THE FUTURE OF FINANCE: THE POTENTIAL FOR THE UNITED STATES TO HARNESS THE PROMISE OF FINANCIAL TECHNOLOGY (FINTECH) AND PAVE THE WAY FOR A NEW AGE OF FINANCIAL INNOVATION AND INCLUSION

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// Abstract

The advent of financial technology, fintech, has changed the way we interact with the financial system. All evidence points to the continued central role of fintech in financial services as we dive into the heart of the 21st century. In broad terms, fintech encompasses the use of technology to enhance existing financial products and services, or the use of technology to develop entirely new products and services.

A central question that permeates many debates around the growth of fintech is: will the primary benefits of fintech be harnessed by established institutions and reinforce existing societal structures, or can it usher in a new age of financial inclusion and social mobility?

With a focus on the United States, but using evidence from around the globe, this thesis explores 1) fintech's existing regulatory landscape, 2) cases in which fintech has been a boon to social mobility and financial inclusion, and when it hasn't, and 3) how Central Bank Digital Currencies could integrate fintech in government institutions and create opportunities to enhance financial inclusion.

Conversations around fintech and its role in the apparatus of government are ramping up across the United States government. This thesis seeks to present an overview of the major themes to help one better understand those discussions.

Reviewers: Thomas Stanton and Brett Decker

Advisors: Jacob Straus, Ph.D. and Benjamin Ginsberg, Ph.D.

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Introduction

The 21st century has seen a dramatic shift in how humans share and consume information, how we interact with each other and how we access and transfer monetary value. Some have compared the potential impact of the internet to the rise of the printing press in 15th and 16th Century Europe.[1]

This momentous transformation has a direct impact on the health of the global socioeconomic order, as individuals in all corners of the world are affected by the digitization of life.[2] Surveys estimate that the number of internet users worldwide increased from 1.8 billion in 2010 to over 5 billion in 2022 and is expected to top 5.6 billion by 2025.[3] Lawmakers and regulators around the world are grappling with what this digital transition means for society and debating the laws that need to be updated or written to effectively regulate all manner of digital interactions.

Governments are assessing how this next step in humanity's technological evolution can be used to enhance their own processes and better the lives of their constituents. They are asking themselves: What does the internet mean for humanity, and how can we make the best of it?

[1] Marantz, Andrew. 2019. "The More Things Change." *New Yorker* 95 (29): 69–74. https://www.newyorker.com/magazine/2019/09/30/the-dark-side-of-techno-utopianism

[2] "New Report: Global Battle over Internet Regulation Has Major Implications for Human Rights." Freedom House, September 21, 2021. https://freedomhouse.org/article/new-report-global-battle-over-internet-regulation-has-major-implications-human-rights.

[3] Degenhard, J. "Internet Users in the World 2025." Statista, July 20, 2021. https://www.statista.com/forecasts/1146844/internet-users-in-the-world.

The internet's rise has had a particularly transformational impact on financial services. This thesis assesses the opportunity for financial technology, fintech, to be a boon for financial innovation and inclusion. Starting with a survey of the current (but rapidly evolving) regulatory landscape for fintech products and services, the paper next discusses fintech's impact on underserved communities and what the U.S. federal government can do to harness the full potential of fintech to support financial inclusion. To close, the paper explores the development of Central Bank Digital Currencies (CBDCs) and the opportunity for a digitized fiat currency to jumpstart a wider application of fintech in the United States.

Fintech has reshaped the way individuals and businesses around the globe interact with financial services. To ensure that fintech provides the most widespread benefit, governments are wrestling with how to protect consumers while implementing clear regulatory frameworks that promote continued innovation. As we will see, studies show that if regulated and furnished in the right way, fintech can have extensive positive impacts on financial inclusion, economic development and wealth building.

Before diving into the contents of this thesis, a brief overview of some of the technical terms used throughout this discussion is warranted.

As the central topic of this thesis, we must first understand fintech. The term fintech describes the digitization of financial services and has become a central pillar of financial activity in the 21st century. The vast majority all financial startups are fintech companies and established legacy financial institutions are investing millions of dollars (if not billions) to harness fintech

for their internal processes.[4] Fintech encompasses products and services that individuals interact with daily, such as online banking, online lending, credit cards, novel payment applications and much more. More recent fintech developments include the use of artificial intelligence in lending decisions, digital payments services like PayPal and Venmo and the rise of blockchain-based cryptocurrency. The U.S. Chamber of Commerce provides a description that concisely incorporates the general functions of fintech, writing:

> Fintech is a broad category that encompasses many different technologies, but the primary objectives are to change the way consumers and businesses access their finances and compete with traditional financial services.[5]

Other technical terms used throughout this thesis that are helpful to understand, include:

- Blockchain: Also known as distributed ledger technology, blockchain is the technology that underpins cryptocurrencies like bitcoin and ether. "It consists of time-stamped record blocks with encrypted transaction activity, continuously audited by all verified network participants. Blockchain decentralizes the storage and trustworthy transmission of money [and information]."[6]
- Peer-to-peer: Fintech has enabled the development of peer-to-peer payment technologies that effectively remove third parties from financial transactions. Instead of sending

[4] "List of Top Financial Services Startups - Crunchbase Hub Profile." Crunchbase. Accessed March 26, 2022. https://www.crunchbase.com/hub/financial-services-startups.
[5] Peek, Sean. "What Is Fintech?" United States Chamber of Commerce, June 11, 2020. https://www.uschamber.com/co/run/business-financing/what-is-fintech.
[6] Mookerjee, Ajay S. "What If Central Banks Issued Digital Currency?" Harvard Business Review Digital Articles, October 15, 2021, 1–11. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bsu&AN=153362531&site=ehost-live&scope=site.

someone a wire to their bank account, peer-to-peer technology allows two people to transact bilaterally and quickly.

- Cryptocurrency: Enabled by blockchain technology, cryptocurrencies are digital assets whose value is derived from immutable and cryptographically secured digital ledgers, or blockchains, that validate and track the transfer of value.

Thesis Overview

With a focus on the United States, Chapter I of this thesis assesses the state of current fintech regulation. A central question in the regulatory assessment, which frames Chapter I, is: can regulators effectively protect consumers while providing space and opportunity for continued financial innovation? Various studies argue that the combination of unclear regulations and a matrix of regulators tasked with fintech oversight has created barriers to entry for businesses seeking to innovate with heavy costs imposed on new entrants. Financial regulators understand the fintech industry is seeking more clarity and brighter regulatory lines, but some argue that existing laws can be interpreted to fit novel products and services. Conversely, industry participants have suggested passing new laws or establishing a novel regulator to oversee the use of artificial intelligence and big data in banking, or new asset classes like cryptocurrency, with rules and regulations more in line with the form and substance of fintech products and services. This thesis comes at a time when regulators are actively discussing the future of fintech regulation, underscoring the germaneness of this topic and the importance of education.

While regulators consider solidifying fintech's regulatory structure, the application of fintech hasn't waited. New fintech-powered products and services have been in the market for years, with ample evidence of how fintech can both drive and hamper financial inclusion. Chapter II analyzes the impact of existing fintech products and services, like digital payments and online lending services, on financial inclusion and economic development. Examining evidence from both the United States and abroad, Chapter II outlines evidence of real socioeconomic benefits as a direct result of fintech. However, these outcomes are not inevitable, and the thoughtful and careful implementation of fintech products is a necessary condition for benefits to flow through to the largest potential user base. Infrastructure and community investment can also have an oversized impact on the ability for fintech to create real inclusion and economic development. Prerequisites like an effective internet connection and financial literacy are critical for consumers to harness the potential of fintech, particularly in low-income areas where such prerequisites are far from universal.

Concrete action is happening on the federal level, with discussions about the implementation of fintech are gathering steam. Chapter III surveys the state of Central Bank Digital Currencies (CBDCs), with a focus on the United States. Digital currencies like bitcoin have become household names, but it might be the rise of a thus far hypothetical digital dollar that becomes the preeminent digital currency used for everyday payments. Dozens of countries around the world are at different levels of development with their own CBDCs, with the United States notably lagging. In 2022, however, the conversation has been jump-started by the Biden Administration and the U.S. Federal Reserve, with a high-profile Executive Order on digital currencies and a report focused on a U.S. CBDC. As with other fintech products, the form of

implementation will define the success of a U.S. CBDC, and lawmakers and regulators need all the information they can gather to ensure effective implementation and avoid potential stability risks inherent in launching a new form of government-backed currency.

Together, these chapters build a body of evidence and analysis to aid in the understanding of where the regulation of fintech stands today. This thesis also provides a base from which lawmakers, regulators and the public can assess the benefits of fintech, how best to ensure those benefits can be realized, and importantly, how to avoid the potential detrimental impacts of fintech.

The U.S. federal government will play a critical role both domestically and internationally in how fintech develops over at least the next decade. Educating policymakers on the ever-changing fintech landscape and the major themes present in this conversation will be central to increasing the likelihood that the benefits of fintech are widely felt. This thesis can provide a foundation for that education and eventual policy analysis.

Chapter I

Fintech and Financial Services Regulation: Can Regulators Protect Consumers and Promote Innovation?

Western democratic political systems are predicated on using the free market to spur innovation and increase competition.[7] Whereas our markets are ostensibly free in comparison to other economic systems, myriad laws and regulations govern our economic relationships, including those between the state, businesses and consumers. This duality creates an inherent tension between the maximization of profit—the aim of those who wield the means of production—and the boundaries set on market actors by the laws and regulations enacted by state and federal legislatures.[8]

A secondary tension arises within our capitalist system: between the drive to innovate, and the regulatory desire to protect consumers.[9] That tension is exacerbated by the reality that innovation is central to the capitalist economic process and is often a prerequisite for success:

> Under capitalism, innovative activity—which in other types of economy is fortuitous and optional—becomes mandatory, a life-and-death matter for the firm.

[7] Baumol, William J. *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*. Princeton, NJ: Princeton University Press, 2002. Accessed April 17, 2021. http://www.jstor.org/stable/j.ctt6wpz8j.1.
[8] Hanson, Kirk. "Can Ethics and Profit Be Reconciled?" Santa Clara University, May 27, 2015. https://www.scu.edu/illuminate/thought-leaders/kirk-hanson/can-ethics-and-profit-be-reconciled.html.
[9] Weimer, Maria, and Luisa Marin. "The Role of Law in Managing the Tension between Risk and Innovation: Introduction to the Special Issue on Regulating New and Emerging Technologies." European Journal of Risk Regulation 7, no. 3 (2016): 469–74. https://doi.org/10.1017/s1867299x00006012.

> And the spread of new technology, which in other economies has proceeded at a stately pace, often requiring decades or even centuries, under capitalism is speeded up remarkably because, quite simply, time is money.[10]

Regulations, regardless of the industry they govern, are geared toward how market actors interact with consumers and ensure consumer protection standards to minimize immediate detrimental impacts on consumers or knock-on impacts on the wider society.[11] Financial regulations are no different. Regulation in financial services often has a dual impact: protecting individual consumers of a specific product, as well as the secondary or tertiary impact on the financial health of all consumers.

Financial services regulations play a critical role. The various concerns around the general stability of financial markets, as well as concerns around how certain products can impact individual consumers, all have a deep impact on the general political and social wellbeing of a nation.[12] With a long history of financial regulation stemming from the National Bank Acts of 1863 and 1864 (or even as far back as Alexander Hamilton's plan to create a national bank in 1790),[13] [14] legislators and regulators in the United States have a clear mandate to oversee the

[10] Baumol, *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*, 1.
[11] Hutter, Bridget M. "Regulation: Standard Setting and Enforcement." *Law & Society Review* 27, no. 1 (1993): 233-48. Accessed April 21, 2021. doi:10.2307/3053756.
[12] Posner, Richard A. "Equality, Wealth, and Political Stability." *Journal of Law, Economics, & Organization* 13, no. 2 (1997): 344-65. Accessed April 17, 2021. http://www.jstor.org/stable/765095.
[13] Brian Johnson, "Thoughts on the Future of Financial Services Regulation in the U.S.," Consumer Financial Protection Bureau. Speech, George Mason University Law & Economics Center's Ninth Annual Financial Services Symposium, April 9, 2019, https://www.consumerfinance.gov/about-us/newsroom/thoughts-future-financial-services-regulation-us/.
[14] Hill, Andrew T. "The First Bank of the United States." Federal Reserve History. Accessed March 27, 2022. https://www.federalreservehistory.org/essays/first-bank-of-the-us.

evolution of financial services and effectively regulate the space to both protect consumers and ensure the general stability of financial markets.

The difficulty in regulating financial markets while ensuring a balance between free market principles and consumer protection is acutely felt in the regulatory approach to fintech. Fintech, taken in its widest definition, refers to technologically enhanced financial products and services. The technologies producing the widest impact on financial services today include artificial intelligence, machine learning, blockchain, the internet of things and big data. In more concrete terms, fintech can be applied to everything from the use of algorithms to help financial traders automate trades, online lenders like SoFi and LendingClub, to novel financial applications like Venmo and PayPal, and cryptocurrencies like bitcoin and ether.

The fintech industry experiences near-constant technological and financial innovation—with market actors, either new entrants or legacy players, iterating on a regular basis to bring new products and services to market. As outlined in an article assessing difficulties inherent in setting international fintech regulations, particularly given fintech's cross-border impact, regulators have been facing new kinds of questions when developing financial regulations to address fintech: "fintech, in fact, presents a novel species of innovation whose distinctive permutations constitute a break from past cycles of market ingenuity."[15]

[15] Yadav, Yesha. "Fintech and International Financial Regulation." *Vanderbilt Journal of Transnational Law* 53, no. 3 (May 2020), at 1125.
http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=asn&AN=145062496&site=ehost-live&scope=site

Adding to fintech's complexity is the reality that existing regulations governing the industry are unclear and in desperate need of update if they are to be effectively applied to fintech.[16] This chapter explores whether the existing financial services regulations in the United States can effectively protect consumers while also promoting innovation. In other words, do financial regulations prevent fintech innovation? Various other questions stem from this starting point. If in fact fintech innovation is stifled by existing financial services regulations, is there a corresponding positive impact on consumers through them being protected from potentially dangerous financial products and services? Possibly most important, and most uncertain, are there regulatory structures that could enhance consumer protection and more effectively promote innovation than those that exist today?

I. Exploring Fintech's Regulatory Landscape

Overlapping Regulatory Oversight in Financial Services Has an Outsized Impact on Fintech

Innovation is central to the economic process. Innovation builds new wealth, creates new industries and enhances existing economic processes.[17] With innovation, however, comes risk, particularly when consumers and regulators do not fully understand the impacts of new products and services.[18] Advances in fintech are among the most quickly evolving areas of the economy

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[16] "Financial Innovation: Reducing Fintech Regulatory Uncertainty." By David W. Perkins, Cheryl R. Cooper, and Eva Su, Congressional Research Service, April 25, 2019. https://crsreports.congress.gov/product/pdf/IF/IF11195
[17] Baumol, *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*, 1.
[18] Stern, Gary. "Can Regulators Keep Up with Fintech?" *Yale Insights*, December 13, 2017. https://insights.som.yale.edu/insights/can-regulators-keep-up-with-fintech.

and they promise to have an outsized impact on the lives of virtually every American who interacts with the financial system.[19]

Efforts to regulate the use of emerging technologies like artificial intelligence, machine learning, blockchain, the internet of things and big data in financial services have been intermittent, disjointed and unclear; leading to the widespread opinion that uneven and ad hoc regulation is stifling financial technology innovation in the United States. Many studies articulate this sentiment when assessing the regulatory landscape around fintech. For example, one study noted the impact of regulation on the fintech industry in the United States in the following way:

> [T]he substance of financial regulation today may well stifle beneficial innovation in the financial sector, precisely at a time when other nations are racing to attract fintech to their jurisdictions. Because fintech is so new, and its ways of doing business so unconventional, regulators are only beginning to come to terms with its implications for financial regulation.[20]

Beyond the slow pace that regulators, notably in the United States, are moving at to effectively regulate fintech, whatever regulation does see the light of day needs to grapple with tensions inherent to innovation—which are particularly noticeable in fintech. As a Deloitte white paper noted, governments across the globe are facing a dual issue: protecting consumers while promoting fintech innovation:

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[19] Saunders, Lauren. "Fintech and Consumer Protection: A Snapshot." National Consumer Law Center, March 2019. https://www.nclc.org/images/pdf/cons-protection/rpt-fintech-and-consumer-protection-a-snapshot-march2019.pdf.
[20] Magnuson, William. "Regulating Fintech." *Vanderbilt Law Review* 71, no. 4 (May 2018): 1167–1226. https://scholarship.law.vanderbilt.edu/cgi/viewcontent.cgi?article=1033&context=vlr.

