

# **DIGITAL DOLLARS:** Critical Design Choices and Effects of a Central Bank Digital Currency

REPORT BY **CHRIS HUGHES**  
MAY 2022





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## ACKNOWLEDGMENTS

The author thanks Harry Whomersley for dedicated research support and conceptual development, Tim Barker and Peter Spiegler for their careful suggestions and edits, and Mehrsa Baradaran and Lev Menand for their comments and insights. Roosevelt staff Emily DiVito, Sonya Gurwitt, Suzanne Kahn, and Niko Lusiani, as well as Beryl Frishtick, all contributed to this project.



# INTRODUCTION

Interest in central bank digital currencies (CBDCs) is surging. In March, President Biden issued an executive order directing the United States government to assess the merits of a CBDC (White House 2022). The Federal Reserve's research division issued an initial paper exploring how a CBDC might work in January (Board of Governors of the Federal Reserve System 2022b), and Governors of the Federal Reserve have made clear that the central bank is considering the idea (Brainard 2022). Meanwhile, a joint project by the Massachusetts Institute of Technology and the Federal Reserve Bank of Boston has piloted a CBDC technology that achieves transaction speeds significantly faster than the best existing cryptocurrency networks, sustaining 1.7 million transactions per second (Werkema et al. 2022).

Multiple factors are driving this surge of interest, including the rise of stablecoins, China's issuance of its own CBDC, and record fiscal transfers in the wake of the COVID-19 pandemic. American policymakers are understandably worried that the United States risks falling behind if it does not issue a CBDC of its own.

The seemingly simple question of whether the Fed should issue a CBDC masks complex technological, financial, geopolitical, and privacy issues. Some designs of a CBDC could fundamentally transform the international financial system, with significant implications for the domestic and global political economy.

Today's debate suffers from definitional ambiguity. When some technologists discuss a digital dollar, they mean a currency built on a decentralized ledger and able to move across international borders seamlessly. By contrast, some academics and policymakers simply mean the digital dollars that are already stored in the bank accounts of financial institutions at the Federal Reserve. Too often, when we debate CBDCs, we are talking past one another.

This report attempts to cut through the confusion and hype around CBDCs to offer a clear view of what CBDC is and assess what it might offer to various stakeholders—American consumers, the banking and finance sectors, and the United States as a geopolitical actor. It lays out the contours of the existing debate and analyzes the competing proposals with a particular eye to the power dynamics: If the Fed launched a CBDC, who would win and who would lose? And how would the specific designs of the CBDC alter outcomes for various stakeholders?

***The challenges facing today's financial system are manifold—it is inefficient, exclusionary, and ripe for disruption by more nimble and inventive competitors. Preserving the status quo would hurt American consumers and the geopolitical power of the United States.***

Put simply, central bank digital currencies are a solution in search of a problem. The current interest in CBDC is driven by a fascination with new technology rather than anything specific that can be accomplished through its use. The challenges facing today's financial system are manifold—it is inefficient, exclusionary, and ripe for disruption by more nimble and inventive competitors. Preserving the status quo would hurt American consumers and the geopolitical power of the United States.

The Fed and Congress, however, can fix these problems by building efficient, inclusive monetary and financial systems for the 21st century. The Fed might develop and expand the emerging FedNow payment system, take on serious study of a public option for banking offered by the Federal Reserve or Treasury, and call for enhanced regulatory power over the emerging stablecoin market. None of these actions requires issuing a CBDC.

Some of these recommendations require Congressional authorization, but that does not mean the Fed as an institution should stand idly by in wait. The clearer the Fed is about how best to create an effective and modern banking system, the more likely that Congress will act.

This report proceeds in four major sections. The first defines what we mean by a central bank digital currency. The second explains the rush of interest in CBDCs. The third examines the range of possible design decisions. The fourth examines the arguments for a digital dollar, and other tools that might be leveraged to accomplish the same meaningful goals.



## SECTION ONE

# DEFINING A CENTRAL BANK DIGITAL CURRENCY

The debate around issuing a central bank digital currency suffers from deep definitional ambiguity. The Fed today defines a CBDC broadly, as “a digital liability of the Federal Reserve that is widely available to the general public” (Board of Governors of the Federal Reserve System 2022b). But that definition is so vague that it encompasses multiple conceptions of what a CBDC might mean.

Scholars, advocates, and technologists use the vocabulary of “digital dollars” and “CBDCs” interchangeably to talk about significantly different financial products. The digital dollar that Senator Elizabeth Warren envisions is very different from the one imagined by J.P. Morgan Chase or technologists at MIT (Elizabeth Warren interview 2022; J.P. Morgan and Oliver Wyman 2021; Federal Reserve Bank of Boston and MIT 2022). The concept must therefore be clarified in order to understand whether a CBDC is a viable solution to existing problems in financial markets.

The vast majority of dollars in today’s domestic and global economy are “digital.” Total digital dollar deposits in US banking institutions today add up to just over \$18 trillion (Board of Governors of the Federal Reserve System 2022a), and only about 3 percent of current dollars exist in cash (Mookerjee 2021).

The digital currency that we use, however, is not held at the central bank; most deposits are held at commercial banks. Nor are the deposits technically guaranteed by the central bank, although the Federal Deposit Insurance Corporation (FDIC) insures commercial banking accounts up to \$250,000.

There are, however, some dollars that are kept on a digital ledger directly at the Federal Reserve. Depository institutions are required to park some portion of their required reserves at the central bank, and these funds, in theory, can be considered an existing central bank digital currency. Whenever the Fed conducts an open market purchase of Treasury bills, for example, it “pays for” the bills with digital central bank currency by crediting one of these accounts on a centralized ledger.

This matters because some CBDC advocates imagine that a democratized Fed could provide these existing digital dollars to all Americans, creating a central bank digital currency on a centralized digital ledger. Effectively, this approach would serve as a public option for banking built on government-issued accounts at the Federal Reserve and does not rely on new technological innovations (Menand et al. 2021; Hockett and Omarova 2016).



In contrast, technology-minded financial experts imagine something very different when they talk about a CBDC. Proposals vary, but many envisage a CBDC built on the blockchain (or blockchain-like technology infrastructure) that is compatible with existing core banking systems. Proponents argue that this design would ensure that central banks maintain a role in interbank settlement amidst the wider adoption of stablecoins (Consensus 2022). We have already seen this version of a CBDC—best envisaged as a kind of “public option” stablecoin (Graf 2022)—via the Boston Fed-MIT partnership, whose prototype uses blockchain-like technology (Federal Reserve Bank of Boston and MIT 2022, 22).

Still others imagine an approach where digital dollars are issued directly by the Federal Reserve but exist in an intermediated system where accounts (or “wallets”) are held only by commercial banking institutions. This would require separate accounts for “100%-reserve” dollars or a wholesale shift in the model of commercial banking.

These are stylized sketches, which we will explore further in Section 4. They demonstrate, however, the vast range of definitional ambiguity and highlight the importance of clarifying what a CBDC can and should be.

We believe that a CBDC should be defined as a new form of digital currency, one that doesn't yet exist today. In this report, when we refer to proposals to create a CBDC, we mean proposals to create a new kind of widely accessible, digital dollar that historically was not possible due to technical limitations.

By contrast, we treat proposals that recommend public banking options—whether through direct, citizen-held accounts at the Federal Reserve or Treasury, or postal banking—as distinct from the CBDC debate. These are indeed good ideas with much promise, but the creation of these accounts was possible well before the CBDC debate emerged, and they do not rely on any meaningfully new technical innovations.

The more specific we are in maintaining that CBDCs should be technology-enabled, central bank dollars, the easier it is to evaluate the impact their introduction might have.



## SECTION TWO

# THE RUSH OF INTEREST IN CBDCS

The explosion of interest in CBDCs has multiple drivers: the rise of cryptocurrencies and stablecoins, the launch of China's CBDC, historic fiscal transfers in the wake of COVID-19, and growing interest on the part of other major central banks.

## 2.1 CRYPTOCURRENCY & STABLECOINS

In a little over a decade, cryptocurrencies have evolved from a niche Silicon Valley fascination to a major global asset class.<sup>1</sup> A 2021 Pew Research survey suggested that 86 percent of Americans have heard at least something about cryptocurrencies and as many as 16 percent have actively bought or sold them (Perrin 2021).

