DIGITIZING THE DOLLAR: INVESTIGATING THE TECHNOLOGICAL INFRASTRUCTURE, PRIVACY, AND FINANCIAL INCLUSION IMPLICATIONS OF CENTRAL BANK DIGITAL CURRENCIES

VIRTUAL HEARING

BEFORE THE

TASK FORCE ON FINANCIAL TECHNOLOGY

OF THE

COMMITTEE ON FINANCIAL SERVICES

U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

JUNE 15, 2021

Printed for the use of the Committee on Financial Services

Serial No. 117–30

U.S. GOVERNMENT PUBLISHING OFFICE

45–254 PDF WASHINGTON : 2021

HOUSE COMMITTEE ON FINANCIAL SERVICES

MAXINE WATERS, California, *Chairwoman*

CAROLYN B. MALONEY, New York
NYDIA M. VELÁZQUEZ, New York
BRAD SHERMAN, California
GREGORY W. MEEKS, New York
DAVID SCOTT, Georgia
AL GREEN, Texas
EMANUEL CLEAVER, Missouri
ED PERLMUTTER, Colorado
JIM A. HIMES, Connecticut
BILL FOSTER, Illinois
JOYCE BEATTY, Ohio
JUAN VARGAS, California
JOSH GOTTHEIMER, New Jersey
VICENTE GONZALEZ, Texas
AL LAWSON, Florida
MICHAEL SAN NICOLAS, Guam
CINDY AXNE, Iowa
SEAN CASTEN, Illinois
AYANNA PRESSLEY, Massachusetts
RITCHIE TORRES, New York
STEPHEN F. LYNCH, Massachusetts
ALMA ADAMS, North Carolina
RASHIDA TLAIB, Michigan
MADELEINE DEAN, Pennsylvania
ALEXANDRIA OCASIO-CORTEZ, New York
JESÚS "CHUY" GARCIA, Illinois
SYLVIA GARCIA, Texas
NIKEMA WILLIAMS, Georgia
JAKE AUCHINCLOSS, Massachusetts

PATRICK MCHENRY, North Carolina, *Ranking Member*
FRANK D. LUCAS, Oklahoma
PETE SESSIONS, Texas
BILL POSEY, Florida
BLAINE LUETKEMEYER, Missouri
BILL HUIZENGA, Michigan
ANN WAGNER, Missouri
ANDY BARR, Kentucky
ROGER WILLIAMS, Texas
FRENCH HILL, Arkansas
TOM EMMER, Minnesota
LEE M. ZELDIN, New York
BARRY LOUDERMILK, Georgia
ALEXANDER X. MOONEY, West Virginia
WARREN DAVIDSON, Ohio
TED BUDD, North Carolina
DAVID KUSTOFF, Tennessee
TREY HOLLINGSWORTH, Indiana
ANTHONY GONZALEZ, Ohio
JOHN ROSE, Tennessee
BRYAN STEIL, Wisconsin
LANCE GOODEN, Texas
WILLIAM TIMMONS, South Carolina
VAN TAYLOR, Texas

CHARLA OUERTATANI, *Staff Director*

TASK FORCE ON FINANCIAL TECHNOLOGY

STEPHEN F. LYNCH, Massachusetts, *Chairman*

JIM A. HIMES, Connecticut
JOSH GOTTHEIMER, New Jersey
AL LAWSON, Florida
MICHAEL SAN NICOLAS, Guam
RITCHIE TORRES, New York
NIKEMA WILLIAMS, Georgia

WARREN DAVIDSON, Ohio, *Ranking Member*
PETE SESSIONS, Texas
BLAINE LUETKEMEYER, Missouri
TOM EMMER, Minnesota
BRYAN STEIL, Wisconsin

CONTENTS

DIGITIZING THE DOLLAR: INVESTIGATING THE TECHNOLOGICAL INFRASTRUCTURE, PRIVACY, AND FINANCIAL INCLUSION IMPLICATIONS OF CENTRAL BANK DIGITAL CURRENCIES

Tuesday, June 15, 2021

U.S. HOUSE OF REPRESENTATIVES,
TASK FORCE ON FINANCIAL TECHNOLOGY,
COMMITTEE ON FINANCIAL SERVICES,
Washington, D.C.

The task force met, pursuant to notice, at 10:07 a.m., via Webex, Hon. Stephen F. Lynch [chairman of the task force] presiding.

Members present: Representatives Lynch, Gottheimer, Lawson; Davidson, Luetkemeyer, Emmer, and Steil.

Ex officio present: Representatives Waters and McHenry.

Also present: Representatives Sherman, Hill, and Gonzalez of Ohio.

Chairman LYNCH. The Task Force on Financial Technology will come to order. Without objection, the Chair is authorized to call a recess of the task force at any time. Also, without objection, members of the full Financial Services Committee who are not members of the task force are authorized to participate in this hearing.

I am asked to remind all Members to keep themselves muted when they are not being recognized by the Chair. The staff has been instructed not to mute Members, except when the Member is not being recognized by the Chair, and there is inadvertent background noise. Members are also reminded that they may only participate in one remote hearing at a time.

I would particularly like to welcome Mr. Davidson. We are happy to have him on board as our new ranking member.

And I am looking forward to working with all of our colleagues to address the challenging times that we have and the challenges that this task force and the Financial Services Committee face on a financial technology basis.

Today's hearing is entitled, "Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies."

I now recognize myself for 4 minutes to give an opening statement.

The way that we pay one another for goods and services has changed dramatically over the last few decades. And driven by consumer demands, payments and technology has evolved at an even more rapid pace in recent years. Today, when we can pay for gro-

ceries with a tap of our phones, or buy cars with cryptocurrency, it is easy to overlook the low-tech dollar bill as a means of payment. The use of cash has been declining for years, a trend rapidly accelerated as many businesses opted into contactless payment during the pandemic. However, cash still plays a critical role in the financial ecosystem. While cash is used for less [inaudible]

Mr. DAVIDSON. Franklin, I hate to interrupt, but I might be the only person not hearing or hearing intermittently the chairman. And it is easier to discuss his comments if we can actually hear them.

Mr. THORNTON. Yes. Mr. Lynch, can we please pause the hearing really quickly until we figure out how to get you a more stable connection?

Chairman LYNCH. Okay. I can hear you very clearly. So, it must be on my end.

Mr. THORNTON. We are having someone reach out to you to make sure that we are good to go. But it does seem to be clearing up a little bit. We just want to make sure that we don't run into any other technical difficulties.

Chairman LYNCH. Okay.

Mr. THORNTON. Just give us one moment. Sorry, everyone.

Chairman LYNCH. It is my hope that this will be the last remote hearing that we will have of this task force. That is my goal for this very reason. So, I appreciate your patience.

Mr. GONZALEZ OF OHIO. Amen. We support you in that endeavor.

Chairman LYNCH. How are we doing, Franklin?

Mr. THORNTON. We are good to go. We should have some technical help reaching out to you momentarily to just make sure that you have a stable connection.

Chairman LYNCH. I am going to proceed. Okay?

Mr. THORNTON. Actually, can you start from the beginning? You were cutting in and out, and we have to make sure that the court reporters heard when you gaveled in the hearing.

Chairman LYNCH. Members understand the rules, so I will not repeat them.

Today, we will be examining one potential next step in addressing many of our financial services and FinTech issues, which is essential to bank digital currency. Central Bank Digital Currencies (CBDCs) are being researched, piloted, and implemented by central banks around the globe. In October of 2020, the Bahamas launched the sand dollar, the first CBDC to receive an official launch.

China has entered the pilot phase of the central bank digital currency (CBDC). And here in the U.S., the Federal Reserve has partnered with MIT to research the technological architecture of a digitalized U.S. dollar.

As the U.S. and the rest of the world moves toward central bank digital currencies, the U.S. must consider its effects on financial inclusion, consumer privacy, illicit finance, and business operations, among many other issues. The question is, will a digitalized dollar enable those outside of the traditional finance system to gain more access? Or will existing barriers remain prohibitive? And where will consumers deposit their digitalized dollars? Can the CBDC operate with the same level of privacy as cash? Or will requirements

of the technology mean that transactions can't be private? And what are the implications for illicit finance schemes?

Another question is, do businesses have the technology to implement a CBDC today, or will there need to be a significant lead-in time to reach actual operation?

Today, we have a distinguished panel of witnesses who will be able to discuss the pressing issues before us in the central bank digital currency space. These technologists, and privacy and financial inclusion experts, will help us better understand this technology and its potential impact on our financial system. And I look forward to this discussion.

The Chair now recognizes the ranking member of the task force, Mr. Davidson of Ohio, for 4 minutes for an opening statement.

Mr. DAVIDSON. Thank you, Mr. Chairman. I appreciate the recognition. And I would just like to express my excitement about being the new ranking member of this task force. It is an honor to take on the role to address this important policy area. And as we all know, all of us on this task force have a strong interest in seeing America's future include a better regulatory environment for financial technology.

Regarding today's hearing, the topic of the central bank digital currency touches on many of the complicated issues presented by the emergence of Fintech. It is safe to say that we are still in the learning phase when it comes to central bank digital currencies. With that in mind, I want to emphasize that it is imperative that we use these hearings to effectively gather information on the subject and to communicate what we do know.

As some of you may have noticed, CBDCs have constantly grabbed headlines since China announced that they would pursue one. I acknowledge that there is incredible potential for a CBDC to enhance our financial infrastructure. However, I also want to emphasize that we must pursue CBDCs for the right reason, and not simply to pressure ourselves in a pursuit for the sake of trying to keep up with China.

Adopting a central bank digital currency that embraces the ineffective financial and monetary rules of the past would be redundant, or even detrimental. It is important for us to be objective in our approach, and also receptive to new ideas as we have this conversation.

It has been almost a month since Fed Chairman Powell outlined how the Federal Reserve would approach the issue. In his announcement, he discussed that the key focus would be on whether and how CBDC could improve on our already safe, effective, dynamic, and efficient U.S. domestic payment system in its ability to serve the needs of households and businesses. He rightly explained that a CBDC would raise important monetary and financial stability, consumer protection, legal, and privacy considerations.

As policymakers, we too must keep these considerations in mind as we determine principles that would underpin a potential central bank digital currency. It is my belief that if the United States were to pursue such a tool, we must do everything that we can to preserve the principles of sound money and privacy. I like that the chairman referenced cash. It is truly permissionless. And we

should preserve cash and its characteristics in our payment system.

This month, we have seen the report that consumer prices have jumped 5 percent. People are realizing that the U.S. dollar is venturing further and further away from being sustainable, sound money. For those unfamiliar with the term, "sound money" refers to a form of currency that is exempt from radical fluctuations and purchasing power over the long term.

A 5-percent jump in consumer prices lacked any resemblance of sound money, and we have seen it distort our stock exchange, where it is now over 200 percent of GDP. While this topic may seem tangential to the structural development of a central bank digital currency, we must use the digitization of the U.S. dollar as an opportunity to also discuss the current devaluation in the monetary system that we have seen.

Remaining competitive on a global stage and remaining the world's reserve currency requires sound money. We must also use this moment to protect individual liberties, namely, privacy. Should the United States pursue a central bank digital currency, government must refrain from becoming a centralized clearinghouse that doubles as a consumer data collection center.

Too often, we see governments slowly chip away at the Fourth Amendment under the guise of security, but I urge my colleagues to resist this temptation to use the monetary system as a tool for control instead of as a store of value and a means of exchange.

A central bank digital currency that is token-based would help avoid this pitfall. And I look forward to discussing this concept today.

I understand that there are CBDC skeptics. I, myself, am skeptical of any central bank digital currency if it fails to uphold the two principles I just mentioned: sound money; and privacy. There is a right and a wrong way to go about it, and we must properly flesh out problems as we look into it. This requires us to look at the architecture, the infrastructure, and the access that the chairman so importantly recognized is completely accessible with cash.

To the few skeptics who claim that there are no current problems that necessitate a central bank digital currency, I would caution against complacency. We cannot sit back, simply because we have the strongest economy, the most robust financial system, and the world's reserve currency. Despite all of this, we still have many Americans who are unbanked or underbanked, and a central bank digital currency may help alleviate these issues. And they also help enhance our financial infrastructure if implemented correctly.

Would it solve every issue? Almost certainly not, but it may offer an improvement over our current system. I ask those who are anti-central bank digital currency to keep these considerations in mind.

Lastly, I know that some people prefer to use the central bank digital currency conversation as a vehicle to voice their opinions on other Fintech issues more broadly. We certainly saw that in the Senate hearing last week. And while I would not shy away from conversations on any of those topics, I hope that we can keep today's conversation focused on central bank digital currencies, since there is true value in that conversation, and it is the topic of the hearing. I yield back.

Chairman LYNCH. I thank the gentleman.

The Chair now recognizes the Chair of the full Financial Services Committee, the gentlewoman from California, Chairwoman Waters, for 1 minute. Welcome.

Chairwoman WATERS. Thank you very much, Chairman Lynch. Today's hearing begins a series of hearings for the committee on an especially important topic: cryptocurrencies and other digital assets. As cryptocurrencies grow exponentially, I have organized a working group of Democratic Members to engage with regulators and experts to do a deep dive on this poorly-understood and minimally-regulated industry.

Today, we continue this discussion by considering central bank digital currencies, or CBDCs, which are being created by governments around the world, and which the Federal Reserve is actually reviewing. If properly designed, CBDCs have the potential to harness the positive innovations arising from cryptocurrencies, and to digitize our dollar. So, I look forward to this discussion, and I yield back the balance of my time. Thank you.

Chairman LYNCH. Thank you, Chairwoman Waters.

The Chair now recognizes the ranking member of the Full Committee, the gentleman from North Carolina, Ranking Member McHenry, for 1 minute.

Mr. MCHENRY. Thank you, Chairman Lynch, and thanks for your leadership on the FinTech Task Force. I also want to commend the new ranking member of the task force, Mr. Davidson, for his engagement in these issues, and I look forward to a productive conversation here.

As the United States considers a central bank digital currency, I think it is important that lawmakers be informed. I think that is a very important thing for us to be apprised of both the advantages and the risks of a U.S. central bank digital currency.

On the advantages side, it makes for a more efficient, effective payment system. It could drive financial inclusion. On the risk side, it can limit growth, and it could destabilize our financial markets in ways that we may not have fully considered.

But I think it is important that we are versed deeply in both the advantages, but also the risks and the challenges. And I will concur with the Chairman of the Federal Reserve, Mr. Powell, when he says it is more important for the U.S. Government to get this right than to be first. And I think we all should agree that is the appropriate thing. I look forward to the hearing. Thanks so much, Chairman Lynch.

Chairman LYNCH. Thank you, Mr. McHenry. Today, we welcome the testimony of our distinguished witnesses. First, we have Mrs. Carmelle Cadet, the founder and CEO of EMTECH, which provides software solutions for central banks around the world. Mrs. Cadet is an expert in how technology can be used to increase financial inclusion.

Second, we have Mr. Jonathan Dharmapalan, the founder and CEO of eCurrency, which is a technology company dedicated to making central bank digital currencies a reality, and is the partner of Jamaica Central Bank in bringing their CBDC to launch.

Third, we have Mr. Rohan Grey, assistant professor of law at Willamette University, and a privacy and finance expert. Mr. Grey

is also the vice chair of privacy at the Digital Currency Global Initiative at Stanford University.

Fourth, we have Dr. Neha Narula, the director of the Digital Currency Initiative at the MIT media lab. Dr. Narula has done significant research on digital currency, and leads MIT's partnership with the Federal Reserve Bank of Boston researching central bank digital currencies.

And, lastly, we have Dr. Jenny Gesley, a Foreign Law Specialist with the Law Library of Congress. Dr. Gesley is an expert on financial supervision, and has also done work for the World Bank and the Institute for Monetary and Financial Stability.

I want to thank all of our witnesses for your willingness to participate and to help inform the committee. Witnesses are reminded that their oral testimony will be limited to 5 minutes. You should be able to see a timer on your screen that will indicate how much time you have left, and a chime will go off at the end of your time. I would ask that you be mindful of your timer, and quickly wrap up your testimony if you hear the chime, so that we can be respectful of both the witnesses' and the task force members' time. And without objection, you written statements will be made a part of the record.

Mrs. Cadet, you are now recognized for 5 minutes to give an oral presentation of your testimony. Thank you.

STATEMENT OF CARMELLE CADET, FOUNDER AND CEO, EMTECH

Mrs. CADET. Chairman Lynch, Chairwoman Waters, Ranking Member McHenry, Ranking Member Davidson, and esteemed members of the task force, thank you for the opportunity to testify and respond to your questions on how digitizing the dollar can address financial inclusion.

My name is Carmelle Cadet. I am the founder and CEO of EMTECH, a U.S.-based financial technology company helping central banks modernize with technologies like blockchain, cloud computing, and data analytics, in order to close inclusion gaps. It is my pleasure to talk to you today about how a central bank digital currency, specifically, a digital version of the paper cash that we know today, can be used for financial inclusion by design, make peer-to-peer payments resilient, lower the cost of payment, and enhance user privacy.

This conversation is very important to me personally, given my experience as a once-unbanked minority person in the U.S., and as a Haitian immigrant supported by a single mom—hi, mom—who was paid below minimum wage, I learned firsthand the importance of accessing the financial sector.

I am now in a position to create jobs, give something back, and promote innovative and actionable CBDC strategies in order to close economic and financial exclusion gaps.

As you investigate the technological infrastructure for a CBDC to achieve financial inclusion, it is important to highlight that technologies, such as distributed ledger technology, blockchain, and cryptography are tools that can be used to drive various outcomes. Some use them for good, and some use for them for bad. Therefore, there is a risk that as we think about the design for a central bank

digital currency, that it will be designed in the image of the status quo.

It is also an opportunity to build and design a truly inclusive and resilient payment infrastructure for every person in this country. I hope this testimony will foster the latter.

Issuing a central bank digital currency should not be about disruption of the current financial sector, nor about emulating bitcoin or other crypto assets. Instead, CBDC in this context represents a once-in-a-lifetime opportunity for the U.S. to revolutionalize its payment infrastructure. This should be considered to complement paper cash, and to give everyone a means to participate in a digital economy, with or without a phone, and with or without a bank account.

Moreover, it is important to realize that a retail digital cash solution, in order for it to be trusted by citizens, can't be used to collect data at will. Protecting, and even enhancing user privacy is a key requirement to deploying a CBDC that every American can trust.

Blockchain cryptography and robust regulations are indeed important to achieving the balance between privacy and fighting money laundering. Achieving those outcomes is not going to be easy. In our written testimony, we mentioned the concepts of FED wallets and a green CBDC as potential design requirements worth testing for.

As a technologist, technology and service provider for central banks, we are, right now, seeing around the world the role of digital and regulatory sandboxes as a tool to innovate, to research, and to understand the desired outcomes, and how they can be best achieved.

To achieve financial inclusion, a central bank should look to collaborate with a broad set of stakeholders such as banks, Fintechs, and other regulators to ensure that the desired outcomes are safely achieved. A digital sandbox is a strategic tool to do so.

To conclude, although many countries are exploring CBDCs today, for various reasons, the U.S. should lead in this innovation to solve real and acute problems here domestically, which include financial exclusion for millions, the need for a modern financial infrastructure in the U.S.—this will lower cost for payments for every American, and for the U.S. Government—and help combat money laundering, and improve the American family's P&L. I welcome your questions. Thank you.

[The prepared statement of Mrs. Cadet can be found on page 30 of the appendix.]

Chairman LYNCH. Thank you, Mrs. Cadet.

Dr. Dharmapalan, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF JONATHAN DHARMAPALAN, FOUNDER AND CEO, ECURRENCY

Mr. DHARMAPALAN. Thank you, Chairwoman Waters, Ranking Member McHenry, Chairman Lynch, Ranking Member Davidson, and members of the task force. I would like to thank you for holding this hearing and inviting me to testify. It is critically important for Congress to investigate the foundational aspects of a central bank digital currency (CBDC) and to understand how a CBDC

should be designed in order to maximize its benefits. I am honored to have the opportunity to discuss this important topic. And I am here to urge Congress to give the U.S. Treasury and the Federal Reserve the rules and the legal authority they need to create a digital U.S. dollar.

The good news is that the rules for how a digital currency should look are largely an extension of the rules for physical currency as they exist today. In other words, central bank-issued cash is the model for central bank-issued digital currency.

My name is Jonathan Dharmapalan, and I am the founder and CEO of eCurrency, a digital security technology company founded solely to create the technology to allow central banks to issue CBDC. We are not a cryptocurrency company. We do not issue any coin, stable coin, or currency of our own. We believe that only the United States Government can issue a digital U.S. dollar, and that the Treasury alone should create it, and the Federal Reserve should have the authority to put it into circulation.

Issuing a CBDC will require many policy and technological considerations. For example, it has to be financially inclusive. To ensure financial inclusion, a CBDC must be easily accessible and fully interoperable. Any CBDC must be able to operate within the existing payment rails of our financial system, including banks and payment cuts, while extending to new apps, smartphones, QR codes, smartcards, and other innovative ways to store and transact digitally.

Privacy is also an important consideration for a CBDC. Digitalization of currency has many benefits, and can be an immensely powerful utility. However, if it is not implemented properly, it has the potential to invade individual and societal privacy.

Any CBDC implementation must protect individual privacy in accordance with the law. It is possible, using a model based on the functionality of cash, to ensure that privacy is protected. The Fed would not need to collect user information. Private sector participants, including banks and digital wallet providers can manage the Know Your Customer (KYC) standards just as they do today.

In order to have a well-developed, well-functioning CBDC that addresses these policy goals, we must first start with the law. A strong legal framework for the creation and the issuance of U.S. dollar currency is already clearly codified. Today, currency comes in the form of notes and coins, and is protected under a clear, legal framework. This framework should be extended to include digital currency. The responsibility to securely produce notes and coins is currently placed on the Treasury. And the production of a digital currency would be a natural extension of the Treasury's role. The Federal Reserve can then fulfill its subsequent role as the issuer and distributor of that U.S. digital currency.

We believe that the technological solution to create a CBDC should follow the laws laid out by Congress, and not the reverse, where laws are formulated to suit technology. In other words, our government should enumerate what standard the CBDC should meet and require that technology enables compliance with those laws and standards.

To advance our understanding of CBDC and to encourage the study of the U.S. digital dollar, Congress should take the following

steps. First, address the definition of "legal tender" in the U.S. Code, to add digital currency to the current standard of notes and coins.

