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## Digitizing the Dollar: Privacy Considerations and Policy Prescriptions for a U.S. Central Bank Digital Currency

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# Digitizing the Dollar: Privacy Considerations and Policy Prescriptions for a U.S. Central Bank Digital Currency

GINA AHMAR\*

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## INTRODUCTION

On March 22, 2021, Federal Reserve (“the Fed”) Chairman Jerome Powell addressed the possibility of a United States (“U.S.”) central bank digital currency (“CBDC”), or a “digital dollar,” stating that though the Federal Reserve Bank of Boston and Massachusetts Institute of Technology (“MIT”) have partnered to explore its necessity and practicality, the Fed is

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“taking its time” before beginning its development.<sup>1</sup> However, the disbursement of stimulus checks during the COVID-19 pandemic, through means including paper checks and prepaid debit cards, has catalyzed conversations about the need for a utilization of the technology available and able to provide streamlined, efficient and “immediate” solutions.<sup>2</sup> The conversation surrounding a digital dollar, then, has become a question of “when,” not “if.”<sup>3</sup> This paper observes the significance of privacy in the greater digital currency space, and argues that, in this period of careful exploration that will inform the future architecture and regulation of a U.S. CBDC, a prioritization of privacy should be at the forefront of the conversation surrounding the digital dollar.

First, Section One will provide an explanation of CBDCs. Section Two will address the relevant discourse surrounding CBDCs and regulation surrounding digital currency at large within the U.S., and Section Three will then briefly discuss the advantages and disadvantages of a CBDC. Section Four of this paper will then provide the greater context of digital currencies and their usage and implementations around the world, and examine the factors that led to either the successes or failures of CBDCs in order to inform this discussion of what an American implementation would look like. Section Five considers the relationship between privacy and the law in the U.S., as well as its history, to further provide the context for a thoughtful consideration of a digital dollar. Assuming that, at some point in the future, the Fed will decide that the advantages *do* outweigh the disadvantages and decide to implement a CBDC, Section Six addresses the architectural means to achieve a privacy-conscious digital dollar, while Section Seven provides two recommendations to achieve the type of privacy-conscious regulatory scheme that should govern the digital dollar.

The importance of preserving privacy, to the extent reasonably possible, is at the heart of this paper. It is this paper’s primary position that, in order to address the increase of governmental power that a CBDC may cause given the exposure to personal information that may result from its widespread usage, U.S. legislation must adapt to balance this power with the potential privacy risks to American citizens by incorporating privacy not just in the design of the digital dollar itself, but in the development of the regulatory scheme surrounding it, by (1) destigmatizing digital currency and (2) allowing for a reasonable amount of anonymity. The final section will then conclude this discussion.

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1. Jeff Cox, *Powell Calls Cryptocurrencies ‘Not Really Useful Stores of Value’ and Says Fed Will Move Slowly*, CNBC (Mar. 22, 2021, 11:02 AM), <https://www.cnbc.com/2021/03/22/cryptocurrencies-are-not-useful-stores-of-value-says-feds-powell.html>.

2. *Experts Tell Congress it’s Time to Create a “Digital Dollar.”* PYMNTS, <https://www.pymnts.com/digital-payments/2020/experts-tell-congress-create-digital-dollar> (June 12, 2020).

3. *Id.*

## SECTION I: WHAT IS A CBDC?

Since its founding, the U.S. has been notably isolationist with respect to its currency.<sup>4</sup> The rise of cryptocurrency has sparked governmental interest in possibly creating its own digital dollar. Instead of waiting and watching the future of finance pass it by, the U.S. is responding with a high level of engagement. While this engagement has been largely discussion-based thus far, there is vast potential for governmental incorporation of digital currencies, plausibly through a CBDC.

CBDCs are government-issued digital assets, which have the ability to expedite and increase the security of payments between banks, institutions, and individuals.<sup>5</sup> A CBDC is backed by a government's own central bank, and is legal tender that represents a claim against the central bank, as opposed to a commercial bank or a payment service provider. It has been considered a response to the rise, popularity, and notoriety of decentralized digital currencies, such as Bitcoin and Ethereum.<sup>6</sup> According to a recent study conducted by the Bank for International Settlements ("BIS"), more than 70% of institutions are actively researching and developing proofs of concept for CBDCs.<sup>7</sup> As CBDCs are still relatively new and early in their development, most countries are starting to explore the idea, including the U.S. Others have already developed their own CBDC demos and are piloting them nationally.<sup>8</sup>

Many already-developed CBDCs are built on blockchain technology. Blockchain technology is a system of recording information; it is a digital ledger of transactions that is duplicated across a distributed network of computer systems, and therefore is not controlled by a single entity.<sup>9</sup> The defining characteristics of the technology, including the lack of intermediaries, result in blockchain finance being far more secure than cash, credit, and other conventional forms of payment.<sup>10</sup> This level of security has

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4. Kimberly Amadeo, *Why the US Dollar is the Global Currency*, THE BALANCE (July 23, 2020), <https://www.thebalance.com/world-currency-3305931>.

5. Matthieu Bouchaud ET AL., *Central Banks and the Future of Digital Money*, CONSENSYS (Jan. 2020), <https://cdn2.hubspot.net/hubfs/4795067/ConsenSys-CBDC-White-Paper.pdf>.

6. Tom Wilson, *Explainer: Bitcoin's Mainstream Charge Raises Stakes for Central Bank Digital Cash*, REUTERS (Feb. 15, 2021), <https://www.reuters.com/article/us-cenbanks-digital-explainer/explainer-bitcoins-mainstream-charge-raises-stakes-for-central-bank-digital-cash-idUSKBN2AF1BW>.

7. *Blockchain Solutions for Central Bank Digital Currency (CBDC)*, CONSENSYS, <https://consensys.net/solutions/payments-and-money/cbdc/> (last visited Apr. 1, 2021); Dante Disparte, *Could Digital Currencies Make Being Poor Less Costly?*, HARV. BUS. REV. (Aug. 5, 2020), <https://hbr.org/2020/08/could-digital-currencies-make-being-poor-less-costly>.

8. Jonathan Cheng, *China Rolls Out Pilot Test of Digital Currency*, THE WALL ST. J., <https://www.wsj.com/articles/china-rolls-out-pilot-test-of-digital-currency-11587385339> (Apr. 20, 2020, 8:22 AM).

9. Emily Rutland, *Blockchain Byte: R3 Research*, R3 Research, FIN. INDUS. REGUL. AUTH., [https://www.finra.org/sites/default/files/2017\\_BC\\_Byte.pdf](https://www.finra.org/sites/default/files/2017_BC_Byte.pdf) (last visited Apr. 1, 2021).

10. Marco Iansiti & Karim R. Lakhani, *The Truth About Blockchain*, HARV. BUS. REV. (Jan. 2017), <https://hbr.org/2017/01/the-truth-about-blockchain>.

fast-tracked blockchain to the forefront of discussions concerning the future financial infrastructure of the U.S. While there is a distinction to be made between wholesale and retail CBDCs, this paper will focus on a retail CBDC, one that would be used by consumers on a day-to-day basis.<sup>11</sup>

## SECTION II: DIGITAL CURRENCY AND U.S. LAW

As a CBDC does not currently exist in the U.S., the regulatory framework that would surround it has not yet been developed. Chairman Powell said in his March 2021 statements that at least some “enabling legislation” would need to be enacted before the Fed can proceed with the digital dollar; thus, this currently underdeveloped area of the law is likely to be built from the ground up in the coming years.<sup>12</sup> Due to the lack of CBDC regulation, and though a CBDC would not constitute a cryptocurrency,<sup>13</sup> a look at the cryptocurrency regulations currently in place will provide the context of the relationship between digital currencies and the law that will be useful in considering a digital dollar.

