

# Taming Wildcat Stablecoins

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*Cryptocurrencies, including stablecoins, are all the rage. Investors are exploring ways to profit off of them. Governments are considering ways to regulate them. While the technology underlying cryptocurrencies is new, the economics is centuries old. Oftentimes, lawmakers are so focused on understanding a new technological innovation that they fail to ask what exactly is being created.*

*In this case, the new technology has recreated circulating private money in the form of stablecoins, which are similar to the banknotes that circulated in many countries during the nineteenth century. The implication is that stablecoin issuers are unregulated banks. Based on lessons learned from economic theory and financial history, we argue that circulating private money is not an effective medium of exchange because it is not always accepted at par and its issuers are vulnerable to destabilizing bank runs.*

*We also explore the treatment of stablecoins under the existing legal framework and examine the upsides and downsides of interpretive, regulatory, and legislative options that attempt to mitigate the financial-stability risks associated with stablecoins. These options include requiring the issuance of stablecoins through banks, backing stablecoins one-for-one with safe assets, and establishing sovereign digital money to compete against private digital money.*

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## INTRODUCTION

Since Bitcoin arrived on the scene in 2009,<sup>1</sup> innovators have created over 8,500 cryptocurrencies, which had a combined market capitalization of over \$3 trillion in 2021.<sup>2</sup> Cryptocurrencies are digital representations of tokens that reside on blockchains. They can be divided into two categories. The first includes cryptocurrencies that are not backed by anything, like Bitcoin and Ethereum.<sup>3</sup> These are so-called “fiat cryptocurrencies.” Their defining feature is that they have no intrinsic value. The second category includes “stablecoins” like Tether and USD Coin, which aspire to be used as a form of circulating private money and so are

<sup>1</sup> See, e.g., Reuben Grinberg, *Bitcoin: An Innovative Alternative Digital Currency*, 4 HASTINGS SCI. & TECH. L.J. 159, 164 (2012); see also Grace Kay, *The Many Alleged Identities of Bitcoin’s Mysterious Creator, Satoshi Nakamoto*, BUS. INSIDER (Nov. 28, 2021), <https://perma.cc/W28B-S6HV>.

<sup>2</sup> See *Global Cryptocurrency Market Cap Charts*, COINGECKO, <https://perma.cc/LQR2-UNK3>.

<sup>3</sup> Steve Patterson, *Bitcoin Is Not Backed by Anything (And That’s OK!)*, BITCOIN MAG. (Oct. 21, 2014), <https://perma.cc/J5NC-9EA5>.

allegedly backed by safe assets (e.g., short-term U.S. Treasuries) to ensure that they are accepted at par in transactions.<sup>4</sup> This article focuses on stablecoins.

In the future, stablecoins can potentially add value in cross-border transactions by decreasing transaction costs for firms and financial institutions. Today, stablecoins are used primarily in trading fiat cryptocurrencies—that is, they enable traders to more easily buy and sell cryptocurrencies on an exchange. They are also used by some retail investors as speculative assets to obtain higher returns. While simply holding stablecoins provides no direct returns—indeed, stablecoins are designed to not deviate from par—owners of stablecoins can pledge them in decentralized finance (DeFi) platforms that (allegedly) provide interest rates that far exceed the yield that retail investors can obtain via traditional means, like a bank savings account. As a result, the market for stablecoins has grown rapidly. In the middle of 2020, the market capitalization of stablecoins was approximately \$20 billion.<sup>5</sup> At year-end 2021, that figure stood at over \$160 billion.<sup>6</sup>

While the technology changes, and the legal form of privately produced money changes, the economics do not. We argue in this Article that the new technology has recreated circulating private money similar to the private banknotes that circulated in many countries during the nineteenth century. The implication is that stablecoin issuers are *unregulated banks*. And the problems underlying circulating private money do not change—namely, private money is a subpar (literally) medium of exchange and its issuers are subject to destabilizing bank runs.

To see this, one must recognize that money has several important properties, with the three most commonly stated ones being a unit of account, a store of value, and a medium of exchange.<sup>7</sup> The most obvious (yet not explicitly stated) property is

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<sup>4</sup> See, e.g., Dan Awrey, *Bad Money*, 106 CORNELL L. REV. 1, 43–44 (2020); Jess Cheng, *How to Build a Stablecoin: Certainty, Finality, and Stability Through Commercial Law Principles*, 17 BERKELEY BUS. L.J. 320, 324–25 (2020); Craig Calcaterra, Wulf A. Kaal & Vadhindran Rao, *Stable Cryptocurrencies: First Order Principles*, 3 STAN. J. BLOCKCHAIN L. & POL'Y 62, 62–63 (2020); Marco Dell'Erba, *Stablecoins in Cryptoeconomics: From Initial Coin Offerings to Central Bank Digital Currencies*, 22 N.Y.U. J. LEGIS. & PUB. POL'Y 1, 7 (2019); see also Anna Gelpern & Erik F. Gerding, *Inside Safe Assets*, 33 YALE J. ON REG. 363, 371–77 (2016) (defining safe assets and explaining their importance in financial transactions).

<sup>5</sup> *Stablecoins by Market Capitalization*, COINGECKO, <https://perma.cc/7FYS-935Z>.

<sup>6</sup> *Id.*

<sup>7</sup> See CHRISTINE DESAN, *MAKING MONEY: COIN, CURRENCY, AND THE COMING OF CAPITALISM 1* (2014).

that money must also satisfy the no-questions-asked (NQA) principle, which requires that the money be accepted in a transaction without due diligence on its value.<sup>8</sup> In other words, NQA means that both parties to a transaction must agree that the money be accepted at par—a ten-dollar bill should be accepted as being worth ten dollars, not a penny less. Achieving the characteristic of NQA has historically been very hard.<sup>9</sup> It is this NQA property that allows money to have a convenience yield—a return that is all, or in part, nonpecuniary. For instance, individuals carry around cash even though it does not pay interest because it has a convenience yield.<sup>10</sup>

The most economically efficient forms of money are ones that maintain a uniform price at par, thereby enhancing their convenience yield. However, if the price is to stay fixed and not vary (as other prices usually do in response to changes in demand), then it is the quantity that must sometimes adjust. During times of heightened economic uncertainty, the quantity can adjust very quickly to zero in a bank run, a situation in which the backing of the money becomes suspect. Stablecoin issuers are vulnerable to these bank runs, which can spill over into the broader economy.

The rest of this Article is organized as follows: Part I provides a detailed definition of stablecoins and highlights key market developments over the past few years. It addresses the fundamental question: What exactly are stablecoin issuers? (Answer: unregulated banks.) It also describes why stablecoins do not neatly fit into the existing legal framework.

Part II begins the review of financial history by focusing on money market funds and the trajectory of financial history since they were deemed to not be banks by the Department of Justice. Part III goes back further in time and describes the U.S. Free Banking Era, the consequences of porous regulation, and the eventual demise of the system via the National Bank Act of

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<sup>8</sup> The NQA principle was expressed by Bengt Holmström, *Understanding the Role of Debt in the Financial System* (Bank for Int'l Settlements, Working Paper No. 479, 2015), <https://perma.cc/QEA6-MNPZ>.

<sup>9</sup> See, e.g., Gary Gorton, *The History and Economics of Safe Assets*, 9 ANN. REV. OF ECON. 547, 549–54 (2017).

<sup>10</sup> Because of the convenience yield, banks obtain cheap funding and then lend the money out. As an illustration, suppose that banks pay 1% interest on their deposits and suppose that it would have been 3% were it not for the convenience yield. Banks lend the deposits out and receive 4%, making a profit of 3% (i.e., 4% minus 1%). That's the business of banking in a nutshell.

1863.<sup>11</sup> Importantly, we believe that the best match for the private stablecoins that circulate today is the private banknotes that circulated during the Free Banking Era.

Based on economic history and historical insights, Part IV presents interpretive, regulatory, and legislative proposals to address the NQA problem and the run risk presented by stablecoins. In general, we observe that the government has two sets of options: (1) convert private stablecoins into the equivalent of sovereign money by (a) bringing stablecoins within the insured-bank regulatory perimeter or (b) requiring stablecoins to be backed one-for-one by short-term Treasuries or reserves at the central bank; or (2) introduce a sovereign digital-money competitor in the form of a central bank digital currency.<sup>12</sup> Table 1 provides a snapshot of the options and whether each option, by itself, could mitigate run risk and achieve NQA.

TABLE 1: OPTIONS TO ADDRESS STABLECOINS

Options	Eliminate Runs?	Achieve NQA?
Status quo (i.e., do nothing)	No	No
Implement bank-like regulations on stablecoin issuers, but no insurance	No	No
Issue stablecoins from within the insured-bank regulatory perimeter	Yes	Yes
Require stablecoins to be backed one-for-one by Treasuries or central bank reserves	Yes	Yes
Replace stablecoins with a central bank digital currency	Yes	Yes

In Table 1, the last three options would produce equivalent results in that they would allow stablecoins to satisfy the NQA

<sup>11</sup> Act of Feb. 25, 1863, ch. 58, 12 Stat. 665 (repealed 1864, current version in scattered sections of 12 U.S.C.); *cf.* Act of June 3, 1864, ch. 106, 13 Stat. 99; Act of Mar. 3, 1865, ch. 78, 13 Stat. 484; Act of July 13, 1866, ch. 184, 14 Stat. 146.

<sup>12</sup> For a comprehensive discussion on the differences between “private money” and “sovereign money,” see MORGAN RICKS, *THE MONEY PROBLEM: RETHINKING FINANCIAL REGULATION* 8–12 (2016).

principle.<sup>13</sup> Indeed, issuing stablecoins through insured banks or requiring them to be backed one-for-one either by central bank reserves or Treasuries would essentially transform stablecoins into sovereign money. These options also have historical or present-day analogues. For instance, a requirement that stablecoins be backed by Treasuries would be similar to the requirement on national banknotes in the nineteenth century and analogous to the business model employed by today's government money market funds; requiring one-for-one backing by central bank reserves would be tantamount to creating a narrow bank; and replacing stablecoins with a sovereign digital currency would follow the path of the National Bank Act of 1863.<sup>14</sup>

However, there are potential downsides to each option, discussed later in Part IV. As a preview, the option of requiring stablecoins to be backed one-for-one by Treasuries essentially ties stablecoins to a limited form of money at a fixed ratio. (Treasuries have a convenience yield and are a form of money used for storing value safely.) This option was tried during the National Banking Era when the government required national banknotes to be backed by Treasuries. There was an underissuance of national banknotes because banks did not want to use their limited Treasuries to back national banknotes. As a result, demand deposits grew seven times faster in the United States than in other developed countries. Demand deposits then became the shadow banking system of their time, and there were runs on demand deposits for decades.<sup>15</sup>

Finally, this Article notes the urgency of addressing the unregulated banks that are stablecoin issuers. Some policymakers may view stablecoins as an up-and-coming financial innovation that does not currently pose any systemic risk and therefore believe that the best strategy is to wait to see how things play out. That would be a terrible mistake. If policymakers wait a decade, stablecoins might become a multitrillion-dollar industry—too big

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<sup>13</sup> In November 2021, the President's Working Group published a report on stablecoins that agreed with the position that stablecoin issuers are essentially unregulated banks. The President's Working Group thus recommended legislation requiring "stablecoin issuers to be insured depository institutions, which are subject to appropriate supervision and regulation, at the depository institution and the holding company level." See President's Working Grp. on Fin. Mkts., the Fed. Deposit Ins. Corp. & the Off. of the Comptroller of the Currency, *Report on Stablecoins* (Nov. 2021), <https://perma.cc/S967-GE86>.

<sup>14</sup> 12 Stat. 665 (1863).

<sup>15</sup> See Gary Gorton, Toomas Laarits & Tyler Muir, *Mobile Collateral Versus Immobile Collateral*, 54 J. MONEY, CREDIT & BANKING 1673, 1697–99 (2022).

to fail—and the government will have to step in with a rescue package whenever there’s a financial panic.<sup>16</sup> Policymakers should learn from history and not make the same mistakes again.

## I. STABLECOINS IN THE TWENTY-FIRST CENTURY

Part I provides a technical definition of stablecoins and discusses whether they qualify as “money.” This Article argues that, because of credibility issues with respect to their backing, stablecoins are not yet money because they do not satisfy the NQA principle and so cannot be efficiently used as a medium of exchange.

### A. What Are Stablecoins?

Stablecoins are a digital form of circulating private money where each coin is supposed to be backed with safe assets.<sup>17</sup> Individuals can buy stablecoins and, for each dollar given to the stablecoin issuer, buyers receive that number of stablecoins in exchange. Supposedly, holders of stablecoins can redeem coins at par and at will for cash, just like demand deposits and money market funds. To date, market adoption of stablecoins as money has been limited, but it is growing at an incredible pace. The market capitalization of Tether has increased by a factor of seventeen since February 2020.<sup>18</sup> Moreover, stablecoin initiatives backed by large technology companies and financial institutions have the potential for even greater adoption.<sup>19</sup>

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<sup>16</sup> See generally Mark E. Van Der Weide & Jeffery Y. Zhang, *Tale of the Tape: Lessons from the 2008 and 2020 Financial Crises*, 26 STAN. J.L., BUS. & FIN. 413 (2021) (discussing the policy response to recent financial panics in markets for cash-like assets).

<sup>17</sup> We do not discuss “algorithmic stablecoins” because, despite their name, they are a subset of fiat cryptocurrencies. Algorithmic stablecoins work something like this: There are two coins, call them Terra and Luna. If Terra were trading at \$1.50, a trader holding Luna could “burn” the Luna worth \$1.00 by converting it into Terra, immediately sell its Terra, and pocket the \$0.50 difference. As more holders do the same, more Luna would be burned, making the remaining Luna supply more valuable until Terra and Luna were back to a one-to-one ratio. This mechanical arbitrage trade was designed to keep the two tokens equally scarce and limit oversupply or undersupply. To incentivize traders to burn Luna to create Terra, Terra allowed owners to stake their Terra holdings in exchange for an interest yield (payable in Terra). Of course, neither Terra nor Luna is worth anything in practice. Hence, they are a subset of fiat cryptocurrency. In our discussions of stablecoins, we are concerned with those that are backed by actual cash and safe assets.

<sup>18</sup> In February 2020, Tether’s market cap was approximately \$4.6 billion. At year-end 2021, its market cap was approximately \$78.3 billion. See *Tether*, COINMARKETCAP, <https://perma.cc/4V4E-PJ7Q>.

<sup>19</sup> See, e.g., Ryan Browne, *Facebook-Backed Diem Aims to Launch Digital Currency Pilot Later This Year*, CNBC (Apr. 21, 2021), <https://perma.cc/3Y3R-244V>.

Stablecoins are distinct from fiat cryptocurrencies like Bitcoin because stablecoin issuers attempt to keep their prices at par. Fiat cryptocurrencies have very volatile prices—capable of rising and falling by double-digit percentages in a matter of weeks or months. For instance, the price of Bitcoin skyrocketed to around \$65,000 per coin in April 2021 before falling to \$35,000 per coin the next month.<sup>20</sup>

Stablecoin issuers appear to understand that they have the same problem that all banks inherently have: What exactly is the backing for their money? If coin holders stop perceiving stablecoins as safe and grow suspicious about their backing, then they may be inclined to sell their coins en masse, creating a run on the issuers.<sup>21</sup> With respect to demand deposits, this problem was solved with federal deposit insurance.<sup>22</sup>

Stablecoin issuers try to convince holders of their coins that the coins are backed by reliable assets. It seems that most issuers provide monthly accounting reports. Paxos, for example, “has engaged Withum, a nationally top-ranking auditing firm, to independently verify at specific points in time that the entire supply of [Pax Dollar] tokens is consistent with USD in reserve accounts at U.S. banks held and managed by Paxos.”<sup>23</sup> Withum performs monthly attestations of these accounts using standards established by the American Institute of Certified Public Accountants. Every attestation report that has been published since the launch of Pax Dollar can be viewed on the Paxos website.<sup>24</sup>

Circle, the issuer of USD Coin (USDC), offers similar assurances. Indeed, the March 2021 Grant Thornton Report asserted: “US Dollars held in custody accounts are at least equal or greater than the USDC tokens outstanding at the Report Date and

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<sup>20</sup> See *Bitcoin Price Series*, COINDESK, <https://perma.cc/R5KX-ED6C>.