Second, clarify the role of the Treasury and the Federal Reserve in the creation and issuance of digital currency. And, finally, encourage the Treasury and the Federal Reserve to initiate a digital dollar pilot program.

Enabling a central bank digital currency in the United States is a once-in-a-generation opportunity for this Congress. The time is now for Congress to amend existing currency laws and set the rules of the road for a safe, secure, and inclusive digital currency.

Fortunately for us, the model for a safe and secure currency that meets all of these requirements is already in place. It is the model we use for cash. We do not have to invent a new model. If we can demand the security technology is appropriately leveraged to support this model, we can enable a digital dollar CBDC in the United States. Thank you. I yield back.

[The prepared statement of Dr. Dharmapalan can be found on page 36 of the appendix.]

Chairman LYNCH. Thank you, Dr. Dharmapalan.

Mr. Grey, you are now recognized 5 minutes to give an oral presentation of your testimony. Thank you.

STATEMENT OF ROHAN GREY, ASSISTANT PROFESSOR OF LAW, WILLAMETTE UNIVERSITY

Mr. GREY. Thank you, Chairman Lynch, Ranking Member Davidson, and members of the task force. In the interest of brevity, I will focus my remarks on three key points.

First, when it comes to designing digital dollar infrastructure, Congress should resist falling into the trap of thinking that there can only be one. Instead, the United States should pursue and coordinate multiple concurrent avenues of experimentation and innovation through different agencies and institutional arrangements.

Contrary to popular misconception, the Federal Reserve is not, and has never been the only entity responsible for issuing currency or providing public payment services. Throughout American history, the United States Mint, the Bureau of Engraving and Printing, the Bureau of the Fiscal Service, and the U.S. Postal Service have all designed, issued, and operated various forms of public monetary technologies. It is thus a mistake to equate and reduce the wide spectrum of digital currency architectures and arrangements to the more limited category of central bank digital currency, which refers only to those models in which central banks are the exclusive issuers and administrators.

The universe of possibilities that we should be exploring at this stage extends beyond what the lens of CBDCs allow us to consider.

To be clear, I believe the Federal Reserve should and will play a central role in any future digital dollar regime. At the same time, however, I also believe postal banking infrastructure should be a top priority, a nonnegotiable component of any legislation to establish a digital dollar.

Equally importantly, into my second point, Congress should direct the Treasury to establish its own system of token-based e-cash cards and virtual wallets as a complement to the account-based

banking services provided by the Fed and the Postal Service. Contrary to certain narratives, account and token-based moneys are not competing substitutes, but complements. They provide different functions and safeguards, and should be developed in a parallel, coordinated manner.

As the Federal agency currently responsible for coins, paper notes, and prepaid debit card services, the Treasury is the most appropriate actor to lead the development of a token-based, e-cash system. Interestingly, I am not the first to make this suggestion to Congress.

The Electronic Money Task Force of the Treasury Department first posed a commission to look into developing a Mint-issued, stored-value e-cash card over 25 years ago.

In an October 1995 hearing on the future of money before the House Banking Subcommittee on Domestic and International Monetary Policy, then-director of the U.S. Mint, Philip Diehl, testified that, "the Mint's main interest in cash cards at the time was as a potential substitute for coins and currency."

Rather than promoting financial inclusion within the banking system, e-cash would preserve and maintain the same transactional freedoms and capabilities in the digital economy as physical cash has historically provided in the traditional economy.

Which brings me to my third and final point. It is not uncommon to hear policymakers claim that designing a digital dollar system to allow for anonymous, peer-to-peer transactions would be radical or extreme. I profoundly disagree. Transactional anonymity, like anonymity more broadly, is a public good and core bedrock of political freedom in an academic society. It is difficult to imagine what America would be today if the Federalist Papers had not been published under a pseudonym, or if the U.S. Supreme Court in 1958 had ruled in *NAACP* v. *Alabama* that the NAACP turn over its records and membership dues to the Governor of Alabama as part of his harassment campaign against their desegregation efforts.

Preserving the right to make peer-to-peer payments without third party approval is, in fact, a small "c" conservative defense against the socially disruptive effects of digital technology on the internet. It reflects a first-do-no-harm approach that ensures we carry the same freedoms into the future as we have enjoyed and fought for in the past.

When it comes to digital transactions, we have a right to what Professor Joel Reidenberg calls, "privacy in public." If there was no compelling reason for public authorities or private platforms to know when I would buy a meatball sub from a street vendor, then they shouldn't know. It is that simple. The way to limit the risks of data abuses is to not collect unnecessary data in the first place.

Above all, Congress should adopt the principle of currency neutrality, similar to net neutrality, whereby digital fiat currency platforms and technologies are treated as common utilities available to all of the public good.

If the digital dollar is to stand for more than surveillance, data-mining, and political censorship, like China's digital e-Yuan or Facebook's Diem, American policymakers must be willing to articulate and defend a different set of principles and commitments, even

when doing so entails difficult choices. Thank you, and I look forward to your questions.

[The prepared statement of Mr. Grey can be found on page 54 of the appendix.]

Chairman LYNCH. Thank you very much, Mr. Grey.

Dr. Narula, you are now recognized for 5 minutes to give an oral presentation of your testimony. Thank you.

STATEMENT OF NEHA NARULA, DIRECTOR, DIGITAL CURRENCY INITIATIVE, MIT MEDIA LAB

Ms. NARULA. Thank you, Chairman Lynch, Ranking Member Davidson, Chairwoman Waters, Ranking Member McHenry, and members of the task force for the opportunity to testify today.

I am the director of the Digital Currency Initiative at MIT. We focus on cryptocurrency, including bitcoin open for software development and digital currency design. I would like to note that my views are my own, and not the views of MIT or the Federal Reserve Bank of Boston, with whom we are engaged in a multi-year research collaboration called Project Hamilton. We will be releasing a paper and open source software later this summer.

Today, I am going to define a CBDC and its benefits, pose questions that should be answered before launching a U.S. CBDC, a digital dollar, and suggest ways to answer those questions. A general purpose, or retail CBDC, is defined as a digital liability of a nation's central bank that is broadly accessible to the general public. That it is a central liability distinguishes it from commercial bank money, credit cards, and cryptocurrency, that its digital nature sets it apart from cash, and it is different from central bank reserves in that users can hold it directly.

The promise of a CBDC goes beyond efficiency and financial inclusion. We have seen tremendous innovation in cryptocurrencies. And it is time to bring some of that innovation into our nation's currency. Digital currency offers an opportunity for ground-up redesign of our payment systems. Together, a well-built digital dollar and other financial technologies could empower users and create a platform for innovation and payments, much as the internet created a platform for innovation by facilitating the transfer of information.

Though promising, the way forward is not entirely clear. There are many open questions regarding how a U.S. CBDC should operate, how users might access it, how consumer privacy would be protected, and even if a CBDC is the best way to achieve goals, such as increasing financial inclusion. For example, 36 percent of those in the U.S. who lack bank accounts also do not have smartphones. Many Americans do not have reliable internet connectivity. Such people could not use a digital currency that requires a mobile app or constant connection to the internet. At MIT, we are investigating designs that would enable forms of secure, offline transactions.

Financial transactions reveal sensitive data about our lives, and protecting privacy is essential for human dignity in a democratic society. Consumer privacy is a requirement for a U.S. CBDC as well as a potential competitive advantage. Yet, much work remains to determine how to do this efficiently and effectively.

More research is needed to determine how a CBDC might address these challenges. It would be a mistake to move to using a CBDC without understanding the implications for financial inclusion and privacy.

Extensive collaboration between academic researchers and the public and private sectors, as well as research funding, is needed to make progress on these key questions. The first step is to obtain agreement on goals. In parallel, the Treasury Department and the Federal Reserve should be investing more in research and development, not to build the digital dollar, but to understand its possibilities and implications, as well as spur technology development.

To build consensus across varied stakeholders and to create a neutral environment where the best ideas can flourish, we should rely on the principles of open-sourced software development that have been so successful in the cryptocurrency space.

The government's typical way of building systems, outsourcing to a third-party vendor, will not, in my opinion, work here. What is possible in terms of policy is inextricably linked to the technical implementation, and the U.S. cannot outsource monetary policy to a vendor. As a first step, I recommend expanding the type of work that MIT is currently doing with the Boston Fed, and other new collaborations between academia and the public sector.

In conclusion, we have a once-in-a-century opportunity to redesign the foundations of the U.S. financial system. Central bank digital currency might have the potential to increase financial inclusion, reduce transaction costs, and become a platform for innovation and payments, but only if designed and implemented well.

I commend this task force for raising this important issue and encouraging this critical dialogue. Thank you, and I look forward to your questions.

[The prepared statement of Dr. Narula can be found on page 68 of the appendix.]

Chairman LYNCH. Thank you, Dr. Narula.

Dr. Gesley, you are now recognized for 5 minutes to give a summation of your testimony.

STATEMENT OF JENNY GESLEY, FOREIGN LAW SPECIALIST, LAW LIBRARY OF CONGRESS

Ms. GESLEY. Thank you, Chairman Lynch, Ranking Member Davidson, Chairwoman Waters, Ranking Member McHenry, and the distinguished members of the task force. It is an honor for me to appear before you today to testify regarding digitizing the dollar. My name is Jenny Gesley, and I am a Foreign Law Specialist at the Law Library of Congress. I also previously worked as the Chair for Money, Currency, and Central Bank Law at the University of Frankfurt, Germany, and I hold a Ph.D. in law in the area of financial market supervision.

In my testimony today, I will provide an overview of different design choices for CBDCs, reasons in favor of adopting a CBDC, and some legal, economic, and technical considerations. And I will use examples from other jurisdictions to illustrate these points.

In October 2020, the central bank of the Bahamas launched the first worldwide retail CBDC, the Electronic Bahamian Dollar, also called the Sand Dollar. And one of its critical goals is financial in-

clusion. The People's Bank of China recently became the first major bank of a major economy to launch a digital currency in several major cities. Sweden's central bank recently announced that it will start the second phase of its e-krona project. And the U.K. and the European Union are doing exploratory work on a potential retail CBDC, although they have not made a decision yet on whether to issue a CBDC.

One of the main functions of central banks is to ensure monetary and financial stability in their respective jurisdictions, and to ensure broad access to safe and efficient payments. One of the core instruments by which central banks perform this function is by providing central bank money.

Traditionally, a central bank has limited digital account-based money to banks and other financial institutions, whereas physical central bank money, meaning cash, is rightly accessible. However, in some jurisdictions, the use of cash is declining, with the possibility of its complete disappearance, indicating that the public would no longer have broad access to central bank money.

This is one of the points where a central bank's digital currencies come into play. But the reasons for adopting a CBDC and the different design choices depend on many different factors, and they are different for each individual jurisdiction.

Among other decisions, central banks need to consider the question of access. Should it be a retail CBDC or a wholesale CBDC? The degree of anonymity, operation availability, interest-bearing characteristics, then limits or caps on individual holdings, and for technical solutions.

And the reasons for adopting the CBDC also vary. One of the reasons is the declining cash usage in Sweden. Then, also, improved financial inclusion for unbanked and underbanked communities, which is particularly true for emerging markets and developing economies, such as the Bahamas and other Caribbean jurisdictions.

General [inaudible] Interest technological [inaudible] Innovation, and making the [inaudible] For the fear that central bank money and transactions will be displaced by private digital tokens, such as cryptocurrency, in general, or stablecoin issues by corporations such as Facebook Diem. This is also one of the reasons that Sweden [inaudible] Cited. And there is also the risk of the so-called digital dollarization with regard to cross-border CBDCs, meaning the use of a [inaudible] Domestic currency, which as an impact on the domestic bank's ability to conduct monetary policy and [inaudible] Ensure monetary stability.

So, if the central bank decides to move forward with a CBDC, they must make several considerations. In particular, they must consider whether the domestic central bank has the authority to issue digital currency and make a [inaudible] Legal tender, if so desired. In compliance with anti-money laundering—I think my connection—

Chairman LYNCH. Can our tech people try to get Dr. Gesley back again? Is that possible?

Dr. Gesley, we see you again. Would you like to conclude the last portion of your testimony?

Okay.

[The prepared statement of Dr. Gesley can be found on page 46 of the appendix.]

Chairman LYNCH. I am reclaiming my time. First of all, I want to thank all of the witnesses, all of the panelists for your contributions. I had a chance last night to read through almost all of the testimony, and there is certainly a richness of perspective here that I did not anticipate, but which is really delightful. So, I am glad that is the case.

Ms. GESLEY. I apologize for the connectivity problems.

Chairman LYNCH. You were fine up until the last minute, Dr. Gesley, and if you would like to conclude that, I would certainly yield you the time. Okay. I don't think that is going to happen.

So, Dr. Narula, I know that you are doing great work over at MIT. Thank you so much for being with us today.

Listening to all of the testimony, reading through the testimony as well, there is the question of, should not the policy inform the architecture? In other words, we have to provide direction, I think, to you to be helpful to decide what will be the priorities, and what are the essential elements, and what is the functionality of CBDC consistent with the role of the Federal Reserve? And as you say, with this once-in-a-generation opportunity to really redesign our currency.

I wonder if you could just take some time and talk about the hurdles, the difficulties that you have encountered in trying to accommodate the different priorities, from anonymity to privacy, to the way this CBDC might unfold, and who would be responsible for administering this.

Mr. Grey suggests that should be one of several, if not many. But that would obviously drastically change the role of the Fed in our monetary policy, and some of the tools that the Fed currently uses to fight inflation, and in control of the money supply. So, I wonder if you could just talk about some of the challenges that you are facing in designing this?

Ms. NARULA. Thank you for that excellent question, Chairman Lynch. It is, indeed, the fact that we have not yet, as a country, had a very deep discussion on exactly how we might want something like a CBDC to be administered, if at all. And I am really happy that we are beginning to have that conversation today. This is just the beginning.

I am not an economist, so I will stay in my lane and not give too many comments about monetary policy. What I will say is that it is absolutely the case that we need to have a lot of research done in terms of policy and how we might want that policy to unfold, whether that is who would administer such a thing, how it is enforced, who would gain access, or what exactly we want it to look like. That does not mean that we wait on the technology until we have had all of those discussions.

What we found, and I think one of the most important things we found, is that in implementing, in doing the technology research, we are surfacing critical nuanced questions that policymakers might not have even known to ask to begin with, and we are very happy to be doing that work.

Chairman LYNCH. That is great.

Dr. Dharmapalan, you have also touched on this idea that policy should inform the architecture. Can you talk about that a little bit more and how we might balance some of the competing interests? I know that the idea of inclusion is universal. I think that is a main, a central tenet of this effort, but that has not necessarily been the case in some of the Fintech world where we have gone to mobile platforms or a digital iteration of cash. And we have actually seen some pushback from certain communities that feel that the move away from physical cash has disenfranchised some elements of society. So, could you take a swipe at that, please?

Mr. DHARMAPALAN. I am happy to, and thank you, Chairman Lynch. One could argue that cash currency is the most inclusive financial instrument we have today. Anyone can access it, and its power is exactly the same—in your hands, in my hands, or in my children's hands, a $5 bill does exactly the same thing.

So when we look at a digital currency, the model is cash. We have to be able to give the digital currency at least the power physical cash has, if not more, which is why we emphasize the fact that policy then drives the technology. Start with the fact that a physical currency instrument exists because of the law. Congress, many, many years ago defined the law to enable legal tender in the form of U.S. dollar notes and coins. They then gave the responsibility to create it without involvement with anyone else to the Treasury. The Treasury creates an incredibly secure instrument that they then put into circulation, using existing infrastructure, starting with the Fed.

The Fed then sends it to commercial banks. Commercial banks get it into their ATMs, and through merchants and what have you gets it into the hands of the public. And we have this incredibly financially inclusive instrument in cash.

So, we think that a digital currency should also start with those same principles in mind. Start with Congress, make the rules, give the responsibility to the Treasury to create a, what we think of as a digital bearer instrument just like cash, move it to the Fed, allow the Fed to distribute it using existing infrastructure without banks and others having to completely overhaul their current systems, and ultimately get it to the public so that they can use it online or offline, with connections, without connections, just as they would a physical bearer instrument. This is what will allow for ultimate inclusion in the digital world for people who don't have smartphones, who may not have internet access at all points, but will always have access to a digital form of cash.

Chairman LYNCH. Thank you. The Chair now recognizes the ranking member of the task force, the gentleman from Ohio, Mr. Davidson, for 5 minutes for questions.

Mr. DAVIDSON. I thank the chairman. And thanks to our witnesses. I am so excited that we are going to meet in person. We have seen a lot of technical glitches in virtual hearings, including at the start of this one. So, we are excited to see the light at the end of the tunnel here.

Mr. Grey, I am very encouraged by this dialogue about cash, and, frankly, by your passion for privacy. And, athough you don't call it out explicitly, the third-party doctrine that leaves privacy in the hands of businesses, highlights one of the big gaping holes in the

Fourth Amendment. And if we get this structure right, we could really move past that sad part of America's history, where Americans essentially surrendered their privacy in the late 1960s, early 1970s, with respect to financial matters. And we have seen it eroded massively over these years.

When you talk about the permissionless nature of cash, as our chairman and several others have, it is very encouraging because the rest of the financial system doesn't really have that characteristic right now. So, if we get a central bank digital currency right, in my opinion, it will certainly have the essential feature of privacy, and, hopefully, it will also develop something we have been lacking, also at least since the 1970s, which is sound money. So, the architecture and structure are really, really important.

Dr. Narula, when you submitted your testimony and spoke, you do a great job of discussing the importance of protecting consumer privacy when developing central bank digital currencies. Specifically, you note that it is essential for human dignity and democratic society. I can't agree more. And you then state that legitimate public policy goals relating to combating criminal activity can be fulfilled while preserving the privacy of the public.

With that in mind, can you discuss other CBDC pilot programs and the privacy standards other countries implement? What can the United States learn from these case studies, good and bad?

Ms. NARULA. Thank you, Ranking Member Davidson. That is an excellent question about privacy, and also, what we can learn from other countries. Part of the benefit of the work that we are doing at MIT is that we are able to speak to many central banks and gather that input to learn about what is common amongst different central banks.

I will say that there are very few central banks that have really gone far enough to begin to ask some of the more nuanced questions. There is just a handful, really. However, some of them have begun to ask very, very important questions about privacy. And I think what is really important to note is that it should be possible to catch criminals without the government having a record of every date, time, amount, and location whenever I buy a cup of coffee. That is just not something that is going to be practical.

So, there is an inherent tradeoff here. Sometimes, it is very fundamentally hard to get two different things at once. The ability to track bad actors implies a design that is less than completely fully private. I think the key is to find the right balance between these tensions, which is why extensive research and design is so critical. One very promising direction my team is exploring is the application of cryptography to this question and tension.

Using cryptography, we can hide the specifics of data, while at the same time, proving more general facts about that data. This will be challenging, and it is still an open area of research in which we are engaging, but I am optimistic.

Mr. DAVIDSON. Thank you for that. And I am encouraged by your work. And one of the important innovations has been cryptography linked to blockchain technology.

Mrs. Cadet, in your testimony, you discussed the benefits of blockchain technology. And you say that blockchain technology can securely embed trust, compliance, privacy, and transparency. Can

you outline why you think that blockchain is a more appropriate infrastructure model for CBDC, as compared to a centrally-controlled database?

Mrs. CADET. No. Thank you for that, Ranking Member. When we started our work in central bank digital currency, blockchain technology is a key differentiator to any other type of technology, and approaches to creating digital currencies, especially when we talk about cash. A cash-like model for CBDC will find many benefits from blockchain technology. The cash today, you don't need an intermediary to use it. If you have cash in your pocket, you don't need to ask permission or wait for the internet to come back up for you to buy a scoop of ice cream.

So when we think about blockchain and the decentralization component of it, it really can reflect cash and bring some benefits that cash provides today.

Cryptography is a big component, combined with blockchain, which can not only provide the privacy, enhance the privacy compared to what we have today, but also the embedded trust, the governance that can be enabled can run. So if we think about the Fed not particularly wanting to manage digital cash directly, blockchain technology enables self-governance, embedded governance with smart contracts and other capabilities that make it much more cost-effective and scalable as well.

Mr. DAVIDSON. Thank you so much. My time has expired. I appreciate your solid answers. I yield back.

Chairman LYNCH. The gentleman yields back. The Chair now recognizes the gentleman from Florida, Mr. Lawson, for 5 minutes of questions.

Mr. LAWSON. Mr. Chairman, can you hear me?

Chairman LYNCH. I can, yes. Mr. Lawson, please proceed. Thank you.

Mr. LAWSON. Okay. Thank you very much, Mr. Chairman, and Mr. Ranking Member, for having this meeting. I would like to welcome the witnesses here today. And this is quite interesting. According to the FCC Broadband Progress Report, 19 million Americans, or 6 percent of the U.S. population, lack access to broadband. The report goes on to detail that even in areas where broadband is available, 100 million Americans opt to not use it. This disparity is concerning to me, and the CBDC is packaged as being a more accessible option to America than the traditional banking.

So my question would be to the panel: How do we reassure Americans, especially people who are not really versed on this issue, especially in rural areas, that they are not going to be left behind? How do we get this information to them? And how do we deal with elderly citizens who have basically been the backbone of the American economy in the middle class to the point where they are right now?

And this is to the whole panel. With this change, how is it going to work, when we talk about ATMs and everything else and not the use of cash, we really need some guidance. What can we tell our constituents?

Mrs. CADET. If it is okay, gentlemen, I will jump in here, because this is something that we think about a lot, inclusion for the unbanked, inclusion for low-infrastructure environments. I travel

around the world. I am originally from Haiti. And among the problems that we see when it comes to inclusion is the access and the understanding of a new financial asset. Financial literacy and education is the key component of the delivery and the introduction of a CBDC to the American economy.

But while doing that, I think there is great value and great benefit. And if you are looking at the Post Office and local stakeholders and local physical institutions that, by the way, have experience in delivering and facilitating financial services in those communities. Community Development Financial Institutions (CDFIs) can also play a role in being interfaced providers in on-boarding and off-boarding stakeholders as part of this new digital network.

I tell people that my mom is very attached to her $100 bill that she keeps in her purse. She is not going to give that away any time soon. She will still want paper cash in her wallet. And for her to have access to paper cash and digital cash is something that I look at as a model for a lot of Americans, and older Americans who want access, but giving them options, and giving them a better way and a more efficient way to receive the benefits, for example, we think can be great ways of integration for them.