Executive and administrative agencies, including the Securities and Exchange Commission (“SEC”)<sup>14</sup>, the Commodities and Futures Trading Commission (“CFTC”), the Federal Trade Commission (“FTC”), the Department of the Treasury via the Internal Revenue Service (“IRS”), the Office of the Comptroller of the Currency (“OCC”), and the Financial Crimes Enforcement Network (“FinCEN”), have been engaged with cryptocurrency regulation, but little formal rulemaking has actually

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11. *Retail CBDCs: The Next Payments Frontier*, OFFICIAL MONETARY AND FIN. INST. F. & INT’L BUS. MACHINES CORP., <https://www.omfif.org/wp-content/uploads/2019/11/Retail-CBDCs-The-next-payments-frontier.pdf> (2019); Wouter Bossu et al., *Legal Aspects of Central Bank Digital Currency: Central Bank and Monetary Law Considerations* (International Money Fund Working Papers, Paper No. 254, 2020), <https://www.imf.org/-/media/Files/Publications/WP/2020/English/wpica2020254-print-pdf.ashx>.

12. Cox, *supra* note 1.

13. Alyssa Hertig, *What is a CBDC?*, COINDESK (Dec. 4, 2020), <https://www.coindesk.com/what-is-a-cbdc>; see also Diego Geroni, *Crypto vs CBDC: Difference Between Blockchain-Enabled CBDC and Other Crypto*, 101 BLOCKCHAINS (Feb. 1, 2021), <https://101blockchains.com/crypto-vs-cbdc>.

14. The SEC generally has regulatory authority over the issuance and resale of any token or other digital asset that constitutes a security. There is debate over whether the digital assets associated with cryptocurrencies ought to constitute a “security” for SEC registration purposes; the regulatory treatment of any particular crypto-asset depends greatly on whether or not it is a security. Former SEC Chairman Jay Clayton said in June 2018 that cryptocurrencies “like Bitcoin” do not constitute securities, and as a digital dollar would similarly aim to at least partially replace the U.S. dollar, it is likely that the direct regulation of the digital dollar itself would not be under the SEC’s purview. Jay Clayton, Chairman, *Chairman’s Testimony on Virtual Currencies: The Roles of the SEC and CFTC*, U.S. SEC. & EXCH. COMM’N (Feb. 6, 2018), <https://www.sec.gov/news/testimony/testimony-virtual-currencies-oversight-role-us-securities-and-exchange-commission>; see also Kate Rooney, *SEC Chief Says Agency Won’t Change Securities Laws to Cater to Cryptocurrencies*, CNBC (June 8, 2018), <https://www.cnbc.com/2018/06/06/sec-chairman-clayton-says-agency-wont-change-definition-of-a-security.html>.

occurred.<sup>15</sup> This is likely, at least partially, due to agency fears regarding both overregulation and legislation that would result in foreign investment.<sup>16</sup> That is, if the U.S. overregulates or passes legislation that makes investment in cryptocurrency unfavorable domestically, investors may resort to investing in cryptocurrency and other uses of blockchain finance technology overseas, which would not be consistent with the U.S. maintaining a leading role in the development of this technology. However, this concern should not continue to stall the creation of sufficient, effective, and informed regulations. The need for these agencies to provide for public protection alongside the rise of cryptocurrencies is only increasing, as the FTC recently warned that cryptocurrency scammers are, increasingly often, tricking people into sending them money.<sup>17</sup> This further goes to the underdeveloped nature of not just the framework that would one day regulate a CBDC, but of the regulatory framework currently in place to address digital currencies on the whole.

The federal government has taken an inhospitable approach to cryptocurrency regulation. Former Attorney General William Barr in October 2020 announced the creation of the Cryptocurrency Enforcement Network, in what was widely regarded as an effort to undercut the ability of cryptocurrency users to transact anonymously.<sup>18</sup> The framework states that the use of private coins themselves can be “indicative of possible criminal conduct,” and targets decentralized exchanges specifically, which allow the exchange of cryptocurrency between individuals without a third-party mediator.<sup>19</sup> The DOJ mandated registration with FinCEN and required cryptocurrency exchanges to “collect and maintain customer and transactional data,” or else be subject to civil and criminal penalties.<sup>20</sup>

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15. Joe Dewey, *Blockchain & Cryptocurrency Regulation 2021*, GLOB. LEGAL INSIGHTS, <https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/usa> (last visited Mar. 30, 2021).

16. *Id.*

17. In her upcoming article, “How to Regulate Blockchain’s Real Life Applications: Lessons from the California Blockchain Working Group,” Professor Michele Benedetto Neitz addresses the importance of creating blockchain technology laws that would protect the public from harm, as part of her greater discussion surrounding the complex questions legislators must consider in regulating a brand-new technology that they might not yet fully understand. Cryptocurrencies are an attractive, exciting investment opportunity to many members of the public who may not be adequately informed to navigate them responsibly; for example, one study found that about 78% of initial coin offerings (ICOs) in 2017 alone were actually scams. The author would like to thank Professor Neitz for her comments on and supervision of this paper. Michele Benedetto Neitz, *How to Regulate Blockchain’s Real-Life Applications: Lessons from the California Blockchain Working Group*, 61 JURIMETRICS (2021); see also Cristina Miranda, *Avoiding a Cryptocurrency Scam*, FED. TRADE COMM’N CONSUMER INFO., BLOG (July 16, 2020), <https://www.consumer.ftc.gov/blog/2020/07/avoiding-cryptocurrency-scam>.

18. Press Release, U.S. Dept. of Justice, Attorney General William P. Barr Announces Publication of Cryptocurrency Enforcement Framework (Oct. 8, 2020), <https://www.justice.gov/opa/pr/attorney-general-william-p-barr-announces-publication-cryptocurrency-enforcement-framework>.

19. U.S. DEP’T OF JUSTICE, 20-1069, REPORT OF THE ATTORNEY GENERAL’S CYBER DIGITAL TASK FORCE: CRYPTOCURRENCY ENFORCEMENT FRAMEWORK at 23 (Oct. 8, 2020).

20. *Id.* at 38.

In June 2020, the Fifth Circuit held in *United States v. Gratkowski* that law enforcement does not need a warrant in order to obtain financial transaction data from cryptocurrency exchanges, and that the defendant did not have a reasonable expectation of privacy in the records of his cryptocurrency transactions.<sup>21</sup> Finally, in December 2020, FinCEN and the U.S. Treasury announced a bill that would require money service businesses, including cryptocurrency exchanges, to collect identifying data about individuals who transact with their customers using self-hosted cryptocurrency wallets or foreign exchanges.<sup>22</sup>

At the state level, some states have intervened with their own understandings of how cryptocurrencies and the law should interact. State legislation has generally fallen into two categories – one which promotes cryptocurrencies as part of larger efforts to stimulate local economies, and another which limits or even prohibits cryptocurrencies out of fear of volatility. For example, in Colorado, the legislature passed a bipartisan bill which exempts cryptocurrencies from securities regulations, which could encourage the use of cryptocurrency.<sup>23</sup> In Wyoming, a state which has demonstrably embraced cryptocurrency, the legislature passed a bill which allows for the creation of a new type of bank, such that businesses will be able to hold digital assets safely and legally.<sup>24</sup> Ohio was the first state to accept taxes via cryptocurrency, though it has since suspended this tax

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21. *United States v. Gratkowski*, No. 19-50492 (5th Cir. June 30, 2020), (USCourts.gov, 5th Cir. Opinions), <https://www.ca5.uscourts.gov/opinions/pub/19/19-50492-CR0.pdf>.

22. These proposals were viewed as widely controversial; critics said that it would be “technically impossible” for some projects to comply as certain decentralized uses of this technology, such as smart contracts, do not have or collect the information to provide. FinCEN received thousands of comments on the proposal and extended the comment period by 45 days, and announced on January 14, 2021 that it had already reviewed over 7,000 comments submitted during the original comment period. Nikhilesh De & Kevin Reynolds, *FinCEN Extends Comment Period for Controversial Crypto Wallet Rule*, COINDESK (Jan. 14, 2021, 6:03 AM), <https://www.coindesk.com/fincen-extends-comment-period-for-controversial-crypto-wallet-rule-by-15-days>; see also *FinCEN Extends Comment Period for Rule Aimed at Closing Anti-Money Laundering Regulatory Gaps for Certain Convertible Virtual Currency and Digital Asset Transactions*, FIN. CRIMES ENF’T NETWORK (Jan. 14, 2021), <https://www.fincen.gov/news/news-releases/fincen-extends-comment-period-rule-aimed-closing-anti-money-laundering>; Lewis Ziropiannis et al., *FinCEN Announces Proposed Rule Aimed at Closing Anti-Money Laundering Regulatory Gaps for Certain Convertible Virtual Currency and Digital Asset Transactions*, FOLEY & LARDNER LLP (Dec. 21, 2020), <https://www.foley.com/en/insights/publications/2020/12/closing-anti-money-laundering-regulatory-gaps>; Press Release, U.S. Dep’t of the Treasury, *The Financial Crimes Enforcement Network Proposes Rule Aimed at Closing Anti-Money Laundering Regulatory Gaps for Certain Convertible Virtual Currency and Digital Asset Transactions* (Dec. 18, 2020), <https://home.treasury.gov/news/press-releases/sm1216>.