> As emerging technologies drive new business and service models, governments must rapidly create, modify and enforce regulations. The preeminent issue is how to protect citizens and ensure fair markets while letting innovation and businesses flourish.[21]

This, above, is indeed the preeminent question in the regulation of fintech.

There are two broad opposing forces in the conversation around fintech regulation: those who draft, enact and apply the law—regulators and legislators—who largely have an appropriate focus on consumer protection and market integrity; and industry insiders, who have a unique focus on building the innovative and particularly profitable financial applications using these new technologies.[22]

Exacerbating the regulatory confusion around the regulation of fintech, multiple federal financial regulators exist in addition to more than 50 state and territory regulators.[23] Each entity has overlapping jurisdictional oversight over different types of financial services companies and by extension new financial technologies, which often emerge at breakneck speeds.

Within this structure, the purpose of regulators is largely to protect the consumer and ensure market stability, as stated above. In some instances, however, the overt lack of clarity can create

[21]Eggers, William D., Mike Turley, and Pankaj Kamleshkumar Kishnani. "The Future of Regulation." *Deloitte Insights*, June 19, 2018. https://www2.deloitte.com/us/en/insights/industry/public-sector/future-of-regulation/regulating-emerging-technology.html.
[22] Kirk, "Can Ethics and Profit Be Reconciled?"
[23] "Who Regulates Whom? An Overview of the U.S. Financial Regulatory Framework." Federation of American Scientists. Congressional Research Service, March 10, 2020. https://fas.org/sgp/crs/misc/R44918.pdf.

situations where some businesses must report to numerous state and federal regulators, while others might report to none, or worse, do not know to whom they report.[24] While this issue is by no means fintech-specific, fintech businesses are particularly impacted by this matrix of regulators and regulations due in large part to the existence of legacy regulations that have not been updated to mesh with the innovations of the internet age, or the age of big data and artificial intelligence, for that matter. A September 2011 National Bureau of Economic Research working paper summarized this sentiment, noting that:

> This confusion occasionally inhibits innovation in the financial services industry and investments in some sectors of the economy. At other times, this confusion enables firms and investors to fly under the radar and profit from regulatory arbitrage. Whether this confusion promotes economic growth or causes economic instability is an open question.[25]

Disjointed Regulation in the U.S. Has Put Pressure on Legislators to Legislate on Fintech Issues

The disjointed regulation of financial technology activities in the United States has created a landscape in which fintech companies are often unsure which agency will regulate their activities, and therefore, which laws or regulations will apply. With a focus on fintech payments and lending technologies, a Government Accountability Office (GAO) report highlighted the

[24]Komai, Alejandro, and Gary Richardson. "A Brief History of Regulations Regarding Financial Markets in the United States: 1789-2009." National Bureau of Economic Research, September 2011. https://www.nber.org/system/files/working_papers/w17443/w17443.pdf#:~:text=The%20history%20of%20financial%20regulation%20is%20long%20but,in%201787%20and%20continued%20unabated%20for%20two%20centuries.
[25] Ibid.

difficulty in navigating various state-specific regulations governing payment and lending operations. While the report notes that in some cases agencies promulgated guidance, in others there continues to be a need for more robust and continued interagency cooperation around fintech regulation.[26]

In general, federal financial regulators can be broken down into the following groups[27]:

- Depository regulators—Office of the Comptroller of the Currency (OCC), Federal Deposit Insurance Corporation (FDIC), and Federal Reserve for banks; and National Credit Union Administration (NCUA) for credit unions;
- Securities markets regulators—Securities and Exchange Commission (SEC) and Commodity Futures Trading Commission (CFTC);
- Government-sponsored enterprise (GSE) regulators—Federal Housing Finance Agency (FHFA), created by HERA (Housing and Economic Recovery Act of 2008), and Farm Credit Administration (FCA); and
- Consumer protection regulator—Consumer Financial Protection Bureau (CFPB), created by the Dodd-Frank Act.

Fintech companies, depending on their activities could fall into at least three of the categories, causing a wide array of regulatory requirements, and potentially extensive compliance burdens. Cooperation between the regulators is a good start, but there is still such uncertainty that the

[26] U.S. Government Accountability Office, "Financial Technology: Additional Steps by Regulators Could Better Protect Consumers and Aid Regulatory Oversight." *GAO Reports*, GAO-18-254, March 22, 2018, i-126, at https://www.gao.gov/products/gao-18-254.
[27] "Who Regulates Whom? An Overview of the U.S. Financial Regulatory Framework," by Mark Labonte. Congressional Research Service, March 10, 2020. https://crsreports.congress.gov/product/pdf/R/R44918.

question of regulating fintech has often moved toward the legislature. Lawmakers on the federal level, however, have been slow to act. Despite this, fintech has proven to be one of the few topics on which bipartisan cooperation is not a pipedream.[28]

Fintech conversation have reached the halls of the U.S. Congress, and hearings about fintech have been picking up pace. The House and Senate held high-profile hearings to address the systemic risks that could be caused by the now-defunct Facebook-led Diem (formerly Libra) project.[29] Since then, various other hearings have been held, including one on "Legal Framework Governing Who Can Lend and Process Payments in the Fintech Age."[30] Numerous other hearings of a range of fintech-related topics are already scheduled for 2022. The U.S. House Financial Services Committee has also created two task forces, one to address the use of artificial intelligence in financial services,[31] and another focused squarely on fintech.[32] Lawmakers are in an educational phase on the topic of fintech. While lawmakers continue to focus, understandably, on the many wide-ranging concerns of American citizens beyond fintech, the fintech industry continues to develop in earnest without clear guidance from Congress that many believe is necessary, a sentiment shared even by some within Congress.[33]

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[28] Mueller, Jackson. "Bipartisan Opportunities to Legislate U.S. FinTech in the 21st Century." *Milken Institute*, October 11, 2020. https://milkeninstitute.org/reports/bipartisan-opportunities-legislate-us-fintech-21st-century.
[29] U.S. Congress, House, Committee on Financial Services, "Examining Facebook's Proposed Cryptocurrency and Its Impact on Consumers, Investors, and the American Financial System," 116th Cong., 1st sess., July 17, 2019. Accessed April 16, 2021. https://financialservices.house.gov/calendar/eventsingle.aspx?EventID=404001.
[30] U.S. Congress, House, Committee on Financial Services, Task Force on Financial Technology, "License to Bank: Examining the Legal Framework Governing Who Can Lend and Process Payments in the Fintech Age," 116th Cong., Sept. 29, 2020. Accessed March 16, 2022. https://www.congress.gov/event/116th-congress/house-event/111057?s=1&r=67
[31] U.S. Congress, House, Committee on Financial Services, "Task Force on Artificial Intelligence," Accessed April 16, 2021. https://financialservices.house.gov/about/task-force-on-artificial-intelligence.htm.
[32] U.S. Congress, House, Committee on Financial Services, "Task Force on Financial Technology," Accessed April 16, 2021. https://financialservices.house.gov/about/task-force-on-artificial-intelligence.htm.
[33] Emmer, Tom. "Congress Has Only Begun Its Study of Financial Technologies." *The Hill*, February 8, 2021. https://thehill.com/blogs/congress-blog/technology/537803-congress-has-only-begun-its-study-of-financial-technologies.

For some lawmakers, there is clear apprehension about the impact that fintech could have on the U.S. and global financial system. Illustrating this, during a hearing where lawmakers heard testimony from Facebook's Mark Zuckerberg, Rep. Brad Sherman (D-Calif.) likened the impact of Diem, a blockchain-based currency spearheaded by Facebook that could be used across its immense platform, to the September 11, 2001, terrorist attacks. A media article about the hearing quoted him as saying:

> Now, we're told by some that innovation is always good. … The most innovative thing that happened this century is when Osama bin Laden came up with the innovative idea of flying two airplanes into towers. That's the most consequential innovation, although this [Diem] may do more to endanger innovation than even that.[34]

Lawmakers continue to resist level-headed regulation of fintech products, and while there have been promising developments with clearly much more education, and notable action from the Executive Branch,[35] the question of whether any legislation addressing fintech innovation is coming in the short term is unclear. Not only does there appear to be no consensus around fintech regulation in Congress, but the act of legislating in the financial services space is itself already fraught with pitfalls.

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[34] Smith, Dave. "A US Congressman Is Standing by His Statement That Facebook's Libra Cryptocurrency Will Be Worse than 9/11." *Business Insider*, July 19, 2019. https://www.businessinsider.com/congressman-brad-sherman-facebook-libra-911-2019-7.

[35] *See* Chapter 3.

The "Innovation Trilemma" describes this issue effectively, referring to the difficulty in balancing 1) simple rulemaking with 2) market integrity and 3) innovation. Moreover, fintech creates a unique problem for regulators when attempting to set standards on financial regulation: constant evolution. Notably, the use of automation, artificial intelligence, big data and supply chains that include legacy financial institutions as well as brand new upstarts, increases the difficulty of creating and applying rules to a continuously evolving industry.[36] A scholar who examined the Innovation Trilemma added:

> When seeking to balance the goals of achieving market integrity and innovation through clear and simple rulemaking, regulators can—at best—achieve only two out of these three objectives.[37]

The Political Power of Financial Institutions

It is no secret that financial institutions have a variety of tools at their disposal to influence and leverage relationships with regulatory agencies, including lobbying and the colloquially termed revolving door, which describes the process of industry insiders and government officials quickly moving their employment between the public to the private sectors.[38]

Not only are regulators often the slowest entities to adapt to market landscape changes, they can also be subject to what is known as regulatory capture, where special interests play an outsized

[36] Yadav, Yesha. "Fintech and International Financial Regulation." *Vanderbilt Journal of Transnational Law* 53, no. 3 (May 2020): 1109–46. http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=asn&AN=145062496&site=ehost-live&scope=site.
[37] Ibid.
[38] "Revolving Door." Opensecrets RSS. Accessed April 25, 2022. https://www.opensecrets.org/revolving/.

role in the rulemaking and regulatory processes.[39] As a Milken Institute paper outlines, this reality can place the interests of citizens as secondary behind political preferences: "government regulations may reflect political preferences—including overreaction to crises, protectionism, or regulatory capture by special interests or market participants—instead of the best interests of citizens."[40]

Financial institutions are notable power players in the political world. A Harvard Business Review article notes that "representatives and lobbyists of the financial sector are so entwined with the agencies that are supposed to regulate it that Washingtonians collectively refer to them as 'The Blob.'"[41] The article looks at the past six U.S. Secretaries of the Treasury, pointing to the reality that they all either came from the financial services industry or found executive positions in the industry following their government service. For example, Hank Paulson, Treasury Secretary under George W. Bush, had previously been CEO of Goldman Sachs, and Jack Lew, who served under Barack Obama had previously worked at Citigroup.[42] The paper highlights research that shows how "leaders' paths to power crucially shape their actions in office." This symbiotic relationship between the financial industry and financial regulators could be a further reason why regulators have been slow to clarify the regulatory frameworks that govern fintech.

It is beyond the scope of this paper to examine whether fintech regulations have been stonewalled by financial industry insiders with access to the regulatory levers of government. Nevertheless, understanding the level of power that established financial institutions have over

[39] Knight, Brian. "Fintech - Who Regulates It and Why It Matters." Milken Institute, April 2016. https://milkeninstitute.org/sites/default/files/reports-pdf/FinTech-Who-Regulates-It-and-Why-It-Matters2.pdf.
[40] Ibid.
[41] Mukunda, Gautam. "The Price of Wall Street's Power." Harvard Business Review, March 27, 2019. https://hbr.org/2014/06/the-price-of-wall-streets-power.
[42] Ibid.

policy is necessary to frame the reality of today's fractured and unclear regulatory landscape for fintech: "Wall Street's influence on policy is extraordinary, even after the financial crisis."[43]

II. The CFPB as a Proxy for Decisive Financial Regulation

This section briefly looks at the formation and constitution of the Consumer Financial Protection Bureau (CFPB) as an example of when the U.S. Congress acted decisively to protect consumers in financial services. The CFPB oversees the financial industry ensuring firms are adhering to a variety of federal consumer financial protection laws and regulations.[44] The agency also oversees several fintech companies. By assessing how the CFPB came into being, this chapter endeavors to consider the best avenue for bolstering the regulatory framework for fintech, either by creating an entire new agency uniquely focused on technology in financial services, or through new systems of cooperation and regulation that can reframe how regulators and fintech companies interact.

The Formation of the CFPB as a Test Case for Fintech Regulation

In the wake of the 2008 financial crisis, the U.S. Congress concluded that an agency focused solely on consumer protection in financial services was needed, bringing the U.S. Consumer Financial Protection Bureau (CFPB) into being. The financial crisis dramatically affected consumers in many cases through the use financial products that they did not fully understand. Even those who were more cautious and steered clear of complicated financial products saw their

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[43] Ibid.
[44] Consumer Financial Protection Bureau. "Rules & Policy." Accessed April 21, 2021. https://www.consumerfinance.gov/rules-policy/#:~:text=Rules%20and%20policy,fair%2C%20transparent%2C%20and%20competitive.

savings and employment impacted as the damage in the financial industry seeped out across all parts of the system. To ensure a more effective consumer protection in financial services Congress created the CFPB during the Obama Administration with the following aim:

> … to increase accountability in government by consolidating consumer financial protection authorities that had existed across seven different federal agencies into one. Consumer financial protection had not been the primary focus of any federal agency, and no agency had effective tools to set the rules for and oversee the whole market. The result was a system without effective rules or consistent enforcement. The results can be seen, both in the 2008 financial crisis and in its aftermath.[45]

Within the framework of financial regulation, there are two main areas of focus: "prudential regulation, whose goal is to maintain the safety and soundness of the financial system, and consumer protection."[46] Until the creation of the CFPB, the agencies overseeing financial services (e.g. the U.S. Securities and Exchange Commission and Commodity Futures Trading Commission) ostensibly also had consumer protection within their scope, which can create a tension between ensuring the financial stability and focusing on consumer protection. However, as highlighted above, many such regulators lacked a focus on the latter.

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[45] Consumer Financial Protection Bureau. "Building the CFPB." Accessed April 12, 2021. https://www.consumerfinance.gov/data-research/research-reports/building-the-cfpb/#:~:text=In%20July%202010%2C%20Congress%20passed,Protection%20Bureau%20(the%20CFPB).

[46] Plato-Shinar, Ruth. "Financial Consumer Protection in the Post Financial Crisis Era: Can the American CFPB Serve as a Model for Other Jurisdictions?" *Texas International Law Journal* 54, no. 2 (Summer 2019): 171–99. http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=asn&AN=139712897&site=ehost-live&scope=site.

This dichotomy highlights an important distinction between how different jurisdictions address the dual purpose of financial regulation: consumer protection and market stability. On the one hand, the U.K. uses the "Twin Peaks Model," where the safety and soundness (prudential) regulation of the industry and consumer protection are tasked to separate regulators.[47] On the other hand, in United States, prior to the formation of the CFPB, we had financial regulators that oversaw consumer protection and the stability of the industry jointly.

With the world reeling from a barely averted imminent financial collapse, the U.S. Congress worked in earnest to develop the framework for an agency that would have a unique focus on consumer protection in financial services. In the lead up to the financial crisis, the existing regulatory structure, notably in the United States, failed to contain the impact of the crisis. Only with 11th hour congressional action was a much deeper crisis avoided. Subsequently, Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act aimed at avoiding another such crisis. As part of Dodd-Frank Act, the Consumer Financial Protection Bureau (CFPB) was created.[48]

The CFPB focuses on four distinct principles to inform its activities. These are:

1. using a market-based approach that believes competition and capitalist markets provide the best outcomes for consumers,
2. understanding that thorough education of the intricacies of a market is paramount to effectively regulating it,

[47] Ibid.
[48] Kennedy, Leonard J., Patricia A. McCoy, and Ethan Bernstein. "The Consumer Financial Protection Bureau: Financial Regulation for the Twenty-First Century." *Cornell Law Review* 97, no. 5 (July 2012): 1141–75

3. ensuring that a variety of interested parties have a say in how the agency acts, including consumer advocates and the entities it regulates—and using technology to ensure enduring participation, and
4. considering a historical understanding of regulation and adopting the best practices from both public and private endeavors.[49]

The CFPB now plays an important role in all new developments in financial services, and particularly on the fintech front where consumer protection is of the utmost importance, given the novelty of the products and services and the general lack of education around new technologies and their applications among the public. While several other federal agencies also have a consumer protection mandate when it comes to fintech, the CFPB is always in the room, so to speak, when it comes to the oversight of fintech.[50] While the CFPB has been largely positive with regard to consumer protection, there now there exists an extra regulator that market actors need to interact with and understand, adding to the already heightened complexity and confusion around fintech regulation.