<sup>21</sup> The first cryptocurrency bank run has already occurred. Iron Titanium token (TITAN) dropped from an all-time high of over \$64 to \$0 in less than twenty-four hours after a massive selloff. The issuer of TITAN said: “We never thought it would happen, but it just did. We just experienced the world’s first large-scale crypto bank run.” *Iron Finance Post-Mortem 17 June 2021*, MEDIUM (June 17, 2021), <https://perma.cc/EB3D-PFQE>.

<sup>22</sup> See GARY B. GORTON, MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON’T SEE THEM COMING 25–28 (2012). The wholesale deposit market, which is not insured, largely takes the form of sale and repurchase agreements, which are collateralized with bonds as a substitute for government insurance.

<sup>23</sup> *Monthly Attestation Reports*, PAXOS, <https://perma.cc/27EK-ZLT6>.

<sup>24</sup> *Id.* Pax Dollar (USDP) was originally named Paxos Standard (PAX) but was re-named in 2021.



Time.”<sup>25</sup> However, Circle recently disclosed that only 61% of its stablecoins are backed by cash and cash equivalents (i.e., that USDC tokens are not backed one-for-one with U.S. dollars (USD)).<sup>26</sup>

Other stablecoin issuers have been less clear about their holdings. New York State Attorney General Letitia James sued Bitfinex and Tether, both owned by Hong Kong–based iFinex, asserting that “Tether’s claims that its virtual currency was fully backed by U.S. dollars at all times was a lie. These companies obscured the true risk investors faced and were operated by unlicensed and unregulated individuals and entities dealing in the darkest corners of the financial system.”<sup>27</sup> These entities agreed to pay \$18.5 million. In the settlement, Tether agreed to the following:

Publication of Tether’s Reserves: On at least a quarterly basis for a period of two (2) years following the effective date of this Settlement Agreement, Tether will publish the categories of assets backing tether (e.g., cash, loans, securities, etc.), specifying the percentages of each such category, and specifying whether any such category constituting a loan or receivable or similar is to an affiliated entity, in a form substantially similar to that previously presented to the [Office of the Attorney General of the State of New York].<sup>28</sup>

Tether then released one page with two pie charts showing backing of only 3.87% cash and 2.94% Treasury bills.<sup>29</sup> Tether was roughly two-thirds backed by commercial paper.<sup>30</sup>

## B. Are Stablecoins “Money”?

Money has three important properties. It must be a unit of account, a store of value, and a medium of exchange.<sup>31</sup> An

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<sup>25</sup> *Independent Accountant’s Report*, GRANT THORNTON LLP 1 (May 24, 2021), <https://perma.cc/BJM8-4H3E>; see also Siddharth Venkataramakrishnan, *Circle Listing Will Test Top Stablecoin’s Transparency over Reserves*, FIN. TIMES (July 9, 2021), <https://www.ft.com/content/7676451f-23a9-42eb-a179-c3ebbcfc0bff>.

<sup>26</sup> *Independent Accountant’s Report*, GRANT THORNTON LLP 4 (July 16, 2021), <https://perma.cc/GWY8-RDD9>.

<sup>27</sup> *Attorney General James Ends Virtual Currency Trading Platform Bitfinex’s Illegal Activities in New York*, OFF. N.Y. STATE ATT’Y GEN. (Feb. 23, 2021), <https://perma.cc/B3KL-LP2P>.

<sup>28</sup> *Settlement Agreement in the Matter of iFINEX, Inc., et al.*, ATT’Y GEN. OF THE STATE OF N.Y. INV. PROT. BUREAU (Feb. 2021), <https://perma.cc/E8N5-WR76>.

<sup>29</sup> *Reserves Breakdown at March 31, 2021*, TETHER, <https://perma.cc/4E2L-CVV5>.

<sup>30</sup> *Id.*

<sup>31</sup> See Desan, *supra* note 7.

instrument is a unit of account if it can be used as a standardized benchmark, that is, a yardstick for measuring the relative value of goods and services. In theory, any asset can be a unit of account. Of course, the reason we do not use apples or oranges as money is because they do not store value well over time. They deteriorate quickly. Thus, money should be a stable store of value. Finally, an instrument is a reliable medium of exchange if it is accepted within a society as an instrument for buying both goods and services.

But it cannot just be assumed that an object will be used as a medium of exchange. For that to happen, the object must satisfy the NQA principle. Imagine attempting to purchase goods and services, or enter into contractual arrangements, when the value of the medium of exchange fluctuates because parties are differentially informed about its value.<sup>32</sup> Engaging in such transactions would be incredibly difficult. Private producers of money therefore try to design an instrument that is information insensitive: no party to a transaction would engage in due diligence on its value because doing so would be too expensive. And because all parties to the transaction know this, they accept the instrument at par.

If the price of privately produced money trades at par and does not fluctuate, the money is more immune to the effects of uncertainty caused by potential losses to insiders when transacting. Professors Tri Vi Dang, Gary Gorton, Bengt Holmström, and Guillermo Ordoñez have argued that this can be accomplished if the price of the debt does not change.<sup>33</sup> And this is best accomplished by backing the debt with debt—for example, by backing private banknotes with state bonds, by backing demand deposits with portfolios of loans, or by backing sale and repurchase agreements (repos) with specific bonds. Debt-on-debt arrangements produce optimally information-insensitive debt.<sup>34</sup>

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<sup>32</sup> The lack of a stable medium of exchange is not a new phenomenon. At various points, people have had trouble discerning the correct value of gold coins. See Gorton, *supra* note 9, at 550.

<sup>33</sup> See Tri Vi Dang, Gary Gorton & Bengt Holmström, *Ignorance, Debt, and Financial Crises*, Yale School of Management Working Paper.

<sup>34</sup> Tri Vi Dang, Gary Gorton & Bengt Holmström, *Ignorance, Debt and Financial Crises* 29, 35–36 (Apr. 2015) (unpublished manuscript) (available at <https://perma.cc/9XNU-LHWQ>). In addition, during the Free Banking Era, banks worked actively to prevent their stock prices from revealing information. See Gary Gorton, *The Development of Opacity in U.S. Banking*, 31 *YALE J. ON REG.* 825, 834–36 (2014).

In general, what should the backing debt be? Dang, Gorton, and Holmström, have shown that there are synergies between the liability side and the asset side of banks.<sup>35</sup> The asset side should consist of loans that are opaque and about which it is costly to produce information, like loans to small businesses and home mortgages. In that case, the money that these assets back becomes information insensitive.<sup>36</sup>

The financial system changes and the forms of short-term debt change. Repos, for example, grew into a large category of short-term debt over the last forty or fifty years.<sup>37</sup> When short-term debt and its collateral are not regulated, the fixed price likely will not hold. In that case, the quantities adjust—to zero in a bank run. This happened with repos during the 2008 global financial crisis.<sup>38</sup>

Stablecoin issuers therefore face a trade-off with respect to opacity and transparency. On one hand, it would be best if the backing for their stablecoins were so opaque that nobody would find it profitable to produce information about the backing assets. On the other hand, if the backing were not credible, then the market would want to produce information about the backing. Stablecoin issuers may take the view that transparency is best, because they are not regulated and cannot rely on bank examiners (and, thus, cannot be opaque).

### C. Are Stablecoins “Demand Deposits” by Law?

Could stablecoins be demand deposits? Demand deposits are private money held in accounts at commercial banks. Owners of such accounts can redeem their deposits for cash at will. For example, when someone withdraws cash from an ATM operated by Bank of America, that person is taking money from a demand deposit account at Bank of America.

By design, a stablecoin is redeemable by the holder of the stablecoin for the underlying asset. It’s an explicit (or sometimes implicit) contract between the stablecoin issuer and the stablecoin

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<sup>35</sup> See Dang et al., *supra* note 33.

<sup>36</sup> Opacity is thus a desirable feature of banks and the debt backing their money-like liabilities. It is the one case where we do not want the price to move in order to clear the market. This is why banks and money are special, why they are regulated and examined.

<sup>37</sup> See Gary Gorton, Stefan Lewellen & Andrew Metrick, *The Safe-Asset Share*, 102 AM. ECON. REV. 101, 104–05 (2012).

<sup>38</sup> See generally Gary Gorton & Andrew Metrick, *Securitized Banking and the Run on Repo*, 104 J. FIN. ECON. 425 (2012); Gary Gorton, Toomas Laarits & Andrew Metrick, *The Run on Repo and the Fed’s Response*, J. FIN. STABILITY (2020).

holder—one stablecoin for one U.S. dollar. Thus, from the perspective of economic incentives, a stablecoin is similar to a demand deposit. (Though, as we will argue in Part III, we believe that stablecoins are most similar to the banknotes that circulated during the nineteenth century.) If people give \$1,000 to a stablecoin issuer in exchange for 1,000 stablecoins, they will behave precisely as if they have \$1,000 in deposits at a bank, available for withdrawal at any time.

From the law's perspective, however, the determination isn't so certain. Based on the existing legal framework, one first must ask whether stablecoins are deposits and, if they are deposits, whether they are demand deposits.

1. Explicit debt contracts.

In order for the stablecoins to be considered a deposit—let alone a demand deposit—one must determine whether the underlying contract between the holder of stablecoins and the stablecoin issuer is an equity contract or a debt contract. The distinction between equity contracts and debt contracts arose during the 1970s, as critics of money market funds alleged that their business practice of redeeming shares for cash was essentially deposit taking and therefore a violation of the Glass-Steagall Act.<sup>39</sup>

On October 18, 1979, Morris D. Crawford, Jr.—the Chairman of the Board of the Bowery Savings Bank of New York—sent a letter to the Securities and Exchange Commission (SEC) regarding the legality of money market funds. Specifically, Crawford questioned whether money market funds violated § 21 of the Glass-Steagall Act,<sup>40</sup> which prohibited nonbank entities from taking deposits.<sup>41</sup> Crawford's concern was that redemptions offered by money market funds were essentially deposits. On October 19,

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<sup>39</sup> See, e.g., John A. Adams, *Money Market Mutual Funds: Has Glass-Steagall Been Cracked?*, 99 BANKING L.J. 4, 4 (1982) (arguing that money market funds "have circumvented the Glass-Steagall wall of separation between the business of commercial banking and the business of securities and investments"); John J. LaFalce, *Banking in the Eighties*, 37 BUS. LAW. 839, 839 (1982) (noting the rise of "direct competition with traditional depository institutions"); see also Kenneth T. Rosen & Larry Katz, *Money Market Mutual Funds: An Experiment in Ad Hoc Deregulation: A Note*, 38 J. FIN. 1011, 1015–16 (1983) (observing that money market funds arose because of deposit rate ceilings at traditional banks).

<sup>40</sup> Banking Act of 1933, ch. 89, 48 Stat. 162.

<sup>41</sup> 12 U.S.C. § 378(a)(2). As discussed later, § 21(a) of the Glass-Steagall Act is still on the books today.

1979, Crawford sent a copy of that letter to the Attorney General of the United States.

In the interpretive letter sent by the Department of Justice to the SEC,<sup>42</sup> Philip B. Heymann—the Assistant Attorney General of the Criminal Division—laid out an argument for why money market funds were not engaged in deposit taking. In particular, the Department of Justice observed that depositors are *creditors*, yet holders of money market fund shares are *owners*. The investor in a money market fund experiences capital gains and losses, and the investor’s ability to “redeem” is simply a way for the investor to transfer *ownership*. The redemption process cannot transform that investor into a creditor.

Here are the relevant excerpts from the interpretive letter:

It is patent from the quoted statutory language that a depositor is only a creditor of his depository (a debtor in the case of an authorized overdraft, which indebtedness he must liquidate by a “deposit”). It is equally patent that one who invests in a money market fund is an owner pro tanto of the fund.

Availability of particular mechanisms for an investor to transfer his ownership is a mere formality and serves in no way to alter the substance of his status as owner. As between him and the fund, the potential for capital gain or loss on his investment remains unaffected by the means he may select to realize his investment, and he is not, by his selection of the mechanism of a combined order to sell and pay over (check) to realize his investment, converted into a mere creditor of the fund with no expectation of capital gain or loss from the fund upon realization.

...

Inasmuch as investors in a money market fund are, in our view, owners of the fund and not mere depositors, we perceive no violation of section 21(a), Glass-Steagall Act, *supra*, in permitting an investor in such a fund to realize his investment by means of a check or otherwise.<sup>43</sup>

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<sup>42</sup> Letter from Phillip B. Heymann, Assistant Att’y Gen., Dept. Just. Crim. Div., to Marty Lybecker, Assoc. Dir., Sec. & Exch. Div. of Mktg. Mgmt. 3–5 (Mar. 6, 1981). The letter was addressed to Mr. Marty Lybecker, the Associate Director of the Division of Marketing Management at the Securities and Exchange Commission.

<sup>43</sup> *Id.* at 5.

The Department of Justice focused on the technical distinctions between debt and equity rather than the identical economic incentives created by redemptions. As shown in Table 2 below, many stablecoins could be deposits under the logic set forth by the Department of Justice over four decades ago, because holders of those stablecoins are *not* owners of the stablecoin issuer.<sup>44</sup> They are essentially a creditor of their depository—e.g., they have lent the issuer \$1,000 for 1,000 stablecoins.

However, based on the Department of Justice’s interpretive letter, some stablecoin issuers like Tether might be treated similarly to money market funds because their contractual relationship with stablecoin holders resembles the relationship between money market funds and their investors.<sup>45</sup> One could, however, counterargue that Tether’s contract is a debt contract even if it has certain characteristics of money market funds under the Department of Justice’s interpretive letter. For example, no holder of Tether coins has the prospect of obtaining gains directly from holding those coins, and there is nothing on Tether’s website suggesting that a holder might benefit from any gain on investments. To the extent there is such a gain, the issuer of the coin (Tether) appears to keep it.<sup>46</sup>

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<sup>44</sup> All sources corresponding to the information in Table 2 are listed in the Appendix.

<sup>45</sup> According to Tether’s online terms of service, “Tether Tokens are 100% backed by Tether’s Reserves . . . Tether reserves the right to redeem Tether Tokens by in-kind redemptions of securities and other assets held in the Reserves.” *Terms of Service*, TETHER 3 (Sept. 2, 2022), <https://perma.cc/NB8X-FVCF>. In other words, Tether is not obligated to exchange one coin for one dollar, which would be a debt contract. Instead, Tether can sell some portion of its underlying assets and give the proceeds to the coin holder when the coin holder seeks redemptions. Notably, the term “reserves,” as used by Tether, “means traditional currency and cash equivalents and, from time to time, may include other assets and receivables from loans made by Tether to third parties, *which may include affiliated entities.*” *Id.* at 1.1.32 (emphasis added).

<sup>46</sup> A holder might realize a gain from an appreciation in the secondary trading price between his purchase and sale; however, those fluctuations occur primarily because of changes in the cryptocurrency market generally, not the performance of Tether’s investments. Indeed, there are Tether futures that do not trade above \$1, a further indication that this is not an equity investment. Moreover, no holder of Tether receives any information about performance of Tether’s investments.

TABLE 2: STABLECOINS AND THEIR CONTRACTS AS OF JUNE 30, 2021

<b>Name</b>	<b>Type</b>	<b>What is the coin pegged to?</b>	<b>Market Cap</b>	<b>Contract Type</b>
<b>Tether</b>	Directly backed and redeemable	US dollar	\$62.5B	Similar to money market funds
<b>USDC</b>	Directly backed and redeemable	US dollar	\$25.4B	Debt
<b>TrueUSD</b>	Directly backed and redeemable	US dollar	\$1.4B	Debt
<b>Paxos</b>	Directly backed and redeemable	US dollar	\$780M	Debt
<b>Gemini Dollar</b>	Directly backed and redeemable	US dollar	\$226M	Debt
<b>EURSToken</b>	Directly backed <sup>47</sup>	Euro	\$107M	Debt
<b>Stably USD, formerly StableUSD (USDS)</b>	Directly backed and redeemable	US dollar	\$512K	Debt
<b>Stronghold USD</b>	Directly backed and redeemable	US dollar	N/A (Stronghold is inactive for retail investors)	Debt
<b>Facebook's Diem (formerly Libra)</b>	Directly backed and redeemable	Diem will have single currency stablecoins (backed by national currencies or government)	N/A (Not yet launched)	Debt

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<sup>47</sup> EURS is not directly redeemable through STASIS (its issuer), but it can be redeemed through other institutions and digital asset exchanges.

		securities denominated in those currencies) and multicurrency stablecoins (backed by a basket of currencies or government securities).		
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2. Without prior notice or limitation.