23. *Senate Bill 19-023*, Colorado General Assembly (2019), [https://leg.colorado.gov/sites/default/files/2019a\\_023\\_signed.pdf](https://leg.colorado.gov/sites/default/files/2019a_023_signed.pdf).

24. Justin S. Wales & Matthew E. Kohen, *State Regulations on Virtual Currency and Blockchain Technologies (Updated July 2020)*, CARLTON FIELDS (Oct. 17, 2017), [https://www.carltonfields.com/insights/publications/2020/state-regulations-on-virtual-currency-and-blockchain-technologies-\(updated-july-2020\)](https://www.carltonfields.com/insights/publications/2020/state-regulations-on-virtual-currency-and-blockchain-technologies-(updated-july-2020)).

payment program, citing “legal issues.”<sup>25</sup> Perhaps most relevant to a future CBDC, Oklahoma governmental agencies have begun accepting cryptocurrency as an instrument of monetary value.<sup>26</sup> On the other end of the spectrum, Iowa introduced a bill that, if passed, would bar the state and political subdivisions within from accepting cryptocurrency as a form of payment.<sup>27</sup> At least ten other states have issued formal warnings about the dangers associated with cryptocurrency.<sup>28</sup> This polarity in state intervention can be read in two ways: states simply view cryptocurrency through different lenses, by virtue of what it is and what they want their economies to reflect; or, this polarity is a mere result of the lack of a centralized cryptocurrency, and the real point of contention amongst state governments is whether it is their place to regulate currencies independent from the U.S. dollar. Further, there is reason to believe that an interjurisdictional race could take place among the states: states with more cryptocurrency-friendly legislation, such as Wyoming and Oklahoma, are more likely to attract the innovators of this space and their new, possibly revolutionary products and services, than other states.<sup>29</sup>

In terms of wholesale electronic funds transfers, the primary source of regulation in the U.S. is Article 4A of the Uniform Commercial Code (“UCC”), which has been enacted in all 50 states.<sup>30</sup> Article 4A addresses and allocates the rights, obligations, and liabilities of banks, other intermediaries, and their customers in the context of funds transfers.<sup>31</sup> Its regulatory framework for wholesale wire transfers has been influential, even internationally.<sup>32</sup> Though this regulation was designed for wholesale wire transfers, Article 4A may be extended to regulate electronic funds transfers in the context of a CBDC.<sup>33</sup>

Thus, due to the lack of a cohesive regulatory framework, there are many unanswered questions with respect to the future of digital currencies. The analysis below will focus on the question of, if the U.S. government were to adopt a CBDC on a national scale, what the regulatory scheme would need to look like in order to balance the government’s increase in access to private information with the privacy concerns of American citizens.

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25. Kelly P. Erb, *Citing Legal Issues, Ohio Suspends Crypto Tax Payment Program*, FORBES (Nov. 6, 2019), <https://www.forbes.com/sites/kellyphillipserb/2019/11/06/citing-legal-issues-ohio-suspends-crypto-tax-payment-program/>.

26. Dewey, *supra* note 15.

27. *Id.*

28. *Id.*

29. The idea of an interjurisdictional competition among states, and that “states who can win the race to attract blockchain businesses to incorporate and domicile in their state can earn more than just increased tax revenues from start-up companies,” is also explored by Neitz in her blockchain law article. Neitz, *supra* note 17.

30. Steven L. Schwarcz, *Central Bank Digital Currencies and Law*, ISTITUTO AFFARI INTERNAZIONALI (Sept. 4, 2020), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3684814](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3684814).

31. *Id.*

32. *Id.*

33. *Id.*

This paper will infer, based on the progress of other countries in this space, as well as current regulations surrounding digital currency at large, what may or may not be possible and preferable for the U.S. In order for the U.S. to successfully utilize a CBDC and take advantage of the benefits that it could promote, it must find a way to strike this balance.

### SECTION III: THE PROS AND CONS OF A DIGITAL DOLLAR

The emergence of digital dollar has become a question of “when,” not “if.”<sup>34</sup> Weighing the advantages of adopting a CBDC against its potentially less favorable consequences is important for two reasons. First, in order to understand why it is likely that the pros will ultimately be deemed to outweigh the cons; and second, in order to understand how the same access to information that underlies some of the advantages may also give rise to invasions of privacy.

To begin with the advantages, currently, the cost of managing and transferring cash is high, and utilizing financial technology could significantly reduce expenses and increase efficiency.<sup>35</sup> ConsenSys, a market-leading blockchain technology company, cites several conceivable benefits for central banks and the wider financial system, including fostering the digital assets revolution by sparking innovation and presenting private companies with the opportunity to create products and services that respond to the novel effects of a CBDC.<sup>36</sup> A CBDC would also support cheaper cross-border remittances, and improve settlements of interbank payments.<sup>37</sup>

Further, central banks would have new tools for expanding and reducing the supply of money, and improving the employment of initiatives, such as direct distribution of money to individuals (as opposed to the indirect methods typically used by governments today, such as tax breaks).<sup>38</sup> The Fed’s toolkit to carry out its dual mandate of promoting both low unemployment and low inflation could be incredibly bolstered. In the words of Ethereum co-founder Joseph Lubin, “CBDCs give central banks future-oriented tools to allow them to implement monetary policy in more direct, innovative ways and keep pace with technological change.”<sup>39</sup>

Finally, a CBDC could help the U.S. accommodate currently unbanked persons.<sup>40</sup> Currently, 5.4 percent of U.S. households (approximately 7.1

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34. PYMNTS, *supra* note 2.

35. *The Rise of Central Bank Digital Currencies*, ATLANTIC COUNCIL (Feb. 1, 2021), <https://www.atlanticcouncil.org/blogs/econographics/the-rise-of-central-bank-digital-currencies/>.

36. Bouchaud et al., *supra* note 5.

37. *Id.*

38. *Id.*

39. *Blockchain Solutions for Central Bank Digital Currency (CBDC)*, CONSENSYS, <https://consensys.net/solutions/payments-and-money/cbdc/>, (last visited Mar. 29, 2021).

40. Disparte, *supra* note 7; *Central Bank Digital Currency Can Contribute to Financial Inclusion but Cannot Solve its Root Causes*, ATLANTIC COUNCIL (June 10, 2020), <https://www.atlanticcouncil.org/blogs/geotech-cues/central-bank-digital-currency-can-contribute-to-financial-inclusion-but-cannot-solve-its-root-causes>.

million households) are unbanked, and there is reason to believe that this is highly associated with the hurdles that accompany opening a bank account.<sup>41</sup> Because a CBDC, in theory, eliminates the need for a third-party bank account, it would promote financial and social inclusion.

These advantages are not without their risks. For the purposes of this paper, the potential invasions of privacy constitute the main drawback of a CBDC that must be addressed in order for it to be successfully implemented. A CBDC would likely provide central governments with ample insight into the personal financial data and transaction details of private citizens.<sup>42</sup> Currently, very few central banks have the appropriate legal frameworks in place to support the launch of a CBDC; this is in part due to the other legal questions a CBDC would raise, including whether or not CBDCs can be considered a currency, and other technical questions about their design.<sup>43</sup> A study found that 69% of central banks cannot issue a tokenized version of a CBDC due to their current legal framework.<sup>44</sup> However, this paper assumes that the necessary legal framework in the U.S. would precede the launch a CBDC. That framework would not only need to be created to allow for the launch of a CBDC, but would also need to be developed in order to address the many other legal questions that it would pose. For the purposes of this paper, the regulatory framework's future relationship with privacy will be assessed, and the analysis in later sections of the paper will focus on that particular aspect of a digital dollar.