Despite being relatively new on the scene, a 2021 CFPB report suggested that the agency would be the most effective fintech regulator. Its report stated that:

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[49] Ibid
http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bsu&AN=78294907&site=ehost-live&scope=site.
[50] "Taskforce on Federal Consumer Financial Law Report." Consumer Financial Protection Bureau, January 5, 2021. https://www.consumerfinance.gov/data-research/research-reports/taskforce-on-federal-consumer-financial-law-report/.

> Congress should authorize the Bureau to issue licenses to non-depository institutions that provide lending, money transmission, or payment services. Licenses should provide that these institutions are governed by the regulations of their home states, even when providing services to consumers in other states. The Bureau should consider the benefits and costs of preempting state law in some specific cases in which the potential for conflict can impede the provision of valuable products and services.[51]

Can the CFPB be Different Than Other Financial Regulators?

The CFPB was born from a global crisis. Many systemic issues that were exacerbated during the 2008 crisis had deep and powerful roots. So why had regulators not acted earlier? The political power of established financial institutions, outlined above, may very likely have played a role. Related to that power is the existence of a "deregulatory bias" built into the financial services regulatory system.[52] This bias is understood to be caused by a lack of access to the courts experienced by non-regulated parties, most often citizens who may challenge deregulatory action. Instead, regulated parties, banks, financial institutions, etc. enjoy widespread access to the courts to challenge regulations that they might deem unfavorable to their business models, and

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[51] Willis, Christopher J., and John L. Culhane. "CFPB's Taskforce on Federal Consumer Financial Law Releases Report." *Consumer Finance Monitor*, January 12, 2021. https://www.consumerfinancemonitor.com/2021/01/12/cfpbs-taskforce-on-federal-consumer-financial-law-releases-report/#:~:text=The%20CFPB's%20Taskforce%20on%20Federal,modernize%20federal%20consumer%20financial%20laws.

[52] Sissoko, Carolyn. "Is Financial Regulation Structurally Biased to Favor Deregulation?" *Southern California Law Review* 86, no. 2 (January 2013): 365–420. http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bsu&AN=89862502&site=ehost-live&scope=site.

create an environment where regulators are subject to far more court challenges when they regulate than when they deregulate, creating this deregulatory bias.

Notably, there is evidence that deregulatory actions by financial regulators can run afoul of their own statutes and existing regulations, and court cases challenging these deregulatory actions are rare. The creation of a division within the CFPB that is tasked with pushing back against this deregulatory bias has been suggested as a response.[53]

Given these existing difficulties with effectively regulating fintech, are there other options that regulators could explore to both protect consumers and promote innovation?

III. Potential Approaches to Regulating Fintech

Whereas financial technology, or fintech, is a relatively new term, modern technology has affected financial services for decades. Starting with the credit card, and automated teller machines (ATMs), technology has been consistently upending financial services. Twenty-first century technologies are revolutionizing financial services more quickly and in more ways than ever before, forcing regulators to respond to myriad dynamic changes to the financial landscape. *The Regulatory Review*, a series of essays on fintech regulation hosted by the Penn Program on Regulation at the University of Pennsylvania Law School, deftly outlines the current state:

> New financial technology, or "fintech," promises to make the financial system faster, better informed, and more global. Once a budding sector of finance, fintech

[53] Ibid

> is now a constant presence in every corner of the industry. Fintech products have opened the door to many new opportunities for consumers, investors, and businesses. But with these opportunities, come new challenges. Regulators and policymakers face key choices as they adapt to meet the needs of this constantly changing landscape while keeping investors and consumers safe.[54]

Consumer safety is paramount. This was demonstrated during the 2008 financial crisis, which showed the world that regulators must be more proactive to ensure that consumers and markets are protected, rather than reactive.

One of the most important steps regulators can take to stay abreast of the novel technological changes in financial services is to educate themselves on these new technologies and their application in financial services. When asking how regulators can ensure that innovation continues apace considering their regulatory purviews and mandates, a deep and constant cooperation and sharing of information between regulators and fintech companies is of the utmost importance.[55]

Leveraging Innovation Offices and Cooperation

Various federal financial regulators have made notable efforts to promote education and build relationships with the fintech industry. This can most clearly be seen in the launch

[54] The Regulatory Review. "Regulation in the Era of Fintech." The Regulatory Review, May 11, 2021. https://www.theregreview.org/2021/04/26/regulation-in-era-fintech/.
[55] Venture Patterns. "7 Things Every Fintech Founder Should Know about Regulation," November 13, 2020. https://venturepatterns.com/blog/startup/7-things-every-fintech-founder-should-know-about-regulation/.

of so-called "innovation offices." These offices have provided a forum for regulators and market actors to discuss new products. They include:

- Office of the Comptroller of the Currency – Office of Innovation;
- Federal Deposit Insurance Corporation – FDIC Tech Lab;
- Consumer Financial Protection Bureau – Office of Innovation;
- Securities and Exchange Commission – FinHub;
- Commodity Futures Trading Commission – LabCFTC.[56]

Most of these forums for regulator-industry collaboration will host innovation office hours where firms can interact candidly about their projects, build a dialogue, a hope to educate regulators and vice versa.[57] These interactions are helpful and can further provide the needed clarity within the existing financial regulatory framework for companies to build out innovative projects more effectively.

While cooperation and a robust dialogue is crucial to ensuring that new fintech products remain on the right side of consumer protection laws, they still face the problem of having to interact with multiple regulators on the state and federal levels. For example, the mobile payments

[56] "Fintech: Overview of Financial Regulators and Recent Policy Approaches." By Andrew P. Scott, Congressional Research Service, April 28, 2020. https://crsreports.congress.gov/product/pdf/R/R46333
[57] "OCC to Host Virtual Innovation Office Hours." OCC, February 3, 2021. https://www.occ.gov/news-issuances/news-releases/2021/nr-occ-2021-18.html.

industry, which has grown dramatically over the past decade,[58] is regulated by eight federal regulators and 50 state regulators.[59]

To address the concern around how to maximize for both consumer protection and innovation more needs to be done so that innovators can flex their creative muscles while also allowing regulators to keep a close eye on their activities and ensure that consumers are effectively protected. There are a couple options for how regulators can do this. Two suggestions this paper outlines are: 1) Regulatory Sandboxes, which already exist, and 2) an entirely new regulator focused on financial innovation.

Regulatory Sandboxes

Regulators at both the federal and state level have created what are known as "regulatory sandboxes." They allow innovators to offer their products within a specific jurisdiction without needing to meet all the regulatory requirements, while often requiring clear disclosures to consumers that they are using products in a unique environment. In a sense, this allows both the innovator to test their product live without requiring all the licenses to engage in a certain business, and regulators to assess the safety of a certain product in the wild.[60]

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[58] Kohan, Shelley E. "Fueled By Increased Consumer Comfort, Mobile Payments In The U.S. Will Exceed $130 Billion In 2020." Forbes Magazine, March 3, 2020. https://www.forbes.com/sites/shelleykohan/2020/03/01/fueled-by-increased-consumer-comfort-mobile-payments-in-the-uswill-exceed-130-billion-in-2020/?sh=174e8d3844f2.
[59] Bourke, Nick. "How Can Regulators Promote Financial Innovation While Also Protecting Consumers?" Pew Trusts. Accessed May 12, 2021. https://www.pewtrusts.org/en/research-and-analysis/reports/2018/08/02/how-can-regulators-promote-financial-innovation-while-also-protecting-consumers.
[60] Ibid.

Arizona created the first regulatory sandbox focused on fintech innovation in the U.S. To date, it has accepted a handful of applicants to offer products within its framework.[61] Arizona's sandbox requires participants to make robust disclosures to consumers about the risks inherent in using their products, but in return provides businesses more freedom to innovate and test their products.[62] The first participant in Arizona's fintech sandbox was Omni Mobile Inc., which provides mobile payments services.[63] The success Arizona's sandbox is still unclear, but the initiative points to a larger opportunity for other state and federal regulators to work more closely to provide an onramp to regulatory compliance for fintech companies.

> Although it is too early to know whether this program will adequately protect consumers—and while the influence of this program may be limited because it applies only to entities that reside and operate in Arizona—its novelty highlights the need for a larger national strategy to promote financial innovation.[64]

The CFPB is one of the few federal regulators to take the regulatory sandbox approach. The CFPB's approach is three-pronged, with a "no-action letter policy," a "compliance assistance sandbox" and a "trial disclosure sandbox."[65] Together, these initiatives provide market actors with a streamlined path to market on a federal level, which minimizes the significant compliance burdens usually associated with nationwide financial operation. With a unique focus on consumer protection, the CFPB's use of these tools creates an important avenue that other

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[61] Ibid.
[62] "Welcome to Arizona's Fintech Sandbox." Arizona Attorney General. Accessed May 12, 2021. https://www.azag.gov/fintech.
[63] "Arizona Accepts First Participant into FinTech Sandbox." Arizona Attorney General, October 11, 2018. https://www.azag.gov/press-release/arizona-accepts-first-participant-fintech-sandbox.
[64] Bourke. "How Can Regulators Promote Financial Innovation While Also Protecting Consumers?"
[65] Consumer Financial Protection Bureau. "Innovation at the Bureau." Accessed May 12, 2021. https://www.consumerfinance.gov/rules-policy/innovation/.

regulators and even Congress can learn from to enable consumer protection and innovation to co-exist effectively in the financial services industry.

Sandboxes have their critics, however. Certain innovation-forward regulators have deemed sandboxes too restrictive and argue that they might slow down innovation. Further, consumer advocates argue that sandboxes can be mismanaged, and participants can circumvent important consumer protection violations. However, if done right, sandboxes can effectively meld the desire for more regulatory certainty that allows for innovation with robust consumer protection requirements. As such, regulatory agencies that go the route of sandboxes can use them to inform future rulemaking that ensures innovation coexists with consumer protection, as outlined in a paper published by the Stanford University Center for Philanthropy and Civil Society:

> Real innovation-minded regulatory agencies see sandboxes as means, not ends. Real innovation-minded regulatory agencies shun the glitz of sandboxes; rather they take the insights gained from sandboxes to improve rulemaking, supervision, and enforcement policies so that the entire market can benefit.[66]

New Potential Approach: A Financial Regulator for Innovation

Congress has the power to create new federal agencies, and while the Executive can at times do something similar with an Executive Office, the onus has been on Congress to address the regulatory uncertainty that permeates much of innovation in financial services. While there is not

[66] Quan, Dan. "A Few Thoughts on Regulatory Sandboxes." Stanford PACS. Accessed May 12, 2021. https://pacscenter.stanford.edu/a-few-thoughts-on-regulatory-sandboxes/.

much scholarship on the topic of creating a new federal agency focused on financial services innovation, history does provide some context around when and why new agencies make sense in some unique circumstances.

Several federal offices already regulate fintech products. This conglomeration of regulators is a major barrier to entry for smaller innovators. This collection of regulators also raises concern about the ability for any one regulator to develop a deep and complete understanding of the already very convoluted world of fintech. A potential answer could be to create a new fintech regulator, perhaps called: the Financial Innovation Commission (FIC). A narrow version of this approach focused on cryptocurrency was suggested by major cryptocurrency exchange Coinbase in its Digital Asset Policy Proposal published in late 2021. It reads: "To avoid fragmented and inconsistent regulatory oversight of these unique and concurrent innovations, responsibility over digital asset markets should be assigned to a single federal regulator."[67]

Rather than create a new regulator out of the ashes of a global disaster like was done with the CFPB,[68] the U.S. could take the lead in understanding and addressing the risks around fintech, while also providing clear and unequivocal rules and regulation that fintech companies can build into their processes. A major barrier to this proactive approach, however, is Congress' fire-alarm, rather than police-patrol, oversight method of regulation.[69]

[67] Shirzad, Faryar. "Digital Asset Policy Proposal: Safeguarding America's Financial Leadership." The Coinbase Blog, October 14, 2021. https://blog.coinbase.com/digital-asset-policy-proposal-safeguarding-americas-financial-leadership-ce569c27d86c.
[68] Consumer Financial Protection Bureau. "Building the CFPB."
[69] McCubbins, Mathew D., and Thomas Schwartz. "Congressional Oversight Overlooked: Police Patrols versus Fire Alarms." American Journal of Political Science 28, no. 1 (February 1, 1984): 165–79.

It may be prudent for Congress to act before the world economy finds itself on another financial precipice. Though such a move appears unlikely, the U.S. financial system would be prepared for the unstoppable awesome innovation in financial services that is yet to come.

IV. Now is the Time to Bolster Fintech Regulation

The future of financial services innovation is exciting and will impact the entire world economy. Inevitable future innovation, however, will bring many challenges for governments to protect consumers and keep markets stable.

Regulators in the United States will likely play an important role in setting standards for fintech. One challenge for regulators will be keeping up to date on the constant developments. Whether it is improving on existing regulatory approaches including sandboxes and innovation offices or finding novel ways to interact with the fintech industry in a more concrete and educated way, there are important strides that must be taken.

There is no time to waste. Innovation in financial services is becoming the norm, and the more legacy institutions invest personnel and money into new financial technologies, the more regulators will need to ensure that consumers remain protected and understand those new technologies. Perhaps most importantly, consumers are increasingly using new fintech products and services, a trend that is unlikely to slow.

The CFPB provides us with an example where appropriate action was taken in response to a global financial crisis. However, the most negative impacts on American consumers may have

been avoided had there been a regulator with a unique focus on ensuring that consumer protection had been top of mind for both regulators and market actors.

For the market-defining changes that are coming to the financial services industry to mesh smoothly with the rest of the U.S. and global economy, clearer and more robust regulations are needed to both keep innovators in check and allow them to provide the best products possible within clear regulatory frameworks. A new financial regulator may be needed to ensure the most seamless integration of these fintech products, with a clear understanding of the technology, the law, and the human aspect of fintech.

How and whether that can happen is unclear, but as this thesis explores in the following chapters, the benefits of fintech are immense but not inevitable. Policymakers must take steps to harness the full potential of fintech to promote financial inclusion and drive economic development. Effective regulation and continued education are both pillars in achieving that goal.

Chapter II

Fintech and Economic Development: Can Novel Financial Products and Services Usher in a New Age of Social Mobility and Financial Inclusion?

In many respects, the world's digitization has occurred more quickly than any innovation in human history, imposing continuous pressure on regulators, as outlined in Chapter I.[70] In fact, Moore's law predicts the speed of innovation may continue, and do so at a quickening pace.[71] Even now, modern technology and the internet may have irreversibly changed the way humanity functions. This is seemingly the case in interpersonal relationships (e.g., social media), in our professional lives (e.g., Google Docs, Zoom, self-driving cars) and in how we build wealth and transfer value (e.g., fintech and cryptocurrency).[72]

Financial institutions have wrapped technology into everything they do. They incorporate technology into their reporting and communications systems, and they leverage technology to create cheaper and more effective consumer products. Legacy financial institutions and fintech[73]

[70] "The Impact of Digital Technologies." United Nations. Accessed October 23, 2021. https://www.un.org/en/un75/impact-digital-technologies.
[71] "Moore's Law." University of Missouri–St. Louis. Accessed March 25, 2022. https://www.umsl.edu/~siegelj/information_theory/projects/Bajramovic/www.umsl.edu/_abdcf/Cs4890/link1.html.
[72] Barley, Stephen R., Beth A. Bechky, and Frances J. Milliken, "The Changing Nature of Work: Careers, Identities, and Work Lives in the 21St Century." *Academy of Management Discoveries* (2017): 111–15.
[73] Peek, Sean. "What Is Fintech?" United States Chamber of Commerce, June 11, 2020. https://www.uschamber.com/co/run/business-financing/what-is-fintech.

startups use a collection of software, applications, and novel payment rails to enhance everything from equities and bond trading to customer service and consumer lending.