If certain stablecoins are legally deposits, are they demand deposits? In the 1980s, as financial innovations were sprouting up and regulatory arbitrage was increasing in frequency, the Federal Reserve attempted to expand its reach in order to regulate what it perceived as new bank-like entities operating outside of the banking regulatory perimeter.<sup>48</sup> In particular, the Board of Governors of the Federal Reserve System revised Regulation Y to expand the definition of a bank by defining demand deposits to include negotiable order of withdrawal (NOW) accounts under the logic that NOW accounts were “as a matter of practice” payable on demand.<sup>49</sup>

In 1986, the U.S. Supreme Court opined on the issue of demand deposits in *Board of Governors of the Federal Reserve System v. Dimension Financial Corp. (Dimension Financial)*.<sup>50</sup> The regulatory text in question was § 2(c) of the Bank Holding Company Act of 1956, which defined a bank as any institution “which (1) *accepts deposits that the depositor has a legal right to withdraw on demand*, and (2) engages in the business of making commercial loans.”<sup>51</sup>

The Supreme Court held that the Federal Reserve’s expanded definition of demand deposits was not an accurate or reasonable interpretation. Specifically, NOW accounts were not demand deposits due to the requirement of prior notice of

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<sup>48</sup> See Saule T. Omarova & Margaret E. 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, 153–54 (2011).

<sup>49</sup> See *id.*

<sup>50</sup> 474 U.S. 361 (1986).

<sup>51</sup> *Id.* at 363 (emphasis added) (citing 12 U.S.C. § 1841(e)).



withdrawal; that requirement impeded the depositor's "legal right" to withdraw on demand. According to the Court:

Application of this standard to the Board's interpretation of the "demand deposit" element of § 2(c) does not require extended analysis. By the 1966 amendments to § 2(c), Congress expressly limited the Act to regulation of institutions that accept deposits that "the depositor has a legal right to withdraw on demand." 12 U.S.C. § 1841(c). The Board would now define "legal right" as meaning the same as "a matter of practice." But no amount of agency expertise—however sound may be the result—can make the words "legal right" mean a right to do something "as a matter of practice." *A legal right to withdraw on demand means just that: a right to withdraw deposits without prior notice or limitation.* Institutions offering NOW accounts do not give the depositor a legal right to withdraw on demand; rather, the institution itself retains the ultimate legal right to require advance notice of withdrawal. The Board's definition of "demand deposit," therefore, is not an accurate or reasonable interpretation of § 2(c).<sup>52</sup>

If the redemption process of stablecoins were unencumbered, then one could argue that stablecoin issuers were accepting demand deposits. Table 3 below lists the major stablecoins and shows their characteristics with respect to redeemability.<sup>53</sup> For example, notice in the table that True USC has a minimum redemption of \$1,000. While this world changes quickly, it seems clear that some stablecoins do have the features of demand deposits and are trying to store their reserves in a credible way.

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<sup>52</sup> *Id.* at 368 (emphasis added) (citations omitted).

<sup>53</sup> All sources corresponding to the information in Table 3 are listed in the Appendix.

TABLE 3: STABLECOINS, REDEMPTIONS, AND FIAT MONEY, AS OF  
JUNE 30, 2021

Name	How to re-deem it?	Is there a cost to redeem?	Is there a notice period?	How are the underlying assets custodied?
<b>Tether</b>	<p>Submit a request through a Tether account.</p> <p>Tether is available to redeem in the United States in all states except New York.</p>	<p>Yes. Fiat withdrawal fee: the greater of \$1,000 or 0.1% of amount withdrawn.</p> <p>Account verification fee: \$150 in Tether tokens.</p>	<p>No. However, there may be an initial delay because Tether accounts need to be verified before redemption can occur. Verification can take days or weeks.</p>	<p>Deltec Bank &amp; Trust (Tether's bank partner in the Bahamas).</p>
<b>USD Coin (USDC)</b>	<p>Step 1: Request redemption from the issuer (minimum 100 USDC).</p> <p>Step 2: Once verified and validated, USDC tokens are "burned" (deleted from circulation).</p> <p>Step 3: Funds from underlying reserves are transferred to the customer's external bank.</p>	<p>No. However, a user's bank may charge fees when receiving the funds.</p>	<p>No. However, there is a verification period which may delay the time between requesting redemption and receiving the USD.</p>	<p>With a licensed CENTRE token-issuing member (e.g., Circle).</p>

<b>TrueUSD</b>	<p>Step 1: Input bank information into the TrustToken app and receive a unique redemption address.</p> <p>Step 2: Send TrueUSD (minimum \$1,000) to the unique redemption address.</p> <p>Step 3: TrueUSD is deleted by smart contract, and banking partners issue a wire to the user's bank account within one business day.</p>	No. However, a user may incur domestic wire fees of up to \$30 and international wire fees of up to \$100.	No.	Escrow accounts (through partnering with registered banks and fiduciaries). These partners include Alliance Trust Company of Nevada and Prime Trust (a trust company in Nevada). Banking relationships include U.S. Bank, Alliance Bank, and Mercantile Bank.
<b>Paxos</b>	<p>Step 1: Use a Paxos account (which has a unique redemption address). Send PAX to the redemption address.</p> <p>Step 2: Paxos will credit the account with USD (may take up to one business day).</p>	No. However, a user's bank or crypto asset wallet provider may charge transaction fees when receiving the funds.	No.	USD is held in Paxos Trust Company in segregated custodial accounts with U.S. banks, or is invested in debt instruments of the U.S. government.

<b>Gemini Dollar (GUSD)</b>	Sell GUSD on the Gemini platform, and USD will be credited to a Gemini account balance at time of sale.	No.	No.	State Street Bank and Trust Company. More generally, U.S. banks eligible for Federal Deposit Insurance Corporation (FDIC) “pass-through” deposit insurance coverage.
<b>EURSToken</b>	N/A  EURSToken cannot be directly redeemed from STASIS (its issuer) but can be exchanged for fiat euros through other institutions (Globitex, Ex-ante).	N/A	N/A	Various partner institutions, including EXT Ltd (company licensed by Cyprus SEC), XNT Ltd (company licensed by MFSA, Malta), UAB NexPay (electronic money institution, authorized by Central Bank of Lithuania).
<b>Stably USD, formerly StableUSD (USDS)</b>	Redeem by generating a personalized deposit address and sending USDS to that deposit address (minimum \$50). USD will be wired to the user’s bank account.	No. However, a user’s bank may charge wire fees for receiving the funds.	No.	FDIC-insured escrow accounts managed by Prime Trust (a trust company in Nevada).

<b>Stronghold USD</b>	<b>Redeem through Stronghold’s user interface. A user can initiate a withdrawal request and get USD through wire transfer or ACH payment, typically within the same day.</b>	<b>No. However, a user’s bank may charge fees.</b>	<b>No.</b>	<b>Reserves held in state-chartered trust company, Prime Trust (a trust company in Nevada). Prime Trust deposits the cash at FDIC-insured banks.</b>
<b>Facebook’s Diem (formerly Libra)</b>	Redeem through Designated Dealers (Designated Dealers will be “well-capitalized financial institutions that will have the right to purchase Diem coins”).	Unclear.  The Designated Dealers may charge early redemption haircuts (fee for instant redemption) in times of illiquidity. The Designated Dealers may also have transaction fees, but they are not yet listed out.	Unclear.  The Designated Dealers may have redemption stays (delayed redemption) in times of illiquidity.	Assets held in reserve, which will be held in a geographically distributed network of well-capitalized banks.

#### D. Are Stablecoin Issuers “Banks” by Law?

Stablecoin issuers are essentially unregulated banks. What is a bank? Today, banks are private financial institutions that engage in three primary business lines: (1) deposit taking,

(2) commercial lending, and (3) payments.<sup>54</sup> For example, Wells Fargo accepts deposits from customers, issues loans to businesses, and facilitates payments.

The definition of a bank from a purely economics perspective is much simpler: an entity is a bank if and only if it engages in the business of issuing short-term debt like demand deposits.<sup>55</sup> In other words, a bank is a firm that issues short-term debt, regardless of whether it is recognized by the government as a bank and regardless of whether the redemption contract is explicit or implicit. To say this another way, a bank is a production function and its output is short-term debt, just as the output of Ford is cars. The short-term debt need not be demandable, but it must be short-term. Examples include repos, which largely mature overnight, as well as commercial paper, which mostly matures in one to four days.

The existing regulatory framework does not share the same view. Consider the following statutory example. For purposes of the Bank Holding Company Act, an institution is considered a bank if it is either (1) an FDIC-insured bank or (2) an institution that accepts demand deposits and makes commercial loans.<sup>56</sup> It's clear that stablecoin issuers are not FDIC-insured banks, so the first prong is unsatisfied.

Regarding the second prong, one could argue that many stablecoins are demand deposits if they are debt contracts and can be redeemed without prior notice or limitation. What about commercial loans? Recall the Supreme Court's decision in *Dimension Financial*. At controversy in that case was not only the Federal Reserve's attempted expansion of demand deposits but also the attempted expansion of commercial loans. In particular, the Federal Reserve wished to scope in "the purchase of retail installment loans or commercial paper, certificates of deposit, bankers' acceptances, and similar money market instruments."<sup>57</sup>

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<sup>54</sup> See, Dan Awrey, *Unbundling Banking, Money, and Payments* 8 (Eur. Corp. Governance Inst., Working Paper No. 565/2021, Feb. 2021); see also Michael Hsu, *Modernizing the Financial Regulatory Perimeter, Remarks at the Federal Reserve Bank of Philadelphia's Fifth Annual Fintech Conference* 2 (Nov. 16, 2021) ("Banking consists of three bundled activities: taking deposits, making loans, and facilitating payments.").

<sup>55</sup> See generally Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401 (1983); Gary Gorton & George Pennacchi, *Financial Intermediaries and Liquidity Creation*, 45 J. FIN. 49 (1990); see also Dang, Gorton, Holmström & Ordoñez, *supra* note 33, at 1005.

<sup>56</sup> 12 U.S.C. § 1841(c); see also Omarova & Tahyar, *supra* note 48, at 156–57.

<sup>57</sup> *Dimension Financial*, 474 U.S. at 363 (quoting 12 C.F.R. § 225.2(a)(1) (1985)).

The Court adopted a very narrow view of the term “commercial loan,” stating that the term is used in the financial community to describe the direct loan from a bank to a business customer. Specifically:

As the Board’s characterization of these transactions as “commercial loan substitutes” suggests, however, money market transactions do not fall within the commonly accepted definition of “commercial loans.” The term “commercial loan” is used in the financial community to describe the direct loan from a bank to a business customer for the purpose of providing funds needed by the customer in its business. The term does not apply to, indeed is used to distinguish, extensions of credit in the open market that do not involve close borrower-lender relationships. These latter money market transactions undoubtedly involve the indirect extension of credit to commercial entities but, because they do not entail the face-to-face negotiation of credit between borrower and lender, are not “commercial loans.”<sup>58</sup>

Given the narrow scope applied by the Supreme Court, stablecoin issuers would not be considered to provide commercial loans. Thus, stablecoin issuers would not be considered banks under the Bank Holding Company Act.

Statutory definitions show only one aspect of the framework. In practice, a bank is a firm that (1) has a charter from a proper federal government authority (e.g., the Office of the Comptroller of the Currency (OCC)) or a proper state government authority (e.g., the State of Connecticut Department of Banking or the New York State Department of Financial Services) and (2) has a master account at the Federal Reserve.<sup>59</sup> A master account must be approved by one of the twelve Federal Reserve Banks. Having one is necessary because the chartered institution needs to have direct access to the Federal Reserve’s payment systems, including Fedwire, in order to settle transactions with other banks using

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<sup>58</sup> *Id.* at 369–70 (emphasis added) (citations omitted).

<sup>59</sup> See *Master Account*, FED. RSRV., <https://perma.cc/5HXN-SYAX>:

A Master Account is the record of financial rights and obligations of an Account Holder and the Administrative Reserve Bank (or any other Reserve Bank maintaining a Master Account identified in Operating Circular 1) with respect to each other, where opening, intraday and closing balances are determined. A Master Account is identified by a Primary nine-digit Routing Transit Number (RTN).

central bank money.<sup>60</sup> As a practical matter, it is not possible to be a bank without a master account.<sup>61</sup>

Could a stablecoin issuer become a bank in practice? We first consider whether an issuer could obtain a charter from the OCC, which is not constrained by the National Bank Act's statutory definition of *bank*. Instead, the OCC is authorized to charter an entity as a national bank if it is engaged in the "business of banking."<sup>62</sup> In 2003, the OCC promulgated a rule that set forth its authority to grant a bank charter to any entity engaged in at least one of the three core banking functions: receiving deposits, paying checks, or lending money.<sup>63</sup>

Financial technology (FinTech) firms do not want to be roped into the regulatory perimeter for deposit-taking institutions because of the corresponding regulatory and supervisory burdens.<sup>64</sup> This is why the OCC announced in 2018 that it would start accepting applications from FinTech firms for special-purpose national bank (SPNB) charters that authorize one of the two core banking activities of paying checks or lending money but *not* deposit taking.<sup>65</sup> The SPNB charter would give FinTech applicants the opportunity to be regulated and supervised by a single federal

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<sup>60</sup> See Randall Guynn, Margaret Tahyar, Jai Massari, Gabriel Rosenberg & Andrew Samuel, *Davis Polk Discusses Who Can Have a Federal Reserve Master Account*, THE CLS BLUE SKY BLOG (May 12, 2021), <https://perma.cc/CV7C-PFKH>.

<sup>61</sup> Kraken, a special-purpose depository institution with a Wyoming charter, has stated that one of its main purposes in getting a bank charter was so that it could get a Federal Reserve master account. See Patrick J. Boot & Marysia Laskowski, *The First Cryptocurrency Bank*, NAT'L L. REV. (Sept. 22, 2020), <https://perma.cc/V4GX-MXUT>.

<sup>62</sup> 12 U.S.C. § 27(a).

<sup>63</sup> 12 C.F.R. § 5.20(e)(1); see also *Rules, Policies, and Procedures for Corporate Activities; Bank Activities and Operations; Real Estate Lending and Appraisals*, 68 Fed. Reg. 70,122, 70,126 (Dec. 17, 2003) (codified at 12 C.F.R. pts. 3, 5, 6, 7, 9, 28, and 34). Typically, the OCC grants full-service charters to firms that conduct all three functions.

<sup>64</sup> FinTech firms have been characterized

as encompassing a wide range of private and regulatory innovations that have become possible through the rapid decline in the cost of computing, accompanied by the widespread availability of reliable, high-speed connectivity (typically over the internet), and an explosion of newly collected data about a broad swath of personal and commercial characteristics and behaviors.

See Howell E. Jackson, *The Nature of the Fintech Firm*, 61 WASH. U. J.L. & POL'Y 9, 10–11 (2020).

<sup>65</sup> *OCC Begins Accepting National Bank Charter Applications from Financial Technology Companies*, OCC (July 31, 2018), <https://perma.cc/8MNX-AZPQ>; see also Howell E. Jackson, Margaret E. Tahyar & Carol Rodrigues, *Fintech Charters*, HARV. L. SCH., 4 (May 2020), <https://perma.cc/45H2-5HSM>.



agency<sup>66</sup> and to apply for a master account at the Federal Reserve.<sup>67</sup>

Former Comptroller Brian Brooks claimed that the OCC had the authority to issue such charters to nondepository institutions involved in payments and lending, but the OCC lost an initial court challenge in 2019 when the New York State Department of Financial Services (DFS) challenged the OCC's authority.<sup>68</sup> In 2021, however, the U.S. Court of Appeals for the Second Circuit overruled the lower court's decision on procedural grounds, noting that, because the OCC has not given any applicant an SPNB charter, the DFS's challenge was constitutionally unripe.<sup>69</sup>

While the OCC's SPNB charter was being litigated, the OCC issued an interpretative letter that allows national banks to hold stablecoin reserves as a service to bank customers.<sup>70</sup> In addition, the OCC granted other charters to FinTech companies such as Varo Bank<sup>71</sup> (full-service national bank charter) and Anchorage

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<sup>66</sup> Having a national charter from the OCC would allow the chartered entity to take advantage of preemption of certain state laws. For example, a national bank charter would allow a firm to operate across the country without having to comply with state-by-state laws limiting interest rates. See Jay B. Sykes, *Federal Preemption in the Dual Banking System: An Overview and Issues for the 116th Congress*, CONG. RSCH. SERV. 6–7 (May 17, 2019), <https://perma.cc/K9FV-N9A3>.