#### SECTION IV: INTERNATIONAL APPROACHES TO CBDCs

On August 13, 2020, Governor Lael Brainard announced that the Fed, “like other central banks, [is] continuing to assess the opportunities and challenges of, as well as the use cases for, a digital currency, as a complement to cash and other payments options.”<sup>45</sup> She also announced a partnership between the Federal Reserve Bank of Boston and MIT to explore the concept of a CBDC and learn what architectural features a future digital dollar would possess.<sup>46</sup> Meanwhile, other countries continue to take the lead on piloting CBDCs.

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41. Mark Kutzbach et al., *How America Banks: Household Use of Banking and Financial Services*, FED. DEPOSIT INSURANCE CORP., [https://www.economicinclusion.gov/downloads/2019\\_FDIC\\_Unbanked\\_HH\\_Survey\\_ExecSumm.pdf](https://www.economicinclusion.gov/downloads/2019_FDIC_Unbanked_HH_Survey_ExecSumm.pdf) (last visited Mar. 24, 2021).

42. Jess Cheng et al., *Preconditions for a General-Purpose Central Bank Digital Currency*, BD. OF GOVERNORS OF THE FED. RESERVE SYS. (Feb. 24, 2021), <https://www.federalreserve.gov/econres/notes/feds-notes/preconditions-for-a-general-purpose-central-bank-digital-currency-20210224.htm>.

43. Rachael King, *Podcast: The Legal Implications of CBDC*, CENT. BANKING (Feb. 17, 2021), <https://www.centralbanking.com/fintech/cbdc/7797661/podcast-the-legal-implications-of-cbdc>.

44. *Id.*

45. Lael Brainard, Governor, *An Update on Digital Currencies*, BD. OF GOVERNORS OF THE FED. RESERVE SYS., (Aug. 13, 2020), <https://www.federalreserve.gov/newsevents/speech/brainard20200813a.htm>.

46. *Id.*

Perhaps most notably, China is at the forefront of CBDC development and implementation. As the world's second largest economy, China's move to digitize its currency has been momentous. It began with piloting its CBDC, Digital Currency/Electronic Payment ("DCEP"), in different cities.<sup>47</sup> Currently, there is no existing law in China that directly regulates DCEP.<sup>48</sup> In October 2020, China's deputy governor Fan YiFei announced that China's CBDC had been used in over 3.1 million transactions, with a valuation of roughly 1.1 billion yuan (\$162 million).<sup>49</sup> While China did attempt to utilize distributed ledger technology in CBDC prototypes, it ultimately found this technology unsuitable for its digital currency<sup>50</sup>

Concerns about China's employment of the DCEP to strengthen its digital authoritarianism and export its influence abroad have begun to surface.<sup>51</sup> DCEP utilizes "controllable anonymity," which means that while both parties of a transaction may be anonymous to the public, the Chinese government can still track all trading information.<sup>52</sup> The Center for New American Security ("CNAS") found evidence in a 2018 PowerPoint presentation, presumptively from the Chinese government, that its "central bank digital currency [was] being designed to allow for surveillance of all financial transactions throughout its society."<sup>53</sup> "By eliminating some of the previous constraints on government data collection of private citizens' transactions, DCEP represents a significant risk to the long-held standards of financial privacy upheld in free societies," states the CNAS report.<sup>54</sup> CNAS went on to emphasize that China is heading toward an obtainment of data that "no other government has ever been able to efficiently assemble," due to the immediate authentication of each transaction.<sup>55</sup> Yaya J. Fanusie, a co-author of the CNAS report, said in an email to CoinDesk that "DCEP would give the Chinese Communist Party something that no government has ever had in history: the ability to monitor in real time the minute financial dealings

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47. Yaya J. Fanusie & Emily Jin, *China's Digital Currency: Adding Financial Data to Digital Authoritarianism*, CNAS (Jan. 2021), <https://s3.us-east-1.amazonaws.com/files.cnas.org/documents/CNAS-Report-Chinas-Digital-Currency-Jan-2021-final.pdf>.

48. Betty Louie & Martha Wang, *China's Digital Currency and What This Could Mean For Foreign Companies and Financial Institutions in China*, JD SUPRA (Feb. 10, 2021), <https://www.jdsupra.com/legalnews/china-s-digital-currency-and-what-this-7987963/>.

49. Ada Hui, *China Central Bank Official Reveals Results of First Digital Yuan Pilots*, COINDESK (Oct. 6, 2020), <https://www.coindesk.com/china-central-bank-official-reveals-results-of-first-digital-yuan-pilots>.

50. Fanusie & Jin, *supra* note 47.

51. *Id.*

52. *Id.*

53. *See id.*; *see also* Jason Brett, *China's Digital Yuan Reported to be Ultimate Financial Censorship Tool*, FORBES (Jan. 27, 2021), <https://www.forbes.com/sites/jasonbrett/2021/01/27/chinas-digital-yuan-reported-to-be-ultimate-financial-censorship-tool/?sh=3707718c50ac>.

54. *Id.*

55. *Id.*

of its citizens.”<sup>56</sup> He clarified that while much of the world transacts digitally today, that transactional data “is not accessible wholesale by government authorities because the government has to go through financial institutions to acquire the data.”<sup>57</sup> In contrast, the DCEP puts the data directly in the hands of the Chinese government, without requiring it to go through intermediaries; as would any CBDC with any central bank issuing it.<sup>58</sup> Accordingly, individuals using a digital yuan are inevitably conceding much of their financial privacy, and this would not be unique to the DCEP.<sup>59</sup>

Thus, privacy concerns are arising in light of the massive “amount of insight a CBDC would give Chinese authorities into its users’ financial data and behavior,” as well as information about anyone who interacts with those users, including international citizens.<sup>60</sup> While Chinese officials have indicated that the large amounts of DCEP data will be used only to enhance monetary policy and monitor illegal activity, other, more senior officials have stated that DCEP may even be used as a tool to enforce political agendas.<sup>61</sup>

Meanwhile, in May 2020, Yves Mersch, Vice-Chair of the Supervisory Board and Member of the Executive Board of the European Central Bank (“ECB”), acknowledged the importance and significance of preserving privacy, suggesting that an attempt to reduce the privacy of payments would “inevitably raise social, political and legal issues.”<sup>62</sup> In an October 2020 ECB report, Fabio Panetta, ECB Executive Board Member and Chair of the Eurosystem High-Level Task Force on Central Bank Digital Currency, announced that:

“to ensure that consumers continue to have unfettered access to central bank money in a way that meets their needs in the digital age, the ECB’s Governing Council decided to advance work on the possible issuance of a digital euro – an electronic form of central bank money accessible to all citizens and firms. A digital euro would be introduced alongside cash, it would not replace it.”<sup>63</sup>

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56. Benjamin Powers, *Geopolitics at Stake in US Response to China’s Digital Yuan: Report*, COINDESK (Jan. 27, 2021), <https://www.coindesk.com/us-china-digital-yuan-cbdc-geopolitical-power-report>.

57. *Id.*

58. Powers, *supra* note 56.

59. Powers, *supra* note 56.

60. Tanzeel Akhtar, *China Proposes Global Rules for Monitoring CBDCs*, COINDESK (Mar. 25, 2021), <https://www.coindesk.com/china-proposes-global-rules-for-monitoring-cbdc>; *see also* Powers, *supra* note 52.

61. Fanusie & Jin, *supra* note 47.

62. Nikhilesh De, ‘Game-Changer’ Retail Digital Currency Now European Central Bank’s Focus, Board Member Says, COINDESK (May 11, 2020), <https://www.coindesk.com/cbdc-ecb-yves-mersch-euro>.

63. *Report on a Digital Euro*, EUROPEAN CENT. BANK (Oct. 2020), [https://www.ecb.europa.eu/pub/pdf/other/Report\\_on\\_a\\_digital\\_euro-4d7268b458.en.pdf](https://www.ecb.europa.eu/pub/pdf/other/Report_on_a_digital_euro-4d7268b458.en.pdf).

