

MONEY IN THE TWENTY-FIRST CENTURY: FROM RUSTY COINS TO DIGITAL CURRENCIES

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After the Global Financial Crisis, central banks became identified as banks' closest allies, rescuing them from failure when things go wrong. Banks, in turn, emerged as complex and unstable institutions that privatize profits and socialize losses, to the despair of taxpayers. And regulation and regulators were seen as incapable of curbing financial excess. The coronavirus pandemic only exacerbated the generally negative sentiment, as governments lacked a fast and simple way to send relief money directly to their citizens. In the meantime, sovereign currencies have faced increased private competition, from Bitcoin to big tech global projects. At this point, some structural reform of the monetary system seems not only desirable but inevitable. It is about time to look again at the role of money in the modern economy and better understand its features and flaws. This Article thus offers a guide to the recent evolution of money and what its future might hold.

“Try again. Fail again. Fail better.”

Samuel Beckett

(Worstward Ho, 1983)

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INTRODUCTION

Not long ago, money was simple, central banks were all but invisible, and banks seemed like an inevitable nuisance. Money consisted of the coins and notes carried in wallets or the checkbook in the desk drawer. Central banks were poorly understood institutions, entrusted with the mystical power to print money. And banks were associated with the agony of waiting in line to cash a check or having awkward conversations with the loan officer when credit was needed. While this world had been slowly dying for some time, the Global Financial Crisis sounded its death knell. Money now takes many forms, from plastic cards to cryptocurrencies. Central banks have become identified as banks' closest allies, rescuing them from failure when things go wrong. And banks emerged as complex and unstable institutions that privatize profits and socialize losses, to the despair of taxpayers.

How have we arrived at such a dismal situation? And what is to be done? Money is a vital part of the answer to both these questions. The Crisis exposed the weaknesses of central banks in monetary matters—and the disproportionate influence banks can exert over money. Banks, not the central bank, are the dominant actors in money creation, circulation, and even money management. Without the intermediation of banks, the central bank cannot fully exercise its monetary powers and fulfill its legal mandate. Banks, in turn, have used the monetary prominence they enjoy to make unsound decisions with little regard or responsibility for the consequences, greatly contributing to financial and economic instability. The costs of the current operational model of the monetary system have far exceeded its benefits.

After the Global Financial Crisis, moreover, confidence in the banking system and in the central banks' ability to avoid excesses and promote stability has waned. This breach of confidence and the ensuing economic slowdown ended up fostering political and social discontent. The view that self-serving elites took advantage of the rest of society and yet paid no price for their misdeeds during the Crisis brewed resentment and conflict.¹ These days, every political debate seems to have only two sides—right and wrong—with each opposing group vigorously claiming to be on the right side. Populism, extremism, and nationalism found their way not only in more unstable societies but also at the heart of the democratic capitalist world.

The coronavirus pandemic only exacerbated the generally negative sentiment, as one particular limitation of government action became evident. After crossing political hurdles to provide economic relief to those most in need, governments realized they lacked a fast and simple way to send money directly to their citizens. With the economy at a standstill and millions of people applying for unemployment benefits each week, the U.S. Treasury had to send relief money to many households by mailing paper checks that

¹ See MARTIN WOLF, *THE SHIFTS AND THE SHOCKS* 351–53 (2014) (explaining how this sentiment against the elites has developed since the crisis).

took weeks, if not months, to arrive. The potential for lasting hardship and social unrest is frightening, requiring governments to do better.²

Against this backdrop, I look, in Part I, at the legal framework of the monetary system and examine the breadth of the central bank's monetary mandate and the limits of the business of banking. The law has historically allowed banks to collaborate with the central bank in the process of creating money and providing liquidity to the economy. But the fruitful collaboration may have come to an end. Building on recent economic and legal scholarship findings, I contend that banks have been inappropriately dominating the process of money creation and eclipsing the central bank's monetary powers, with dire consequences for monetary and financial stability.

Before advancing to discuss the future possibilities for the monetary system, I take a step back to consider, in Part II, how we arrived at the current monetary arrangement. By reviewing the evolution of banking and central banking, we can better understand how an initially symbiotic relationship became dysfunctional in the late 20th century. The current situation, in which banks are the dominant actors in the monetary system and central banks seem powerless to curb banks' supremacy, is motivated mainly by the design of the monetary and banking systems. Only a structural change can thus solve the imbalance and fragility that today characterize these systems.

Among different possibilities for reorganizing the monetary system, I contrast two options in Part III. Starting with Bitcoin, private alternatives to the sovereign money flourished. The amount of attention privately issued currencies have received lately would have been unimaginable before the Crisis. It is true that cryptocurrencies, and Bitcoin in particular, have failed to promote the monetary revolution many people expected. But these private currencies set out to prove that different monetary arrangements are possible. The march of technology and the growing dissatisfaction with established institutions may soon threaten sovereign monies and banking systems more fiercely. Under this threat, how should central banks react?

Central banks could welcome the monetary competition and engage in the race to promote their view on the future of money. A central-bank digital currency, or CBDC, made available to everyone, would be a strong response. From improving monetary policy to increasing financial stability, several arguments in favor of central banks issuing the sovereign money in the digital format can be made.³ But the technological, societal, economic, political, and

² See Stephen Roll & Michal Grinstein-Weiss, *Did CARES Act Benefits Reach Vulnerable Americans? Evidence from a National Survey*, BROOKINGS INST. (Aug. 25, 2020), <https://www.brookings.edu/research/did-cares-act-benefits-reach-vulnerable-americans-evidence-from-a-national-survey/> [<https://perma.cc/UNU7-43Y7>].

³ See, e.g., Mohammad Davoodalhosseini et al., *CBDC and Monetary Policy*, BANK OF CANADA (Staff Analytical Note 2020-4, 2020), <https://www.bankofcanada.ca/2020/02/staff-analytical-note-2020-4/> [<https://perma.cc/C49X-2KUQ>]; see also Tobias Adrian & Tommaso Mancini-

legal hurdles for full implementation are also numerous. In any case, the CBDC presents an alternative model of monetary and financial organization that is worth considering. By exploring the past and present of money in law and in practice, this Article offers a preview of how money will look like in the future.

I. MONEY IN LAW AND IN PRACTICE

In the modern economy, money and central banks go together. Central banks are seen as powerful institutions because they can “print money,” acting as the ultimate liquidity providers in a sovereign territory—with “liquidity” here meaning money that can be immediately used to make payments and settle debt.⁴ The aftermath of the Global Financial Crisis only reinforced this view. Central banks around the world have used unconventional and even unprecedented measures to restore monetary and financial stability.⁵ This whole idea of central banks’ powers has become a distraction, though, as the idea obscures a more pressing concern in the monetary system: banks are the true holders of the monetary powers, and the central bank only regains prominence after banks abuse their powers and a crisis sets in. This arrangement, however, is neither efficient nor legal.

A. *The Myth of the Powerful Central Bank*

The law of the monetary system is founded on two basic pillars. First, the law states what should be considered money in the sovereign territory and grants the central bank a monopoly on creating the money chosen to be “legal tender.” As legal tender, the designated money has, by law, the irrevocable power to discharge any debt, from taxes to private obligations enforceable in courts.⁶ Because of its legal status, the money recognized as legal tender becomes the general unit of account—the measure with which

Griffoli, *Central Bank Digital Currencies: 4 Questions and Answers*, IMFBLOG (Dec. 12, 2019), <https://blogs.imf.org/2019/12/12/central-bank-digital-currencies-4-questions-and-answers/> [<https://perma.cc/JTQ2-8YNX>].

⁴ About “liquidity,” see, e.g., Daniela Gabor & Jakob Vestergaard, *Chasing Unicorns: The European Single Safe Asset Project*, 22 COMPETITION AND CHANGE 140, 146 (2018).

⁵ For an overview of the non-traditional measures adopted by central banks during and after the Global Financial Crisis, see Claudio Borio & Piti Disyatat, *Unconventional Monetary Policies: An Appraisal*, 78 THE MANCHESTER SCH. 53 (2010); and Claudio Borio & Anna Zabai, *Unconventional Monetary Policies: A Re-Appraisal*, BANK FOR INT’L SETTLEMENTS, WORKING PAPER No. 570 (2016), <https://www.bis.org/publ/work570.pdf> [<https://perma.cc/7NX6-UALG>].

⁶ For a historical perspective on the origins and evolution of the idea of legal tender, see Angela Redish, *Anchors Aweigh: The Transition from Commodity Money to Fiat Money in Western Economies*, 26 CAN. J. ECON. 777, 781–85 (1993).

prices are quoted and debts are recorded⁷—and tends to be the favored means of payment in the sovereign territory. Second, the central bank receives the legal authority and the tools to regulate the supply, value, and circulation of the sovereign money to attain price stability.⁸

In America, the legal treatment of the monetary system appears to diverge from these two pillars. In the United States Code (U.S.C.), a consolidation and codification of the general and permanent laws of the United States by subject matter, the subchapter explicitly dedicated to the monetary system has only three sections.⁹ The first section sets the dollar and its subdivisions as the unit of account in the United States. The second designates the standard used to gauge the weight of the national coins. And the third and final, provides that the official coins and currency are legal tender in the sovereign territory. These statutory provisions, however, shed no light on the details of fundamental monetary issues, like those regarding how the sovereign money is created, managed, and transferred.

The additional monetary rules are instead found in the chapter devoted to the Federal Reserve System, under Title 12 of the U.S.C.¹⁰ The provisions in this chapter come mostly from the Federal Reserve Act of 1913, which is the chief statute about central banking in the United States. But the monetary powers are rooted in the Constitution, which gave Congress the mandate to “coin money [and] regulate the value thereof.”¹¹ Only with the Federal Reserve Act Congress delegated its mandate to the central bank. Regarding money creation, Section 16(1) of the Federal Reserve Act gives the Board of Governors of the Federal Reserve System the power to issue, at its discretion, the “Federal Reserve Notes.”¹² These Notes, which are the dollar bills daily used for monetary transactions, “are legal tender for all debts, public charges, taxes, and dues” in the American territory.¹³ So, the Board of Governors of the Federal Reserve has a monopoly on creating legal tender in the United States.

As to the legal authority to regulate the supply, value, and circulation of the sovereign money, Sections 14 and 19 provide the Federal Reserve System with two primary tools to adjust the amount of sovereign money available in the economy and, in turn, its value. The use of the term “Federal Reserve

⁷ About the importance of the unit of account as one of the defining characteristics of money, together with the functional characteristics of means of payment and store of value, see STEPHEN CECCHETTI & KERMIT SCHOENHOLTZ, *MONEY, BANKING AND FINANCIAL MARKETS* 24–26, 33–34 (5th ed. 2016).

⁸ *E.g.*, Section 2A of the Federal Reserve Act, 12 U.S.C. § 225a, sets the monetary-policy objectives to be pursued by the Board of Governors of the Federal Reserve System and the Federal Open Market Committee: “maximum employment, stable prices, and moderate long-term interest rates.”

⁹ 31 U.S.C. §§ 5101–5103.

¹⁰ 12 U.S.C. §§ 221–522.

¹¹ U.S. Const. art. I, § 8, cl. 5.

¹² 12 U.S.C. § 411.

¹³ 31 U.S.C. § 5103.

System” here, instead of the more specific “Board of Governors,” is not accidental. The Federal Reserve System is not limited to the Board of Governors, which is the government agency that manages the System and holds regulatory and supervisory powers.¹⁴ The System also includes the Federal Open Market Committee, or FOMC, the separate and independent body responsible for setting monetary policy,¹⁵ and the twelve Federal Reserve Banks, the hybrid public-private institutions that implement policy.¹⁶ In many instances, the typical powers of a central bank are not exercised by one of these entities alone but shared among them. As Peter Conti-Brown, a Wharton School professor, puts it, the central bank of the United States, or simply the Fed, is not an “it” but a “they.”¹⁷

It is based on this complex structural arrangement that Section 14(2)(b) of the Federal Reserve Act stipulates that “[e]very Federal Reserve bank shall have power” to buy and sell in the open market either government securities, “in accordance with rules and regulations prescribed by the Board of Governors of the Federal Reserve System,” or agency securities, “under the direction and regulations of the Federal Open Market Committee.”¹⁸ The Fed trades securities in open-market operations to increase or reduce the amount of money in circulation, therefore stimulating or constraining economic activity—and eventually influencing prices. In practice, only the Federal Reserve Bank of New York executes open-market operations in the United States under specific authorization of the FOMC, which appears “in the minutes of the first FOMC meeting of each year.”¹⁹

Section 19 of the Federal Reserve Act, with the subsequent amendments, gives the Fed another tool for monetary management: reserve requirements.²⁰ Reserve requirements have been used to limit banks’ ability to make new loans and, with that, to create more money, in the form of bank deposits. To that end, Section 19 mandates banks to maintain reserves against their transaction accounts in a ratio determined by the Board of Governors. The larger the amount of reserves kept at the central bank, the higher the interest banks charge in their lending operations. As, however, the enforcement of

¹⁴ Federal Reserve Act, 12 U.S.C. §§ 225a, 241–248, 355(1).

¹⁵ *See id.* §§ 225a, 263, 355(2).

¹⁶ *See id.* §§ 301–308, 341–347d.

¹⁷ *See* PETER CONTI-BROWN, *THE POWER AND INDEPENDENCE OF THE FEDERAL RESERVE* 13–14, 69–83, 103–26 (2016).

¹⁸ “Agency securities” are the securities issued or backed by a Government Sponsored Enterprise, like Fannie Mae and Freddie Mac. *See* 12 U.S.C. § 355(1)–(2).

¹⁹ FED. RESERVE BANK OF N.Y., *ABOUT THE NEW YORK FED: OPEN MARKET OPERATIONS* (Aug. 2007), <https://www.newyorkfed.org/aboutthefed/fedpoint/fed32.html> [<https://perma.cc/P8VG-XHMY>].

²⁰ 12 U.S.C. § 461.

this tool is complex and often inefficient, reserve requirements have been losing much of their importance to monetary policy.²¹

Section 10B of the Federal Reserve Act,²² which prescribes the terms and conditions for individual banks to borrow directly from the Fed, was once viewed as a tool to execute monetary policy. With this tool, the Federal Reserve Banks lend money against collateral to a bank in need of additional liquidity at a discount rate that the Board of Governors sets after reviewing the recommendations of the Reserve Banks.²³ As discount lending is targeted at individual banks facing a liquidity shortfall, this tool is more useful for financial stability, when the central bank is acting as lender of last resort²⁴—not when the central bank is aiming for adjusting the amount of money available to the banking system as a whole.²⁵ In discount lending operations, moreover, the Fed can accept as collateral a wider range of assets, even private, when making the loan. The main statutory requirement is that the loan is “secured to the satisfaction of [the] Federal Reserve bank.”²⁶ In open-market operations, by contrast, only government and agency securities can be traded, following the plain language of section 14(2)(b) of the Federal Reserve Act.²⁷

Discount lending is, in fact, closer to the tool present in the now infamous section 13(3) of the Federal Reserve Act, which set the conditions for broad emergency lending, even for non-bank institutions, “[i]n unusual and exigent circumstances.”²⁸ Section 13(3) was greatly revised after the financial crisis by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, or Dodd-Frank Act, since some believed that the Fed improperly used

²¹ About the futility of reserve requirements, see CECCHETTI & SCHOENHOLTZ, *supra* note 7, at 474–75, 493–94.

²² 12 U.S.C. § 347b.

²³ Although the term “Fed’s discount window” is commonly associated with this lending operation, the Fed rarely discount papers presented by banks these days. Instead, “[a] Federal Reserve Bank generally extends credit by making an advance” secured by acceptable collateral. 12 C.F.R. § 201.3(a)(1).

²⁴ For an overview of the origins, evolution, and current status of the role of lender of last resort, see MERVYN KING, *THE END OF ALCHEMY: MONEY, BANKING AND THE FUTURE OF THE GLOBAL ECONOMY* 187–207 (2016); *see also* PAUL TUCKER, *UNELECTED POWER: THE QUEST FOR LEGITIMACY IN CENTRAL BANKING AND THE REGULATORY STATE* 503–24 (2018).

²⁵ About the base discount rate and the lending operations at the “discount window,” *see* FREDERIC MISHKIN, *THE ECONOMICS OF MONEY, BANKING, AND FINANCIAL MARKETS* 384–89 (9th ed. 2010).

²⁶ Federal Reserve Act, 12 U.S.C. §§ 347b(a), 343(3)(A). The Board of Governors defined “satisfactory collateral” as including not only federal, state, and local government securities but also “business, consumer, and other customer notes.” *See* 12 C.F.R. § 201.3(a)(2).

²⁷ *See* 12 U.S.C. § 355.

²⁸ *Id.* at § 343(3)(A).

Section 13(3) to bail out institutions during the crisis.²⁹ Despite the normative tweaks, the essence of the statutory rule remained the same. The crucial legislative change intended to prohibit the Fed from saving individual institutions by restricting the provision of emergency loans to “any participant in any program or facility with broad-based eligibility.” But, as Princeton University professor and former vice-chairman of the Federal Reserve Alan Blinder counters, “this policy change is less transformative than it seems. If a future Fed perceives an urgent need to save some critical financial company, it shouldn’t take much effort to design a lending program ‘with broad-based eligibility.’”³⁰

When it comes to the circulation of the sovereign money in the economy, sections 13(1) and 16(14) of the Federal Reserve Act are the relevant rules.³¹ These sections put the Federal Reserve Banks at the center of the payments system, which is the set of networks banks use to exchange information and money based on the payments and transfer of funds ordered by their clients.³² Here, “payments system” will be used in a specific sense, focused on the legal and institutional framework through which banks maintain relations among themselves and with the central bank when payments and funds are transferred in the economy. Omitted from this concept and, thus, from the present analysis are issues connected to payments services or technologies (like checks or mobile wallets) and to the relations of banks with their customers when payments are made.³³

²⁹ See ALAN BLINDER, *AFTER THE MUSIC STOPPED: THE FINANCIAL CRISIS, THE RESPONSE, AND THE WORK AHEAD* 276–77, 293–94 (2013); Alexander Mehra, *Legal Authority in Unusual and Exigent Circumstances: The Federal Reserve and the Financial Crisis*, 13 U. PA. J. BUS. L. 221, 221 (2010). In favor of the Fed’s actions, see Thomas Baxter Jr., & David Gross, *The Federal Reserve’s Response to the Crisis: Doing Whatever it Takes within its Legal Authority*, in *INTERNATIONAL MONETARY AND FINANCIAL LAW: THE GLOBAL CRISIS* 293, 298–303 (Giovannoli & Devos eds., 2010).

³⁰ BLINDER, *supra* note 29, at 310. The term “broad-based eligibility” was defined by the Board of Governors in 12 C.F.R. § 201.4(d)(4) (2017): “a program or facility has broad-based eligibility only if the program or facility is designed to provide liquidity to an identifiable market or sector of the financial system” and does not exhibit the disqualifying characteristics described in 12 C.F.R. § 201.4(d)(4)(iii).

³¹ See 12 U.S.C. §§ 248-1, 342.

³² See James Tobin, *Financial Innovation and Deregulation in Perspective*, 3 *BOJ MONETARY AND ECON. STUD.* 19, 22 (1985) (highlighting the importance of the payments system not only as a set of networks for the flow of money, but also as a “communications network” for the flow of information).

³³ For a view of the payments system from a perspective close to the one adopted in the text, see Benjamin Geva, *Global Payment and Settlement Systems*, in *HANDBOOK OF KEY GLOBAL FINANCIAL MARKETS, INSTITUTIONS AND INFRASTRUCTURE* 513, 513–14 (G. Caprio Jr. ed., 2013). Focusing instead on new technologies that influence payments processing and on the legal protections for

So, when persons or institutions make payments with checks or credit cards instead of using cash, the related payment is ultimately processed and settled inside the payments system. The payments system facilitates the circulation of money, especially among persons and institutions that keep checking accounts with different banks. It is, therefore, to enable the broad circulation of the sovereign money that the law authorizes the Federal Reserve Banks to receive deposits, checks, drafts, and other payment orders from different banks.³⁴ The Reserve Banks then organize all these orders and sort them by bank and by the bank's position—sender or receiver of money. Finally, the Reserve Banks, based on the net result of each bank, collect more money from the banks with a negative result and transfer money to the banks with a positive result. By doing so, the Reserve Banks ultimately function as clearinghouses for the banks in the system. This process is even easier for banks and other depository institutions that are members of the Federal Reserve Banks, since member banks keep an account with the Reserve Banks that can be debited or credited accordingly.³⁵

A similar normative pattern for creating and regulating money is observed in other jurisdictions as well, although over a somewhat different legal infrastructure. A direct constitutional mandate for central banks to issue currency and regulate its value is found in the European Union³⁶ and Brazil.³⁷ The Bank of England, on the other hand, became the monetary authority for the United Kingdom with the Bank Charter Act of 1844, which granted the Bank a formal monopoly on issuing banknotes in England and Wales.³⁸ The story behind the Bank Charter Act of 1844 illustrates the struggle for

end-users of payment services, see Mark Edwin Burge, *Apple Pay, Bitcoin, and Consumers: The ABCs of Future Public Payments Law*, 67 HASTINGS L.J. 1493, 1493, 1524, 1527 (2016).

³⁴ See, e.g., 12 C.F.R. §§ 210.28-210.30 (2017) (detailing the relationships between the banks and the Reserve Banks in one of the major infrastructures of the American payments system, Fedwire).

³⁵ For simplicity, I will use the term “bank” for all “depository institutions” in the text, although “depository institution” has a broader meaning than “bank.” In the United States, “depository institution,” according to section 19(b)(1)(A) of the Federal Reserve Act, 12 U.S.C. § 461(b)(1)(A) (2018), includes commercial banks, savings and loan associations, savings banks, and credit unions.

³⁶ See Consolidated Version of the Treaty on the Functioning of the European Union art. 127(1), 2016 O.J. (C 202) [hereinafter TFEU] (“The primary objective of the European System of Central Banks (hereinafter referred to as ‘the ESCB’) shall be to maintain price stability.”), art. 128(1) (“The European Central Bank shall have the exclusive right to authorise the issue of euro banknotes within the Union.”) and art. 282.

³⁷ See Constituição Federal [C.F.] [Constitution], art. 21, VII (Braz.) (“The Union shall have the power to: . . . VII – issue currency.”), and art. 164 (Braz.) (“The competence of the Union to issue currency shall be exercised exclusively by the central bank. The central bank may purchase and sell bonds issued by the National Treasury, for the purpose of regulating the money supply or the interest rate.”).

³⁸ See Bank Charter Act 1844, 7 & 8 Vict., c. 32 (Eng.).

monetary power between public and private entities that has long contributed to the complex nature of money.