The implementation of digital banking services began with the launch of credit cards in the 1950s,[74] long before what is typically understood as the birth of fintech. Following the widespread adoption of credit cards, financial institutions launched other, now ubiquitous, technologies to enhance banking services. These include automated teller machines (ATMs), digitally run and online stock exchanges, and digital financial data storage.[75]

Banks have further adopted many technological changes to cut costs and facilitate transactions. However, the qualitative impact of novel financial technologies on consumers remains unclear. In other words, has fintech been a net positive for society at large and promoted financial inclusion, particularly in under-served communities? This chapter parses this nuanced question and highlights the variables that come into play when trying to answer it.

Financial institutions and consumers have a tense relationship, and that relationship has soured following the Great Recession and sociopolitical movements like Occupy Wall Street. Partly, the tension exists because of the profit-seeking behavior of intermediaries, where many cost-cutting benefits from the implementation of fintech do not flow through to consumers. According to one study, the profit from rent-seeking behavior of financial intermediaries accounts for about 2% of all intermediated assets.[76] This both raises prices for consumers and creates barriers to entry for

[74] Ibid.
[75] Ibid.
[76] Wójcik, Dariusz, "Financial Geography II: The Impacts of FinTech – Financial Sector and Centres, Regulation and Stability, Inclusion and Governance." *Progress in Human Geography* 45 (4) (2021).

individuals who might be most sensitive to increases in fees and costs, and who would benefit most from the implementation of novel fintech products.

Emerging financial technologies have started to redefine the relationship between businesses and consumers by providing individuals with the tools to take more ownership of their own financial transactions and wealth building. In essence, many of the fintech developments of the 21st Century, notably blockchain applications and peer-to-peer transactions are disintermediating financial services. They push back against the rent-seeking behavior of legacy financial institutions, which has been a mainstay of the financial system for centuries. As outlined in a European banking and regulatory journal, these fintech services may be more effective than legacy institutions, like banks, at providing basic financial services:

> Fintechs provide indeed the same services as banks, possibly more efficiently because of technologies, but in a different and unbundled way. For example, like banks, crowdfunding platforms transform savings into loans and investments. Yet, differently from banks, the information they use is based on big data not on long term relationships; access to services is only decentralized through internet platforms; risk and maturity transformation is not carried out; lenders and borrowers or investors and investment opportunities are matched directly. There is disintermediation in this case.[77]

[77] Navaretti, Giorgio Barba, Giacomo mname Calzolari, Joss Manuel Mansilla-Fernandez, and Alberto F. Pozzolo. "Fintech and Banking. Friends or Foes?" *European Economy – Banks, Regulation, and the Real Sector*, 2, no. 2017 (January 10, 2018).

As this chapter explores, fintech is not an elixir that will definitively unseat legacy banking institutions. Fintech has been embraced by many legacy banks, and their institutional power and knowledge provide them with crucial advantages as they merge the tried and true with the fast and novel. The "pure" fintech products of today cannot answer all the questions of financial inclusion and equity. Instead, a hybrid approach may be needed, with support from the federal government to create an environment of knowledge and access:

> However, these pure FinTech unbundled activities have limited scope. For example, it is difficult for platforms to offer to their clients diversified investment opportunities without keeping part of the risk on their books, or otherwise securitizing loan portfolios. Other functions carried out through Fintechs instead of banks, like payment systems (e.g. Apple pay instead of credit cards) are still supported by banks. Banks lose part of their margins, but still keep the final interface with their clients, and because of the efficiency of these new systems, they expand their range of activities. Hence, in this case, there may be strong complementarities between banks and Fintechs.[78]

This chapter 1) assesses the evidence that fintech creates positive economic benefits by providing individuals with more access to banking services, 2) outlines shortcomings of the expansion of fintech services around the globe, and 3) discusses a stalled legislative effort that sought to wrap fintech into existing federal infrastructure with the goal of promoting financial

[78] Ibid.

inclusion. With the understanding of these mechanisms in mind, this chapter explores the most effective means to harness fintech services to the benefit of economic development, social mobility, and financial inclusion.

I. The Benefits of Fintech to Social Mobility

The opportunities for fintech to play a crucial role in promoting financial inclusion are extensive. Importantly, fintech can provide more widespread and cheaper access to essential financial services like payments and credit.[79]

One study focuses on sustainability and financial inclusion noted that the benefits of fintech could align to the overarching United Nations Sustainable Development Goals (SDGs). It notes that: "The full potential of fintech to support the SDGs may be realized with a progressive approach to the development of underlying infrastructure to support digital financial transformation."[80] The study also provides context for the size of the addressable market for basic banking services that can be tapped by expanding access to fintech:

> As of 2017, 1.7 billion adults lacked access to a financial or mobile money account, some 31 percent of the world's population. Significantly, though,

[79] Wójcik, "Financial Geography II: The Impacts of FinTech – Financial Sector and Centres, Regulation and Stability, Inclusion and Governance."
[80] Arner, Douglas W., Ross P. Buckley, Dirk A. Zetzsche, and Robin Veidt, "Sustainability, FinTech and Financial Inclusion." *European Business Organization Law Review* 21 (1) (2020): 7–35.

> between 2010 and 2017, 1.2 billion people gained a financial or mobile money account for the first time, with most located in developing countries.[81]

Another study also outlined the growth of financial access over the past 10 years. It found that "between 2011 and 2017 the percentage of adults globally with an account at a financial institution or a mobile money provider rose from 51 per cent to 69 per cent, with fastest growth in sub-Saharan Africa."[82] The evidence further shows that over the same period, fintech had a measurable impact on financial inclusion across China, Russia and India, which along with sub-Saharan Africa "account for the vast majority of the gains in financial inclusion since 2010."[83]

Other evidence that further informs on the breadth of fintech's impact, found that women accrue more of the economic benefits of fintech than men. Fintech also has a larger impact on younger generations, as "Millennials and Generation X users of FinTech benefit, Baby Boomers neither gain nor lose."[84] Additionally, some evidence shows that simple access to fintech payments and other digital financial applications can undeniably positive impacts on social mobility:

> In what is probably the most publicized article on the topic, [the authors] estimate that M-Pesa[85] lifted 194,000 people in Kenya out of poverty.[86]

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[81] Ibid.

[82] Wójcik, "Financial Geography II: The Impacts of FinTech – Financial Sector and Centres, Regulation and Stability, Inclusion and Governance."

[83] Arner, "Sustainability, FinTech and Financial Inclusion."

[84] Wójcik, "Financial Geography II: The Impacts of FinTech – Financial Sector and Centres, Regulation and Stability, Inclusion and Governance."

[85] M-Pesa is a mobile-based finance app that provides money transfer services and micro-financing. The service is popular in Sub-Saharan Africa, notably Kenya.

[86] Wójcik, "Financial Geography II: The Impacts of FinTech – Financial Sector and Centres, Regulation and Stability, Inclusion and Governance."

That study also found that the impacts of M-Pesa and the advent of "mobile money" were "more pronounced for female-headed households."[87] In short, the authors concluded that mobile money "increased the efficiency of the allocation of consumption over time while allowing a more efficient allocation of labor, resulting in a meaningful reduction of poverty in Kenya."[88]

There is further evidence pointing to the unique ability for fintech to promote economic inclusion. An International Monetary Fund report on the promise of fintech-driven financial inclusion highlighted that in eight African countries "including Zimbabwe, South Africa and Nigeria the progress in financial inclusion is entirely driven by fintech."[89] The report adds:

> "Fintech solutions appear particularly well adapted to the constraints women face—the interfaces are being increasingly designed to be consumer-friendly and digital finance does not require physical presence to access financial services."[90]

The evidence is certainly compelling that the growth of fintech can have a real and measurable positive impact on the lives of millions around the globe, and importantly, that impact can align powerfully with promoting social mobility and economic development. While countries like the United States also experience financial inclusion benefits from fintech, some evidence links fintech to an increase in inequality and disenfranchisement.

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[87] Ibid.
[88] Suri, Tavneet and William Jack, "The Long-Run Poverty and Gender Impacts of Mobile Money," *Science* 354, no. 6317 (September 2016): pp. 1288-1292.
[89] Sahay, Ratna, Ulric Eriksson von Allmen, Amina Lahreche, Purva Khera, Sumiko Ogawa, Majid Bazarbash, and Kim Beaton. "The Promise of Fintech - International Monetary Fund." International Monetary Fund, 2020. https://www.imf.org/~/media/Files/Publications/DP/2020/English/PFFIEA.ashx.
[90] Ibid.

Limiting Factors of Fintech

As seen above, there is well-founded evidence showing that fintech can have a positive impact on the financial lives of individuals around the world. This can be particularly the case for those who use fintech services in developing countries, and it can likewise be a boon to less advantaged communities in more economically developed countries.

In cases like Kenya, where the proliferation of applications like M-Pesa had an outsized impact on the financial standing of individuals, access to traditional means of banking was sparse, whereas access to cellphones was much more common.[91] That created the space for a dramatic increase in wealth building and other banking activities, using fintech products that were generally rare given the lack of existing banking infrastructure. In the rural United States, however, or other economically developed nations, local banks have played a much more prominent role.

This chapter has explored circumstances in which fintech can create powerful and positive economic benefits. As we will see below, there is important nuance in how beneficial fintech can be in wealthier nations, particularly in areas of wealth and racial disparity.

[91] Ibid.

Fintech is not a panacea. Researchers have found that the benefits of fintech are often unequal depending on several variables, notably existing infrastructure, and that fintech can exacerbate wealth disparities in certain cases.[92]

Importantly, a necessary condition to use fintech products and services is access to the internet and an internet-connected device. Even access to faster broadband services can be reflected in better outcomes in the use of fintech products. Fintech products and services, at the end of the day, are built online. Without the appropriate devices and internet connections, fintech can become essentially useless. In some parts of the United States internet access has become a barrier for fintech and the potentially associated economic empowerment.

As we will see, fintech is notably less impactful in communities where access to the internet is sparse or slower than the norm. There are also connections between a community being a rural or low-income community and the lack of robust internet access, minimizing the proliferation of fintech product in communities that have the most to benefit.

Largely focused on the United States, several studies outlined that the implementation of fintech products and services can have deeply unequal impacts on different communities. Generally, these studies showed that the advent of fintech might in fact be further limiting access to banking for those in rural areas. As one study noted:

[92] Friedline, Terri, Sruthi Naraharisetti, and Addie Weaver. "Digital Redlining: Poor Rural Communities' Access to Fintech and Implications for Financial Inclusion." *Journal of Poverty* 24 (5/6) (2020): pp. 517–41.

> Rural communities are at risk of marginalization given their comparatively lower rates of broadband or high-speed internet and cell phone services that make online and mobile banking possible. Consequently, rural communities could be discouraged from accessing financial services and from dignified economic participation as bank branches decline, especially among communities with high poverty rates and concentrations of people of color.[93]

According to the same study, "a majority of rural residents does not have access to broadband or high-speed internet or cell phone service—digital technologies required for online and mobile banking."[94]

In 2018, the Federal Communications Commission (FCC) noted that 31% of those in rural areas do not have access to high-speed or broadband internet.[95] Some states have notably higher rates of sub-par internet access in their rural communities, with 65% of Arizona's rural population, for example, lacking high-speed internet access, and between 80% and 84% of New Mexico's and West Virginia's rural population lacking "cell phone service with high-speed internet."[96] The FCC further notes that:

> Rural communities are experiencing digital and financial divides. Mutually reinforcing trends of low rates of high-speed internet access and smartphone ownership alongside high rates of bank branch closures have the potential to

[93] Ibid.
[94] Ibid.
[95] Ibid.
[96] Ibid.

> exacerbate rural communities' marginalization from the financial marketplace and inhibit their dignified participation in the economy.[97]

Inconsistent access to fintech products requires that the "fintech industry, policymakers, planners, and community members … mobilize to understand the racial equity implications of fintech lending,"[98] and help implement equitable access where possible.

The evidence above shows that infrastructure constraints are important variables in understanding of how well fintech products can address issues of financial inequality. Further, discriminatory biases, that may also be inherent to the novel technologies central to fintech, can have a notable impact on how effectively the rise of fintech can energize a community. There is evidence to show that new technologies, including artificial intelligence, big data and algorithm usage, which are widely implemented across fintech products like automated lending platforms and roboadvisors, may also contain inherent racial and cultural biases that dampen the positive impact of fintech.[99]

Considering these realities, we can directly ask ourselves the question: can fintech effectively provide better access to payment rails and credit opportunities while offering more support and educational resources for marginalized groups and historically disadvantaged communities?

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[97] Ibid.
[98] Velasquez, Sharon, "FinTech: Means to Inclusive Economic Development?" *Harvard Journal of Hispanic Policy* 32 (January 2020): 32–40.
[99] Ibid.

One journal opinion piece provides an eloquent explanation of the complicated reality faced when attempting to best deploy fintech and ensure it can be a boon to financial inclusion. It highlights the central role that regulators must play in creating an environment where fintech can be fully harnessed:

> In the hullabaloo of the fintech age, we are once again reminded there are powerful tools but no silver bullets. It will be up to practitioners and policy makers to ensure that FinTech results in benefits beyond financial inclusion to have a meaningful impact on the lives of those who move from 'excluded' to Fintech-enabled 'included'.[100]

Researchers have outlined how regulators and legislators might approach addressing these concerns inherent in the proliferation of fintech products. One group of scholars, Douglas Arner and his colleagues, note that while fintech is a "key driver for financial inclusion," the implementation of fintech products must be done in a way that best moves toward that goal of inclusion. Their study outlines four pillars that will help ensure the effective proliferation of fintech products and the associated desired inclusion: 1) creating an effective digital identity system, 2) having an "open interoperable electronic payments system," 3) effective and robust infrastructure, and 4) supporting broader access to capital in the form of investments.[101]

These four requirements can be addressed in turn. Federal initiatives like the Build Back Better Act, which "devotes about $1 billion to broadband affordability and accessibility, alongside

[100] Jones, Linda. "Guest Editorial: Poverty Reduction in the FinTech Age." *Enterprise Development & Microfinance* 29, no. 2 (June 2018): 99–102.
[101] Arner, "Sustainability, FinTech and Financial Inclusion."

funding for committees and awareness efforts," and the Infrastructure Investment and Jobs Act, which included $65 billion to expand access to high-speed internet, can provide critically important infrastructure benefits supporting the eventual widespread economic benefits of fintech.[102] The bill has faced thus far insurmountable opposition in the U.S. Senate, with a Sen. Manchin, D-WV, a notable holdout.[103]

II. Exploring the Banking for All Act

This section reviews proposed legislation authored by Sen. Sherrod Brown, D-OH, the "Banking for All Act"[104]—one of the few examples of suggested federal legislative action to address the dearth of access to banking services faced by millions of Americans. By outlining the contours of the proposed bill, we can assess whether a proposal like the Banking for All Act could address some of the shortcomings pointed out in various studies around the implementation of fintech products.

As show in the previous section, there is ample evidence that the free market, including the advent of fintech, has created a matrix of unequal access to banking, which can, and is, disenfranchising millions of Americans. The federal government and local governments need to support the creating of an environment where access to banking becomes largely ubiquitous.

[102] DiMolfetta, David. "Outlining the Broadband Provisions of the Build Back Better Act." S&P Global, November 8, 2021. https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/outlining-the-broadband-provisions-of-the-build-back-better-act-67464128.
[103] Zhou, Li. "Congress's Packed to-Do List, Briefly Explained." Vox. Vox, April 25, 2022. https://www.vox.com/23037690/congresss-pandemic-aid-ukraine-recess.
[104] U.S. Congress, Senate, Banking for All Act, S. 3571, 116th Congress, https://www.congress.gov/bill/116th-congress/senate-bill/3571.

Doing so would level the playing field, provide more economic opportunity, and strengthen financial inclusion regardless of a community's average income level or location.

The Banking for All Act is among the most direct attempts by a federal legislator to use technologically enhanced financial services to expand access to banking to a wide swath of the country. Using the Act as context, this chapter posits what may be the major requirements for the successful deployment of fintech services in the United States, where new technologies can provide equal access to banking and improve overall financial inclusion.

The effective implementation of fintech will rely in large part on how policy is crafted to address the numerous variables that this chapter has shown play a role in its ultimate efficacy improving individual financial lives. As just described, fintech can provide tangible benefits to entire communities by creating new ways to access capital and building new payment rails. Conversely, the proliferation of fintech can also have negative impacts on access to banking in certain regions and for specific communities.