The global rush into cryptocurrencies cannot be chalked up to faddish fascination with new technology, the recent historically low interest rate environment, or old-fashioned market speculation, even though all these factors have certainly contributed to their rise. Cryptocurrencies respond to a market demand: for instantaneous, real-time value transfer unmediated by banks or financial institutions.

However, cryptocurrencies' value is wildly unstable, which means they do not serve as effective units of account or stores of value and so are not money in any conventional sense. Therefore, in the past several years, a subcategory of cryptocurrency called stablecoins has exploded in popularity. Stablecoins build on the fundamental value of cryptocurrencies but tie their value to underlying stable assets. Unlike Bitcoin or other cryptocurrencies, stablecoin issuers attempt to peg the value of a single stablecoin to the value of a unit of fiat currency, usually the dollar, or a basket of currencies or other assets.

To purchase stablecoins, consumers transfer money to a private company from their commercial bank account and receive theoretically dollar-equivalent stablecoins in return.<sup>2</sup>

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<sup>1</sup> Estimates for the market capitalization of all cryptocurrencies reach as high as \$1.7 trillion. This headline figure is somewhat misleading because much of the value is in tokens, which have never been sold on the market. Token prices on unregulated crypto exchanges are susceptible to "pump-and-dump" schemes which artificially affect prices. The true market size is likely significantly smaller. Nevertheless, this inflated figure makes crypto a major asset class and one which seems likely to rise. See <https://coinmarketcap.com/charts/> and Greifeld 2022 for further details.

<sup>2</sup> In practice, \$100 does not buy 100 stablecoins, because of the fees taken by transfer agents and platforms like Coinbase. For example, spending \$100 on Coinbase leads to the purchase of 96.16 USDCoin after fees.



These coins can enable real-time payments, settled without the need of a bank or a third party but with a relatively stable value.<sup>3</sup> Unlike other cryptocurrencies, stablecoins are managed by a centralized provider and backed up by assets that these companies have purchased. They are compliant with Know Your Customer regulatory requirements. Consumers, in theory, may move their money back out of stablecoins and into ordinary dollars at any time.

Since January 2020, the total supply of dollar stablecoins has grown from \$6 billion to \$174 billion (Department of the Treasury 2022). According to a recent Treasury report, most stablecoins today are being used for digital asset trading because of their ability to settle payments in real time. The Treasury does, however, anticipate that this currency could be used for retail or supply chain payments in the future. Calling the likelihood “hard to predict,” the report is clear that “the transition to more widespread use could occur quickly” (President’s Working Group on Financial Markets 2021).

Despite concerns about the stability of their reserves, most major stablecoins have managed to retain value at or around the level of the dollar (Prasad 2021, 155-157). As long as this commitment to redeem at par value holds strong, it seems likely that the meteoric rise of stablecoins will only continue.

This promise of stability is built on consumer faith that the asset pools will enable the issuer to maintain the intended peg. Stablecoin companies take in currency and invest those funds in financial products.<sup>4</sup> Nothing in the regulatory framework requires these companies to share their investment strategies, and nothing prevents them from extending credit to other entities.<sup>5</sup> The largest stablecoin companies—Tether, Circle, and Binance—all maintain substantial operations offshore, helping them skirt certain US financial regulations.

One of regulators’ biggest concerns is a possible run on stablecoins. Unless the stablecoin company supporting the value had sufficient liquidity to buy the stablecoins being sold in the market, the value of the coin could fall below the fiat currency’s value.

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<sup>3</sup> Or, at least, not fluctuating more than the value of the assets to which they’re pegged.

<sup>4</sup> This can produce substantially different business models. Tether, for example, is backed by an investment basket which includes large amounts of commercial paper, corporate bonds, commercial loans, and other cryptocurrencies (see Yang 2021). Meanwhile, Circle, the company behind USDCoin, is 61 percent backed by sovereign money.

<sup>5</sup> Stablecoins are closest to money market funds in structure, except the underlying asset being purchased is the cryptocurrency. See Department of the Treasury 2022.

The implicit guarantee that a stablecoin holder thought she had for convertibility could quickly go up in smoke, similar to what happened with money market mutual funds (MMMFs) in the 2008 crisis.<sup>6 7</sup>

Clearly, the private sector has created a synthetic dollar that consumers want, but with significant risk to stablecoin buyers. Given the explosion in the size of the stablecoin market and the attendant risk, central bankers face an important question: Do we need a Federal Reserve-backed digital dollar to securely provide more liquidity to markets? We evaluate this as a potential solution in Section 4.3.

## 2.2 CHINA AND INTERNATIONAL COMPETITION

At the same time that private synthetic currencies have challenged central banks, the rise of China's digital yuan has Americans and Europeans considering whether to pursue CBDCs of their own.

Since World War II, the preeminent role of the dollar and Wall Street in international finance has expanded the sphere of American political and economic influence (Krippner 2011, 86-105). Nearly half of global exports are invoiced in dollars, strengthening the power of American economic sanctions, as we have seen with the sanctions imposed after Russia's invasion of Ukraine.<sup>8</sup> Among other advantages, the breadth and depth of dollar usage incentivizes international investors to move into US securities, particularly in times of crisis, thereby decreasing the cost of debt servicing for the American government.<sup>9</sup>

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<sup>6</sup> Although we note that the scale of the MMMF industry in 2008 is of a different order than that of stablecoins in 2022—MMMFs held \$3.58 trillion in deposits in 2008 (see McCabe 2010) compared to \$184.8 billion in stablecoin market cap (see <https://coinmarketcap.com/view/stablecoin/>) today—the stablecoin industry is rapidly expanding (see Greifeld 2022) and fulfills a similar niche as that occupied by MMMFs.

<sup>7</sup> The promise of money market mutual funds to redeem holdings at par was exposed as an illusion in September 2008 when larger funds could no longer redeem principals at par. In the absence of any federal insurance on the principal, this stimulated a run on money market funds more broadly as \$500 billion of MMMF investments fled for the safety of treasuries and bank deposits. This was one factor in the spectacular funding market contraction of September 2008 and, along with the simultaneous contractions in the repo and eurodollar markets, resulted in the doubling of the amount of money an investment bank would need to mobilize to hold anything other than top-quality securities. In the completely unregulated stablecoin market, such a scenario seems plausible, if not likely. (See Tooze 2018, 152-153.)

<sup>8</sup> Estimates suggest that 40 percent of global exports are invoiced in dollars, even though only 10 percent are from the United States. In southeast Asia, that number reaches 80 percent (Greene 2021).

<sup>9</sup> Escaping from this “dollar hegemony” has been a long-term concern of many international governments, from French Prime Minister Valéry Giscard d'Estaing complaining of “America's exorbitant privilege” under the Bretton Woods system in the 1960s to modern-day developing countries who have accumulated dollars to insure against debt shocks, often at the expense of domestic investment. Many have seen the recent issuing of CBDC by the People's Bank of China (PBOC) as having the ability to conclusively end the dollar's hegemonic role in global trade (Eichengreen 2010, 4; Feygin and Leusder 2020). Economically, it has never been clear that a strong dollar helps working-class Americans. The dollar's reserve status makes the currency disproportionately expensive, contributing to the demise of export-driven industries.

The Chinese are sanguine about the multiple benefits a CBDC offers to rival American influence. Within China, the digital yuan (e-CNY) is primarily seen as an attempt to wrest control of retail payments from the private hands of WeChat Pay and Alipay and to boost China's ability to surveil and track its citizens. Internationally, it holds the promise of enabling Chinese companies to avoid the dollar-denominated international financial system (Greene 2021).

Despite a recent bump in usage during the Winter Olympics, e-CNY adoption rates have been slower than many analysts expected (Shrivastava 2022). Chinese consumers already enjoy digitally mediated, immediate, ledger-based payments, minimizing the consumer gains from the e-CNY. Unsurprisingly, many Chinese citizens have surveillance and privacy concerns.<sup>10</sup> Despite these challenges, Chinese officials claimed in January 2022 that 261 million individuals have downloaded the e-CNY app, more than double the figure in October 2021 (Ju 2022).