When the Bank of England received the monopoly on note issue in 1844, the Bank was a private organization. The Bank of England only became a public institution with the Bank of England Act of 1946.³⁹ In any case, the Bank Charter Act of 1844 was seen as a victory for the Currency School. In 19th-century Britain, the Banking School and the Currency School argued over how the English monetary system should be organized. The Banking School believed in monetary flexibility and the importance of banks creating money as a response to the demand of the economy at large. The Currency School, in contrast, emphasized the need for having control over the creation of money, advocating rigid limitations on the capacity of banks to extend credit or issue means of payment. The victory for the Currency School was incomplete, however. Although banks other than the Bank of England could not issue notes anymore, banks could still offer checkable deposits that circulated and were used as means of payment, thus competing with the official notes.⁴⁰

At first glance, the law seems to put the monetary system under the absolute control of the state, most notably of the central bank. The monetary powers of issuing the sovereign currency and regulating its supply, value, and circulation are legally depicted as an attribute of state sovereignty. Often, these powers receive constitutional status. The legal definition of money tends to expand this perception of money as a creature of the state. In the United States, for example, “money” in the ambit of the Uniform Commercial Code is “a medium of exchange currently authorized or adopted by a domestic or foreign government.”⁴¹ Scholars have even coined the term “monetary sovereignty” to express how important the power to issue and regulate money is to any sovereign state that aspires to be independent and provide its people with the right to self-determination.⁴² Money and state are so intertwined that, for centuries, the history and evolution of money have been connected to the history and evolution of the nation-state.⁴³

1. *The Central Bank is Not Alone*

³⁹ See Bank of England Act 1946, 9 & 10 Geo. 6, c. 27 (Eng.).

⁴⁰ About the debate between the Banking School and the Currency School in 19th-century Britain, see Victoria Chick & Sheila Dow, *Financial Institutions and the State: A Re-examination*, in MONETARY ECONOMIES OF PRODUCTION: BANKING AND FINANCIAL CIRCUITS AND THE ROLE OF THE STATE 99, 107–08 (L.-P. Rochon & M. Seccareccia eds., 2013); see also MORGAN RICKS, THE MONEY PROBLEM: RETHINKING FINANCIAL REGULATION 231–33 (2016).

⁴¹ U.C.C. § 1-201(b)(24) (AM. L. INST. & UNIF. L. COMM’N 1977).

⁴² On monetary sovereignty and its meanings and limitations, see, for example, ROSA MARIA LASTRA, INTERNATIONAL FINANCIAL AND MONETARY LAW 3–27 (2d ed. 2015).

⁴³ For detailed accounts of the strong relations between state and money over time, see KING, *supra* note 24, at 211–48; see also FELIX MARTIN, MONEY: THE UNAUTHORISED BIOGRAPHY 66–121 (2013).

On closer inspection, though, the reality is more nuanced, and money looks more like a public-private effort than like a sovereign endeavor. Many rules and regulations allow or even require banks to play a role in the monetary system and share with the central bank much of the monetary powers, from money creation and circulation to the very management of money's value. Several statutory rules have, moreover, been developed by judicial interpretation in a way that permits banks to create and manage the sovereign money. Finally, how the organization of the monetary system has evolved and, in turn, how the practice of money as a shared enterprise has consolidated over the years also contributed to placing banks as an essential part of all monetary activities.

Although relatively scarce on the topic in the United States, judicial decisions have already recognized the legitimacy of this public-private monetary arrangement. The most meaningful decision was rendered in an action brought in 1984 by Senator John Melcher, a Democrat from Montana. Senator Melcher was challenging the participation in the FOMC of five members selected by the private Reserve Banks rather than nominated by the President and confirmed by the Senate. Senator Melcher argued "that only public officials nominated by the President and confirmed by the Senate may carry out or participate in the carrying out of those responsibilities."⁴⁴ As the U.S. District Court for the District of Columbia summarized: "[t]he broader issue, therefore, is whether under the Constitution, Congress may permit open market trading as an element of monetary policy to be exercised by private persons, or whether it is restricted in that regard to a grant of authority to government officials."⁴⁵

Reasoning that "plaintiff has failed to offer any cogent reason why Congress may not establish or continue a partnership of public and private control over these functions [open-market operations] in lieu of execution of these responsibilities exclusively by government officials,"⁴⁶ the District Court ruled in 1986:

Congress has employed its undoubted power to regulate the banking industry and the nation's money supply by a system that is in part private although it also includes significant avenues for decisive governmental influence. Few issues in the history of this nation have been as thoroughly considered and debated as central banking and the regulation of the money supply, and private participation, or even control, have been hallmarks of what was from time to time prescribed by the Congress. The current system is also the product of an unusual degree of debate and reflection within the Legislative Branch, with the participation from time to time of the Executive, and it represents an exquisitely

⁴⁴ *Melcher v. Fed. Open Mkt. Comm.*, 644 F. Supp. 510, 522–53 (D.D.C. 1986), *aff'd*, 836 F.2d 561 (D.C. Cir. 1987).

⁴⁵ *Melcher*, 644 F. Supp. 510 at 523.

⁴⁶ *Id.*

balanced approach to an extremely difficult problem. To be sure, this background would not save the legislation if it clearly contravened the Constitution. But the Court concludes on the basis of its consideration of all the factors discussed above, that, while the composition of the Federal Open Market Committee may be unusual, it is not unconstitutional.⁴⁷

In 1988, after the U.S. Court of Appeals for the D.C. Circuit affirmed the judgment dismissing the action despite vacating the District Court's opinion, the Supreme Court denied certiorari to the petition filed by Senator Melcher.⁴⁸ In denying certiorari, the Supreme Court does not express any opinion on the previous decisions. It merely acknowledges that fewer than four Justices considered the case to deserve review at the Supreme Court level. In fact, the Supreme Court has never ruled on the constitutionality of the public-private nature of the monetary system or, for that matter, of the Federal Reserve System.⁴⁹ But the decision by the U.S. District Court for the District of Columbia in *Melcher* provides enough context about the sway banks can legitimately hold over sovereign money. And the legal framework of the monetary system only makes this preeminence stronger.

The concept of legal tender, to begin with, is not as steady as it appears.⁵⁰ Although legal-tender rules usually create some constraints favoring the use of sovereign money, these constraints tend to be soft: contracting parties can freely decide on what constitutes a means of payment and how a debt may be discharged between them. Consequently, the legal concepts of "money" and "payment" become not a matter of strict statutory definition, but a matter of contracts, open to private negotiation and agreement.⁵¹ The idea that sovereign money has to be used or accepted in all monetary transactions conducted in the sovereign territory is wrong in most jurisdictions.

In the United States⁵² and the United Kingdom,⁵³ for instance, legal tender is a narrow disposition that does not compel the parties to use the official currency in their economic transactions. The parties can agree to

⁴⁷ *Id.* at 523–24.

⁴⁸ See *Melcher*, 836 F.2d at 561, *cert. denied*, 486 U.S. 1042 (1988).

⁴⁹ For more on the cases challenging the constitutionality of the FOMC's structure and why these cases tend not to be heard by the courts, see CONTI-BROWN, *supra* note 17, at 117–20.

⁵⁰ See Antonio Sáinz de Vicuña, *An Institutional Theory of Money*, in INTERNATIONAL MONETARY AND FINANCIAL LAW: THE GLOBAL CRISIS 517, 521–23 (Giovanoli & Devos eds., 2010).

⁵¹ See LASTRA, *supra* note 42, at 13–14.

⁵² See 31 U.S.C. § 5103.

⁵³ See Tom Fish & Roy Whymark, *How has Cash Usage Evolved in Recent Decades? What Might Drive Demand in the Future?*, 55 BANK OF ENG. Q. BULL. 216, 218 (2015), <https://www.bankofengland.co.uk/quarterly-bulletin/2015/q3/how-has-cash-usage-evolved-in-recent-decades-what-might-drive-demand-in-the-future> [<https://perma.cc/2ES2-7289>].

accept any (legal) form of payment and even refuse the currency.⁵⁴ As the Board of Governors of the Federal Reserve System website clarifies, “no Federal statute mandat[es] that a private business, a person, or an organization must accept currency or coins as payment for goods or services. Private businesses are free to develop their own policies on whether to accept cash unless there is a state law which says otherwise.”⁵⁵

In the Eurozone, the euro should be accepted if used as payment for a debt, but parties can still decide on a different medium of exchange.⁵⁶ More than that, as Recital 19 of Council Regulation n° 974/98, issued by the Council of the European Union at the time of the introduction of the euro, makes clear: “limitations on payments in notes and coins, established by Member States for public reasons, are not incompatible with the status of legal tender of euro banknotes and coins, provided that other lawful means for the settlement of monetary debts are available.”⁵⁷ Brazil, in contrast, adopts a more restrictive approach, as legal tender means “forced tender”: the use of the national currency in economic transactions is mandatory, and no one can refuse a payment made in the national currency.⁵⁸ Contracting parties, moreover, cannot choose any other medium of exchange, foreign currencies included, in the national territory.⁵⁹

⁵⁴ See Hilary J. Allen, *\$=Euro=Bitcoin?*, 76 MD. L. REV. 877, 900–01 (2017).

⁵⁵ BD. OF GOVERNORS OF THE FED. RES. SYS., FAQs—CURRENCY AND COIN—IS IT LEGAL FOR A BUSINESS IN THE UNITED STATES TO REFUSE CASH AS A FORM OF PAYMENT? (June 17, 2011), https://www.federalreserve.gov/faqs/currency_12772.htm [<https://perma.cc/GES5-HJF3>].

⁵⁶ See TFEU art. 128(1). See also Court of Justice of the European Union, Judgment of 26 January 2021, *Dietrich and Häring*, C-422/19 and C-423/19, EU:C:2021:63 (ruling that “it cannot be considered necessary (...) for the establishment of the status of legal tender of banknotes denominated in euro (...) to impose an absolute obligation to accept those banknotes as a means of payment. (...) Nor, moreover, is it necessary (...) that the EU legislature lay down exhaustively and uniformly the exceptions to that fundamental obligation, provided that every debtor is guaranteed to have the possibility, as a general rule, of discharging a payment obligation in cash).

⁵⁷ Recital 19 of Council Regulation (EC) 974/98 of 3 May 1998, Introduction of the Euro, 1998 O.J. (L 139) 1–5.

⁵⁸ See Decreto No. 857, de 11 de setembro de 1969, Diário Oficial da União [D.O.U.] de 12.9.1969 (Braz.), art. 1°; Decreto No. 10.192, de 14 de fevereiro de 2001, D.O.U. de 16.2.2001 (Braz.), art. 1° (providing that the “Real” is the legal tender to be used in all payments in the national territory); see also Decreto No. 10.406, de 10 de janeiro de 2002, D.O.U. de 11.1.2002 (Braz.) art. 318 (illustrating a general prohibition on using gold or foreign currency as means of payment in contract clauses).

⁵⁹ Foreign currencies can only be used in transactions involving currency exchange. The main purpose of this legal rigidity has been to avoid the dollarization of the economy in times of crisis. See Decreto No. 857, de 11 de setembro de 1969, D.O.U. de 12.9.1969 (Braz.), art. 2°.

In all these jurisdictions, however, balances denominated in the sovereign currency and held in bank accounts—or simply, *bank deposits*⁶⁰—are as legitimate to act as means of payment as the currency issued by the central bank. As the current-account balances can be converted into currency on demand or transferred to another account through the payments system with no loss of value, these balances offer a close and convenient substitute for currency.⁶¹ As an example, Section 16(13) of the Federal Reserve Act provides that checks and bank deposits used by banks' clients to transfer funds or make payments shall be sent and received at par, or dollar for dollar, between banks. These checks and bank deposits are also transferred at par from banks to the central bank—in this case, the Federal Reserve Banks—for clearing and final settlement.⁶²

Under certain circumstances, the law even creates a preference for bank deposits over the sovereign money issued by the central bank. Attempting to curb money laundering, tax evasion, and the financing of terrorism, numerous countries have enacted legislation capping the amount of cash that can be used to make payments.⁶³ In many European countries, the amount of cash a person can use in a single transaction without identification varies from €1,000 to €3,000. No limit exists in Germany, though, and this limit is raised to 100,000 francs in Switzerland. In the United States, any business receiving more than \$10,000 in cash must file Form 8300 with the Internal Revenue Service to report the transaction and identify the payer.⁶⁴ By contrast, in the United Kingdom and Brazil, fewer limitations in the use of cash apply.⁶⁵ In any case, all these countries, following Financial Action Task Force (FATF) recommendations, have enacted rules about the reporting of suspicious transactions.⁶⁶ These rules can include requirements that

⁶⁰ “Bank deposits” is used throughout the text in the sense of bank-created money: the money deposited in current accounts that can be easily converted into currency (central-bank created money) or transferred to another bank account to make a payment. For a comprehensive regulatory definition of deposits—highlighting different types, inclusions, and exclusions—see 12 C.F.R. § 204.2 (2017).

⁶¹ See E. Gerald Corrigan, *Are Banks Special?*, FED. RES. BANK OF MINNEAPOLIS ANN. REP. (1982), <https://www.minneapolisfed.org/article/1983/are-banks-special> [<https://perma.cc/WDF5-RE2N>]; and LASTRA, *supra* note 42, at 25.

⁶² See Federal Reserve Act, 12 U.S.C. §§ 342, 360.

⁶³ See, e.g., Sáinz de Vicuña, *supra* note 50, at 522.

⁶⁴ See 31 U.S.C. §§ 5313-5316, 5331; 31 C.F.R. § 1010.330 (2017) (stipulating at the regulatory level that “[c]urrency in excess of \$10,000 received by a person for the account of another must be reported.”). Similarly, sending to or receiving from a foreign country “currency or other monetary instruments in an aggregate amount exceeding \$10,000 at one time” also creates the legal obligation of reporting. 31 C.F.R. § 1010.340 (2017).

⁶⁵ See Fish & Whymark, *supra* note 53, at 225.

⁶⁶ See FIN. ACTION TASK FORCE, INTERNATIONAL STANDARDS ON COMBATING MONEY LAUNDERING AND THE FINANCING OF TERRORISM & PROLIFERATION (THE FATF RECOMMENDATIONS) (2020), www.fatf-gafi.org/recommendations.html [<https://perma.cc/JG2W-9QG4>].

financial institutions and some designated non-financial businesses and professions report cash transactions above a pre-set threshold.

In the modern monetary system, the legal concept of “money”—in the narrow sense of a generally accepted instrument to make payments and settle debt⁶⁷—is expanded. This concept has to include not only central-bank money (*currency* in the form of banknotes and coins, or just *cash*⁶⁸) but balances held in current accounts (*bank deposits*) that can be easily redeemed or transferred with no loss of value. Any of these types of “money” can be used to discharge debts and make payments, although they are not always interchangeable: in normal times, the law may require the use of bank deposits instead of cash for some payments; in a banking crisis, though, only central-bank money retains its liquidity and availability.⁶⁹

Bank deposits have thus become, mainly in advanced economies, the most used means of payment by households and institutions in their monetary transactions.⁷⁰ As former governor of the Bank of England Mervyn King illustrates, the share of bank deposits in total money (in the sense of means of payment, also including cash) is around 90% in the United States. And this share “is even higher in other major countries, at 91 percent in [the] euro area, 93 percent in Japan and no less than 97 percent in the United Kingdom.”⁷¹ In the United Kingdom, moreover, the proportion of payments using cash, in value terms, has been in gradual decline.⁷²

A survey in the euro area, in apparent contrast, highlights that, in 2016, people used cash in almost 80% of transactions—but for small payments, particularly below €25. In terms of value, payments in cash amounted to 53.8% of all low-value payments, while the use of cards reached 39%. Even so, 93% of euro area consumers owned or had access to a payment card, and the amount of cash people carried, on average, in their wallets was below €100, except for Luxembourgers (€102) and Germans (€103). More than

⁶⁷ About the different types of “money” and the inherent hierarchical character of money based on the levels of liquidity of different financial instruments (from securities and demand deposits to currency and gold), see Perry Mehrling, *The Inherent Hierarchy of Money*, in SOCIAL FAIRNESS AND ECONOMICS: ECONOMIC ESSAYS IN THE SPIRIT OF DUNCAN FOLEY 394 (2012).

⁶⁸ In some countries, however, coins are issued not by the central bank but by the treasury, as a legacy of the time when the sovereign issued gold or silver coins by itself. In the United States, for example, coins are issued by the Secretary of the Treasury, under 31 U.S.C. § 5111(a)(1) (2018).

⁶⁹ See KING *supra* note 24, at 53–54; Perry Mehrling, *Financialization and its Discontents*, FINANCE AND SOCIETY 1, 7–8 (2017), http://financeandsociety.ed.ac.uk/ojs-images/financeandsociety/FS_EarlyView_Mehrling.pdf [<https://perma.cc/UN7W-EQVG>].

⁷⁰ See, e.g., Sáinz de Vicuña, *supra* note 50, at 521–23.

⁷¹ KING, *supra* note 24, at 62.

⁷² See Fish & Whymark, *supra* note 53, at 217, 220.

that, 84% of euro area consumers answered that, in 2016, they had not received any regular income in cash.⁷³

Bank deposits are as legitimate as the official banknotes and coins for making payments and transferring funds. In effect, bank deposits tend to be the ultimate representation of “money” in modern economies. As bank deposits are under the direct control of banks, does that mean that not only the central bank can create the sovereign money but also banks? A look at the legal framework of banking will point to an affirmative answer. Yet a look at the reality of banking will show that banks have taken their legally established monetary power too far.

B. Banks and the Real Monetary Power

In the United States, the “business of banking” was defined in Section 8 of the National Bank Act of 1864. This Section, now as Section 24, Seventh, in Title 12 of the United States Code, remains the relevant statutory provision on the topic until these days, with the developments brought by years of regulatory and judicial interpretation. The then Section 8 authorized national banks to exercise, among others, the powers of “receiving deposits” and “loaning money on personal security.” At that time, national banks could also issue *notes* redeemable on demand at par to circulate in the economy.⁷⁴ Both notes and deposits had to be partially backed by the official currency (greenbacks) or gold.⁷⁵ In any case, Section 31 of the Act explicitly allowed national banks to multiply the money received from customers, as the statutory rule required banks to keep “on hand” (as a reserve requirement) just a partial amount of money relative to their notes and deposits. Currently, Section 19 of the Federal Reserve Act of 1913 sets the rules on reserve requirements.⁷⁶

The subsequent legislation reinforces the idea that the combination of receiving deposits⁷⁷ and making loans is the essence of the business of banking and, thus, the distinguishing characteristic of banks.⁷⁸ Since the

⁷³ For details on the survey in the euro area and the source of the cited data, see Henk Esselink & Lola Hernández, *The Use of Cash by Households in the Euro Area*, EUR. CENT. BANK OCCASIONAL PAPER SERIES (Nov. 2017), <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op201.en.pdf>. The use of cash in the United States is similar to the results found in the Eurozone. See KENNETH ROGOFF, *THE CURSE OF CASH* 49–51 (2016).

⁷⁴ See National Bank Act of 1864 § 23 (repealed 1920).

⁷⁵ See *id.* at § 31 (repealed 1913).

⁷⁶ See 12 U.S.C. § 461 (2018).

⁷⁷ For purposes of deposit insurance, “deposit” has a statutory definition in 12 U.S.C. § 1813(l) (2018).

⁷⁸ This view has been recently challenged by the Office of the Comptroller of the Currency (OCC), which is defending in court its legal authority to issue special purpose national bank charters for financial technology (fintech) companies that make loans but do not receive deposits. For an overview of the case and its implications, with links to relevant court filings, see Lev Menand & Morgan Ricks,

Banking Act of 1933—known as the Glass-Steagall Act—no person or corporation can engage, without getting the proper authorization, “in the business of receiving deposits subject to check or to repayment upon presentation of a passbook, certificate of deposit, or other evidence of debt, or upon request of the depositor.”⁷⁹ Similarly, the Federal Deposit Insurance Act of 1950 defined “State bank” as an institution “engaged in the business of receiving deposits.”⁸⁰

And finally, the Bank Holding Company Act Amendments of 1970, besides referring to the definition of bank from the Federal Deposit Insurance Act, added that a bank is an institution that both: “(i) accepts deposits that the depositor has a legal right to withdraw on demand; and (ii) engages in the business of making commercial loans.”⁸¹ The second and conjunctive prong to the statutory test of what constitutes a “bank” (“making commercial loans”) was only introduced with the 1970 Amendments. The statutory emphasis on “commercial loans,” leaving aside “consumer loans,” indicates that, at the time, regulators were concerned with banks providing credit to businesses and, in consequence, with both banks and corporations accumulating too much power. Personal loans were not seen as an activity that required special regulation or supervision.⁸²

The case law in the United States reaffirms this understanding of banking centered around receiving deposits and making loans. As early as 1872, in *Oulton*, the Supreme Court stated that “[s]trictly speaking the term bank implies a place for the deposit of money, as that is the most obvious purpose of such an institution.”⁸³ In the 1986’s *Dimension* case, the Supreme Court went further and acknowledged: “the narrowed statutory definition [based on the Bank Holding Company Act of 1956] required that both the demand deposit and the commercial loan elements be present to constitute the institution as a bank.”⁸⁴

Lacewell v. OCC, JUST MONEY (July 2020), <https://justmoney.org/lacewell-v-occ/> [<https://perma.cc/TKU5-EGSK>].

⁷⁹ Originally, Banking Act of 1933 § 21(a)(2) (1933). Currently, 12 U.S.C. § 378(a)(2) (2018).

⁸⁰ Originally, Federal Deposit Insurance Act § 3(a), 12 U.S.C. § 264 (1950). Currently, 12 U.S.C. § 1813(a)(2)(A) (2018).

⁸¹ Originally, Bank Holding Company Act Amendments of 1970 § 101(c) (1970). Currently, 12 U.S.C. 1841(c)(1)(A)-(B) (2018), with an updated text.

⁸² About the evolution of the statutory definition of “bank” in the United States, its main exemptions, and the reasons for the statutory emphasis on “commercial loans,” see Saule Omarova & Margaret Tahyar, *That Which We Call a Bank: Revisiting the History of Bank Holding Company Regulation in the United States*. 31 REV. BANKING & FIN. L. 113 (2011).

⁸³ *Oulton v. German Sav. & Loan Soc.*, 84 U.S. 109, 118 (1872) (holding that a savings bank operating for profit was not exempt from taxation on the deposits the bank held for its customers).