The next month, Panetta announced that the ECB was in a phase of “listening and experimentation,” and released a public survey to gather information on European sentiments regarding a CBDC.<sup>64</sup> He also stated that the ECB’s Governing Council will decide “whether to initiate a fully-fledged project that should lead us to define the specific characteristics of a digital euro and get ready for a possible launch” by the middle of 2021.<sup>65</sup> Thus, while a digital euro is in its early stages of development, the importance of privacy has already been acknowledged by Panetta as an “essential element of modern democracies and part of our European values.” Though Panetta said that a digital euro would enhance privacy in digital payments because central banks have “no commercial interests” related to consumer data that private suppliers of payment services may have, inappropriate usage of consumer data is just one of the ways in which abuses of privacy can occur. Perhaps to address this concern, Panetta went on to say that, as payments must also respect individuals’ privacy rights, the ECB has already “started exploring possible ways of enhancing privacy.”<sup>66</sup> This prioritization of privacy should be emulated by the U.S. when building its digital dollar, as discussed in section VI.

To continue this assessment of the international landscape, the Swedish central bank ran a digital currency pilot from February 2020 to February 2021, and reported that it should not be expected to feature the privacy inherent in cash usage, due to the fact that CBDCs, whether blockchain-based or not, require some sort of remote ledger, and thus cannot be genuinely “peer-to-peer, offline, or anonymous like cash.”<sup>67</sup> In October 2020, Central Bank of Russia head Elvira Nabiullina went further to say that a digital ruble would have, “no anonymity in the sense that there is in cash,” but that “confidentiality will be strengthened.”<sup>68</sup>

In October 2020, the Bahamas launched the Sand Dollar, the world’s first fully executed CBDC.<sup>69</sup> The Sand Dollar runs on a blockchain, and is a digital version of the Bahamian dollar, to which it is backed at a 1:1 ratio.<sup>70</sup> Unlike the Swedish, Russian and European Central Banks, which aim to complement cash usage with a CBDC, the goal of the Sand Dollar is to

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64. Fabio Panetta, *A Digital Euro for the Digital Era*, EUROPEAN CENT. BANK (Oct. 12, 2020), [https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp201012\\_1~1d14637163.en.html](https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp201012_1~1d14637163.en.html).

65. *Id.*

66. *Id.*

67. Hanna Armelius, Carl Andreas Claussen & Isaiah Hull, *On the Possibility of a Cash-Like CBDC*, SVERIGES RISK BANK (Feb. 2021), <https://www.riksbank.se/globalassets/media/rapporter/staff-memo/engelska/2021/on-the-possibility-of-a-cash-like-cbdc.pdf>.

68. Leop Jakobson, *Digital Ruble Coming as Soon as 2021*, MODERN CONSENSUS (Oct. 23, 2020), <https://modernconsensus.com/politics/digital-ruble-coming-as-soon-as-2021/>.

69. David Zaslowsky, *Bahamas to Launch Central Bank Digital Currency*, BAKER MCKENZIE: BLOCKCHAIN (Sept. 16, 2020), <https://blockchain.bakermckenzie.com/2020/09/16/bahamas-to-launch-central-bank-digital-currency/>.

70. Sebastian Sinclair, *Central Bank of Bahamas Launches Landmark ‘Sand Dollar’ Digital Currency*, COINDESK (Oct. 21, 2020), <https://www.coindesk.com/central-bank-of-bahamas-launches-landmark-sand-dollar-digital-currency>.

provide a safe and easy *alternative* to cash, as well as to foster more “inclusive access to regulated payments and other financial services.”<sup>71</sup> Being marketed and regarded as a true cash replacement in the Bahamas, it can be inferred that Bahamian citizens have a notable level of trust in their government.<sup>72</sup> However, the scalability of the currency should also be accounted for, as the population of the U.S. is over 800 times that of the Bahamas.<sup>73</sup>

In January 2020, the Hong Kong Monetary Authority (“HKMA”) and the Bank of Thailand announced their findings from Project Inthanon, their CBDC research project, conducted in partnership with eight commercial banks and R3, a blockchain company.<sup>74</sup> Edmond Lau, the Senior Executive Director of the HKMA, stated that the project was a first step towards solving the “pain points of low efficiency and high costs in traditional cross-border payments...with the use of blockchain technology.”<sup>75</sup> The two central banks developed a prototype using a distributed ledger in collaboration with ten banks, from both of the nations.<sup>76</sup> Ultimately, while both authorities have yet to release their own CBDCs, they have agreed to proceed in their research and continue trials, perhaps with more collaborators.<sup>77</sup> Later in 2020, Hong Kong began stricter regulation of cryptocurrencies in order to strengthen their anti-money laundering and counter-terrorist infrastructure.<sup>78</sup> In response, Paul Haswell, a technology expert at international law firm Pinsent Masons, warned that “cryptocurrencies have existed in something of a grey area in Hong Kong for some time, with talk of regulation rife for the last five years...regulation will also likely be against the backdrop of China’s own state-run digital currency, so Hong Kong will want to ensure any rival digital currencies are subject to oversight.”<sup>79</sup> Thus, tensions between distributed ledger-based cryptocurrencies and centralized digital currencies are already beginning to rise, and this same tension should be expected between a future digital dollar and existing cryptocurrencies in the U.S.

Ten days after the Bahamas launched its CBDC, the National Bank of Cambodia entered the market with its blockchain-based Bakong system.<sup>80</sup>

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71. *About Us*, SAND DOLLAR, <https://www.sanddollar.bs/about> (last visited Mar. 20, 2021).

72. *Sand Dollar*, <https://www.sanddollar.bs/> (last visited Mar. 20, 2021).

73. World Bank Group, *Economy Profile of the Bahamas*, (last visited Mar. 18, 2021) <https://www.doingbusiness.org/content/dam/doingBusiness/country/b/bahamas/BHS.pdf>.

74. Press Release, Bank of Thailand, *The Outcomes and Findings of Project Inthanon-LionRock and the Next Steps* (Jan. 22, 2020), [https://www.bot.or.th/English/FinancialMarkets/ProjectInthanon/Pages/Inthanon\\_LionRock.aspx](https://www.bot.or.th/English/FinancialMarkets/ProjectInthanon/Pages/Inthanon_LionRock.aspx).

75. *Id.*

76. *Id.*

77. *Id.*

78. Paul Haswell, *Hong Kong to Regulate Cryptocurrency Markets*, PINSENT MASONS: OUT-LAW (Nov. 10, 2020), <https://www.pinsentmasons.com/out-law/news/hong-kong-to-regulate-cryptocurrency-markets>.

79. *Id.*

80. Paddy Baker, *Cambodia Readies a Blockchain-Based Digital Currency*, COINDESK (Jan. 20, 2020), <https://www.coindesk.com/cambodia-readies-a-blockchain-based-digital-currency>.

The Cambodian central bank will back these transactions with both its fiat currency, the riel, and the U.S. dollar.<sup>81</sup> The Bank of Korea has been running a CBDC pilot since February 2020, which began its final phase in early 2021.<sup>82</sup> Lastly, the ECB, the Bank of Canada, the Bank of England, the Bank of Japan, the Sveriges Riksbank and the Swiss National Bank, together with the BIS, have created a coalition to share experiences as they assess the potential cases for CBDCs in their home jurisdictions.<sup>83</sup>

It is clear that there is excitement surrounding the adaptation of CBDCs, and any uncertainty associated has yet to stall development. The gradual steps taken by the aforementioned countries indicates a global movement towards this technology; albeit a deliberate and careful one.

#### SECTION V: PRIVACY AND LAW IN THE U.S.

The U.S. is the world's largest economy, encompassing one-fourth of the world's wealth.<sup>84</sup> Its dominance on the global stage is in large part due to the dominance of its currency. About 59%<sup>85</sup> of all foreign exchange currency reserves are denominated in U.S. dollars.<sup>86</sup> The dollar plays a key role in the international payments system – it is what gives U.S. sanctions their bite.<sup>87</sup> The preeminence of the dollar ultimately ensures financial stability and security to the American consumer and the broader economy. The status of a country's currency, in large part, goes hand-in-hand with that country's power in the international arena; the methodical and scrupulous development of a CBDC will inevitably become a national security imperative.