Political and financial leaders in the US have every reason to be worried that China's investment in CBDC infrastructure threatens American geopolitical hegemony, as we will see in Section 4.5. Whether an American CBDC is the best tool to counter the rising Chinese threat is very much in question.

## 2.3 FISCAL TRANSFERS

Over the course of the COVID-19 pandemic, Congress authorized on three occasions the distribution of stimulus checks to most Americans, adding up to over \$867 billion in direct transfers (Peter G. Peterson Foundation 2021). To facilitate the payments, Congress directed the IRS to use the same system that powers tax refunds. Only Americans who had filed tax refunds received the funds automatically, leaving out many of the poorest—disproportionately Black, Latinx, or mixed-status households (Narea 2020)—who had not earned enough income to pay income taxes. In addition, despite the IRS's heroic work, millions of eligible recipients failed to receive their initial check within six months. Delays were significantly longer in later rounds of distribution, ranging between three weeks and four months.<sup>11</sup> In trying to access their stimulus checks, Americans paid an estimated \$66 million to extractive, non-bank check cashing services (Murphy 2021).

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<sup>10</sup> Although the PBOC and the Chinese government have remained vague about the precise surveillance abilities encoded within the e-CNY, Chinese officials have not shied away from the fact that CBDC makes money more traceable, as it contains the information of every holder of that particular token over the course of its lifetime. A PBOC position paper on the subject confirms that “key data of the entire lifecycle of [the e-CNY will] . . . be extracted covering the issuance, circulation, exchange, storage and retrieval of currency” and that “it is important to build up a cloud chart for [e-CNY] operation and distribution that clearly shows the size [and] location” (Yao 2018).

<sup>11</sup> The IRS was never set up to facilitate payments of this magnitude. The agency's chronic underfunding means it's a struggle to maintain even normal operations—let alone significantly increase its scope.

As the scale of fiscal transfers to Americans has dwarfed previous waves of fiscal transfers, many have wondered if there isn't a more efficient and effective way to get money to Americans. A set of proposals would provide every American with a Social Security number a deposit account either at the Federal Reserve or at a public bank, helping the unbanked in particular access government fiscal transfer, as Section 4.2 explores.<sup>12</sup>

Some FedAccount advocates make the case for a central bank digital currency, believing that its creation would require the Fed to offer direct accounts to all Americans. In a period where fiscal transfers have hit record levels, more activists and scholars have seen the creation of a CBDC tied to FedAccounts as a viable method to facilitate fiscal stimulus with many additional benefits.



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<sup>12</sup> At present, the Fed is allowed to maintain accounts for US depository institutions, the US Treasury, certain government-sponsored residential mortgage providers, certain foreign governments, banks (both central and private), and international organizations, as well as assorted other smaller governmental and government-sponsored entities (see See 12 U.S.C. § 286d, 342, 347d, 358, 391, 1435, 1452(d), 1723a(g) and 5465). Any move toward FedAccounts would therefore require an act of Congress.

## SECTION THREE

# DESIGNING THE DIGITAL DOLLAR

There is no clear consensus around how to design a CBDC. The extent of financial market disruption, consumer benefit, and geopolitical power that a central bank digital currency might confer depends entirely on its design. Therefore, evaluating whether a digital dollar is worthwhile hinges on foundational design considerations.

The one common trait that all CBDC proposals share is the currency's status as a liability of the central bank. No matter who is using it or for what purpose, the central bank is directly liable for the digital currency's value. All CBDC designs lack credit risk<sup>13</sup> of any sort and are not commercial bank money.

Below, we highlight five of the most foundational design questions which shape how a CBDC functions in the world:

1. Should the CBDC be built on blockchain or a centralized digital ledger?
2. Where can the CBDC be held?
3. How much CBDC can an individual or corporation hold at any one time?
4. Should the CBDC bear interest, how much, and in what circumstances?
5. Should the CBDC be programmable?

Exploring the merits of varied design decisions helps to shed light on the varied impacts a CBDC could have on the modern economy. This section aims to explore the trade-offs in each of these designs, purposefully posing more questions than answers.

## 3.1 SHOULD A CBDC BE BUILT ON BLOCKCHAIN OR A CENTRALIZED DIGITAL LEDGER?

Perhaps the most contested debate in CBDC design is whether a digital dollar should be programmed on the blockchain, a decentralized ledger technology (DLT), or through a centralized ledger technology (CLT).

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<sup>13</sup> Or, at least, no more credit risk than of the issuing central bank.

The DLT approach favored by blockchain advocates would use a peer-to-peer protocol to eliminate the need for a centralized authority to facilitate transfers or check for manipulation and fraud.<sup>14</sup> The peer-to-peer nature of DLT means transactions do not rely on intermediaries, including governments and banks, but it does not introduce significant new security risk. Assets can be transferred securely without relying on institutional intermediaries. It also enables near-instantaneous updating of financial transactions and records, with relatively small time lag for settlement or clearance.

DLT databases are spread across multiple devices, each of which saves and updates a copy of the ledger. Once the Fed issued the CBDC, no institution would be required to facilitate transactions. All the devices update themselves with the agreed “correct” copy of the ledger, preventing theft or loss (Maull et al. 2017). For cyber-crime or fraud to occur, the entire network of devices would have to be attacked or hijacked at the same time.<sup>15</sup>

Despite the technical complexity of the idea, the best way to think about a digital dollar built on DLT is perhaps the simplest: It would work like the paper currency in your wallet but with a record of where it’s been in the past. It could be transferred quickly and easily between individuals or businesses without the government facilitating the exchange.<sup>16</sup> It would be easily verifiable that a dollar is a dollar, and would be legal tender in the United States for all debts public and private.

There are two significant downsides to this approach. First, unlike paper currency, significant amounts of a blockchain-based CBDC could move instantaneously between individuals or institutions. Whereas paper currency transactions do not make logistical sense above a certain threshold (typically a few thousand dollars), this physical limitation would no longer apply. If the decentralized approach embraced anonymity, users could instantaneously and anonymously transfer unlimited amounts of money, making it attractive to money launderers, sanction busters, or anyone engaged in illicit financial activity.

Second, a DLT-based system would not be interoperable with the existing financial infrastructure. Imagine a world where consumers have a traditional deposit account to hold “normal” dollars at their local bank, but require a second account or wallet to hold the DLT dollar. Unless Congress and the Fed decided to eliminate all commercial deposit

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<sup>14</sup> It is impossible to build a decentralized ledger CBDC without using certain techniques also used by blockchains, such as asymmetric cryptography and cryptographically linked blocks of data (Federal Reserve Bank of Boston and MIT 2022).

<sup>15</sup> While it is probably *de facto* true for large DLT-reliant technologies like Bitcoin, which uses thousands of devices in its DLT, no DLT is theoretically immune from all hijacking, known as “51% attacks,” i.e., if hackers are able to gain control of the mining and computing power of a majority of devices on the network.

<sup>16</sup> Each transaction is, however, recorded in the blockchain, which means it could be tracked back to a particular individual or institution. This is a potential privacy concern, albeit one that is more acute with regard to CLT.

banking, an entire second financial ecosystem would develop. This would be undesirable because, as Lev Menand, John Crawford, and Morgan Ricks write in their report on digital dollars, “When it comes to money and payments, integration and interoperability beat fragmentation and balkanization” (Menand et al. 2021, 118).

By contrast, a digital dollar built on a centralized ledger would look like today’s digital dollars. In this scenario, the Federal Reserve would work with other institutions—banks, companies, and government agencies—to maintain records of cash balances. Settlement and clearing would be operated through centralized systems, akin to the payment and wiring systems used today. However, such technology carries with it negative privacy implications that have worried some lawmakers (Office of Ted Cruz 2022) and activists (Sats Symbol 2022). The Fed paper outlining their policy has claimed that privacy protections would be built into the system, but it is clear that greater outreach is needed to ensure that these promises are taken seriously.

## 3.2 WHERE CAN THE CURRENCY BE HELD?

A CBDC could be held by consumers and institutions in multiple ways with at least three clear options.

First, CBDCs could be held exclusively in FedAccounts, which function as ordinary deposit accounts at the Fed.<sup>17</sup> Under this scenario, digital dollars would move around inside the walled system of the central bank and would not leave this system to move into the commercial banking sector, crypto wallets, or foreign accounts. Individuals would have balances at the central bank, and retailers would use their own accounts at the central bank for receiving and paying funds. Because the balances would be comprised of sovereign-backed currency, overdrafts would not be possible, and the Fed would be unlikely to charge fees for transfers.