Congress is aware of the impact that technology can have on financial services. For example, the U.S. House Financial Services Committee has created two task forces on technology and financial services: the Task Force on Artificial Intelligence,[105] and the Task Force on Financial

[105] U.S. Congress, House, Committee on Financial Services, "Task Force on Artificial Intelligence," Accessed April 16, 2021. https://financialservices.house.gov/about/task-force-on-artificial-intelligence.htm.

Technology.[106] High-profile hearings in the U.S. Senate have also touched on fintech and its potentially outsized impact on various parts of our socio-economic world.[107]

Leveling the Playing Field

As the COVID-19 pandemic raged across the globe, Sen. Sherrod Brown (D-OH) proposed a bill that would provide every American with a digital wallet accessible at local bank branches or at any U.S. Post Office.[108] Amid a flurry of relief bills that sought to soften the economic blow from the pandemic, the Banking for All Act provided an opportunity for the federal government to wrap the benefits of fintech into our everyday lives. The bill would also have done so in a notably egalitarian way, by creating digital wallets for every American accessible at local bank branches or at any U.S. Post Office. While reminiscent of what is known as "postal banking," access to traditional financial services at Post Offices ended in 1967 following the closing of the Postal Savings System.[109] This new iteration of postal banking would leverage the U.S. Post Office's significant national footprint to address some of the important infrastructural shortcomings that can plague the implementation of fintech.

As the federal government was poised to send out hundreds of billions of dollars to millions of Americans in response to the COVID-19 pandemic, a crucial question was raised concerning the

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[106] U.S. Congress, House, Committee on Financial Services, "Task Force on Financial Technology," Accessed April 16, 2021. https://financialservices.house.gov/about/task-force-on-artificial-intelligence.htm.

[107] U.S. Congress, House, Committee on Financial Services, "An Examination of Facebook and its Impact on the Financial Services and Housing Sectors," 116th Congress, 1st Session, 2019, https://financialservices.house.gov/uploadedfiles/chrg-116hhrg42452.pdf.

[108] U.S. Congress, Senate, "Banking for All Act," S.3571 - 116th Congress (2019-2020). https://www.congress.gov/bill/116th-congress/senate-bill/3571/text.

[109] "Reforming the U.S. Postal Service: Background and Issues for Congress." By Michelle Christensen, Kathryn Francis and Garrett Hatch, Congressional Research Service, Aug. 25, 2016. https://crsreports.congress.gov/product/pdf/R/R44603.

ability for unbanked and underbanked Americans to quickly access the cash. According to the Federal Insurance Deposit Corporation (FDIC), as of 2019, around 7.1 million households, (about 5.4%)[110] are unbanked. These households would likely experience delays in receiving their Coronavirus stimulus payments as the funds could not be directly deposited into bank accounts. The unbanked would also likely have to pay check-cashing fees at a time of great economic uncertainty.

Beyond the unbanked, who live their lives largely outside the traditional financial system, in 2017, the FDIC estimated that a further 18.7% of American households (24.2 million households comprised of 48.9 million adults and 15.4 million children) were also underbanked. Underbanked households are those with members who interact with financial products outside the banking system, while also holding an FDIC-insured account at a financial institution.[111]

The Banking for All Act, therefore, would provide these millions of unbanked and underbanked Americans with near-immediate access to their stimulus funds. In a statement following the introduction of the bill, Sen. Brown said:

> At the height of this pandemic we must do more to protect the financial wellbeing of hardworking Americans and consumers. They are on the front lines of this crisis and are already feeling the effects of the economic fallout. My legislation

[110] "How America Banks: Household Use of Banking and Financial Services, 2019 FDIC Survey." FDIC.gov. Accessed December 18, 2021. https://www.fdic.gov/analysis/household-survey/.

[111] "2017 FDIC National Survey of Unbanked and Underbanked Households." FDIC.gov. Accessed December 18, 2021. https://www.fdic.gov/analysis/household-survey/2017/index.html.

> would allow every American to set up a free bank account so they don't have to rely on expensive check cashers to access their hard-earned money.[112]

Spurred by the pandemic, the emergence of the Banking for All Act shows that Congress is aware of the significant impact fintech is likely to have on financial services. It further suggests that at least some federal legislators believe fintech should be harnessed by the federal government to ensure equitable access to the benefits of new technologies in finance.[113]

A blog post by the Atlantic Council, and American think tank focused on international affairs, discussing the emergence of a digital dollar and related initiatives, like the Banking for All Act, explained that:

> The appearance of more initiatives in Congress, noting the growing necessity of reaching the … 'unbanked' in times of financial crisis, hints at the recognized potential of the digital dollar's future. Even as there is an increasing awareness about the possibility of issuing these digital dollar wallets to US citizens, there is still much to be thought through.[114][115]

[112] Sherrod, Brown. "Brown Introduces New Legislation to Help Hardworking Americans in the Coronavirus Relief Package." United States Committee on Banking, Housing, and Urban Affairs, March 24, 2020. https://www.banking.senate.gov/newsroom/minority/brown-introduces-new-legislation-to-help-hardworking-americans-in-the-coronavirus-relief-package.
[113] Greenwald, Michael. "Digitizing the Dollar in the Age of Covid-19." Atlantic Council, April 22, 2020. https://www.atlanticcouncil.org/blogs/new-atlanticist/digitizing-the-dollar-in-the-age-of-covid-19/.
[114] Ibid.
[115] See Chapter III for a discussion of Central Bank Digital Currencies.

In practice, the Banking for All Act would have provided every American citizen and resident, as well as U.S.-domiciled businesses, with the opportunity to set up a free digital dollar wallet. The account would be called a "FedAccount," and local, state, and national banks, with U.S. Post Offices, would maintain and provide access to the accounts.[116]

According to an overview of the bill by the Proskauer law firm, "A FedAccount would allow a holder 'receive payments from the United States pursuant to a federal law relating to the coronavirus disease 2019 (COVID-19),' as well as perform more general tasks such as withdrawing and receiving money, and making payments."[117] Despite the bill's lofty goals, the Senate did not consider the Banking for All Act. It was also not included in any of the COVID-19 relief bills.

Financial Services During Times of Crisis

The Banking for All Act touched on a critically important concern during times of crisis: access to financial services.[118] With the global economy largely at the mercy of a variety of potential crises (e.g., health-related like COVID-19, environmentally connected, or political), access to financial services is crucial to soften the economic blow. Fintech is an important tool for governments to provide more widespread and easier access to financial services in times of crisis.

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[116] Shelton, Jordan. "Digital Dollars: Amid the COVID-19 Crisis, Support for a U.S. Digital Currency Emerges." Blockchain and the Law, February 22, 2021. https://www.blockchainandthelaw.com/2020/04/digital-dollars-amid-the-covid-19-crisis-support-for-a-u-s-digital-currency-emerges/.
[117] Ibid.
[118] Al Nawayseh, Mohammad K, "FinTech in COVID-19 and Beyond: What Factors Are Affecting Customers' Choice of FinTech Applications?" *Journal of Open Innovation* 68 (2020): 1–15. doi:10.3390/joitmc6040153.

The COVID-19 pandemic played a crucial role in laying bare the need for more access to fintech products. There are at least two obvious ways in which fintech would benefit the general population in a time of crisis, and particularly a health-related one like the COVID-19 pandemic. First, access to financial services is necessary to mollify the negative economic impacts of crises, and second, the infectious nature of the COVID-19 crisis caused health experts to suggest cutting out the use of physical cash.[119] A paper assessing the impact of COVID-19 discussed the necessity of providing wider access to fintech products, especially in lower-income communities, to ensure vulnerable communities are not disproportionately negatively impacted during times of crisis, saying:

> In light of the COVID-19 crisis, the infection could be transmitted through many mediums, one of them is cash. Access to cash during the COVID-19 crisis was a major concern during lockdowns, especially in developing countries. Moreover, governments struggled to financially help vulnerable citizens and businesses to access cash during this crisis. To ensure inclusivity, governments should support the use of such applications by establishing Fintech business incubators, marketing, reducing taxes and easing their regulations.[120]

[119] Daragmeh, Ahmad, Csaba Lentner, and Judit Sági. "Fintech Payments in the Era of COVID-19: Factors Influencing Behavioral Intentions of 'Generation X' in Hungary to Use Mobile Payment." *Journal of Behavioral and Experimental Finance* 32 (2021).
[120] Al Nawayseh, "FinTech in COVID-19 and Beyond: What Factors Are Affecting Customers' Choice of FinTech Applications?"

As several studies have shown, access to financial services is not immune to discrimination and redlining.[121] Add the disproportionate impact of crises on low-income and disadvantaged communities, and the benefits and importance of building a robust financial system that everyone can access become clear.

Certain infrastructural and community-based necessities can often be a prerequisite to effectively implementing a system that can harness the promise of fintech. These include, access to the internet and avenues for financial literacy and new investment. According to the Arner study, these are 1) creating an effective digital identity system, 2) having an "open interoperable electronic payments system," 3) effective and robust infrastructure, and 4) supporting broader access to capital in the form of investments.[122]

Proponents of the Banking for All Act argue that it would have moved the needle in the right direction for the first and second pillars by creating a web of digital bank accounts connected to the Federal Reserve and to each other. It would likewise effectively connect the identity of the account holder with a network of other accounts.

The Act could also push forward the third and fourth pillars. By providing access to these accounts at U.S. Post Offices and community banks, the bill would address an important infrastructural constraint given the inconsistency of internet access across the country,[123] increasing financial access in rural areas. The opportunity for federal or state governments to

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[121] Friedline, "Digital Redlining: Poor Rural Communities' Access to Fintech and Implications for Financial Inclusion."
[122] Arner, "Sustainability, FinTech and Financial Inclusion."
[123] Friedline, "Digital Redlining: Poor Rural Communities' Access to Fintech and Implications for Financial Inclusion."

immediately send relief payments (or any other kind of payments for that matter), could start to address the fourth pillar above, by spurring economic activity and broader investments.

III. Ensuring Fair Access to Fintech

At its core, technology is agnostic to the user. We are not yet in a world where the technology we use on a day-to-day basis develops its own prejudices. The biases in how access to technology has expanded, whether through digital redlining or digital discrimination, is born from the impact that individuals have on the implementation of technological projects. Biases can be "coded" into different technologies using algorithms and artificial intelligence in fintech lending decisions, a reality that should not be taken lightly and are important to address early in the development of new technologies.[124]

Fintech, encompassing a significant subset of the technological initiatives across the globe today, faces the same problem of inherent bias and discrimination caused by a confluence of factors. This range of factors is hamstringing the full equitable deployment of fintech products that could have outsized positive impacts on underserved communities.[125]

One of the answers to addressing this problem when deploying financial services would be to create a framework that includes infrastructure, education and access to capital. Fintech is a great candidate for being able to hit these pillars, but it will not be able to do it alone.

[124] Velasquez, "FinTech: Means to Inclusive Economic Development?"
[125] Ibid.

To illustrate how a bill like the proposed Banking for All Act could have a measurable impact on the financial lives of the unbanked and underbanked in the United States, we can look back to federal action following the Civil War. According to a *University of Chicago Booth Review* paper, the federal government launched financial support for freed slaves in the form of the Freedman's Saving and Trust Company to "accelerate their economic empowerment."[126] Whereas there is ample evidence that the bank "had a measurably positive effect on its customers," the paper also outlines that access is not sufficient to address wealth disparities. The paper quotes an Ohio State professor who said:

> 'The main lesson and takeaway I see is that access to financial institutions is important, but it is unlikely that it is a necessary or sufficient condition to close the racial wealth gap,' says Ohio State's Trevon D. Logan. 'It's not as if people are unbanked because they have hundreds of thousands of dollars under mattresses. They lack the resources to have a bank account.'[127]

The University of Chicago paper further outlines that whereas access is necessary for disadvantaged communities to benefit from the litany of services that the banking system provides, other variables come into play, including education and trust. It is important to note that the Freedman's Bank quickly shuttered in 1874 following the panic of 1873, leaving "60,000 depositors with nearly $3 million in losses." According to the paper, research shows that the bank's failure did "long-term damage to financial trust." This lack of trust has continued to today, with Black residents in counties where a Freedman's Bank branch had opened "more

[126] Doris, Áine. "How Powerful Is Financial Inclusion?" The University of Chicago Booth School of Business, August 10, 2020. https://www.chicagobooth.edu/review/how-powerful-is-financial-inclusion.
[127] Ibid.

likely to list mistrust of financial institutions as a reason for being unbanked—an association that is not present for white Americans," according a 2017 FDIC national survey.[128]

Leveraged and delivered in the right way fintech can be a critical resource for the economic empowerment of traditionally underserved communities and could play a role in reestablishing trust and providing educational services. With the federal government and private industry working in conjunction to create more economic access and opportunity, fintech can be an important cog in an effort toward American economic and financial equity in the 21st Century.

Federal Action Can Support the Equitable Application of Fintech

Both the Donald Trump and Joe Biden administrations have undertaken important initiatives that could support the equitable proliferation of fintech products. The expansion of Opportunity Zones during the Trump administration and billions of dollars earmarked for the expansion of high-speed internet in the Biden-led infrastructure bill are likely to be a boon to economic development and empowerment particularly in underserved communities.

a. Opportunity Zones

First conceived in 2015 by a bipartisan team of economists, Kevin Hassett and Jared Bernstein, Opportunity Zones seek to explore ways to address the unequal recovery that succeeded the

[128] Ibid.

Great Recession of 2007 and 2008.[129] Put in motion as part of the 2017 Tax Cuts and Jobs Act (TCJA), Opportunity Zones are a bipartisan effort that have played, and can continue to play, an important role in economic equity across the nation.[130]

Under the Opportunity Zone program, localities designated by the states, and subsequently approved by the Treasury Department, benefit from increased economic investment resulting from tax incentives for businesses that invest in the area.[131] These localities are traditionally underserved and must meet certain income requirements to be deemed an Opportunity Zone.

According to a Department of Housing and Urban Development (HUD) press release in August 2020, Opportunity Zones were "on track to lift one million American out of poverty," had spurred the creation of around half a million jobs and brought in $75 billion in new capital investment.[132] The expected reduction in poverty rates equates to an 11% decrease in that rate within Opportunity Zones, a notable impact brought by increased investments.

Opportunity Zones show that federal initiatives to spur investment can have a notable impact on economic empowerment and equity, squarely addressing the fourth prong outlined in the Arner study: supporting broader access to capital in the form of investments.

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[129] "Opportunity Zones History." Economic Innovation Group, October 4, 2021. https://eig.org/opportunityzones/history.
[130] Ibid.
[131] Ibid.
[132] "New Report Shows Opportunity Zones on Track to Lift One Million Americans out of Poverty," HUD.gov. U.S. Department of Housing and Urban Development, August 25, 2020. https://www.hud.gov/press/press_releases_media_advisories/HUD_No_20_131.

It has further been suggested that Opportunity Zones can have a direct impact in bringing "high-tech, high-return AI companies to lower income communities in order to create jobs and move capital to areas of poverty," a direct link to the world of fintech.[133] This bipartisan effort serves as an important piece of evidence for how the federal government can support the implementation of fintech to the benefit of all, and level the playing field in financial services.

b. Infrastructure Bill and Build Back Better Act

In 2021, Congress and the President engaged in a concerted effort to expand access to broadband and high-speed internet across the country through the Infrastructure Investment and Jobs Act. The law included $65 billion to expand access to high-speed internet.[134] A significant portion of the investment, $14.2 billion or 22%, "is set aside for the establishment of the Affordable Connectivity Fund."[135] Ensuring that broadband funding is directed toward making broadband and high-speed internet more affordable is crucial to ensuring fair access to banking services and fintech products.

As outlined previously, the FCC has shown that access to broadband in rural communities is lacking. Further, low-income and minority communities are especially prone to be in regions underserved by broadband and high-speed internet.[136] Improving the digital connectivity for

[133] White-Klososky, Annette. "How Opportunity Zones Are Helping AI Startups Thrive in Low-Income Communities." Forbes. Forbes Magazine, August 13, 2019. https://www.forbes.com/sites/cognitiveworld/2019/08/07/opportunity-zones-ai/?sh=14b767ea6a14.
[134] DiMolfetta, "Outlining the Broadband Provisions of the Build Back Better Act."
[135] Ibid.
[136] Friedline, "Digital Redlining: Poor Rural Communities' Access to Fintech and Implications for Financial Inclusion."

these populations will have a positive impact on their ability to access and benefit from fintech products.