⁸⁴ *Bd. of Governors of the Fed. Res. Sys. v. Dimension Fin. Corp.*, 474 U.S. 361, 367 (1986) (holding that the Board of Governors of the Federal Reserve lacked

The case law, moreover, has provided the legal basis underpinning fractional-reserve banking, the ability that banks have to hold in reserve just a fraction of the total amount they receive in deposits, using the rest to make loans. In 1881, the Supreme Court asserted that “the relation between a bank and its general depositor is that of debtor and creditor. When he deposits moneys with the bank, it becomes his debtor to the amount of them.”⁸⁵ This rule was reaffirmed by the Supreme Court several times since, making it clear that a bank account “consists of nothing more or less than a promise to pay, from the bank to the depositor;” and not “money belonging to the depositor and held by the bank.”⁸⁶ As the Supreme Court underlined in the 1904 case *New York County National Bank v. Massey*,

except under special circumstances, or where there is a statute to the contrary, a deposit of money upon general account with a bank creates the relation of debtor and creditor. The money deposited becomes a part of the general fund of the bank, . . . and the right of the depositor is to have this debt repaid in whole or in part by honoring checks drawn against the deposits. It creates an ordinary debt, not a privilege or right of a fiduciary character.⁸⁷

And that is the legal reason why banks—and banks only—can use the money deposited to make new loans and keep just a part of the amount deposited to meet legal and regulatory requirements. In the majority opinion of the Supreme Court in the 1963 case *United States v. Philadelphia National Bank*, Justice Brennan contended that “[c]ommercial banks are unique among financial institutions in that they alone are permitted by law to accept demand deposits. This distinctive power gives commercial banking a key role in the national economy.”⁸⁸ Even Justices Harlan and Stewart, who dissented from the majority opinion, agreed on that point: “The unique powers of commercial banks to accept demand deposits, provide checking account services, and lend against fractional reserves permit the banking

statutory authority to expand the definition of “banks” contained in the Bank Holding Company Act of 1956).

⁸⁵ *Libby v. Hopkins*, 104 U.S. 303, 308 (1881). To make this point, the U.S. Supreme Court invoked the authority of the emblematic English case *Foley v. Hill*, (1848) 2 HLC 28, 9 Eng. Rep. 1002, which was decided by the House of Lords, the highest court at the time. *Foley* is one of the fundamental cases in the English banking law about the nature of the relationship between the bank and its depositors. About *Foley* and its relevance, see E. P. ELLINGER ET AL., *ELLINGER'S MODERN BANKING LAW* 120–22 (5th ed. 2011).

⁸⁶ *Citizens Bank of Md. v. Strumpf*, 516 U.S. 16, 21 (1995). Following the same line, see *Bank of Marin v. England*, 385 U.S. 99, 101 (1966) (stating that “the relationship of bank and depositor is that of debtor and creditor, founded upon contract.”).

⁸⁷ *New York Cnty. Nat'l Bank v. Massey*, 192 U.S. 138, 145 (1904).

⁸⁸ *United States v. Philadelphia Nat'l Bank*, 374 U.S. 321, 326 (1963).

system as a whole to create a supply of ‘money,’ a function which is indispensable to the maintenance of the structure of our national economy.”⁸⁹

Finally, since the late 19th century, the Supreme Court has underscored the importance of national banks in supporting the government in its monetary and financial duties. As opposed to banks incorporated under state laws, national banks organized under the National Bank Act of 1864, a federal law, were viewed as “instrumentalities of the federal government.”⁹⁰ In their origin, national banks were “established for the purpose, in part, of providing a currency for the whole country, and in part to create a market for the loans of the General government.”⁹¹ Some historical context helps to understand the early decisions of the Supreme Court on national banks.

After the two frustrated attempts to create a federal bank that could serve as a central bank in the late 18th and early 19th centuries, free banking prospered between 1837 and 1863. With no federal laws in place, states set low entry barriers and allowed banks to issue notes, which circulated and were used as means of payment. Free banking, however, did not mean that an individual or entity could start a banking business without constraints or government involvement. Any new bank had to register with state authorities and deposit securities to support all of the notes issued. Charles Calomiris, from Columbia Business School, and Stephen Haber, from Stanford University, explain the arrangement:

[Although] bank charters no longer had to be approved by state legislatures, . . . individuals could open banks provided that they registered with the state comptroller and deposited state or federal bonds with the comptroller as a guarantee of their note issues. . . . [U]nder free banking, all banknotes had to be 100 percent backed by high-grade securities—which, notably, included bonds issued by the state government—that were deposited with the state comptroller of the currency. Free banks were forced, in essence, to grant a loan to the state government in exchange for the right to operate.⁹²

Free banking was not unrestricted, but it was not well regulated either. The large number of banks subject to weak requirements and feeble supervision

⁸⁹ *Id.* at 374.

⁹⁰ *Davis v. Elmira Sav. Bank*, 161 U.S. 275, 283 (1896) (holding that a state has no authority to enforce state rules against a national bank when these rules conflict with a federal statute).

⁹¹ *Tiffany v. Nat’l Bank of Missouri*, 85 U.S. 409, 413 (1873) (holding that a national bank may charge the highest interest rate allowed in the state, even when a lower rate is set for the banks organized under the state laws).

⁹² CHARLES CALOMIRIS & STEPHEN HABER, *FRAGILE BY DESIGN: THE POLITICAL ORIGINS OF BANKING CRISES AND SCARCE CREDIT* 169 (2014).

led to the fragmentation of the monetary system and to instability, which was made worse by the Civil War of the 1860s.⁹³

The National Bank Act of 1863, amended in 1864, aimed to organize the banking system, establish a national currency, and solve fiscal problems, all with the help of national banks.⁹⁴ In the absence of a central bank, national banks were therefore seen as “instrumentalities of the federal government.”⁹⁵ The original rationale for giving national banks preferential treatment ended, though, with the enactment of the Federal Reserve Act of 1913 and the creation of the Federal Reserve System.⁹⁶ As the Supreme Court explicitly acknowledged in 1940, “[t]hrough the national banks’ usefulness as an agency to provide for currency has diminished markedly, their importance as general bankers shows a constant growth.”⁹⁷ So, even after the Federal Reserve Act transferred the monetary functions to the authority of the central bank, national banks continued to receive preferential treatment from the Supreme Court, this time regarding their commercial operations.⁹⁸

This view of national banks as “national favorites,” as affirmed in the 1873 case *Tiffany v. National Bank of Missouri*,⁹⁹ was softened more recently. In the 2009 case *Cuomo v. Clearing House Association*, for instance, the Supreme Court conceded, in a majority opinion, that national banks, despite their privileged position in the American financial system, are subject to the law enforcement of the states and the related actions brought by a state attorney general.¹⁰⁰ The Dodd-Frank Act, moreover, introduced the “National Bank Act preemption provisions” stipulating that, except under

⁹³ For a detailed and more favorable analysis of free banking, see GEORGE SELGIN, *THE THEORY OF FREE BANKING: MONEY SUPPLY UNDER COMPETITIVE NOTE ISSUE* (1988).

⁹⁴ About the historical context of the emergence of national banks, see Arthur Rolnick & Warren Weber, *New Evidence on the Free Banking Era*, 73 *THE AM. ECON. REV.* 1080, 1080–84 (1983). In any case, national banks were “national” “only in the sense that their charter was granted by the federal government, not in the sense that they could operate nationwide branches. They continued to be subject to state laws that either made branching entirely illegal or limited the number of branches that could be operated.” CALOMIRIS & HABER, *supra* note 92, at 179.

⁹⁵ *Davis*, 161 U.S. at 283.

⁹⁶ Although the Federal Reserve System was statutorily created in 1913, Peter Conti-Brown contends that, in fact, the Fed had “three foundings”: in 1913, with the Federal Reserve Act; in 1935, with the Banking Act; and in 1951, with the Fed-Treasury Accord. See CONTI-BROWN, *supra* note 17, at 15–39.

⁹⁷ *Colorado Nat’l Bank of Denver v. Bedford*, 310 U.S. 41, 48 (1940) (holding that a safe-deposit business can be considered an “incidental power” relative to the business of banking).

⁹⁸ See, e.g., *Marquette Nat’l Bank of Minneapolis v. First of Omaha Serv. Corp.*, 439 U.S. 299 (1978) (holding that a national bank based in one state may charge its credit-card customers from another state the interest rate allowed by its home state, even if it is higher than the maximum rate permitted in the state of the customer).

⁹⁹ *Tiffany v. National Bank of Missouri*, 85 U.S. 409, 413 (1873).

¹⁰⁰ See *Cuomo v. Clearing House Ass’n, LLC*, 557 U.S. 519 (2009).

specific circumstances, states have the power to apply their laws to national banks.¹⁰¹ In any event, the one point all these Supreme Court decisions have in common is to show how banking has historically been an activity close to the sovereign and to money creation and circulation.

1. *The Legal Limits of Banking: Multiplying Existing Deposits*

The law, therefore, builds a distinctive legal framework for banks, allowing them to receive deposits from the public, keep a fraction in reserve, and use the rest to make loans. Under this framework, banks can legitimately collaborate with the central bank in creating money—still in the narrow sense of a generally accepted instrument to make payments and settle debt—by following a particular sequence, here stylized:

*the central bank creates money and puts it in circulation*¹⁰²
 → *people deposit spare money in banks* → *banks keep in reserve only a part of the deposits but guarantee the entire amount (fractional reserve)* → *banks lend the rest of the money deposited* → *private creation of money occurs through multiplication*

As the sequence makes clear, the legal framework implies that the central bank starts the process of money creation, not the banks. Under this traditional or orthodox model of banking, banks are depicted as intermediaries of “loanable funds,” receiving funds in deposit from savers and using these funds to make loans for borrowers. This view does not imply that banks cannot take part in the process of money creation. Banks can and do create money through fractional reserving. Under any fractional-reserve system of banking, banks can use their balance sheet to expand the money supply: banks record the full amount deposited by customers as an accounting entry but keep in reserve just a fraction of the money received on deposit, using the rest to fund loans that will generate new deposits.¹⁰³

President Franklin D. Roosevelt eloquently described this model of banking in his “fireside chat” of March 12, 1933, the first in a series of thirty radio broadcasts delivered to the nation. In this speech, President Roosevelt was trying to restore public confidence in the banking system after the 1929 crash:

First of all let me state the simple fact that when you deposit money in a bank the bank does not put the money into a safe

¹⁰¹ See 12 U.S.C. § 25b (2018).

¹⁰² In this stylized model, central-bank money enters circulation through the banking system. The central bank purchases securities from the banks and pays the banks with central-bank money in the form of central-bank reserves. These central-bank reserves are later transformed into currency (banknotes and coins) when banks’ customers start making withdrawals.

¹⁰³ On the process of fractional reserving and money multiplication, see CECCHETTI & SCHOENHOLTZ, *supra* note 7, at 462–75.

deposit vault. It invests your money in many different forms of credit-bonds, commercial paper, mortgages and many other kinds of loans. In other words, the bank puts your money to work to keep the wheels of industry and of agriculture turning around. A comparatively small part of the money you put into the bank is kept in currency—an amount which in normal times is wholly sufficient to cover the cash needs of the average citizen. In other words the total amount of all the currency in the country is only a small fraction of the total deposits in all of the banks.¹⁰⁴

This model based on the multiplication of central-bank money by banks made sense in a commodity-money regime, in which the expansion of money by the central bank depended on the supply of an underlying commodity, like gold. Without the underlying commodity, no more central-bank money could be created and put in circulation by the central bank. Fewer deposits, in turn, were made with the banks, reducing banks' capacity to multiply deposits and create more money.¹⁰⁵ When, however, money lost its mechanical connection to a commodity and became pure fiat-money, a simple accounting entry on the liabilities side of the central bank's balance sheet was enough to create more central-bank money.¹⁰⁶ The central bank did not have to back this newly issued money with a commodity anymore. The chief constraint on the

¹⁰⁴ Franklin D. Roosevelt, *Fireside Chat 1: On the Banking Crisis* (Radio broadcast Mar. 12, 1933), <https://millercenter.org/the-presidency/presidential-speeches/march-12-1933-fireside-chat-1-banking-crisis> <https://perma.cc/HE83-VA9J>. Criticizing the model of banks as “intermediaries of loanable funds” and the idea that “banks put our money to work,” see Robert Hockett & Saule Omarova, *The Finance Franchise*, 102 CORNELL L. REV. 1143 (2017); Zoltan Jakab & Michael Kumhof, *Banks are not Intermediaries of Loanable Funds – And Why This Matters* (Bank of Eng., Staff Working Paper No. 529, 2015), <https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2015/banks-are-not-intermediaries-of-loanable-funds-and-why-this-matters.pdf?la=en&hash=D6ACD5F0AC55064A95F295C5C290DA58AF4B03B5> [<https://perma.cc/PLE8-6ZEC>]; McLeay et al., *Money Creation in the Modern Economy*, 54 BANK OF ENG. Q. BULL. 14 (2014), <https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/money-creation-in-the-modern-economy.pdf?la=en&hash=9A8788FD44A62D8BB927123544205CE476E01654> [<https://perma.cc/PLE8-6ZEC>].

¹⁰⁵ About the limitations imposed by commodity money on money creation and monetary policy, see CHARLES GOODHART, *THE EVOLUTION OF CENTRAL BANKS* 5-6 (2d ed.1988)

¹⁰⁶ See McLeay et al., *supra* note 104, at 15-16.

central bank's capacity to issue money indefinitely came to be inflationary pressure.¹⁰⁷

2. Breaking the Legal Limits: Creating Deposits Independently

In line with this increased monetary freedom for the central bank, banks also could adjust their actions. Banks no longer had to wait for deposits to come before making new loans. Banks could now create both at the same time by making the loan (an asset on the banks' balance sheet) and crediting the borrower's bank account with the sum equivalent to the amount lent (a liability on the banks' balance sheet). And as the central bank started focusing on meeting the goal of price stability, the central bank would support the increased liquidity banks created as long as the target for interest rates was met.¹⁰⁸ This process of money creation grew ever more common in the early 2000s, when price stability consolidated its position as the dominant concern in central banking, and the inflation-targeting regime gained widespread acceptance.¹⁰⁹

The mechanics of this process of money creation led by banks is straightforward. Typically, the central bank sets a target for the base interest rate, which influences other interest rates in the economy and, in turn, the spending decisions of households and corporations. The base interest rate is the price banks have to pay in the interbank market to get additional central-bank money, known as *electronic reserves*, or simply *reserves*. Reserves are digitally issued by the central bank and used exclusively by banks to settle transactions in the payments system with other banks, the central bank, and the government. More lending operations create more bank deposits and, to support these new deposits, banks need to get more central-bank money (reserves) in the interbank market. With higher demand for reserves, their price—the base interest rate—tends to go up, moving away from the target. To avoid missing the target, the central bank uses open-market operations to put more reserves in the interbank market at an interest rate closer to the

¹⁰⁷ About the constraints inflationary pressure can put on the capacity of central banks to issue money indefinitely, see Robert Hall & Ricardo Reis, *Maintaining Central-Bank Financial Stability under New-Style Central Banking* (Nat'l Bureau of Econ. Res., Working Paper No. 21173, 2015), <http://www.nber.org/papers/w21173> <https://perma.cc/6ZNR-BQKW>].

¹⁰⁸ See Victoria Chick, *The Current Banking Crisis in the UK: An Evolutionary View*, in *FINANCIAL CRISES AND THE NATURE OF CAPITALIST MONEY: MUTUAL DEVELOPMENTS FROM THE WORK OF GEOFFREY INGHAM* 148, 151–58 (J. Pixley & G. C. Harcourt eds., 2013).

¹⁰⁹ The inflation-targeting regime, developed in the late 1990s, is the current policy framework of choice. Under this framework, the central bank will make its judgment based on the target for the overnight interbank interest rate (the nominal base interest rate), which is set according to a specific target for inflation publicly announced. See CECCHETTI & SCHOENHOLTZ, *supra* note 7, at 497–500.

target, ultimately supporting the process of money creation started by the banks.¹¹⁰

This process might have been facilitated, in the United States, by the easing of monetary policy in the first half of the 2000s. Concerned with low economic growth following the burst of the dot.com bubble and the 9/11 attacks, and alarmed by the Japanese deflationary experience, the Federal Reserve lowered the target for interest rates and kept it low until late 2005. The target went from 6.5% in January 2001 to the lowest point of 1% between mid-2003 and mid-2004.¹¹¹ With rates being so low, it was cheaper for banks to eventually get from the central bank the support they needed to keep the process of money creation going. For Stanford University economist John Taylor, “[s]tarting in 2003-05, [the Fed] held interest rates too low for too long and thereby encouraged excessive risk-taking and the housing boom.”¹¹²

The transition from commodity money to fiat money made the process of money creation easier not only for the central bank but also for banks. And although a growing amount of research in recent years has acknowledged the monetary change,¹¹³ the banking law and traditional economic textbooks are still stuck with the old model.¹¹⁴ In the context of a fiat-money regime, which became prevalent after the end of the gold standard in the 1930s and is the

¹¹⁰ See JOSEPH HUBER, *SOVEREIGN MONEY: BEYOND RESERVE BANKING* 125 (2017).

¹¹¹ See SIMON JOHNSON & JAMES KWAK, *13 BANKERS: THE WALL STREET TAKEOVER AND THE NEXT FINANCIAL MELTDOWN* 146–47 (2010); SEBASTIAN MALLABY, *THE MAN WHO KNEW: THE LIFE AND TIMES OF ALAN GREENSPAN* 580–82, 593–607, 632–45 (2016).

¹¹² John Taylor, *The Dangers of an Interventionist Fed*, WALL ST. J. (Mar. 29, 2012), <http://www.wsj.com/articles/SB10001424052702303816504577307403971824094> [<https://perma.cc/DHX8-2ADE>]. In defense of the Federal Reserve’s monetary policy of this period, see Ben Bernanke, Chairman, Bd. of Governors of the Fed. Res. Sys., Speech at the Ann. Meeting of the Am. Econ. Ass’n: Monetary Policy and the Housing Bubble (Jan. 3, 2010), <https://www.federalreserve.gov/newsevents/speech/bernanke20100103a.htm> [<https://perma.cc/7NK2-ZQGM>].

¹¹³ Acknowledging the power banks have to create money through lending, with no need to rely on previous deposits, see Hockett & Omarova, *supra* note 104; HUBER, *supra* note 110, at 57–64; Jakab & Kumhof, *supra* note 104; McLeay et al., *supra* note 104; RICKS, *supra* note 40, at 52–62. An earlier voice about this process of money creation by banks can be found in James Tobin, *Commercial Banks as Creators of “Money,”* in *BANKING AND MONETARY STUDIES* 408 (D. Carson ed., 1963).

¹¹⁴ Among traditional economic textbooks advancing the view that banks are “intermediaries of loanable funds,” see LAURENCE BALL, *MONEY, BANKING, AND FINANCIAL MARKETS* 317–24 (Craig Bleyer et al. eds., 2009); MISHKIN, *supra* note 25, at 354–66.

reality for most countries today,¹¹⁵ the sequence of money creation occurs in reverse order relative to the orthodox model:

a potential borrower asks the bank for a loan → the bank decides to lend → the bank makes the loan and credits the account of the borrower with a deposit in the amount of the loan → private creation of money occurs through accounting → the borrower uses the new deposit to make a payment for a customer of a different bank → the new deposit enters circulation → the lender bank needs central-bank money (reserves) to settle outstanding balances related to the new deposit in circulation → central bank creates reserves to meet the increased demand

But nowhere in the relevant law, as discussed above, appears any authorization for banks to start the process of money creation, to “create” or “issue” more deposits before receiving money from their customers—and this is what is happening in the monetary system.¹¹⁶ In the United States, it could be argued that “issuing” demand deposits before receiving central-bank money could be included in the “*incidental powers* as shall be necessary to carry on the business of banking,” as provided in Section 24, Seventh, of Title 12 of the United States Code.¹¹⁷ No judicial or regulatory decision ever went that far in extending banks’ “incidental powers,” though. In any case, when the Supreme Court examined the power of banks to create money, Justice Brennan acknowledged that “banks do not merely deal in but are actually a source of, money and credit; when a bank makes a loan by crediting the borrower’s demand deposit account, it augments the Nation’s credit supply.” But in footnote No. 4, at the end of this excerpt, Justice Brennan added: “Such creation is not, to be sure, pure sleight of hand. A bank may not make a loan without adequate reserves. Nevertheless, the element of bank money creation is real.”¹¹⁸

3. Banks’ Dominance and the Powerless Central Bank

So, although the legal framework of the monetary system has not been revised accordingly, banks changed the way they treat loans and deposits and, as a consequence, the way money is created in the economy. And central banks could not help but adjust accordingly. Instead of constraining the banks’ actions from the start, the central bank reacts to the banks’ decisions, assuming the role of a supporting character, not of the protagonist. Banks

¹¹⁵ Fiat-money regimes became prevalent after the end of the gold standard. The gold standard was abandoned in the 1930s, and the fixed exchange-rate regime based on the dollar and gold that emerged from Bretton Woods permanently ended in 1973. See Redish, *supra* note 6, at 788–90.

¹¹⁶ In the present days, “it may be more accurate, or at least more useful, to say that deposits are *instruments* that the bank *issues*.” RICKS, *supra* note 40, at 57.

¹¹⁷ 12 U.S.C. § 24 (Seventh) (emphasis added).

¹¹⁸ *United States v. Philadelphia Nat’l Bank*, 374 U.S. 321, 326 n.4 (1963).

begin the process of money creation, and the central bank uses its monetary tools at the end of the process to keep the base interest rate on target and attain price stability.

The central bank's control, although deferred, is tighter during periods of inflationary pressure, when prices in the economy are rising. In these periods, the central bank must keep reserves at a low level so that their cost remains high, thus dampening banks' willingness to make new loans and create deposits. The higher the cost for banks to get more reserves, the lower the incentive banks have to lend, an arrangement that leads to less money available and serves to curb inflation. But in times of stagnant economic growth and stable or even falling prices, the central bank's control over money creation by banks loosens, and banks' dominance becomes more worrisome. As the central bank does not want reserves to be expensive, which would translate into higher interest rates and less incentive to borrow and spend, the central bank stands ready to provide banks with more reserves whenever needed. By doing so, the central bank accommodates banks' increasing creation of money, in the form of bank deposits, as a result of their lending operations. Under this scenario, therefore, the risk of the central bank getting too complacent and of banks abusing their monetary powers grow. But even here, banks cannot create money without limits.

The first limitation for banks to create money comes from the demand of their customers, since a weaker demand for loans leads to fewer opportunities for banks to start the process of money creation. Banks also have to control their lending activity to meet regulatory standards (like capital and liquidity requirements) and manage risks, especially if banks want to stay competitive and profitable.¹¹⁹ Limitations on money creation by banks still exist. However, they do not typically result from monetary constraints directly imposed by the central bank but from banks' business and legal strategies. Let's take a look at how we got to this point of banks dominating the monetary system.

II. FLAWED BY DESIGN

Central banking has been evolving for more than 300 years. But it was not until the first half of the 20th century that central banks consolidated what today is their most problematic and perhaps most overlooked characteristic: central banks have no direct relations with the public and economy at large. The modern central bank depends on the banking system to perform all the basic monetary functions, from getting currency into circulation to managing the supply of money and, in the end, pursuing price stability. The banking system, built over a payments system that connects the economy with the centralized reserves held with the central bank, is the only channel the central bank has to reach the real world and implement its policies.