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<sup>17</sup> This is not an approach currently considered by the Board of Governors of the Federal Reserve System 2022. It is, however, one that may hold significant positive outcomes (see, *inter alia*, Section 4.2). Congress could require the Fed to pursue it at any time.

Most FedAccount advocates imagine that the Fed would build a digital application enabling individuals to open, manage, and use accounts. The Fed might choose to create an application programming interface (API) to enable the private sector to build products to help consumers manage their accounts better. An approach of this kind would enable continued private sector innovation in the fintech sector, without sacrificing the promise of a fee-free, entirely secured, instantaneous transfer FedAccount system.<sup>18</sup> (More on the history of public banking and benefits to financial inclusion in Section 4.2.)

Alternatively, the Fed could design a system in which digital dollars are held by licensed banking institutions. This is what the Fed seems most interested in, highlighting in its own report that it would like a CBDC to be “intermediated” by existing institutions. In this design, account holders would open a CBDC-specific account at a private bank alongside any other checking or savings accounts they might have. Deposits in these CBDC accounts would be guaranteed by the Federal Reserve with no credit or liquidity risk. The dollars inside would be the liability of the central bank and thus only housed at the commercial bank. These would be “wallets” rather than “accounts,” given that the bank would not consider the funds to be liabilities of their own.

Finally, a CBDC could also be held in wallets at a wide range of companies and non-financial institutions. This could be done in two ways. Just as consumers use wallets to hold cryptocurrencies, it’s possible to build a blockchain-based digital dollar that can be held in crypto wallets. The digital dollar could also be held by third-party, non-financial companies as custodians. Companies like Venmo or Coinbase could hold the digital dollar, without adopting a wallet technology.

In these scenarios, the Fed would license only certain wallet providers, folding them into the Federal Reserve system and setting requirements for security and compliance. The Fed would likely use this approach to enforce Know Your Customer regulations and to ensure a basic degree of security for the wallets to prevent easy theft. Corporate wallet providers could be paired with nonprofit providers or governmental partners like the US Postal Service.

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<sup>18</sup> This system would have numerous benefits for consumers, small businesses, and potentially investors, depending on other design decisions. All Americans would have access to free bank accounts. Deposits would be fully guaranteed by the Federal Reserve directly. Transfers would occur instantaneously, disproportionately helping the poorest Americans—those who live paycheck to paycheck. Detractors are primarily concerned with how FedAccounts could disintermediate existing commercial banks.



Advocates believe that a wallet approach would provide a sizable boost to access. To see any kind of meaningful uptake by the private sector, however, wallet providers would have to have a clear financial interest, likely either through charging customers fees or selling access to the bulk financial data and insights their data produces. Additionally, a new regulatory structure would be required to ensure that non-bank financial companies do not use the CBDC reserves in their wallets for credit or security operations, making them unchartered illegal banks.

### 3.3 HOW MUCH CBDC CAN AN INDIVIDUAL OR CORPORATION HOLD AT ANY ONE TIME?

Congress and the Fed would need to decide whether to create a cap for how much CBDC an individual or company might hold. The existence of a cap and its level are the primary determinants of the level of banking disintermediation a CBDC might precipitate. The higher the cap (or if there's no cap at all), the more disruption for the financial sector.

If Congress and the Fed decided not to cap the amount of CBDC a person or company might hold, many analysts expect a migration from dollar deposits in commercial bank accounts into CBDC (Keister and Sanches 2021). Individuals and institutions would be attracted by the near-instantaneous transfers, the guarantee of value, and the fee-free nature of the new accounts.

If holdings were uncapped and the CBDC were held only in FedAccounts or in wallets, commercial banking institutions would likely see a sustained drain of deposits and a transformation of their business model (more on this in Section 4.6). Given the seismic change that this would mean for the system, some advocates of uncapped CBDC holdings favor a moderated cap system as part of a phase-in program.<sup>19</sup>

Suggestions for the size of the cap vary. Most individuals and small businesses keep a modest amount of funds in cash at any point in time. According to Fed figures for 2019, the most recent pre-pandemic year, the median amount held in US households' transaction accounts was \$5,300,<sup>20</sup> while the median small business held an average daily cash balance of \$12,100.<sup>21</sup>

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<sup>19</sup> Whether the CBDC bears interest matters significantly here. In a moderate or high interest rate environment, an uncapped CBDC that pays no interest would only partly disintermediate bank deposits (see Section 4.4, below and Menand et al. 2021).

<sup>20</sup> The median amount varies by race: \$8,200 for white households, \$1,950 for Hispanic households, and \$1,510 for Black households. ([https://www.federalreserve.gov/econres/scf/dataviz/scf/chart/#series:Transaction\\_Accounts;demographic:all;population:1;units:median](https://www.federalreserve.gov/econres/scf/dataviz/scf/chart/#series:Transaction_Accounts;demographic:all;population:1;units:median).)

<sup>21</sup> The median amount of cash balance a business owns varies widely by sector: Construction services hold \$10,700, personal services hold \$5,300, and high tech manufacturing businesses hold \$34,200 (Farrell and Wheat 2016).

Financial institutions interested in some of the benefits of a CBDC are, unsurprisingly, the most interested in setting low caps. An internal report by J.P. Morgan, for instance, argues for a hard cap of \$2,500 (Ledger Insights 2021). The European Central Bank has also floated the idea of limiting holdings of a putative digital euro to €3,000, about \$3,400 (Jones 2021). The Peterson Institute published a paper in 2020 proposing a limit of \$10,000 (Coronado and Potter 2020). Caps at these relatively modest levels would keep the basic structure of the commercial banking system in place, effectively relegating the usage of CBDC to retail and peer-to-peer payments.

It isn't clear how a cap would be enforced. The commitment to providing a no-fee financial product would prohibit "excess deposit" fees. Would the currency be programmed so that any account or wallet would reject additional payments above a certain level? This would create a new source of financial uncertainty for consumers: How much should they keep inside a CBDC account versus a private commercial bank account? Given this complexity, many consumers, particularly less financially sophisticated ones, might choose to stick with commercial bank deposits.

### **3.4 SHOULD THE CBDC BEAR INTEREST, HOW MUCH, AND IN WHAT CIRCUMSTANCES?**

Bank accounts at the Federal Reserve currently provide a minimum level of interest on the deposits of financial institutions. This was designed to broaden the scope of monetary policy and make it easier for the Fed to hit its short-term interest rate targets (Federal Reserve Bank of San Francisco 2013). Certain synthetic digital dollars, like the USDC stablecoin offered by the private company Circle, offer interest to holders.

Congress and the Fed might make the digital dollar interest-bearing to provide the same services it currently offers financial institutions.<sup>22</sup> This would enable Americans to enjoy some return, however modest, on entirely liquid cash deposits.

Interest-bearing CBDCs would also enhance monetary policy transmission. Currently the Fed adjusts monetary policy largely by influencing the Federal Funds Rate (FFR), the benchmark rate that banks pay to borrow central bank money from one another. For instance, when the Fed raises rates today, it shifts the federal funds spread and pays more interest to banks on their accounts at the Federal Reserve.

But the pass-through of policy rate changes to interest rates in the broader economy can be weak, blunting the effect of monetary policy changes. This attenuation of pass-

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<sup>22</sup> Congress authorized the Fed to begin paying interest on reserves in 2006, and this continues to be an important tool in managing the Federal Funds Rate. Currently the Fed is legally prohibited from providing interest directly to individuals.

through is due in part to the fact that banks and other financial companies can benefit by increasing lending rates immediately in response to increased Fed policy rates but delaying increases in deposit rates. Directly paying interest to consumers through the CBDC would eliminate the reliance on financial intermediaries in the federal funds market to pass on interest rate movements. This would enhance the effectiveness of monetary policy, as is discussed in Section 4.4.