The infrastructure bill will likely provide a significant pot of funds to drive the further proliferation of fintech products in underserved communities. Paired with the Build Back Better Act, which has yet to be passed into law as of December 2021, these initiatives can start to paint a picture of an effort for digital and financial equity. The Build Back Better Act "devotes about $1 billion to broadband affordability and accessibility, alongside funding for committees and awareness efforts."[137]

Build Back Better includes $475 million in grants for digital devices like laptops and tablets, which "low-income consumers [can] qualify [for] through subsidies provided in the infrastructure bill and Build Back Better."[138] Other parts of the Build Back Better Act provide investments in education, outreach and forward-looking efforts to ensure low-income communities do not continue to be left behind.[139]

The expansive Opportunity Zone program and the funding for broadband and high-speed internet contained in the infrastructure bill and Bill Back Better Act can build solid foundations for fintech to equitably proliferate across the diverse parts of the country. As we have seen, the advent of fintech can restrict access to banking services by pushing out banks from areas that

[137] DiMolfetta, "Outlining the Broadband Provisions of the Build Back Better Act."
[138] Ibid.
[139] Ibid.

rely on them, leaving underbanked communities with even fewer options.[140] These initiatives can counter those developments.

The initiatives discussed above address the third and fourth prongs outlined by Arner, pushing forward broader and more equitable access to capital through the Opportunity Zone program, and focusing on improving the digital infrastructure that undergirds the use of fintech products.

The role of the federal government in ensuring financial equity in the context of fintech proliferation will continue to be crucial. As outlined above, inconsistent access to fintech products requires that the "fintech industry, policymakers, planners, and community members … mobilize to understand the racial equity implications of fintech lending,"[141] and help implement equitable access where possible.

What Other Federal Action is Needed?

Existing federal actions are addressing the third and fourth prongs of Arner's analysis of what is needed to equitably and fairly deploy fintech products. So, what can be done to round out remaining the two prongs: 1) creating an effective digital identity system, 2) having an "open interoperable electronic payments system"?

The Banking for All Act discussed above could serve as an exciting opportunity to create an "open and interoperable electronic payments system." As discussed in Chapter III, other efforts

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[140] Friedline, "Digital Redlining: Poor Rural Communities' Access to Fintech and Implications for Financial Inclusion."
[141] Velasquez, "FinTech: Means to Inclusive Economic Development?"

by central banks across the globe, including in the United States, have sought to create what are known as Central Bank Digital Currencies (CBDCs). CBDCs employ fintech technologies like blockchain to launch government-backed digital tokens that can serve as an alternative to cash, while harnessing the speed and efficiency exhibited by the rise of cryptocurrency.[142] According to the Atlantic Council's CBDC tracker, "87 countries (representing over 90 percent of global GDP) are exploring a CBDC."[143]

These digital versions of fiat currency would improve payment efficiencies when compared to physical cash by lowering transaction costs and promoting financial inclusion, as the Atlantic Council outlines:

> There are a lot of reasons to explore virtual currencies, depending on the economic situation within a country. Here are just a few according to the International Monetary Fund: CBDCs are more cost efficient than physical cash as they have lower transaction costs; they can promote financial inclusion, meaning those who are unbanked can get easier and safer access to money on their phone; they can compete with private companies that need incentives to meet transparency standards and limit illicit activity; and they can help monetary policy flow more quickly and seamlessly.[144]

[142] Frankenfield, Jake. "What Is Cryptocurrency?" Investopedia, December 20, 2021. https://www.investopedia.com/terms/c/cryptocurrency.asp.
[143] "Central Bank Digital Currency Tracker." Atlantic Council, December 15, 2021. https://www.atlanticcouncil.org/cbdctracker/.
[144] Ibid.

The advent of CBDCs and other initiatives like what was included in the Banking for All Act could have a powerful impact on creating an "interoperable electronic payments system." The conversation around CBDCs has already begun in the U.S. with a bill aimed at exploring the launch of a CBDC introduced earlier this session.[145] The text summary outlines the bill:

> This bill requires the Board of Governors of the Federal Reserve System to report on the impacts of the introduction of a central bank digital currency (CBDC) on consumers, businesses, monetary policy, and the U.S. financial system. Several countries are currently developing CBDCs in response to the growth of privately issued digital currencies such as Bitcoin.

Moving forward with a CBDC in conjunction with the investment in infrastructure, high-speed internet and broadband would set the stage for the effective implementation of fintech products that would have equitable and fair impact across the country.

The first prong of Arner's analysis, creating a digital identity system, still requires more attention from the federal government. There are, however, exciting private initiatives being undertaken in the blockchain space, including Civic, which has created a system for digital identity sharing.[146]

IV. A Focus on Equity in Fintech is Paramount

[145] U.S. Congress, House, "Central Bank Digital Currency Study Act of 2021," H.R. 2211, 117th Congress. https://www.congress.gov/bill/117th-congress/house-bill/2211.
[146] "Identity Verification by Civic - Compliance Tools for Decentralized Finance (DEFI), Public Blockchains, Nfts, and Businesses." Civic Technologies, Inc. Accessed December 20, 2021. https://www.civic.com/.

There are no simple answers when assessing the best way to implement fintech in our existing financial system, and even fewer concrete federal efforts to ensure it is deployed it in an inclusive and equitable manner. Add to that a disjointed and unclear regulatory reality,[147] and the need for a clearer direction is evident.

This chapter provides a blueprint to consider how the federal government can harness fintech in its most benign form. Fintech can raise standards of living and create vibrant new economies of scale and opportunities for low-income and marginalized communities. However, fintech deployed without care can deepen income inequality and harm consumers in areas where the infrastructure required for fintech is lacking.

As explored here, there are four main prongs that if adhered to can make the equitable implementation of fintech more likely: 1) creating an effective digital identity system, 2) having an "open interoperable electronic payments system," 3) effective and robust infrastructure, and 4) supporting broader access to capital in the form of investments.[148]

Using these prongs as a guide, we can ensure a "progressive approach to the development of underlying infrastructure to support digital financial transformation," in the hopes of building a sustainable and inclusive financial system that benefits all.[149]

Creating an inclusive digital identity system, prong one, is a project that has yet to see federal action, however, the remaining three can be supported by existing federal initiatives, and should

[147] See Chapter I.
[148] Arner, "Sustainability, FinTech and Financial Inclusion."
[149] Ibid.

be expanded. The federal government is right to be exploring the impact of fintech with task forces and proposed bills, but more needs to be done.

Fintech entrepreneurs will not wait, and the fintech industry will move to market as quickly as they innovate. Widespread adoption of fintech products is imminent, but the federal frameworks to ensure its equitable development are sparse. The scholarly work exists, and legislators must take stock now before the law gets too far behind the activity it is meant to govern.

Chapter III

Exploring Central Bank Digital Currencies (CBDCs): Will Central Banks Move Financial Services Into the Future?

As outlined in the preceding chapters, financial technology is having, and will continue to have, deep and long-term impacts on developing and developed economies alike. A central question that remains for policymakers is: do we embrace new technologies and wrap them into our existing financial structures, or do we allow for the private development of a novel financial paradigm that lives in parallel and competes with the legacy financial systems?

The rise of Central Bank Digital Currencies (CBDC) shows that a growing number of governments around the world have decided that employing novel financial technologies to enhance the functioning of a more efficient financial system can be a boon to economies. Innovation in financial services and payments have changed the way that economies function and have had a deep impact on human interactions over millennia. The advent of CBDCs may very well be the contemporary iteration of the cheque, and banknotes or coins before it.[150]

The Bank of International Settlements, a Switzerland-based international organization comprised of central banks from around the world with a mission to "support central banks' pursuit of

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[150] Auer, Raphael, Giulio Cornelli, and Jon Frost. "Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies." The Bank for International Settlements, August 24, 2020. https://www.bis.org/publ/work880.htm

monetary and financial stability through international cooperation, and to act as a bank for central banks,"[151] has released various reports that analyze the implications of CBDCs. In one of those reports published in 2020, the group provided a brief overview of where CBDCs fit in the history of money and payments:

> Over the centuries, wave after wave of new payment technologies has emerged to meet societal demands. Coins, banknotes, cheques and credit cards were each innovations in their own day. Today, there is growing discussion of a new payment technology: central bank digital currencies (CBDCs). As a digital liability of the central bank, wholesale CBDCs could become a new instrument for settlement between financial institutions, while retail (or general purpose) CBDCs would be a central bank liability accessible to all.[152]

Multiple iterations of CBDCs have been suggested, but a vast majority of them could be described at a very high level as a digital representation of fiat currency backed by the federal government. As an example, one unit of a hypothetical "digital dollar" would be interchangeable with one physical dollar bill. Importantly, CBDCs would also "be a central bank liability accessible to all."[153] In other words, CBDCs would have the same utility and backing as a unit of fiat currency.

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[151] "About BIS." The Bank for International Settlements, January 1, 2005. https://www.bis.org/about/index.htm?m=1_1.
[152] Auer, Raphael, Giulio Cornelli, and Jon Frost. "Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies."
[153] Ibid.

Another central aspect of CBDCs will likely be the use of blockchain, or distributed ledger technology, as the underlying technology that supports fiat-backed digital currencies across the globe. A *Harvard Business Review* article outlined the implementation of blockchain in the following way:

> Ultimately, the technology underlying CBDCs will be Blockchain, the technology that enables Bitcoin. It consists of time-stamped record blocks with encrypted transaction activity, continuously audited by all verified network participants. Blockchain decentralizes the storage and trustworthy transmission of money.[154]

The article notes that whereas blockchain technology currently faces several hurdles, including growing pains when supporting large-scale projects, there is an expectation that these limitations will be addressed in the near-term. "At a certain point, therefore, the existing digital infrastructure will be replaced, which will eliminate the dependence of new entrants on the resources and capabilities controlled by incumbent financial institutions."[155]

This chapter assesses at a high level the status and progress around CBDCs in the United States and around the world. This chapter further outlines the myriad benefits and concerns inherent in the development of such a novel means of representing fiat currency. At the core, this conversation is about how fintech can be wrapped into our existing financial systems, the benefits of such an update to current monetary and fiscal systems, and importantly the pitfalls that both policymakers and the general public must be aware of.

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[154] Mookerjee, Ajay S. "What If Central Banks Issued Digital Currency?" Harvard Business Review Digital Articles, October 15, 2021, 1–11. https://hbr.org/2021/10/what-if-central-banks-issued-digital-currency.
[155] Ibid.

I. The Global Landscape for CBDCs

While Many Countries Are Experimenting With CBDCs, Full-Blown Launches Are Few and Far Between

As technology plays an increasingly central role in financial services, regulators and legislators around the world have been struggling with how best to regulate fintech, and secondarily how to incorporate fintech into legacy financial systems.

Central Bank Digital Currencies (CBDCs) have come to the fore as a compelling way to integrate blockchain technology into existing financial infrastructure. CBDCs have been discussed for years by academics and policymakers alike, and some of the world's largest economies have launched CBDC pilot programs or are currently developing programs to test how CBDCs would function in the wild.

A survey of the global CBDC landscape shows that as of December 2021, 87 countries were exploring the implementation of a CBDC, which together represent "over 90% of global GDP."[156] Nine of these countries have already launched full-blown CBDCs available to retail users. The largest of these countries, and the only one outside of the Caribbean is Nigeria, which launched its e-Naira in October of 2021.[157]

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[156] "Central Bank Digital Currencies Archives." Atlantic Council. Accessed March 1, 2022. https://www.atlanticcouncil.org/category/blogs/econographics/cbdc/.
[157] Ibid.

A further 14 countries, including China, South Korea and Russia are currently piloting their own CBDCs,[158] with China's most recent live pilot taking place during the 2022 Winter Olympics in Beijing. At the Games, visitors and Olympians could download a "digital yuan wallet app or store the digital money on a physical card." There was also an option to wear a wristband that could be swiped to complete transactions.[159] Questions around privacy have already arisen about China's CBDC, known as e-CNY, with some users and merchants concerned that the Chinese government would be able to access and trace every payment made through the system.[160]

Despite some of the world's largest nations moving forward with a CBDC, a notable outlier is the United States, which has proved to be particularly slow at launching even high-level conversations about the development of a CBDC. According to the Atlantic Council's CBDC tracker, "Of the countries with the 4 largest central banks (the US, the Euro Area, Japan, and the UK), the United States is furthest behind."[161]

The United States Lags Behind Its Peers, But Recent Moves Are Promising

With financial innovation and financial technology, the United States has been notoriously tepid on regulation and implementation. As was explored in Chapter I, U.S. regulators have fallen behind other nations in drawing brighter regulatory lines and providing clarity on the use of

[158] Ibid.
[159] Pandey, Ashutosh. "China Heats up Digital Currency Race with e-CNY Debut at Olympics," DW.COM, February 9, 2022. https://www.dw.com/en/china-heats-up-digital-currency-race-with-e-cny-debut-at-olympics/a-60701261.
[160] Wan, Allen. "China's Much-Hyped Digital Yuan Fails to Impress Early Users." Bloomberg.com. Bloomberg, May 9, 2021. https://www.bloomberg.com/news/articles/2021-05-09/china-s-much-hyped-digital-yuan-fails-to-impress-early-users.
[161] "Central Bank Digital Currencies Archives." Atlantic Council.

novel technologies like blockchain, artificial intelligence and machine learning in financial services:

> [T]he substance of financial regulation today may well stifle beneficial innovation in the financial sector, precisely at a time when other nations are racing to attract fintech to their jurisdictions. Because fintech is so new, and its ways of doing business so unconventional, regulators are only beginning to come to terms with its implications for financial regulation.[162]

Nevertheless, in 2022, the Executive Branch has made promising moves in the form of Executive Orders and a published report from the Federal Reserve. A private consortium of former policymakers and industry experts, the Digital Dollar Project, has also provided important context and knowledge to inform the creation of a U.S. CBDC. Further, the Federal Reserve Bank of Boston has partnered with the Massachusetts Institute of Technology' Digital Currency Initiative (MIT) on a multiyear research project to assess CBDCs and provide a deeper understanding of how a U.S. CBDC would function.[163] While this is by no means an exhaustive list of the robust partnerships and conversations happening around CBDCs, it illustrates the serious-mindedness of the efforts on this front.

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[162] Magnuson, William. "Regulating Fintech." *Vanderbilt Law Review* 71, no. 4 (May 2018): 1167–1226. https://scholarship.law.vanderbilt.edu/cgi/viewcontent.cgi?article=1033&context=vlr.
[163] "Project Hamilton Phase 1 Executive Summary." Federal Reserve Bank of Boston, February 3, 2022. https://www.bostonfed.org/publications/one-time-pubs/project-hamilton-phase-1-executive-summary.aspx.

In January 2022, the U.S. Federal Reserve published a report titled *Money and Payments: The U.S. Dollar in the Age of Digital Transformation*.[164] The report shows a concerted effort from the federal government to assess the potential for a CBDC in the United States, outlining the development of the existing payments system, challenges that a CBDC could address, the rise of digital assets (also known as cryptocurrencies) and how a dollar CBDC could function. Significantly, the report also included a request for comment from the industry on a variety of open questions that need clarification before moving forward with a CBDC.

The report concisely describes the rationale of many countries as they explore CBDCs:

> Recent technological advances have ushered in a wave of new private-sector financial products and services, including digital wallets, mobile payment apps, and new digital assets such as cryptocurrencies and stablecoins. These technological advances have also led central banks around the globe to explore the potential benefits and risks of issuing a CBDC.[165]

A few months later, in March 2022, President Joe Biden issued an *Executive Order on Ensuring Responsible Development of Digital Assets*[166], a first major foray into the world of cryptocurrency by a U.S. president.[167] The Executive Order is lengthy and stresses the

164 "Money and Payments: The U.S. Dollar in the Age of Digital Transformation." The U.S. Federal Reserve. www.federalreserve.gov, January 2022. https://www.federalreserve.gov/publications/files/money-and-payments-20220120.pdf.
165 Ibid.
166 "Executive Order on Ensuring Responsible Development of Digital Assets." The White House. The United States Government, March 9, 2022. https://www.whitehouse.gov/briefing-room/presidential-actions/2022/03/09/executive-order-on-ensuring-responsible-development-of-digital-assets/.
167 President Trump indicated his skepticism with cryptocurrency in a Tweet while in office, but it does not appear that the White House did not publish any in depth materials on the topic.

importance of interagency coordination on the topic of financial innovation and cryptocurrency. The Order acknowledges the matrix of regulations that touch fintech activities, noting the importance of "an evolution and alignment of the United States Government approach to digital assets."[168] Crucially, the Order discusses CBDCs, saying:

> Monetary authorities globally are also exploring, and in some cases introducing, central bank digital currencies (CBDCs). While many activities involving digital assets are within the scope of existing domestic laws and regulations, an area where the United States has been a global leader, growing development and adoption of digital assets and related innovations, as well as inconsistent controls to defend against certain key risks, necessitate an evolution and alignment of the United States Government approach to digital assets.[169]

The Executive Order and the Federal Reserve report were published a short time prior to the drafting of this thesis and little to no peer reviewed papers have discussed these developments. However, there has been a body of commentary that speaks to the significance of these moves to the future of fintech regulation and the implementation of fintech in the national financial infrastructure.