<sup>67</sup> According to the OCC:

A special purpose national bank is a national bank that engages in a limited range of banking or fiduciary activities, targets a limited customer base, incorporates nontraditional elements, or has a narrowly targeted business plan. Special purpose national banks include those banks whose operations are limited to certain activities, such as credit card operations, fiduciary activities, community development, or cash management activities. Special purpose national banks also include national banks that engage in limited banking activities, including one or more of the core banking functions of taking deposits, paying checks, or lending money.

*Considering Charter Applications from Financial Technology Companies*, OCC (July 2018), <https://perma.cc/Z3SF-K96W>.

<sup>68</sup> See *Lacewell v. Off. of the Comptroller of the Currency*, 2019 WL 6334895, at \*1 (S.D.N.Y. Oct. 21, 2019); see also Lev Menand & Morgan Ricks, *Policy Spotlight: Lacewell v. OCC, JUST MONEY*, <https://perma.cc/867R-GNUZ>.

<sup>69</sup> *Lacewell v. Off. of the Comptroller of the Currency*, 999 F.3d 130, 140 (2d Cir. 2021).

<sup>70</sup> See Jonathan V. Gould, *OCC Chief Counsel's Interpretation on National Bank and Federal Savings Association Authority to Hold Stablecoin Reserves*, OCC (Oct. 2020), <https://perma.cc/2QVN-UVW3>. The letter addresses only stablecoins that are "backed on a 1:1 basis by a single fiat currency where the bank verifies at least daily that reserve account balances are always equal to or greater than the number of the issuer's outstanding stablecoins." *Id.*

<sup>71</sup> *Acting Comptroller of the Currency Presents Varo Bank, N.A. Its Charter*, OCC (July 31, 2020), <https://perma.cc/36BH-XE46>.

Digital Bank (national trust bank charter).<sup>72</sup> To be sure, Acting Comptroller Michael Hsu recently noted that the OCC is conducting a review of the agency's recent chartering decisions and interpretive letters.<sup>73</sup>

States have started catering to FinTech firms as well. The state of Wyoming established a special purpose depository institution (SPDI) charter aimed at cryptocurrency businesses seeking access to Federal Reserve services and recognition as "qualified custodians" for purposes of the SEC's custody rule. The SPDI charter permits deposit taking but prohibits commercial lending, which is intended to allow the SPDI to seek Federal Reserve services without the SPDI's parent being considered a bank holding company. Under Wyoming's SPDI charter, the Wyoming Division of Banking would be the chartered bank's primary regulator.<sup>74</sup> Kraken became the first cryptocurrency company to receive an SPDI bank charter.

Following in the footsteps of Wyoming, the state of Nebraska recently passed a law that created a state bank charter for depository institutions dealing with cryptocurrencies. These new state-chartered digital-asset banks would be allowed to apply for access to the Federal Reserve's payments system.<sup>75</sup> The state of Texas is now jumping into the race as well. The Texas Department of Banking recently stated that its state-chartered banks may store cryptocurrencies for their clients.<sup>76</sup>

In this vortex of innovation, interest in gaining access to a Federal Reserve master account is growing among FinTech companies. However, Reserve Banks decide which institutions receive master accounts, regardless of whether the institution has a charter from the OCC or from a state like Wyoming or

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<sup>72</sup> *OCC Conditionally Approves Conversion of Anchorage Digital Bank*, OCC (Jan. 13, 2021), <https://perma.cc/DB9L-B8A3>. Anchorage deals solely with cryptocurrencies. For example, through its partnership with BankProv, Anchorage provides its clients with a line of credit that is secured with cryptocurrencies such as Bitcoin and Ethereum. This gives holders of those cryptocurrencies liquidity without the need to sell them outright. See Martin Young, *Digital Bank Anchorage Offers Ethereum-Backed Loans to Institutions*, COINTELEGRAPH (June 4, 2021), <https://perma.cc/X7FG-7GP3>.

<sup>73</sup> *OCC's Hsu: Recent Approvals of Crypto Charters 'On the Table' for Review*, ABA BANKING J. (June 2, 2021), <https://perma.cc/VF65-HSG5>.

<sup>74</sup> Wyoming first authorized SPDI charters with the enactment of House Bill 74 in 2019, which became the Special Purpose Depository Institutions Act, Wyo. Stat. § 13-12-101–26. H.B. 74, 65th Leg., 2019 Gen. Sess. (Wyo. 2019) (enacted).

<sup>75</sup> Nate DiCamillo, *Nebraska Legislature Approves Framework for Digital Asset Banks*, COINDESK (May 21, 2021), <https://perma.cc/FUL3-KGQC>.

<sup>76</sup> *Authority of Texas State-Chartered Banks to Provide Virtual Currency Custody Services to Customers*, TEX. DEP'T BANKING (June 10, 2021), <https://perma.cc/2ZDE-U7BV>.

Nebraska.<sup>77</sup> Thus, in a practical sense, stablecoin issuers cannot become banks simply by receiving a charter from the OCC or from a state banking authority.<sup>78</sup>

## II. MONEY MARKET FUNDS IN THE TWENTIETH CENTURY

Suffice it to say, policymakers who were considering whether to regulate money market funds as banks in the 1970s did not foresee the need for future government bailouts. Part II provides a historical overview of money market funds and the consequences of labeling them as securities when it was obvious that their economic content was equivalent to a demand deposit. If there was any confusion about this point, the runs on money market funds in 2008 and in March 2020 provide further evidence.

### A. Arbitrage of Regulation Q

Money market funds arose as a creature of regulatory arbitrage. The Glass-Steagall Act of 1933 prohibited the payment of interest on demand deposits and authorized the Federal Reserve to set maximum interest rates paid by commercial banks on savings deposits.<sup>79</sup> Following the instruction set forth by Congress, the Federal Reserve soon after implemented Regulation Q.<sup>80</sup>

Up through the mid-1960s, Regulation Q was not binding. Interest rate caps were set above market interest rates and above the average interest rates paid on savings deposits by member banks.<sup>81</sup> Then the 1970s arrived. Inflation, as measured by the Consumer Price Index, hit double digits as energy shocks roiled the United States.<sup>82</sup> With elevated inflation for the foreseeable

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<sup>77</sup> See, e.g., Guynn et al., *supra* note 60.

<sup>78</sup> Another issue is raised here: the interoperability of FinTech firms and the Federal Reserve is not going to go away. An analogous issue concerns clearing agency licenses, which allow firms to engage in security clearing. Under § 17A of the Securities Exchange Act of 1934 and Rule 17Ab2-1, an entity wishing to clear securities must register with the SEC. *Clearing Agencies*, SEC (Feb. 1, 2021), <https://perma.cc/S2SB-XTHJ>. Notably, Paxos (a FinTech firm) is applying for such a license. *Cryptocurrency Firm Paxos to Apply for Clearing Agency License*, REUTERS (Apr. 6, 2021), <https://perma.cc/3W2J-RL9M>.

<sup>79</sup> R. Alton Gilbert, *Requiem for Regulation Q: What It Did and Why It Passed Away*, FED. RSRV. BANK ST. LOUIS (1986), <https://perma.cc/62U9-3XZW>.

<sup>80</sup> This rule was previously located at 12 C.F.R. § 217, but it was repealed by a rule effective July 21, 2011, consistent with the repeal of § 19(i) of the Federal Reserve Act by the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act). See 76 Fed. Reg. 42,015, 42,015 (July 18, 2011).

<sup>81</sup> Gilbert, *supra* note 79, at 26.

<sup>82</sup> MICHAEL D. BORDO & ATHANASIOS ORPHANIDES, *THE GREAT INFLATION: THE REBIRTH OF MODERN CENTRAL BANKING* 6–7 (2013).

future, consumers began to demand a higher return on their savings. Thus, money market funds were born—literally as a workaround to the interest rate cap set by Regulation Q.

Under a typical arrangement, “investors” would buy “shares” of money market funds, akin to “depositors” putting money into a “demand deposit.” But unlike other mutual funds, money market funds promised to maintain a stable share price of \$1.00 per share, redeemable on demand.<sup>83</sup> Thus, investors in money market funds could receive \$1.00 per share on demand plus the yield that was earned during the investment.<sup>84</sup>

### B. The 2008 Run on Money Market Funds

It’s not surprising that a financial instrument designed to perfectly mimic a demand deposit would have the same upsides and downsides as a demand deposit. When bank depositors believe that the bank is no longer able to provide a full redemption of their deposits, they cause a run on the bank with the hope of withdrawing their deposits before it’s too late. Money market funds are similarly susceptible to runs, a phenomenon known as “breaking the buck.”<sup>85</sup> When the share price of a money market fund deviates more than 0.5% from its stable \$1.00 share price, investors will no longer be able to redeem one share for one dollar—a phenomenon akin to bank depositors not being able to withdraw the full value of their deposits. Breaking the buck can unleash a market-wide panic as investors rush to sell their shares.

Such a market-wide panic occurred in 2008. Following the bankruptcy declaration of Lehman Brothers on September 15, 2008, a money market fund named the Reserve Primary Fund broke the buck on September 16, 2008, due to its exposure to debt issued by Lehman Brothers, leading many investors to pull their money out of the fund.<sup>86</sup> That same week, prime institutional money market funds experienced substantial redemptions, with

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<sup>83</sup> *Fact Sheet: Reforming Money Market Funds*, SEC (June 5, 2013), <https://perma.cc/69CE-5S2V>.

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

<sup>86</sup> *Id.*; see also Burcu Duygan-Bump, Patrick Parkinson, Eric Rosengren, Gustavo A. Suarez & Paul Willen, *How Effective Were the Federal Reserve Emergency Liquidity Facilities? Evidence from the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility*, 68 J. FIN. 715, 719 (2013).

investors withdrawing approximately \$400 billion (14% of their assets).<sup>87</sup>

Runs on money market funds can destabilize the entire short-term credit market.<sup>88</sup> During a panic, money market funds are flooded with redemption requests. But because monetary market funds invest the “deposits” like banks, they do not have enough cash on hand to meet all the redemption requests. The funds are then forced to start the process of selling their assets in illiquid markets at fire-sale prices, which has the further effect of reducing the supply of short-term credit in the economy, raising the price of short-term credit and driving down the market values of short-term debt instruments in the financial system. Panic leads to runs, which result in significant harm to credit markets and borrowers in these markets. This is precisely what occurred in September 2008.<sup>89</sup>

In order to stop the outflows from spiraling out of control and crippling the financial system, the government undertook two unprecedented emergency actions. On September 19, 2008, the Treasury Department announced a guarantee program for money market funds, analogous to providing deposit insurance in order to prevent depositors from running on a bank.<sup>90</sup> The move was stunning. According to the initial announcement:

The U.S. Treasury Department today announced the establishment of a temporary guaranty program for the U.S. money market mutual fund industry. For the next year, the U.S. Treasury will insure the holdings of any publicly offered eligible money market mutual fund – both retail and institutional – that pays a fee to participate in the program.

President George W. Bush approved the use of existing authorities by Secretary Henry M. Paulson, Jr. to make available as necessary the assets of the Exchange Stabilization Fund for up to \$50 billion to guarantee the payment in the circumstances described below.<sup>91</sup>

A week later, the Treasury Department released additional details of its guarantee program:

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<sup>87</sup> Duygan-Bump et al., *supra* note 86, at 719.

<sup>88</sup> See Van Der Weide & Zhang, *supra* note 16, at 425–29.

<sup>89</sup> *Id.*

<sup>90</sup> *Id.* at 435.

<sup>91</sup> *Treasury Announces Guaranty Program for Money Market Funds*, U.S. DEP'T OF TREASURY (Sept. 19, 2008), <https://perma.cc/MZW6-WHB6>.

All money market mutual funds that are regulated under Rule 2a-7 of the Investment Company Act of 1940, maintain a stable share price of \$1, and are publicly offered and registered with the Securities and Exchange Commission will be eligible to participate in the program. Treasury first announced this program on Friday, September 19.

The temporary guarantee program provides coverage to shareholders for amounts that they held in participating money market funds as of the close of business on September 19, 2008. The guarantee will be triggered if a participating fund's net asset value falls below \$0.995, commonly referred to as breaking the buck.<sup>92</sup>

In addition, on September 19, 2008, the Federal Reserve authorized the establishment of the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF).<sup>93</sup> Under the AMLF, the Federal Reserve provided nonrecourse loans to U.S. banking firms secured by high-quality asset-backed commercial paper purchased by the banking firms from money market funds. The AMLF helped money market funds that held asset-backed commercial paper to meet investor demands for redemptions. Without additional liquidity for money market funds, forced sales of commercial paper would have further depressed the price of short-term debt securities and further raised the price of short-term funding in the U.S. financial system.

### C. The 2020 Run on Money Market Funds

After the 2008 episode, regulators at the SEC understood the need for structural reform. In 2014, the SEC implemented reforms that required prime institutional money market funds to "float their NAV" (i.e., no longer maintain a stable price) and provide nongovernment money market funds with new tools like liquidity fees and redemption gates to address runs.<sup>94</sup> The structural reforms took effect on October 14, 2016.<sup>95</sup>

However, these structural reforms did not address the underlying issue: redemptions are essentially demand deposits, and, as demonstrated by history, runs on deposits did not stop until FDIC

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<sup>92</sup> *Treasury Announces Temporary Guarantee Program for Money Market Funds*, U.S. DEPT OF TREASURY (Sept. 29, 2008), <https://perma.cc/FX8V-CZBW>.

<sup>93</sup> See Van Der Weide & Zhang, *supra* note 16, at 432.

<sup>94</sup> *Money Market Funds*, SEC, <https://perma.cc/YU5Q-8XM4>.

<sup>95</sup> *Id.*

insurance was implemented.<sup>96</sup> Not surprisingly, when market volatility spiked again, investors lined up for redemptions.

In March 2020, as volatility spread through global markets because of COVID-19, investors requested substantial redemptions from prime and tax-exempt money market funds in the belief that these funds would not be able to honor their redemption requests at full value.<sup>97</sup> The Federal Reserve had to step in once again. With the approval of the Treasury Secretary, the Federal Reserve established the Money Market Mutual Fund Liquidity Facility (MMLF) on March 18, 2020 to rescue money market funds.<sup>98</sup>

Two runs in twelve years. Policymakers can learn a couple of lessons from studying money market funds. First, given the fact that stablecoin issuers are essentially taking deposits, holders of stablecoins will run when market volatility spikes. In fact, this has already occurred. Second, one way to eliminate contagion-inducing runs is to bring stablecoin issuers within the regulatory perimeter for deposit-taking institutions. As the market for stablecoins grows and become more systemically important, runs on stablecoin issuers could pose the same risk to destabilizing the financial system as runs on money market funds did in both 2008 and 2020.<sup>99</sup>

### III. STATE BANKNOTES IN THE NINETEENTH CENTURY

Today's stablecoins are most similar to the myriad banknotes that circulated in the nineteenth century. This Part therefore describes the experience of privately produced money during the Free Banking Era of the nineteenth century. There are three main takeaways from the historical experience of the United

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<sup>96</sup> See Gorton, *supra* note 22, at 25–28.

<sup>97</sup> *President's Working Group on Financial Markets Releases Report on Money Market Funds*, U.S. DEPT OF TREASURY (Dec. 22, 2020), <https://perma.cc/7R2E-J8CP>; see also Lei Li, Yi Li, Marco Macchiavelli & Xing Zhou, *Liquidity Restrictions, Runs, and Central Bank Interventions: Evidence from Money Market Funds*, 34 REV. FIN. STUDIES 5402, 5408–09 (May 2021).

<sup>98</sup> See Van Der Weide & Zhang, *supra* note 16, at 432.

<sup>99</sup> Federal Reserve Chair Jerome Powell said:

Really the question is stablecoins, and my point with stablecoins is they're like money funds, they're like bank deposits, and they're growing incredibly fast but without appropriate regulation . . . And if we're going to have something that looks just like a money-market fund or bank deposit . . . we really ought to have appropriate regulation and today we don't.