### 3.5 SHOULD THE CURRENCY BE PROGRAMMABLE?

Engineers designing a currency based on the blockchain are able to create self-executing computer programs that perform predefined tasks based on a set of criteria. These “smart contracts”<sup>23</sup> can be written to include expiration dates or move currencies from one location to another.<sup>24</sup>

In theory, a digital dollar might be programmed in a variety of ways. If it were issued for monetary policy reasons to stimulate consumer spending, the central bank could mandate the money be spent by a specific deadline. Programmability might also make it possible to engineer capital controls, the ability to ensure dollars stay in the United States, into the currency itself.<sup>25</sup> One could imagine other political controls, like restrictions that the funds be used to pay for groceries, educational tuition, or other virtue-enhancing expenditures. This kind of programmability might be viewed as a form of social engineering (Prasad 2021, 223-224), and could in practice end the possibility of anonymous cash transfers or payments.<sup>26</sup>



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<sup>23</sup> In theory, smart contracts function as a replacement for institutional enforcement of agreements. For instance, if an individual wants to exchange an asset, such as a security or a home, for money, a smart contract could be designed to execute the transfer only after both parties have provided the asset and payment. If one party fails to deliver the asset, the transaction does not occur. Here, the traditional role of the escrow agent is performed by technology on the blockchain (Boucher 2017).

<sup>24</sup> Similar programming opportunities could be implemented using a centralized ledger-based technology. Chinese authorities have discussed programming the e-CNY, which is not built on the blockchain, to lose value over time to encourage spending (Propper and Li 2021).

<sup>25</sup> In a scenario where a CBDC is built using decentralized ledger technology and holdings are uncapped, consumers could, in theory, shift holdings to non-US citizens or non-US banking institutions. Enforceable capital controls would be possible with a digital dollar if Congress and the Fed required American identity verification to hold the CBDC in a wallet. Undocumented immigrants would likely be excluded from such a system and there might be additional complications for mixed-status households, although legal immigrants would be able to access CBDC since they can apply for Social Security numbers.

<sup>26</sup> The Swedish Riksbank has noted that, due to the currency’s digital format, a CBDC payment or transfer would have to fulfill anti-money laundering traceability requirements (see Sveriges Riksbank 2018). This could have a wide range of negative implications for people who want to legitimately transfer money anonymously, from charitable donors to individuals seeking to save money to facilitate escape from an abusive partner.

## SECTION FOUR

# A SOLUTION IN SEARCH OF A PROBLEM

There are at least six major arguments that CBDC proponents offer. We take each case below and articulate why the creation of a digital dollar is likely to create more problems than it solves. Policymakers should develop better public policy solutions than CBDCs to meet their stated goals.

## 4.1 TRANSFER SPEED AND COST

In almost all potential design permutations, a CBDC would provide real-time clearance for payments, significantly helping consumers and small businesses with liquidity needs.

America's payments system is expensive and slow. Individuals and small businesses pay each other using a retail payment system, most commonly cash or a bank card. Financial institutions then adjust their accounts to settle up the payments using specialized electronic platforms (Conti-Brown and Wishnick 2020, 7-12).

Estimates suggest that fees and interest on non-bank financial products in 2018 (the most recent year for which there is complete data) totaled \$189 billion, an average of \$3,000 per unbanked or underbanked person (Birken 2022). Depending on the system used, payments can take days to process. Someone paid on a Friday who needs to make rent the same day faces the unenviable choice of turning to a check cashing service or a payday lender. It is not only individual consumers who are affected: Small businesses often carry little cash in hand and can be left in trouble when transferring funds. Moving money from a Square account to a bank account can take up to three days.

Congress and the Federal Reserve are well aware of the deficiencies of the payment system in the United States.<sup>27</sup> In 2015, the Fed convened over 300 institutions in the Faster Payments Task Force, which recommended the creation of a new payments infrastructure.

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<sup>27</sup> The United States, for all its financial muscle, remains a laggard in this area. Japan introduced a system of real-time retail payments in 1973, and in the ensuing decades similar systems have been produced in US-peer countries such as Switzerland, the United Kingdom, Sweden, Denmark, and Australia. Developing countries have also invested in faster payment systems: Nigeria, Mexico, and China, for example, rolled out their own systems more than a decade ago (Faster Payments Taskforce 2017).

In 2023, the Fed will introduce the result of those conversations—a public, real-time payment system called FedNow. Designed to help individuals, small businesses, and larger corporations facilitate real-time payment transfer, FedNow will operate similarly to the existing FedWire-style real-time gross settlement platform. It will ensure funds clear in real time 24 hours a day, 7 days a week, and is meant to help small businesses in particular transfer funds instantaneously and cheaply (Board of Governors of the Federal Reserve System 2021).

Given the payments breakthrough on the horizon, one of the chief problems that a central bank digital currency would purportedly solve should no longer be as large a problem. It will take the FedNow system some time to get off the ground, and Congress and the Fed will have to work to ensure that it is functioning as hoped.<sup>28</sup> But there's good reason to believe that the Fed will be able to deliver on its promise—as it has for other programs it manages and maintains. In 2021, the Fed oversaw \$991 trillion in transfers through its FedWire system, with near perfect precision (FRBServices.org 2022).

## 4.2 FINANCIAL INCLUSION AND EQUITY

In 2019, an estimated 5.4 percent of US households were unbanked—meaning no individual in those households had a bank account. An additional 18.7 percent were underbanked. Underbanked households, despite having a bank account, rely on nonbank services for payment and financial needs (Federal Deposit Insurance Corporation 2021). The unbanked and underbanked are disproportionately poor and people of color, a result of historical efforts to make financial access harder for minorities, in particular Black Americans (Baradaran 2015).

The unbanked must pay routine bills in person and make use of check cashing and wire transferring services. These services are usually monopolized by one or two private companies, resulting in little consumer choice, less efficiency, and more expensive services (“Savings, Assets and Banking Among Low-Income Households: Introduction and Overview,” in Barr and Blank 2009). Many unbanked individuals turn to prepaid debit cards, which often charge high fees and regularly experience usage interruptions (see for example, Sanger 2015). As a result of their exclusion, the unbanked struggle to build a strong credit score, further limiting their access to credit.<sup>29</sup>

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<sup>28</sup> For an exploration of what additional actions the Fed could take, see Conti-Brown and Wishnick 2020.

<sup>29</sup> Meanwhile, individuals and households with access to the banking sector can use a range of products that make their financial lives more convenient, most notably (untaxed) reward points, cash back, and frequent flier miles (Klein 2018).

The underbanked often turn to high-fee, non-bank financial products as well, but even when located inside the banking infrastructure, they pay enormous fees. In 2019, overdraft fees alone added up to \$15 billion of revenue for banks (Consumer Financial Protection Bureau 2021).

Advocates for improving financial inclusion have long organized around the idea of public banks, which have played a major role in providing financial resources to Americans during certain periods in history. For much of the 20<sup>th</sup> century, The United States Postal Savings System offered a public option for savers, and was particularly popular with immigrant communities, until it was shut down in the late 1960s (Sprick Schuster et al. 2019).

Proponents of a CBDC interested in improving financial inclusion often connect the introduction of a CBDC to the creation of FedAccounts. As discussed in Section 4, this is a design decision rather than a necessary feature of CBDCs. These advocates believe that creating a CBDC would put additional pressure on the Fed to create public banking accounts for all Americans, thereby accomplishing a longstanding goal of providing a public option for banking (Menand et al. 2021).

Accessible to all Americans, FedAccounts would offer the same basic services as commercial bank accounts (interest on balances, real-time transfers) as well as the full backing of the central bank—and all without fees. (The only typical service not offered would be overdraft coverage.) As discussed previously, these accounts already exist, but only major banking entities have access to them.

With FedAccounts, the Federal Reserve would provide a public option for bank accounts to all Americans, not just individuals who already bank with major financial institutions. Most FedAccount proposals assume the accounts would be largely digital, perhaps with a partnership with the postal service for in-person banking needs.

FedAccounts could be a major advance for financial inclusion. With traditional banking, minimum balance requirements and transfer and maintenance fees often combine to discourage individuals from opening an account. Many Americans also say that they just don't trust banks, and fully guaranteed accounts held at the Federal Reserve might combat that.<sup>30</sup> If businesses used the FedAccount structure to pay invoices and payroll in real-time, workers could benefit significantly.

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<sup>30</sup> There is also good reason to believe that there would be public skepticism about the Fed's expanded role, at least at the start (Williams 2021).