Interviewed for an article in *The New York Times*, Cornell University professor of trade policy Eswar Prasad spoke of the significance of the Biden Executive Order on digital assets, saying,

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[168] Ibid.
[169] Ibid.

"the order would put the United States in 'pole position' to set global standards and move closer to … 'the inevitable digitization of the world's pre-eminent currency."[170]

Law firm Skadden, Arps, Slate, Meagher & Flom LLP published an article covering the Federal Reserve report on CBDCs, outlining the major takeaways from the report. The article noted that while the move is promising, it is still unclear how quickly the U.S. federal government could move on putting a CBDC into action: "Given the Federal Reserve's cautious stance and the uncertainty of legislative action by Congress, we do not expect significant progress toward development of a U.S. CBDC this year."[171]

These efforts by the federal government to move more quickly on the use and regulation of digital assets will play a critical role in expanding access to fintech and its potential benefits. Notably, these efforts could also place questions of financial inclusion, privacy, environmental concerns, and financial stability at the forefront of fintech regulation.

A blog accompanying the Biden Executive Order on digital currency authored by Dr. Alondra Nelson, head of the Office of Science and Technology Policy and Deputy Assistant to the President, highlighted these concerns and their importance:

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[170] Rogers, Katie, and Ephrat Livni. "Biden Takes Step Toward Regulating Cryptocurrencies." *The New York Times*, March 9, 2022. https://www.nytimes.com/2022/03/09/us/politics/crypto-regulation-biden.html.

[171] Jamie L. Boucher Eytan J. Fisch Stuart D. Levi Bao Nguyen Khalil N. Maalouf James E. Perry, "The Federal Reserve Weighs Risks and Benefits of a US Central Bank Digital Currency: Insights: Skadden, Arps, Slate, Meagher & Flom LLP." Insights | February 4, 2022. https://www.skadden.com/insights/publications/2022/02/the-federal-reserve-weighs-risks.

> But as the use of any technology scales, we often see real and meaningful risks where these technologies intersect with people's lives, our society, and the planet. In particular, digital assets have serious potential to affect consumers, communities, the climate, and both U.S. and global financial stability. Without proper controls in place, digital assets can enable fraud and crime, creating new ways to deceive American consumers and to facilitate illegal conduct. They can also be volatile in value, which could amplify financial harms to communities that are more invested in digital assets.[172]

These texts show that the Biden Administration and the federal government are serious in their study of the potential for a U.S. CBDC. While the United States might be behind many in the economically developed world, the sense of urgency is undeniable.

II. Defining a Central Bank Digital Currency

Why Are CBDCs Coming to the Fore Now?

Before discussing the particulars of how a CBDC would work at a high level, understanding why these conversations are happening today in central banks around the world is critical to provide context on potentially one of the most consequential developments in financial services innovation of our modern age.

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[172] Nelson, Alondra. "The Path toward Responsible and Equitable Digital Assets Innovation." The White House. The United States Government, March 9, 2022. https://www.whitehouse.gov/ostp/news-updates/2022/03/09/the-path-toward-responsible-and-equitable-digital-assets-innovation/.

The Bank for International Settlements provided a concise outline of the impetus behind CBDCs in a 2018 report, highlighting the following drivers:

> (i) interest in technological innovations for the financial sector; (ii) the emergence of new entrants into payment services and intermediation; (iii) declining use of cash in a few countries; and (iv) increasing attention to so-called private digital tokens."[173]

The use of cash has dramatically decreased in many parts of the world with the advent of digital payment technologies and credit cards. In the United States, for example, one survey found that the percentage of transactions that were made in cash decreased by more than half, from 40% in 2012 to 19% in 2020.[174] Other countries saw even larger decreases, with the rate in Sweden falling from 33% to 10% over the same time period.[175]

A further notable factor impacting the declining use of cash is the continuing Covid-19 pandemic, the enforced social distancing rules and concerns with physical cash as a potential transmission vector, which "have further sped up the shift toward digital payments, and may give a further impetus to CBDC."[176]

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[173] "Central Bank Digital Currencies." Bank For International Settlements, March 2018. https://www.bis.org/cpmi/publ/d174.pdf.
[174] Kim, Laura, Shaun O'Brien, and Kelsey Coyle. "2021 Findings from the Diary of Consumer Payment Choice." Federal Reserve Bank of San Francisco, May 5, 2021. https://www.frbsf.org/cash/publications/fed-notes/2021/may/2021-findings-from-the-diary-of-consumer-payment-choice/.
[175] "Payments in Sweden 2020." Sveriges Riksbank, October 29, 2020. https://www.riksbank.se/en-gb/payments--cash/payments-in-sweden/payments-in-sweden-2020/.
[176] Auer, Raphael, Giulio Cornelli, and Jon Frost. "Rise of the Central Bank Digital Currencies: Drivers, Approaches and Technologies."

In the United States, the Digital Dollar Project is a notable organization that seeks to promote the conversation about and research on a U.S. CBDC. Led by consulting giant Accenture and former federal regulators, including J. Christopher Giancarlo who served as chairman of the U.S. Commodity Futures Trading Commission under President Donald Trump,[177] the Digital Dollar Project "seeks to advance the public interest by future-proofing the dollar for consumers and institutions across both domestic and global economies."[178]

Just as groups like the Digital Dollar Project are gaining steam, the federal government has become more vocal about the prospect of a CBDC. The cadence of releases from the federal government on this topic shows that there is a certain level of urgency to understand the technical aspects of a U.S. CBDC, as other countries move along with their pilots and introduce fully-functional CBDCs. Chair Giancarlo of the Digital Dollar Project also alluded to the fear that the U.S. might be left behind if we don't act quickly on this front:

> "The U.S. doesn't need to be first to the central bank digital currency, but it does need to be a leader in setting standards for the digital future of money … We need to better understand how to balance the complex issues of a CBDC and how to incorporate key societal values, like privacy rights, financial inclusion and rule of law. Together, this project team will conduct research, experiment and develop

[177] "Chairman J. Christopher Giancarlo." CFTC. Accessed March 20, 2022. https://www.cftc.gov/About/Commissioners/JChristopherGiancarlo/index.htm.
[178] "The Digital Dollar Project - Exploring a US CBDC." The Digital Dollar Project, May 2020. http://digitaldollarproject.org/wp-content/uploads/2021/05/Digital-Dollar-Project-Whitepaper_vF_7_13_20.pdf.

> thought leadership in an open manner in the interest of informing public policy."[179]

It has become increasingly clear to both government officials and private industry that the world is moving in the direction of an even more digitized financial system, and that CBDCs will play a pivotal role in the adoption of future financial innovations.

How Would a CBDC Actually Work?

The technical specifications of CBDCs and the blockchain technology that would likely undergird it fall outside the four corners of this thesis. However, to better contextualize the practical significance of CBDCs, a brief overview of how such a technology would function in practice is helpful.

Backed by the Federal Reserve

As a starting point, the Federal Reserve report provides the following description of how a U.S. CBDC would work, and how it would compare with existing forms of payment:

> Like existing forms of commercial bank money and nonbank money, a CBDC would enable the general public to make digital payments. As a liability of the Federal Reserve, however, a CBDC would not require mechanisms like deposit

[179] Accenture. "Digital Dollar Project to Launch Pilot Programs to Explore Designs and Uses of a U.S. Central Bank Digital Currency." Newsroom. Accenture, May 3, 2021. https://newsroom.accenture.com/news/digital-dollar-project-to-launch-pilot-programs-to-explore-designs-and-uses-of-a-us-central-bank-digital-currency.htm.

> insurance to maintain public confidence, nor would a CBDC depend on backing by an underlying asset pool to maintain its value. A CBDC would be the safest digital asset available to the general public, with no associated credit or liquidity risk.[180]

The critical aspect here is that a CBDC would be "a liability of the Federal Reserve." A U.S. CBDC would be backed by the federal government, but it wouldn't require the use of deposit insurance like the bank accounts individuals traditionally benefit from when holding funds at commercial banks.

CBDCs Would Work Alongside Existing Payment Systems

Rather than replacing existing payment systems, CBDCs would serve as a "third format of currency," according to the Digital Dollar Project.[181] The Project's ideal U.S. CBDC would be framed in the following way:

> a) operates alongside existing monies, b) is primarily distributed through the existing two-tiered architecture of commercial banks and regulated money transmitters, c) is recorded on new transactional infrastructure, potentially informed by distributed ledger technology.[182]

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[180] "Money and Payments: The U.S. Dollar in the Age of Digital Transformation."
[181] "The Digital Dollar Project - Exploring a US CBDC." The Digital Dollar Project.
[182] "The Digital Dollar Project - Exploring a US CBDC." The Digital Dollar Project.

In essence, an ideal CBDC, according to the Digital Dollar Project, would function much in the same way as physical cash or money held in a deposit account at a bank. This would provide customers with another way to interact with the payments system, and rather than trying to phase out other means of payment, CBDCs would serve to complement existing payment rails in the digital age.

The Tokenization of the U.S. Dollar

For a CBDC to function with the same payment characteristics as a physical dollar, certain features must be apparent. Most importantly, one unit of a CBDC cannot be spent by two people at the same time. A central element of the Digital Dollar Project's proposal for a U.S. CBDC is "tokenization," which employs distributed ledger technology, or blockchain, to ensure the uniqueness of one CBDC unit. This is where a potential CBDC differentiates itself from other digital forms of money transmission like Venmo or Paypal or like traditional bank transfers. The Digital Dollar Project explains in its whitepaper how tokenization would compare to existing forms of money transfer:

> Tokenization is the act of turning an asset, good, right, or currency into a representation with properties that suffice to attest to and transfer ownership. As an analogy to our current world, cash is a physical token. To verify the transaction, you only need to verify the authenticity of the bill (the token), and because each bill is unique, it is impossible to spend the same bill more than once at the same time. As a bearer instrument, a dollar bill cannot be physically held by

> two people simultaneously (i.e., when it leaves one person's hands, it is now in the counterparty's possession). This differs from account-based electronic money, which uses a reconciliation-intensive, message-based approach to adjust entries in a ledger.[183]

Tokenization is one of the more consequential features of a CBDC, providing unparalleled "portability, efficiency, programmability, and accessibility" to the U.S. dollar, while also providing an avenue to bring our payment infrastructure to a new level.[184]

Such an innovation could lead to real-world benefits in a number of areas, notably in retail, wholesale, and international payments.[185] In some ways, a CBDC would allow anyone to send central bank money just as easily as they send a text, without the need for an intermediary like a bank.[186] These transactions, likely built on a private, government-run blockchain, could be safe, quick and reliable, merging the value propositions of a physical dollar with that of existing mobile apps.

III. Are CBDCs a Boon to Financial Inclusion, or Are They a Stability Risk?

[183] Ibid.
[184] Ibid.
[185] Ibid.
[186] Ibid.

As explored in Chapter I, the capitalist system that governs many modern societies also creates a profit motive, which can be tied to innovation. This is particularly true for fintech, as the innovations directly impact the notably profit-driven financial services industry.

Governments, however, have different incentive structures. Much of the focus on CBDCs from both the federal government and private consortiums has been on its the benefits to financial inclusion and access to services. At a high level, CBDCs would provide seamless access to bank account-like services. But, rather than run through a profit-seeking financial institution, the service would be run by the federal government.

Promoting Financial Inclusion

The Digital Dollar project conceptualizes access to CBDCs flowing through traditional commercial banks and other payments intermediaries with citizens able to access those funds through digital wallets hosted by financial institutions:

> A digital dollar could be distributed to the end user through commercial banks and trusted payment intermediaries while facilitating financial inclusion by broadening access to services via additional mechanisms, such as digital wallets. In particular, a digital dollar could expand the ability of currently un-or-underbanked populations to access digital financial services and transact on ecommerce platforms that do not deal in physical cash.[187]

[187] Ibid.

The idea of a government-backed digital wallet was discussed in Chapter II in the context of Ohio Sen. Sherrod Brown's Banking for All Act, which would create digital wallets for every American accessible at local bank branches or at any U.S. Post Office.[188] CBDCs would fit perfectly with such initiatives to the benefit of unbanked and under-banked Americans. As further outlined in Chapter II, as of 2019, around 7.1 million households were unbanked[189] in the United States (about 5.4%).[190] A further 18.7% of households, or 48.9 million adults and 15.4 million children, were underbanked, as of 2017.[191]

The potential audience for a CBDC could be enormous, with widespread economic and social impacts to large swaths of society. The White House and the Federal Reserve have both focused heavily on these questions of access and inclusion as a powerful impetus for exploring a U.S. CBDC.

In his Executive Order on the regulation of digital assets, President Biden highlighted what a central purpose of a CBDC would be from his administration's perspective:

> A United States CBDC may have the potential to support efficient and low-cost transactions, particularly for cross-border funds transfers and payments, and to foster greater access to the financial system, with fewer of the risks posed by private sector-administered digital assets. A United States CBDC that is

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[188] U.S. Congress, Senate, "Banking for All Act," S.3571 - 116th Congress (2019-2020). https://www.congress.gov/bill/116th-congress/senate-bill/3571/text.
[189] "How America Banks: Household Use of Banking and Financial Services, 2019 FDIC Survey." FDIC.gov. Accessed December 18, 2021. https://www.fdic.gov/analysis/household-survey/.
[190] Greenwald, Michael. "Digitizing the Dollar in the Age of Covid-19."
[191] "2017 FDIC National Survey of Unbanked and Underbanked Households." FDIC.gov.

> interoperable with CBDCs issued by other monetary authorities could facilitate faster and lower-cost cross-border payments and potentially boost economic growth, support the continued centrality of the United States within the international financial system, and help to protect the unique role that the dollar plays in global finance.[192]

The Federal Reserve outlined a similar sentiment in its assessment of the potential benefits of a CBDC, highlighting that it could promote financial inclusion "particularly for economically vulnerable households and communities," and significantly lower transaction costs.

As with fintech generally, these benefits are not inevitable. Studies show that the specific way a CBDC is built, in combination with various external factors, would impact the ability for a CBDC to promote financial inclusion. One study that modeled the impact of a CBDC said that it predicted "that [a] CBDC is likely to increase financial inclusion and diminish the use of cash, though the quantitative magnitude of this effect is likely to depend on programme parameters and the existing degree of financial development."[193]

Benefits to Monetary Policy and Crisis Relief

Not only could CBDCs promote financial inclusion by facilitating access to digital payments, but they could also have real benefits in the realm of economic policy. The speed at which these new

[192] "Executive Order on Ensuring Responsible Development of Digital Assets." The White House.
[193] Andolfatto, David. 2021. "Assessing the Impact of Central Bank Digital Currency on Private Banks." *Economic Journal* 131 (634): 525–40.

payments would move, and the ability for the federal government to quickly target individuals in need of economic support, could have immense benefits.

The Covid-19 crisis has scathed every corner of the globe. One of the most powerful tools to mitigate the economic damage of the pandemic has been the use of stimulus payments directly to individuals. The immense coordinated effort of stimulus payments, both in the United States and around the world, laid bare the shortcoming of our current payments system. According to the Director of the Atlantic Council's GeoEconomic Center, Covid-19 imbued central banks with more urgency around the development of CBDCs:

> Before Covid, central bank digital currencies were largely a theoretical exercise. But with the need to distribute unprecedented monetary and fiscal stimulus around the world, combined with the rise of cryptocurrencies, central banks have quickly realized they cannot let the evolution of money pass them by.[194]

In the United States, the 2020 Coronavirus Aid, Relief, and Economic Security (CARES) Act[195] and the American Rescue Plan Act of 2021[196] provided economic relief and assistance to individuals and businesses throughout the United State in response to the sudden economic contraction caused by the pandemic. These bills provided meaningful economic support directly

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[194] "Atlantic Council Releases New State-of-the-Art Central Bank Digital Currency Tracker." Atlantic Council, July 22, 2021. https://www.atlanticcouncil.org/news/press-releases/atlantic-council-releases-new-state-of-the-art-central-bank-digital-currency-tracker/.