Even when the central bank trades with non-bank institutions—

¹¹⁹ For a more detailed account of the limitations banks face in money creation, see McLeay et al., *supra* note 104, at 17–21; Tobin, *supra* note 113, 412–18.

purchasing financial assets under a quantitative-easing program, for example—all the related payments are processed within the banking system. The problem appears because central banks only make payments to, and receive payments from, banks that hold accounts with the central bank—the *reserve accounts*, also known as *master accounts* in the United States.¹²⁰ In consequence, for every asset purchase the central bank makes in the economy to implement policy, the related payment has to go through the banking system. The central bank issues money in the form of electronic reserves to the banks, and they in turn credit the bank account of the sellers with money in the form of a deposit corresponding to the value of the assets transacted.¹²¹

The structure and operation of the monetary system thus help to explain the prominence of the banking system and the difficulties the central bank faces to limit banks' dominance. Banks are the only *monetary* institutions in the financial system, providing the economy with money (in the form of bank deposits) and allowing this money to circulate through the processing of payments.¹²² And, as monetary institutions, banks cannot simply fail. When a bank fails, not only individuals and corporations but also non-bank financial institutions, like pension funds and insurers, lose access to their funds, in a process that can become systemic and bring the entire economy to a halt.¹²³ Without banks, people cannot withdraw cash, pay bills, transfer funds, or even receive their wages and salaries.

From this perspective, modern central banking is in the banks' hands—not necessarily because of capture,¹²⁴ but mostly because of design. Little, though, can the government—the original master of the central bank—do to prevent this situation from worsening, as the government allowed its old financier to become too intertwined with the banking system. And for a good reason: government borrowing has reached such a vast amount that only

¹²⁰ Regulation J issued by the Board of Governors, for instance, defines *reserve account* simply as “an account on the books of a Federal Reserve Bank” 12 C.F.R. § 210.2(a) (2017).

¹²¹ See John Barrdear & Michael Kumhof, *The Macroeconomics of Central Bank Issued Digital Currencies* 12–13 (Bank of Eng., Staff Working Paper No. 605, 2016), <https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2016/the-macroeconomics-of-central-bank-issued-digital-currencies.pdf?la=en&hash=341B602838707E5D6FC26884588C912A721B1DC1> [<https://perma.cc/9PVM-J8CN>]; McLeay et al., *supra* note 104, at 24–25.

¹²² Developing the idea of banks as “monetary institutions,” see HUBER, *supra* note 110, at 64–67. See also Corrigan, *supra* note 61 (arguing that banks are “special” among financial institutions).

¹²³ See Ben Dyson & Graham Hodgson, *Digital Cash: Why Central Banks Should Start Issuing Electronic Money*, POSITIVE MONEY 10-11 (2016), http://positivemoney.org/wp-content/uploads/2016/01/Digital_Cash_WebPrintReady_20160113.pdf [<https://perma.cc/Z2NJ-BKYM>].

¹²⁴ About capture in the relationship of the central bank with the banks, see Lawrence Baxter, *Capture in Financial Regulation: Can we Channel it Toward the Common Good?*, 21 CORNELL J.L. & PUB. POL'Y 175 (2011).

banks, and “big banks” in particular, are capable of efficiently making a market and creating liquidity for government debt.¹²⁵ Quid pro quo has been at the heart of central banking since its origins.¹²⁶ To mitigate the effects of this structural flaw of the monetary system leading to the near-impossibility of bank failures, a legal and institutional framework based on lender of last resort, deposit insurance, and extensive financial regulation had to be developed.¹²⁷ Design, therefore, matters. Design can be the decisive factor in building monetary and financial stability. Understanding how and why the monetary system reached the current predicament will help us explore the possibilities of different monetary arrangements later on.

A. *Deconstructing Central Banks*

Central banks have evolved as servants of two masters. They have long served as the government’s bank and the banker’s bank.¹²⁸ This dual nature has shaped the development of central banking over the years and is at the core of the complex and controversial issues involving central banks: from monetary financing to independence; from bailouts to quantitative easing; from managing the money supply to facing monetary competition. The dual nature has also influenced the institutional and legal framework governing central banks, their actions, and their relations with the government and the banks. Since their origins, central banks have functioned as a public-private partnership trying to reconcile the needs of their two masters—not always with positive outcomes.¹²⁹

1. *A Central Bank for the Government*

Central banks started to appear in the late 17th and 18th centuries in Europe mainly because of a political quid pro quo. The first central banks, in Sweden and England, were private commercial banks that, in return for helping to finance the government, received privileges and eventually monopoly rights on issuing notes to be used as currency in the sovereign territory. The favored bank granted the government a loan, especially during wartime, and the notes issued as the representation of this loan were spent by the government in the economy. Since these notes were not only redeemable

¹²⁵ See Lawrence Baxter, *Betting Big: Value, Caution and Accountability in an Era of Large Banks and Complex Finance*, 31 REV. BANKING & FIN. LAW 765, 818–21 (2011–2012).

¹²⁶ Developing the idea that central banks, notably the Bank of England, appeared because of a quid pro quo between the sovereign king and private bankers, see MARTIN, *supra* note 43, at 117–21.

¹²⁷ See Chick, *supra* note 108, at 149–51; Daniela Gabor & Jakob Vestergaard, *Towards a Theory of Shadow Money*, INST. FOR NEW ECON. THINKING 4–9, 27 (2016),

https://www.ineteconomics.org/uploads/papers/Towards_Theory_Shadow_Money_GV_INET.pdf.

¹²⁸ See LASTRA, *supra* note 42, at 33, 45–52.

¹²⁹ See MARTIN, *supra* note 43, at 117–18.

for gold coins at the issuer bank but accepted by the government as payment for taxes, the notes circulated as money. People were willing to receive these notes as payment because they knew other persons and, ultimately, the government would also take the notes in exchange for goods and services or, at least, to settle taxes.¹³⁰

Although other banks could still issue banknotes to private customers, representing deposits received or loans granted, the power to create the official currency gave the favored bank a share in the profits of seigniorage. Seigniorage represented the difference between the face value of the currency issued, which could be used to acquire goods and services, and the cost of its production.¹³¹ Because banknotes were then based on and convertible into some quantity of gold or silver coins, the arrangement also allowed the government to, through the favored bank, acquire more control over the metallic reserves of the country.

This privileged position of a private bank as the banker to the government and, later, as the monopolistic issuer of the official currency ended up having a side effect: the other commercial banks increasingly turned to this favored bank for holding their reserved assets, or simply “reserves,” the assets banks kept available to face immediate demand. Commercial banks found the favored bank to be not only a trustworthy guardian for their reserves but a liquidity provider for difficult times. As the issuer of the sovereign money, the favored bank would rediscount private promissory notes that the banks held. By doing so, the favored bank was making the sovereign money available to the other banks so that they could meet public demand and financial obligations denominated in the official, and generally used, unit of account. The role of bankers’ bank, therefore, came not because of a deliberate or formal provision but because of a natural development rooted in the historical characteristics of the banking system.¹³²

2. *The Problem of the Banks*

Much before central banks began to monopolize the issue of banknotes, a monopoly that crystalized only in the mid-19th century, commercial banks had been issuing notes that could be used as means of payment. These notes were issued in exchange for a deposit of metallic coins or as a sign of a loan granted, which would otherwise require providing borrowers with coins for the time of the lending operation. And the notes carried the promise of being convertible on demand into the commodity that had been deposited or had backed the amount loaned. But instead of being issued for the exclusive use

¹³⁰ About the building of this close relationship between a favored bank and the government, see CHRISTINE DESAN, *MAKING MONEY: COIN, CURRENCY, AND THE COMING OF CAPITALISM* 361–62, 386–89 (2014).

¹³¹ On seigniorage, see CECCHETTI & SCHOENHOLTZ, *supra* note 7, at 397–98; ROGOFF, *supra* note 73, at 80–81.

¹³² On the emergence of the first central banks, see DESAN, *supra* note 130, at 386–89; GOODHART, *supra* note 105, at 4–5, 19–20, 122–28; MARTIN, *supra* note 43, at 238–39.

of the depositor or the borrower, these notes were payable to the *bearer*, creating a claim against the issuer bank that any person holding the note could redeem.¹³³ Banknotes were then interest-free promissory notes redeemable on demand by the holder.¹³⁴

These notes were, thus, used to make payments, serving as privately issued paper money. As commercial relations spread geographically, notes issued by commercial banks circulated more and were presented far from the place the notes had been issued. In many cases, the counterparties receiving these notes had little information about the issuer and were rarely able or willing to travel to redeem the note directly at the issuing bank.¹³⁵ This imperfect information about issuers of banknotes circulating widely in the economy tended to have two big implications—and not only for the banks receiving these notes but for the issuing banks as well.

On the one hand, this increased distance between the issuing bank and the note holder could create incentives for over-issue. If the issuer expected that few notes would be redeemed in the short or medium terms, the issuer would be tempted to issue notes without having or retaining enough assets, usually coins, to guarantee future convertibility. Over-issue could also result from another lesson commercial banks had learned from their long experience in financial intermediation. Banks noticed that depositors and bearers would seldom come all at the same time to redeem the banknotes for the underlying commodity. So, after a reasonable pool of deposited assets of the same sort had been formed, banks could attempt a new trick: they could use the idle pool of assets in more productive and profitable ways, namely to back banknotes issued with new loans. Banks no longer had to rely only on their capital to originate loans. After all, it was cheaper and easier for the banks to “multiply” deposits and transfer banknotes to borrowers when making loans than to accumulate scarce gold coins that could then be lent and made physically available to borrowers.¹³⁶

This ingenious method, which provided the base for fractional-reserve banking, enhanced banks’ returns because of the multiple uses of the deposited assets. And this method received legal support once courts recognized, notably in early 19th-century England, that the assets deposited were property not of the depositor but of the banks. Banks could then use the deposited assets freely, since their legal obligation was to return the same amount of assets—but not the same assets—on demand. The method, however, also set the stage for runs if ill-designed—too many loans originated or non-performing, for example—or if a confidence crisis

¹³³ See CALOMIRIS & HABER, *supra* note 92, at 72.

¹³⁴ See DESAN, *supra* note 130, at 394–97; GOODHART, *supra* note 105, at 30; HUBER, *supra* note 110, at 15–18.

¹³⁵ See Gary Gorton, *Pricing Free Bank Notes*, 44 J. MONETARY ECON. 33, 34–37 (1999).

¹³⁶ About the “efficiency logic for economizing on [scarce] money,” see James Buchanan, *The Constitutionalization of Money*, 30 CATO J. 251, 255–56 (2010).

motivated a surge of withdrawals.¹³⁷

On the other hand, the banks dealing with notes issued by distant and unfamiliar banks had incentives to form or join an interbank association.¹³⁸ A bank could try to identify all the other banks with which it would exchange notes, open a correspondent account in each of these banks, and keep some money deposited in this type of account for future settlements. The other banks would do the same, opening correspondent accounts with the soliciting bank. This solution, however, would be too costly, as it would have high transaction costs and require that considerable amounts of money remained idly deposited in the accounts of correspondent banks for long. The alternative offered by the interbank association was more appealing.

In the interbank association, banks were required to deposit in one or a few trustworthy major banks some amount of the assets they kept available to be immediately redeemed. With a centralized pool of reserved assets, the major banks could act as central correspondents and clearinghouses.¹³⁹ The central commercial banks would then have enough scale and resources to amass information even about distant issuers. These banks were thus able to redeem, net out, or even discount—usually with a haircut depending on the issuer's location and credibility¹⁴⁰—the different notes that the association members held. These central commercial banks also provided information about their members and ensured that the amount of assets held by each member was proportionate to the volume of the member's transactions, avoiding settlement problems.¹⁴¹ Central banking thus started to take form and, in its origins, was represented by big commercial banks acting like central clearinghouses.

With the flow of payments increasingly channeled to the interbank association and finally settled through the banks' accounts with a central commercial bank, an internal market for reserves was created. At the end of each day, some banks would need more reserves to meet settlement demands, and some would be willing to offer their excess reserves for a profit. As members of the interbank association had notes against each other, balances could be netted out at some point before reserves were exchanged, and reserves could be kept only as a fraction of the total volume of daily transactions. The emergence of a full-reserve system was thus forgone in favor of banks' resolve to allocate liquidity more efficiently and profitably. More than that, by creating this rudimentary payments system and enforcing an early form of reserve requirements, central commercial banks were

¹³⁷ For an overview of the English courts' landmark decisions in the 19th century that favored fractional-reserve banking, see DESAN, *supra* note 130, at 389–94.

¹³⁸ See GOODHART, *supra* note 105, at 69–75.

¹³⁹ *Id.* at 31–37.

¹⁴⁰ As Gary Gorton remarks, the farther the note was from where it had been issued, the greater tended to be the haircut to discount the note, especially because of the costs and risks involved in redeeming the note directly with the issuer. See Gorton, *supra* note 135, at 39, 45–50.

¹⁴¹ See GOODHART, *supra* note 105, at 34–37; Gorton, *supra* note 135, at 34–36.

building protection against over-issue that would be useful centuries later for central banks when managing money.¹⁴²

Commercial banks have, therefore, shown a historical tendency to centralize a part of their reserved assets in the vaults of one or a few bigger banks. The goal of these banks was to make interbank transactions more efficient and less costly or risky for all of them. When a favored bank later appeared as the government's bank and monopolistic note issuer, commercial banks realized that this powerful bank could offer a better solution for their historical needs. Banks would prefer to centralize their reserves with this favored bank, which was no longer a competitor given its close relationship with the government, not with the other commercial banks, all of them competing for the same customers and opportunities. So, from the banks' perspective, the rise of the central bank was not seen as an undesirable intervention from the government but as a welcome remedy for the troubles within the interbank association.¹⁴³

3. *A Central Bank for the Banks*

But why exactly was a favored bank, with close ties to the government, held in such high regard by the commercial banks of the late 17th and 18th centuries? The then big commercial banks that held reserves for other banks already performed a central-bank-like role, especially when clearing transactions and providing short-term liquidity. These big banks, however, were also competing and profit-maximizing banks, features that created conflicts of interest. The more reserves other banks placed with one commercial bank, the more powerful the bank acting as a central bank would become. The central commercial bank would, therefore, be ever more competitive and profitable at the expense of the other members of the association.¹⁴⁴

This arrangement could also create perverse incentives in times of crisis. The bank or banks controlling the centralized reserves could see a crisis as an opportunity for forcing troubled competitors out of the market instead of providing them with liquidity assistance. All the other member banks would, in turn, try to keep deposited with the central commercial banks as few reserves as they could. Not only would member banks want to save some reserves for themselves if they were not to find financial help within the association, but they would also want to limit their losses if another member bank had to be rescued. Distrust would, thus, jeopardize the operation and even the purpose of the interbank association. Creating constraints on banking behavior would be the best option to control these perverse incentives. But then again, banks would have to trust a competitor, possibly one of the biggest and most influential banks, to regulate and supervise them.

¹⁴² About the making of the payments system, see THOMAS CONWAY JR. & ERNEST MINOR PATTERSON, *THE OPERATION OF THE NEW BANK ACT 282–89, 323–27* (1914); GOODHART, *supra* note 105, at 31–37.

¹⁴³ This view is promoted and developed by GOODHART, *supra* note 105.

¹⁴⁴ *Id.* at 37–39.

The initial model of central banking based on private clearinghouses managed by the big banks was not working.¹⁴⁵

It was only when the government-connected commercial bank appeared, and particularly when this favored private bank evolved into a governmental institution apart from the banking system, that the conflict of interests among commercial banks could be solved. Commercial banks finally had the opportunity to take part in a network that revolved around a powerful yet noncompeting, non-profit-maximizing bank. This model of a separate and noncompeting central bank seemed to offer such a reasonable solution that, in the 20th century, most countries were creating their central banks as government institutions—in contrast to the first central banks, like the Swedish Riksbank or the Bank of England, which were private banks turned into central banks and only later made into government institutions.¹⁴⁶

The process of creating the central bank from scratch occurred even in countries where a major commercial bank had performed central-bank-like functions, such as the Imperial Bank of India or the Banco do Brasil. The goal was to avoid making an existing commercial bank even more powerful, a situation that would only aggravate the conflict of interests usually present in banking networks.¹⁴⁷ Section 19(e) of the Federal Reserve Act, for instance, restricted the ability of member banks to keep deposits with and to make discounts for non-member banks after the creation of the Federal Reserve System in 1913.¹⁴⁸ The provision aimed to invigorate the recently created Reserve Banks by ending with the practice of big commercial banks, notably from New York City, acting as central clearinghouses for smaller banks across the country.¹⁴⁹ By the 1940s, most central banks, even those that started as private institutions, were operating under state ownership or control, as government institutions. Central banks also stopped dealing directly with the public, a vestige of the private origin of many, to focus on being bankers only for the banking system.¹⁵⁰

For the central bank, assuming the unintended role of bankers' bank

¹⁴⁵ For more on the American reality, see CONWAY JR. & PATTERSON, *supra* note 142, at 4–17, 202–07, 282–89. For a European perspective, see GOODHART, *supra* note 105, at 38, 43–44, 53–55.

¹⁴⁶ Both the Riksbank of Sweden and the Bank of England were founded in the late 17th century as private institutions and only acquired governmental status either in the transition from the 19th to the 20th century, the Riksbank, or in the mid-20th century, the Bank of England. See GOODHART, *supra* note 105, at 104, 122–28; KING, *supra* note 24, at 159–60.

¹⁴⁷ See GOODHART, *supra* note 105, at 9, 35–36, 104.

¹⁴⁸ See 12 U.S.C. § 374 (2018).

¹⁴⁹ See CONWAY JR. & PATTERSON, *supra* note 142, at 282–89 (on how New York City big banks acted as central banks for banks all over the country before the creation of the Federal Reserve System).

¹⁵⁰ Contrasting the reality of the newly created Federal Reserve System, based on little direct interaction with the public, with the practice then adopted by leading European central banks, dealing with all classes of people and institutions, see CONWAY JR. & PATTERSON, *supra* note 142, at 171–72.

brought more risks and responsibilities, but this role also contributed to furthering a welcome synergy. As the bankers' bank, the central bank was put in the middle of the banking system, holding reserves from different commercial banks and facilitating payments, clearing, and settlement. In this position, the central bank was exposed to the banks' troubles and even to potential failures, as banks would rely on the central bank for liquidity provision. Central banks, thus, had to get involved in the regulation and supervision of the banking system to avoid that the provision of liquidity turned into a blanket protection against reckless risk-taking. But the role of bankers' bank also created the possibility for the central bank to strengthen the relations between its two masters. Sovereigns have always relied on banks—state-controlled or private—for funding, and bankers have long seen sovereigns as less risky borrowers.¹⁵¹ By the end of the 19th century, central banking was consolidated as a public-private partnership, serving both the government and the banks' needs.

4. *A Model for Central Banking*

Modern central banking was, therefore, built over three core features, which had been shaped by the historical experience of the Bank of England since its foundation in 1694. First, a favored bank becomes the government's bank, managing the government's debt and fiscal affairs, and, in consequence, receives the monopoly on issuing the sovereign currency. Second, and mostly because of the first characteristic, commercial banks trust this favored bank to hold the reserved assets they traditionally keep to face immediate demand and make interbank transactions easier and safer. The favored bank, holding the centralized reserves, turns into the banker's bank, acting as a manager and a liquidity provider of last resort for the banking system. And third, consolidating its position as a noncompetitive, non-profit-maximizing bank among banks, the central bank emerges as a government institution that does not establish direct relations with the public. Central banks would only reach the economy and its actors through the commercial banks—this often-overlooked feature is crucial to understanding the dominance of banks in the modern monetary system.¹⁵²

5. *Away from the Government—and Closer to Banks*

The initial feature of central banks—to act as government's bank—soon lost its appeal, as the dramatic episodes of hyperinflation following World War I provided strong evidence against central banks getting too close to the government.¹⁵³ This view led to the outright prohibition on monetary financing of governments, a statutory limitation enacted in many countries

¹⁵¹ On the long-standing relationship between sovereigns and banks, see GOODHART, *supra* note 105, at 7–8, 48–49.

¹⁵² About the three core features of central banking and how they developed over time, see DESAN, *supra* note 130, at 360–421; GOODHART, *supra* note 105.

¹⁵³ See BALL, *supra* note 114, at 422–25; KING, *supra* note 24, at 68–71.

since the 1930s.¹⁵⁴ In the 1970s, after President Nixon severed the final link of the dollar to gold, completing the transition from commodity money to fiat money, the process of money creation and the implementation of economic policies aimed at stimulating growth were made easier. The combination of this new reality with the oil crises of 1973 and 1979 caused inflation to run out of control, reinforcing the idea that politicians should not have excessive power over money matters. As a consequence, the effort to make central banks independent from the government and insulated from political pressure gained widespread acceptance in the 1990s.¹⁵⁵ By the end of the 20th century, central banks' close ties with the government had loosened.

In the United States, the statutory limitation on monetary financing was originally imposed in 1935 by Section 206(a) of the Banking Act. The limitation was relaxed in 1942 during the war period and only became effective again in 1981, upon the termination of the final exemption period set in the 1979 Amendment.¹⁵⁶ Today, the statutory limitation appears in Section 14(2)(b) of the Federal Reserve Act. The Federal Reserve Banks are allowed to buy and sell government and agency securities, but only *in the open market*.¹⁵⁷ "In the open market" means that the Reserve Banks have to use the secondary market to buy or sell government securities instead of transacting directly with the Treasury. Direct transactions should be avoided to prevent the central bank from issuing money to finance government needs with no consideration for holding deficit or inflation in check.¹⁵⁸ This idea is also present in Article 123(1) of the Treaty on the Functioning of the European Union. This Article expressly prohibits the European Central Bank and the national central banks of the euro area from purchasing debt instruments *directly* from the government or other public authorities.

Meanwhile, the relations of the central bank with the banks, a feature that had initially been all but accidental, grew stronger.¹⁵⁹ As central banks had not established relations with the public, the only way central banks had to control the supply of money in the economy—therefore stimulating or constraining spending and growth—was through an intermediary. And the banking system was the sole intermediary that interacted both with the

¹⁵⁴ See Manuel Monteagudo, *Neutrality of Money and Central Bank Independence*, in *INTERNATIONAL MONETARY AND FINANCIAL LAW: THE GLOBAL CRISIS* 484 (Mario Giovanoli & Diego Devos eds., 2010).

¹⁵⁵ For an overview of the origins and evolution of central-bank independence, see Stanley Fischer, Vice Chairman, Bd. of Governors of the Fed. Res. Sys., Herbert Stein Memorial Lecture at the Nat'l Econ. Club: Central Bank Independence (Nov. 4, 2015).

¹⁵⁶ See Act of June 8, 1979, Pub. L. No. 96-18, § 3(a), 93 Stat. 3. On the legislative history of the provision and how it changed over time, see Kenneth Garbade, *Direct purchases of U.S. Treasury Securities by Federal Reserve Banks* (Fed. Res. Bank of N.Y., Staff Reports, No. 684, 2014), https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr684.pdf.