But FedAccounts could easily be created without the introduction of a new CBDC. If anything, introducing the CBDC component adds unnecessary complexity into the debate. Conversations about financial inclusion and providing a public option for bank accounts quickly evolve into debates about cryptocurrency and stablecoins.

***Financial inclusion should be a critical priority for Congress and the Fed, but a CBDC is not necessary to create FedAccounts, public banks, or better regulatory infrastructure. In fact, it is likely to be a political distraction.***

FedAccounts are only one solution to the problem of financial inclusion. Another option, the United States Postal Savings System, could be resurrected in a modern form. Or, the Treasury could open its own accounts (Jackson and Massad 2022). Advocates in Congress have also proposed the development of a new network of public banks, including the idea of the federal government providing seed money to get them started (Stewart 2020). Even if these proposals fail, Congress could regulate financial institutions with an eye toward tackling the reasons banks fail to serve so many Americans, including limiting fees or inserting requirements to guarantee broader access.

Financial inclusion should be a critical priority for Congress and the Fed, but a CBDC is not necessary to create FedAccounts, public banks, or better regulatory infrastructure. In fact, it is likely to be a political distraction.

## 4.3 LIMITING THE STABLECOIN MARKET

Given the rapid rise of stablecoins, many central bankers, politicians, and private sector actors believe that the state must race to catch up. Many see, in this narrative, a repeating theme throughout history: The private sector creates something of meaningful value, and the public sector must respond in order to provide equitable access, stability, or improved efficiency.

In this context, a digital dollar could be considered a “public option” for stablecoin, for individuals and institutions. The provision of such a digital dollar, these advocates argue, would be the best way to limit the growth of unstable, unregulated synthetic digital dollars.



As discussed, there are important reasons why stablecoins have grown so quickly in popularity, primarily the instantaneous, fee-free clearing of transactions that enables seamless asset transfers. There are also less virtuous reasons: skirting money laundering, banking, and terrorism regulations.

Congress and the Fed have better ways of providing instantaneous clearance and settlement. Without the need for improvement in settlement efficiency, there are few good reasons for individuals to move into stablecoins.

The “public option” for stablecoins should be today’s dollar, moving through an instantaneous FedNow system. In addition, a regulatory framework can and should be developed to protect consumers from the instability the assets introduce while continuing to encourage further innovation in the stablecoin field (Department of the Treasury 2022).

## 4.4 MONETARY POLICY EFFECTIVENESS

CBDC advocates argue that it could help the Fed conduct monetary policy more effectively. An interest-bearing CBDC, for example, could help to address the problem of poor pass-through of policy rates. Currently, the Fed’s primary tool of monetary policy is its control over the FFR. In theory, changes in the FFR lead to changes in real economic activity through the ripple effect these changes have on rates throughout the economy, including interest rates on deposit accounts and other savings instruments.

Central banks rely on private financial institutions to “pass through” the new cost of money to borrowers and savers. Historically, this pass-through has been sluggish and one-sided, with banks quickly lowering savings and deposit rates when the FFR is cut, but only slowly increasing them when rates rise (Menand et al. 2021, 15-16; Duffie and Krishnamurthy 2016, 24-7; Driscoll and Judson 2013). A universally available, interest-bearing CBDC would allow the Fed to set a floor on deposit rates for all individual accounts and to directly raise or lower that floor as needed.

This power to adjust rates could be administered through a new form of CBDC—for example, a DLT-based CBDC using programmable smart contracts, or through a CBDC on a centralized ledger system. But nothing about the improved pass-through mechanism mentioned above would require the creation of a new form of digital central bank money. It could be achieved, instead, through the establishment of universally available FedAccounts, with the same payments technology the Fed already uses to credit and debit the accounts of member banks and other entities with FedAccounts.



CBDC proponents also highlight the opportunity for the Fed to use CBDCs to implement so-called “helicopter money” drops—i.e., direct transfers of newly created money to individuals. The concept of helicopter money, first imagined by Milton Friedman, is a theoretical way of getting around the difficulties inherent in conducting monetary policy through the medium of the private banking system.

The “helicopter drop” moves central bank money directly to people rather than relying on banks to lend on central bank money credited to their reserve accounts.<sup>31</sup> The idea has taken on new relevance during the era of monetary policy at the zero lower bound, as the Fed has needed to search for new policy tools to spur economic activity. Former Fed Chair Ben Bernanke has said it should be “on the table” as a monetary policy instrument in moments of extreme economic crisis (Bernanke 2016).<sup>32</sup>

A CBDC would facilitate the implementation of helicopter money by giving the Fed a form of central bank money that is directly transferable to individuals. These funds could even be programmed to disappear after a certain duration, encouraging individuals to spend the funds immediately in order to maximize the policy’s stimulative effect in a recessionary moment. In practice, however, ethical and political concerns about removing money already transferred would likely limit the uses of programmability.<sup>33</sup>

The biggest barrier to implementing helicopter money is a lack of financial infrastructure. Congress implemented large stimulus transfers in the wake of the COVID-19 pandemic with the dual goals of near-term financial assistance to needy families and countercyclical stimulative economic policy. The Fed, of course, worked to monetize the sovereign debt created by these expenditures, creating a kind of “back door” helicopter money. It would be wise to create the financial infrastructure to facilitate these payments more efficiently in future recessions.

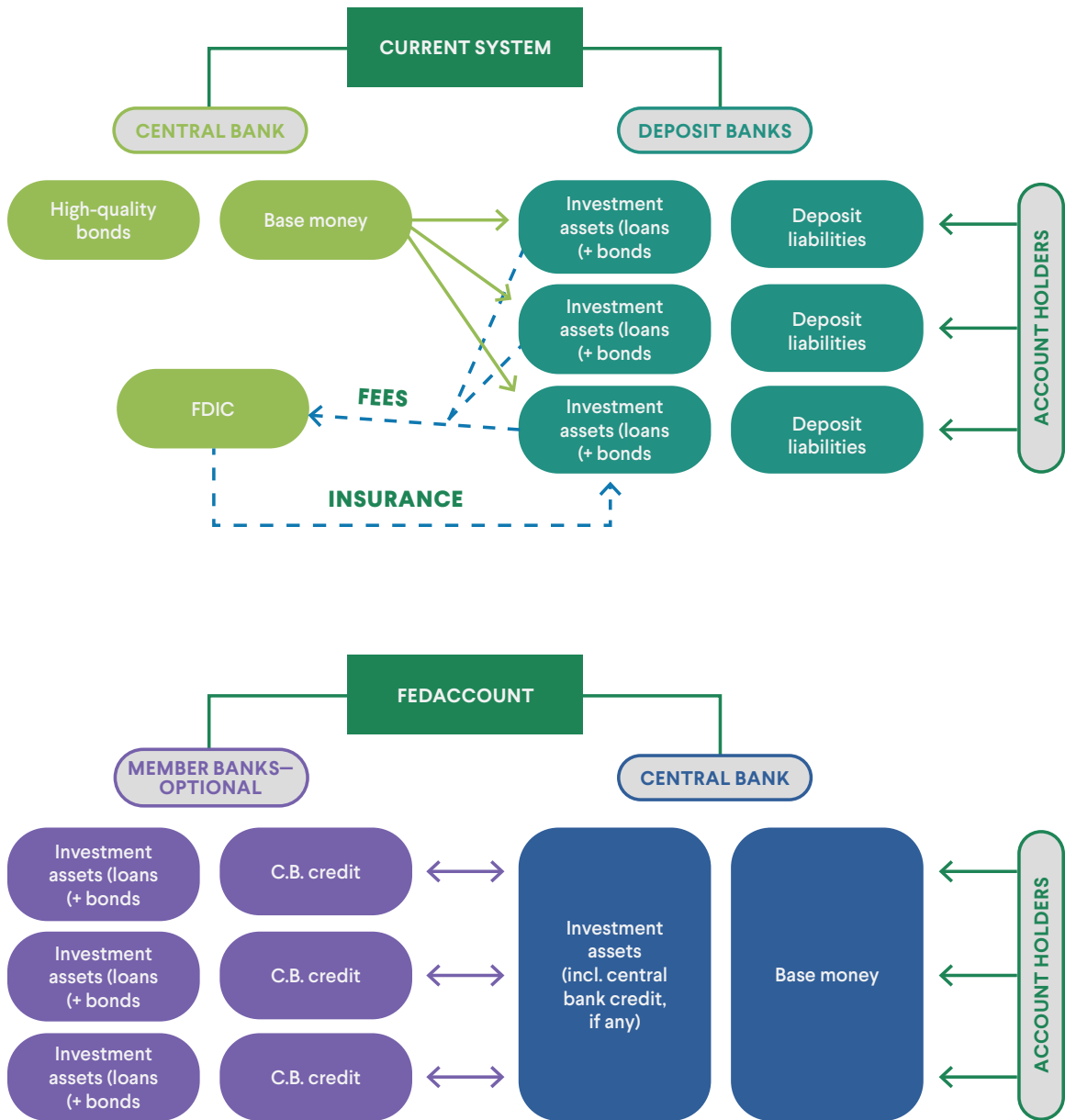
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<sup>31</sup> In this sense, helicopter money is a hybrid of fiscal and monetary policy. Ben Bernanke has noted that it is best understood as a “Money-Financed Fiscal Program” (Bernanke 2016).