[195] "About the Cares Act and the Consolidated Appropriations Act." U.S. Department of the Treasury, April 13, 2021. https://home.treasury.gov/policy-issues/coronavirus/about-the-cares-act.

[196] "American Rescue Plan." The White House. The United States Government, October 8, 2021. https://www.whitehouse.gov/american-rescue-plan/.

to American taxpayers, including up to $1,200 per eligible adult from the CARES Act[197] and a further up to $1,400[198] per eligible adult through the American Rescue Plan Act.

Some level of relief was sent to about 90% of tax filers, according to the Urban-Brookings Tax Policy Center, meaning that upward of 200 million Americans were sent some sort of monetary relief.[199] Whereas many of those individuals had the funds deposited directly into their bank accounts, according to a Brookings opinion piece, "roughly 70 million American families [were] likely to have to wait at least [one] month, or more, for their money."[200] Further, many of these families were unable to receive direct deposits into their accounts, and would instead have to wait for physical checks to be mailed. The families impacted by this delay could be living paycheck to paycheck, without easy or low-cost access to credit in such a time of need, the opinion continued:

> The need to eat and live does not follow the payment system's business hours only. These families will often turn to high cost alternatives like bank overdrafts, payday lenders, and check cashers. Solutions to these problems abound, if only policy makers would prioritize them.[201]

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[197] "Economic Impact Payments." U.S. Department of the Treasury, June 17, 2021. https://home.treasury.gov/policy-issues/coronavirus/assistance-for-american-families-and-workers/economic-impact-payments.

[198] "American Rescue Plan." The White House.

[199] Klein, Aaron. "70 Million People Can't Afford to Wait for Their Stimulus Funds to Come in a Paper Check." Brookings, March 9, 2022. https://www.brookings.edu/opinions/70-million-people-cant-afford-to-wait-months-for-their-stimulus-to-come-in-a-paper-check/?mod=article_inline.

[200] Ibid.

[201] Ibid.

One of these potential solutions is the implementation of a CBDC to provide every American with quick and easy access to funds. The Digital Dollar Project highlighted this potential boon as well: "The pandemic-induced crisis should be a call to action to renovate these long-neglected yet critical payment and financial infrastructure that are becoming increasingly outdated."[202]

Studies have also shown that CBDCs could very well support general monetary policy efforts undertaken by the federal government. At some level, CDBDs might even be more efficient and provide additional benefits than existing tools. Noting that it is still early to "make definitive, quantitative statement at this stage about the impact of CBDC," an analysis published in the *International Journal of Central Banking* concluded that:

> Our analysis leads us to the broad conclusion that a universally accessible, interest-bearing, freely convertible CBDC could be used for monetary policy purposes in much the same way that central bank reserves are now. On the margin, there may even be reason to believe that the monetary transmission mechanism would be stronger for a given change in policy instruments.[203]

Stability and Privacy Risks With CBDCs

While many studies and government reports tout the myriad benefits a CBDC would bring to an economy, the impact of a move toward the use of CBDCs on the financial sector and the public

[202] "The Digital Dollar Project - Exploring a US CBDC." The Digital Dollar Project.
[203] Meaning, Jack, Ben Dyson, James Barker, and Emily Clayton. 2021. "Broadening Narrow Money: Monetary Policy with a Central Bank Digital Currency." *International Journal of Central Banking* 17 (2): 1–42. doi:http://www.ijcb.org/journal/currentissue.htm.

would be widespread. Whether this impact is an overall net benefit to an economy hinges on the structure, purpose and features of a CBDC. Two of the major concerns include financial stability and personal privacy.

The overarching concern about financial stability is centered on the disintermediation of commercial banks in a world with CBDCs. In short, instead of individuals holding all their funds in an insured bank account, a significant portion of funds could be converted into CBDC. The federal reserve in its report on CBDCs discusses this concern:

> Because central bank money is the safest form of money, a widely accessible CBDC would be particularly attractive to risk-averse users, especially during times of stress in the financial system. The ability to quickly convert other forms of money—including deposits at commercial banks—into CBDC could make runs on financial firms more likely or more severe.[204]

The impact of a CBDC on financial stability was likewise prominently noted by the Biden White House in its Executive Order on digital assets. The first topic of interest the Administration highlighted in the Order asked about "the potential implication of a United States CBDC, based on the possible design choice, for national interests, and including implications for economic growth and stability."[205][206]

[204] "Money and Payments: The U.S. Dollar in the Age of Digital Transformation." The U.S. Federal Reserve.
[205] "Executive Order on Ensuring Responsible Development of Digital Assets." The White House.
[206] The second request sought information on the potential for CBDCs to impact financial inclusion.

Beyond the stability concerns, policymakers and scholars have touched on the potential negative impact of CBDCs on privacy protections. Given the fully digital nature of CBDCs, certain safeguards would need to be in place to satisfy both legal and politically sensitive privacy concerns.

To deter the proliferation of illegal activity with CBDCs, however, law enforcement would need to have some insight into the CBDC payments themselves, as well as some level of personal information about the transactors.[207] Further, it is unlikely that the federal government itself would host the digital wallets in which customers can store their CBDC, with commercial banks instead hosting the wallets as an intermediary. In this structure, banks could use their existing privacy controls to safeguard the personal information of customers interacting with CBDCs.[208]

The Digital Dollar Project similarly includes privacy as a central tenet of its preferred CBDC structure, writing: "The digital dollar will support a balance between individual privacy rights and necessary compliance and regulatory processes, decided upon by policymakers and ultimately reflecting the jurisprudence around the Fourth Amendment."[209]

Both the stability and privacy concerns are prominent, but they can also be effectively contained if certain features are built into the CBDC. In a talk at the Atlantic Council in Washington D.C., International Monetary Fund Managing Director Kristalina Georgieva, highlighted that central

[207] "Money and Payments: The U.S. Dollar in the Age of Digital Transformation." The U.S. Federal Reserve.
[208] Ibid.
[209] "The Digital Dollar Project - Exploring a US CBDC." The Digital Dollar Project.

banks are likely to do their utmost to ensure that the impact of CBDCs on financial intermediation and the provision of credit is minimized, proxies for financial stability.[210]

One tactic would be to make CBDC holdings non-interest-bearing. Instead, customers would be incentivized to hold their funds at legacy financial institutions, particularly those with large sums of money.[211] According to Georgieva, three existing CBDC projects that are live or in pilot, those in China, the Bahamas and the Eastern Caribbean Currency Union, have all placed limits on how much can be held by a single person or entity "to prevent sudden outflows of bank deposits into CBDC."[212] This feature could also prevent large-scale illegal activity.

Privacy concerns are also touched upon in Georgieva's speech, as she explains that softer identification requirements could be imposed on individuals with smaller holdings of CBDC, adding that "this could be a boon for financial inclusion," as individuals who may not hold ID cards or passports could still have access to CBDCs. Georgieva nevertheless stresses the importance of having "more stringent checks" on larger holdings and transactions.[213] "In many countries, privacy concerns are a potential deal breaker when it comes to CBDC legislation and adoption. So, it's vital that policymakers get the mix right, she added."

[210] Georgieva, Kristalina. "The Future of Money: Gearing up for Central Bank Digital Currency." IMF, February 9, 2022. https://www.imf.org/en/News/Articles/2022/02/09/sp020922-the-future-of-money-gearing-up-for-central-bank-digital-currency.
[211] Ibid.
[212] Ibid.
[213] Ibid.

That right mix might not be the easiest to achieve, however. One study explained that the unique fact that a CBDC would be wholly digital in nature makes "it significantly harder to achieve a similar level of anonymity and privacy as cash."[214]

> Furthermore, a comparable degree of anonymity is not possible because a fully confidential digital means of payment could facilitate money laundering and the financing of criminal activities. For central banks, as the governing entities of such platforms, this would entail reputational risks."[215]

These risks are significant, and policymakers are clearly wary not to launch a financial instrument as consequential as a CBDC without a sufficient body of evidence that proves its safety for individuals as well as for the general economy.

IV. If Done Right, CBDCs Could Help Usher in a New Age of Financial Inclusion

Full-blown Central Bank Digital Currencies already exist in a handful of Caribbean nations. On the opposite side of the country-size scale, China is piloting its own CBDC. The United States, however, has been slow to take steps to digitize the dollar, instead taking time to assess the various implications of CBDCs, a process which is still in its infancy (according to public statements).

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[214] Ballaschk, David, and Jan Paulick. 2021. "The Public, the Private and the Secret: Thoughts on Privacy in Central Bank Digital Currencies." *Journal of Payments Strategy & Systems* 15 (3): 277–86. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=bsu&AN=153066901&site=ehost-live&scope=site.
[215] Ibid.

This delay, while understandable given the size of the U.S. economy and the impact that a poorly constructed CBDC system could have, could be cause for concern as the rest of the globe powers toward implementation.

A former chair of the Commodity Futures Trading Commission, Timothy Massad, said in a hearing before the Joint Economic Committee of the U.S. Congress in late 2021 that regulators were moving too slowly on a CBDC. He added:

> "CBDCs, stablecoins and digital assets generally are often cited as a means to achieve greater financial inclusion, and we should consider their potential for doing so," said Massad. "We should act now to improve access to financial services through other means as well — the need is too great."[216]

Others suggest that this slower cadence from the U.S. Federal Reserve and other Western nations like the U.K. is "optimal." Megan Greene, a senior fellow at the Harvard Kennedy School of Government, ascribes to this view, arguing that for central banks to retain control of the payments space, and importantly ensure the continued stability of the financial system, the development of CBDCs needs to happen deliberately and carefully. She writes:

> The international financial system must be updated for the digital age, and central banks will take the lead … But getting CBDC design right is crucial. Simply

[216] Wright, Turner. "US Is Not Moving Fast Enough to Develop a CBDC, Says Former CFTC Chair." Cointelegraph, November 17, 2021. https://cointelegraph.com/news/us-is-not-moving-fast-enough-to-develop-a-cbdc-says-former-cftc-chair.

> assuming that "if it's digital, it must be better" is too simplistic. This is a case where speed is not of the essence, and the Fed and BOE are wise to proceed cautiously to get it right.[217]

However quickly it comes, the emergence of a U.S. CBDC appears likely to become reality. The digitization of the U.S. dollar would bring with it a host of benefits, including speed and accessibility. It could also be a convincing use-case for wrapping fintech into additional government programs and more sectors of the economy. A CBDC will not be a panacea, however, and concerns around privacy and overall economic stability cannot be taken lightly.

The United States is moving swiftly to assess the multidimensional implications of a CBDC on the American economy, as shown by extensive statements and reports from both the White House and the Federal Reserve. While there are certainly innumerable issues that are top of mind for U.S. policymakers, the impact that fintech promises to have on the global economy and life as we know it should be top of mind as well. For now, it seems to be getting there slowly but surely.

[217] Greene, Megan. "Central Banks Need to Go Slow on Digital Currencies." Financial Times, August 26, 2021. https://www.ft.com/content/21e3affe-8c57-4bac-b9c5-21b645e93d7c.

Conclusion

Fintech undeniably shows great promise to promote a more inclusive and transparent economic system. Its potential impacts on financial inclusion and economic development are touted by many knowledgeable about the industry, on both the public and private sides of the policy divide, and by those on the right and left of the political spectrum. For fintech to reach its potential, however, a concerted effort between lawmakers, regulators, the fintech industry and the public must be made to ensure the equitable and fair distribution of products and services.

The number of individuals who could benefit from better access to financial services certainly still surpasses 1 billion worldwide.[218] In the United States, that number potentially reaches tens of millions, as discussed in Chapter II.[219] Fintech products and services have the potential to create true economic empowerment for meaningful section of humanity.

This thesis did not intend to be an exhaustive survey of the various opinions about fintech and economic inclusion, far from it. The fintech industry is still in its adolescence; the role and regulation of fintech products and services are everchanging, ensuring that parts of this thesis will quickly become stale. Nevertheless, the themes discussed here will hopefully remain relevant for some time.

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[218] Degenhard, J. "Internet Users in the World 2025."
[219] "2017 FDIC National Survey of Unbanked and Underbanked Households."

First, the importance of regulatory clarity in a novel industry is of the utmost importance, this being particularly the case with fintech. In our capitalist system, the regulatory bodies in any industry must provide both unambiguous guidance and robust safeguards to ensure confident and safe industry development. With fintech, this could be in the shape of new laws governing novel asset classes like cryptocurrency or the use of novel technologies in banking. It could also be the creation of a new regulator with a unique purview to oversee fintech or the use of digital technology across industries.

Second, while there is ample evidence that fintech products and services can provide meaningful economic benefits and promote financial inclusion, those benefits are not inevitable. In fact, in certain cases, as in the United States, the rise of fintech has forced certain communities to transact outside the traditional banking system. A focus on infrastructure and education is a necessary condition for the full benefits of fintech to be felt, particularly in low-income communities.

Third, the digitization of the U.S. dollar offers a fantastic opportunity for the world's largest economy to lead in fintech. Policymakers and regulators have been slow to the table, but they are no longer wasting time. Public initiatives from the Executive Branch, and public-private partnerships that study the potential impacts of a Central Bank Digital Currency, will play a central role in how and whether a U.S. CBDC comes into being in the coming years. Implementation of a U.S. CBDC could immediately bank millions of under-banked and unbanked Americans, providing tangible economic benefits that otherwise may never have existed.

The meteoric rise of fintech is not happening in a vacuum. Over the past two years, the world has been pummeled by the Covid-19 pandemic, exacerbating inequality while creating new opportunity. Fintech products and services can play a crucial role in mitigating future economic crises, they can speed up cross-border transactions, make such transactions cheaper, and, importantly, they can provide individuals with new opportunities to build and share wealth.

To close, the following passage concisely frames the fintech conundrum in our modern age of technological innovation:

> Minimizing the risks of fintech to financial exclusion takes a new meaning if the political cost and social implications of ignoring the "small guy" is high, evidenced by the social unrest in many countries during the COVID-19 crisis. Indeed, high or rising inequalities of income and wealth, in part attributed to new technology, is becoming a major source of concern in a number of countries, which will likely exacerbate during the post COVID-19 era, unless financial exclusion is addressed. The silver lining is that—with careful regulation and supervision, as well as addressing the several constraints that the expansion of financial inclusion faces—countries can

attain the promise of fintech to serve greater proportions of the population in realizing their dreams of upward mobility.[220]

[220] Sahay, Ratna, Ulric Eriksson von Allmen, Amina Lahreche, Purva Khera, Sumiko Ogawa, Majid Bazarbash, and Kim Beaton. "The Promise of Fintech - International Monetary Fund." International Monetary Fund, 2020. https://www.imf.org/~/media/Files/Publications/DP/2020/English/PFFIEA.ashx.

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Author Bio

Philip Rosenstein is a Belgian, Brazilian, American who grew up in Brussels, London and Paris. After completing high school at the International School of Brussels, Philip attended college at New York University, studying History with a minor in Sociology. Notable areas of focus during college included radical U.S. history following the First World War and U.S.-France sociopolitical dialogue during the 1960s.

Following college, Philip worked as a paralegal in New York City before embarking on a personal project, White House Press, which sought to aggregate releases from the West Wing press office during the presidencies of Barack Obama and Donald Trump. He was a 2015 Entrepreneurial Journalism fellow at CUNY's Newmark School of Journalism, where we worked on White House Press.

Following CUNY, Philip worked as a reporter and columnist covering advertising technology and political marketing at the media and advertising trade publication MediaPost. He next joined Law360 in 2017, where we covered state and local tax law, and subsequently became Law360's first Senior Reporter for Fintech. As Senior Reporter for Fintech, Philip developed a deep interest in fintech regulation and policy, writing analyses and features about the development of fintech law, regulation and policy. In 2020, Philip joined the cryptocurrency exchange Gemini as a content writer, overseeing and writing for the Gemini blog, and providing content support across the company. [221]

Philip is an avid tennis and soccer player who enjoys exploring new parts of New York City, local museums, libraries and reading about American and European history.

[221] Any opinions or suggestions in this thesis were made by the author in his individual capacity as a graduate student.