for International Settlements, August 2003), <https://www.bis.org/cpmi/publ/d55.pdf>.

money as perfect substitutes—they are interchangeable as a means of payment. The credibility of this fixed exchange rate between commercial and central bank money is what allows our payment system to be stable and efficient. I will return to this point later.

This division of functions between the Federal Reserve and commercial banks reflects an economic truth: that markets operate efficiently when private-sector firms compete to provide the highest-quality products to consumers and businesses at the lowest possible cost. In general, the government should compete with the private sector only to address market failures.

Consideration of the Case for a Federal Reserve CBDC

This brings us back to my original question: What is the problem with our current payment system that only a CBDC would solve?

Could it be that physical currency will disappear? As I mentioned before, the key to having credible commercial bank money is the promise that banks will convert a dollar of digital bank money into a dollar of U.S. physical currency. But how can banks deliver on their promise if U.S. currency disappears? Accordingly, many central banks are considering adoption of a CBDC as their economies become “cashless.” Eliminating currency is a policy choice, however, not an economic outcome, and Chair Powell has made clear that U.S. currency is not going to be replaced by a CBDC. Thus, a fear of imminently vanishing physical currency cannot be the reason for adopting a CBDC.⁷

Could it be that the payment system is too limited in reach, and that introducing a CBDC would make the payment system bigger, broader, and more efficient? It certainly

⁷ Physical currency can effectively disappear, and everything still works. All the central bank needs to do is promise to provide the currency if requested.

doesn't look that way to me. Our existing interbank payment services have nationwide reach, meaning that an accountholder at one commercial bank can make a payment to an accountholder at any other U.S. bank. The same applies to international payments—accountholders at U.S. banks can transfer funds abroad to accountholders at foreign banks. So, a lack of connectedness and geographic breadth in the U.S. payment system is not a good reason to introduce a CBDC.

Could it be that existing payment services are too slow? A group of commercial banks has recently developed an instant payment service (the Real-Time Payment Service, or RTP), and the Federal Reserve is creating its own instant payment service, FedNowSM.⁸ These services will move funds between accountholders at U.S. commercial banks immediately after a payment is initiated. While cross-border payments are typically less efficient than domestic payments, efforts are underway to improve cross-border payments as well.⁹ These innovations are all moving forward in the absence of a CBDC. Consequently, facilitating speedier payments is not a compelling reason to create a CBDC.

Could it be that too few people can access the payment system? Some argue that introducing a CBDC would improve financial inclusion by allowing the unbanked to more readily access financial services. To address this argument, we need to know, first, the size of the unbanked population, and second, whether the unbanked population would use a Federal Reserve CBDC account. According to a recent Federal Deposit Insurance

⁸ These services will complement the existing automated clearinghouse (ACH) payment network, which now enables same-day settlement of ACH payments.

⁹ Financial Stability Board, "FSB Delivers a Roadmap to Enhance Cross-Border Payments," news release, October 13, 2020, <https://www.fsb.org/2020/10/fsb-delivers-a-roadmap-to-enhance-cross-border-payments/>.

Corporation (FDIC) survey, approximately 5.4 percent of U.S. households were unbanked in 2019.¹⁰ The FDIC survey also found that approximately 75 percent of the unbanked population “were not at all interested” or “not very interested” in having a bank account. If the same percentage of the unbanked population would not be interested in a Federal Reserve CBDC account, this means that a little more than 1 percent of U.S. households are both unbanked and potentially interested in a Federal Reserve CBDC account. It is implausible to me that developing a CBDC is the simplest, least costly way to reach this 1 percent of households. Instead, we could promote financial inclusion more efficiently by, for example, encouraging widespread use of low-cost commercial bank accounts through the Cities for Financial Empowerment *Bank On* project.¹¹

Could it be that a CBDC is needed because existing payment services are unreasonably expensive? In order to answer this question, we need to understand why the price charged for a payment might be considered “high.” In economics, the price of a service is typically composed of two parts: the marginal cost of providing the service and a markup that reflects the market power of the seller. The marginal cost of processing a payment depends on the nature of the payment (for example, paper check versus electronic transfer), the technology used (for example, batched payments versus real-time payments), and the other services provided in processing the payment (for example, risk and fraud services). Since these factors are primarily technological, and there is no reason to think that the Federal Reserve can develop cheaper technology than private firms, it seems unlikely that the Federal Reserve would be able to process CBDC

¹⁰ “Key Findings from How America Banks: Household Use of Banking and Financial Services,” Federal Deposit Insurance Corporation, <https://www.economicinclusion.gov/surveys/2019household/>.