<sup>32</sup> Others have expressed skepticism about the desirability of helicopter money, even in extraordinary circumstances (for example, see Cassidy 2016).

<sup>33</sup> In theory, CBDCs could be programmed in a variety of ways, not just with an expiration date. For example, right-wing lobbying groups might argue that CBDC should be programmed so that it can’t be spent on family planning services. Similarly, CBDC payments programmed to be spent only on food could be regarded as an easy substitute for food stamps (Prasad 2021, 224-238).

**FIGURE 1: CURRENT SYSTEM VERSUS FEDACCOUNT**



If Congress and the Fed want to pursue the development of helicopter money infrastructure, however, they can use the existing dollar framework with FedAccounts. There is no reason the Fed needs to create a newly defined central bank digital currency to accomplish this important goal.

## 4.5 GEOPOLITICAL DOMINANCE

China's investment in its CBDC, the e-CNY, has many Americans concerned that the United States is falling behind. This concern stems from a belief that preserving the dollar's status as the global reserve currency enhances America's economic strength and foreign policy. Skeptics of this view maintain that the dollar's artificially inflated strength suppresses exports, hollowing out much of US industrial capacity.

For the sake of argument, we can set aside those concerns and assume that Congress and the Fed want to preserve the dollar's dominance. There is little doubt that the rise of the Chinese CBDC and a potential CBDC from the European Central Bank, the Bank of England, or the Bank of Japan would significantly threaten American financial power.

One of the most important geopolitical developments brought about by the e-CNY is the ability for China to create a monetary sphere that allows users to sidestep American financial protocols ("Introduction: At a Global Crossroads in Digital Currencies" in Duffie and Economy 2022). In practice, the preeminence of the dollar means that a large amount of non-American corporations and transactions fall under some kind of US oversight, something which has only deepened since the Fed's unprecedented interventions into global markets in 2008 (Tooze 2018, 209-219). Reliance on dollar-denominated trade means China cedes to the United States the power to implement economic sanctions. Indeed, the limits on Washington's ability to use this financial weapon are political rather than economic or legal (Mulder 2022, 294-295). The recent nosedive of the Russian economy after a particularly tough round of sanctions illustrates this power (Giles 2022; Thompson 2022; Thompson and Cotovio 2022).

Clearly, China is building the infrastructure for more financial system independence from the US. In 2015, China launched the Cross-border Interbank Payment System (CIPS), a renminbi-denominated alternative to SWIFT, fueling speculation that such a move was part of a concerted Chinese attempt to displace the dollar as the preeminent global currency (Qian 2020). While use of CIPS increased by 75 percent between 2020 and 2021 to nearly \$13 trillion (Reuters Staff 2022), the FedWire service processed 78 times more than that last year (FRBServices.org 2022).

China's CBDC, the e-CNY, would go further than CIPS, allowing individuals, companies, and financial institutions to conduct real-time transactions that do not interact with the dollar-denominated global system.

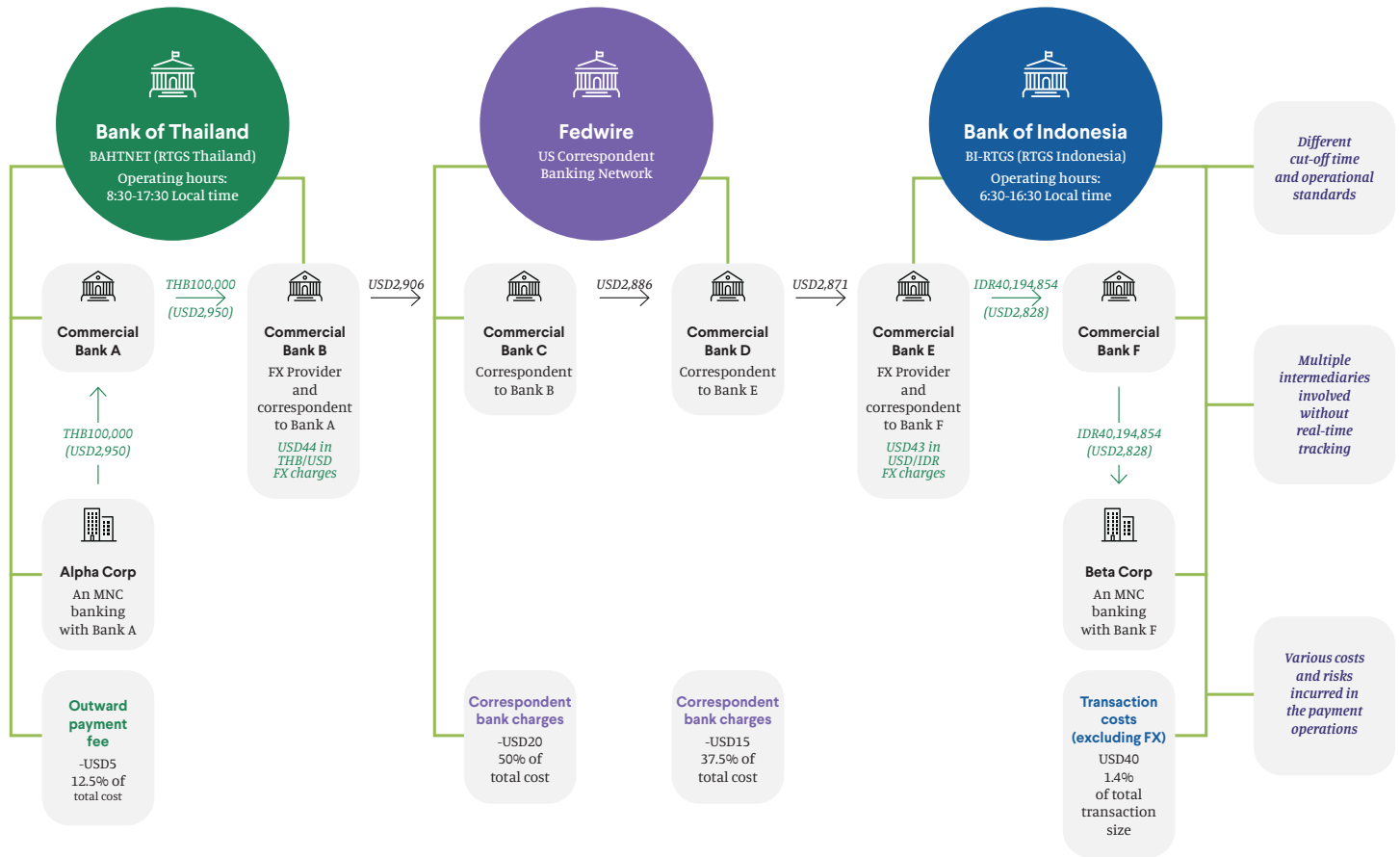
The e-CNY is stored in digital wallets provided by existing financial institutions and maintained on a centralized ledger, not the blockchain. The PBOC is responsible for the creation of the e-CNY as well as its core clearing and settlement infrastructure. Registered banks, telecoms operators, and third-party online payment platforms provide a second layer, where merchants and consumers interact. The e-CNY does not earn interest when

stored on digital wallets, but if stored in a bank account, it earns that bank's rate. All Chinese merchants who accept digital payments in the cities where e-CNY is being trialed are required to accept the e-CNY as legal tender (Prasad 2021; Greene 2021; Kumar 2022).