Mr. GREY. May I jump in?

Mr. LAWSON. Go ahead. Yes, please.

Mr. GREY. Thank you.

I think when it comes to actually successful implementation as well as design of a digital fiat currency, it is critical to take the average person's trust and access to that as a core design constraint. One of the reasons why we are proposing that the Treasury issue its own trusted hardware-based token system that can be used offline alongside account- or ledger-based systems is precisely to ensure that people can use it outside of the ways in which people use banks today.

When we designed the Automatic Boost to Communities Act with Congresswomen Tlaib and Jayapal, we created the emergency responder call that would actually deliver prepaid pandemic relief cards and perform a wellness check in the process to people's doors. And it is that kind of critical human infrastructure, like the Postal Service, that is going to be really important, not only to ensure that people can use a digital currency, but that they are educated and that they are involved in the deliberation process for its design.

Mr. DHARMAPALAN. I will add a couple of thoughts, Congressman, to what Mr. Grey just said.

If designed properly, you don't need broadband access to use a CBDC. It should be able to exist in your wallet on a smart card, just like a card exists today, except now it is the United States dollar existing in your wallet in digital form.

Mr. LAWSON. Okay. Thank you, Mr. Chairman. We have a long ways to go, and I yield back.

Chairman LYNCH. That was great, Al, great questions, and excellent answers as well.

The Chair now recognizes the gentleman from Missouri, Mr. Luetkemeyer, for 5 minutes of questions.

Mr. LUETKEMEYER. Thank you, Mr. Chairman, and thank you for the hearing today. This is really interesting stuff here.

In listening to the witnesses today, there are a number of things that, I think, concerns that they brought up. Almost all of them talked about the privacy of the consumer information with regards to those people who own the digital currency, how we can make it difficult to launder money or use it for illicit financing. We have to be able to protect against those things. We need to protect the value of the transaction at the moment that it is done from the wild swings of valuation, for instance, when we have something like bitcoin. And then I think another one that we haven't really gotten to very much here is to protect the reserve currency status of the United States dollar.

And so, Ms. Gesley, I would like to start with you with regards to, China is in the middle of getting ready to issue their own currency here, their own digital currency. They are a major player in the world. Their economy is second only to the United States. Do you see their ability to get out front on this as a threat to our reserve currency status or do you think that this is not something that—this is just going to be a supplement to the kind of money that they use right now to transact business with?

Ms. GESLEY. Thank you for this question. It is a little bit out of my expertise, but I will try to talk about it.

First of all, China said that they would first use it as a domestic CBDC, but they did mention that it could also potentially be used for cross-border purposes, so there is definitely a risk of the digital dollarization in this case. That would also mean that there needs to be a huge uptake off China's CBDC by other countries. So if other countries, instead of now the U.S. currency—yes, the U.S. dollar, its reserve currency, the countries would then decide to take the Chinese CBDC and replace the U.S. dollar with that.

I don't see that actually happening, because reportedly, the way the Chinese CBDC will be designed has also left us with privacy implications, so the Chinese central bank will have lots of insight into people's information. So, I don't see this as a very good alternative, even though they said they will try to use this also for cross-border purposes.

Mr. LUETKEMEYER. Thank you for that.

Mr. Dharmapalan, do you see a problem with these digital currencies around the world as a threat to our reserve purchase status, or do you think that this is, again, just a supplemental way of transacting business to help people facilitate their daily transactions?

Mr. DHARMAPALAN. I think, Congressman, it is a slippery slope. Initially, it will look very much like people transacting their daily business, but if you go into a southeast Asian country, you will notice that at the local 7-Eleven, there is direct access to Alipay. If Alipay is now empowered and is a Chinese yuan, and the public is buying materials from the local 7-Eleven using the Chinese yuan, it doesn't prevent the 7-Eleven from buying their supplies using the Chinese yuan, directly from their Chinese supplies.

So little by little, this could creep into other countries besides China and succeed in achieving what China really wants, which is for mercantile payments to take place, merchant payments to take place using the Chinese yuan. So it goes first from a retail payment

to ultimately creeping into wholesale payments and payments like sports directly from China. So, that risk does exist.

Mr. LUETKEMEYER. Thank you for that.

Dr. Grey, quickly, it would appear to me that there is going to have to be some congressional authorization to be able to implement any sort of CBDC modeling or even the authority to issue this additional currency.

What your thoughts on that?

Mr. GREY. Yes. Thank you. I think we should adopt a comprehensive approach rather than starting with one institutional perspective. And by that, I mean that we should have Fed Accounts of the kind proposed by Professor Menand and others, alongside of Treasury eCash, alongside postal banking, and we should design that legislation as a comprehensive package that combines retail account and token options.

At the same time, it is going to be very important to get the perspective of stakeholders that are currently not in this process, privacy advocates, groups who are involved with people who conduct remittances—

Mr. LUETKEMEYER. Thank you. Thank you for that, Dr. Grey.

Anybody who thinks the Postal Service is a way to deliver money has been asleep at the wheel for the last 30 years, in how they actually perform when they are broke themselves.

But with that, Mr. Chairman, I yield back.

Chairman LYNCH. The gentleman yields back.

Next on my list is the gentlewoman from Georgia, Ms. Williams. I don't see you on the screen, but I know you might be on your phone. I am not quite sure.

Okay. We are going to go to the gentleman from Texas, Mr. Green. I see you there, sir. You are welcome to ask your questions for 5 minutes.

Mr. Green, are you muted?

We are going to go to Mr. Sherman, the next Democrat on the list. Mr. Sherman, the gentleman from California?

We are going to go to Mr. Emmer, the gentleman from Minnesota. You are recognized for 5 minutes.

Mr. EMMER. Thank you, Chairman Lynch, and new Ranking Member Davidson. Like Representative Luetkemeyer before me, I am very happy that you are hosting this timely hearing to discuss the potential of United States digital dollars, because we probably now are all beginning to realize this discussion is incredibly important from a national security standpoint and from a global competitiveness standpoint.

Through Chinese testing and rollout of the digital yuan, it is more important than ever to submit the U.S. dollar dominance. The benefit of having a digital dollar would only come to fruition if it were open, permissionless, and private. We should not lose sight of these values, and we should not craft a CBDC that enables the Fed to provide retail banking accounts for Americans that, in fact, would convert the Fed into a consumer bank. And if it were such, it would be able to collect all sorts of private information on Americans. That is not what we want.

Our banks and Fintechs are doing a great job serving their customers and expanding access to financial services, and the competi-

tive marketplace of the private sector can facilitate that goal. The private sector has led the charge on innovating in the digital currency space already. The private sector developed our record infrastructure, our telecommunications infrastructure, and the internet.

If we are talking about programmable money and building off of the dominance of the U.S. dollar, we have to involve the private sector. Whatever future innovation we discover from the CBDC will not come from the government, and I tend to agree with Representative Luetkemeyer, certainly not from the post office, but rather, from people and individuals building off it, just like there were underlying protocols for the internet.

The bottom line is that U.S. lawmakers need to stop being so skeptical of crypto and recognize that it is not going to go away. We need to support this technology. Anything to the contrary will push our innovators and our entrepreneurs overseas, where compliance is more streamlined.

As China and other nations push ahead in this field, promoting transactions on blockchains through digital dollars and stablecoins, it is becoming clear that the United States needs to craft a token-based digital dollar that is open, permissionless, and private.

And with that, Ms. Gesley, I want to ask you—I guess I would put it this way: Like the Colonial Pipeline, the centralization of data and information is a target for bad actors. The Fed isn't immune to this; their Fedwire system went down earlier this year. In wake of all of these ransomware acts, I think it is important to ask if the cybersecurity standards of the Fed are able to withstand being such a target. If the Fed's CBDC goes down, many people would have problems accessing an app or other financial instruments if they are all linked to the CBDC.

Could you please speak to the threat of the single point of failure, and why we should explore stablecoins and other means of financial transactions to circumvent or prevent the threat of crippling the entire financial system?

Ms. GESLEY. Certainly. So as you are saying, there is obviously always the risk of cybersecurity hacker attacks. But I think normally, and it is also what we have seen with other countries, that the central banks normally uses intermediaries, such as the commercial banks, to issue their CBDC. And those banks normally have a very robust infrastructure in place. And then they should also—for example, in the Bahamas, when they register so-called wallet providers, they make them go through an independent third party that looks at their cybersecurity infrastructure to ensure that all of these wallet providers will be able to provide the necessary security and, therefore, only those intermediaries that pass this test will be able to.

So I don't think—and, normally, central banks, this would be if it was all located at the central bank, a huge, additional cap for the central bank, which they are not equipped to do at the moment. So having this with intermediaries, and then having independent third parties do the testing off the cybersecurity infrastructure, is probably the way to go.

Mr. EMMER. I appreciate that.

I see my time has expired. Thank you, Mr. Chairman.

Chairman LYNCH. The gentleman yields back.

The Chair now recognizes the gentleman from Wisconsin, Mr. Steil, for 5 minutes.

Mr. STEIL. I will start off by saying that I look forward to our next hearing being in person, where the mute will be a little bit easier to do. But I appreciate you holding today's hearing, Mr. Chairman.

I appreciate Mr. Luetkemeyer's comments in particular on the importance of the United States dollar being the world's reserve currency, and Mr. Davidson's comments and Mr. Emmer's comments on the importance of maintaining privacy.

I would like to dive in as to the problem that we are trying to solve and, if I can, direct the question towards you, Ms. Gesley. Over the course of today's hearing, I think we have heard some disagreement about the structure of CBDC stems from different views as to what problems the CBDCs are supposed to solve.

So, I look at the Sand Dollar and see that the problem was, how do we get funds from point A to point B in an island nation, not a challenge in the United States, but a challenge for some island nations.

I see what I think are some countries who are actually on the other side of the privacy issue, who are actually trying to remove privacy and trying to gain insights as to what their citizens are doing as being a problem that they are trying to solve. I don't want to solve that problem here in the United States. I think privacy of individuals is important.

If I look at the FDIC's survey of American banks, in particular looking at the unbanked—36.3 percent of households that are unbanked replied that they didn't have a bank because they simply don't trust banks. So, I don't know that putting this in the hands of the Federal Government is going to get those people on board, that they would trust the Federal Government more than they trust banks. Nineteen percent said that banks didn't offer the products or services that they needed.

So, what I am looking for is, what problem would the CBDC necessarily solve? And what problems in particular have you seen other countries trying to address through CBDC implementation, Ms. Gesley?

Ms. GESLEY. Thank you for that question. If I could go back to the Bahamas, where they are trying to solve the financial inclusion problem, they did several things. For example, especially with regard to not trusting commercial banks, they said, in addition to commercial banks, there could be several wallet providers, so the wallet providers do the digital wallets where the CBDCs will be. And they also said cooperative credit unions, but then also just money transmission businesses, payment service providers, so it is a wide range of providers. So, if you don't trust the traditional commercial bank, you have the option, for example, you may be more likely to go to a payment service provider with which you are already familiar.

Also, what they did there, they said that—so all the wallet providers need to provide a financial inclusion strategy, so they can say, well, in this remote area, we are going to do it XYZ so the central bank can look at this problem. They are supposed to provide financial—

Mr. STEIL. Ms. Gesley, if I can follow up on that, because I think it is an interesting point. We want financial inclusion. We want to make sure that people who are unbanked have access to that. I think it is a very worthy cause.

Do you think that goal was accomplished, or is that a goal that they set out to achieve and this was not a successful path?

Ms. GESLEY. I think they are on the way to achieving this, especially after the launch—for example, they added prepaid cards in collaboration with Mastercard so that people who don't necessarily have access to a smartphone are able to use the Sand Dollar. So, this is another way. And I think the Bahamas is a good example, especially now that it is already in use. Following along and seeing what improvements they are making along the way I think is very helpful, so that is something they added—

Mr. STEIL. So would an analogy be a similarity as to how we are using food stamps in the United States, where there would now be a card? Is that almost what is occurring as you are looking at the Sand Dollar?

Ms. GESLEY. Just a prepaid amount, yes, that is loaded onto the card, so that everywhere Mastercard is accepted, you can use this card, and it just has the Sand Dollars loaded on it. Or sometimes they also have, with the problem when there is no internet connection, you can already preload something on your digital wallet, so you don't necessarily need to be online all the time.

Mr. STEIL. It sounds almost in many ways like they are using financial technology as much as they are actually using the digital currency to get inclusion into the financial system for many of their people.

Ms. GESLEY. Exactly.

Mrs. CADET. Representative Steil, is it okay for me to—

Mr. STEIL. Looking at the time, I am going to—I am hearing some feedback here, but—

Mrs. CADET. Yes, I wanted to jump in to give you some color around this—

Chairman LYNCH. Go ahead.

Mrs. CADET. I just wanted to say, as someone who participated in the pilot in the Central Bank of the Bahamas, I wanted to give some color around the implementation. The financial inclusion was a big driver, but the access and making sure that the transactions could be done in real time was something that was executed successfully. That is what I wanted to say.

Mr. STEIL. Thank you very much.

Cognizant of the time, Mr. Chairman, I will yield back.

Chairman LYNCH. Okay. The Chair will try again to recognize Mr. Green of Texas for 5 minutes. I am not sure he can hear us. Mr. Green of Texas?

Okay. Then I am going to go with Mr. Gonzalez of Texas for 5 minutes.

Okay. The Chair will recognize the gentleman from Indiana, Mr. Gonzalez, for 5 minutes.

Mr. GONZALEZ OF OHIO. Do you mean the one from Ohio?

Chairman LYNCH. Okay. I'm sorry.

Mr. GONZALEZ OF OHIO. That is all right.

Chairman LYNCH. I was thinking of Indiana, I'm sorry.

Mr. GONZALEZ OF OHIO. I spent some time in Indiana. But, in any event, thank you, Chairman Lynch and Ranking Member Davidson, for holding today's hearing. And thank you to our witnesses for participating.

I want to sort of stay on some of the topics that Mr. Steil was just referencing with respect to expanding access and whether that is the problem we are trying to solve. I think it is. It is sort of what is the best way for us to expand inclusion in the banking system or the financial system writ large.

And so, Dr. Narula, I want to start with you, if I could, specifically on the design component of this. You focused on what you are calling digital cash in your testimony, and in the MIT study, and it sounds like that is true. Can you compare and contrast that to the two-tier and Fed wallet system and why you sort of trended in the direction of the digital cash model?

Ms. NARULA. Certainly. Thank you, Congressman. And I am from the Midwest. Ohio is a great State.

Mr. GONZALEZ OF OHIO. Wonderful State. Thank you very much.

Ms. NARULA. So, yes, there has been a lot of conversation about the direct versus two-tier CBDC models. And what I would like to say is that it is not exactly either/or. There are actually a lot of very fine grain choices about exactly how a digital currency might be distributed and how users might be allowed to access it. A key question, as you point out, is who will have access. It should be, I think, a wider swath of players than just commercial banks. Additional players could provide digital wallets for users in more interesting applications, for example, Fintechs. But people should also be able to hold it directly, much as they hold cash directly today, not because the CBDC is supposed to replace cash, but simply because cash is a great example of how we can provide the most access to the most people.

We want to encourage innovation, wherever it may come from, and if a CBDC were only limited to a small set of financial institutions, then it might not be able to serve as that platform for innovation in the future, nor would it help people who weren't interested in using a commercial bank.

Mr. GONZALEZ OF OHIO. Thank you.

And then sort of building on that, comparing ether bitcoin, which has sort of an open architecture and allows for a ton of innovation and, I think, in many ways, part of the excitement around this technology, at least for me, is in the decentralized finance (DeFi) movement and in the ability to really create products that historically just haven't existed or we haven't been able to unlock.

How do you see a digital dollar working either in competition with those products or alongside of—do you see the architecture being similar such that we could innovate in similar ways via digital dollars?

Ms. NARULA. Thank you for that question. I think it is really important.

I want to be very clear. I think that cryptocurrency and any CBDC are not in competition. They will coexist, and each will probably help further the other. Quite frankly, we wouldn't be here today having this hearing if it weren't for cryptocurrencies like bitcoin. There was a lot of innovation there. There were a lot of

really interesting applications. You point out the DeFi space. There is a tremendous amount of experimentation happening there, and we want to continue to encourage that experimentation and innovation. We want to make sure that the United States is at the forefront of that. I think CBDC is a natural thing to consider seeing that innovation happening and thinking about how we might want to upgrade our financial systems broadly.

So, to me, these two things will coexist. They are both very important, and I don't see them as being in competition.

Mr. GONZALEZ OF OHIO. Thank you.

One criticism is that the digital dollar forces the Fed to replace retail banks and takes assets off of bank balance sheets and moves them directly to the Fed. Is that necessarily true with the digital dollar or CBDC? And how would you solve that if that was an objective you did not want to see happen?

Ms. NARULA. Thank you. I think that this is a really important question. I am not an economist, so I am just going to speak from the perspective of a technologist. I think that there are ways to perhaps keep that from happening. It really depends on exactly how the system is designed and how much, for example, of the digital dollar is in circulation.

So, I think that this is something that could potentially be mediated. I know a lot of economists are looking at this problem, and I look forward to seeing more of the research that comes out, but I don't think it is a deal breaker.

Mr. GONZALEZ OF OHIO. Thanks. I do think it is an important concern. I don't think we want to fully take over the banking system and have every American with a bank account, or at least I don't want that for me personally, but I am encouraged by your work and your testimony.

And I yield back. Thank you.

Chairman LYNCH. The gentleman from the great State of Ohio yields back.

The Chair recognizes the gentleman from Texas, Mr. Green, once again. Can you hear us?

Okay. I am going to go to the gentleman from California, Mr. Sherman, for 5 minutes.

Mr. SHERMAN. Thank you, Mr. Chairman. Thanks for an opportunity to participate in this task force hearing.

Mr. Dharmapalan, the American Families Plan Tax Compliance Agenda released just last month says that cryptocurrency poses a significant detection problem by facilitating illegal activity broadly, including tax evasion.

IRS Commissioner Rettig, from my town of Los Angeles, has testified that the annual tax gap in terms of what the IRS fails to collect chiefly from the top 1 percent may be as now high as $1 trillion, which means that we are seeing several trillion dollars of income concealed, which means over the year, we are seeing tens of trillions of dollars of assets concealed.

How could the Fed make sure that a digital dollar is not a tool for tax evasion? And how will you apply the Know Your Customer (KYC) and Anti-Money Laundering (AML) rules?

Mr. DHARMAPALAN. Thank you. I am also from the great State of California. Thank you, Congressman.

This is a very important question about transparency and the existence of a United States digital dollar that is visible to the Federal Reserve and the Treasury.

It is important to recognize that cryptocurrencies were set up to actually bypass the central bank and maybe even bypass existing financial infrastructure. We think that the architecture for a central bank digital currency, a United States legal tender, should be based on something other than cryptocurrencies. Cryptocurrencies is a bad model.

We have a much better model. It is called the United States dollar, and the United States dollar is a transparent instrument that protects our privacy, but also allows us to enforce KYC, AML, and CFD regulations, which, by the way, are placed upon the private sector intermediaries to manage. When legal doctrine allows for that veil to be pierced and information collected using whatever necessary court orders, we are actually able to pursue bad actors through those AML, CFD, KYC regulations.

So moving away from the cryptocurrency model, I think is important, and taking a step towards the transfer into a U.S. digital dollar is the right way to go.

So, thank you for that question.

Mr. SHERMAN. You want your digital currency to be successful. You are going to be competing against others, and one of the ways to compete is to go after the tax evasion market. Making life better for tax evaders and making sure the top 1 percent both evade law and evade jail is something that will be well-paid for in our society, as it has been for many years. And I hope that as you—as we work to develop a more popular digital dollar, that we don't get pulled into, oh, we could be more successful if we just allowed people to have anonymous accounts. And this segment of the market wants anonymous accounts. And shouldn't Americans have everything they want? They want anonymous accounts.

So I am hoping that, as we move forward with this, that the Know Your Customer rules, and the Anti-Money Laundering rules are there.

And I don't really have enough time to ask and hear the answer to a second question, so I yield back.

Chairman LYNCH. I thank the gentleman.

The Chair now recognizes the distinguished gentleman from Arkansas, Mr. French Hill, for 5 minutes.

Mr. HILL. Thank you, Mr. Chairman. Thanks for letting me participate in the hearing today. It has just been outstanding. What a great panel of witnesses who can comprehensively talk about this.

I congratulate my friend from Ohio as the ranking member of the task force. Both of you, keep up the good work.

The issue of a central bank digital currency is something that I have worked on now for 2 years. And I want to thank my friend from Illinois, Bill Foster; Congressman Bill Foster and I have been focused on talking to the Treasury and the Fed about this since 2019, during our Full Committee hearings when we heard about Libra for the first time, Facebook's previous cryptocurrency idea.

And we introduced legislation this spring that would ask the Fed to formally do a study on just what laws and regulatory changes

would be necessary for the Treasury and the Fed to collaborate on a central bank digital dollar. So, this hearing is very timely, and I congratulate the work being done by the Federal Reserve Bank of Boston and MIT.

Last year, we had a similar hearing on the task force with former CFTC Chairman Chris Giancarlo testifying. And there, I agreed with his testimony that the Fed should not have direct accounts with individuals. I found that concerning. I understand the rationale for it, but as we look for ways to increase financial inclusion—obviously, we heard testimony today about the lack of mobile phones and other issues, it is an all-of-the-above strategy. We need our Community Development Financial Institutions, our nonprofits, our credit unions, and our banks all working to break down barriers to help the underbanked and unbanked have access to the American financial system so that they can save, invest, and better manage their money, and grow in their capabilities for their families, work.

So, I don't think it is a one-size-fits-all solution. I don't think a digital account at the Fed directly with individual households is some panacea towards that. I appreciated all the comments made on that so far today.

Dr. Narula, can you talk about—you didn't really do this in your testimony—some of the negative effects, where we could have individual household accounts actually at the government-owned and operated central bank?

Ms. NARULA. Thank you, Congressman Hill, and thank you for the work that you have been doing over the last 2 years to move this discussion forward.

I think that, unfortunately, we have suffered from this binary choice that does not really need to be binary. It is not a question of only accounts at the Federal Reserve versus no accounts—no information at the Federal Reserve whatsoever. I think there is a lot of fine grain choices around exactly how a digital currency could be distributed and how to access it, and we need to find the right balance.

A key question is, who will have access? And Fed accounts are not the only way to do a direct currency. There could be benefits of something like a minimal direct model to act as a platform for innovation for the private sector, for example.