¹¹ See <https://joinbankon.org/>.

payments at a materially lower marginal cost than existing private-sector payment services.¹²

The key question, then, is how a CBDC would affect the markup charged by banks for a variety of payment services. The markup that a firm can charge depends on its market power and thus the degree of competition it faces. Introducing a CBDC would create additional competition in the market for payment services, because the general public could use CBDC accounts to make payments directly through the Federal Reserve—that is, a CBDC would allow the general public to bypass the commercial banking system. Deposits would flow from commercial banks into CBDC accounts, which would put pressure on banks to lower their fees, or raise the interest rate paid on deposits, to prevent additional deposit outflows.¹³

It seems to me, however, that private-sector innovations might reduce the markup charged by banks more effectively than a CBDC would.¹⁴ If commercial banks are earning rents from their market power, then there is a profit opportunity for nonbanks to enter the payment business and provide the general public with cheaper payment services. And, indeed, we are currently seeing a surge of nonbanks getting into payments. For example, in recent years, “stablecoin” arrangements have emerged as a

¹² Note that section 11A of the Federal Reserve Act (12 U.S.C. § 248a) directs the Federal Reserve to establish a fee schedule for its payment services. Over the long run, these fees are set “on the basis of all direct and indirect costs actually incurred in providing [a service], including interest on items credited prior to actual collection, overhead, and an allocation of imputed costs which takes into account the taxes that would have been paid and the return on capital that would have been provided had the services been furnished by a private business firm”

¹³ See David Andolfatto “Assessing the Impact of Central Bank Digital Currency on Private Banks,” *The Economic Journal* 131 (February 2021): 525–40.

¹⁴ The Federal Reserve’s longstanding policy is to offer new payment services to its accountholders only when “other providers alone cannot be expected to provide [those services] with reasonable effectiveness, scope, and equity.” See “The Federal Reserve in the Payments System” (issued 1984; revised 1990 and 2001), https://www.federalreserve.gov/paymentsystems/pfs_frpayssys.htm.

particularly important type of nonbank entrant into the payments landscape. Stablecoins are digital assets whose value is tied to one or more other assets, such as a sovereign currency. A stablecoin could serve as an attractive payment instrument if it is pegged one-to-one to the dollar and is backed by a safe and liquid pool of assets.¹⁵ If one or more stablecoin arrangements can develop a significant user base, they could become a major challenger to banks for processing payments. Importantly, payments using such stablecoins might be “free” in the sense that there would be no fee required to initiate or receive a payment.¹⁶ Accordingly, one can easily imagine that competition from stablecoins could pressure banks to reduce their markup for payment services.

Please note that I am not endorsing any particular stablecoin—some of which are not backed by safe and liquid assets. The promise of redemption of a stablecoin into one U.S. dollar is not perfectly credible, nor have they been tested by an actual run on the stablecoin. There are many legal, regulatory, and policy issues that need to be resolved before stablecoins can safely proliferate.¹⁷ My point, however, is that the private sector is already developing payment alternatives to compete with the banking system. Hence, it seems unnecessary for the Federal Reserve to create a CBDC to drive down payment rents.

Returning to possible problems a CBDC could solve, it is often argued that the creation of a CBDC would spur innovation in the payment system. This leads me to ask:

¹⁵ A well-designed stablecoin would function similarly to a “narrow bank,” which has a long tradition in economic theory but has never existed in any serious way as a competitor for commercial banks. Narrow banks take deposits and issue liabilities on themselves much like a standard bank. However, narrow banks hold only liquid, very safe assets that back up their liabilities 100 percent. They do not make loans or hold risky securities.

¹⁶ However, stablecoin payment might not be free in the sense that stablecoin users would allow their financial transaction data to be harvested and monetized.

¹⁷ The President’s Working Group on Financial Markets expects to issue recommendations related to stablecoins in the coming months. See <https://home.treasury.gov/news/press-releases/jy0281>.

do we think there is insufficient innovation going on in payments? To the contrary, it seems to me that private-sector innovation is occurring quite rapidly—in fact, faster than regulators can process. So, spurring innovation is not a compelling reason to introduce a CBDC.

Could it be, however, that the types of innovations being pursued by the private sector are the “wrong” types of payment innovations? I see some merit in this argument when I consider crypto-assets such as bitcoin that are often used to facilitate illicit activity. But a CBDC is unlikely to deter the use of crypto-assets that are designed to evade governmental oversight.