¹⁵⁷ See 12 U.S.C. § 355 (2018).

¹⁵⁸ About the meaning of "open market," see MISHKIN, *supra* note 25, at 381–83.

¹⁵⁹ See Chick, *supra* note 108, at 150–53.

general public, providing financial services and processing payments, and with the central bank, through the payments system and the centralized reserves. As a consequence, banks have since been deeply involved in the process of money supply and management, and the banking system is the only bridge between the central bank and the economy.¹⁶⁰

The end of the gold standard and the rise of fiat money also helped to strengthen central banks' connections with banks. Money would no longer be exchangeable for any metal. It would be pure fiat money, an abstraction that could be issued at will with few constraints.¹⁶¹ For the central bank, this transition meant first and foremost that the complexity of monetary policy was about to increase. Under a commodity standard, the money supply was determined by the production of the convertible commodity, usually gold, and the opportunity for monetary discretion or management was hardly available.¹⁶² With a fiat-money regime, in contrast, the supply of money was not controlled by the mining industry anymore. Central banks had to find ways to achieve the right level of money growth by themselves, without any external or rigid determination. The time to explore the possibilities of the old monetary system built around centralized reserves and an integrated payments system had arrived—and the assistance of the banks and, in turn, their prominence would prove unavoidable.

B. *The Neglected Payments System*

With the rise of fiat money, the monetary powers of the central bank increased, but the use of these powers got more complex. Since money was not convertible into a commodity any longer, the central bank could freely create any amount of money with a simple accounting entry on the liabilities side of its balance sheet.¹⁶³ The problem was to determine how much money should be created based on market participants' demand. Supplying too much money could lead to escalating inflation, whereas excessively controlling the money supply could compress economic growth to the point of deflation. But how could the central bank know the need and demand of market participants

¹⁶⁰ See BD. OF GOVERNORS OF THE FED. RES. SYS., *THE FEDERAL RESERVE SYSTEM: PURPOSES & FUNCTIONS* 4–5, 17, 38–50 (10th ed. 2016), <https://doi.org/10.17016/0199-9729.10> [<https://perma.cc/2TNE-8Y6R>].

¹⁶¹ About the monetary revolution brought by the end of the gold standard, see John Exter, *Future of Gold and the International Monetary System*, XIII *ECON. EDUC. BULL.* 1 (1973), <https://www.aier.org/research/future-of-gold-and-the-international-monetary-system/> [<https://perma.cc/4RGD-C7MA>]; Redish, *supra* note 6, at 788–90.

¹⁶² Despite its formal rigidity and objectivity, with the fixed money supply not allowing much room for discretion or management, the gold standard could still be subject to turnabouts. To wit, the gold standard was repeatedly suspended by countries during wartime, when, because of increased public expenditure and inflationary pressure, it was impossible to keep the promise of converting notes into gold at the announced fixed exchange rate. See DESAN, *supra* note 130, at 16–20; KING, *supra* note 24, at 75–77.

¹⁶³ See McLeay et al., *supra* note 104, at 15–16.

if the central bank interacted solely with the government and the banks? By using the structure of the existing payments system to manage the flow of information and money, with banks serving as conduits between market participants and the central bank. The payments system commercial banks had developed to clear transactions among them and prevent settlement failures would now turn into the central bank's primary tool to manage the supply of money in a fiat-money regime.

Recall that "money," in its narrow sense of a generally accepted instrument to make payments and settle debt, appears in the economy in one of two forms: the physical currency issued by the central bank (cash) or balances deposited in current accounts with banks (bank deposits).¹⁶⁴ Every household, corporation, or government institution that opts for the sovereign currency in their economic transactions will use banknotes and coins or bank deposits to make their payments.¹⁶⁵ As the central bank issues banknotes and coins, it can more easily control the availability of these types of money and make the required adjustments.

Bank deposits, on the other hand, are under the exclusive command of banks, which can create more deposits through the multiplication process or through lending operations. And bank deposits are the type of money most used by households and companies to make payments in the more developed monetary systems. In the United States, the estimated number of non-cash payments—ultimately involving the transfer of bank deposits—amounted to 174.2 billion transactions in 2018, with a total value of \$97 trillion, excluding wire transfers.¹⁶⁶ More than 477 million retail non-cash payments, on average, were thus processed daily in 2018 in the American payments system. Also in 2018, cash withdrawals at depository institutions—here used as a rough sign of the circulation of central-bank-created money—amounted to \$800 billion, as a result of 5.1 billion operations.¹⁶⁷ Every time a non-cash payment is made, money in the form of bank deposits circulates in the

¹⁶⁴ *See id.*

¹⁶⁵ In the United States, investors have also been able to use "checkable" money-market mutual fund (MMMF) accounts to make payments. But the terminology is misleading. Unlike a regular check, an MMMF account "check" does not represent a direct drawing on balances kept in the MMMF account that can be immediately transferred to another account. Instead, a check from an MMMF account involves "a dual order to the fund's manager to sell a specified portion of the shareowner's asset holdings and then to transfer the monetary proceeds to a third party named on the check." JOSEPH SALERNO, *MONEY, SOUND AND UNSOUND* 124 (2010). And this transfer is made with the use of bank deposits, credited by the fund's manager to the current account of the third party. So, a "checkable" MMMF account is not a separate means of payment but a platform that eventually leads to the use of bank deposits as a means of payment.

¹⁶⁶ *See* data from BD. OF GOVERNORS OF THE FED. RES. SYS., *THE 2019 FEDERAL RESERVE PAYMENTS STUDY* (2020), <https://www.federalreserve.gov/paymentsystems/fr-payments-study.htm>. [<https://perma.cc/8GSE-YD4N>].

¹⁶⁷ *See id.*

economy, and the central bank has no direct control or information about it. But the central bank has the payments system.

It is with the payments system that the central bank gets a grip on what banks are doing regarding money creation and circulation, in the form of bank deposits. First, the central bank can only gather information about the volume of money banks are transacting if the transfers of bank deposits are finally settled in the reserve accounts banks keep with the central bank.¹⁶⁸ Second, the central bank can only exert some control over the volume of money banks are transacting if the final settlement of all transfers of bank deposits is made using electronic reserves. As electronic reserves are a type of money that only the central bank can issue, the central bank can limit banks' capacity to create and exchange more money (bank deposits) by limiting the amount of electronic reserves available to banks.¹⁶⁹

The reserve accounts banks keep with the central bank and their balances of electronic reserves are thus vital for the payments system's operation and for the central bank to manage the monetary system. Before digging deeper into the payments system's workings, let's first set forth the current meaning of "reserves" and why they are relevant. In the context of a fiat-money regime, the concept of "reserves" acquires a new significance. "Reserves" are no longer a fraction of the physical currency, normally gold or silver coins, banks received in deposit from their customers, as happened when money was convertible into a commodity and could be redeemed. Nor are "reserves" some quantity of metal, like gold bars, kept in vaults to back the paper money issued.

"Reserves" are instead the amount of central-bank money that banks hold to face immediate demand from their customers or regulatory requirements. "Reserves" are thus represented by the two types of central-bank money, which in turn constitute two different assets for commercial banks: the *currency* (banknotes and coins) banks keep available in their vaults and cash dispensers or ATMs;¹⁷⁰ and the *electronic reserves* banks have deposited in their reserve accounts with the central bank not only to meet reserve requirements—in the jurisdictions that still enforce reserve

¹⁶⁸ In fact, banks and other depository institutions are required to maintain reserve accounts with the central bank under Section 19 of the Federal Reserve Act, 12 U.S.C. § 461 (2018). For simplicity, I use "bank" for "depository institutions" in the text.

¹⁶⁹ For more on the "central bank as a monopoly supplier (and withdrawer) of reserves" and its implications, see Benjamin M. Friedman, *The Future of Monetary Policy: The Central Bank as an Army with Only a Signal Corps?*, 2 INT'L FIN. 321, 323–26 (1999).

¹⁷⁰ See Todd Keister & James McAndrews, *Why are Banks Holding so Many Excess Reserves?*, 15 CURRENT ISSUES IN ECON. & FIN. 1, 1 (2009), https://www.newyorkfed.org/medialibrary/media/research/current_issues/ci15-8.pdf.

requirements¹⁷¹—but especially to settle transactions in the payments system.¹⁷²

More than that, “reserves,” and electronic reserves in particular, are not simply an asset that banks deposit and keep with the central bank. “Reserves” are, in fact, a dynamic monetary instrument, traded not only among banks but also between banks and the central bank, which can always issue more “reserves,” if need be. As the statutory language of Section 19(f) of the Federal Reserve Act makes clear, “[t]he required balance [of reserves] carried by a member bank with a Federal Reserve Bank may . . . be checked against and withdrawn by such member bank for the purpose of meeting existing liabilities.”¹⁷³

Because “reserves,” on the other hand, are a bank’s asset, they are not meant to absorb losses the bank may face in the value of its assets—“capital,” which represents shareholders’ equity in the bank, is used to that end. Holding more “reserves,” therefore, does not increase the amount of bank’s capital or help the bank to comply with capital requirements. On the contrary. As assets appear in the denominator of capital ratios (the required amount of bank’s capital divided by its assets, risk-weighted or not), holding reserves in excess increases the volume of assets and may, in turn, require the bank to raise more equity to meet capital requirements.¹⁷⁴ Holding more “reserves,” however, does contribute to enhancing the short-term liquidity position of the bank, as “reserves” are a type of money in the narrow sense of liquidity or an instrument to make payments and settle debt—although only among banks and with the central bank.

The focus here is on *electronic* reserves, this unique type of money issued by the central bank and used in its transactions with the banking system that, contrary to currency, is not available to the public. Electronic reserves exist solely in digital form and never appear in the economy in their original form. Banks can only move reserve balances from their accounts with the central bank to the economy by converting electronic reserves into currency, as electronic reserves can always be exchanged for currency at exact parity.¹⁷⁵ And the focus is on electronic reserves because their connection with bank

¹⁷¹ For a comparative overview of how reserve requirements are used in different countries, see Simon Gray, *Central Bank Balances and Reserve Requirements* (IMF Working Paper No. 11/36, 2011), <https://www.imf.org/external/pubs/ft/wp/2011/wp1136.pdf>.

¹⁷² See Friedman, *supra* note 169, at 332; McLeay et al., *supra* note 104, at 16.

¹⁷³ 12 U.S.C. § 464 (2018).

¹⁷⁴ For more on how excess reserves can complicate banks’ balance-sheet management in the longer run, see Peter Stella, *Exiting Well*, at 13–18 (Dec. 31, 2015), https://8b1fe6ec-20e9-4128-8a79-c598c4f073fb.filesusr.com/ugd/c55963_a16ab2e069304431b5530e579bea8347.pdf.

¹⁷⁵ About *electronic* reserves and their uses and limitations, see Keister & McAndrews, *supra* note 170, at 5–8; McLeay et al., *supra* note 104, at 16–18.

deposits reveals the operating structure of the monetary system and the roots of the central bank's dependence on the banking system.

Two features of the payments system are crucial for the central bank to follow how much money is circulating in the economy and, based on the objectives set in monetary policy, react accordingly. First, the flow of bank deposits in the payments system is tied to the electronic reserves banks keep in their reserve accounts with the central bank. And second, all payments are required to be finally settled in these reserve accounts.¹⁷⁶ Under this structure, the central bank can increase or reduce the amount of electronic reserves available for banks when settling the transactions among themselves, thus expanding or constraining banks' capacity to process more payments—which, in the end, means banks' capacity to create more money in the form of bank deposits. A closer look at the payments system's mechanics will help elucidate this intimate relationship of electronic reserves with bank deposits and, ultimately, of the central bank with the banking system.

1. *The Mechanics of the Payments System*

For all transfers of funds involving the sovereign currency that are made without the use of banknotes or coins—or simply, a non-cash payment—the payments system comes into play. However different the beginning of a non-cash payment is (a debit or credit card, a wire transfer, PayPal, Apple Pay), the related payment will eventually be processed through a bank network and settled at the central bank.¹⁷⁷

Some payments systems work with the individual processing of each payment in real time within the central bank, transaction by transaction—the Real-Time Gross Settlement or RTGS systems. RTGS systems require banks to hold more liquidity, in the form of electronic reserves, throughout the day so that credit risk is reduced. By contrast, other systems allow payment transactions to be processed in batches and settlements to be made with multilateral netting—the Deferred Net Settlement or DNS systems—although the final settlement will still be made at the central bank. Here, banks can operate with less liquidity since they will exchange electronic reserves less often and only for the net value of the transactions, but credit risk is higher.¹⁷⁸ Most payments systems today are hybrid, though. Even RTGS systems count with multilateral netting mechanisms for saving liquidity, and many of them have the central bank providing intraday liquidity to facilitate payments processing at times of increased movement.¹⁷⁹

¹⁷⁶ See Corrigan, *supra* note 61.

¹⁷⁷ Describing these payments innovations as “new technologies running on old rails” since they offer a new interface but are processed like all the other non-cash payment methods, see MICHAEL BARR ET AL., *FINANCIAL REGULATION: LAW AND POLICY* 823–25 (2d ed. 2018).

¹⁷⁸ For more on the different types of payments systems that exist today and their basic characteristics, see Geva, *supra* note 33, at 513–17.

¹⁷⁹ See *id.* at 515.

In its essence, every non-cash payment involving customers who bank with different institutions leads to a transfer between banks' current accounts, reducing the balance of the payer's bank account and increasing the balance of the payee's bank account by the same amount. The payment will thus take place with no immediate flow of physical currency; only the balance sheets of the banks involved in the transaction and the balance of the accounts of the payer and the payee will be affected.¹⁸⁰ For banks, however, the transfer of money in the form of bank deposits is not finished when their customers' accounts (payer and payee) are debited and credit—unless both payer and payee are customers of the same bank, in which case the process ends with this first step since it only requires accounting records reflecting the balance changes of the two current accounts affected.

After that stage, the banks of the payer and of the payee have to clear and settle the transfer of funds between them. As bank deposits are liabilities, when a bank transfers balances to another bank through the payments system, the transferring bank also has to transfer a corresponding asset. And this asset is money in the form of electronic reserves banks keep in their reserve accounts with the central bank.¹⁸¹ Two different yet interconnected structures work every time a non-cash payment is processed between different banks: first, the structure of *bank accounts* held by banks' clients, in which *bank deposits* are transferred; and second, the structure of *reserve accounts* held by banks with the central bank, in which *electronic reserves* are transferred.¹⁸²

The simultaneous transfer of the liability with an asset is necessary because of the double-entry accounting system. In this system, widely adopted in the governmental, corporate, and financial sectors, every change in one account of the balance sheet (like one of the liability accounts) must be matched by a corresponding change in another account (like one of the asset accounts). The ultimate goal is to keep all the accounts in balance so that errors can be easily identified, since they will inevitably create a flaw in the basic accounting equation, which should always remain true: *assets = liabilities + equity*.¹⁸³ Financial institutions in the United States, for instance, are statutorily required to prepare their financial statements based on the Generally Accepted Accounting Principles (GAAP), which follow the double-entry system.¹⁸⁴ Most other countries use the International Financial

¹⁸⁰ See Eugene Fama, *Banking in the Theory of Finance*, 6 J. MONETARY ECON. 39, 42–43 (1980).

¹⁸¹ See McLeay et al., *supra* note 104, at 18–19.

¹⁸² See HUBER, *supra* note 110, at 57–59.

¹⁸³ About the double-entry bookkeeping system and, in particular, its relevance for the origin and operation of banks, see ALVARO CENCINI & SERGIO ROSSI, ECONOMIC AND FINANCIAL CRISES: A NEW MACROECONOMIC ANALYSIS 19–20, 25–37 (2015).

¹⁸⁴ See, e.g., 12 U.S.C. § 1463(b)(2)(A) (2018) (mandatory use of GAAP by savings associations); 12 U.S.C. § 1831n(a)(2)(A) (2018) (mandatory use of GAAP by “all insured depository institutions”).

Reporting Standards (IFRS) as their preferred accounting standard, which also adopts the double-entry system.¹⁸⁵

So, the more money—in the form of *bank deposits*, the liability—a bank transfers to other banks because of orders received from its customers, the more money—in the form of *electronic reserves*, the asset—the transferring bank will need to send to the other banks, settling all transactions within the reserve accounts at the central bank.¹⁸⁶ This process linking bank deposits and electronic reserves is what allows central banks to keep track of what is happening in the economy. Since this process creates demand for electronic reserves, the central bank, as their monopolistic issuer, can set the total amount of reserves available to the banking system. By setting the total amount available, the central bank influences the price of electronic reserves, which matters because it is the base cost of money. This cost determines the value of the short-term interest rate that, in turn, affects all other interest rates in the economy—basically, the price of money.¹⁸⁷ Banks' cost to get more electronic reserves when needed is, thus, the fundamental element the central bank relies on to assess and influence the monetary reality.

2. *The Cost of Electronic Reserves and its Significance*

But how does the central bank influence the formation of the price of electronic reserves in the interbank market? The answer to this question will reveal how fragile the central bank's capacity currently is to implement monetary policy. With the flow of payments affecting the balance of reserve accounts kept with the central bank, some banks may need more electronic reserves to meet settlement or regulatory demands, while others may want to offer electronic reserves in excess. As in any borrowing transaction, the counterparty lending electronic reserves will charge the borrower a premium. Electronic reserves are then traded among banks at a cost, the “overnight interbank rate,” which in the United States is known as the “federal funds rate.”¹⁸⁸ This rate represents the interest rate banks charge when making overnight uncollateralized loans of reserves to each other.¹⁸⁹ Because banks are the main providers of money and tend not to make loans at a rate lower than the rate they could charge or would have to pay for electronic reserves,

¹⁸⁵ On the IFRS accounting standard, see Martin Hoogendoorn, *International Accounting Regulation and IFRS Implementation in Europe and Beyond – Experiences with First-time Adoption in Europe*, 3 ACCT. IN EUR. 23 (2006), <https://doi.org/10.1080/09638180600920087>.

¹⁸⁶ See McLeay et al., *supra* note 104, at 18–19.

¹⁸⁷ On the connection between bank deposits and electronic reserves in the payments system and how the central bank uses this connection to implement policy, see *id.* at 18–21.

¹⁸⁸ On the federal funds rate, see, for example, CECCHETTI & SCHOENHOLTZ, *supra* note 7, at 482–90.

¹⁸⁹ See *id.* at 430–34.

banks' base cost affects all other interest rates in the economy.¹⁹⁰

In a stylized situation, a bank will consider two aspects: the return rate of new loans to the public and the cost to finally settle transactions in the interbank market. New loans create a corresponding amount of bank deposits that may eventually be transferred through the payments system when the borrower makes a payment. And when the borrower transfers bank deposits from the lending bank to someone that keeps an account with another bank, this transaction requires an interbank settlement inside the central bank with electronic reserves. As all banks are taking part in this process of granting loans and creating deposits, bank deposits are in a constant two-way flow among banks inside the payments system. This arrangement allows banks to exchange electronic reserves based on the net effect of the two-way flow, instead of continuously transferring electronic reserves in the same amount of the bank deposits transferred—even in RTGS systems.¹⁹¹ “Normally, if a loan of £100 is issued, a bank will know that in net, it only needs to pay a fraction of that amount in reserves to other banks.”¹⁹²

A bank, therefore, sends electronic reserves when it creates more bank deposits than it receives from other banks and receives reserves when it creates fewer bank deposits relative to the other banks. Electronic reserves, in turn, have a cost to be borrowed in the interbank market. This cost is borne by the banks originating more loans and related bank deposits, since these banks will need more electronic reserves to settle transactions within the central bank. So, if the return on originating new loans is lower than the cost of borrowing additional electronic reserves to finally settle the bank deposits created with these loans, banks will have no incentive to make the loans in the first place.

The central bank, on the other hand, following the trades happening in the interbank market for reserves, will manage the total level of reserves available to regulate their cost. To that end, the central bank will use different techniques, from reserve requirements and a base discount rate to open-market operations, which has been the predominant monetary tool in most developed and developing markets.¹⁹³ In open-market operations, the central

¹⁹⁰ See McLeay et al., *supra* note 104, at 15, 20–21. Highlighting that loans of electronic reserves in the interbank market are “generally titanic, short-term, and uncollateralized—except when a financial crisis exists or is looming,” see CENCINI & ROSSI, *supra* note 183, at 239.

¹⁹¹ “Over the years, distinctions [between DNS and RTGS systems] have been blurred and hybrid systems have emerged.” Geva, *supra* note 33, at 515.

¹⁹² Dyson & Hodgson, *supra* note 123, at 29. “[O]n statistical average, the total reserves the banks need for carrying out all current payments amount to only about 1.25% of the stock of bankmoney in the UK, about the same in the USA, and 1.5% or slightly more in the euro area.” HUBER, *supra* note 110, at 71.

¹⁹³ Other instruments of monetary control, like credit and interest rate controls, could also be used by the central bank. But those instruments were typical of a period when domestic money markets and secondary markets for government securities were lacking or not sophisticated enough. See, e.g., LASTRA, *supra* note 42, at 44–45.

bank purchases or sells government securities, either outright or for a short-term, in this case through repurchase agreements, or repos, at an interest rate close to the target rate.

With repos, the central bank exchanges electronic reserves for securities with a bank, and the counterparty offering the securities has the obligation to repurchase them the next day or soon after and pay some interest. When the central bank receives securities, the operation is a *repo transaction*; when, instead, the central bank offers securities, a *reverse repo transaction*. At any point of settlements, therefore, if transactions surge and the demand for electronic reserves increases, the central bank can issue more electronic reserves (buying securities or engaging in repo transactions) to lower the cost of reserves or to keep it stable. On the contrary, if settlement transactions decline, the central bank will buy electronic reserves (selling securities or engaging in reverse repo transactions) to increase or stabilize the cost of reserves.¹⁹⁴

In this setting, if the cost of reserves steadily rose in the interbank market, banks' natural reaction would be to increase the cost of lending for their customers. Costlier loans would reduce credit expansion, reducing the volume of bank deposits entering the payments system and, as a consequence, the balances against banks at settlement time. With credit expansion slowing down, and fewer bank deposits circulating in the economy, spending would also be constrained. If, however, the central bank believed, according to its policy framework, that the economy would benefit from more instead of less spending, the central bank would act to put more electronic reserves in the banking system, lowering their cost. Opposite effects would take place if electronic reserves were abundant and losing value. Reserves are, thus, supposed to be relatively scarce, so that the central bank can timely influence their cost by trading low amounts of reserves. This is the process through which central banks have managed the money supply and transmitted monetary policy to the economy—at least until the Global Financial Crisis.¹⁹⁵

3. *The Troubles of the Monetary System Built Around Banks*

With this arrangement, based on bank deposits connected with electronic reserves inside the payments system, the central bank found a way to control money supply and growth in the economy. At the same time, the central bank handed over much of the monetary powers to the banks. If during the gold standard the central bank's power over money was limited by the mining industry's productivity, under a fiat-money regime this power became dependent on the banks' initiative. Again, despite the radical change in the monetary regime, the central bank would not be able to lead the processes of

¹⁹⁴ About repo and reverse repo transactions performed by the central bank, see Keister & McAndrews, *supra* note 170.