Mr. HILL. Right.

Ms. NARULA. So, I think we still have a lot of work to do to figure out exactly where that line should be drawn. It is clear we want to bring the benefits of the private sector to bear on this and we want to have that innovation available to a central bank digital currency.

Mr. HILL. Thank you. I have concerns—and they have been expressed very eloquently by other Members—about that direct access really at the retail level. I can envision it, I understand it, but I just don't think it is the right way to approach it.

I appreciate Mr. Luetkemeyer talking about how the dollar is a primary centerpiece of the international monetary system and how a competitive digital dollar plays into that. Again, my friend on the other side of the aisle, Jim Himes, and I have introduced a bill on this, the 21st Century Dollar Act. I encourage all of my friends to

co-sponsor that, again, where because of what China has been doing that we have talked about today, that this is another reason, another rationale for carefully assessing how to have a digital dollar. Because China is well-known for what they are doing in WeChat and at the retail level, but their surveillance system and their strategy to extend the R&B to beat out the dollar over the next few years is operating on real time, not just retail but across their Belt and Road Initiative around the world.

I want to thank the panel. I appreciate you, Mr. Chairman, and I yield back.

Mr. LYNCH. I thank the gentleman. The gentleman yields back.

We are going to try one last time for the gentleman from Texas, Mr. Green. If he would like to ask questions, he is recognized for 5 minutes.

He seems to be nonresponsive. I am not sure if that is a glitch or if he is just not here.

First of all, I would like to thank the Members who have participated this morning. Thank you for your thoughtful questions. But I especially would like to thank our witnesses. This has been a great group and very, very, very helpful [audio malfunction] Express yourselves extremely well and have been enormously helpful.

The Chair notes that some Members may have additional questions for this panel, which they may wish to submit in writing. Without objection, the hearing record will remain open for 5 legislative days for Members to submit written questions to these witnesses and to place their responses in the record. Also, without objection, Members will have 5 legislative days to submit extraneous materials to the Chair for inclusion in the record.

Mr. DAVIDSON. I apologize, but it looks like our chairman has dropped off, and if you are like me, we missed the closing portion of his comments. It does highlight the importance of being able to meet in person. It has been a rough year, year-and-a-half for really Planet Earth, but especially, work like this on our committee highlights both the amazing part of technology and the limitations of it. So, it will be great to be in person. As science has wafted over into the House Chambers, we are now able to gather safely, and it is a feat in its own right.

We had great testimony today. It is an honor to be joined by colleagues who raised important concerns and highlighted important considerations in this. And I thank our witnesses for all of your expertise in this hearing, and also in your written testimony. Thanks for that, and thanks for the work that you are doing day in and day out to bring attention and the right considerations to this.

As for one objection, I will say the tax policy of the United States is outside the scope of this committee, but it highlights that a shift to consumption taxes would be another way to solve this, and it would be more private. So, there are ways to solve all sorts of problems and address privacy concerns.

Thanks a lot. And without objection, I will ask that we adjourn.

[Whereupon, at 11:47 a.m., the hearing was adjourned.]

A P P E N D I X

June 15, 2021

United States House of Representatives
Committee on Financial Services
Task Force on Financial Technology

June 15, 2021
"Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies"

Written Testimony of Carmelle Cadet

Dear Chairman Lynch, Chairwoman Waters, Ranking Member Davidson, Esteemed Committee Members

Thank you for the opportunity to testify and respond to your questions on how Digitizing the Dollar, with the use of blockchain technology (a Central Bank Digital Currency (CBDC)), can address financial inclusion and equitable society initiatives while executing an efficient and more secure payments infrastructure in the United States for everyone.

My name is Carmelle Cadet, and I'm the Founder and CEO of EMTECH, a U.S.-based financial technology company helping central banks around the world use modern technology such as blockchain, cloud computing and data analytics tools to deploy inclusive and resilient financial market infrastructures.

It is my pleasure to talk to you today about how with a CBDC the United States can unleash tools and policies for economic uplifting of the unbanked, the minorities, the underserved communities, the unemployed and ultimately the nation's infrastructure itself.

This conversation is very important to me personally, given my experience as a once unbanked minority person in the U.S. As a Haitian immigrant, supported by a single mother who was paid substantially below the minimum wage, I learned first-hand the importance of financial sector access. Integration into the formal banking sector was transformative and for many like myself, represented a key step in becoming a proud American.

I am now in a position to create jobs, give something back and promote innovative 'actionable' CBDC strategies promoting using modern technology to achieve financial and economic inclusion. However, far too many Americans still struggle to get such access to safe, reliable and low-cost provision of financial services.

I understand the value of an inclusive financial infrastructure, and I see it as a duty to bring my voice to the table, given this is the key reason why I launched my company. The emergence of digital currency can be done in the image of the status quo, or we could take the opportunity to design a truly inclusive and resilient infrastructure for every person in this country. I hope this testimony will foster the latter.

And so, I hope to share with you today that CBDC should not be about disruption of the current financial sector nor is it about emulating Bitcoin and other crypto assets. Though a CBDC would significantly decrease attractiveness and uptake of these.

Crucially, CBDC in this context represents a once in a lifetime opportunity for the U.S. to revolutionize its currency infrastructure, along with many of its peers, in building a modern, resilient, efficient and inclusive cash and payment infrastructure.

Why Issue a Retail Central Bank Digital Currency?

Central Bank Digital Currency like the current money supply, can be issued for wholesale (for bank to bank transactions) or retail (banks to businesses and citizens, includes cash printed) purposes by the Federal Reserve. As stated in its initial mandate, the Federal Reserve has the role to provide payment systems infrastructure and frameworks that ensure the public's interest. The physical paper provided by the central bank today can be gradually complemented with a more easily distributed digital version. A Central Bank issued "Digital Cash" design and execution with a focus on financial inclusion, efficient peer to peer payments and government benefits distribution has the potential to foster economic development while reducing pervasive vulnerabilities associated with money laundering and cybersecurity threats.

Digital cash issued by the central bank can reflect and strengthen American values implicit in the sovereign control of currency, while enhancing the competitiveness of the US currency as well as US financial technology. Further, digital cash would allow the U.S. to maintain the dollar's role as a trusted currency in cross-border payments and remittances, while reducing the cost of these transactions.

Digital cash could be the ideal facilitating tool, in Guam for example, considering it being the 'financial powerhouse of Micronesia'. Transfer of payments via digital cash could foster robust and timely payments and government stimulus in a region reliant on US national defence, tourism and investments of Asia Pacific.

To foster a scalable and consistent digital cash distribution, existing infrastructure such as banks, non-banks and other institutions such as the US Post Offices can be key network participants to facilitate the onboarding and trusted services to achieve universal access. This also represents an opportunity for new comers and new frameworks to be tested such as:

- Fintechs accessing and servicing central bank money efficiently to cash based users
- Pension and benefits management with CBDC for the unbanked
- Feasibility of a "No phone" access to and use of CBDC

1. Equality and Financial Inclusion Policy

Financial inclusion - Access to basic digital finance - Efficient distribution

I was a bank teller and a mortgage underwriter. I value banks, but the reality is the banking business model still leaves millions of citizens underbanked, many with no access to basic bank accounts and relatedly no access to cost effective digital payments and online economy.

A report prepared for the Bank for International Settlements Committee on Payments and Market Infrastructures & the World Bank Group found that high fees are the most relevant factor affecting access to transaction accounts and their regular use. The other key factors are indirect costs – such as cost of transportation to a branch or other point of service in rural areas, low-income levels and transaction payments products that fail to meet the needs of minority end users.[1]

Hence, though traditional commercial banks have been making some financial inclusion progress there is still a significant gap, only made more felt and visible during the pandemic. Previous

[1] Committee on Payments and Market Infrastructures & World Bank Group (2016): "Payment aspects of financial inclusion" https://www.bis.org/cpmi/publ/d144.pdf

proposals have suggested that banks should be mandated to provide free accounts to lower income populations. We believe such efforts will not be as fruitful as expected based on historical experience and core business incentives of the banks. Instead, we believe that the central bank with its public mandate and financial stability objective is best placed to close this financial inclusion gap and ensure the public's interest by modernizing its cash infrastructure.

Wallet vs Account

Instead of the account-based approach, in order to achieve true inclusion, digital cash via a "Fed Wallet" should be deployed using strong frameworks around user privacy, user data and the use of open APIs in order to establish a standard to integrate the asset with the fabric of our nation through physical and digital networks such as the commercial banks, post offices, digital banks and digital payment networks including card networks and ATMs for ease of use. This cash infrastructure would better offer citizens more choices if innovators were given a central bank currency platform on which they can safely build solutions that will extend central bank money efficiently and make it universally accessible with private sector stakeholders.

The "Fed Wallet" concept here differs from the original concept of a "Fed Account" to provide more cash-like benefits such as the direct claim with the central bank, available to all without requiring an intermediary, but at blockchain level. At the digital infrastructure level.

From there, other players can provide the user interface for the citizens and at local institutions to service the new asset. According to the Bank of England, Payment Interface Providers can provide a set of services around onboarding, offboarding and conversion from and to paper cash and other digital assets based on the user's needs.[2]

This approach has the potential of making the overall financial infrastructure more resilient, setting digital money standards, maintaining a strong presence of central bank money in the economy and giving every citizen inclusive option. That is why the concept of "Fed Wallet" should be considered and tested with broad ecosystem engagement via a regulatory sandbox with financial inclusion as a clearly stated objective and outcome. The pandemic only highlighted that the financial inclusion gap needs to be closed fast and a CBDC could be the most safe and democratic way to do so.

A CBDC solution allows for direct access to digital money for everyone and crucially for those who face issues opening and/or using a bank account. With the right technological design, to which I come in a minute, digital cash (CBDC) implementation could leverage a risk-based approach to preventing money laundering, such as requiring less KYC for transactions below a certain amount, which would help keep the provision of CBDCs cost-effective and become as inclusive as physical legal tender is today.

Impact of speed

The past year has shown the importance of rapidly distributing stimulus payments directly to Americans during an economic crisis; however, the infrastructure for accomplishing those payments proved to be deficient in speed, simplicity, and effectiveness. That's why we believe that as a complement to paper cash, the United States needs to develop a digital cash infrastructure that will allow it to reach citizens directly and fast for actual efficient distributions for lower income households.

---

[2] Bank of England (March 2020): *"Central Bank Digital Currency - Opportunities, challenges and design"* https://www.bankofengland.co.uk/-/media/boe/files/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design.pdf

The speed of payments is an important element to highlight, especially as it impacts low-income households who are forced to pay extra for financial services when they find themselves in an illiquid financial position. They are either faced with costly overdraft fees or must resort to the services of illegal or informal money lenders facing predatory costs and conditions. Furthermore, those who fail to access to affordable credit might face foreclosures on their homes, creating further strain on society and the financial system.

Impact on Credit

Unbanked can't demonstrate credit-worthiness via their physical cash holding – yet, they could, for example, if they wanted their digital cash (CBDC) wallet data to be shared and weighted as a data point in credit ratings.

The Consumer Financial Protection Bureau has found that approximately 26 million Americans are credit invisible, which means that they do not have a credit record, and another 19.4 million do not have sufficient recent credit data to generate a credit score. Black and Hispanic consumers are notably more likely to be credit invisible or to have an unscored record than White consumers.[3]

Relatedly, benefits distributed via CBDC can be fast, direct, accurate and safe leading to better financial outcomes for American families and to more inclusive credit scoring. It would equally provide the government with better performance data on whether financial assistance successfully reaches those vulnerable and underserved households, while reducing fraud and waste.

Let me highlight that performance data tools for the government having oversight of its funds reaching those targeted households in need does not need to be a big brother state with detailed insights into private citizens' spending habits and personal lives. In fact, we strongly believe in the opportunity of a thoughtful CBDC design that, like physical cash, offers strict privacy, while leveraging embedded governance to combat money laundering with the use of CBDC.

2. Infrastructure and Technology

Let me now focus on the technology and infrastructure to achieve financial inclusion. Namely, cryptographic technology and blockchain. These technological tools are now famous in connection with Bitcoin and crypto currencies, where many people associate them with disruption. I would like to stress and highlight that these are outcome neutral tools that can be used for other stated outcomes like user privacy and trusted peer to peer like cash offers today.

What is Blockchain?

Blockchain is a framework that allows any asset to be tokenized - think of your candy crush or Mario games where you win tokens. In those games, one token is just that, and only usable in that game. In blockchain, a token can represent anything. In addition to enabling the tokenization of the assets, it allows issuers to pre-program how that token can be accessed, how it can be used, and what it represents. As the token is created and used, transactions are recorded on a distributed ledger. Think here of an excel spreadsheet that gets updated within seconds and that no one can change and that maintains the accounting and integrity of the activities in a transparent and trusted way.

[3] Consumer Financial Protection Bureau (CFPB) (2015): *"Data Point: Credit Invisibles"* https://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf

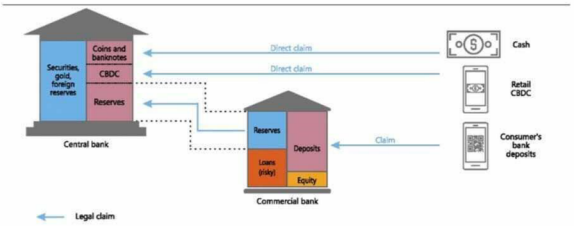
Technology, in the form of blockchain can be used as an implementation tool, to address key features not always present with traditional paper money. Both privacy and transparency along with efficient unimpeded allocation mechanisms are strengthened through Blockchain solutions. Blockchain technology can embed trust, compliance, privacy and transparency in such networks.

Blockchain with smart-contracts services can make the system more resilient by facilitating self-regulation, fostering a trusted network and peer-to-peer resilience. With a CBDC platform and infrastructure regulators do not need to approve every transaction yet guarantee good consumer protection that is scalable and safe.

Cryptographic technology can provide better solutions to data integrity, confidentiality and availability. Blockchain technology can securely embed trust, compliance, privacy and transparency. Such a CBDC platform could allow for implementing confidential transaction processing, while also allowing law enforcement to take action for accounts participating in specific transactions in an auditable way. This also ensures accountability of compliance to privacy laws.

Universal access to CBDC can be designed inclusively, such that access does not depend on smartphone ownership or status with a commercial bank. With emerging financial services technologies, people don't technically need to have a bank account with a traditional bank and not with a Fed either - to make digital payments. CBDC digital cash wallet can be available with various integration models (API or smart contract or node level) available to fintechs as well as banks in a two-tier system and them providing the distribution service making CBDC available to the users. [4] Policies should be aligned on the direct Fed Wallet option that could be managed by an "Payment Interface Providers" and support in physical locations that can support in person transactions.

Cash, electronic payment instruments, and retail CBDC — Graph 2



Cash is a direct claim on the central bank, while deposit accounts are claims on the commercial bank. Commercial banks back some of these claims by holding reserves at the central bank and have equity, but the value backing is never full. A CBDC that is unaffected by financial crisis must be a cash-like direct claim on the central bank.

Source: Authors' elaboration.

Impact on Environment and Cost

While Bitcoin has arguably high energy consumption on the scale exceeding of the country of Philippines[5], any CBDC that would be launched in the next 2 to 5 years would consider climate change, Sustainable Development Goals (SDGs) and Environmental Social Governance (ESG) for

[4] R. Auer and R. Böhme (Bank for International Settlements, June 2021): *"Central bank digital currency: the quest for minimally invasive technology"* https://www.bis.org/publ/work948.pdf

[5] Cambridge Centre for Alternative Finance (CCAF), Judge Business School, University of Cambridge: *"Cambridge Bitcoin Electricity Consumption Index (CBECI)"* https://cbeci.org/cbeci/comparisons

guidance for a government designed and operated CBDC. We are looking at the concept of a "Green CBDC" adhering to environmental goals. Cash distribution using CBDC can be operated cost effectively for the government and *close to free to customers* and with low impact on the environment.

Lower cost to consumers also refers to them not 'paying with their data'. American citizens and consumer organisations are rightly demanding more government regulation on what big tech and banking institutions do with their consumer data. We agree that stronger regulation and oversight is needed. Privacy rights are embedded in the US constitution, and they can be better protected by giving citizens back ownership of their own data. CBDC would offer a way for households to conduct digital payments via a safe and distributed network, free of monopolies. Blockchain technology can facilitate confidential transactions through smart contracts that obscure consumers' transaction details and account balances.

It's worth noting that smart contracts technology used in blockchains, can be designed for inclusion and equality as streamlined processes with smarter contracts make it easier and more efficient to connect low-income and small and medium-sized enterprises (SMEs) borrowers and lenders. They can drive financial inclusion by lowering processing costs and frictions and operational, fraud, or legal risk contribute significantly to the cost of financial services. They can also help in situations where trust is a barrier to the uptake of financial services. Smart contracts will not alleviate income inequality barriers to financial inclusion, but CBDC distributed benefits will.

3. Conclusion

As a complement to paper cash, the United States needs to invest in a Digital Cash Infrastructure that allows it to reach people directly for actual cash distribution. A blockchain-based CBDC with a distributed ledger technology offers the best option for the US to build a modern and safe currency system around its central banking structure. A clear mandate of protecting the public interest, financial inclusion and an efficient payment system for all should be clearly stated as the priority objective for the U.S. CBDC.

In order to ensure such outcomes are achieved, we see the regulatory sandbox as a strategic research tool for the Federal Reserve to engage with key stakeholders such as banks, non-banks, fintechs, Congress and even users on the concept of Digital Cash Fed Wallet.

Although many countries are exploring CBDCs for various reasons, the U.S. should lead in this innovation to solve real and acute problems domestically, which include financial inclusion and modern financial infrastructure, making the financial system safer. This will lower the cost of payments for American citizens and the U.S. government, help combat money laundering and improve the American family's P&L to uplift the entire nation's economy.

The US should lead in CBDC research and development, not simply follow or play catch up, but harness its strength in executing public and private partnerships that will establish an unmatched foundation that can provide a competitive advantage on the global stage.

eCurrency

United States House of Representatives Committee on Financial Services

Task Force on Financial Technology

Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies

June 15, 2021

Testimony of Jonathan Dharmapalan - Founder and CEO, eCurrency

Introduction

Chairman Lynch, Ranking Member Emmer, Chairwoman Waters, Ranking Member McHenry, and members of the Task Force; I would like to thank you for holding this hearing and inviting me to testify. It is critically important for Congress to investigate the foundational aspects of a Central Bank Digital Currency and to understand how a CBDC should be designed in order to maximize its benefits. I am honored to have the opportunity to discuss this important topic and I am are here to urge Congress to give the Federal Reserve and the Treasury the authority they need to create a digital US dollar and to set the standards for how a US CBDC should be created, how it should function, and what policy goals it should address. The good news is; the rules for how a digital currency should work are largely an extension of the rules for physical currency as they exist today. In other words, the model for central bank issued digital currency is central bank issued cash.

Background on eCurrency

My name is Jonathan Dharmapalan and I am the Founder and CEO of eCurrency; a digital security company and technology infrastructure provider, founded solely to create the technology to allow central banks, such as the US Federal Reserve, to issue Central Bank Digital Currency. We are not a cryptocurrency company and we do not issue any coin, stable coin or currency of our own. We believe that only the United States government can issue a digital US dollar and that the Federal Reserve and Treasury alone should have that authority.

eCurrency has spent years consulting with monetary policy experts and central banks around the world in order to determine how a CBDC should function. Through our research and pilot programs with central banks, we have concluded that the best

approach is that CBDC should be modeled after physical currency (paper notes and coins) and should operate on the same rails that currently exists for the creation and distribution of physical money into the economy. This sentiment is shared by many of the thought leaders on this topic, including the Bank for International Settlements (BIS) and the International Monetary Fund (IMF).

Clear Policy Objectives

A foundational element for introducing a CBDC is understanding its purpose: What can a CBDC be used for, how can it be used, and what potential value does it provide? A recent Bank for International Settlements report highlighted a number of potential benefits for a CBDC. These include enhancing payment system resiliency, increasing payments diversity, encouraging financial inclusion, and improving cross-border payments.

Central bank interests in CBDC research and experimentation varies significantly. However, these interests generally fall into two broad categories. One set of central banks is primarily looking to address present-day challenges, while for others it is exploring future capabilities. For some jurisdictions, a CBDC is intended to address a specific problem — inefficient payment systems, weak banking infrastructure, or declining cash use — or to promote national policy goals, such as supporting payments inclusion and protecting monetary sovereignty. For many advanced economies, the primary motivations are centered on potential payments innovation and general preparedness for a potential future state when digital transactions become the predominant mode of commerce.

For the United States, whatever specific objectives may arise for a CBDC, they should be consistent with the Federal Reserve's longstanding objectives of the safety and efficiency of the nation's payments system, as well as monetary and financial stability. A CBDC arrangement must be in keeping with these objectives, which have guided the central bank since its establishment in 1913. These objectives should be complemented by the three foundational principles recently outlined by the Bank of Canada, European Central Bank, Bank of Japan, Sveriges Riksbank, Swiss National Bank, Bank of England, and Federal Reserve to "do no harm"; complement existing forms of money; and support innovation and efficiency. A CBDC arrangement should also support the Federal Reserve's broader work in consumer protection and community development.

Key Considerations

Financial Inclusion

A key requirement for a CBDC must be that it is accessible from a variety of digital payment vehicles. Any CBDC must be able to operate within the existing payment rails of the financial system including bank accounts, apps, and payment cards, while extending to smartphones, QR codes, and other innovative ways to store digital objects. The key to promoting financial inclusion with a CBDC is interoperability. If the CBDC is designed to work across platforms and utilizing all available high- and low-tech solutions, it will provide the options necessary to allow previously disengaged users into the financial system. The result will not be that existing participants move to new platforms but that more users are able to engage with the digital financial system overall.

Responding to Private Digital Currencies

By issuing a CBDC the US can provide a stable alternative to currently available private digital currency like cryptos and stable coins. These options are not stable stores of value and are not suitable for use in day-to-day transactions. A federally issued digital form of the US dollar would serve as an alternative to the rise of these private digital currencies and provide consumers with the safety and stability that physical US dollars do today.