*Fed's Powell 'Legitimately Undecided' on Central Bank Digital Currency*, REUTERS (July 15, 2021), <https://perma.cc/2E9F-9V8B>.

States. First, the use of private banknotes was a failure because they did not satisfy the NQA principle and were subject to runs. Second, the U.S. government took control of the monetary system under the National Bank Act and established public banknotes. Third, the requirement to back banknotes with Treasuries had unintended consequences. Because of a shortage of Treasuries, banknotes were underissued, and another form of private money arose in the form of demand deposits. Runs on demand deposits ended only with the implementation of federal deposit insurance in 1934.

#### A. The U.S. Free Banking Era

The closest analogy to stablecoins is found in the U.S. Free Banking Era, when entry into banking was relatively easy and banks could issue their own banknotes. As shown in the table below,<sup>100</sup> starting in 1837, some states changed the way that they granted bank charters.<sup>101</sup> These states allowed free banking—that is, anyone could open a bank. However, there were rules. Banks had to back their note issuance one-for-one with state bonds that were deposited with the state treasurers. (The banks received the coupons from these bonds.) Each state specified the exact bonds that were eligible to back notes.

TABLE 4: FREE BANKING STATES AND CHARTERED BANKING STATES

Free Banking States	Year Free Banking Law Passed	States without Free Banking
Michigan	1837	Arkansas
Georgia	1838	California
New York	1838	Delaware
Alabama	1849	Kentucky
New Jersey	1850	Maine

<sup>100</sup> The information presented in this table is from Rockoff, *infra* note 105, as compiled by Rolnick and Weber, *infra* note 105.

<sup>101</sup> See generally Kenneth Ng, *Free Banking Laws and Barriers to Entry in Banking, 1838–1860*, 48 J. ECON. HIST. 877 (1988); see also Andrew Economopoulos & Heather O’Neill, *Bank Entry During the Antebellum Period*, 27 J. MONEY, CREDIT & BANKING 1071, 1073 (1995).



<b>Illinois</b>	1851	Maryland
<b>Massachusetts</b>	1851	Mississippi
<b>Ohio</b>	1851	Missouri
<b>Vermont</b>	1851	New Hampshire
<b>Connecticut</b>	1852	North Carolina
<b>Indiana</b>	1852	Oregon
<b>Tennessee</b>	1852	Rhode Island
<b>Wisconsin</b>	1852	South Carolina
<b>Florida</b>	1853	Texas
<b>Louisiana</b>	1853	Virginia
<b>Iowa</b>	1858	
<b>Minnesota</b>	1858	
<b>Pennsylvania</b>	1860	

FIGURE 1: A PRIVATE BANKNOTE REPORTER FROM 1848<sup>102</sup>

Newspaper postage only is chargeable on this sheet.



Terms.—Weekly, \$2; Semi-monthly, \$1; Monthly, 50 cents. } NEW-YORK, FEBRUARY, 1848. } Subscriptions invariably in advance.

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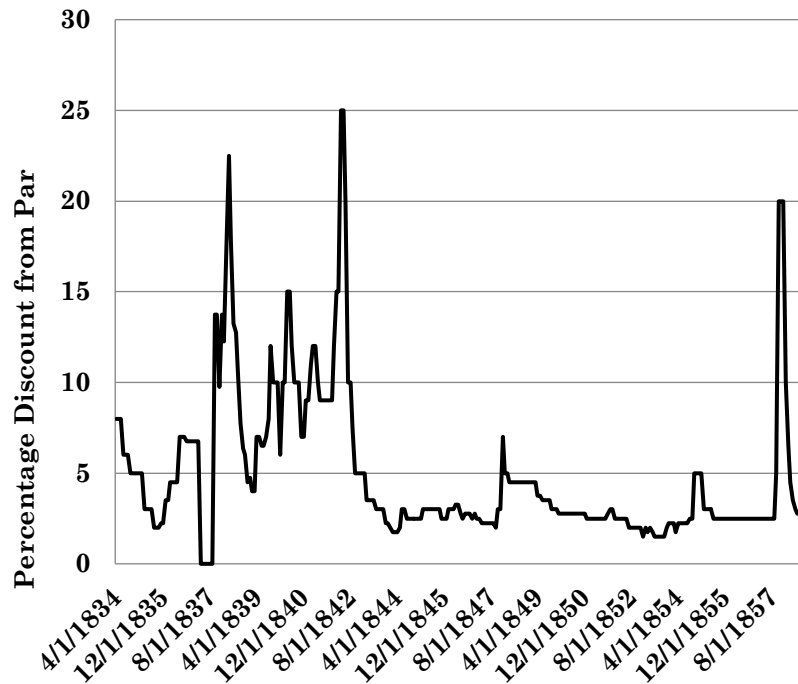
**TWEEDY & BARROWS,**  
80 Cedar-street, near Broadway.

Imaged by Heritage Auctions, HA.com

<sup>102</sup> THOMPSON'S BANK NOTE REPORTER (Oct. 1, 1848), <https://perma.cc/BLF4-2HYG>.

These private banknotes circulated as money, as the alternative was a bewildering array of different coins from around the world. But the private banknotes, whether issued by chartered banks or free banks, did not trade at par away from the issuing bank. For example, a note issued by a bank in Tennessee might circulate at a 20% discount in Philadelphia, as shown in Figure 1 below.<sup>103</sup> The discounts were published in banknote reporters, weekly newspapers that were available in all major cities (see picture above). The prices reported were secondary market prices. If a store took in notes from banks all over the country, that store would sell them to note brokers who made markets in those notes.

FIGURE 2: PLANTERS BANK OF TENNESSEE NOTE DISCOUNT IN PHILADELPHIA



For many years, the literature asserted that there were wildcat banks during this period. These were banks that either (1) did not deposit the requisite bonds, or (2) in some states,

<sup>103</sup> The data are from Gary B. Gorton & Warren E. Weber, *Quoted Discounts on State Bank Notes in Philadelphia, 1832–1858*, FED. RSRV. BANK OF MINNEAPOLIS RSCH. DEP'T (Apr. 3, 2018), <https://perma.cc/N829-BBUE>.

where bonds were valued at par and not market value, defrauded the public by issuing notes that they would never redeem in specie (i.e., gold or silver).<sup>104</sup> Counterfeiting was a big problem, but the system was not chaotic. Bank failures were not due to wildcat banking as has often been alleged.<sup>105</sup> In fact, the system functioned well from the point of view of efficient market theory.<sup>106</sup> However, while the market was an efficient market in the sense of financial economics, varying discounts made actual transactions (and legal contracting) very difficult. In other words, it was not economically efficient. There was constant haggling and arguing over the value of notes in transactions. Private banknotes were hard to use in transactions. Here's an explanation from a nineteenth century source:

It is difficult for the modern student to realize that there were hundreds of banks whose notes circulated in any given community. The "bank notes" were bits of paper recognizable as a species by shape, color, size and engraved work. Any piece of paper which had these appearances came with the prestige of money; the only thing in the shape of money to which the people were accustomed. The person to whom one of them was offered, if unskilled in trade and banking, had little choice but to take it. A merchant turned to his "Detector." He scrutinized the worn and dirty scrap for two or three minutes, regarding it as more probably "good" if it was worn and dirty than if it was clean, because those features were proof of long and successful circulation. He turned it up to the light and looked through it, because it was the custom of the banks to file the notes on slender pins which made holes through them. If there were many such holes the note had been often in bank and its genuineness was ratified. All the delay and trouble of these operations were so much deduction from the character of the notes as current cash. A community forced to

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<sup>104</sup> See Arthur J. Rolnick & Warren E. Weber, *Free Banking, Wildcat Banking, and Shinplasters*, FED. RSRV. BANK OF MINNEAPOLIS Q. REV. 13 (Fall 1982), <https://perma.cc/6TC9-44PZ>.

<sup>105</sup> See Hugh Rockoff, *The Free Banking Era: A Reexamination*, 6 J. MONEY, CREDIT & BANKING 141, 163 (1974); Arthur J. Rolnick & Warren E. Weber, *The Causes of Free Bank Failures: A Detailed Examination*, 14 J. MONETARY ECON. 267, 276–83 (1984).

<sup>106</sup> See Gary Gorton, *Pricing Free Bank Notes*, 44 J. MONETARY ECON. 33, 58–61 (1999); see also, e.g., Gary Gorton, *Reputation Formation in Early Bank Note Markets*, 104 J. POL. ECON. 346, 367–74 (1996).

do its business in that way had no money. It was deprived of the advantages of money.<sup>107</sup>

Said differently, the NQA principle was violated. Without NQA, the community had no money. Stablecoins that do not satisfy this principle will also not be able to serve as money in transactions.

## B. The National Bank Act

The National Bank Act was passed in 1863, establishing national banks in the United States.<sup>108</sup> These banks could issue national banknotes, but they had to be backed with U.S. Treasury bonds deposited with the U.S. Treasury.<sup>109</sup> Subsequent legislation imposed a prohibitively high tax on banknotes other than national banknotes.<sup>110</sup> In other words, the era of privately issued banknotes was over. For the first time in U.S. history, there was a uniform currency that satisfied the NQA principle.<sup>111</sup>

The creation of a uniform national currency was economically efficient. Professor Chenzi Xu and He Yang found that “places gaining access to the new currency experienced a shift in the composition of agricultural production from non-traded to traded goods and increased employment in trade-related professions. In addition, counties gaining access to the new stable money increased their manufacturing output by sourcing more inputs, and they innovated more.”<sup>112</sup> In fancier vernacular, the United States became an optimal currency area (OCA). According to Professors Markus Brunnermeier, Harold James, and Jean-Pierre Landau: “An OCA is typically characterised by geographic proximity and the ability of participants to dispense of the exchange rate as an

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<sup>107</sup> WILLIAM GRAHAM SUMNER, *A HISTORY OF BANKING IN THE UNITED STATES* 455 (1896).

<sup>108</sup> Awrey, *supra* note 54, at 12.

<sup>109</sup> *Founding of the OCC & the National Banking System*, OCC, <https://perma.cc/WYA9-SN9U>.

<sup>110</sup> Gary B. Gorton & Jeffery Zhang, *Protecting the Sovereign’s Money Monopoly* 18 (L. & Econ. Working Papers, U. Mich. L. Sch., Working Paper No. 228, 2022).

<sup>111</sup> This is essentially the route that the People’s Bank of China has taken with respect to cryptocurrencies: they are all prohibited in favor of the PBOC’s central bank digital currency. See Omkar Godbole, *China Says Banks Must Block Crypto Transactions; Market Falls*, COINDESK (June 21, 2021), <https://perma.cc/5MG2-R99B>.

<sup>112</sup> See Chenzi Xu & He Yang, *Real Effects of Stabilizing Private Money Creation* i (Stan. Graduate Sch. Bus., Working Paper, Feb. 2021). See also generally Matthew Jaremski, *National Banking’s Role in U.S. Industrialization, 1850–1900*, 74 J. ECON. HIST. 109 (2014).

adjustment tool. In turn, that implies some commonality of macroeconomic shocks and a sufficient degree of factor mobility.”<sup>113</sup>

The National Bank Act, however, did not end banking panics. The newly issued national banknotes had to be backed by Treasuries. Because Treasuries had (and still have) a convenience yield and were in limited supply, banks did not want to use all of their Treasuries for the purpose of backing their notes. As a result, banks underissued notes, which led to the development of another source of private money: demand deposits. Demand deposits paid interest and grew significantly.<sup>114</sup> Thus, during the National Banking Era, runs were on demand deposits, not banknotes.<sup>115</sup> The table below shows the dates of the banking panics prior to the Federal Reserve System.<sup>116</sup> Then, of course, there were the panics during the Great Depression, peaking in March 1933. Afterward, the United States experienced about seventy-five years of financial calm before the global financial crisis.

TABLE 5: BANKING PANICS AND BUSINESS CYCLES

Height of Panic	Nearest Peak	Comments
August 1814 – January 1817	January 1812	War-related
April – May 1819	November 1818	
May 1837	April 1837	
October 1839 – March 1842	March 1839	
October 1857	May 1857	
December 1861	September 1860	War-related
September 1873	September 1873	
May 1884	May 1884	
November 1890	November 1890	

<sup>113</sup> Markus Brunnermeier, Harold James & Jean-Pierre Landau, *Digital Currency Areas*, VOXEU (July 3, 2019), <https://perma.cc/PN6R-3FQ6>. The concept of an OCA was developed by Robert A. Mundell, *A Theory of Optimum Currency Areas*, 51 AM. ECON. REV. 657, 657 (1961).

<sup>114</sup> Gorton et al., *supra* note 15, at 1674–76. Again, this was due, in part, to a design problem with the National Bank Act, which did not recognize that U.S. Treasury bonds also have a convenience yield.

<sup>115</sup> *See id.* at 1698.

<sup>116</sup> The data in Table 5 are from Charles Calomiris & Gary Gorton, *The Origins of Banking Panics: Models, Facts, and Bank Regulation*, FIN. MARKETS & FIN. CRISES 109, 114 (R. Glenn Hubbard ed., 1991).

<b>June – August 1893</b>	April 1893	
<b>October 1896</b>	March 1896	
<b>October 1907</b>	September 1907	
<b>August – October 1914</b>	May 1914	War-related

### C. The Legal Basis to Create and Regulate Money

How did the government enact such significant reforms to the monetary system? They were not without controversy. Article I, § 8 of the U.S. Constitution enumerates the many powers that Congress possesses, including the power to “coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures.”<sup>117</sup> There are, however, two important follow-up questions: First, can Congress ensure that its currency is the only game in town by taxing privately created currencies? The answer is yes, as decided by the Supreme Court based on facts that emerged during and after the Civil War. Second, can Congress create a fiat currency that is not backed by gold or silver? The answer is also yes, based on the Supreme Court’s *Legal Tender Cases*. We briefly discuss each in turn.

#### 1. Singular national currency.

Congress passed the National Bank Act in 1863 to help finance the Civil War. As described above, national banks were chartered and allowed to issue a uniform national currency. Uptake was not immediate, as many continued using state banknotes. Subsequent legislation required *all* banks to pay a 10% tax on payments that they made in currency notes other than national banknotes:

That every national banking association, State bank, or State banking association shall pay a tax of ten percentum on the amount of notes of any person, State bank, or State banking association used for circulation and paid out by them after the 1st day of August, 1866, and such tax shall be assessed

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<sup>117</sup> U.S. CONST., art. I, § 8.

and paid in such manner as shall be prescribed by the Commissioner of Internal Revenue.<sup>118</sup>

The constitutionality of the tax came before the Supreme Court in *Veazie Bank v. Fenno*,<sup>119</sup> a case brought by a state-chartered bank in Maine that issued its own banknotes subject to the tax. The bank refused to pay the 10% tax, alleging it to be unconstitutional on two fronts:

The first is that the tax in question is a direct tax, and has not been apportioned among the States agreeably to the Constitution. The second is that the act imposing the tax impairs a franchise granted by the State, and that Congress has no power to pass any law with that intent or effect.<sup>120</sup>

In a six–two decision, the Court determined that Congress had the authority to tax the banknotes and that it was not a direct tax. If it had been a direct tax, its incidence would have had to be apportioned among the states according to their respective populations.<sup>121</sup> Importantly, the Court also stated:

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.<sup>122</sup>

Thus, Congress has the authority to issue a uniform currency and to impose a tax on competing currencies to ensure that its uniform currency is successfully adopted.

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<sup>118</sup> Act of July 13, 1866, ch. 184, 14 Stat. 146. Congress passed this law on July 13, 1866. RICHARD H. TIMBERLAKE, CONSTITUTIONAL MONEY: A REVIEW OF THE SUPREME COURT'S MONETARY DECISIONS 81 (2013).

<sup>119</sup> 75 U.S. 533 (1869).

<sup>120</sup> *Id.* at 540.

<sup>121</sup> U.S. CONST. art. I, § 2, cl. 3.

<sup>122</sup> *Veazie Bank*, 75 U.S. at 549 (emphasis added).