Accordingly, discussions surrounding the digitization of currency are of large interest to the U.S. government. Given the unique features of the American economy, and unique concerns of the American consumer, this paper advocates the position that regulation of a digital dollar must have privacy preservation at its forefront.

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81. ATLANTIC COUNCIL, *supra* note 35; Press Release, Bloomberg, Soramitsu Develops World's First Blockchain-Based Retail Payments System with National Bank of Cambodia (Jan. 31, 2020), <https://www.bloomberg.com/press-releases/2020-01-31/soramitsu-develops-world-s-first-blockchain-based-retail-payments-system-with-national-bank-of-cambodia>.

82. ATLANTIC COUNCIL, *supra* note 35.

83. Press Release, European Central Bank, Central Bank Group to Assess Potential Cases for Central Bank Digital Currencies (Jan. 21, 2020), [https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200121\\_1~e99d7946d6.en.html](https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200121_1~e99d7946d6.en.html).

84. *Gross Domestic Product 2020*, WORLD BANK, <https://databank.worldbank.org/data/download/GDP.pdf> (last visited Mar. 15, 2021).

85. The dollar's share of global reserves has actually decreased to its lowest level since 1995, down by a 1.5 percentage point over the last quarter. Julia-Ambra Verlaire, *Central Banks Retreat From U.S. Dollar*, THE WALL ST. J. (Apr. 6, 2021), <https://www.wsj.com/articles/central-banks-retreat-from-u-s-dollar-11617720602>.

86. Gertrude Chavez-Dreyfuss, *U.S. Dollar Share of Global Reserves Dips in Second Quarter*, REUTERS (Sept. 30, 2020), <https://www.reuters.com/article/us-global-forex-reserves/u-s-dollar-share-of-global-reserves-dips-in-second-quarter-idUSKBN26L217>.

87. Eswar Prasad, *Has the Dollar Lost Ground as the Dominant International Currency?*, GLOB. ECON. AND DEV. AT BROOKINGS (Sept. 2019), [https://www.brookings.edu/wp-content/uploads/2019/09/DollarInGlobalFinance.final\\_9.20.pdf](https://www.brookings.edu/wp-content/uploads/2019/09/DollarInGlobalFinance.final_9.20.pdf).

Privacy concerns are not distinctly American, per se; however, they have been persistent objects of inquiry throughout American history. A discussion about the history of law and privacy in the U.S. almost requires a reference to Justice Louis Brandeis and his 1890 Harvard Law Review article, “The Right to Privacy.”<sup>88</sup> Almost thirty years later, while sitting on the Supreme Court, he argued for a constitutional right to privacy in his *Olmstead v. United States* dissent, against the backdrop of the technological advancements of the telephone and wiretapping.<sup>89</sup> In this digital age, new technologies, such as social media and public databases, continue to call for increased privacy protection, with regulators in recent years looking to broaden the types of data that should be protected.

The U.S. takes a different approach to privacy regulation than other jurisdictions by focusing on specific industries. For example, the European Union (“EU”) defined personal data in order to regulate it directly under its 1996 Data Protection Directive,<sup>90</sup> and continues to regulate data protection and privacy via its 2018 General Data Protection Regulation.<sup>91</sup> In contrast, industry-specific laws, such as the Fair Credit Reporting Act, the Gramm-Leach-Bliley Act, the Sarbanes-Oxley Act, and the Health Insurance Portability and Accountability Act, have characterized the federal regulatory landscape in the U.S.<sup>92</sup> Thus, privacy regulation occurs largely at the state level, with some states defining personal data and even the ideas of data breaches differently than others.<sup>93</sup>

However, even in the absence of overarching federal laws, states have created their own privacy regulations. These include the 2018 California Consumer Privacy Act, which sparked a wave of similar regulations in at least nine other states, and Virginia’s Consumer Data Protection Act, which will come into effect on January 1, 2023.<sup>94</sup> Thus, a look at the origination of privacy law in the U.S., and its regulation in the digital age, does indicate that state legislators are more focused on privacy concerns than is the federal government.

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88. D. Brent Waltz, Senator, *Privacy in the Digital Age*, IND. UNIV. ROBERT H. MCKINNEY SCH. OF L., <https://mckinneylaw.iu.edu/ilr/pdf/vol48p205.pdf> (last visited Apr. 1, 2021), citing Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193 (1890).

89. Justice Brandeis became the first justice to interpret a constitutional right to privacy in the Fourth Amendment. Leah Burrows, *To Be Let Alone: Brandeis Foresaw Privacy Problems*, BRANDEIS UNIV.: BRANDEIS NOW (July 24, 2013), <https://www.brandeis.edu/now/2013/july/privacy.html>.

90. *US Data Protection: Compliance and Regulations*, VARONIS, <https://info.varonis.com/hubfs/docs/whitepapers/en/US%20Data%20Protection%20Compliance%20%26%20Regulations%20Whitepaper.pdf>, (last visited Apr. 1, 2021).

91. *The History of the General Data Protection Regulation*, EUROPEAN DATA PROT. SUPERVISOR, [https://edps.europa.eu/data-protection/data-protection/legislation/history-general-data-protection-regulation\\_en](https://edps.europa.eu/data-protection/data-protection/legislation/history-general-data-protection-regulation_en) (last visited Apr. 1, 2021).

92. VARONIS, *supra* note 90.

93. Ryan Brooks, *United States Data Protection Laws: State-Level Approaches to Privacy Protection*, NETWRIX BLOG (Aug. 27, 2019), <https://blog.netwrix.com/2019/08/27/data-privacy-laws-by-state-the-u-s-approach-to-privacy-protection>.

94. *History of Privacy Timeline*, UNIV. OF MICH.: SAFE COMPUTING, <https://safecomputing.umich.edu/privacy/history-of-privacy-timeline> (last visited Apr. 1, 2021).

If the Fed were to create a CBDC, a greater regulatory framework would likely come into effect. Moreover, since the regulation of the dollar is a federal matter, it will be the federal regulatory authorities that will be better positioned than the states to build privacy preservation into the foundation of the legal approach to the digital dollar.

In terms of American sentiments regarding privacy, U.S. citizens are already uneasy about the unprecedented amount of data that both public and private organizations have been collecting through social media, the internet, sensor networks, and smart devices.<sup>95</sup> This information, dubbed “big data,” provides these organizations with the opportunity to identify and address consumer needs more directly and efficiently, but also with the opportunity to misuse such personal information; for example, through targeted marketing schemes or, sometimes, fraud.<sup>96</sup> A 2015 survey indicated that privacy is of great concern to Americans, as 93% of respondents expressed a desire to be in control of *who* receives certain information about them, and 90% wished to be in control of *what* information is collected about them.<sup>97</sup> A 2019 study conducted by the PEW Research Center revealed that most Americans believe that they have little control over the data collected about them by both the public and private sectors.<sup>98</sup> When asked whether they believe their personal information is less secure, more secure or about the same as it was five years ago, 70% of adults responded that their personal data is less secure.<sup>99</sup>

Despite being aware of the privacy threats that new technologies pose, the utility, instant gratification, and convenience provided by technology seem to, more often than not, outweigh these concerns. The PEW study found that only one in five adults reads a company’s privacy policy before agreeing to it, and only a minority of that population reads it all the way through before agreeing.<sup>100</sup> Moreover, 63% of Americans say that they understand “very little or nothing at all” about the laws and regulations currently in place that govern their data privacy.<sup>101</sup> This lack of knowledge, and the lack of any *pursuit* of this knowledge, indicates that privacy concerns

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95. *Americans’ Attitudes toward Information Privacy in the World of Big Data*, NAT’L SCI. BD., <https://www.nsf.gov/statistics/2018/nsb20181/assets/404/americans-attitudes-toward-information-privacy-in-the-world-of-big-data.pdf> (last visited Mar. 12, 2021).

96. *Id.*

97. Mary Madden & Lee Rainie, *Americans’ Attitudes About Privacy, Security and Surveillance*, PEW RSCH. CTR. (May 20, 2015), <https://www.pewresearch.org/internet/2015/05/20/americans-attitudes-about-privacy-security-and-surveillance/>.