Protecting Privacy

Privacy is an important consideration for a CBDC. Digitalization of currency has many benefits and can be an immensely powerful utility, however if it is not implemented properly, it has the potential to invade individual and societal privacy. One of the common misconceptions about Central Bank Digital Currency (CBDC) is that it is antithetical to privacy. This misconception derives from the idea that the technology behind CBDC must be either a centralized ledger account (an account held at the Federal Reserve by the public) or a distributed ledger technology derived from the blockchain architecture of Bitcoin. Both approaches are based on a "ledger" and since the ledger associates the user with the value they are holding, neither approach ensures privacy. Any CBDC implementation must be able to protect individual privacy and personal information in accordance with the law. It is possible, using a model based on the functionality of cash, to ensure privacy is protected. The Federal Reserve would not need to collect user information and the private sector participants, including banks and digital wallet providers, would manage AML/CFT and KYC, just as they do today.

Ensuring US Leadership in Digital and Financial Technology

The US has the opportunity to set the rules for how digital currencies function in the international financial system. We understand how China plans to use its CBDC to surveil users and to attempt to sidestep the US dollar's position as the world reserve

currency. The US can develop its CBDC to be a model for upholding privacy, promoting inclusion, and increasing innovation. This will undoubtedly assure that the US dollar continues to be the global standard in financial instruments.

Strong Legal Framework

A strong legal framework for the creation and the issuance of US dollar currency is clearly codified in the law. Today our cash currency comes in the form of notes and coins. This legal framework presents an opportunity to extend existing laws and practices to include a digital currency. The responsibility to securely produce notes and coins is placed on the Treasury of the United States. Extending that responsibility to the production of CBDC would be a natural extension of the role of the Treasury. The Federal Reserve can then fulfil its subsequent role as the issuer and distributor of the CBDC.

A principal role of the Federal Reserve in the U.S. financial system is to be the guardian of public confidence in money; hence the same sound legal framework is a key precondition. It serves as the bedrock that enables users of a general-purpose CBDC and the market more broadly to be confident that the instrument they use to transfer value is robust and reliable, functions smoothly and securely, and comes with clear rules and protections for the payment recipient and for the consumer. Any cracks would undercut the public's trust in the CBDC. Critical first steps toward building such a sound legal framework include formulating a clear position on the legal issues highlighted below.

Clear legal authority. A first-order consideration is whether the issuance of a general-purpose CBDC would be consistent with the Federal Reserve's mandates, functions, and powers as enshrined in the central bank law, namely the Federal Reserve Act (FRA). The central bank exercises only powers and functions authorized under the FRA. For example, the FRA authorizes the Federal Reserve to issue Federal Reserve notes and to provide payment services to depository institutions and certain other entities. Consideration would need to be given as to whether additional amendments to the FRA would be required related to the issuance of a general-purpose CBDC.

Legal tender status. The topic of legal tender status is often raised in the context of CBDCs. In the United States, that status has specific meaning. By statute, all currency issued by the Federal Reserve is a valid and legal offer of payment for settling "debts" to a creditor. It is important to note that neither the statute nor any other federal law compels an individual or private business to accept currency or coins as payment for goods and services. Rather, these private-sector entities are generally free to develop their own policies on whether to accept cash, within the boundaries of any applicable state law and with appropriate notice. Although the status of CBDC as legal tender under U.S. law remains an open question, a general-purpose CBDC's recognition as legal tender would not guarantee its acceptance in commercial use; that would largely

depend on the credibility of the CBDC, including the soundness of the legal framework underpinning it (for example, commercial law rules that facilitate market activities).

Privacy. It is both customary and an intrinsic feature of cash that transactions between parties remain private. In a CBDC environment, that privacy may not be a given and cannot be taken for granted. It will be essential to consider how privacy is respected and how personal data is protected in a CBDC arrangement. Legal requirements vary, depending on the role a particular party plays in handling or processing a payment transaction–whether the party is a bank, service provider to a bank, affiliated party, or communication provider. Depending on the design of a CBDC and the extent of the central bank's role in the arrangement, the central bank could have access to an unprecedented scale of granular transaction information; possibly, transactional data could be available to certain third parties (like banks and service providers) or, in the extreme, to everyone. This close linkage between money and data contrasts with physical banknotes, which do not carry with them transaction data that can be connected to a specific person and their history of financial dealings. The legal framework for privacy as it pertains to CBDC would require specific attention by it framers.

Anti-money laundering, countering the financing of terrorism, and addressing sanctions evasion. It is critical that such a legal framework, as a precondition, includes approaches to combatting money laundering and countering the financing of terrorism so as to mitigate the risk that the CBDC could become a favored medium for illicit activities, particularly given the ease and speed at which potentially large amounts of money could be transferred. As a point of comparison, illicit activities in connection with virtual currencies are not just limited to direct use in transactions to commit crime or to support terrorism (such as buying and selling illicit things), but also include use by bad actors to launder their illicit proceeds or hide financial activity from authorities (such as law enforcement, national intelligence, tax, or economic sanctions authorities).

Broad Stakeholder Support

Developing a CBDC requires input, engagement, and support from a range of stakeholders in both the public and private sectors and contributes significantly to market readiness. Though full agreement among stakeholders is likely impossible, an inclusive discussion and general consensus is a precondition. Key stakeholders include government bodies, end users, financial institutions, technology and infrastructure providers, academia, and standards development organizations. Broad stakeholder support will take time to achieve given the diverse interests involved and the number of complex decisions that will need to be made on system design and ecosystem development.

Government bodies. Governmental support is essential to facilitating the legal and societal changes that would be needed for the introduction of a CBDC. The legislative and executive branches of government would need to make critical decisions affecting the design and implementation of a CBDC. Consideration by Congress, for example, must be given to key areas such as the authority of the Federal Reserve to issue a general-purpose CBDC, the potential sea change in the relationship of the central bank with the public, and potential legislative changes related to contract law, privacy, and consumer protection. Executive branch support is also needed from federal agencies on a number of design and implementation issues, including those related to tax, public spending, counterfeiting and fraud, anti-money-laundering, and cybersecurity. Coordination and harmonization of regulatory frameworks across various jurisdictions would also require the support of government at both the federal and state levels.

End users. Usability will be key given that a general-purpose CBDC must be designed for the people and organizations who use money to pay for goods and services. Including end users of various ages, geographic locations, payment habits, and financial literacy in the design and testing of a CBDC could help sharpen the basic features of a viable CBDC arrangement. For example, how will people use a CBDC–through a smartcard, smartphone, fingerprint, iris scan, or something else? Why would they choose a CBDC over another payment instrument? To make a CBDC that appeals to merchants, its designers will need to include benefits for retail transactions. These might include being a less expensive and faster alternative to existing payment options.

Engaging with individuals and businesses and consulting with consumer groups, community organizations, and business associations to understand the use case for a CBDC will help in the decision whether to issue a CBDC and its potential design. End-user input on privacy and usability would be particularly useful in designing a CBDC. Questions related to privacy would include identifying what type of information is kept on the system, who owns the information, who has access to it, and how it can be used. End-user input on security will also be important depending on the design on the system. For example, how much responsibility does the end user want when considering the tradeoffs that may need to be made with consumer protection and loss allocation?

Financial Inclusion. Additionally, while the current payments system works well for most, a CBDC could help address unmet needs. According to a 2019 Federal Deposit Insurance Corporation report, 5.4 percent of American households had neither a savings nor a checking account, which means they might not have direct access to the bank-intermediated payment system. A recent Federal Reserve Bank of Atlanta report noted that "access to digital payment vehicles that don't depend on traditional bank accounts" may be an effective approach to addressing the needs of unbanked Americans. Although a significant group of Americans are unbanked, they can and are participating in digital payments utilizing nonbank mobile money service providers. As such, the digital dollar would help advance financial inclusion by introducing a CBDC instrument

which can be used across different bank and nonbank payment networks. Moreover, transactions data could be used by financial intermediaries for information-based risk assessment for lending purposes, which would also be positive for financial inclusion. Engaging with end users or the groups that represent unbanked Americans can help determine whether or how a CBDC could be designed to support payment inclusion goals.

Financial institutions. Introduction of a CBDC could result in significant changes to market structure and dynamics. There are important questions about the potential role of banks and other financial institutions in a CBDC arrangement. A CBDC might affect commercial bank deposits, bank credit, and the broader financial system. However, it is also possible there would be little to no disruption to the banking sector, depending on the features of a CBDC and how it is implemented. Engaging broadly with financial institutions of many types, from global systemically important banks to local community banks to internet-only banks, would inform policymakers on potential impacts, benefits, design considerations, and policy requirements.

Technology and infrastructure providers. Technology and infrastructure firms play a significant role in today's market, and support from these groups is a precondition of a CBDC issuance. A potential CBDC may take many different forms, some of which could be achieved through existing technology and infrastructures. Or it could use newer technologies, such as distributed ledgers, that are not widely used today. Or it could use a combination of existing and new technologies. CBDC arrangements may also allow or accelerate the entry of new providers, such as bigtech and fintech, into payment or other financial services. Incumbent firms that are unable or unwilling to embrace or develop new capabilities may experience negative impacts as new entrants emerge. Understanding these dynamics will inform design choices and help address questions of CBDC design, interoperability, market structure, and market adoption.

Others. Other stakeholders, such as academic institutions, think tanks, standards organizations, and the international community, can inform and support the foundations of a CBDC. Academic institutions and think tanks can provide thought leadership to inform policymaking. Standards organizations can contribute by defining terms, developing taxonomies, and creating specifications and standards in support of the broader ecosystem. The international community, such as other central banks and policy makers, is also important given the role of the U.S. dollar in international trade and finance as well as the opportunity to learn from CBDC pilots or initiatives in various jurisdictions. Other questions include how visitors and foreign businesses might access a CBDC, how it could be used offshore, and what rules should govern this type of use.

eCurrency

Congress needs to set the rules

The foundation of a CBDC must be derived in policy. Congress needs to set the standards by which the technology developed to create CBDCs are evaluated. It is our view at eCurrency that the technology solution should follow the laws and standards laid out by Congress, the Federal Reserve, and the Treasury and that these entities should not develop standards in order to conform with one technology's capabilities. In other words, the government should enumerate what standards a CBDC should meet and require that technology providers comply.

What should a CBDC look like?

In order to address the needs of the economy and represent an improvement on the current financial system a CBDC should achieve the following:

- **Creation** – CBDC should be created under the control of Treasury and the security technology used to create digital currency should remain under the control of the Secretary of the Treasury.
- **Issuance** - The issuance of the digital currency should be recognized as a liability of the Federal Reserve and it should remain fully fungible with Federal Reserve notes.
- **Distribution and Interoperability** – The digital currency should be distributed using secure technology to commercial banks and made accessible via existing payment systems
- **Security** – The digital currency must be safeguarded against counterfeiting and quantum computing risks through the use of both appropriate security technology
- **Resilience** – The digital currency needs to be resilient from operational disruption
- **Oversight** – The Federal Reserve and the Treasury will govern, control, and oversee the digital currency
- **Settlement** – The digital Currency must achieve instant and final settlement
- **Efficiency** – The digital currency should be capable of scaling massively with minimal energy consumption
- **Accessibility** – Users of the digital currency must have 24/7/365 access to digital currency through bank and non-bank payment service providers. It should be accepted by individuals and businesses, fungible with other forms of legal money

- **Inclusivity** – The digital currency must be accessible to and used by individuals who are unbanked or have limited engagement with the financial system
- **Ease of Use** – Digital currency should be able to be stored and used in the most convenient and intuitive ways through e-wallets, payment cards, smart phones, QR codes, etc.
- **Privacy** – The personal/identifying information of users must be protected in accordance with the law
- **Reporting by Intermediaries** – Financial integrity should be safeguarded through AML/KYC/CTF compliance using existing reporting systems of financial intermediaries
- **Stability and Transaction Limits** – The digital currency should meet financial system stability considerations by the ability to set e-wallet holding and transaction limits
- **Programmability Experience** – The digital currency's applications layer should be programmable by financial intermediaries to meet contractual obligations and for customer-facing services
- **Green CBDC** – The CBDC should aim to be 'green' in terms of a low-carbon footprint, which could be measured by the energy use per transaction.

What can Congress do now to advance our progress towards a CBDC?

In order to advance our understanding of CBDCs and encourage the study of a digital US dollar, Congress should take the following steps:

- Congress needs to address the definition of legal tender in the US code to add digital currency to the current standard of notes and coins.
- Congress should also clarify the roles of the Federal Reserve and the Treasury in the creation and issuance of digital currency. In order for digital currency to work it must function the same way as cash which is created by the Treasury and issued by the Federal Reserve.
- As previously mentioned, Congress must set the standards by which a digital currency will be created and set up policy goals that one should achieve.
- Congress should also encourage the Federal Reserve and the Treasury to initiate a digital US dollar pilot program and appropriate funds to carry it out. The results of this pilot can then be reported back to congress to inform its policy decisions.

Conclusion

Issuing a CBDC in the United States would not be an easy task. A number of foundational elements would be required. Having clear policy objectives is key in guiding the design of a CBDC. Establishing broad stakeholder support is needed to affect the social and legal changes needed to refine how society thinks about money and how Americans use it. A strong legal framework must provide the legal basis for the issuance, distribution, use, and destruction of a CBDC. Moreover, a CBDC must be supported by robust technology that ensures its safety and efficiency. Lastly, market readiness is needed for widespread acceptance and adoption. These preconditions, and the work it takes to achieve them, are interconnected such that efforts in one area may lead to developments in another. These developments could strengthen or weaken the forces for change towards a general-purpose CBDC issuance. Each of the preconditions on its own will take significant time to achieve, and these preconditions represent only a starting point. Fortunately for us the model for a safe and secure currency that meets all of these requirements is already in place. It is the model we use for issuing cash (notes and coins). We do not have to invent a new model. If we demand that the most secure digital technology is leveraged to support the digital dollar, we can enable a safe and secure CBDC in the United States.

Testimony before the
U.S. House of Representatives Committee on Financial Services
Task Force on Financial Technology

Regarding

"Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies"

June 15, 2021

Dr. Jenny Gesley, LL.M. (U Minn.)
Foreign Law Specialist
Law Library of Congress

I. Introduction

Task Force Chairman Lynch, Ranking Member Emmer, and distinguished members of the Financial Technology Task Force, it is an honor for me to appear before you today to testify regarding digitizing the dollar. My name is Jenny Gesley and I am a Foreign Law Specialist at the Law Library of Congress. I have previously worked at the chair for money, currency, and central bank law at the University of Frankfurt, Germany, and I hold a Ph.D. in law in the area of financial market supervision. In my testimony today, I will provide an overview of different design choices for central bank digital currencies (CBDCs), reasons in favor of and against adopting a CBDC, and some legal, economic, and technical considerations. I will use examples from other countries to illustrate these points.

Technology and digitalization are changing the way we pay. The COVID-19 pandemic has only accelerated the trend away from cash to digital payments. Cryptocurrencies, such as Bitcoin, are experiencing an all-time high. However, we have also seen the volatility of cryptocurrencies when the price of Bitcoin dropped by almost 30% after concerns about tighter regulations and Tesla's announcement that it would not accept Bitcoin as a means of payment anymore.

Central banks are taking note of these developments. On October 20, 2020, the Central Bank of The Bahamas (CBB) launched the first worldwide retail CBDC, the Electronic Bahamian Dollar ("Sand Dollar").[1] Its purpose is to "promote more inclusive access to regulated payments and other financial services for unbanked and underbanked communities and socio-economic groups within the country."[2] The People's Bank of China (PCOB) recently became the first central bank of a major economy to roll out a digital RMB in several major cities.[3] Sweden's Riksbank announced that it will bring in commercial banks and other market participants in the next phase of its e-krona project to test how it might work practically.[4] The United Kingdom (UK) and the European Union (EU) are also performing exploratory work on a potential retail CBDC, but have not yet made a decision on whether to introduce one.[5] With regard to wholesale CBDCs, the Bank for International Settlement (BIS) Innovation Hub, the Swiss National Bank, the Bank of France, and a private sector consortium announced on June 10, 2021, that they would investigate the potential benefits and challenges of a wholesale CBDC in settling cross-border payments and digital financial instruments ("Project Jura").[6]

---

[1] *Digital Bahamian Dollar*, Central Bank of The Bahamas, https://perma.cc/RPX5-BNQP.

[2] Id.

[3] David Olsson et al., King & Wood Mallesons, *China's Digital RMB – Is Your Business Ready?*, China Law Insight (May 11, 2021), https://perma.cc/UB27-EPWB; PCOB, 中华人民共和国中国人民银行法（修订草案征求意见), draft art. 19, https://perma.cc/7GF9-NSZM. Draft article 19 states: "Renminbi includes both physical and digital forms."

[4] *E-krona*, Sveriges Riksbank (last updated Apr. 29, 2021), https://perma.cc/3MU8-LWMF.

[5] Press Release, Bank of England [BoE], Bank of England Statement on Central Bank Digital Currency (Apr. 19, 2021), https://perma.cc/XV4A-QU3W; *A Digital Euro*, European Central Bank [ECB], https://perma.cc/BWN4-EX5P.

[6] Press Release, Bank for International Settlement [BIS], Bank for International Settlements Innovation Hub, Swiss National Bank and Bank of France Collaborate for Experiment in Cross-Border wCBDC (June 10, 2021), https://perma.cc/UH72-XJ6K.

One of the main functions of central banks is to ensure monetary and financial stability in their respective jurisdictions and to promote broad access to safe and efficient payments. A core instrument by which central banks achieve these objectives is by providing central bank money. Traditionally, central banks have limited access to digital account-based central bank money (a.k.a. reserves or settlement balances) to banks and certain other financial or public institutions. By contrast, physical central bank money, meaning cash, is widely accessible. In some jurisdictions, however, the use of cash is decreasing, with the possibility of its complete disappearance, implying that the public would no longer have wide access to central bank money. That is one of the points where central bank digital currencies (CBDCs) come into play. However, reasons for adopting a CBDC and design choices depend on many different factors and are different in individual jurisdictions. Differences also exist between emerging market economies and advanced economies.

II. Overview of Central Bank Digital Currencies (CBDCs)

A. Definition

There is no official definition of CBDCs. The BIS defines it as a "digital form of central bank money that is different from balances in traditional reserve or settlement accounts."[7] Generally, CBDCs have the following three characteristics. They are

- electronic money issued by the central bank,
- denominated in the national unit of account, and
- a liability of the central bank.

B. Worldwide Progress on CBDCs

A 2021 survey conducted among 65 central banks by the BIS found that 86% of survey participants were actively researching the benefits and drawbacks of CBDCs, with 60% conducting experiments or proofs-of-concept and 14% moving forward to development and pilot projects.[8] The survey also found that seven out of eight central banks in advanced stages of CBDC work were in emerging market and developing economies (EMDEs). As mentioned, the Central Bank of The Bahamas was the first central bank worldwide to launch a retail CBDC. Other Caribbean central banks, such as the Bank of Jamaica (BoJ) and the Eastern Caribbean Central Bank (ECCB) also recently announced the launch of their CBDC pilot projects on March 22, 2021, and March 31, 2021, respectively.[9]

Another question to consider is whether consumers are ready for a CBDC. A 2019 global opinion poll from the Official Monetary and Financial Institutions Forum (OMFIF) on public trust in

---

[7] BIS, Committee on Payments and Market Infrastructures, *Central Bank Digital Currencies* (Mar. 2018), https://perma.cc/5TCR-58RB.

[8] BIS, BIS Papers, No 114, *Ready, Steady, Go? – Results of the Third BIS Survey on Central Bank Digital Currency* (Jan. 2021), https://perma.cc/P8UQ-2HNW.

[9] Press Release, Bank of Jamaica [BoJ], BoJ Prepares for Central Bank Digital Currency (Mar. 22, 2021), https://perma.cc/4V34-LRXW.; *About the Project*, DCash. An ECCB Initiative, https://perma.cc/VJX4-JBFV.

monetary institutions, payment characteristics, and digital currency across 13 advanced and emerging countries found that in almost all countries, respondents indicated that they would feel most confident in digital money issued by the domestic monetary authority.[10] Respondents globally expressed a lack of confidence in digital money issued by a tech or credit card company, which was particularly true for respondents from advanced economies. Across all countries, respondents were unanimous in citing safety from fraud and theft as the most important feature. Second were privacy protections. Speed was the least important characteristic. In general, emerging market respondents were much more open to digital money than their advanced-economy counterparts.

C. Design Choices of CBDCs

Among other decisions, central banks adopting a CBDC have to consider the different design choices. In particular, the questions of access, degree of anonymity, operational availability, interest bearing characteristics, limits or caps on individual holdings, and technical solution have to be taken into account. In general, there are two models under discussion: a wholesale CBDC, where access would be limited to a predefined group of users, and a retail CBDC (also called general purpose CBDC), which would be widely accessible and be a digital equivalent of cash for use by end users. The choice between a wholesale and a retail CBDC depends on many different factors and differs from jurisdiction to jurisdiction.

D. Reasons for Adopting a CBDC

Reasons for adopting a CBDC also vary from jurisdiction to jurisdiction. Among the reasons are

- declining cash usage in some jurisdictions, such as Sweden;
- improved financial inclusion for unbanked and underbanked communities, especially in EMDEs, such as the Caribbean jurisdictions;
- a general interest in technological innovations for the financial sector and making the payment system more efficient and instantaneous;
- the fear that central bank money in transactions will be displaced with private digital tokens such as cryptocurrencies in general or stablecoins issued by corporations, such as Facebook's diem; and
- the risk of a "digital dollarization" related to cross-border CBDCs. Dollarization is shorthand for the use of any foreign currency by another country and has an impact on the domestic central bank's ability to conduct monetary policy and ensure financial stability.[11]

However, central banks that decide to move forward with a CBDC due to one of these reasons, must make several legal, economic, and technical considerations. I will outline some of these considerations below.

---

[10] Bhavin Patel & Pierre Ortlieb, *Digital Currencies. A Question of Trust. An OMFIF Report on Global Public Confidence in Monetary, Financial and Payment Institutions* (2020), https://perma.cc/8XCX-XXFW.

[11] Andrew Berg & Eduardo Borensztein, *Full Dollarization. The Pros and Cons*, Economic Issues No. 24 (Dec. 2020), https://perma.cc/5GJU-7TFL.