## 2. Fiat currency.

Almost everyone takes this for granted now, but Congress also has the ability to issue fiat currency—that is, currency not backed by specie. In its efforts to finance the Civil War, the government passed the Legal Tender Act in 1862, which authorized the creation of paper money not redeemable in specie (the greenbacks). This was controversial because this new paper money had to be accepted for all taxes, debts, and other obligations, even those contracted *prior* to 1862. In *Hepburn v. Griswold*,<sup>123</sup> the Court ruled by a four-to-three majority that Congress lacked the power to make the notes legal tender, as it violated Fifth Amendment guarantees against deprivation of property without due process of law. Following the decision, an apparently displeased President Ulysses S. Grant sent the nominations of two new justices—Joseph P. Bradley and William Strong—to the Senate for confirmation.<sup>124</sup> During its next session, the Supreme Court reversed its prior decision in *Hepburn v. Griswold*. Specifically, in consolidated cases *Knox v. Lee* and *Parker v. Davis*,<sup>125</sup> the Supreme Court held that making paper money the legal tender of the land did not conflict with Article I of the U.S. Constitution.

## IV. POLICY CONSIDERATIONS

Based on economic theory and financial history, we observe that the government has a couple of high-level options to combat the financial-stability risk posed by the proliferation of stablecoins: (1) transform stablecoins into the equivalent of sovereign money by (a) requiring stablecoins to be issued through banks or (b) requiring stablecoins to be backed one-for-one with Treasuries or reserves at the central bank; or (2) introduce a central bank digital currency as a sovereign competitor.

### A. Transform Private Money into Sovereign Money

Choosing the first set of options would effectively turn stablecoins into public money. One way to achieve this outcome is by bringing stablecoin issuers within the insured bank regulatory perimeter. Another way to achieve this outcome is by requiring

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<sup>123</sup> 75 U.S. 603 (1870).

<sup>124</sup> Timberlake, *supra* note 118, at 98.

<sup>125</sup> 79 U.S. 457 (1871).

stablecoins to be backed one-for-one by Treasuries or central bank reserves.

If stablecoins are to be transformed into public money, then updates or modifications to the regulatory infrastructure would have to be made. We discuss a few here, which involve the Glass-Steagall Act, the Dodd-Frank Act,<sup>126</sup> and new legislation from Congress.

1. Issue stablecoins through banks.

Most are unaware of the fact that § 21 of the Glass-Steagall Act is still on the books. It has not been repealed by the many deregulatory statutes since 1933. Under § 21 of the Glass-Steagall Act, it is unlawful for a nonbank entity to engage in deposit taking.<sup>127</sup> Indeed, as observed by Professors Howell Jackson and Morgan Ricks, “[t]he legislative history of section 21(a)(2) confirms that the provision was intended to ‘prohibit[ ] . . . unregulated private banking so far as practicable.’”<sup>128</sup> The Department of Justice has the authority to interpret § 21 of the Glass-Steagall Act, and has opined on this issue before in the context of money market funds. As discussed above,<sup>129</sup> in 1979, the Department of Justice stated that depositors are creditors, whereas holders of money market fund shares are considered equity owners. The investor’s ability to redeem shares is simply a way to transfer ownership, not to transform the investor into a creditor.

The Department of Justice’s 1979 interpretation could be consistent with a view that some stablecoins are legally deposits. Importantly, the holders of many stablecoins are clearly not equity owners of the stablecoin issuer. They are creditors of their depository—for instance, an explicit contract promising to exchange 1,000 stablecoins for \$1,000. Therefore, one avenue to regulate many stablecoin issuers is for the Department of Justice to update and publicize its interpretation of § 21 of the Glass-Steagall Act. The result would be that some stablecoin issuers might be in violation of § 21 of the Glass-Steagall Act *as it exists today*. This would not ban the existence of those stablecoins, as noted by Jackson

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<sup>126</sup> Pub. L. No. 111-203, 124 Stat. 1376 (2010).

<sup>127</sup> 12 U.S.C. § 378(a)(2).

<sup>128</sup> Howell E. Jackson & Morgan Ricks, *Locating Stablecoins Within the Regulatory Perimeter*, HARV. L. SCH. F. ON CORP. GOVERNANCE (Aug. 5, 2021), <https://perma.cc/8U3R-GZTE>.

<sup>129</sup> See *supra* note 42 and accompanying text.

and Ricks,<sup>130</sup> but it could force those stablecoin issuers to conduct their business within the bank regulatory perimeter.

This proposal does have shortcomings. First, from a legal perspective, not all stablecoins are redeemed via explicit debt contracts. It's possible that stablecoin issuers modeled after money market funds could escape the regulatory perimeter. Of course, the Department of Justice's interpretive letter is not dispositive, as federal authorities could issue a more expansive reading of § 21(a)(2),<sup>131</sup> or Congress could pass new legislation that strengthens § 21. Indeed, the United States should not have a regulatory regime in which a stablecoin issuer could escape the appropriate regulations simply by changing its consumer disclosures to create a contract that is not explicitly a debt contract on its face.

Second, this interpretation could have broader policy ramifications beyond stablecoin issuers. It could impact e-money payment platforms as well. The defining feature of modern payment platforms is that they issue multipurpose monetary liabilities that are close functional substitutes for conventional bank deposits. This includes other bank-like entities such as PayPal, Venmo, WeChat Pay, and AliPay. These platforms accept cash, checks, and electronic fund transfers in exchange for the issuance of monetary liabilities. And they allow customers to make and receive multiple payments. This can involve accumulating positive balances akin to deposits in a bank. Thus, depending on the specifics on the interpretation, these payments platforms also could be brought within the regulatory perimeter.

## 2. Require stablecoins to be backed one-for-one.

During the 2008 global financial crisis, regulators learned that weaknesses in the nonbanking sphere (which includes insurance companies and investment banks) could impact the broader financial sector. "When the housing bubble burst, nonbanks like Bear Stearns, Lehman Brothers, and AIG were among the first

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<sup>130</sup> See Jackson & Ricks, *supra* note 128 ("Denominating stablecoins as Glass-Steagall deposits is not tantamount to banning them. Instead, it simply means that issuers of these tokens need to satisfy one of the three statutory exemptions that the provision provides.").

<sup>131</sup> See Jackson & Ricks, *supra* note 128 ("What is clear from the text of Section 21(a)(2) is that Glass-Steagall deposits represent a wider range of instruments than the class of liabilities issued by chartered depository institutions commonly known as deposits.").

firms to fail, triggering the broader panic.”<sup>132</sup> None of these companies were subject to significant consolidated oversight or regulation. In Title I of the Dodd-Frank Act, Congress created the Financial Stability Oversight Council (FSOC) to combat the risk of systemic nonbank financial companies.

The FSOC is composed of ten voting members and five nonvoting members:<sup>133</sup>

The voting members are the Secretary of the Treasury (who serves as the Chairperson of the FSOC), the Chair of the Board of Governors of the Federal Reserve System (Federal Reserve), the Comptroller of the Currency, the Director of the Consumer Financial Protection Bureau, the Chair of the Securities and Exchange Commission, the Chairman of the Federal Deposit Insurance Corporation, the Chairman of the Commodity Futures Trading Commission, the Director of the Federal Housing Finance Agency, the Chairman of the National Credit Union Administration, and an independent member with insurance expertise who is appointed by the President, by and with the advice and consent of the Senate. The five nonvoting members are the Director of the Office of Financial Research, the Director of the Federal Insurance Office, and state insurance, banking, and securities regulators.<sup>134</sup>

The FSOC could designate stablecoin issuance as a systemic *payment activity* under Title VIII of the Dodd-Frank Act. The statute states:

The purpose of this subchapter is to mitigate systemic risk in the financial system and promote financial stability by—

(1) authorizing the Board of Governors to promote uniform standards for the—

(A) management of risks by systemically important financial market utilities; and

(B) conduct of systemically important *payment*, clearing, and settlement *activities* by financial institutions;

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<sup>132</sup> Jeremy C. Kress, *The Last SIFI: The Unwise and Illegal Deregulation of Prudential Financial*, 71 STAN. L. REV. ONLINE 171, 172 (2018).

<sup>133</sup> *Nonbank Designations – FAQs*, U.S. DEP’T OF TREASURY, <https://perma.cc/2D7T-NB22>.

<sup>134</sup> *Id.*

- (2) providing the Board of Governors an enhanced role in the supervision of risk management standards for systemically important financial market utilities;
- (3) strengthening the liquidity of systemically important financial market utilities; and
- (4) providing the Board of Governors an enhanced role in the supervision of risk management standards for systemically important payment, clearing, and settlement activities by financial institutions.<sup>135</sup>

FSOC designation would give the Federal Reserve the authority to regulate the activity of stablecoin issuance by any financial institution. The Federal Reserve could then require stablecoins to be backed one-for-one with safe assets like Treasuries or central bank reserves.

There are a few potential shortcomings with this approach. The first is simply that some would argue stablecoins are currently *not* systemically important. While that might be right, there's no doubt that the stablecoins industry is growing rapidly and that the FSOC has the ability to designate payment activities that "are, *or are likely to become*, systemically important."<sup>136</sup>

The second is that the FSOC designation process is not airtight. The FSOC previously designated MetLife as a systemically important financial institution, and a federal district court judge later ruled that the designation was "arbitrary and capricious."<sup>137</sup> To be sure, this case turned on whether the FSOC had followed its own guidance and rules, and nothing specific has been issued under Title VIII of the Dodd-Frank Act.<sup>138</sup>

Third, on the policy front, requiring stablecoins to be backed one-for-one with safe assets may have unintended macroeconomic and financial consequences. These consequences are not insurmountable, but would require additional adjustments. We discuss each in turn.

Consider the possibility of requiring stablecoins to be backed one-for-one by reserves at the central bank. Under this scenario, stablecoin issuers would become similar to narrow banks, which could have implications for monetary policy, financial

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<sup>135</sup> 12 U.S.C. § 5461(b) (emphasis added).

<sup>136</sup> 12 U.S.C. § 5463(a)(1) (emphasis added).

<sup>137</sup> *MetLife, Inc. v. Fin. Stability Oversight Council*, 177 F. Supp. 3d 219, 230 (D.D.C. 2016).

<sup>138</sup> *See id.* at 236.

intermediation, and financial stability.<sup>139</sup> With respect to monetary policy, for instance, stablecoin issuers that are narrow banks could attract a large quantity of deposits away from the banking sector and cause significant growth of the Federal Reserve's balance sheet. This, in turn, "could affect the [Federal Open Market Committee's] plans to reduce its balance sheet to the smallest level consistent with efficient and effective implementation of monetary policy."<sup>140</sup> Concerning financial intermediation, lenders might find it more attractive to put their money in stablecoin issuers instead of the overnight general collateral repo market. According to the Federal Reserve, if that were to happen, "securities dealers could find it more costly to finance their inventories of Treasury securities. Such a development could impair the liquidity of the repo market, making it harder for banks to monetize Treasury securities in times of stress and raising the overall cost of Treasury borrowing."<sup>141</sup> With regard to financial stability, the creation of stablecoin issuers that are narrow banks could amplify runs during times of stress:

[Stablecoins] could be seen as more attractive than Treasury bills, because they would provide instantaneous liquidity, could be available in very large quantities, and would earn interest at an administered rate that would not necessarily fall as demand surges. As a result, in times of stress, investors that would otherwise provide short-term funding to non-financial firms, financial institutions, and state and local governments could rapidly withdraw that funding from those borrowers and instead deposit those funds at [stablecoin issuers].<sup>142</sup>

Next, consider the requirement of having stablecoins be backed one-for-one by Treasuries. In this case, stablecoin issuers would become similar to government money market funds.<sup>143</sup> In both the 2008 and 2020 crises, investors in prime money market funds withdrew their money and parked it in government money

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<sup>139</sup> See generally Regulation D: Reserve Requirements of Depository Institutions, 84 Fed. Reg. 8,829 (Mar. 12, 2019) (to be codified at 12 C.F.R. pt. 204).

<sup>140</sup> *Id.* at 8,830.

<sup>141</sup> *Id.*

<sup>142</sup> *Id.* at 8,831.

<sup>143</sup> See *Money Market Funds*, INVESTOR.GOV, <https://perma.cc/74M9-M8W5> ("Government money market funds are defined as money market funds that invest 99.5% or more of their total assets in very liquid investments, namely, cash, government securities, and/or repurchase agreements that are collateralized fully with government securities.").

market funds.<sup>144</sup> It is not difficult to imagine depositors withdrawing their money from banks and putting it into stablecoins backed one-for-one by Treasuries during times of stress. Disintermediation aside,<sup>145</sup> backing one-for-one by Treasuries could produce a suboptimal currency, because this requirement would tie stablecoins to a limited form of money at a fixed ratio. (Recall that Treasuries have a convenience yield and are a form of money for storing value safely.) Following the National Banking Act, national banks issued national banknotes by depositing Treasury bonds with the Treasury, which would then print the bank's notes. The idea was to create a demand for Treasuries so as to finance the North during the Civil War.<sup>146</sup> An unintended consequence was the underissuance of national banknotes. The reason behind the underissuance was a shortage of safe debt, which meant that banks had other uses for Treasuries and did not want to use all of their Treasuries to back national banknotes.<sup>147</sup>

### 3. New legislation.

The previous proposals of mitigating the run risk associated with stablecoins can be accomplished another way: Congress can pass legislation that essentially transforms stablecoins into public money in the ways described above.

Relatedly, Congress also could pursue a more comprehensive and aggressive approach that would fix the underlying definitions related to banking that have created suboptimal regulatory arbitrage for decades.<sup>148</sup> Doing so would have the benefit of adapting

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<sup>144</sup> See *id.* (describing prime money market funds as those investing in taxable short-term corporate and bank debt securities); see also Van Der Weide & Zhang, *supra* note 16, at 426–27 (illustrating the dynamic in the money markets in 2008 and 2020).

<sup>145</sup> Disintermediation—a reduction in the intermediation between producers and consumers by, for instance, investing directly in the securities market rather than through a bank—would be nontrivial. Because the deposit insurance limit of \$250,000 does not help large institutions and firms protect their money, they would move their cash into stablecoins. At the largest commercial banks, approximately half of deposits are uninsured. See Mark Egan, Ali Hortaçsu & Gregor Matvos, *Deposit Competition and Financial Fragility: Evidence from the US Banking Sector*, 107 AM. ECON. REV. 169, 195 (2017). The banking system would be disintermediated and would make fewer loans.

<sup>146</sup> See Gorton et al., *supra* note 15, at 1687.

<sup>147</sup> See *id.* at 1674–75. The Basel III liquidity coverage ratio requires that banks back one form of money with another at a fixed ratio. Not unexpectedly, this has reduced liquidity in the system. See generally Daniel Roberts, Asani Sarkar & Or Shachar, *The Costs and Benefits of Liquidity Regulations*, FED. RSRV. BANK OF N.Y. (June 2018), <https://perma.cc/6JJX-HRQ3>.

<sup>148</sup> See Ricks, *supra* note 12, at 237 (observing that Congress's “failure to specify a functional legal definition of what constitutes a monetary instrument is the original sin of

to technological development. Stablecoins certainly will not be the last attempt to create private money with new technology. But if the fundamental economic concepts remain identical, then it makes sense to regulate that entity like a bank.

Having Congress implement legislation is important for another reason. The status quo will result in substantial regulatory fragmentation. As discussed previously, the OCC and state banking regulators already have started to experiment—pursuing ways to provide access to some advantages of being a bank, while limiting the amount of regulatory oversight and barriers to entry.

Having multiple special charters and no uniform regulatory framework would be the least desirable outcome. (It truly would be the Free Banking Era again.) A major issue that's pointed out again and again by scholars and policymakers who evaluate the U.S. regulatory framework is the suboptimally high level of fragmentation among state agencies, among federal agencies, and between state and federal agencies.<sup>149</sup> While fragmentation may lead to unexpected experiments to evaluate which policies are superior, it also leads to regulatory arbitrage.<sup>150</sup> It's easier for financial institutions to cherry pick the most lenient regulators and supervisors. Financial entities shopped for the best regulators in the lead-up to the 2008 global financial crisis, as the Office of Thrift Supervision found itself providing consolidated supervision over massive entities like General Electric, AIG, American Express, and Morgan Stanley.<sup>151</sup> Thus, having a uniform national framework is imperative.

## B. Replace Private Digital Money with Sovereign Digital Money

There is an alternative way to tackle the risks associated with stablecoins. Congress could require the Federal Reserve to

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banking law, and it is the main source of our current regulatory troubles” (emphasis in original)).