98. Brook Auxier et al., *Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information*, PEW RSCH. CTR. (Nov. 15, 2019), <https://www.pewresearch.org/internet/2019/11/15/americans-and-privacy-concerned-confused-and-feeling-lack-of-control-over-their-personal-information/>.

99. *Id.*

100. *Id.*

101. *Id.*

do not prevent individuals from affirmatively sharing their personal data with third parties.<sup>102</sup> This is known as the “privacy paradox.”<sup>103</sup>

More specifically, there is reason to believe that consumers are more sensitive about the collection and use of their financial information, as opposed to, for example, their media usage or consumption habits being tracked by social media platforms. Thus, the importance of reconciling privacy with the use of a CBDC cannot be overstated: if a CBDC does not provide for certain privacy preservations, it is unclear why current private accountholders would be incentivized to transact with a digital dollar, and even more unclear why those who exclusively use cash would be so compelled. A CBDC that fails to prioritize privacy would consequently undermine a considerable amount of the goals, advantages, and purposes behind a CBDC.

When it comes to who has access to private information, the government seems to be preferred over the private sector. The PEW study found that 79% of Americans are concerned about the use of their data by private companies, whereas only 64% are concerned with governmental use of private information.<sup>104</sup> This 15-percentage point differential could indicate that, in the realm of digital assets, a CBDC would be preferred to private cryptocurrencies.

#### SECTION VI: THE ARCHITECTURE OF THE DIGITAL DOLLAR

Along with the establishment of an appropriate regulatory framework, the design of a digital dollar must also be assessed with privacy in mind. The design of the digital dollar could take two forms: it could be either token-based or account based.<sup>105</sup>

If the digital dollar is token-based, it could use either a distributed ledger or a centralized ledger.<sup>106</sup> A blockchain is a way to implement a distributed ledger, but not all distributed ledgers necessarily employ blockchains.<sup>107</sup> It is more likely, though, that the government would prefer to use a centralized ledger, in which a designated central authority is trusted by all transacting parties to determine and ensure the validity of transactions.<sup>108</sup> In contrast, distributed ledgers do not require this third-party role because they are self-authenticating; they are maintained and validated by several

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102. NAT’L SCI. BD., *supra* note 95.

103. *Id.*

104. Auxier, *supra* note 98.

105. Anthony Culligan, *Token or Account Based CBDC?*, SETL: SETL BLOG (Apr. 14, 2020), <https://setl.io/blog/token-or-account-based-cbdc/>.

106. Geoffrey Goodell, Hazem D. Al-Nakib & Paolo Tasca, *A Digital Currency Architecture for Privacy and Owner-Custodianship*, UNIV. COLL. LONDON CTR. FOR BLOCKCHAIN TECH., <https://arxiv.org/pdf/2101.05259.pdf> (last visited Apr. 2, 2021).

107. Rutland, *supra* note 9.

108. *Centralized Versus Distributed Ledgers*, PACKET, <https://subscription.packtpub.com/book/data/9781789804164/1/ch01lv1sec02/centralized-versus-distributed-ledgers> (last visited Mar. 18, 2021).

separate nodes that store and preserve the blockchain data.<sup>109</sup> It should be noted that distributed does not always mean decentralized. Distributed ledgers “can be either decentralized, granting equal rights within the protocol to all participants, or centralized, designating certain users with particular rights.”<sup>110</sup>

Alternatively, if the digital dollar uses account-based technology (and, thus, not token-based), “the central bank would hold accounts for users of the CBDC, and would handle the debits and credits between users itself.”<sup>111</sup> It would thus require the central bank to manage and maintain exponentially more accounts than it currently does.<sup>112</sup> Meanwhile, a token-based system does “not require reconciling two databases, but is rather the near-immediate transfer of ownership, very much like handing over banknotes from one person to another.”<sup>113</sup> Thus, there is a clear difference between the degrees of privacy provided by the two options.

From an architectural standpoint, to ensure the balance of governmental power with the protection of individual privacy interests, prioritizing the preservation of identifying information must be at the forefront of the composition of a digital dollar. As noted by the Bank of Canada in a staff analytical note applying Dr. Anna Cavoukian’s *Privacy by Design* concept, privacy must be “designed into the system from the outset,” as opposed to “the alternative, of doing a functional design first and adding privacy...later, [which] carries risks of unnecessary trade-offs.”<sup>114</sup> This is due to the important distinction between privacy and mere data protection. While data protection “is about preventing unauthorised use of data following its collection, privacy is about preventing individuals...from revealing information about their (legitimate) habits and behaviours in the first instance.”<sup>115</sup> A future CBDC regulatory framework should acknowledge that the two are not interchangeable.

Further, in the same Bank of Canada article, Sriram Darbha and Rakesh Arora suggested design strategies that, if inherent in a CBDC, could be utilized to achieve “fine-grained CBDC privacy goals.”<sup>116</sup> These design strategies include zero-knowledge proofs, which can prove claims about data without revealing them; differential privacy and anonymization, which

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109. Tracy Molino, *Practical Application of Distributed Ledger Technology: Self-Sovereign Identity on the Blockchain*, JD SUPRA (Oct. 23, 2019), <https://www.jdsupra.com/legalnews/practical-application-of-distributed-71041/>; see also Rutland, *supra* note 9.

110. Rutland, *supra* note 9.

111. Bouchaud et al., *supra* note 5.

112. *Id.*

113. *Id.*

114. Sriram Darbha & Rakesh Arora, *Privacy in CBDC Technology*, BANK OF CAN. (June 2020), [www.bankofcanada.ca/2020/06/staff-analytical-note-2020-9/](https://www.bankofcanada.ca/2020/06/staff-analytical-note-2020-9/); Ann Cavoukian, *The 7 Foundational Principles: Implementation and Mapping of Fair Practices*, PRIV. BY DESIGN, [https://iapp.org/media/pdf/resource\\_center/pbd\\_implement\\_7found\\_principles.pdf](https://iapp.org/media/pdf/resource_center/pbd_implement_7found_principles.pdf) (last visited Mar. 15, 2021).

115. Goodell et al., *supra* note 106.

116. Darbha, *supra* note 114.

ensure that personally identifiable information cannot be extracted from sensitive datasets; and secret sharing schemes, which guarantee that sensitive data is disclosed only when an adequate number of entities (e.g., three of five) agree.<sup>117</sup> Importantly, most of the suggested techniques are flexible enough to be used across different technology platforms; thus, regardless of whether the U.S. opts for a centralized or distributed ledger foundation for its CBDC, these privacy design ideas ought to be considered.<sup>118</sup>

However, while the technical considerations of privacy are important, for the purposes of this paper, the regulatory framework surrounding a CBDC is the main object of inquiry. In this vein, privacy must be the first consideration that the U.S. government addresses in building the legal infrastructure that must exist preceding any introduction of a CBDC.

## SECTION VII: POLICY PRESCRIPTIONS FOR A PRIVACY-CONSCIOUS CBDC REGULATORY FRAMEWORK

Because the regulatory framework for CBDC regulation must prioritize privacy, it is useful to consider relevant policy prescriptions throughout the future legislative process. The two that this paper advocates— destigmatization of digital currency and allowing for anonymity – are a logical place to start.

### A. DESTIGMATIZING DIGITAL CURRENCY

To return to the current legal framework in place, the governmental stance towards cryptocurrency and privacy seems to be taking a federalist approach. First, consider FinCEN's December 2020 proposed regulation, which would require cryptocurrency exchanges to collect identity data about individuals who transact with their customers using self-hosted cryptocurrency wallets, and turn the information over to the government in certain circumstances.<sup>119</sup> The authors of the bill clarified that its motive is to protect against threats to national interests posed by these technologies.<sup>120</sup> The regulation is likely to further distinguish the use of cryptocurrency from the use of cash. Some cryptocurrencies, including Bitcoin, operate such that, when one knows the name of a user associated with a Bitcoin address, they may glean information about all their transactions associated with that address.<sup>121</sup> Thus, it appears that the government is attempting to collect larger

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117. *Id.*

118. *Id.*

119. Requirements for Certain Transactions Involving Convertible Virtual Currency or Digital Assets, 85 Fed. Reg. 83840 (proposed Dec. 23, 2020) (to be codified at 31 C.F.R. pts. 1010, 1020 & 2022).