1. *Legal Authority of the Central Bank/Legal Tender Status of CBDCs*

Not every central bank has the legal authority to issue a digital currency. It might therefore be necessary to amend the central bank act or other law that authorizes the domestic central bank to issue the currency of the country. In addition, a clarification that the digital currency will also have legal tender status as the physical currency, if so desired, might have to be enacted. The 2021 BIS survey found that 26% of the surveyed central banks do not have the authority to issue a CBDC and that 48% were unsure.[12] If the central bank law is ambiguous, an amendment is necessary to avoid any questions about the legality of issuing a CBDC. In the Bahamas, the Central Bank of The Bahamas Act, 2020 (CBBA) was amended to provide the CBB with the legal authority to issue the Sand Dollar and to make both notes and digital currency legal tender.[13] Among others, the Bank of Jamaica, the PCOB, and the Bank of Russia are preparing amendments to their respective legislation to give the central bank the sole right to issue the digital currency as legal tender.[14]

2. *Compliance with Anti-money Laundering and Counter Terrorism Financing (AML/CFT) Requirements/Privacy Considerations*

Compliance with AML/CFT requirements is of concern with regard to anonymous CBDCs. A completely anonymous CBDC therefore seems not feasible. However, people prefer cash, because of its anonymity, among other reasons. As the 2019 opinion poll from OMFIF showed, privacy protections were the second most important feature for respondents. CBDCs would therefore have to provide something equivalent to the benefits of cash, while balancing the need to comply with AML/CFT requirements. The Chinese digital RMB will reportedly have conditional anonymity and support for dual offline payments, meaning that both payor and payee can be offline.[15] Conditional anonymity means that the data provided by the users would be tiered depending on the type of digital wallet (basic or premium) and data access would be restricted, such as that only the PBOC will know the identity of the user.[16] However, it should be noted that the proposed Chinese digital RMB would reportedly use a centralized solution, providing less anonymity than other proposed solutions.[17]

3. *Flight from Commercial Banks to Central Banks ("Digital Run")/Disintermediation of Commercial Banks*

Adopting a CBDC could have negative effects on the commercial banking sector. During a systemic banking crisis, holding risk-free central bank issued CBDCs could become vastly more

[12] BIS, supra note 8, at 10 et seq.

[13] Central Bank of The Bahamas Act, 2020 (CBBA), Extraordinary Official Gazette, July 27, 2020, art. 5, para. 1(h) & para. 1(p), art. 8, para. 1, art. 12, https://perma.cc/6TDW-VEGX.

[14] BoJ, supra note 9; Bank of Russia, Digital Ruble Concept 29 (Apr. 2021), https://perma.cc/5G87-T8CY; PCOB, supra note 3.

[15] Olsson et al., supra note 3.

[16] Id.

[17] Id.

attractive than bank deposits at commercial banks. As a result, there could be a sector-wide run on bank deposits, magnifying the effects of the crisis ("digital run").[18]

Furthermore, there is a risk of disintermediation of the banking sector depending on what CBDCs would substitute. If households substitute banknotes with CBDCs, then the change to central bank and commercial bank balance sheets would be marginal. However, if households substitute commercial bank deposits with CBDCs, then this would imply a funding loss for commercial banks. Commercial banks would have to try to offer better conditions on their deposits in order to protect their deposit base as much as possible – but this would imply higher funding costs for banks which would most likely be passed on to consumers.[19]

The Electronic Bahamian Dollar provides insight into possible solutions to counter these problems. The draft Central Bank (Electronic Bahamian Dollars) Regulations, 2021 provide that to constrain the ability of the Sand Dollar wallets to substitute for deposit accounts, the CBB would be empowered to suspend the withdrawal of deposits or limit the maximum amount of withdrawals; however, not exceeding seven days.[20] After this time at the latest, other measures to ensure financial stability would need to be enacted.[21] In addition, no interest would be paid or any other benefit awarded related to digital currency held in mobile wallets in order to make them less attractive than deposit accounts.[22] Furthermore, the CBB would be empowered to limit the amount of the digital currency that individuals, businesses and other non-supervised financial institutions can hold.[23]

4. Risks to Central Bank Independence

During emergencies, a central bank could agree to act as a government agent and execute CBDC fund transfers on the government's behalf to individuals and businesses. For example, it has been suggested to use CBDCs as a way to deliver stimulus packages to households and businesses during the Covid-19 pandemic ("helicopter money").[24] However, helicopter money is a form of fiscal policy, suggesting that the lines between monetary and fiscal policy could become blurred. One of the reasons for central bank independence is to shield it from undue influence of politics.

---

[18] BIS, Committee on Payments and Market Infrastructures, Markets Committee, *Central Bank Digital Currencies* (Mar. 2018), at 16, https://perma.cc/KGZ4-WPLQ.

[19] Ulrich Bindseil, *Tiered CBDC and the Financial System*, ECB Working Paper Series No. 2351, at 9 (Jan. 2020), https://perma.cc/M6T5-NMN8.

[20] Central Bank of The Bahamas, *Consultation Paper: Proposed Legislation for the Regulation of the Provision and Use of Central Bank Issued Electronic Bahamian Dollars*, proposed regulation no. 18, https://perma.cc/GNT3-XG2J. The finalized regulations were supposed to be issued by May 1, 2021, however, they have not been published to-date.

[21] Id.

[22] Id. proposed regulation no. 15.

[23] Id. proposed regulation no. 19.

[24] See e.g. H.R.6321 - Financial Protections and Assistance for America's Consumers, States, Businesses, and Vulnerable Populations Act, https://perma.cc/2D7J-93H9; S.3571 - Banking for All Act, https://perma.cc/ZW5U-KVPC.

5. Technical Solution

In general, there are two ways to design a retail CBDC. A retail CBDC could either be offered as a digital currency token or in the form of a deposit account with the central bank.[25] A digital currency token would circulate in a decentralized way without central ledger using distributed ledger (DLT) technology, such as blockchain. Sweden's central bank announced that they would most likely employ a DLT solution, whereas the Bank of Jamaica for example stated that their CBDC option will not use blockchain, but rather be fully integrated with the Bank's existing financial market infrastructure.[26] Similar to cash, such an option would provide more anonymity, because the central bank would not know who currently holds the token.[27] The Chinese digital RMB would reportedly not use blockchain technology but be designed as a centralized digital currency, providing less anonymity.[28]

A second option would be establishing deposit accounts with the central bank for all households and businesses.[29] The actual servicing and technical maintenance of the accounts could be assigned to one or several third party providers. Such a solution would provide advantages for unbanked communities that do not have a regular deposit account.

6. Financial Inclusion

Improved financial inclusion for unbanked and underbanked communities is one of the main reasons EMDEs consider adopting a CBDC. However, these considerations can also be applied to other countries where parts of the population have no access to traditional banking services. The Central Bank of The Bahamas cited financial inclusion as one of the critical goals of the Sand Dollar. In order to achieve this goal, the draft regulations would require all wallet providers to provide basic wallet services to all persons at no cost, to establish a financial inclusion strategy, and to provide the central bank periodically with financial inclusion data.[30] Furthermore, they would empower the central bank to intervene if services are withdrawn by a wallet provider or no services are provided in certain locations.[31] In such a case, the central bank would designate a wallet provider to provide services.[32] Furthermore, in addition to traditional commercial banks, co-operative credit unions, money transmission businesses, and payment service providers can apply to become wallet providers, thereby expanding options for unbanked or underbanked communities.[33] As of mid-March, nine wallet providers had completed the cybersecurity

---

[25] Bindseil, supra note 19, at 4.

[26] *The E-krona Pilot – Test of Technical Solution for the E-krona*, Sveriges Riksbank, https://perma.cc/RV6T-787N; BoJ, supra note 9.

[27] Bindseil, supra note 19, at 4.

[28] Olsson et al., supra note 3.

[29] Bindseil, supra note 19, at 4.

[30] Central Bank of The Bahamas, supra note 20, proposed regulation nos. 7(a), 11(2), 19(4).

[31] Id. proposed regulation no. 9(8).

[32] Id.

[33] Id. proposed regulation no. 4.

assessments of their technology systems and had been cleared to distribute the Bahamian CBDC.[34]

However, a CBDC that would replace cash could have negative effects for financial inclusion. Central banks therefore have tried to ease these fears by pointing out that a CBDC would not replace cash, but be introduced as a complement to cash and central bank deposits. Even though the ECB and the Bank of England are only in the exploratory stages of a CBDC, public statements and reports made sure to emphasize this point.[35]

[34] Press Release, CBB, Consumer-Centric Aspects of the Proposed Regulations for the Bahamian Digital Currency (Mar. 26, 2021), https://perma.cc/CDJ6-U4BX.

[35] ECB, *Report on a Digital Euro* 6 (Oct. 2020), https://perma.cc/7QBJ-WEGR; BoE, supra note 5.

Testimony before the

U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON FINANCIAL SERVICES
Task Force on Financial Technology

Hearing on

"Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies"

June 15, 2021

Rohan Grey
Assistant Professor of Law, Willamette University

Introduction

Thank you Chair Lynch, Ranking Member Davidson, and members of this Task Force, for the opportunity to testify today. My name is Rohan Grey. I am an Assistant Professor of Law at Willamette University, where I research money and technology, specializing in the design and regulation of digital fiat currency.[1]

I also serve as a Vice-Chair of the Policy and Governance Working Group at the Digital Currency Global Initiative, a partnership between Stanford University and the United Nations' International Telecommunications Union. In that capacity, I work with policymakers and industry representatives from around the world to develop and harmonize technical and regulatory standards concerning digital fiat currency, with a focus on privacy, identity, and on-boarding issues.

As the author of a forthcoming book titled "Digitizing the Dollar: the Battle for the Soul of Public Money in the Age of Cryptocurrency" (Melville House, 2022), I am grateful for the opportunity to participate in a hearing that shares its title, and to offer my personal views on the technological infrastructure, privacy, and financial inclusion implications of publicly issued digital currencies. I am also thrilled to be joined by such esteemed co-panelists, including my friend Jonathan Dharmapalan, with whom (in the

1 Thanks to Galin Brown, Mary Rumsey, and the rest of the wonderful Willamette University College of Law library team for their research assistance.

interests of disclosure) I co-authored a white paper on the macroeconomic policy implications of digital fiat currency back in 2017.[2]

1. Situating CBDC Within a Broader Vision of Digital Fiat Currency

I come here today in support of the creation of a digital dollar. **Properly designed and administered, a digital dollar system could improve financial access and equity, revitalize the direct public provisioning of payments and banking services, and ensure the United States meets the evolving challenges of the 21st century digital economy**. To that end, I thank and commend each of you on this Task Force, as well as your colleagues on the Senate side, for taking the potential of a digital dollar seriously, and for giving the nuanced technical and policy issues it raises the thoughtful attention they deserve.

Nevertheless, I am afraid I must begin my substantive remarks with a quibble, albeit a gentle and mostly provocative one. In particular, my complaint is with the use of the term "central bank digital currency" in the title of this hearing. **In my view, it is a mistake to equate and reduce the idea of a "digital dollar" to that of a "central bank digital currency."** The former encompasses a wide spectrum of designs, architectures, and arrangements, while the latter refers only to a narrow segment of that spectrum in which central banks are the exclusive issuers and administrators.

To be clear, I believe the Federal Reserve should and will play a central role in any future digital dollar regime introduced in the United States. I also strongly endorse the FedAccounts proposal of my co-panelist Professor Menand and his colleagues.[3] But in my view, **the universe of digital fiat currency possibilities that we should be exploring at this stage extends beyond that which the vocabulary of CBDCs allows us to consider**.

I appreciate that it may seem like I am making a mountain out of minor semantics. But **the boundaries of our words quickly become the boundaries of our thoughts, and with them, our actions**. To give a sense of what I am talking about, consider the example the Telecommunications Act of 1996, which established a new regulatory

---

2 Jonathan Dharmapalan & Rohan Grey, *The Macroeconomic Policy Implications of Digital Fiat Currency*, eCurrency Mint (2017), https://www.ecurrency.net/post/the-case-for-digital-legal-tender-the-macroeconomic-policy-implication-of-digital-fiat-currency.

3 Morgan Ricks, John Crawford, & Lev Menand, *FedAccounts: Digital Dollars*, 89 Geo. Wash. L. Rev. 113 (2021), https://www.gwlr.org/fedaccounts-digital-dollars. *See also* Saule Omarova, *The People's Ledger: How To Democratize Money and Finance the Economy*, Vand. L. Rev. (forthcoming) (2020), https://privpapers.ssrn.com/sol3/papers.cfm?abstract_id=3715735; Robert Hockett, *Money's Past is Fintech's Future: Wildcast Crypto, the Digital Dollar, and Citizen Central Banking*, 2 Stan. J. of Blockchain L. & Pol'y (2019), https://stanford-jblp.pubpub.org/pub/wildcat-crypto-fintech-future/release/1; Rohan Grey, *Mobile Finance in Developing Countries: Macroeconomic Implications and Potential*, Global Institute for Sustainable Prosperity Working Paper No. 116 (2017), http://www.global-isp.org/wp-content/uploads/WP-116.pdf.

framework for the internet and online platforms. Around the time of the bill's passage, Columbia Law Professor Eben Moglen observed that the use of specific metaphors like "information superhighway," "market for eyeballs," and "broadcaster-consumer model," was shaping public discourse around the internet, and with it, Congress's legislative response.[4]

In particular, Professor Moglen argued that these and similar metaphors, by emphasizing commerce, passive consumerism, and hyperindividualism, had the effect of "rul[ling] out of our minds certain issues, ranges of outcomes, and possible modes of organization."[5] He posed a thought experiment:

> "[s]uppose instead... beginning in the early 1990s, we had instead all referred to emerging internet as "the Universal Education System." This would have captured a different range of meanings, neither more nor less correct as a characterization of the new technology. But the shift of metaphor would surely have affected the political climate… Immediately, inquiry is led to issues of equality of access, locus of editorial control, development of the labor force, and the relevance of the technology to the actual conduct of electoral politics."[6]

Today, a similar metaphorical hijacking is underway in the digital fiat currency discourse. This time, however, the culprit is not free market ideology, but a tendency among certain political classes to refract all issues of monetary governance through the overriding lens of central bank independence.

In reality, the economic principle of central bank independence, which has its theoretical roots in historical disputes over institutional priorities between the Treasury and Federal Reserve regarding the coordination of monetary and fiscal policy,[7] has little if anything to do with currency architecture or payments system administration. Nevertheless, it has become so culturally dominant that when policymakers begin to consider how to digitize the monetary system, they simply assume any such process should and must be conducted in accordance with the same institutional division of labor between central banks and other executive branch actors as presently exists with respect to the determination of, for example, interest rates and liquidity provisioning.

---

4 Eben Moglen, *The Invisible Barbecue*, 97 Colum. L. Rev. 945 (1997), http://moglen.law.columbia.edu/publications/barbecue.html.

5 *Id.*

6 *Id.*

7 *See, e.g.*, Robert Hetzel & Ralph Leach, *The Treasury-Fed Accord: A New Narrative Account*, Federal Reserve Bank of Richmand Economic Quarterly (Winter, 2001), https://www.richmondfed.org/-/media/richmondfedorg/publications/research/economic_quarterly/2001/winter/pdf/hetzel.pdf.

What insights into the themes of this hearing might we gain by reformulating our thinking away from "CBDCs," and towards the broader framework of "digital fiat currency"? How does our understanding of the challenges and possibilities of digitizing the dollar change when we abandon the notion that any and all innovation must take place either at, or through, the Federal Reserve? I can think of at least a couple of ways.

2. Beyond CBDC: Towards a Polycentric Digital Dollar Architecture

The first concerns the institutional delegation of responsibility for designing and implementing a digital dollar between the Federal Reserve and other government agencies and actors. Contrary to some popular narratives, **the Fed is not and has never been the only federal entity responsible for issuing currency or administering public payments infrastructure**.

The Mint, which issues coins, is the oldest monetary institution in the U.S. government, preceding the founding of the Fed by over a hundred years. The Bureau of Engraving and Printing, also housed in the Treasury, is responsible for printing Federal Reserve Notes ("FRNs") on behalf of the Federal Reserve. Indeed, modern FRNs are themselves modeled on earlier Treasury Notes known as Greenbacks, which circulated concurrently with FRNs until 1971.[8]

Another Treasury agency, the Bureau of the Fiscal Service, today partners with a number of commercial banks to issue pre-paid debit cards to millions of benefit recipients and military service people operating overseas in areas that lack traditional banking services.[9] It also operates the TreasuryDirect program, through which individuals can acquire and hold digital book-entry securities directly at the Treasury without any involvement from the Federal Reserve or private intermediaries.[10]

Beyond the Treasury, the U.S. Postal Service provided postal banking services from 1910-1967, until it was shut down due to pressure from banking interests who saw it as a growing threat to their business model.[11] Today, the Department of Education is responsible for issuing, processing, and securitizing millions of student loans every year,

---

8 United States Treasury, *Legal Tender Status*, Frequently Asked Questions (Jan 1., 2011), https://www.treasury.gov/resource-center/faqs/Currency/Pages/legal-tender.aspx ("Because United States Notes serve no function that is not already adequately served by Federal Reserve Notes, their issuance was discontinued, and none have been placed in to circulation since January 21, 1971").

9 The Treasury also used its prepaid debit card program to deliver COVID-19 pandemic relief payments. *See* United States Treasury, *Treasury is Delivering Millions of Economic Impact Payments By Prepaid Debit Card*, Press Release (Jan. 7, 2021), https://home.treasury.gov/news/press-releases/sm1229.

10 Indeed, some digital dollar proposals have proposed expanding TreasuryDirect into a general purpose, account-based payments system, which would be administered by the Treasury Department rather then the Federal Reserve. *See, e.g.*, Robert Hockett, *The Democratic Digital Dollar: A "Treasury Direct" Option*, Just Money (March 25, 2020), https://justmoney.org/r-hockett-the-democratic-digital-dollar-a-treasury-direct-option; David Andolfatto, *Bitcoin and Central Banking*, Macromania (Nov. 12, 2015), http://andolfatto.blogspot.com/2015/11/bitcoin-and-central-banking.html.

in the process generating trillions of dollars of U.S. government-backed financial assets that circulate in the capital markets as a form of near-money alongside Treasuries and Mortgage-Backed Securities issued by Freddie, Fannie, and Ginnie.[12]

Given this diverse, fragmented tapestry of roles, instruments, and processes, **the Federal Reserve is clearly not the only government agency with a legitimate interest in the future design and administration of a digital dollar**. Instead of expecting the Fed to shoulder the entire burden of America's monetary governance through whatever CBDC architecture it ultimately settles on, why not bring in other key actors into the infrastructure-building process from the get-go?

If the United States is to truly lean into and take advantage of this historical opportunity and inflection point, policymakers must resist false dichotomies and trade-offs between policy priorities that do not actually exist. The federal government has considerable resources and the capacity to both walk and chew gum at the same time. The challenge is to not take our eyes off the bigger picture, which in this case is the complete top-to-bottom digitization of our entire system of public finance. **To that end, other public agencies, such as the Treasury and the Postal Service, have unique needs, priorities, and expertise that should also be considered when evaluating the appropriate division of executive branch responsibilities for digital fiat currency infrastructure**.

To their credit, Professor Menand and his colleagues have long-recognized the benefits of inter-agency coordination when it comes to the retail provisioning of FedAccount services through partnership with the U.S. Postal Service, with its nation-wide network of brick-and-mortar institutions and centuries of steady service-delivery.[13] But when it comes to the architecture and governance structure of FedAccounts themselves, responsibility remains tightly and exclusively vested in the Federal Reserve. The Postal Service, by contrast, is largely demoted to a junior partner and second-tier stakeholder, positioned closer to the commercial banks that the Fed is presently responsible for supervising and regulating. Retail customer interfaces and platforms administered by the Postal Service are treated as distinct from, and derivative of, the core FedAccount architecture, and given far less media and policymaker attention.[14]

A regrettable effect of this positioning has been the emergence of a gap in enthusiasm and sense of urgency among policymakers regarding FedAccounts on

---

11 *See, e.g.*, Mehrsa Baradaran, *A Short History of Postal Banking*, Slate (Aug. 18, 2014), https://slate.com/news-and-politics/2014/08/postal-banking-already-worked-in-the-usa-and-it-will-work-again.html; United States Postal Service Historian, *Postal Savings System* (July 2008), https://about.usps.com/who-we-are/postal-history/postal-savings-system.pdf.

12 Raúl Carrillo, *How Wall Street Profits From Student Debt*, Rolling Stone (April 14, 2016), https://www.rollingstone.com/politics/politics-news/how-wall-street-profits-from-student-debt-225700/. *See also* Luke Herrine, *The Law and Political Economy of a Student Debt Jubilee*, 68 Buff. L. Rev. 281 (2020), https://digitalcommons.law.buffalo.edu/buffalolawreview/vol68/iss2/1/.

13 *See, e.g.*, Ricks, Crawford, & Menand, *supra* note 3, at 124-5.

14 *Id.*

one hand, and Postal Banking on the other. Unless this trend is reversed, I fear the likely end result will be a digital dollar system in which Postal Banking is deprioritized or even abandoned entirely, and responsibility for provisioning of FedAccount services left exclusively to the same for-profit commercial banks and fintech platforms that dominate the retail payments landscape today.

To avoid such an outcome, **I strongly urge members of this Task Force, and Congress more broadly, to make Postal Banking, of the kind proposed by the Campaign for Postal Banking[15] and leading banking experts like University of California, Irvine Law Professor Mehrsa Baradaran,[16] a top priority and non-negotiable component of any legislation establishing a digital dollar system.**

More broadly, the design and marketing of public digital money should be a matter of widespread community consultation and popular inclusiveness. It will affect everybody, like any other major piece of national infrastructure with great political consequence across the country, and will influence the economies of all every state and territory. It is important the process remain democratically driven, and that private actors and obscure public bureaucrats from any agency do not inadvertently become the major "stakeholders" and set the terms of the debate for the public and their representatives.

3. Tokens and Accounts: Complements, Not Substitutes

When we approach questions of digital fiat currency design from a multi-institutional perspective, options that initially appear as competing alternatives instead become potential complements. Today, for example, there is considerable debate among central bankers over the relative merits of account-based and token-based digital currency architectures.[17] This debate is often framed in terms of arguments for the superiority of one model over the other, as though nations must choose between them and then stick with their choice forever. In reality, however, **token and account monies are not substitutes but complements, together capable of achieving functionality not otherwise possible with one or the other system independently**.

Account-based money is typically recorded in a common ledger and maintained by a central actor or distributed group of actors according to common accounting standards. Payments are recorded through marking up and down ledger entries, which represent contractual obligations between the account-manager and the account-holders to pay or

15 *Campaign for Postal Banking* (2021), http://www.campaignforpostalbanking.org.