<sup>149</sup> See Andrew Metrick & Daniel Tarullo, *Congruent Financial Regulation*, BROOKINGS PAPERS ON ECON. ACTIVITY (2021) 143, 165 (2021) (noting the United States’ “famously balkanized organization of financial regulation”).

<sup>150</sup> See, e.g., Katherine E. Di Lucido, Nicholas K. Tabor & Jeffery Y. Zhang, *Fenceposts Without a Fence*, VAND. L. REV. (forthcoming) (arguing that the bank regulatory perimeter has become broader, more complex, and more permeable than at any point in its history).

<sup>151</sup> Dain C. Donelson & David Zaring, *Requiem for a Regulator: The Office of Thrift Supervision’s Performance During the Financial Crisis*, 89 N.C. L. REV. 1777, 1779 (2011).



issue a central bank digital currency as a substitute to privately produced digital money like stablecoins.<sup>152</sup>

Countries will not use paper and metal coins forever. In the nineteenth century, as the form of money evolved, the federal government instituted a uniform national currency via the National Bank Act. The present-day analogue is for the federal government to create a central bank digital currency. The question then becomes whether policymakers would want to have central bank digital currencies coexist with stablecoins or to have central bank digital currencies be the only form of money in circulation.

1. Benefits of sovereign digital currency.

The benefits of implementing a central bank digital currency are an increase in the convenience yield, a reduction in the costs of payment systems, and the maintenance of monetary sovereignty.<sup>153</sup> These benefits are distinct from facilitating monetary policy issues like breaking through the zero lower bound or fiscal policy issues like targeting helicopter drops of money.<sup>154</sup>

With respect to the convenience yield, a central bank digital currency should make it possible to lower the costs resulting from the time spent getting to a cash delivery point, withdrawing money, and then using it to make payments. Funds could be transferred from a bank account, credit card, or other payment service to the central bank digital currency wallet via a phone. No more long waits to move money cross-border. Conversely, a user could convert a central bank digital currency at par into any other form of money. Simply put, a central bank digital currency would enhance the convenience yield because it would be more efficient than paper currency and coins.

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<sup>152</sup> A central bank digital currency is a digital asset—tokenized on a blockchain—that only the central bank may issue or destroy. It is traded at par against banknotes and reserves. As direct claims on the central bank, central bank digital currency tokens are analogous to paper currency but are transferred electronically. Token holdings are recorded in ledger accounts maintained by the central bank or by payment service providers.

<sup>153</sup> See Gary B. Gorton & Jeffery Y. Zhang, *The Orkney Slew and Central Bank Digital Currencies*, 14 HARV. NAT'L SEC. J. 1 (2022).

<sup>154</sup> See, e.g., Julia Coronado & Simon Potter, *Securing Macroeconomic and Monetary Stability with a Federal Reserve-Backed Digital Currency*, PETERSON INST. FOR INT'L ECON. (Mar. 2020), <https://perma.cc/28J8-WAWK>. In short, the technological advancement provided by a central bank digital currency could improve the conduct of monetary policy. It's hard to control the supply of paper money, but it's easier to control the supply of digital money. In times of crisis, it could be easier to inject money—even in targeted ways—into the economy.

The largest benefits would likely accrue to the wholesale market in cross-border transactions. The 2008 global financial crisis revealed the size of the wholesale banking market. Global supply chains and global banking are very large, and gross capital flows have grown enormously in the past three decades.<sup>155</sup> Yet cross-border transactions are currently exceedingly slow because of various hurdles. There is a lack of standardization across jurisdictions with respect to operating hours, data standards, and regulatory requirements. A bank is forced to rely on its correspondent bank network to facilitate a cross-border transaction. As a result, there are significant delays in payment processing, potentially leading up to wait times of multiple days or even a week. A central bank digital currency could ease these difficulties. To be sure, there would have to be interoperability between the central bank digital currencies of all countries because foreign exchange conversions would still need to take place.<sup>156</sup>

The second benefit of having a central bank digital currency is that it could reduce the costs associated with making payments generally. Payment systems are costly.<sup>157</sup> The costs of making payments were estimated to be as much as 3% of a country's GDP.<sup>158</sup> In the Netherlands, the total cost of all point-of-sale payments was estimated to be 0.65% of GDP in 2002.<sup>159</sup> Banks' costs related to payment services were estimated at 0.49% of GDP in Norway<sup>160</sup> and 0.77% of GDP in Portugal.<sup>161</sup> Finally, Heiko Schmiedel, Gergana Kostova, and Wiebe Ruttenberg have estimated that the costs in EU countries related to payment services

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<sup>155</sup> See, e.g., Maurice Obstfeld, *Financial Flows, Financial Crises, and Global Imbalances*, 31 J. INT'L MONEY & FIN. 469, 472 (2012); Stefan Avdjiev, Bryan Hardy, Şebnem Kalemli-Özcan & Luis Servén, *Gross Capital Flows by Banks, Corporates and Sovereigns* 24–26 (Bank for Int'l Settlements, Working Paper No. 760, 2018), <https://perma.cc/GJJ9-8QRW>.

<sup>156</sup> See Gorton & Zhang, *supra* note 153, at 14–16.

<sup>157</sup> BANK FOR INT'L SETTLEMENTS, CENTRAL BANK DIGITAL CURRENCIES FOR CROSS-BORDER PAYMENTS: REPORT TO THE G20, at 2 (2021) (“CBDCs have the potential to enhance the efficiency of cross-border payments, as long as their design follows the ‘Hippocratic Oath for CBDC design’ and its premise to ‘do no harm.’”).

<sup>158</sup> David Humphrey, Magnus Willeson, Ted Lindblom & Göran Bergendahl, *What Does It Cost to Make a Payment?*, 2 REV. NETWORK ECON. 159, 172 (2003).

<sup>159</sup> Hans Brits & Carlo Winder, *Payments Are No Free Lunch*, 3 DE NEDERLANDSCHE BANK, no. 2, Oct. 2005, at 35, <https://perma.cc/JQ2E-XRMV>.

<sup>160</sup> Olaf Gresvik & Harald Haare, *Costs in the Payment System*, 80 NORGES BANK ECON. BULL. 16, 16 (2009).

<sup>161</sup> BANCO DE PORTUGAL, RETAIL PAYMENT INSTRUMENTS IN PORTUGAL: COSTS AND BENEFITS 18 (2007).

were 1% of GDP.<sup>162</sup> These figures clearly show that the costs related to payment activities are not negligible.

Third, the introduction of a central bank digital currency would allow the government to maintain monetary sovereignty.<sup>163</sup> We briefly discuss this issue next.

## 2. Coexistence between private and sovereign money.

Can private stablecoins coexist with public money?<sup>164</sup> In other words, should the sovereign have a monopoly on money issuance? As shown by revealed preference in the table below,<sup>165</sup> the answer is yes.<sup>166</sup>

TABLE 6: CENTRAL BANKS AND MONOPOLIES

Country	Central Bank Founded	Monopoly Imposed
Austria	1816	1816
Norway	1816	1818
Denmark	1818	1818
United Kingdom	1694	1844
France	1800	1848

<sup>162</sup> Heiko Schmiedel, Gergana Kostova & Wiebe Ruttenberg, *The Social and Private Costs of Retail Payment Instruments: A European Perspective*, EUR. CENT. BANK OCCASIONAL PAPER SERIES, no. 137, at 25 (Sept. 2012), <https://perma.cc/5GT7-6WJY>.

<sup>163</sup> Federal Reserve Chair Jerome Powell has remarked:

I think that may be the case and I think that's one of the arguments that are offered in favor of digital currency. . . . That, in particular, you wouldn't need stablecoins, you wouldn't need cryptocurrencies if you had a digital U.S. currency—I think that's one of the stronger arguments in its favor.

Jonnelle Marte, *Powell Says a Fed Digital Currency Could Undercut Need for Cryptocurrencies*, REUTERS (July 14, 2021), <https://perma.cc/JM7Z-ZNBR>.

<sup>164</sup> Note that if stablecoins were insured by the government or were required to be backed by cash or Treasuries, they would essentially become a national currency.

<sup>165</sup> FORREST CAPIE, CHARLES GOODHART, STANLEY FISCHER & NORBERT SCHNADT, *THE FUTURE OF CENTRAL BANKING: THE TRICENTENARY SYMPOSIUM OF THE BANK OF ENGLAND* 6, 175 (1994).

<sup>166</sup> There have been instances when a government currency coexisted with private banknotes. For example, Ben Fung, Scott Hendry, and Warren Weber studied a period in Canada when both private banknotes and government notes were simultaneously in circulation. The private money did not achieve the NQA principle. The authors concluded that only government regulation can achieve the NQA principle. Ben Fung, Scott Hendry & Warren E. Weber, *Canadian Bank Notes and Dominion Notes: Lessons for Digital Currencies* 30–31 (Bank of Canada, Staff Working Paper No. 2017-5, 2017), <https://perma.cc/V22K-H4PF>.

<b>Belgium</b>	1850	1850
<b>Netherlands</b>	1814	1863
<b>Spain</b>	1874	1874
<b>Germany</b>	1876	1876
<b>Japan</b>	1882	1883
<b>Finland</b>	1811	1886
<b>Portugal</b>	1846	1888
<b>Sweden</b>	1668	1897
<b>United States</b>	1913	1913
<b>Italy</b>	1893	1926

The intuition is quite straightforward. As David Ricardo wrote:

In the use of money, every one is a trader; those whose habits and pursuits are little suited to explore the mechanism of trade are obliged to make use of money, and are no way qualified to ascertain the solidity of the different banks whose paper is in circulation; accordingly, we find that men living on limited incomes, women, laborers, and mechanics of all descriptions, are often severe sufferers by the failures of country banks.<sup>167</sup>

In other words, during transactions, agents have to determine the value of a unit of private money being offered. Not everyone can be sufficiently informed to make an accurate judgement. The uninformed agents—the “men living on limited incomes, women, laborers, and mechanics of all descriptions”—will be taken advantage of. This sentiment was expressed by Congress during the debate about the National Bank Act and taxing state-chartered banknotes:

The advantages of uniformity were not hidden from the statesmen of that day who had been taught in the bitter school of experience what were the disadvantages of a mongrel currency. The great advantage to the business of the community of a uniform currency would lie in economy of

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<sup>167</sup> DAVID RICARDO, *Proposals for an Economical and Secure Currency*, in 4 THE WORKS AND CORRESPONDENCE OF DAVID RICARDO 43, 72–73 (Piero Sraffa ed., 1951).

exchange. This point was clearly made by Secretary Chase in his Report of 1861, when he recommended the system for the first time, and it was reiterated in his Report of 1862.

Western people especially stood in need of a sound currency, both for use among themselves and in their transactions with eastern banks.<sup>168</sup>

For all these reasons, the United States decided to establish a single uniform sovereign currency in 1863.

In addition to the historical case study, coexistence has implications for the Federal Reserve's ability to conduct monetary policy. Suppose a Big Tech firm issued a stablecoin. Current stablecoin issuers, which are new on the scene, have trouble convincing holders that they actually have reserves backing their coins. Big Tech firms like Google, Apple, Facebook, and Microsoft, on the other hand, have significant resources and could be viewed as implicitly guaranteeing their stablecoins. This implicit guarantee could support a tremendous amount of stablecoins in circulation—a money supply that could not be controlled by the central bank. In turn, this could impede the central bank's ability to conduct monetary policy—specifically to rein in inflation when the economy is overheating and to boost output when the economy is in a recession. Thus, coexistence would present a multitude of problems to economic functions that are taken for granted today.

### 3. Design of sovereign digital currency.

Examining the design parameters of central bank digital currencies is well outside the scope of this Article. But, at a high level, there are two ways to think about designing a central bank digital currency: The first is an indirect model in which the consumer has a claim on an intermediary, with the central bank keeping track of the accounts. The second is a direct model in which the consumer has a direct claim on the central bank, which keeps a record of every transaction.<sup>169</sup> We argue in favor of the indirect model and briefly discuss our rationale.

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<sup>168</sup> John Wilson Million, *The Debate on the National Bank Act of 1863*, 2 J. POL. ECON. 251, 264–65 (1894).

<sup>169</sup> Raphael Auer & Rainer Boehme, *The Technology of Retail Central Bank Digital Currency*, BANK FOR INT'L SETTLEMENTS Q. REV. 85, 88–91 (Mar. 1, 2020), <https://perma.cc/XE3V-3AGN>. The authors also described a hybrid approach in which the consumer has a direct claim on the central bank but intermediaries handle payments.

Under the first design option, a central bank digital currency would be issued as a digital version of physical cash. Thus, if you were to withdraw \$50 from your bank account, you could choose to withdraw the \$50 in the form of either digital cash (on your phone or in your blockchain “wallet”) or physical cash.<sup>170</sup> This is the most straightforward option and the least likely to cause unintended consequences.

The second design option would allow households and businesses to establish deposit accounts directly with the central bank. Such an option has been labeled “FedAccounts”<sup>171</sup> or “The People’s Ledger.”<sup>172</sup> One of the central arguments for this second design option is financial inclusion.<sup>173</sup> In 2019, the FDIC reported that 5.4% of U.S. households did not have a bank account, down from 8.2% in 2011.<sup>174</sup> Of these unbanked people, 48.9% reported that they did not have enough money to meet the minimum balance requirements of banks.<sup>175</sup> The FDIC reports, “About two-thirds of the decline in the unbanked rate between 2011 and 2019 was associated with improvements in the socioeconomic circumstances of U.S. households over this period.”<sup>176</sup> There is a more direct way to address financial inclusion. For example, policymakers could require banks to provide free, no-minimum accounts to users, or otherwise limit or eliminate account fees charged by banks. Better yet, policymakers could fix the underlying problem of economic inequality, which should be addressed through fiscal policy rather than linking it to the central bank.<sup>177</sup>

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<sup>170</sup> The central bank would stand behind these two monies, one paper and one digital, and would exchange one for the other at par, as needed.

<sup>171</sup> See generally John Crawford, Lev Menand & Morgan Ricks, *FedAccounts: Digital Dollars*, 89 GEO. WASH. L. REV. 113 (2021).

<sup>172</sup> See generally Saule T. Omarova, *The People’s Ledger: How to Democratize Money and Finance the Economy*, 74 VAND. L. REV. 1231 (2021).

<sup>173</sup> This is not the only argument in favor of FedAccounts. For a full discussion of potential benefits, see Crawford et al., *supra* note 171, at 125–45.

<sup>174</sup> FED. DEPOSIT INS. CORP., HOW AMERICA BANKS: HOUSEHOLD USE OF BANKING AND FINANCIAL SERVICES (2021) (available at <https://perma.cc/H9R9-AHK5>).

<sup>175</sup> *Id.*

<sup>176</sup> *Id.*

<sup>177</sup> Financial inclusion is currently not in the Federal Reserve’s mandate. See *Statement on Longer-Run Goals and Monetary Policy Strategy*, FED. RSRV. (Jan. 25, 2022), <https://perma.cc/6Y37-6L8M>; see also Lars Peter Hansen, *Central Banking Challenges Posed by Uncertain Climate Change and Natural Disasters*, (June 9, 2021), <https://perma.cc/X742-68TH> (arguing that “[b]y adhering to their mandated roles, [central banks] retain their critically important distance from the political arena”); PAUL TUCKER, *UNELECTED POWER: THE QUEST FOR LEGITIMACY IN CENTRAL BANKING AND THE REGULATORY STATE* 483 (2018).

More importantly, what does the central bank do with all the money that is deposited into these accounts? In theory, the amounts that flow into these accounts could be very large—hundreds of billions, or even trillions, of dollars.<sup>178</sup> Money in bank deposit accounts, money market funds, repos, commercial paper, and so on could all end up at the central bank. The Federal Reserve could buy securities with this money, but there might not be enough Treasuries because Treasuries are desired by the U.S. private sector for their convenience yield.<sup>179</sup> Or the Federal Reserve could buy other securities such as corporate bonds, commercial and residential mortgage-backed securities, and other asset-backed securities.<sup>180</sup> Of course, it's not the size of the purchases that is an issue; the Federal Reserve could buy a lot more if it wanted (assuming inflation is under control). The problem is that additional Federal Reserve purchases would introduce distortions into the capital markets, as the private sector would overproduce the highest-risk securities that the Federal Reserve had agreed to purchase.<sup>181</sup> This occurred in the eurozone.<sup>182</sup> As Professor Kjell Nyborg put it, “[I]f central bank money is available only against igloos, or igloo-backed securities, igloos will be built.”<sup>183</sup> In short, the Federal Reserve would be engaging in fiscal

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<sup>178</sup> The amount deposited depends on the interest rate offered. The Federal Reserve's policy regarding this rate will affect the inflow and outflow of deposits (cash) at the central bank, which is a complication because it amounts to an open market operation.