¹⁹⁵ For a critical view about the transmission mechanisms of modern monetary policy, questioning the capacity of the central bank to influence bank and market rates by managing the base interest rate, see HUBER, *supra* note 110, at 125–29.

money creation and management; the central bank would once more react to the actions of an external source.¹⁹⁶

As the monetary system is designed, the central bank may lose monetary control if electronic reserves are abundant for an extended period, a situation that is already happening in the biggest economies.¹⁹⁷ Excess reserves in the banking system are now the norm in countries that resorted to quantitative easing, or QE, and are still facing deflationary pressure.¹⁹⁸ In these economies, the cost of electronic reserves is all but irrelevant for the interbank market. When all or at least most banks have more electronic reserves than they need or are required to hold, the cost of reserves tends to zero, and the interbank market for reserves proves futile. If the central bank cannot influence the cost of electronic reserves, the central bank has difficulties in transmitting monetary policy and adjusting the price of money in the economy.

One option for the central bank to avoid the irrelevance of electronic reserves is to pay interest on the reserves in excess, a tool that started to be used in the United States in October 2008. It was an attempt to set a floor to short-term interest rates. In theory, banks would not have incentives to lend money below the interest rate paid on excess reserves by the Federal Reserve. Loans to corporations or households, even for the shortest term, would have a cost above the interest rate paid on reserves. So, by tweaking the interest rate paid on reserves, the Federal Reserve could still influence other interest rates in the economy.¹⁹⁹

But paying interest on reserves was not designed because of the Global Financial Crisis or to deal with the problem of excess reserves. Paying interest on reserves had appeared as a policy tool in the United States and the United Kingdom back in 2006 before the crisis hit. In the United States, the

Financial Services Regulatory Relief Act of 2006 authorized the Federal Reserve Banks to pay interest on balances held by or on behalf of depository institutions at Reserve Banks, subject to regulations of the Board of Governors, effective October 1, 2011. The effective date of this authority was

¹⁹⁶ With a similar view about the dependence of the central bank on the banks in the monetary process, see *id.* at 57–64, 123–24.

¹⁹⁷ Discussing different threats to the efficacy of monetary policy if reserves become irrelevant, see Friedman, *supra* note 169.

¹⁹⁸ Discussing the purpose and mechanics of QE, see Adam Hayes, *Challenges Confronting Central Bankers Today*, (MARIO EINAUDI CTR. FOR INT'L STUD., Working Paper No. 4-16, 2016), <https://ecommons.cornell.edu/handle/1813/55058>.

¹⁹⁹ About interest on excess reserves as a monetary tool, see David Bowman et al., *Interest on Excess Reserves as a Monetary Policy Instrument: The Experience of Foreign Central Banks*, BD. OF GOVERNORS OF THE FED. RES. SYS., INTERNATIONAL FINANCE DISCUSSION PAPERS NO. 996, 2010, <http://www.federalreserve.gov/pubs/ifdp/2010/996/ifdp996.pdf>.

advanced to October 1, 2008, by the Emergency Economic Stabilization Act of 2008.²⁰⁰

In the United Kingdom, the Bank of England started paying interest on reserves in May 2006 and overhauled the related framework in March 2009.²⁰¹ The plan was to reduce the dependence of the central bank on government securities to implement monetary policy, not to find an alternative because banks were holding more electronic reserves than they needed—which they were not.²⁰²

Paying interest on reserve balances is, in fact, a policy tool that has yet to prove its value in a scenario of abundant reserves.²⁰³ So much so that the Federal Reserve had to develop an additional tool named “overnight reverse repurchase agreements program,” or ON RRP, to help keep the base interest rate inside the target range. The program, which began being tested in late 2013 as a temporary tool but is still used, was devised to widen the Fed’s reach beyond the banking system when implementing monetary policy.²⁰⁴ Because only banks that keep reserve accounts with the Federal Reserve can hold electronic reserves and, in turn, receive the related interest payments, other institutions that also act as cash lenders, like money-market mutual funds, were left out. As these institutions were not receiving any interest payments on their cash holdings, they would lend cash to earn interest that would be lower than that paid by the Federal Reserve to banks on electronic reserves.²⁰⁵

These non-bank institutions pushed the short-term interest rate down, making the base cost of money drop below the floor created by the Federal Reserve with the payment of interest on excess reserves. The base interest rate of the economy was being influenced not by the cost of interbank transactions anymore. Instead, the base interest rate was informed primarily by the cost of transactions in the money market, in which money and highly

²⁰⁰ BD. OF GOVERNORS OF THE FED. RES. SYS., MONETARY POLICY. POLICY TOOLS. INTEREST ON REQUIRED BALANCES AND EXCESS BALANCES, (Sep. 19, 2016), <https://www.federalreserve.gov/monetarypolicy/reqresbalances.htm> [<https://perma.cc/V7U7-5BWL>].

²⁰¹ See BANK OF ENGLAND, *Statistics. Explanatory notes – Wholesale* (Sep. 20, 2016), http://www.bankofengland.co.uk/statistics/pages/iadb/notesiadb/wholesale_baserate.aspx [<https://perma.cc/4LNY-HJM6>].

²⁰² See *id.*

²⁰³ For a debate over the effectiveness of paying interest on reserves when the reserves are abundant, see Bowman et al., *supra* note 199, at 5; Stella, *supra* note 174, at 9–12.

²⁰⁴ For an overview of the new monetary tools used by the Federal Reserve after the Global Financial Crisis, see Jane Ihrig & Scott Wolla, *How Does the Fed Influence Interest Rates Using Its New Tools?*, OPEN VAULT BLOG (Aug. 5, 2020), <https://www.stlouisfed.org/open-vault/2020/august/how-does-fed-influence-interest-rates-using-new-tools> [<https://perma.cc/4BQB-YCAA>].

²⁰⁵ See BD. OF GOVERNORS, *supra* note 160, at 50–52.

liquid assets (like government securities) are traded for a short-term, notably overnight. The Fed could not ignore this reality.²⁰⁶ So, to avoid completely losing influence over short-term interest rates, the Fed had to reach out to the shadow-banking sector, extending its open-market operations to non-bank institutions holding large quantities of money. In early 2021, 90 non-bank institutions, basically money-market funds, were eligible to transact in the ON RRP facility alongside government-sponsored enterprises and commercial banks. In comparison, the list of “primary dealers,” which are the traditional counterparties of the Federal Reserve in open-market operations, included only 24 institutions, mostly securities traders.²⁰⁷

In ON RRP operations, the Federal Reserve usually pays an interest rate 0.25 percentage points below the interest it pays on electronic reserves, setting a second and lower floor that creates a range, instead of a single target, for the benchmark rate. The Fed wants to lure these non-bank institutions into lending out their money only for a return higher than the return these institutions receive if they deposit their cash holdings overnight with the Fed in exchange for securities. By doing so, the Fed tries to regain control over the base cost of money and, in turn, over the availability and price of money in the economy so that the short-term interest rate remains close to the official target.²⁰⁸

The point I want to underscore with this illustration is that some of the unconventional measures adopted by central banks after the Global Financial Crisis might have been more a sign of desperation than of power. With the ON RRP operations, the Federal Reserve acknowledged that conducting transactions only with banks to implement monetary policy was no longer effective. With the banking system holding electronic reserves in excess, the alternatives were straightforward: either the Fed broke free from banks and broadened its operational reach or risked losing its capacity to transmit monetary policy. As the Fed opted for the former, the Fed signaled, perhaps unintentionally, that the centuries-old structure of the monetary system is ripe for a rethink. In the next part, I explore the alternatives to the current model, focusing on how technology can open up new perspectives on money.

III. THE NEW POSSIBILITIES FOR MONEY

On Halloween 2008, a month and a half after Lehman Brothers’ spectacular collapse, Satoshi Nakamoto published Bitcoin’s white paper—and changed money forever.²⁰⁹ Bitcoin showed that, with technology,

²⁰⁶ *See id.*

²⁰⁷ For a list of all the Fed’s counterparties either in open-market operations (“primary dealers”) or in reverse repos, see FED. RES. BANK OF N.Y.: MKT. & POL’Y IMPLEMENTATION, *Counterparties*, (Jan. 17, 2021), <https://www.newyorkfed.org/markets/counterparties> [<https://perma.cc/7MSG-UXFK>].

²⁰⁸ *See* Ihrig & Wolla, *supra* note 204.

²⁰⁹ *See* Satoshi Nakamoto, *Bitcoin: A Peer-To-Peer Electronic Cash System*, BITCOIN (2008), <https://bitcoin.org/bitcoin.pdf>.

different monetary arrangements are possible: money does not need to be controlled by a government or limited to a sovereign territory anymore. Bitcoin and the thousands of cryptocurrencies that followed are still battling against issues of scale and trust. But they pose a threat to the traditional monetary system based on a sovereign currency because of two main reasons. First, many cryptocurrencies aim to build monetary arrangements apart from the current monetary system and without the sovereign currency. They have their own unit of account and infrastructure to process payments, allowing users to complete transactions among themselves regardless of banks' intermediation or the participation of a central bank. Second, cryptocurrencies have appeared in a time when confidence in the capacity of central banks to manage money has been declining. After the Global Financial Crisis, more people seem willing to support monetary alternatives like those proposed by cryptocurrencies.

How should central banks react to this threat? Central banks could favor solutions that would impose a ban on cryptocurrencies. From a legal perspective, a general ban on cryptocurrencies is a real possibility. The U.S. Supreme Court, for example, has long ago ruled:

Having thus, in the exercise of undisputed constitutional powers, undertaken to provide a currency for the whole country, it cannot be questioned that Congress may, constitutionally, secure the benefit of it to the people by appropriate legislation. To this end, Congress has denied the quality of legal tender to foreign coins, and has provided by law against the imposition of counterfeit and base coin on the community. *To the same end, Congress may restrain, by suitable enactments, the circulation as money of any notes not issued under its own authority.* Without this power, indeed, its attempts to secure a sound and uniform currency for the country must be futile.²¹⁰

The option for a general ban, however, would be criticized for stifling innovation and would face practical difficulties, as transactions with cryptocurrencies are typically processed and recorded in multiple computers around the world with no single issuer or manager. Central banks could, instead, welcome the monetary competition and engage in the technological race to offer their view on the future of money. A central-bank digital currency, or CBDC, as it became known, would be a strong response because CBDCs are not just about making money digital. What is new about CBDCs is creating the possibility for anyone to open a basic checking account at the central bank, an option that would have profound implications for governments, central banks, financial institutions, and regular people.

²¹⁰ *Veazie Bank v. Fenno*, 75 U.S. 533, 549 (1869) (emphasis added). *See also Virtual Currency Schemes – A further analysis*, EUR. CENT. BANK 30-32 (2015), www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemesen.pdf.

A. *Private Money and the Crypto Promises*

1. *The Cryptocurrency Attack*

One option for structural monetary reform would be to make extensive use of privately issued cryptocurrencies. This option would follow in the steps of the free-banking system's advocates, for whom a monetary system made solely of private and competing currencies, with no government intervention or even a central bank, would be more efficient and stable.²¹¹ Bitcoin, for example, replaces the central database of monetary transactions that is guarded by a trustworthy authority, the central bank, with an open distributed ledger protected not by one or more trusted parties but by collaboration, consensus, and cryptography.²¹² Yet, when it comes to money, trustworthiness can still be an issue tipping the balance in favor of government-issued currencies.

2. *Trust Matters*

Take Bitcoin and its promise of a monetary system that does not require trusted central counterparties to work, just computational power and advanced mathematics. Payments using bitcoins are processed and settled in a decentralized way through computerized nodes and miners solving mathematical problems.²¹³ But “decentralized” does not mean “disintermediated,” as these nodes and miners are nothing but intermediaries operating between the payer and the payee to complete and record each Bitcoin transaction. In theory, the people behind the computers used to keep copies of the blockchain records (nodes), make the payments system function (miners) or design Bitcoin's software (developers) should not matter.²¹⁴ In practice, who these people are and how many of them take part in the network

²¹¹ See, e.g., SELGIN, *supra* note 93; VERA SMITH, *THE RATIONALE OF CENTRAL BANKING AND THE FREE BANKING ALTERNATIVE* (reprint 1990) (1936), http://files.libertyfund.org/files/1413/0100_Bk.pdf. For a skeptical view on free-banking systems, see Milton Friedman & Anna Schwartz, *Has Government Any Role in Money?*, 17 J. MONETARY ECON. 37 (1986); GOODHART, *supra* note 105, at 29–83. Contending that “[t]he notions that banking systems can arise spontaneously, or that they could function efficiently without active government involvement, are utopian fantasies,” see CALOMIRIS & HABER, *supra* note 92, at 491.

²¹² See Allen, *supra* note 54, at 900–06; He et al., *Virtual Currencies and Beyond: Initial Considerations* 18–21 (Int'l Monetary Fund, Staff Discussion Note No. 16/03, 2016), <http://www.imf.org/external/pubs/cat/longres.aspx?sk=43618>.

²¹³ For an overview of the decentralized ledger technology ecosystem and its inner workings, see Carla Reyes, *Moving Beyond Bitcoin to an Endogenous Theory of Decentralized Technology Regulation: An Initial Proposal*, 61 VILL. L. REV. 191, 196–202 (2016).

²¹⁴ About the different actors and their roles in cryptocurrencies' networks, see Angela Walch, *Deconstructing 'Decentralization': Exploring the Core Claim of Crypto Systems*, in *CRYPTOASSETS: LEGAL, REGULATORY, AND MONETARY PERSPECTIVES* 39, 47–51 (Chris Brummer ed., 2019).

are relevant information. Satoshi Nakamoto, the pseudonym used by Bitcoin creator, underlined the perils of a “51% attack.”²¹⁵ If a person or group seizes more than 50% of the computing resources used to process and settle Bitcoin transactions, they can control how the cryptocurrency works from that point on—and even create and process fraudulent transactions.²¹⁶

Even without an attack or fraud, the people operating the cryptocurrency infrastructure and the place where the operations are happening can influence its functioning, especially because of the relatively small size of the Bitcoin market.²¹⁷ In 2016 and early 2017, most of the Bitcoin trading and transactions processing occurred in China—until Chinese regulators stepped in. In late 2017, Chinese authorities decided to restrict the buying or selling of bitcoins and then, in early 2018, to order the shutdown of miners, which process transactions and create new bitcoins.²¹⁸ Even for Bitcoin, a decentralized and borderless currency, what happened in the Chinese market and regulatory system during this period affected the price and availability of the cryptocurrency everywhere else.²¹⁹ And the actions of governmental authorities can also positively influence Bitcoin’s performance. In Japan, a law was enacted in April 2017 making Bitcoin a legal method of payment, news that contributed to the subsequent surge in the price of the cryptocurrency in the second half of 2017.²²⁰

²¹⁵ See Nakamoto, *supra* note 209, at 4.

²¹⁶ About the “51%” or “50%+1 attack” and how, despite being improbable, it represents a considerable vulnerability of Bitcoin, see Robleh Ali et al., *Innovations in Payment Technologies and the Emergence of Digital Currencies*. 54 BANK OF ENG. Q. BULL. 262, 271–74 (2014); PAUL VIGNA & MICHAEL CASEY, *THE AGE OF CRYPTOCURRENCY: HOW BITCOIN AND DIGITAL MONEY ARE CHALLENGING THE GLOBAL ECONOMIC ORDER* 145–159 (2015). Giving the example of a 51% attack that happened in January 2019 on the cryptocurrency Ethereum Classic, see Walch, *supra* note 214, at 57–58.

²¹⁷ See Walch, *supra* note 214, at 52–58.

²¹⁸ See, e.g., Gabriel Wildau, *China Probes Bitcoin Exchanges Amid Capital Flight Fears*, FIN. TIMES (Jan. 10, 2017), <https://www.ft.com/content/bad16a88-d6fd-11e6-944b-e7eb37a6aa8e> (reporting that “Renminbi transactions accounted for 98 per cent of global bitcoin trading volume over the past six months”). About the shutdown of miners in China, where almost 80% of bitcoins were mined, see Chao Deng, *China Quietly Orders Closing of Bitcoin Mining Operations*, WALL ST. J. (Jan. 11, 2018), <https://www.wsj.com/articles/china-quietly-orders-closing-of-bitcoin-mining-operations-1515594021>.

²¹⁹ Stating that “despite the talk of a borderless currency, a handful of Chinese companies have effectively assumed majority control of the Bitcoin network,” so that “China’s clout is raising worries about Bitcoin’s independence and decentralization,” see Nathaniel Popper, *How China Took Center Stage in Bitcoin’s Civil War*, DEALBOOK. N.Y. TIMES (June 29, 2016), <https://nyti.ms/2k7L5lg>.

²²⁰ See Enda Curran et al., *Central Banks Can’t Ignore the Cryptocurrency Boom*, BLOOMBERG MARKETS (Aug. 30, 2017, 12:00 AM), <https://www.bloomberg.com/news/articles/2017-08-30/cryptocurrencies-are-new-barbarians-at-the-gate-of-central-banks>.

Finally, the governance model and rules of the cryptocurrency—as much as that of any currency—also matter. Who controls the underlying software code of the cryptocurrency and how changes to the code are made can either build or erode trust in the cryptocurrency. Reuben Grinberg, a lawyer at Davis Polk law firm, contends that not only the “developers,” a five-member developing team working on Bitcoin software, but also a “convincing coalition” formed by an influential group of programmers, can change how Bitcoin functions.²²¹ For the change to be implemented, though, any of these groups have to convince a majority of users to adopt the software updated by the “developers” or switch to a compatible yet new version of the Bitcoin software made by the “convincing coalition.”²²² “Such an exercise of discretion, even if done with good intentions and supported by a majority of Bitcoin users, may nevertheless cause many individuals to lose confidence in Bitcoin.”²²³

These trust issues are not exclusive to Bitcoin or other cryptocurrencies and do not imply that sovereign currencies necessarily deserve a higher degree of credibility. But they show that private cryptocurrencies, as much as any sovereign currency, can only enjoy credibility if they are properly designed and managed. If, however, confidence is lost in the way the currency is governed, affecting its stability, market participants will swiftly find a monetary substitute, be it a foreign currency, a parallel currency, or another cryptocurrency. Argentina in the early 2000s provides a recent example of the rapid rise of substitute money in the face of monetary mischief that undermined trust in the official currency. Following the introduction, in December 2001, of strict limits on the amount of cash that could be withdrawn from bank accounts, Argentinians responded quickly, as recounted by economist Felix Martin:

Provinces, cities, and even supermarkets chains started to issue their own IOUs, which rapidly began to circulate as money—in open defiance of the government’s attempts to keep liquidity tight to support the peso. By March 2002, such privately issued notes made up nearly a third of all the money in the country.²²⁴

3. *The Bright Side of Monetary Competition*

If monetary incompetence can affect both sovereign and private currencies, either traditional or crypto, how best to organize the monetary system in a digital age? As a first step, countries should enact rules adopting the narrowest sense of the concept of “legal tender”—which is already the

²²¹ See Reuben Grinberg, *Bitcoin: An Innovative Alternative Digital Currency*, 4 HASTINGS SCI. & TECH. L.J. 159 (2012).

²²² For concrete examples of concentration of power among developers, see Walch, *supra* note 214, at 52–56.

²²³ Grinberg, *supra* note 221, at 175–76.

²²⁴ MARTIN, *supra* note 43, at 68.

norm in the more developed economies.²²⁵ This framework would favor a system of monetary competition, allowing contracting parties to use and accept as payment any media of exchange other than the sovereign currency. As a consequence, private currencies could legitimately offer alternatives to the sovereign monetary system. In turn, the government and the central bank would have enough incentives to avoid monetary mischief.

People should have the freedom to adopt monetary alternatives at any time, particularly if the government failed to supply and manage the sovereign currency adequately. The central bank should hold a monopoly only on creating and managing the sovereign currency denominated in the official unit of account, issued in physical or digital format. The central bank should not, however, hold a monopoly on money in general and not even over the means of payment used in the sovereign territory, as private parties should be legally allowed to decide what currencies to use in their contractual relations.²²⁶

4. *Creating Private Currencies*

In this context, digital or cryptocurrencies denominated in their own unit of account and not backed by any sovereign currency would be just another monetary instrument privately issued and not guaranteed by the government.²²⁷ And the more a private instrument was used and accepted for making payments and transfers, the closer this instrument would be of serving as money. The distinction, though, between the theoretically more stable sovereign currency, even if digital, and the private monetary instruments should remain clear to avoid misconceptions that could imply governmental support of non-official currencies.

Issuers of private currencies would have to be careful, thus, not to present their currency in a way that could lead the public to mistake a competing currency for the sovereign money. The risk for private currencies would be raising the question of counterfeiting and, in turn, constituting a statutory violation. Two recent cases in the United States illustrate this risk. In March 2011, Bernard von NotHaus, the creator of a private currency known as Liberty Dollar, was convicted by a federal jury for “making coins resembling and similar to United States coins; of issuing, passing, selling, and possessing

²²⁵ See *supra* Part I discussing the scope of the concept of “legal tender.”

²²⁶ Arguing that “[a] benign use of monetary prerogatives by the government would be the definition of a monetary regime with no forced tender, allowing competitive supply of money,” see LEÓNIDAS ZELMANOVITZ, *THE ONTOLOGY AND FUNCTION OF MONEY: THE PHILOSOPHICAL FUNDAMENTALS OF MONETARY INSTITUTIONS* 203–04 (2016).

²²⁷ “Monetary instruments,” as used in the text, purport to include not only short-term debt issued by an identifiable person or entity but also cryptocurrencies that have no issuer and are not a liability of anyone, like Bitcoin. See, e.g., He et al., *supra* note 212, at 9, 25. The goal is to highlight the difference between the central-bank digital currency and all other currencies that might become generally used and accepted despite not having governmental support.