Could the problem be that government authorities have insufficient information regarding the financial transactions of U.S. citizens? In general, the government has sought to balance individuals’ right to privacy with the need to prevent illicit financial transactions, such as money laundering. For example, while the government does not receive all transaction data regarding accountholders at commercial banks, the Bank Secrecy Act requires that commercial banks report suspicious activity to the government.

Depending on its design, CBDC accounts could give the Federal Reserve access to a vast amount of information regarding the financial transactions and trading patterns of CBDC accountholders. The introduction of a CBDC in China, for example, likely will allow the Chinese government to more closely monitor the economic activity of its citizens. Should the Federal Reserve create a CBDC for the same reason? I, for one, do not think so.

Could the problem be that the reserve currency status of the U.S. dollar is at risk and the creation of a Federal Reserve CBDC is needed to maintain the primacy of the

U.S. dollar? Some commentators have expressed concern, for example, that the availability of a Chinese CBDC will undermine the status of the U.S. dollar. I see no reason to expect that the world will flock to a Chinese CBDC or any other. Why would non-Chinese firms suddenly desire to have all their financial transactions monitored by the Chinese government? Why would this induce non-Chinese firms to denominate their contracts and trading activities in the Chinese currency instead of the U.S. dollar? Additionally, I fail to see how allowing U.S. households to, for example, pay their electric bills via a Federal Reserve CBDC account instead of a commercial bank account would help to maintain global dollar supremacy. (Of course, Federal Reserve CBDC accounts that are available to persons outside the United States might promote use of the dollar, but global availability of Federal Reserve CBDC accounts would also raise acute problems related to, among other things, money laundering.)

Finally, could it be that new forms of private money, such as stablecoins, represent a threat to the Federal Reserve for conducting monetary policy? Many commentators have suggested that new private monies will diminish the impact of the Federal Reserve's policy actions, since they will act as competing monetary systems. It is well established in international economics that any country that pegs its exchange rate to the U.S. dollar surrenders its domestic monetary policy to the United States and imports U.S. monetary policy. This same logic applies to any entity that pegs its exchange rate to the U.S. dollar. Consequently, commercial banks and stablecoins pegged to the U.S. dollar act as conduits for U.S. monetary policy and amplify policy actions. So, if anything, private stablecoins pegged to the dollar broaden the reach of U.S. monetary policy rather than diminish it.

After exploring many possible problems that a CBDC could solve, I am left with the conclusion that a CBDC remains a solution in search of a problem. That leaves us only with more philosophical reasons to adopt a CBDC. One could argue, for example, that the general public has a fundamental right to hold a riskless digital payment instrument, and a CBDC would do this in a way no privately issued payment instrument can.¹⁸ On the other hand, thanks to federal deposit insurance, commercial bank accounts already offer the general public a riskless digital payment instrument for the vast majority of transactions.

One could also argue that the Federal Reserve should provide a digital option as an alternative to the commercial banking system. The argument is that the government should not force its citizens to use the commercial banking system, but should instead allow access to the central bank as a public service available to all.¹⁹ As I noted earlier in my speech, however, the current congressionally mandated division of functions between the Federal Reserve and commercial banks reflects an understanding that, in general, the government should compete with the private sector only to address market failures. This bedrock principle has stood America in good stead since its founding, and I don't think that CBDCs are the case for making an exception.

In summary, while CBDCs continue to generate enormous interest in the United States and other countries, I remain skeptical that a Federal Reserve CBDC would solve any major problem confronting the U.S. payment system. There are also potential costs

¹⁸ See Aleksander Berentsen and Fabian Schar "The Case for Central Bank Electronic Money and the Non-Case for Central Bank Cryptocurrencies," Federal Reserve Bank of St. Louis, *Review* 100, no. 2 (Second Quarter 2018).

¹⁹ See David Andolfatto "Fedcoin: On the Desirability of a Central Bank Cryptocurrency," *Macromania Blog*, February 3, 2015, <http://andolfatto.blogspot.com/2015/02/fedcoin-on-desirability-of-government.html>.

and risks associated with a CBDC, some of which I have alluded to already. I have noted my belief that government interventions into the economy should come only to address significant market failures. The competition of a Fed CBDC could disintermediate commercial banks and threaten a division of labor in the financial system that works well. And, as cybersecurity concerns mount, a CBDC could become a new target for those threats. I expect these and other potential risks from a CBDC will be addressed in the forthcoming discussion paper, and I intend to expand upon them as the debate over digital currencies moves forward.