16 Mehrsa Baradaran, *The Case for Postal Banking*, Data for Progress & Justice Collaborative Institute Report (July 2020), https://30glxtj0jh81xn8rx26pr5af-wpengine.netdna-ssl.com/wp-content/uploads/2020/12/the-case-for-postal-banking-2.pdf.

17 *See, e.g.*, Raphael Auer & Rainer Boehme, *Central Bank Digital Currency: The Quest for Minimally Invasive Technology*, BIS Working Paper No. 948 (June 2021), https://www.bis.org/publ/work948.htm; Bank of International Settlements, *Central Bank Digital Currencies* (March 2018), https://www.bis.org/cpmi/publ/d174.pdf.

settle in higher forms of money "on demand." Token-based money, in contrast, is a form of transferable "bearer instrument," which means that legal ownership resides with the person currently in legitimate possession of the instrument, whether in your pocket or a digital wallet running on a server under your mattress at home.

Token money and account money systems each have their own benefits. Account money, on one hand, supports identity-linking, fraud prevention, and consumer protection. Token money, on other hand, affords greater privacy, flexibility, and the capacity for "offline" transactions in contexts where access to a common ledger or financial intermediary is impracticable. In addition, token money is often used by actors and communities with limited trust in intermediated accounts managed by commercial banks and governments.

Although it is common to treat these two forms of money presented as competitors, in reality, **token and account-based monies have existed concurrently for thousands of years, with almost all major civilizations and economies employing both in some mix or other**.[18] Indeed, archaeologists believe that the origins of writing itself lay in prior systems of three-dimensional clay tokens,which were traded and transferred as legal receipts for taxes and other dues owed to governing authorities.[19]

Since then, there have been sorts of technological and institutional innovations in account money, from the development of double-entry bookkeeping in medieval Italy, to the introduction of central banks, mobile money, and e-money operators more recently. At the same time, there have also been ongoing innovations in token-money, from the introduction of metallic coins in Lydian Greece in the sixth century B.C., to paper currency and now, digital cryptoassets.[20]

One of my favorite examples of underappreciated token-money technologies is the tally-stick, which became widely popular in England and elsewhere during the middle ages.[21] The tally stick was a small piece of wood that was broken in a distinct way so as to create two unique parts of a larger unified whole. The issuer, typically the sovereign, kept one half, while the other was issued into circulation as money. When the time came to pay taxes, individuals tendered their "private" half, which was matched up to its "public" half for authenticity to minimize counterfeiting.[22]

---

18 *See, e.g.*, David Graeber, *Debt: The First 5000 Years* (2011); David Fox & Wolfgang Ernst (Eds.), *Money in the Western Legal Tradition: Middle Ages to Bretton Woods* (2016).

19 Denise Schmandt-Besserat, *The Origins of Writing: An Archaeologist's Perspective*, 3(1) Written Comm. 31 (1986).

20 For a broad overview, *see, e.g.*, William Goetzmann, *Money Changes Everything: How Finance Made Civilization Possible* (2016); Felix Martin, *Money: The Unauthorized Biography* (2013).

21 *See* W.T. Baxter, *Early Accounting: The Tally and Checkerboard*, 16(2) The Acct. Hist. J. 43 (1989).

22 Interestingly, the technical principle behind breaking the stick in two is not dissimilar from the modern system of public key encryption that undergirds most online commercial authentication systems, which relies on pairing a "public key" address with a unique "private key" password hash that only the creator knows.

While this system may sound unwieldy, in remained in practical operation for centuries, allowing public authorities to issue a cheap, generic, but also highly secure monetary instrument that could easily circulate among the general population. Critically, however, its introduction and use came at a time of simultaneous proliferation of new forms of credit and account-based monies, including some of the earliest precursors of modern commercial bank deposits.[23]

A key lesson from such periods of monetary history is the importance of embracing pluralism, heterogeneity, and constructive tensions among different public monetary practices and technologies. Rather than approaching questions of digital dollar design as if, like Highlander, "there can only be one," **Congress and the Biden Administration should pursue and coordinate multiple, concurrent avenues of technological experimentation and innovation through a range of agencies and institutional arrangements.**

4. The Treasury Should Issue a Token-Based, "eCash" Version of the Digital Dollar to Complement FedAccounts and Postal Banking

In the United States today, token-money exists in the form of coins stamped by the Mint and paper currency printed by the Bureau of Engraving – both sub-agencies of the Treasury Department. Although coins and notes are distributed via the Federal Reserve, and modern paper notes legally treated as liabilities of the Federal Reserve, responsibility for their actual design, security, and physical lays exclusively with the Treasury. Historically, the Mint offered its money-creation services directly to the public, a tradition whose legacy still endures to this day in the form of the Mint's multi-billion dollar commemorative and bullion coin programs.[24]

By contrast, the Federal Reserve's expertise and administrative responsibility lies primarily with the management of accounts on behalf of select, high-level counterparties, including banks, foreign governments, and other federal agencies, as well as the supervision and regulation of private financial markets and systemically important institutions. With the exception of the recently created and largely autonomous Consumer Financial Protection Bureau, the Federal Reserve System has limited direct day-to-day interaction with retail currency users as a stakeholder group. Senior officials and political appointees tend to come from backgrounds in macroeconomics, monetary theory, and financial market regulation, with little to no experience in provision of

23 *See, e.g.*, P.R. Schofield & N.J. Mayhew, *Credit and Debt in Medieval England c.1180-c.1350* (2016); Benjamin Geva, *'Bank Money: The Rise, Fall and Metamorphosis of the 'Transferable Deposit,'* in Fox & Ernst, *supra* note 15, ch. 18.

24 For an extended history of U.S. Mint activities, *see* David Lange & Mary Jo Mead, *History of the United States Mint and Its Coinage* (2005).

consumer financial services, payments system administration or the technical manufacture of monetary instruments.

This is, of course, understandable. Compared to the trillions of dollars settled across FedWire, CHIPS, and other wholesale systems, the relative fraction of overall payments activity conducted with cash appears almost trivial. Similarly, compared to the pressing problems of rolling global financial crises, macroeconomic under-investment, and a rapidly evolving digital economy, physical currency-related issues like the nationwide shortage of coins experienced last year can feel like a much lower priority.[25]

But why must we triage between such collective problems as if they are zero-sum, rather than addressing them concurrently through different programs and efforts? As noted above, one obvious way in which Congress can promote financial inclusion is through prioritizing the introduction of retail banking services and consumer interface technologies managed by the Postal Service alongside the back-end development of FedAccounts and CBDC infrastructure by the Federal Reserve. Equally importantly, **Congress should direct the Treasury to design, issue, and administer its own system of token-and-wallet-based "eCash" as a complement to the account services provided by the Federal Reserve and Postal Service**.

Members of this Task Force with an interest in legislative history may be interested to note that I am not first person to make such a recommendation to Congress. In 1995, the Electronic Money Task Force of the Treasury Department proposed the creation of a study commission into the creation of a Mint-issued digital currency card, as part of Vice President Gore's broader National Performance Review initiative to "reinvent government" in light of emerging internet and other digital technologies.[26] In an October 1995 hearing before the House Banking Committee on Domestic and International Monetary Policy on the topic of "The Future of Money," then-Director of the U.S. Mint, Philip Diehl, testified that **the Mint's "main interest in the evolution of payments system is … focused on stored value cards as a potential substitute for coins and currency."**[27]

Director Diehl further noted that:

> "As sole provider of the nation's coinage, the Mint has an important role in our monetary system. As the use of stored value cards evolves, many

25 Ian Richardson, *Fact Check: Yes, There's a Nationwide Currency Shortage. Here's Why*, USA Today (July 21, 2020), https://www.usatoday.com/story/news/factcheck/2020/07/21/fact-check-america-midst-national-coin-shortage/5439455002.

26 *U.S. Mint Eyes Government's Own Stored Value Card*, 15(5) Bank. Pol'y Rep. 14 (1996).

27 *The Future of Money – Part 2, Hearing Before the Subcommittee on Domestic and International Monetary Policy of the Committee on Banking and Financial Services*, 104th Cong. (1995) (Statement of Philip Diehl, Director, U.S. Mint), https://ia802708.us.archive.org/31/items/futureofmoneyhea02unit/futureofmoneyhea02unit_bw.pdf.

> consumers might be expected to replace coinage and currency transactions with 'e-cash' transactions, thus creating a new de facto form of currency. …
>
> **It is [thus] appropriate to ask the question whether at some point in the future the requirements of market efficiency could accelerate the federal government's role in producing a stored value card that would augment the use of coinage in commercial transactions**. …
>
> The issuance of a 'legal tender' stored value card would also allow the Treasury to regain seigniorage profits that would otherwise be reduced by a decline in the demand for coinage, avoiding the need for additional tax revenue or additional borrowing."[28]

Director Diehl's prescient vision of a Treasury-administered system for storing and transferring digital currency balances directly via secured hardware devices is still highly relevant today, even as the technological possibilities have evolved considerably with the advent of mobile phones and other smart wearable technologies. **Rather than promoting financial inclusion within the banking system, the goal of a stored-value or token-based 'eCash' system like the one Director Diehl proposed would be to preserve and maintain the same transactional freedoms and functions in the digital space as physical currency has historically provided in the traditional economy.**

Such a system, importantly, does not replace or undermine the need for other digital fiat currency systems like FedAccounts in any way. That said, it does implicate a different set of legal considerations and constitutional questions. For example, individuals today typically enjoy limited privacy protections when it comes to account-based financial information, due to the fact that the financial intermediary counts as a "third party" to any and all transactions conducted using the account, thereby obviating any reasonable expectation of privacy between the two transacting parties. Similarly, bank and other payment intermediaries are typically subject to Know-Your-Customer and Anti-Money Laundering requirements that create additional restrictions on how individuals can access and use account-money compared to the token-money in their pockets.[29]

5. Token-Based "eCash" is an Essential Component of A Privacy-Respecting Digital Dollar Regime

It is not uncommon to hear policymakers claim that the adoption of a token-based digital fiat currency instrument that could be used anonymously, offline, in a peer-to-peer

---

28 *Id.*

29 *See, e.g.*, Jerry Brito, *Central Banks Are Wrong to Say That CBDCs Must Be Built to Comply With AML Regulations* (June 29, 2020), https://blog.jerrybrito.com/2020/06/29/cbdc-and-aml.

manner, without requiring any common ledger or record, would be "radical" or "extreme." I profoundly disagree. **Preserving the right to hold currency and make peer-to-peer payments directly without third-party involvement or approval is a small-c conservative response to the socially disruptive effects of digitization and the internet**. If we do not take active and committed steps to reverse our decline into information and surveillance capitalism,[30] including ending the so-called "War on Cash" that is slowly transforming every aspect of our transactional lives into a digitized data stream that can be centrally surveilled and censored,[31] we will end up in a world in which token-money, and the freedoms and civil liberties that it affords, are functionally extinct.

When considering the case for and against physical cash and digital cash-like technologies, it is tempting, as Harvard Economics Professor Kenneth Rogoff did in his 2016 book, *The Curse of Cash*,[32] to focus on the very worst possible abuses of such technology as proof that it is generally undesirable. Much like in the early debates over the internet itself, it is now common to hear claims today that if we allow anonymity in digital currency networks, we are effectively giving a green light to criminals, money launderers, and terrorists.

I strongly urge members of this Task Force not to be enticed by this crude, albeit seductive, narrative. **Transactional anonymity, like anonymity more broadly, should be understood as a public good and a core bedrock of political freedom in a democratic society**. It is difficult to imagine what America would be today, for example, if the Federalist papers had not been published under a pseudonym, or if the U.S. Supreme Court in *National Association for the Advancement of Colored People v. Alabama*[33] had ruled that the NAACP had turn over its records of membership dues to the Governor of Alabama as part of his harassment campaign in opposition to desegregation and in defense of white supremacy.

It is often asserted that as long as there are adequate privacy safeguards baked into centrally administered systems, then there is little to worry about when it comes to

---

30 *See, e.g.*, Amy Kapczynski, The Law of Informational Capitalism, 129(5) *Yale L. J.* 1276, https://www.yalelawjournal.org/review/the-law-of-informational-capitalism; Julie Cohen, *Between Truth and Power: the Legal Constructions of Information Capitalism* (2019); Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (2019);

31 *See, e.g., License to Bank: Examining the Legal Framework Governing Who Can Lend and Process Payments in the Fintech Age, Hearing Before the Task Force on Financial Technology of the Committee on Financial Services*, 104th Cong. (1995), 24-5, (Statement of Raúl Carrillo, Policy Counsel, Demand Progress Education Fund & Fellow, Americans for Financial Reform Education Fund), https://www.congress.gov/116/meeting/house/111057/witnesses/HHRG-116-BA00-Wstate-CarrilloR-20200929.pdf; Brett Scott, The War on Cash, The Long+Short (Aug. 19, 2016), https://thelongandshort.org/society/war-on-cash.

32 Kenneth Rogoff, *The Curse of Cash: How Large-Denomination Bills Aid Crime and Tax Evasion and Constrain Monetary Policy* (2016).

33 357 U.S. 449 (1958).

potential for abuse. Again, I would strongly urge members of this Task Force not to indulge in this dangerous fiction, which is typically paired with the personal sentiment that "as long as one is not doing anything wrong, one should have nothing to hide." **History reminds us time and time again that public actors, even those we tend to consider on the side of right and good, cannot always be relied upon to respect their own bright lines, or to self-regulate the worst excesses of their often well-intentioned desire to compromise individual rights and due process in the pursuit of swift and efficient administration of justice**.

Indeed, it was only days ago that the media reported former President Trump had in 2018 subpoenaed personal data records of Democratic members of Congress, including senior members of the House Intelligence Committee, as well as those of at least one minor relative, as part of a hunt for leakers. If even elected officials, from Representative Schiff to Chancellor Merkel, cannot trust that digital data made available to the U.S. government will remain secure, why should the average American be expected to do so?

Similarly, last month it was reported that Venmo had begun blocking donations made by individuals to Palestinian aid organizations on the grounds that it constituted support for terrorist activities. Whatever one's views on that particular issue, **it is not difficult to envisage a future in which political donations, even within the United States, become increasingly subject to censorship and monitoring by those in control over the technological means of payment**.

Perhaps the most important reason of all to be weary of claims that transactional anonymity is obsolete and unnecessary is simply that the future is unpredictable and volatile. Few could have predicted the rolling economic and political crises and protests of the past decade, or indeed the broader social transformation that the internet and mobile phones have provoked in our collective conscious and daily lives. Digital devices are actively remaking our neural pathways, and we are reaching the point where almost every newborn child will be connected from birth to every other person on the planet via a single, globally networked, digital nervous system.

In the face of such uncertainty and risk of catastrophic error, **the safest and most defensible approach is to adopt a Hippocratic-style principle of "first, do no harm."** In the context of digital financial privacy, **the best way to limit the risk of data abuses is to not collect it in the first place**.[34] If there is no compelling reason for public authorities to know where or who I am when I buy a meatball sub from a street vendor, then it should be possible to conduct that transaction digitally without generating data that is then made available forever to private platforms and public authorities. In other words, **when it come to our day-to-day digital monetary affairs, it should be**

34 *See, e.g.*, Carrillo, *supra* fn. 27, at 24.

possible to exercise what Fordham Law professor Joel Reidenberg calls "privacy in public."[35]

One way to do that is for **policymakers to adopt a principle of "currency neutrality," in which, like "net neutrality" for internet service provisioning,**[36] **digital fiat currency systems are treated as common utilities that process payments and store funds as a universal public good**. Of course, that does not mean letting crime run rampant – traditional investigatory and law enforcement methods will continue to be critical to the security and smooth functioning of any digital currency regime. At the same time, however, just as we do not design our taps and waterways to query whether someone has a criminal record before determining whether they are worthy of having their thirst quenched, we should think seriously before embedding in digital fiat currency technologies the capacity to categorically exclude people *ex ante* based on who they are or what they have done in the past.

Of course, it is inevitable that any digital system will generate certain kinds of data and opportunities for surveillance and control. At the same time, however, **there are meaningful and important differences between a digital fiat currency regime committed to preserving the privacy and freedom-respecting features of physical currency, and one built exclusively instead around common ledger or account-based technologies in which all transactions are recorded and censorable by design**. Beyond any one architectural question, these two visions of the future of digital fiat currency represent different sets of values and commitments that, as with the 'Information Superhighway' and the other internet metaphors of the 1990's, can shape how legislators and the public think and respond.

It is noteworthy that in discussions over the future of digital fiat currency, the two actors that get cited most commonly in justification of America issuing its own digital dollar are Facebook and China, both of whom have abysmal records of privacy protection and censorship. **If a digital dollar is to stand for something more than the data-mining and political suppression of the e-Yuan and/or Diem, American policymakers must be willing to articulate and defend a different set of principles and commitments, even when doing so entails difficult choices**.

Conclusion

The decisions made today regarding the digitization of the dollar will reverberate for decades. It is still the early stages, and there are a lot of details and kinks that will need to be worked out along the way. Nevertheless, as my remarks have hopefully conveyed, there are a few general principles and lessons that policymakers can and should keep in

35 Joel Reidenberg, *Privacy in Public*, 69(1) Univ. of Miami L. Rev. 141 (2014).

36 *See, e.g.*, Tim Wu, *Network Neutrality, Broadband Distribution*, 2 J. of Telecom. & High Tech. L. 141 (2003).

mind when embarking on this brave new experiment in the grand old tradition of American money-making.[37] To recap:

> 1. **Digital Fiat Currency is bigger than CBDCs, and the Federal Reserve is not the only game in town**. Other public agencies, in particular the Treasury and Postal Service, have complementary roles to play in the provisioning of digital fiat currency services alongside any CBDC system of FedAccounts.
>
> 2. **Token and Account Based Monies are Complements, Not Substitutes**. They provide different functionality, safeguards, and resiliencies, and should be developed in a parallel, coordinated manner rather than treated as competing alternatives.
>
> 3. **The Treasury should should develop and administer an 'eCash' system of digital dollar tokens that replicates the features and functionality of physical currency in the digital space**. This system would operate alongside and in coordination with FedAccounts, much as physical currency operates alongside and in coordination with bank and other account-money systems today.
>
> 3. **The right to transactional privacy and anonymity is a bedrock of political freedom and democracy, and should not be abandoned as we transition to a permanently digitally connected society.** Instead, policymakers should adopt a "do no harm" principle, and commit to preserving "currency neutrality" in both design and implementation.

Thank you, and I look forward to your questions.

---

37 *See, e.g.*, Nathan Tankus, *Treasury Notes*, JSTOR Daily (2021), https://daily.jstor.org/column/treasury-notes; Maxximilian Seijo, Scott Ferguson, & William Saas, *Money Politics Before the New Deal With Jakob Feinig*, Money on the Left Podcast (Sep. 13, 2019), https://mronline.org/2019/09/13/money-politics-before-the-new-deal-with-jakob-feinig; Christine Desan, *From Blood to Profit: The Transformation of Value in the American Constitutional Tradition*, 20 J. of Pol'y Hist. 26 (2008).

US House of Representatives Committee on
Financial Services
Task Force on Financial Technology

"Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies"

June 15th, 2021
Written testimony of
Dr. Neha Narula

Thank you Chairman Lynch, Ranking Member Davidson, and members of the task force, for the opportunity to testify today.

My name is Neha Narula and I am the Director of the Digital Currency Initiative at the Massachusetts Institute of Technology. We are a research group based within the MIT Media Lab focusing on cryptocurrency and digital currency design, including development of the open source software behind Bitcoin. I have taught five graduate cryptocurrency courses across departments at MIT and during the course of my PhD I conducted research in MIT's Computer Science and Artificial Intelligence Laboratory on databases and distributed systems. In August 2020 the DCI began a multi-year research collaboration with the Federal Reserve Bank of Boston on Project Hamilton, to understand the technology tradeoffs involved in a hypothetical digital currency. We will be releasing a paper and open source software this summer. I'd like to note that my views are my own, and not the views of MIT, the Board of Governors, or the Federal Reserve Bank of Boston, nor am I offering any insight into Federal Reserve policy or perspectives.

The problem and opportunity

Traditional electronic transaction systems today have high fees and limited access. These systems have simply not evolved fast enough to keep pace with the demand for online digital payments. Our legacy payment rails require expensive delays because they were created at a time when the technology did not support settling every transaction in real time. The pace of updates has been slow due, in part, to structural problems in the payment ecosystem making it difficult to coordinate large-scale change.

At the same time, we are seeing experimentation in the realm of cryptocurrencies built on open networks that do not require a traditional financial intermediary. This area serves as a laboratory showing what innovation and functionality might be possible if we were not constrained by legacy financial rules and systems. However, this area is still developing and comes with many risks, not least of which is the immaturity of the technology and its ability to provide widely available, highly secure, and scalable payment transactions. Figuring out how to address these limitations is an active area of research where my group spends much of its time.

In response, central banks across the world are considering issuing digital forms of their currency to the public. A Bank for International Settlements survey of 65 central banks found that 86% are actively engaging in some sort of work on Central Bank Digital Currency (CBDC), to improve payment efficiency and robustness, facilitate financial inclusion, and maintain financial stability, among other reasons.[1]

It is important to note that a CBDC might not be the only way to address some of these problems. For example, in the US we might improve financial inclusion by requiring commercial banks to provide free, no-minimum accounts to users, or by limiting or eliminating fees. (These would address some reasons people offer for not having bank accounts.[2]) More research is needed to determine how a CBDC might compare to other approaches to solving financial inclusion issues, and how exactly to build a CBDC to address these challenges. At MIT, we are beginning to investigate the possibilities of CBDC as a vehicle for increased financial inclusion, but as of yet, the promise is unverified in either a US or global context.

The potential promise of a CBDC goes beyond payment efficiency and financial inclusion. Digital currency is an opportunity for a ground-up redesign of our current payment systems. If designed in the right way, a system to create and support a digital dollar might increase competition and standardize disparate data models, leading to more interoperability and creating a platform for innovation in payments, much as the Internet created a platform for innovation by facilitating the transfer of information. In undertaking such a redesign, additional opportunities for increasing financial inclusion and solving challenges in the legacy financial system might also be uncovered.

Though promising, the way forward is not entirely clear. There are many remaining open questions regarding how a US CBDC should operate, how users might access it, and how consumer privacy would be protected. In what follows I offer a few of the choices that would need to be made if the United States decided to issue a digital dollar.