120. Marta Belcher & Aaron Mackey, *The U.S. Government Is Targeting Cryptocurrency to Expand the Reach of Its Financial Surveillance*, ELEC. FRONTIER FOUND. (Dec. 21, 2020), <https://www.eff.org/deeplinks/2020/12/us-government-targeting-cryptocurrency-expand-reach-its-financial-surveillance>.

121. *Id.*

amounts of data. This attempt may be part of an effort to apply pre-existing regulations and financial surveillance methods intended for the traditional banking system, to cryptocurrencies, perhaps out of discomfort with the financial privacy and anonymity that this technology offers.

Alternatively, this regulatory tone may perhaps be strategic, and a result of the government's desire to monopolize the public use of a digital currency with its own CBDC in the future. The current legislation is communicating a distaste for digital currency that may be preventing American citizens from attempting to learn about this technology. The idea may be that the government would prefer the majority of individuals avoid cryptocurrencies, and that once the government offers its own digital currency, they will be more willing to use it. There may be an assumption that any stigma created around cryptocurrency would not apply to a CBDC. However, to the average American citizen, the two are not as distinct as the government may think. Comfort with the technology is the only way that individuals will take steps to not only utilize it, but utilize it responsibly, with their privacy concerns in mind. In that vein, the *Gratkowski* decision, and the idea that individuals lack a reasonable expectation of privacy in information stored on cryptocurrency blockchains, should be reconsidered in the context of a CBDC.<sup>122</sup> A reasonable expectation of privacy in the transactions of a CBDC account may be worth the legal recognition; of course, to a reasonable degree.

Regulating currently existing decentralized cryptocurrencies to a lesser extent, though, may not necessarily set the scene in a more favorable way for a CBDC; especially as there may be good cause for bolder approaches to preventing "crypto crime." Governmental enforcement of the security and safety that a CBDC would provide may be necessary to encourage public usage and adaptation of a digital dollar. In that vein, policies that require as much transparency as possible on behalf of the government and that provide for open communication between the public and government officials may be not only useful, but necessary, in the introduction of a CBDC. The public will inevitably have many questions to be answered, and many concerns to be assuaged; destigmatizing cryptocurrency, highlighting the plausible benefits of digital currency, and maintaining transparency should be hallmarks of the regulatory framework, as these will be integral to adequate responses to privacy-related questions and concerns.

#### B. ALLOWING *(SOME)* ANONYMITY

When considering anonymity, the government must do away with the assumption that one would only desire to remain anonymous if they are conducting illicit transactions. Conversely, anonymity should be seen as an effective tool for the government to preserve privacy. In the context of a digital dollar, anonymity is inherently cash-like.

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122. *Gratkowski*, *supra* note 21.

Thus, this paper's second recommendation is an elaboration of an idea in ConsenSys's CBDC whitepaper: "to provide high privacy for small transactions by retail users, similar to cash today, while programming in high traceability for larger transactions, whether by individuals or corporations."<sup>123</sup> This would allow for the implementation of standard Know Your Customer ("KYC") procedures on those transactions.<sup>124</sup> As a preliminary matter, preserving cash-like features would be an attractive facet of a CBDC because cash is inherently private and untraceable. While financial measures to prevent money laundering and combat terrorism should still be taken into consideration while regulating a CBDC, this does not necessarily entail stripping digital currency of its ability to replace cash usage, at least to some degree.

When digital assets are in the possession of private entities, the government's ability to track patterns for potential crime is hindered by several hurdles. The government usually must access information possessed by third parties, such as banks, in order to determine if a crime is being committed. In the context of a digital dollar, the government would be in possession of the data necessary to determine whether financial crimes are being committed, while still having the ability to preserve the anonymity cash entails. Though Governor Brainard did mention in her August 2020 announcement that the digital currency currently being explored by the Fed may be a *complement* to cash, that does not undermine the importance of a CBDC at least possessing some cash-like qualities; or the possibility that a CBDC, in the far future, may one day replace physical currency.<sup>125</sup>

With a CBDC, the government would likely possess details of the real-time financial dealings of American citizens. It is this paper's position that CBDC regulators should consider a plan of action which preserves anonymity with respect to transaction-tracing. In theory, the government could regulate one's transactions without knowing *who* they are. To create a digital wallet, or the type of online account that a CBDC would likely require, this paper assumes that users would need to provide their name, home address, email address, and other personal details before receiving a username. What differentiates this process from a private bank is that the "bankers," or in this case, the CBDC regulators, would not have such direct access to this information, and the details of one's transactions would only be visible to certain parties under very specific circumstances.

At first glance, this CBDC may seem to directly contradict much of the appeal of cryptocurrencies and what they are set out to be: completely anonymous and decentralized methods of payments. However, a proper construction of the digital dollar and a preservation of anonymity that is sewn

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123. Bouchaud et al., *supra* note 5.

124. *Id.*

125. Lael Brainard, Governor, *The Future of Retail Payments in the United States*, BD. OF GOVERNORS OF THE FED. RSRV. SYS., (Aug. 6, 2020), <https://www.federalreserve.gov/newsevents/speech/brainard20200806a.htm>.

into the fabric of the legal framework surrounding it may allow the digital dollar to preserve at least some of the inherent characteristics of the cryptocurrencies that came before it.

One way to achieve this, for example, would be for the government to assign random usernames compiled of letters, numbers and symbols that in no way correlate to any given person. In order to transfer money to another person, the users would have to provide each other with their specific usernames. The government would thus not see the details of a transaction and know who transferred money to who; instead, they would only see that userBxcRy!4\* transferred \$20 to user4WD9fx8!~\$, for example. In that case, if suspicious activity were to arise, the government could then look at an individual user's past transactions, and perhaps, send a message to the user, assuming technology would allow for communication with an account without automatically disclosing the identity of the person who holds it. Then, in theory, the government could achieve its crime prevention goals, and only revert to accessing individuals' information and identity once probable cause has been sufficiently developed. To reference the ConsenSys suggestion, small transactions by retail users should remain anonymous to the highest degree possible.<sup>126</sup> In line with this, it is the opinion of this paper that anonymity should only be infringed upon in high-volume or uncharacteristic transactions in which there is probable cause, or at least reasonable suspicion, that a crime has occurred. Tracking this information with usernames instead of real names is a way for regulators to allow law-abiding citizens to maintain anonymity and privacy while transacting freely. Under this theory, the government would only access identifying information once suspicious activity surpasses the line of reasonable suspicion or probable cause, which the government already has the constitutional right to regulate.

Thus, when considering regulation schemes, the preservation of anonymity must be inextricable from the creation of a digital dollar. A digital dollar that incorporates anonymity would preserve privacy to a considerable degree and promote a standard practice in which one's personal details are only revealed to the extent necessary to prevent and investigate crime.

## CONCLUSION

A digital dollar may revolutionize the financial infrastructure of the U.S., and allow for significant progress towards a more inclusive, efficient, and secure monetary system. However, the concept of a CBDC remains highly theoretical; the technology has far outrun the creation of policy, and the first decision that must be made is what the U.S. wants most out of a CBDC. Once there is a clearer vision of what the government's goals are, these goals will be able to guide a pragmatic and holistic approach to introducing a CBDC. Regardless of the type of underlying technology used,

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126. Brainard, *supra* note 5.

or the degree to which a digital dollar is expected to replace cash, privacy concerns will still be raised. While the “privacy paradox” may continue to reign, such that the utility and convenience of a CBDC will outweigh corresponding privacy concerns for many individuals, the legal infrastructure built to regulate and support a CBDC must prioritize privacy in order to prevent the misuse of an entire new class of information that will be put directly in the government’s hands.<sup>127</sup> Destigmatizing digital currencies and upholding anonymity to a reasonable extent are just two considerations to be made in navigating future tensions between privacy and power that are likely to be posed by a digital dollar.

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127. NAT’L SCI. BD., *supra* note 95.

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