Liberty Dollar coins; . . . issuing and passing Liberty Dollar coins intended for use as current money; and conspiracy against the United States.”²²⁸ The evidence presented in the trial showed that “the Liberty coins were marked with the dollar sign (\$); the words dollar, USA, Liberty, Trust in God (instead of In God We Trust); and other features associated with legitimate U.S. coinage.”²²⁹

The press release issued in the case by the U.S. Attorney’s Office stated that “[i]t is a violation of federal law . . . to create private coin or currency systems to compete with the official coinage and currency of the United States.”²³⁰ Despite the press release’s hostile tone, von NotHaus was not convicted simply for issuing private coins and currency but for issuing coins and currency that *resembled official U.S. currency*.²³¹ So much so that von NotHaus’s indictment and later conviction were based on charges and counts under federal statutory rules that deal with conspiracy and counterfeiting.²³² In the end, “the Liberty Dollar government action is best understood as an attack on counterfeiting and fraud rather than as the first salvo in a war against private currencies.”²³³

Another federal criminal rule that could, at least theoretically, be used against issuers of private currency is Section 2 of the Stamp Payments Act of 1862. This rule provides:

Whoever makes, issues, circulates, or pays out any note, check, memorandum, token, or other obligation for a less sum than \$1, intended to circulate as money or to be received

²²⁸ Press release, Fed. Bureau of Investigation, Defendant Convicted of Minting His Own Currency (Mar. 18, 2011), <https://www.fbi.gov/charlotte/press-releases/2011/defendant-convicted-of-minting-his-own-currency> [<https://perma.cc/4J9K-ECGK>]. For a detailed factual background of the case, see *United States v. von NotHaus*, No. 5:09CR27-RLV, 2014 WL 5817559 (W.D.N.C. Nov. 10, 2014).

²²⁹ Fed. Bureau of Investigation, *supra* note 228.

²³⁰ *Id.*

²³¹ See Grinberg, *supra* note 221, at 191–94.

²³² 18 U.S.C. §§ 371, 485, 486 (2018). As later summarized in *United States v. Von NotHaus*, No. 509CR00027RLVDCK, 2017 WL 1396043, at 2 (W.D.N.C. Apr. 18, 2017), “[a] jury convicted von NotHaus of conspiracy to defraud the United States by making, uttering, and passing counterfeit coins in violation of 18 U.S.C. § 371 (2006), falsely making and forging counterfeit coins in violation of 18 U.S.C. §§ 485, 2 (2006), and uttering and making coins of silver intended for use as current money, in violation of 18 U.S.C. §§ 486, 2 (2006).”

²³³ Grinberg, *supra* note 221, at 192. In November 2014, the United States District Court, W.D. North Carolina, found “no appealable defect in the indictment or the jury instructions” and denied von NotHaus’s Motions for Post-Conviction Relief. *United States v. von NotHaus*, No. 5:09CR27-RLV, 2014 WL 5817559 (W.D.N.C. Nov. 10, 2014). In turn, in December 2014, von NotHaus was sentenced to “be on probation for a term of *THREE (3) YEARS*,” to “serve *SIX (6) MONTHS* home detention,” and to pay \$300 in criminal monetary penalties. *U.S. v. NotHaus*, 2014 WL 7505580 (W.D.N.C.).

or used in lieu of lawful money of the United States, shall be fined under this title or imprisoned not more than six months, or both.²³⁴

The scope of the rule tends to be limited, though. The statutory provision would hardly apply to any currency that “does not resemble official U.S. currency and is otherwise unlikely to compete with small denominations of U.S. currency.”²³⁵ More than that, “there has been no published court opinion interpreting the Act since 1899,” which is an indication of how remote the use of this rule to stop the issuance of private currencies may be.²³⁶

The second case about the risks for issuers of private currencies involves a “digital currency system” named e-gold that operated from the mid-1990s to 2007. The institution behind e-gold allowed any person to visit its website and open an account denominated in some amount of gold, the e-gold account. The registered user could then deposit dollars or other currencies in this account to create e-gold balances, transfer these balances to other e-gold account holders around the world, and cash out e-gold balances when making withdrawals. Despite being depicted as a digital currency, e-gold was closer to an exchange offering services to investors willing to have exposure to gold. But the e-gold system operator was not licensed or registered with state or federal authorities and had not implemented procedures to prevent money laundering. The directors of e-gold were, therefore, charged with conspiracy, money laundering, and operating a money-transmitting business without the proper license.²³⁷

In July 2008, the directors of e-gold entered a plea agreement.²³⁸ Later that year, in November, e-gold director and CEO was sentenced to three years of supervised release—with six months of electronically monitored home detention—to perform 300 hours of community service, and to pay a \$200 assessment. The other two e-gold directors were sentenced to probation for three years, to complete 300 hours of community service, and to pay a \$2,500 fine and a \$100 assessment.²³⁹ As in the von NotHaus case, e-gold directors were not criminally liable for issuing a private currency. Here, the currency creators and managers faced punishment for failing to follow anti-money

²³⁴ 18 U.S.C. § 336 (2018).

²³⁵ Grinberg, *supra* note 221, at 185.

²³⁶ *Id.* at 190.

²³⁷ 18 U.S.C. §§ 1956, 1960 (2018). For details on the e-gold case, see Grinberg, *supra* note 221, at 204–06; Lawrence White, *The Troubling Suppression of Competition from Alternative Monies: The Cases of the Liberty Dollar and E-gold*, 34 CATO J. 281, 288–97 (2014).

²³⁸ See Press Release, U.S. Dep’t of Just., Digital Currency Business E-Gold Pleads Guilty to Money Laundering and Illegal Money Transmitting Charges (July 21, 2008), <http://www.justice.gov/opa/pr/2008/July/08-crm-635.html> [<https://perma.cc/WT5X-B3YN>].

²³⁹ See Stephanie Condon, *Judge Spares E-Gold Directors Jail Time*, CNET (Nov. 20, 2008), <https://www.cnet.com/news/judge-spares-e-gold-directors-jail-time/> [<https://perma.cc/DKW8-2UNG>].

laundering rules and to obtain the required license of money transmitter. Private digital currencies can thus be legitimately issued under the current federal legal framework in the United States—they are not outright illegal.²⁴⁰ The difficulty lies in designing the currency to avoid violating related, even if not closely connected, laws.

At the state level, the issue of private currencies, digital or not, has also been gaining greater legal support. In California, Section 107 of the Corporations Code provided that “[n]o corporation, social purpose corporation, association, or individual shall issue or put in circulation, as money, anything but the lawful money of the United States.”²⁴¹ On June 28, 2014, however, Section 107 was repealed by Assembly Bill No. 129, which opened the way for the development, issuance, and circulation of private currencies in the state of California.²⁴² The relevant federal law has still to be observed, but the less hostile state legislation makes it easier for alternative currencies to appear.

The Court of Justice of the European Union also hinted at a more permissive approach to privately issued currencies in the *Hedqvist* case.²⁴³ Although the case focused on debating whether exchanging bitcoins for sovereign currencies as a commercial activity would be subject to the value-added tax, the Court signaled that a private currency could be legitimately issued and used in the European Union. In doing so, the Court defined the basic characteristics of private, “non-traditional currencies”: “currencies other than those that are legal tender in one or more countries, in so far as those currencies have been accepted by the parties to a transaction as an alternative to legal tender and have no purpose other than to be a means of payment.” If, therefore, a privately issued instrument meets these characteristics, it can be considered “currency”—at least for tax purposes.

5. *Private Currencies as a Check on the Government and the Central Bank*

Despite some headwinds, private digital currencies could, if properly designed and managed, create incentives for the government and the central bank to preserve the stability of the sovereign digital currency. The risk for the sovereign currency, if private digital currencies became widespread,

²⁴⁰ With a similar view, see Allen, *supra* note 54, at 900. See also Julie Hill, *Virtual Currencies & Federal Law*, 18 J. CONSUMER & COM. LAW 65, 66–67 (2014). *But cf.* White, *supra* note 237, at 288–97 (arguing that the cases of Liberty Dollar and e-gold demonstrate that the government has used the legal system to throttle monetary competition).

²⁴¹ California’s Corporations Code is available at <http://leginfo.legislature.ca.gov/faces/codesTOCSelected.xhtml?tocCode=corp> [<https://perma.cc/6C9J-W9HC>].

²⁴² See Assemb. B. 129 ch. 74 (2014) http://www.leginfo.ca.gov/pub/13-14/bill/asm/ab_0101-0150/ab_129_bill_20140628_chaptered.htm [<https://perma.cc/FT93-PPDY>].

²⁴³ See Judgment of 22 October 2015, *Hedqvist*, C-264/14, EU:C:2015:718.

“would be analogous to the dollarisation issue. Domestic monetary policy is weakened the greater the dollarisation of the economy.”²⁴⁴ The government could, thus, be more diligent in preventing monetary mischief or breach of trust relative to the sovereign currency if private monetary alternatives existed and were readily available. Banks, for example, could take advantage of their extensive client base and geographical dispersion to offer a private digital currency, perhaps globally, as a service to their customers. The same could be done by big tech companies, like Google or Apple, or even by influential retailers, like Amazon, looking to build a more efficient network for cross-border payments.

The separation of banking and commerce, statutorily consolidated in the United States with the Bank Holding Company Act of 1956, would not create a problem here.²⁴⁵ Although today the separation has been diluted by many exemptions, it still lingers based on the historical fear that large corporations and influential banks accumulate too much power—as demonstrated by the backlash against Wal-Mart trying to acquire a financial-institution charter in 2005.²⁴⁶ As, however, corporations issuing private digital currencies denominated in their own unit of accounts would not be acting like a “bank”—basically, an entity that both accepts demand deposits and makes loans²⁴⁷—the statutory prohibition would not reach the corporate issuance of currencies.

Securities laws, on the other hand, might apply if these corporate currencies were considered not just tokens that could be used to pay for some service or good (“utility tokens”), but investments with the expectation of profits (“securities”). A private currency may be characterized as “security” under the “*Howey* test,” a framework developed by the U.S. Supreme Court to help identify when an investment is considered “security” for regulatory purposes. As the Supreme Court held in this precedent that influenced securities laws across the world,

[A]n investment contract for purposes of the Securities Act means a contract, transaction or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party, it being immaterial whether the shares in the

²⁴⁴ FIN. STABILITY BD., *Financial Stability Implications from FinTech. Supervisory and Regulatory Issues that Merit Authorities’ Attention* 53 (June 27, 2017), <http://www.fsb.org/wp-content/uploads/R270617.pdf> [<https://perma.cc/LCV8-3BH3>].

²⁴⁵ Currently, the separation of banking and commerce appears in 12 U.S.C. § 1843 (2018).

²⁴⁶ See Omarova & Tahyar, *supra* note 82, at 167–69.

²⁴⁷ See 12 U.S.C. §§ 1841(c)(1)(A)–(B) (2018). About the evolution of the statutory definition of “bank” in the United States, see generally Omarova & Tahyar, *supra* note 82.

enterprise are evidenced by formal certificates or by nominal interests in the physical assets employed in the enterprise.²⁴⁸

The misfortunes of Initial Coin Offerings, or ICOs, are illustrative. In late 2017, with the surge in Bitcoin's price, ICOs launching new digital or cryptocurrencies that could serve a variety of purposes became popular. As ICOs that were not outright fraudulent looked a lot like public offerings of securities to raise funds from investors in search of profits, the Securities and Exchange Commission started following coin issuance more closely to enforce securities laws.²⁴⁹

The so-called "stablecoins," like Facebook's Libra-Diem, could also be viewed as securities.²⁵⁰ Stablecoins are cryptocurrencies pegged to one or more sovereign currencies to make their market price more stable. They want to create an alternative to the excessive volatility of Bitcoin, which is not backed by any assets. The promise is that the money the stablecoin issuers receive from their users will be kept on reserve so that it will always be possible to convert the stablecoin into the reference sovereign currency at a 1:1 rate. Or "basically PayPal, except on a decentralized database instead of a centralized one."²⁵¹ This reality pushes stablecoins away from the currency realm and into the securities territory. They closely resemble shares in a money market mutual fund, which reflect the value of a portfolio of assets selected by the fund manager and are expected to be freely redeemable at no significant price loss.²⁵² Stablecoins seem to go beyond typical mutual fund's shares since they can be transferred to other participants. But the difference

²⁴⁸ S.E.C. v. W.J. Howey Co., 328 U.S. 293, 298–99 (1946). For more on the "Howey test" and how it has been applied in the case law, see JAMES COX ET AL., SECURITIES REGULATION: CASES AND MATERIALS 27–90 (7th ed. 2013).

²⁴⁹ For an overview of ICOs, their complicated relations with securities regulation, and the Securities and Exchange Commission's actions, see Joshua Morgan, *What I Learned Trading Cryptocurrencies While Studying the Law*, 25 U. MIAMI INT'L & COMP. L. REV. 159, 191–94, 202–15 (2017). See also U.S. Sec. and Exch. Comm'n, *Spotlight on Initial Coin Offerings (ICOs)* (Jan. 7, 2020), <https://www.sec.gov/ICO> [<https://perma.cc/4G2G-JF5P>].

²⁵⁰ For a detailed account of why stablecoins, and Libra-Diem in particular, could be considered securities, see Marcelo Prates, *Deconstructing Facebook's Libra*, YALE J. ON REG.: NOTICE & COMMENT (Oct. 29, 2019), [<https://perma.cc/89L9-44ZG>]. See also Douglas Arner et al., *Stablecoins: Risks, Potential and Regulation* (Bank for Int'l Settlements, Working Paper No. 905, November 2020), <https://www.bis.org/publ/work905.pdf> (discussing the status of Facebook's Libra and principles for regulating stablecoins).

²⁵¹ J.P. Koning, *18 Things About Tether Stablecoins*, MONEYNES (Aug. 26, 2020), <http://jpkoning.blogspot.com/2020/08/18-things-about-tether-stablecoins.html> [<https://perma.cc/R9DR-ZGUG>].

²⁵² Also likening Libra to shares in a money market mutual fund, see Robert Hockett, *Facebook's Proposed Crypto-Currency: More Pisces Than Libra For Now*, FORBES (June 20, 2019), <https://www.forbes.com/sites/rhockett/2019/06/20/facebooks-proposed-crypto-currency-more-pisces-than-libra-for-now/> [<https://perma.cc/ES52-X7N8>].

is only apparent. Unless resale restrictions apply (e.g., because of holding period requirements), securities are also transferable, either on an exchange or through a contractual agreement.²⁵³

Even if they can escape the securities characterization, stablecoins will hardly avoid the fate of being just a fancy name for e-money. Electronic money, or simply e-money, is defined in the Community Law of the European Union as “electronically, including magnetically, stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions (. . .) and which is accepted by a natural or legal person other than the electronic money issuer.”²⁵⁴ This definition also appears, with minor adjustments, in the laws of the United Kingdom²⁵⁵ and Brazil.²⁵⁶ E-money is traditionally issued by fintech companies in exchange for funds and stored on prepaid cards or pre-funded digital wallets that can be later used for making payments.

So, in all jurisdictions that regulate e-money, stablecoin issuers have to apply for authorization before they can start operating. The United States is the outlier, with no federal law on e-money but 50 “different” state money transmission laws that may have to be observed by stablecoin issuers—at least when the issuer is an identified institution and holders have the right to redeem the stablecoin for dollars.²⁵⁷ Remaining under or unregulated is not, therefore, an option for institutions that issue stablecoins since stablecoins will likely fall into the category of securities or e-money in most jurisdictions.

Despite all the private options available, if the sovereign currency, physical or digital, remains the most used unit of account, privately issued digital currencies will face a competitive disadvantage. When most prices are denominated in a currency, say euro, making payments in a different currency, say dollar, can be not only inconvenient, but it can also create additional transaction costs: the contracting parties have, at least, to agree on an exchange rate to settle the transaction. In any event, private parties are free to decide on the unit of account they will use, an option that can facilitate adopting alternative units of account created with private currencies.

As with legal tender, private entities are not typically required by law to use the unit of account statutorily set for the sovereign territory. The

²⁵³ About resale of securities in the United States, see, for example, Rutheford Campbell, Jr., *Resales of Securities Under the Securities Act of 1933*, 52 WASH. & LEE L. REV. 1333 (1995).

²⁵⁴ Directive 2009/110, of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions. 2009 O.J. (L 267) 7-17, Art. 2(2).

²⁵⁵ See FIN. CONDUCT AUTH., PAYMENTS SERVICES AND ELECTRONIC MONEY—OUR APPROACH (2019), <https://www.fca.org.uk/firms/emi-payment-institutions-key-publications> [<https://perma.cc/UQS5-FZKA>].

²⁵⁶ See Lei No. 12.865, de 9 de outubro de 2013, D.O.U. de 10.10.2013.

²⁵⁷ For an overview of state money transmission laws in the United States, see Carol R. Goforth, *The Case for Preempting State Money Transmission Laws for Crypto-Based Businesses*, 73 ARK. L. REV. 301 (2020).

American law of the monetary system, for example, currently provides that the “United States money is expressed in dollars, dimes or tenths, cents or hundredths, and mills or thousandths. . . .”²⁵⁸ It is a merely descriptive provision, which does not prescribe any particular action that should be observed by the public. The original text of this provision, from 1792, was more prescriptive, but the 1982 amendment eliminated or omitted words that were considered “unnecessary” or “surplus.”²⁵⁹ The text stated: “The *money of account* of the United States shall be expressed in dollars or units, dimes or tenths, cents, or hundredths, and mills or thousands, . . . ; and *all accounts in the public offices and all proceedings in the courts* shall be kept and had in conformity to this regulation.”²⁶⁰

A similar provision is found in the euro area, where Article 320 of the Treaty on the Functioning of the European Union stipulates: “The multiannual financial framework and the annual budget shall be drawn up in euro.” Council Regulation n° 974/98, issued by the Council of the European Union to regulate the introduction of the euro, also prescribes that “the currency unit shall be one euro. One euro shall be divided into one hundred cent” (Article 2).²⁶¹ But this Regulation adds in its Article 4 that “the euro shall be the unit of account of the European Central Bank (ECB) and of the central banks of the participating Member States,” without placing the same burden on private parties. Only government institutions have to keep their financial and accounting records denominated in the official unit of account. Nothing in the law prevents persons or corporations from creating or adopting their own unit of account—practicality may be the biggest limitation.

B. *The Central Bank Back in Charge of the Monetary System*

Central banks can take advantage of the recent technological progress achieved in the cryptocurrencies’ world to challenge banks’ monetary dominance and finally exert direct control over money creation and management. Do they need to use blockchain to do so? On the face of it, central banks using blockchain technology seems contradictory. Blockchain is a technology developed to prevent the same digital currency from being spent twice (double-spending) in a system that does not rely on a central database managed by a trusted authority to record and keep track of monetary transactions. Central banks, on the other hand, are the quintessential trusted central counterparty in money matters, holding and guarding the central ledger used to manage all monetary information. Even if not adopting the blockchain technology, central banks could still benefit from the Bitcoin

²⁵⁸ 31 U.S.C. § 5101 (2018).

²⁵⁹ Pub. L. No. 97-258, 96 Stat. 980 (1982).

²⁶⁰ Law of April 2, 1792, ch. 16, § 20, 1873 first ed. of the Revised Statutes of the United States 1, 707 (emphases added).

²⁶¹ Council Regulation 974/98, art. 2, 1998 O.J. (L 139) 1-5 (EC).

experience with transferring and using digital currency with cryptographic protection. How, then, could a central bank move toward a digital currency?

1. *A Model for the Central-Bank Digital Currency*

As the possibilities for a CBDC are multiple, and the related taxonomy is becoming increasingly confusing,²⁶² CBDC in this Article refers to a type of money with at least three features:

- unlike bank deposits or e-money stored in prepaid cards, it is a liability of the issuing central bank that can be held directly by any person, not a liability of an intermediary between the central bank and the money user;
- unlike electronic reserves held by banks at the central bank, it is available to any person or business, not just to selected counterparties; and
- unlike cash, it exists in electronic form, not as a physical token.

The CBDC is, thus, a conceptual type of money that has not yet been created, except for some limited prototypes.²⁶³

Against this backdrop, I propose a model of CBDC that allows any person or institution to hold deposits directly with the central bank through a digital wallet. With this model, I want to show how wildly different a CBDC can get from both the current monetary system and the options offered by private cryptocurrencies. I prefer the term “digital wallets” in this context to emphasize that the central bank would not be offering to the public full-service digital accounts like those now provided by commercial banks. The central bank digital wallets would simply allow users to hold the digital currency and make or receive payments, much like cash in a physical wallet. Other services that today can be connected to bank accounts, especially those involving the supply of credit, like overdraft or credit cards, would not be rendered by the central bank. Financial intermediation should remain with financial institutions.

To avoid losing its characteristics of monetary authority, the central bank should not get involved in credit allocation.²⁶⁴ Credit supply would,

²⁶² For an overview of other models of CBDC, see Raphael Auer & Rainer Boehme, *The Technology of Retail Central Bank Digital Currency*, BIS Q. REV. (Mar. 1, 2020), https://www.bis.org/publ/qtrpdf/r_qt2003j.htm [<https://perma.cc/8FRJ-7Q2K>].

²⁶³ For a useful survey on different types of CBDCs and the related projects around the world, see John Kiff et al., *A Survey of Research on Retail Central Bank Digital Currency* (Int’l Monetary Fund, Working Paper No. 20/104, 2020), <https://www.imf.org/en/Publications/WP/Issues/2020/06/26/A-Survey-of-Research-on-Retail-Central-Bank-Digital-Currency-49517> [<https://perma.cc/SN66-BXZX>].

²⁶⁴ With a similar argument, see Klaus Löber & Aerd Houben, *Central Bank Digital Currencies* 14 (Bank for Int’l Settlements, joint report submitted by the

therefore, stay as a service rendered by banks and other financial intermediaries. The distance from credit allocation would prevent the central bank from turning into a dominant development or state bank that could use its monopolistic capacity to issue digital currency for financing projects based on political considerations or pressure.²⁶⁵ The goal should not be to transform the central bank into a central planner, allocating resources and dictating investments, but to assert central bank's authority over the sovereign money.²⁶⁶

Under the new model, payments would not have to go through the banking system, as the central bank would settle them in real time through the digital wallets. However, in favor of a market-driven approach that encourages innovation, the central bank digital wallets should be developed and operated by the private sector—from banks to telecom or technology companies—not directly by the central bank. In any case, the central bank would be able not only to pay interest on currency—positive or negative—but also to trade assets with any market participant, controlling the amount of money in the economy without depending on banks' intermediation. In extreme circumstances, the central bank could even issue small amounts of digital currency directly into all or selected digital wallets, thus stimulating the economy through the unconventional tool known as “helicopter money.”²⁶⁷

2. Radicalizing the Central-Bank Digital Currency Model

But why propose this seemingly extreme model for a CBDC, prioritizing the possibility of opening up the central bank for all? Because models for a sovereign digital currency that do not allow the central bank to connect directly with the public will prove futile. If the central bank were to start issuing cash digitally with no significant change to the monetary intermediation provided by banks, little would change since banks would remain the primary providers of money to the economy. Most dollars circulating in the economy today are already digital and made available

Comm. on Payments & Mkt. Infrastructures, 2018),
<https://www.bis.org/cpmi/publ/d174.pdf>.