China is working with the Bank of International Settlements and several other countries, including the United Arab Emirates and Thailand, to create an exchange for CBDCs called mBridge (Bank of International Settlements 2021). This kind of exchange could reduce clearing times to mere seconds and significantly reduce fees—up to 50 percent by some estimates. The initiative is still in its infancy, but even if it doesn't take root, the underlying idea can be replicated with relative ease.

To understand how this could create a new sphere of Chinese geopolitical dominance, let's imagine a transaction occurring between an Indian exporter and a Chinese retail importer (see Figure 2.) Currently, the Chinese importer directs its bank to send funds to the bank account of the Indian exporter. These funds move from the importer's bank to a correspondent bank that converts the funds from yuan into dollars. These funds then move to a commercial bank inside the Fedwire correspondent banking network, submitting them to US regulatory oversight. The funds then move to a commercial bank in India that exchanges the dollars into rupees. The funds are transferred a final time to the commercial bank of the Indian exporter. This process takes days, and absorbs over 1 percent of the total transaction amount in fees (J.P. Morgan and Oliver Wyman 2021).

**FIGURE 2: AN ILLUSTRATIVE CROSS-BORDER PAYMENT FLOW VIA CORRESPONDENT BANKING**



**Assumptions:** Bank A (bank in Thailand) and Bank F (bank in Indonesia) do not have direct-dollar correspondence. They must route dollar payments through Banks B (bank in Thailand) and Bank E (bank in Indonesia).

Countries chosen are for illustration purposes only. There may be intra-ASEAN banking relationships between certain banks that do not require routing through the US correspondent banking network.

Rates assumed: THB100 = USD2.950 and USD1 = IDR14,213.5. All amounts are rounded to the nearest dollar.

Example and inspiration for graphic drawn from Ekberg, Jason, Tek Yew Chia, Michael Ho, Laura Liu, Naveen Mallela, Harshika Patel, and Sukrit Khatri. 2021. *Unlocking \$120 Billion Value in Cross-Border Payments*. Oliver Wyman and J.P. Morgan Chase. <https://www.oliverwyman.com/our-expertise/insights/2021/nov/unlocking-120-billion-value-in-cross-border-payments.html>.

In a scenario where the Chinese e-CNY becomes usable globally, the transfer is simplified significantly. First, the Chinese importer sends e-CNY to the Indian exporter's bank account. The exporter receives these funds immediately and then chooses to either hold the digital renminbi, exposing them to currency risk, or more likely, convert them into rupees.<sup>34</sup> The time for the transaction to process has been collapsed to a day, with dramatically lower fees.

Significant uptake of the e-CNY would enable any international actor uninterested in being caught in the sanctions-enforcing nets of the Americans or Europeans to transact in e-CNY.

Of course, there are many downsides that would slow rapid migration to the e-CNY as a settlement currency for international trade. The renminbi currently operates under a series of strict capital controls (Lee 2021) and trades within a controlled band (Choudhury 2019). Perhaps more importantly, many international actors would be unwilling to submit the personal details of their transaction to the watchful eyes of the Chinese state.

Even if the popularity of e-CNY is modest, China has much to gain. Even limited uptake in the short-term could enable China to evade international sanctions should it take military action against Taiwan or pursue other widely unpopular geopolitical moves. (Last month, Chinese political leaders convened major banks to discuss actions it might take today to evade Western sanctions, like those that have hurt Russia after the invasion of Ukraine (Sun 2022).) With the e-CNY used extensively across borders, China could continue to trade internationally with major partners willing to prioritize economic stability over other geopolitical priorities. Sanctions would have significantly less effect.

The United States, by contrast, has far less to gain by issuing a CBDC to compete with China's. Because the US already controls many of the levers of international finance, we do not need a CBDC to evade them.

To launch a CBDC that would enable the facilitation of global trade in a similar way to what the e-CNY might do, Congress and the Fed would need to design a CBDC attractive enough to be used in dollar-denominated transactions internationally. To make this possible, institutions would need to be able to hold very large quantities of the CBDC (that is, in a scenario where CBDC holdings are not capped). As discussed in Section 4.6, an uncapped CBDC would cause significant disintermediation of the commercial banking sector in the United States. Congress and the Fed would be forced to choose between a CBDC designed to compete in international capital markets and one which causes minimum disruption to domestic banking arrangements. It cannot have both.

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<sup>34</sup> This would require the Bank of India to hold CBDC reserves.

If America wants to counter the rising global financial power of China, it could start by significantly improving the dollar-denominated international payments infrastructure. Policy decisions have emphasized regulatory goals—anti-terrorism, money laundering, etc.—over speed or ease. But in the wake of fiercer competition, the US should endeavor to make the international payment system faster without sacrificing security goals. One route forward might be the internationalization of FedNow, which currently supports only domestic transfers. The Fed could convene an international payments taskforce, similar to the domestic taskforce it convened in 2015, to make a recommendation for how to move forward.

***The Fed doesn't have to create a CBDC to remain competitive geopolitically and preserve its sphere of influence, but it does need to immediately invest significant resources into offering competitive payments systems globally.***

If the Fed develops neither CBDC nor a real-time payments alternative, it would cede the field to foreign interests and make it more likely that foreign government CBDCs and stablecoins will surge in interest internationally. The Fed doesn't have to create a CBDC to remain competitive geopolitically and preserve its sphere of influence, but it does need to immediately invest significant resources into offering competitive payments systems globally.

## 4.6 FINANCIAL DISINTERMEDIATION

Large banks, investors, and some policymakers are understandably concerned about the financial disintermediation that a CBDC might introduce. If significant deposits shift out of the commercial banking sector and into central bank digital currencies that are not held at private banks, commercial banks could find themselves in a position where they must significantly contract their own loan portfolios or raise additional debt or equity financing. In a scenario where Congress directs the Fed to offer uncapped FedAccounts, it's possible to imagine a wholesale disintermediation of the existing banking system.

Some scholars, however, see this as a feature of a CBDC implementation, not an obstacle (Omarova 2021; Menand et al. 2018). Private banks, in their formulation, would continue to be responsible for the private allocation of credit, but instead of using consumers' deposits to finance their asset portfolios, they would borrow from an expanded version of the Fed's discount window.

Advocates of this view tend to see banking institutions as "franchisees" of the state rather than financial intermediaries (Hockett and Omarova 2016), making the transition to a discount window lending policy more naturally representative of the current relationship (Rohan Grey, "Banking in a Digital Fiat Currency Regime," in Hacker et al. 2019). Migrating to a model where banks rely on the discount window instead of deposits would effectively insure all deposits in the banking system, rendering existing deposit insurance obsolete and eliminating rent extraction in the form of current banking fees (Menand et al. 2021, 144). Some also see a potential "crowding in" of money because the cash assets of unbanked individuals may move into the banking system (Chiu et al. 2019).

It is difficult to imagine this kind of wholesale migration, given the depth and breadth of existing interests dedicated to preserving the structure of the domestic financial system. Such significant disintermediation needs further scrutiny to assess whether it is viable or desired. Even if a consensus develops that it is, there is little reason to believe that a technology-enabled central bank digital currency should be the primary route to making it happen. An uncapped FedAccount system could create the same kind of new market structure, using similar technological infrastructure for the dollars that circulate today.





# CONCLUSION

As the conversation about whether the United States should introduce a CBDC continues to accelerate, policymakers would do well to bear in mind that we already have a financial system that uses a widespread digital dollar. Based on a centralized, digital ledger, our current system is organized by the world's most important central bank.

America's financial and payments systems need significant improvement, particularly to enhance transfer speed at lower cost and to include more Americans in the banking and financial systems. A FedAccount structure in particular could help meet the goals of increased financial inclusion, transfer speed, and enhanced monetary and fiscal policy effectiveness. Improving the international payment system could help in the retention of American geopolitical dominance.

These are important goals, but a central bank digital currency as many understand it—a new, technology-enabled, programmable dollar rivaling stablecoins—is likely not the best solution. In fact, introducing a CBDC could mean significant confusion for American consumers and create a more balkanized, segregated global financial system that is more challenging to regulate and manage.



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