<sup>179</sup> See generally Arvind Krishnamurthy & Annette Vissing-Jorgensen, *The Aggregate Demand for Treasury Debt*, 120 J. POL. ECON. 233 (2012).

<sup>180</sup> Currently, the Federal Reserve cannot buy corporate bonds and private-label asset-backed securities during normal times.

<sup>181</sup> Proponents of FedAccounts recognize this potential problem as well. See Crawford et al., *supra* note 171, at 145:

Market depth is limited, and the central bank could end up dominating these markets, pushing asset prices around and distorting credit allocation. Optimal portfolio composition therefore cannot be determined a priori. It depends on the available supply of suitable investment assets in relation to the desired base money supply (which is a function of monetary policy).

<sup>182</sup> See, e.g., Sjoerd Van Bakkum, Marc Gabarro & Rustom M. Irani, *Does a Larger Menu Increase Appetite? Collateral Eligibility and Credit Supply*, 31 REV. FIN. STUD. 943 (2018).

<sup>183</sup> KJELL G. NYBORG, COLLATERAL FRAMEWORKS: THE OPEN SECRET OF CENTRAL BANKS 22 (2016); see also Stefano Pegoraro & Mattia Montagna, *Issuance and Valuation of Corporate Bonds with Quantitative Easing* (Eur. Cent. Bank, Working Paper No. 2520, Jan 2021); Roberto A. De Santis & Andrea Zaghini, *Unconventional Monetary Policy and Corporate Bond Issuance* (Eur. Cent. Bank, Working Paper No. 2329, Nov. 2019); Karamfil Todorov, *Quantify the Quantitative Easing: Impact on Bonds and Corporate Debt Issuance*, 135 J. FIN. ECON. 340 (2020).

policy, with all the political ramifications that would entail, and jeopardizing its political independence.

#### CONCLUSION

The more things change, the more they stay the same. Regulation is still being outpaced by innovation—thereby creating an uneven playing field, as it is easier and cheaper for more technologically advanced firms to offer similar products and services.

In this case, it is also true that the problems associated with privately produced money are the same as they were 150 years ago. Given the similarities between today's private stablecoins and the circulating banknotes of the nineteenth century, we would like to stress three points from our review of economic theory and financial history. First, stablecoin issuers are equivalent to unregulated banks. Second, the use of private banknotes was a failure because they did not satisfy the NQA principle and were subject to runs. The same will be true of unregulated or poorly regulated stablecoins. Third, the U.S. government took control of the monetary system under the National Bank Act and subsequent legislation in order to eliminate the private banknote system in favor of a uniform currency—namely, national banknotes.

As stablecoins evolve, the stablecoin ecosystem will look increasingly like an unregulated version of the Free Banking Era when different banknotes circulated at time-varying discounts based on geography and the perceived risk of the issuing bank. Stablecoin prices are independent of geography but not independent of the perceived risk of their backing assets. If stablecoins become used as money in everyday transactions, they will likely trade at time-varying discounts as well. Policymakers should approach the regulation of stablecoins by learning from economic theory and financial history.



## APPENDIX

**Sources for Tables 2 and 3**

<b>Name</b>	<b>Sources</b>
<b>Tether</b>	<p><b>What is the coin pegged to?</b>            USD:  <a href="https://perma.cc/2BJ8-8ZTU">https://perma.cc/2BJ8-8ZTU</a> (under “100% backed”)</p> <p><b>Market Cap:</b>  <a href="https://perma.cc/QR3T-GJ7D">https://perma.cc/QR3T-GJ7D</a></p> <p><b>Is the contract equity or debt?</b>            Equity:  <a href="https://perma.cc/5HHL-DDBF">https://perma.cc/5HHL-DDBF</a> (section 3)</p> <p><b>How to redeem it?</b>            Redemption process:  <a href="https://perma.cc/7EPY-LFMB">https://perma.cc/7EPY-LFMB</a>            Tether is available to redeem in the United States, except New York, as per its settlement with the NY Attorney General:  <a href="https://perma.cc/HJQ5-VZF5">https://perma.cc/HJQ5-VZF5</a> (p.11, section 57c)</p> <p><b>Is there a cost to redeem?</b>            Yes:  <a href="https://perma.cc/4YRP-FTHV">https://perma.cc/4YRP-FTHV</a></p> <p><b>Is there a notice period?</b>            No, but a verification process can delay redemption. Accounts must be verified before redemption can occur:  <a href="https://perma.cc/8NEJ-G6PM">https://perma.cc/8NEJ-G6PM</a>            Verification process:  <a href="https://perma.cc/VD9C-HMYJ">https://perma.cc/VD9C-HMYJ</a></p> <p><b>How are the underlying assets custodied?</b>            Tether banks with Deltec Bank &amp; Trust:  <a href="https://www.nasdaq.com/articles/tether-confirms-that-it-is-banking-with-bahamas-based-deltec-2018-11-01">https://www.nasdaq.com/articles/tether-confirms-that-it-is-banking-with-bahamas-based-deltec-2018-11-01</a>;  <a href="https://www.coindesk.com/tether-bank-deltec-stablecoin-reserves">https://www.coindesk.com/tether-bank-deltec-stablecoin-reserves</a></p>
<b>USDC</b>	<p><b>What is the coin pegged to?</b>            USD:  <a href="https://perma.cc/SV79-JWQP">https://perma.cc/SV79-JWQP</a> (under “What is USDC and why is it important and needed?”)</p> <p><b>Market Cap:</b>  <a href="https://perma.cc/NNR7-4R3C">https://perma.cc/NNR7-4R3C</a></p> <p><b>Is the contract equity or debt?</b></p>

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Debt:

<https://support.usdc.circle.com/hc/en-us/articles/360001233386> (section 2)

**How to redeem it?**

Redemption process:

<https://perma.cc/36TB-BCCR> (under “How does USDC work technically?”)

<https://perma.cc/X6N3-A7P5> (p.10-11)

Minimum redemption amount:

<https://support.usdc.circle.com/hc/en-us/articles/360015269732-Redeeming-USDC-FAQ> (under “Are there any minimum redemption amounts for USDC?”)

**Is there a cost to redeem?**

No:

<https://support.usdc.circle.com/hc/en-us/articles/360015269732-Redeeming-USDC-FAQ> (under “Are there any fees for redeeming USDC?”)

**Is there a notice period?**

No, but there is a verification process for each redemption:

<https://perma.cc/P3PQ-6JLQ> (under “How does USDC work technically?”)

**How are the underlying assets custodied?**

Licensed CENTRE token-issuing member:

<https://perma.cc/5PD5-F7VY>

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**TrueUSD**

**What is the coin pegged to?**

USD:

<https://perma.cc/V5WV-JHJV>

**Market Cap:**

<https://perma.cc/LY76-26VG>

**Is the contract equity or debt?**

Debt:

<https://perma.cc/8UM7-VWLC> (under “TrueCoin Services”)

**How to redeem it?**

Redemption process:

<https://support.trusttoken.com/hc/en-us/articles/360024952672-How-do-I-mint-and-redeem-TrueUSD-and-other-TrueCurrencies->

**Is there a cost to redeem?**

No:

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<https://support.trusttoken.com/hc/en-us/articles/360019876351-What-are-the-fees-for-mints-and-redemptions->

**Is there a notice period?**

No:

<https://support.trusttoken.com/hc/en-us/articles/360024952672-How-do-I-mint-and-redeem-TrueUSD-and-other-TrueCurrencies->

**How are the underlying assets custodied?**

Escrow accounts:

<https://blog.trusttoken.com/who-are-the-correspondent-banks-and-trustee-partners-for-trueusd-e12508f0d5a2>

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**Paxos****What is the coin pegged to?**

USD:

<https://perma.cc/E2SH-VYMF>

**Market Cap:**

<https://perma.cc/K6J8-RZNB>

**Is the contract equity or debt?**

Debt:

<https://perma.cc/4LB3-W3P7> (section 4.1, section 9)

**How to redeem it?**

Redemption process:

<https://perma.cc/B8ZC-PZ3X> (under “How Does Paxos Standard Token Work?”)

<https://perma.cc/3FZ8-WLN8> (section 9)

**Is there a cost to redeem?**

No:

<https://perma.cc/JQT5-4V9L> (section 13)

**Is there a notice period?**

No, immediate redemption:

<https://perma.cc/3N5V-58BH>

**How are the underlying assets custodied?**

Paxos Trust Company:

<https://perma.cc/P2X3-WLVA> (section 4)

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**Gemini Dol- lar****What is the coin pegged to?**

USD:

<https://perma.cc/EEF4-NRD9>

**Market Cap:**

<https://perma.cc/JY2Q-YHQW>

**Is the contract equity or debt?**

Debt:

<https://perma.cc/ENQ6-RPFP> (under “Redemption”)

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**How to redeem it?**

Redemption process:

<https://support.gemini.com/hc/en-us/articles/360001352466-How-do-I-buy-or-sell-my-Gemini-dollar-GUSD->

**Is there a cost to redeem?**

No:

<https://support.gemini.com/hc/en-us/articles/360001352466-How-do-I-buy-or-sell-my-Gemini-dollar-GUSD->

**Is there a notice period?**

No:

<https://support.gemini.com/hc/en-us/articles/360001352466-How-do-I-buy-or-sell-my-Gemini-dollar-GUSD->

**How are the underlying assets custodied?**

State Street Bank and Trust Company:

<https://www.coindesk.com/crypto/gemini-dollar>  
U.S. banks eligible for FDIC “pass-through” insurance coverage:

<https://perma.cc/73MG-USWQ>

**EURSToken****What is the coin pegged to?**

Euro:

<https://perma.cc/2GNC-X8QA> (under “What is EURS?”)

**Table 2 Footnote / Table 3 How to redeem it?**

EURS is not directly redeemable through STASIS, but is redeemable through other institutions and digital asset exchanges:

<https://perma.cc/526S-QGYV> (under “About EURS” / “Can I exchange EURS for fiat euros?”)

Some of the institutions/exchanges listed in the above source no longer operate:

ePayments was suspended:

<https://perma.cc/WV4Y-B3PZ>

DSX no longer works:

<https://perma.cc/MK2F-FVKV>

Gozo no longer works:

<https://perma.cc/LCD5-TQKG>

**Market Cap:**

<https://perma.cc/6K6N-BG33>

**Is the contract equity or debt?**

Equity:

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	<p><a href="https://perma.cc/4BDR-R7X2">https://perma.cc/4BDR-R7X2</a> (under “There Are a Lot of Stable Coin Projects—Here’s How Ours is Different” / “How does EURs fit into all this?”)</p> <p><b>How are the underlying assets custodied?</b></p> <p>Partner institutions:</p> <p><a href="https://perma.cc/S6G2-GCF5">https://perma.cc/S6G2-GCF5</a> (under “About STASIS” / “Who manages the reserves and how?”)</p> <p>Names of partner institutions are listed in the “On-demand verification” document:</p> <p><a href="https://perma.cc/9K9D-MWFU">https://perma.cc/9K9D-MWFU</a></p>
<p><b>Stably USD, formerly StableUSD (USDS)</b></p>	<p><b>What is the coin pegged to?</b></p> <p>USD:</p> <p><a href="https://perma.cc/VD54-7MSF">https://perma.cc/VD54-7MSF</a></p> <p><b>Market Cap:</b></p> <p><a href="https://perma.cc/S32M-3P66">https://perma.cc/S32M-3P66</a></p> <p><b>Is the contract equity or debt?</b></p> <p>Debt:</p> <p><a href="https://perma.cc/U5V7-QB94">https://perma.cc/U5V7-QB94</a> (section 2.1)</p> <p><b>How to redeem it?</b></p> <p><a href="https://perma.cc/MCG8-3LMM">https://perma.cc/MCG8-3LMM</a> (under “How to Redeem USDS”)</p> <p><b>Is there a cost to redeem?</b></p> <p>No:</p> <p><a href="https://perma.cc/MCG8-3LMM">https://perma.cc/MCG8-3LMM</a> (under “Fees”)</p> <p><b>Is there a notice period?</b></p> <p>No:</p> <p><a href="https://perma.cc/VD54-7MSF">https://perma.cc/VD54-7MSF</a> (under “Our Stablecoin’s Features”)</p> <p><b>How are the underlying assets custodied?</b></p> <p>Prime Trust:</p> <p><a href="https://perma.cc/VD54-7MSF">https://perma.cc/VD54-7MSF</a></p>
<p><b>Stronghold USD</b></p>	<p><b>What is the coin pegged to?</b></p> <p>USD:</p> <p><a href="https://perma.cc/6VZR-UX5L">https://perma.cc/6VZR-UX5L</a> (under “FAQ” / “Why Stronghold USD?”)</p> <p><b>Market Cap:</b></p> <p>Unknown market cap:</p> <p><a href="https://perma.cc/8F7M-2P5X">https://perma.cc/8F7M-2P5X</a></p> <p>Inactive for retail investors:</p> <p><a href="https://cryptobriefing.com/stronghold-just-another-stablecoin/">https://cryptobriefing.com/stronghold-just-another-stablecoin/</a></p> <p><b>Is the contract equity or debt?</b></p>

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Debt:

<https://perma.cc/9TLK-DBSS> (section 4.3, section 5)

<https://media-nucleo.s3.amazonaws.com/media/asset/73/whitepaper/RBFACISPBC9S.pdf> (p.2, p.7)

**How to redeem it?**

Redemption process:

<https://media-nucleo.s3.amazonaws.com/media/asset/73/whitepaper/RBFACISPBC9S.pdf> (p.7)

[asset/73/whitepaper/RBFACISPBC9S.pdf](https://media-nucleo.s3.amazonaws.com/media/asset/73/whitepaper/RBFACISPBC9S.pdf) (p.7)

**Is there a cost to redeem?**

No:

<https://perma.cc/9AEA-RV86> (section 5)

**Is there a notice period?**

No:

<https://media-nucleo.s3.amazonaws.com/media/asset/73/whitepaper/RBFACISPBC9S.pdf> (p.7)

[asset/73/whitepaper/RBFACISPBC9S.pdf](https://media-nucleo.s3.amazonaws.com/media/asset/73/whitepaper/RBFACISPBC9S.pdf) (p.7)

**How are the underlying assets custodied?**

Prime Trust:

<https://perma.cc/H87Z-MB8Y>

Prime Trust deposits the cash at FDIC-insured banks:

<https://www.coindesk.com/ibm-is-helping-launch-a-price-stable-cryptocurrency-insured-by-the-fdic>

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**Facebook's  
Diem  
(formerly  
Libra)**

**What is the coin pegged to?**

Single currency and multiple currencies:

<https://www.diem.com/en-us/white-paper/#cover-letter> (under "Offering single-currency stablecoins in addition to the multi-currency coin")

**Market Cap:**

N/A. Diem has not yet been released:

<https://perma.cc/UV6U-XADQ>

**Is the contract equity or debt?**

Debt:

<https://www.diem.com/en-us/white-paper/#the-economic-and-the-libra-reserve> (under "Emergency Operations")

**How to redeem it?**

Designated Dealers:

<https://www.diem.com/en-us/white-paper/#compliance-and-the-prevention-of-illicit-activity> (under "Details of compliance and safety controls across the Libra network" / "D. Association will distribute Libra Coins through regulated Designated Dealers")

**Is there a cost to redeem?**

Unclear. It may have redemption fees:

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<https://www.diem.com/en-us/white-paper/#the-economic-and-the-libra-reserve> (under “Emergency Operations”)

It also may have transaction fees:

<https://www.diem.com/en-us/white-paper/#the-economic-and-the-libra-reserve> (under “The importance of full backing and risk mitigation”)

**Is there a notice period?**

Unclear. It may have redemption stays:

<https://www.diem.com/en-us/white-paper/#the-economic-and-the-libra-reserve> (under “Emergency Operations”)

**How are the underlying assets custodied?**

Reserve:

<https://www.diem.com/en-us/white-paper/#the-economic-and-the-libra-reserve> (under “Custody and Designated Dealers”)

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