²⁶⁵ On the perils of the central bank becoming a development or state bank, see Stephen Cecchetti & Kermit Schoenholtz, *Fintech, Central Banking and Digital Currency*, MONEY AND BANKING (June 12, 2017), <http://www.moneyandbanking.com/commentary/2017/6/11/fintech-central-banking-and-digital-currency> [<https://perma.cc/EWS4-6FE8>]; Paul Tucker, *The Political Economy of Central Banking in the Digital Age* 9–10 (SUERF Policy Note No. 13, 2017), <https://www.suerf.org/policynotes/1105/the-political-economy-of-central-banking-in-the-digital-age> [<https://perma.cc/6HZU-7P8L>].

²⁶⁶ This goal of keeping the control over money with the central bank while leaving the lending of money for the banks was also at the core of the Chicago Plan, as underscored by Irving Fisher, *100% Money and the Public Debt*, ECON. F. 406, 413 (1936).

²⁶⁷ For an overview on “helicopter money,” see Dyson & Hodgson, *supra* note 123, at 2, 8, 22–24.

through regulated intermediaries: the balances from bank accounts used to make payments and transfers. Worse still, the indirect model would leave for banks the job of providing every person—no matter how poor, uneducated, or old they may be—with the digital sovereign money.²⁶⁸ Depending on how banks handled this massive need for financial inclusion, the transition to a CBDC could give rise to segregation or even outright discrimination, depriving many of essential services.

For a CBDC to be transformative, the central bank has not only to issue the sovereign money digitally but to establish a direct relationship with persons and institutions, receiving their deposits and processing payments among them. This kind of “central bank for all,” with the central bank and the banks competing for deposits, could end up increasing rather than reducing instability. As deposits held with the central bank, the ultimate issuer of the sovereign digital currency, would be safer than deposits kept with banks, depositors would have an increased incentive to move their funds to the central bank. Banks could still compete with the central bank by offering an additional return to depositors willing to stay. But, at the first sign of trouble, the remaining depositors would probably flee from banks to the central bank. This flight to safety is a hallmark of crises and a common trigger of bank runs, asset fire sales, and financial panic.²⁶⁹

If banks lost much of their deposits to the central bank, they would have to find other sources to fund lending operations and remain in the business. That is why banks, under the CBDC model proposed here, should be able to borrow CBDC from the central bank against a broader range of collateral and for longer periods. The additional CBDC liquidity would provide banks with stable and inexpensive funding that could be used to meet the demand for credit in the economy, thus avoiding credit freeze and spikes in interest rates. As an incentive, especially in times of crisis or persistent deflation, favored borrowing conditions based on the volume of bank loans to specific segments, like small businesses or green projects, could apply. This type of

²⁶⁸ See Ben Broadbent, Deputy Governor, Bank of Eng., Speech at the London Sch. Econ.: Central Banks and Digital Currencies (Mar. 2, 2016), <https://www.bankofengland.co.uk/speech/2016/central-banks-and-digital-currencies> [<https://perma.cc/6TJW-KW54>].

²⁶⁹ Arguing that a CBDC competing with bank deposits could increase the risk of bank runs, see Aleksander Berentsen & Fabian Schär, *The Case for Central Bank Electronic Money and the Non-Case for Central Bank Cryptocurrencies*, 100 FED. RES. BANK OF ST. LOUIS REV. 97, 101–102 (2018), <https://doi.org/10.20955/r.2018.97-106> [<https://perma.cc/LQU7-XC9S>]; Cecchetti & Schoenholtz, *supra* note 265; Löber & Houben, *supra* note 264, at 16–17. *But see* Jack Meaning et al., *Broadening Narrow Money: Monetary Policy with a Central Bank Digital Currency* 14 (Bank of Eng. Staff Working Paper No. 724, 2018), <https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2018/broadening-narrow-money-monetary-policy-with-a-central-bank-digital-currency.pdf> (arguing that the risk of runs from bank deposits to the sovereign digital money would be manageable depending on the model of CBDC adopted).

liquidity assistance is nothing new in central banking. The ECB has been offering targeted longer-term refinancing operations since 2014. The TLTROs, as they are known, allow banks that lend more to non-financial corporations and households to borrow more and at a lower interest rate from the ECB.²⁷⁰

3. *Legal Limits of the Monetary Mandate*

Under the model of CBDC proposed, the central bank would face three immediate legal questions from the monetary perspective. First, would the central bank have the authority to issue currency in digital form? Second, could the central bank offer the digital currency directly to any person or institution and even hold deposits? And third, how would the central bank put the digital currency in circulation? The current legal framework of central banking in different jurisdictions does not allow much room for a rapid transition to a CBDC. Except for the European Union, the legal monetary mandate tends to connect the central bank's actions with the intermediation of the banking system, limiting the central bank's capacity to interact directly with the public at large. Let's compare what the central bank could do by itself and how the transition would play out in some selected jurisdictions.²⁷¹

4. *Issuing the Currency Digitally*

The language of monetary mandates is, in general, silent about a digital form of currency, as digital currencies for general use are a more recent possibility. It will be hard to find today a monetary mandate explicitly authorizing the central bank to issue currency digitally. The legal question has to be turned instead to examining whether a monetary mandate could still be construed to accommodate the possibility of a sovereign digital currency or whether the mandate somehow limits this possibility. In the United States and Brazil, the language of the monetary mandate is broad enough to back the view that the sovereign currency could take a digital form. The U.S. Constitution gives Congress the mandate, which was delegated to the central bank in the Federal Reserve Act of 1913, to “coin money [and] regulate the

²⁷⁰ About TLTROs and their costs and benefits, see Eric Lonergan & Megan Greene, *Dual Interest Rates Give Central Banks Limitless Fire Power*, VOXEU (Sep. 3, 2020), <https://voxeu.org/article/dual-interest-rates-give-central-banks-limitless-fire-power> [<https://perma.cc/4EFP-2J2K>].

²⁷¹ For a detailed discussion about the legal questions facing central banks that are willing to issue CBDC, see Wouter Bossu et al., *Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations* (IMF Working Paper No. 2020/254, Nov. 20, 2020), <https://www.imf.org/en/Publications/WP/Issues/2020/11/20/Legal-Aspects-of-Central-Bank-Digital-Currency-Central-Bank-and-Monetary-Law-Considerations-49827>. [<https://perma.cc/H8PG-T76Q>].

value thereof.”²⁷² Likewise, the Brazilian Constitution grants the central bank the power to “issue currency.”²⁷³

At the statutory level, moreover, the law stipulates that “United States coins and currency (including Federal reserve notes and circulating notes of Federal reserve banks and national banks) are legal tender for all debts, public charges, taxes, and dues.”²⁷⁴ The word “including” hints that the list that follows “currency” is illustrative, allowing other formats of currency to be legal tender. Similarly, the Brazilian law only requires two characteristics for a currency to be considered legal tender in the sovereign territory: it has to be issued by the central bank and denominated in the legally defined unit of account.²⁷⁵ Nothing is said about the format of the sovereign currency. As no constitutional or statutory rule determines the form the *money* or the *currency* should have, both central banks could use the existing mandate to issue a CBDC—or even to abolish cash altogether and substitute it for digital currency.

The ruling of the U.S. Supreme Court in the Legal Tender Cases of the late 19th century supports this line of interpretation.²⁷⁶ In 1870, the Supreme Court examined the limits of the power of Congress to “coin money and regulate its value thereof.” Back then, some advocated that this reference to “money” should be understood as a reference to “*metallic* money,” such as gold and silver coins, especially because the word “money” was closely associated with the verb “coin.” As only *metallic* money could be “coined”—in the sense of striking a coin by cutting it from metal—the conclusion should be that the Constitution did not authorize the issuance of money in other formats, like *paper* money.²⁷⁷

The Supreme Court, however, did not accept the argument that

because certain powers over the currency are expressly given to Congress, all other powers relating to the same subject are impliedly forbidden . . . [S]uch is not the manner in which the Constitution has always been construed. On the contrary it has been ruled that power over a particular subject may be exercised as auxiliary to an express power, though there is another express power relating to the same subject, less comprehensive.²⁷⁸

²⁷² U.S. Const. art. I, § 8, cl. 5.

²⁷³ C.F. art. 21, VII, and art. 164.

²⁷⁴ 31 U.S.C. § 5103.

²⁷⁵ Lei No. 8.880, de 27 de maio de 1994, D.O.U. de 28.5.1994, art. 2º, *caput*, and Lei No. 9.069, de 29 de junho de 1995, D.O.U. de 30.6.1995, art. 1º, *caput*.

²⁷⁶ See *Legal Tender Cases*, 79 U.S. 457 (1870). The decision in the Legal Tender Cases was later abrogated in part by *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*, 535 U.S. 302 (2002), although on other grounds, related to the Court’s takings jurisprudence.

²⁷⁷ *Legal Tender Cases*, 79 U.S. at 464–73.

²⁷⁸ *Id.* at 544–45.

The Court reasoned that “the gift of power to coin money and regulate the value thereof, was understood as conveying general power over the currency, the power which had belonged to the States, and which they surrendered.”²⁷⁹ In the end, the majority of the Court ruled that the power to “coin money” included the power for Congress to declare treasury notes, not only “*metallic* money,” legal tender.²⁸⁰

Despite this legal flexibility at the federal level toward the sovereign money format, some local and state governments in the United States started enacting legislation to prohibit businesses from limiting only to cards the payment of in-person transactions.²⁸¹ But these state and municipal laws mandating cash acceptance would become futile if the Federal Reserve stopped issuing physical money and opted instead for a sovereign digital currency. Since federal law does not prescribe the format the sovereign currency must have, abolishing cash should not present a legal problem, as long as the central bank issues some other type of sovereign currency.

In the European Union, on the other hand, the plain language of the monetary mandate is more restrictive, complicating an outright expansive interpretation. According to the Treaty on the Functioning of the European Union (TFEU), the ECB has “the exclusive right to authori[z]e the issue of euro banknotes,” while “Member States may issue euro coins.”²⁸² This binary distinction between paper currency and coins may hinder the creation of a “digital euro” if the legal framework is not adjusted.²⁸³ As the legal rules characterize the two forms of money that can be issued, adding a third one (the digital form) through interpretation could face pushback. This view is reinforced by another legal provision in the TFEU, underscoring that euro banknotes “shall be the only such notes to have the status of legal tender within the Union.”²⁸⁴ In consequence, it could be even harder to justify eliminating cash in favor of a sovereign digital currency in the Eurozone. The explicit legal reference to euro banknotes and coins seems to constrain the ECB more tightly when it comes to the format of the euro.

The language of the TFEU, however, has not prevented the ECB from using digital money—in the form of *electronic reserves*—in its transactions with the banking system to process payments and to conduct open-market or

²⁷⁹ *Id.* at 546.

²⁸⁰ *Id.* at 546–47.

²⁸¹ The city of Philadelphia and the state of New Jersey passed laws in early 2019 prohibiting some retail businesses, notably restaurants, from refusing to accept cash as payment from their customers. See Olga Kharif & Krista Gmelich, *As Amazon Leads Cashless Charge, States and Cities Push Back*, BLOOMBERG (Mar. 29, 2019, 5:00 AM), <https://www.bloomberg.com/news/articles/2019-03-26/who-is-banning-cashless-stores-amazon-go-could-be-next> [<https://perma.cc/RET6-KEJG>].

²⁸² TFEU, art. 128(1)–(2), 2016 O.J. (C 202).

²⁸³ In Brazil, the binary distinction, despite not present in the language of the Constitution, appears in the federal law that created the Central Bank of Brazil and organizes and regulates the financial system: Lei No. 4.595, de 31 de dezembro de 1964, D.O.U., art. 10, I, de 31.1.1965.

²⁸⁴ TFEU art. 128(1).

credit operations. In the Eurozone, both settlement and reserve accounts are kept by commercial banks with a National Central Bank participating in the European System of Central Banks. These accounts are denominated in euro, and transactions are processed and settled using “central bank money,” in the language of the related regulation. “Central bank money,” according to this regulation, means *electronic reserves* kept in settlement and reserve accounts in opposition to *banknotes and coins*, which, when used in payments, would lead to a “cash settlement” through a “dedicated cash account.”²⁸⁵

More than that, as long as the ECB can frame the issuance of a “digital euro” as a measure related to “price stability,” the ECB’s decision could be met with a more favorable reception. First, because the ECB’s Governing Council—comprised of the members of the Executive Board of the ECB and the governors of the national central banks of the Member States whose currency is the euro—is statutorily authorized to “decide upon the use of [other instruments of monetary control] as it sees fit.”²⁸⁶ With a majority of two-thirds of the votes cast, the ECB’s Governing Council could decide on the adoption of a “digital euro” to achieve the objective of price stability. Second, because the Court of Justice of the European Union, in the leading case *Gauweiler*, signaled that it is willing to show more deference to the ECB’s decisions related to ensuring price stability.²⁸⁷

5. Making the Digital Currency Widely Available

When it comes to making the digital currency available to the public, the legal situation in those selected jurisdictions is quite the opposite: the prospects are brighter in the European Union than in the United States or Brazil. Central banks from these two countries are statutorily authorized to establish relations only with a limited set of institutions, not with people or corporations. In the United States, a Federal Reserve Bank may receive deposits from its member banks, from the government, from other Federal Reserve Banks, and from foreign banks.²⁸⁸ A Federal Reserve Bank may even receive deposits from “any nonmember bank or trust company or other depository institution,” but “solely for the purposes of exchange or of

²⁸⁵ About the different accounts kept with the National Central Banks and the nature of their balances, see Council Guideline 2015/510, of the European Central Bank of 19 December 2014 on the Implementation of the Eurosystem Monetary Policy Framework, art. 2(91), 54, 2015 O.J. (L 91) 3; Council Regulation 1745/2003, of the European Central Bank of 12 September 2003 on the Application of Minimum Reserves, art. 6(1), 2003 O.J. (L 250) 10; Council Guideline 2013/47, of the European Central Bank of 5 December 2012 on a Trans-European Automated Real-time Gross Settlement Express Transfer System, art. 1(1), 1a, 2(51), (57), (59), 2012 O.J. (L 30) 1.

²⁸⁶ Statute of the European System of Central Banks and of the European Central Bank, 2016 O.J. (C 202) [hereinafter ECB Statute] art. 10.1, 20.

²⁸⁷ See Case C-62/14, *Gauweiler v. Deutscher Bundestag*, 2015 EUR-Lex 62014CJ0062 (June 16, 2015).

²⁸⁸ Federal Reserve Act § 13(1),(14) (1913); 12 U.S.C.A. §§ 342, 347d (West 1913).

collection.”²⁸⁹ Both of these purposes are related to the processing of payments and transfers of funds that occurs daily among banks within the payments system based on their clients’ monetary activities.

If, however, the Federal Reserve Banks could eventually provide digital wallets for regular people, they might have to charge all depositors for offering this service. Under section 11A(b)(8) of the Federal Reserve Act, “any new services which the Federal Reserve System offers, including but not limited to payment services to effectuate the electronic transfer of funds,” shall be covered by a fee schedule.²⁹⁰ And the schedule of fees is fixed by the Board of Governors based on pricing principles defined in section 11A(c).²⁹¹ Section 11A(a) of the Federal Reserve Act, on the other hand, restricts the charging of fees to services rendered by the Reserve Banks to “depository institutions”—which again indicates that, under current law, the Federal Reserve cannot interact with the public at large.²⁹²

The legal structure in Brazil is similar, as the Central Bank of Brazil, or BCB, can receive and hold deposits from financial institutions.²⁹³ A more recent statute authorized the BCB to receive and hold deposits from non-financial institutions that are part of the Brazilian Payments System (SPB). These institutions are typically fintech companies offering prepaid cards and pre-funded digital wallets that allow their customers to hold and transfer e-money.²⁹⁴ Even so, no legal authorization exists today for the BCB to receive deposits from individuals or businesses that are not financial institutions or participants in the SPB. The Brazilian Constitution, moreover, explicitly prohibits the BCB from giving loans to any person or institution, governmental or private, other than financial institutions.²⁹⁵ Although not directly related to the possibility of the BCB opening accounts for regular people, this constitutional rule reinforces the idea that the BCB cannot have relations beyond the financial system. In these two jurisdictions, thus, the central bank does not find in the current legal rules the required authority to accept deposits from individuals and corporations.

It would be legally easier for the ECB to offer “digital euros” directly to the public, as “the ECB and the national central banks may open accounts for credit institutions, public entities and other market participants.”²⁹⁶ The current statutory language would thus suffice to allow the ECB to offer a “digital euro” to the public through digital accounts or wallets if it so chooses. The related regulation, however, points in a different direction. Guideline 2015/510, edited by the ECB in late 2014 to regulate the Eurosystem monetary-policy framework, prescribes that only “institutions” can be

²⁸⁹ Federal Reserve Act § 13(1); 12 U.S.C.A. § 342.

²⁹⁰ 12 U.S.C.A. § 248a(b) (West 1913).

²⁹¹ *Id.* § 248a(c).

²⁹² *Id.* § 248a(a).

²⁹³ Lei No. 4.595, de 31 de dezembro de 1964, D.O.U., art. 10, IV, de 31.1.1965.

²⁹⁴ Lei No. 12.865, de 9 de outubro de 2013, D.O.U. de 10.10.2013, art. 14.

²⁹⁵ C.F. art. 164, § 1° (Braz.).

²⁹⁶ ECB Statute, 2016 O.J. (C 202) art. 17.

eligible to take part in monetary-policy operations with the ECB.²⁹⁷ The question here is whether depositing digital currency in digital wallets provided by the central bank and making payments and transfers would come under “monetary-policy operations.”

6. Putting the Digital Currency into Circulation

Finally, regarding the question of how to put the digital currency in circulation, central banks might find difficulties in using the existing tools to this end. The traditional open-market operations, in which the central bank trades electronic reserves for securities to adjust the price and availability of money in the economy, may not be the ideal tool. The central bank conducts open-market operations today not directly with individual investors or institutions but through auctions restricted to selected dealers. These dealers are known as “primary dealers,” which are big banks and securities traders ready to buy or sell government securities, helping to keep liquid the market for these securities. This procedure, however, is more a result of practice and regulatory activity than of statutory command. In consequence, the central bank could broaden its audience for open-market operations, if needed or desired.

In the United States, the Federal Reserve Banks may buy and sell in the open market government and agency securities.²⁹⁸ The situation in Brazil and the Eurozone is similar since no statutory rule compels the central bank to deal with selected counterparties.²⁹⁹ The only condition is that the operations happen in the “open market,” in the sense that the central bank does not transact directly with the treasury, but rather trades government securities in the secondary market to avoid monetary financing. If this condition is observed, the central bank is free to choose its counterparties—unless the related regulation stipulates otherwise, as illustrated by the ECB’s Guideline 2015/510 setting that only “institutions” can be eligible counterparties with the ECB. Even so, if the regulation were adjusted, the statutory language would support an expansive interpretation of the counterparties eligible to engage in open-market operations with the central bank.

The current system of “primary dealers” is used, though, to facilitate open-market operations. All the payments the central bank makes or receives are processed with electronic reserves, and, today, only banks holding reserve accounts have access to electronic reserves. Given, moreover, the volume transacted in open-market operations, the counterparties trading with the central bank must be able to handle the transactions in a reliable and timely fashion. The high nominal values these transactions can reach makes it difficult for individuals, corporations, and smaller financial institutions to

²⁹⁷ See Council Guideline 2015/510, of the European Central Bank of 19 December 2014 on the Implementation of the Eurosystem Monetary Policy Framework, art. 55–57, 2015 O.J. (L 91) 3.

²⁹⁸ See Federal Reserve Act § 14(2)(b) (1913); 12 U.S.C. § 355 (1971).

²⁹⁹ In Brazil, see Lei No. 4.595, de 31 de dezembro de 1964, D.O.U., art. 10, XII de 31.1.1965. In the Eurozone, see ECB Statute art. 18.

participate in open-market trades consistently.³⁰⁰ But then again, nothing in the examined legal frameworks prevents the central bank from trading directly with counterparties other than the “primary dealers” or some selected institutions.

7. Testing the Legal Limits of Monetary Change

From a legal standpoint, it is unlikely that any of these central banks could opt for a digital currency without first seeking from the legislature a revamp of the law of the monetary system. In the jurisdictions surveyed, the monetary mandate does not grant the central bank clear authority to issue currency in a digital form or establish a direct relationship with persons willing to use or hold the currency. Even when the language of the monetary mandate seems flexible enough to authorize the issue of currency in digital form, the central bank does not have sufficient legal authority to offer accounts or wallets to the public.

CONCLUSION

At this point, some structural reform of the monetary system seems not only desirable but inevitable. The technology available can speed up the process, creating new possibilities for money that would change the life of governments, central banks, financial institutions, and regular people. From allowing the privatization and decentralization of money to enabling central-bank digital currencies (CBDCs), options abound. More than that, with many private players entering the monetary game, from creative start-ups to ambitious big tech firms, the interest in transforming money is now widespread. Among all these possibilities, what does the future hold for money, and what type of money will prevail?

Bitcoin offers by far the best solution for cross-border payments. Two characteristics help the reigning cryptocurrency receive this recognition: Bitcoin has no issuer, so it is not connected to a jurisdiction, and it has its own unit of account, without any reference to or backing by a sovereign currency. A bitcoin in a Japanese wallet can be transferred to a Brazilian wallet and then to an American wallet seamlessly and in no time. The main trouble with Bitcoin appears at the national level, when someone wants to use Bitcoin as money to pay for basic goods and services. As few places accept bitcoins for everyday payments, the holder has to exchange bitcoins for the sovereign currency whenever she wants to buy groceries or take a bus.

For domestic use, a CBDC could prove more useful and even vital. In the increasingly digital world, not having access to digital money means not being a full citizen. A CBDC will not promote financial inclusion by itself. Digital currencies may be useless for those who do not have regular access to smartphones, connectivity, or even electricity. But if central banks do not

³⁰⁰ For an up-to-date view on the typical size of open-market operations, see *Markets Data Dashboard*, FED. RES. OF N.Y., <https://www.newyorkfed.org/markets/data-hub> (last visited Jan. 28, 2021).

offer a stable and inexpensive public option for digital money and payments, many persons and small businesses that cannot afford the private alternatives could be deprived of an essential service in the modern economy. A CBDC would also provide a public choice for those who would still prefer to have a government-issued digital currency despite the many options offered by the private sector, from bank deposits and e-money to cryptocurrencies and stablecoins.

Among the private options, a digital currency issued by one of the big tech companies could rapidly become dominant. These companies can take advantage of their extensive user base and geographical dispersion to create a digital currency that would facilitate not only local transactions but also cross-border payments. Facebook's Libra, now Diem, was the initial step in this direction, although its future is still unclear. But we should not overlook that, with a 2.4 billion user base, Facebook can eventually offer its digital currency to more than 1/3 of the world's population. Rich or poor, old or young, educated or illiterate, if these users can already access Facebook, they could use its coin as well.

In the end, no matter how fanciful the monetary alternatives look like, finding the money of choice comes down to answering one old question. Who do you trust the most (or the least) to take care of your money: the government, Bitcoin's developers and miners, or Facebook?