It would be irresponsible to launch a digital dollar until we can make progress on these questions -- but addressing them requires investment now, and extensive collaboration between academic researchers and the public and private sectors.

International exploration of CBDC

Some countries have issued a CBDC, and others are considering issuing one, or are exploring CBDC viability. For example, in October 2020 the Central Bank of the Bahamas issued the Sand Dollar to promote financial inclusion and access. Sweden is exploring an e-krona because of the decline in the use of cash in payments, and its Riksbank wants to continue its mandate of providing a public option for payments. The People's Bank of China is engaging in late stage

[1] Boar, Codruta, and Andreas Wehrli. "Ready, steady, go? Results of the third BIS survey on central bank digital currency." (2021).
[2] FDIC. "How America Banks: Household Use of Banking and Financial Services." FDIC Survey (2019).

digital currency pilots and might launch the eCNY[3] to, in part, bring China's massive fintech industry back under the umbrella of the central bank after the enormous success of payment platforms like Alipay and WeChat Pay. Those platforms together comprise 93% of mobile payments in China.[4] Each of these countries is using a different technology stack and has made different initial choices about how to involve commercial banks and about how the CBDC might be accessed by users.

Currencies compete; it is certainly possible that consumers might be attracted to a digital currency which is easy to use, has no or low fees, and comes with interesting features. But the concerns of the United States are unique in that the dollar plays a critical role in the global economy as the world's reserve currency. The once-in-a-century opportunity to redesign the US dollar should not be rushed. It is important to carefully consider how we might want a US digital dollar to operate and what effect different technical and policy choices will have on accessibility, overall financial stability, and the potential for a US digital dollar to be a platform for innovation.

What is a CBDC?

A general purpose, or retail, CBDC is defined as a digital liability of a nation's central bank that is broadly accessible and usable by the general public. It is distinguished from commercial bank money, credit cards, and mobile payment application balances in that it is a liability of the central bank; it is different from cash in that it is entirely digital; and it is different from central bank reserves in that users might hold it directly. This is in contrast to what is known as wholesale CBDC, which is a digital liability of the central bank which is limited to certain financial institutions and is not available to the general public.

Beyond those basics, definitions start to vary widely. Some experts argue that a CBDC must be built on distributed ledger technology (DLT). I believe that is putting the cart before the horse. We should first determine how a CBDC should operate before choosing an implementation technology. Also, it is important to distinguish between the underlying datastore of a CBDC implementation, and the interface to the CBDC and how it is intermediated and accessed. These different aspects are often conflated under the general term "distributed ledger technology." For example, a CBDC could act as a legal bearer instrument with a programmable interface even if it is built on top of traditional database technology.

CBDC and cryptocurrency will coexist

---

[3] In China there have been mixed messages as to whether the eCNY even is a CBDC: Former PBOC Governor Zhou Xiaochuan said in December 2020 that eCNY would not be a liability of the PBoC, contradicting statements by Mu Changchun, Director-General of the Digital Currency Institute at the PBoC, and Fan Yifei, Deputy Governor at the PBoC.

[4] Zhang, M. "China moves further towards cashless society as payment giants Alipay, WeChat Pay gain ground." *Retrieved from South China Morning Post: www.scmp.com/business/companies/article/2130400/ china-movesfurther-towards-cashless-society-payment-giants.* (2018).

Cryptocurrency and central bank digital currency are not mutually exclusive and will coexist. One prominent reason people use cryptocurrency is *because* its issuance is determined by software and a decentralized network, instead of a central bank. A central bank digital currency would not replace this preference.

Another reason people use cryptocurrencies today is for the innovative applications and flexibility they increasingly provide. Cryptocurrencies serve as a platform for rapid financial innovation, while a nation's monetary system benefits from long-term stability. The experimentation enabled and incentivized by cryptocurrencies has been productive. We can highlight two examples: programmability and innovation in cryptography. Much of the excitement about DLT is actually about programmability and automation.[5] This comes directly from developments in cryptocurrency. For example, the atomic swaps used in the Bank of Canada and the Monetary Authority of Singapore's Project Jasper/Ubin could reduce economic rents and increase stability in wholesale settlement.[6] Similarly, protecting consumer privacy is a requirement for a hypothetical CBDC and privacy-protecting designs directly benefit from innovation in cryptography driven by privacy-focused cryptocurrencies. Innovations such as these would not exist without pioneering work done in cryptocurrencies in general and Bitcoin in particular.

Accessibility: How is the CBDC accessed and managed?

In order to achieve goals of financial inclusion, a CBDC should be broadly accessible and usable. Every point of intermediation involved in a user obtaining and using CBDC is another potential friction that could inhibit access.

For example, international studies on financial inclusion have shown that requiring strong forms of identification deters the poor from accessing financial services.[7] One of the benefits of cash is that it can be used by anyone without requiring identification or signing up for an account, which is, in part, what makes it the payment system of choice for the poor. However, at the same time, policymakers would like to limit the potential use of CBDC for illicit activity. One way to address this tension is by creating tiers of access that would require different levels of identification. In the Bahamas, there is a low-value tier of access to the Sand Dollar that requires only an email address or mobile number to sign up, but limits balances to $500 and transaction volume to $1,500 per month.[8]

---

[5] Bundesbank, Deutsche. "Money in programmable applications: Cross-sector perspectives from the German economy." (2020).
[6] Bank of Canada and Monetary Authority of Singapore. "Jasper Ubin Design Paper: Enabling Cross-Border High Value Transfer Using Distributed Ledger Technologies." 2016.
[7] Demirguc-Kunt, Asli, Leora Klapper, Dorothe Singer, Saniya Ansar, and Jake Hess. The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution. The World Bank, 2018.
[8] Central Bank of the Bahamas. "Consumer-Centric Aspects of the Proposed Regulations for the Bahamian Digital Currency." (2021).

It is important to consider users who might not be able to use mobile payment applications. For example, 36% of those in the US who lack bank accounts also do not have smartphones.[9] Many Americans do not have reliable internet connectivity. Such people could not use a digital currency that requires a mobile app or constant connection to the Internet. To help with financial inclusion, a US CBDC could be available via smart cards, which could limit certain aspects of its design. At MIT we are investigating designs that would enable forms of secure offline transactions.

Data protection: What data is visible to whom, and under what circumstances?

Transaction data can vary widely; at a minimum it includes sender and recipient, amounts, and the time of the transaction. Some transaction systems collect user data like name, date of birth, social security number, and address, or other passive information like a user's IP address, GPS location, browser, or mobile operator. All of this information can then be used to track users and build profiles of their habits and behavior across websites and applications.

Financial transactions reveal sensitive data about our lives and protecting privacy is essential for human dignity and a democratic society. Consumer privacy is a requirement for a US CBDC as well as a potential competitive advantage. In addition, collecting and storing personally identifying user data at all makes that data vulnerable to accidental leaks or malicious hacking attempts, so the design of a US CBDC should strive to limit data collection to only what is critically necessary to safely process transactions.

The private sector has an incentive to collect and monetize all these different forms of data. Whether through regulation or by providing a public option, CBDC designers must consider how to protect user data. In particular, it should not be the case that those who can afford it can pay for services which protect their data while the poor are left to services that monetize their data and exploit their digital footprints for financial gain.

A CBDC which is in some part run by the central bank does not necessarily require the central bank to have visibility into fine-grained transaction data. Legitimate public policy goals relating to combating criminal activity can be fulfilled while preserving the privacy of the public and preventing a central bank being drawn into the commercial surveillance models which are now prevalent in the private sector.[10]

Seven architectures to implement a CBDC and adjacent designs

---

[9] FDIC survey.

[10] Ali, Robleh, and Neha Narula. "Redesigning digital money: What can we learn from a decade of cryptocurrencies." Digital Currency Initiative, MIT Media Lab (2020).

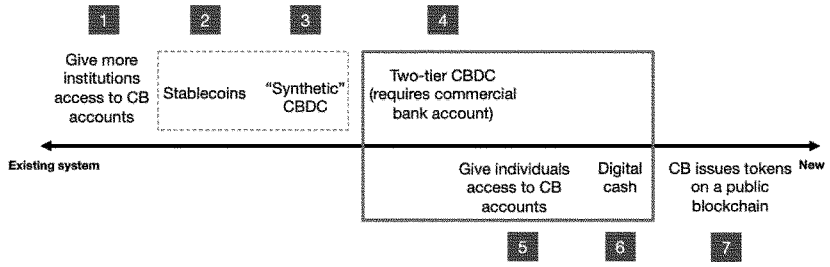


Figure 1. Collection of seven different architectures we describe that directly implement or are adjacent to a general purpose central bank digital currency. The dotted box contains architectures that do not fit the definition of CBDC given above, in that they are not liabilities of the central bank. The solid box contains the most common architectures proposed for retail CBDC. CB is "Central Bank". Architecture 6 "digital cash" is where the Digital Currency Initiative at MIT is currently spending its time.

Figure 1 shows seven different architectures to consider in CBDC design, ranging from those closer to our existing system to entirely new models for accessing central bank currency. For each architecture I describe its potential to improve financial inclusion and to serve as a platform for innovation.

Under the basic definition given earlier, wholesale CBDC already exists since financial institutions hold electronic balances with the Federal Reserve. Architecture 1 would simply expand access to the Federal Reserve balance sheet to a larger set of institutions, for example by extending access to mobile payment application providers. This might reduce settlement costs and improve competition, and through that, improve access and innovation. However, it would also require increased regulatory scrutiny of these new participants, which might limit their ability to provide accounts to those currently left out. It is not clear it will help promote interoperability and standards, leading to a platform for innovation.

The next two architectures shown in Figure 1 do not fit under the definition of CBDC provided above in that they are not direct liabilities of the central bank. One option is to expand support and regulatory clarity for so-called stablecoin providers (Architecture 2 above). Stablecoin providers issue dollar-pegged tokens on public (so-called permissionless) or non-public (so called permissioned) blockchains. These then fall into two categories: Those that are one-to-one backed by commercial bank deposits or other relatively stable, liquid assets like US Treasuries, and algorithmic stablecoins, that operate in a smart contract on a public blockchain, and are usually heavily overcollateralized using cryptocurrency assets or other stablecoins, with the peg managed by a software algorithm running in the smart contract. To date, US dollar-denominated stablecoins have a market capitalization of over $100B, with the vast majority of that value in the first category.[11] They appear to be primarily used as a mechanism for facilitating cryptocurrency trading, and I am not aware of any rigorous evidence that stablecoins help improve financial inclusion, though this is an area deserving more research. Architecture 3 is what the

[11] https://coinmarketcap.com/view/stablecoin/

International Monetary Fund deems "synthetic" CBDC, in that it is issued by commercial banks and not actually a liability of the central bank, but is backed entirely by central bank reserves.[12] It is also unclear exactly how this architecture might help promote access and financial inclusion beyond our existing system, or how it could become a platform for innovation.

Architectures 4, 5, and 6 (contained in the solid box) are the most discussed designs for retail CBDC, though there are still many choices and variations within the proposals. Architecture 4 is deemed "two-tier" CBDC in that it is expected that the CBDC would be accessible only through commercial banks.[13] This implies that a user will need to obtain an account with a commercial bank in order to receive and transact in the CBDC. This design is appealing because it preserves the current structure of electronic payments, but at the same time, it is unclear how this design alone would help promote financial inclusion in the US because it does not appear to address the main reasons why the unbanked do not use banks. Figure 2 (below) is copied from Figure ES.3 from the FDIC's 2019 survey on "How America Banks: Household Use of Banking and Financial Services" and shows survey responses for why unbanked households do not have bank accounts. The success of this architecture in addressing financial inclusion will depend on exactly how commercial banks would administer CBDC accounts; if it is not different from how they administer traditional checking accounts, they would be unlikely to address any of the unbanked's concerns.

How successful this design would be in providing a platform for innovation also depends on whether commercial banks cooperate to provide compatible APIs (Application Program Interfaces) to facilitate building new applications that transfer CBDC. Under the status quo it is unlikely a two-tier CBDC would help promote innovation in payments, since commercial banks currently do not provide these interfaces widely and do not interoperate.

---

[12] Adrian, Tobias, and Tommaso Mancini-Griffoli. "The rise of digital money." Annual Review of Financial Economics 13 (2019).

[13] The CBDC might also be available through additional regulated financial service providers. We should compare and contrast this type of two-tier model with the benefits and risks of the first architecture, which is expanding the set of institutions that can access the central bank's balance sheet, without issuing a new form of CBDC.

Figure ES.3 Reasons for Not Having a Bank Account, Among Unbanked Households, 2019 (Percent)

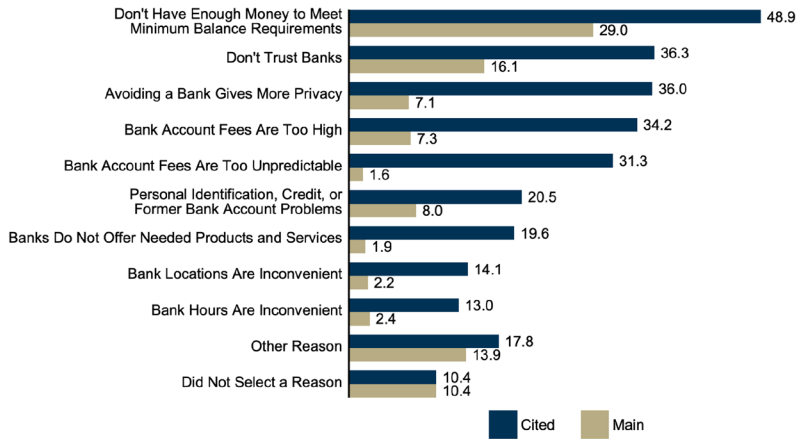


Figure 2. Source: FDIC survey on How America Banks: Household Use of Banking and Financial Services[14]

Architecture 5 is also known as FedAccounts. It would give retail users the option of holding an account directly with the Federal Reserve, a privilege currently limited to regulated financial institutions. The authors of the FedAccounts proposal have written extensively on how the proposal might help with financial inclusion.[15] We have not independently verified those reports. It is to be determined if the FedAccounts proposal would promote innovation in payments beyond improving competition.

Architecture 6 is “digital cash,” which is a CBDC that can be held directly by users without requiring an intermediary commercial bank account. It is important to note that a digital currency cannot be entirely peer-to-peer as is cash; digital information, unlikely physical objects, can be easily copied, so at some point a recipient needs to check that the payment they are receiving has not already been previously spent (this is called a “double spend”). One option for doing this is to employ secure hardware, which would prevent the double spend in the first place. This, however, requires relying on the correctness and integrity of secure hardware implementations, which might have bugs. The more common way is to reconcile with a ledger managing the issuance of the digital currency. There is a lot of leeway in the design of how exactly that ledger is accessed and when, and what controls that ledger has in terms of permitting, denying, or reversing transactions. In a CBDC designed to look more like digital cash, the ledger could simply prevent double spends.

---

[14] FDIC survey.

[15] Ricks, Morgan, John Crawford, and Lev Menand. "Central banking for all: A public option for bank accounts." The Great Democracy Initiative Report (2018).

This architecture could improve financial inclusion if it were easy to use and implemented in a way that is widely accessible, because it would not necessarily require users to sign up for accounts to receive payments,[16] and users would have an already existing mental model (cash) for how it works and how to use it. Note that banks or other third-party providers could custody digital cash for users, if desired. This architecture could also provide a standard to use as a layer of interoperability among payment providers, promoting a platform for innovation. At MIT, we are currently actively researching how to design safe, efficient, and useful digital cash.

Architecture 7 is proposed by some private-sector actors as well as some blockchain technology and cryptocurrency advocates; they suggest that a central bank issue digital currency on an existing blockchain system. This might be a permissionless smart-contract platform like Ethereum or a permissioned blockchain like Facebook's Diem. Under this type of architecture, a central bank could control issuance of the digital currency, but would give up all other control to the governance of the underlying blockchain. For example, the participants in the blockchain network might decide to reverse a transaction, as happened in Ethereum after one of its smart contracts, the DAO, was hacked. Ethereum developers, miners, and community members cooperated to reverse the hack and restore funds.[17] It is extremely unlikely that any central bank would want to put this level of control in the hands of blockchain participants. Blockchain networks are open and accessible and have high levels of innovation, though there has not necessarily been a concerted effort to research how to effectively add features that reliably support financial inclusion through blockchain networks. This is also an area that deserves further investigation as it might help inform CBDC design features and possibilities for advancing financial inclusion.

All of these architectures need to be carefully evaluated for their potential to improve financial inclusion, risks and complexity of implementation, monetary and economic implications, and the potential to affect the cost of credit and financial stability.

Conclusion

Extensive collaboration between academic researchers and the public and private sectors, as well as research funding, is needed to make progress on these key questions.

The first step is to obtain agreement on goals. In parallel, the Treasury Department and the Federal Reserve should be investing more in research and development, not to build "the" digital dollar but to fully understand its possibilities and implications as well as spur technology development.

---

[16] Identity checks could be done depending on the amount transacted, as described earlier.
[17] DuPont, Quinn. "Experiments in algorithmic governance: A history and ethnography of "The DAO," a failed decentralized autonomous organization." Bitcoin and beyond (2017): 157-177.

To build consensus across varied stakeholders and create a neutral environment where the best ideas can flourish, we should rely on the principles of open source software development. The government's typical way of building systems -- outsourcing to a third party vendor -- will not, in my opinion, work here. What is possible in terms of policy is inextricably linked to the technical implementation. The US cannot outsource monetary policy to a vendor. As a first step I recommend expanding the type of work MIT is currently doing with the Federal Reserve Bank of Boston and other collaborations between academia and the public sector.

In conclusion, we have a once-in-a-century opportunity to redesign the dollar. Central bank digital currency might have the potential to increase financial inclusion, reduce transaction costs, and become a platform for innovation in payments, if designed and implemented well.

I commend this task force for raising this important issue and encouraging this critical dialogue. Thank you and I look forward to your questions.

Statement for the Record

On Behalf of the

American Bankers Association

Before the

Task Force on Financial Technology

Of the

Financial Services Committee

June 15, 2021

Statement for the Record

On Behalf of the

American Bankers Association

Before the

Task Force on Financial Technology

Of the

Financial Services Committee

June 15, 2021

Chairman Lynch, Ranking Member Davidson, and members of the Fintech Task Force, the American Bankers Association[1] (ABA) appreciates the opportunity to submit a statement for the record for the hearing titled "Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies" The topic of today's hearing is an important one, with significant implications for our financial system, economy, markets, and most importantly for the American consumer.

Policymakers around the world, including at the U.S. Federal Reserve, are examining the potential opportunities and risks associated with issuing Central Bank Digital Currencies (CBDCs).[2] A number of central banks are moving from conceptual research to developing pilot programs to explore the uses and efficiency of CBDCs.[3] As this work progresses, there is a growing recognition that central bank digital currencies may be weighed down by very significant real-world trade-offs. The reality is that the dollar is largely digital today. The proposed benefits of CBDCs to international competitiveness and financial inclusion are theoretical, difficult to measure, and may be elusive, while the negative consequences for monetary policy, financial stability, financial intermediation, the payments system, and the customers and communities that banks serve could be severe.

The primary reason for this disconnect between the commonly-touted benefits of CBDCs and the more privately-assessed risks of re-engineering our financial system is that we tend to treat CBDCs superficially, as though a digital currency is a single concept, and one that could be implemented beside, rather than on top of, our existing system. Neither is true. A CBDC is not a single proposal; rather, it refers to a wide range of different proposals with varied potential designs, each with specific costs and benefits. Nor does CBDC fill a fundamental gap in our

---

[1] The American Bankers Association is the voice of the nation's $21.1 trillion banking industry, which is composed of small, regional and large banks that together employ more than 2 million people, safeguard $17 trillion in deposits and extend nearly $11 trillion in loans.

[2] In its simplest terms, a CBDC is a digital representation of a country's government-issued, central-bank-controlled money (a "digital dollar"). A CBDC would be a liability of the central bank, just as the dollar is today.

[3] *See* BIS Papers No. 114, *Ready, Steady, Go? – Results of the Third BIS Survey on Central Bank Digital Currency* (Jan. 2021), https://www.bis.org/publ/bppdf/bispap114.pdf.

financial architecture that it could slide neatly into to perform a discrete role. Some designs are more disruptive than others, but all have the potential to transform the way money flows through our economy in ways both intended and unintended.

The Highlight Reel Effect

Current policy discussions often fail to acknowledge that many of the purported benefits of CBDC are mutually exclusive and driven by how the CBDC is designed. Choosing between the various designs requires serious and complex policy tradeoffs. Too often CBDC proponents take a "highlight reel" approach to describing CBDC, cherry picking all the perceived benefits, while downplaying the serious risks to consumers and our financial system. In particular, all CBDC designs would take the money currently held on bank balance sheets and place it directly on that of the Federal Reserve.[4] In today's economy, most money takes the form of bank deposits. Money—and therefore deposits—is created through the private credit allocation process, which is a critical driver of economic growth and prosperity. Taking deposits out of the banking system would disrupt this key economic function by bifurcating deposit taking and lending, making lending more expensive, among other things.[5]

Federal Reserve Chairman Jerome Powell highlighted the importance of this in a recent video where he noted that any potential CBDC "serve as a complement to and not a replacement of cash and current private-sector digital forms of the dollar such as deposits at commercial banks."[6]

The U.S Already Has the Most Robust Financial System in the World

As Governor Brainard has recently noted, "In any assessment of a CBDC, it is important to be clear about what benefits a CBDC would offer over and above current and emerging payments options, what costs and risks a CBDC might entail, and how it might affect broader policy objectives."[7]

For example, it is unclear what policy goals a CBDC would achieve in the United States. For some countries, a CBDC could enhance weak or nonexistent financial systems. Unlike many other countries, the United States has a well-developed and robust financial system that is the backbone of our economy and markets. As they have done for hundreds of years, American

---

[4] In a May 24, 2021 speech Federal Reserve Governor Lael Brainard highlighted these concerns noting, "Banks play a critical role in credit intermediation and monetary policy transmission, as well as in payments. Thus, the design of any CBDC would need to include safeguards to protect against disintermediation of banks and to preserve monetary policy transmission more broadly." https://www.federalreserve.gov/newsevents/speech/brainard20210524a.htm.

[5] Even a CBDC with account limits would likely have a significant impact on the deposit base. The ECB estimates that a CBDC with account limits of €3,000 would lead to deposit outflows of € 1trillion.

[6] Chair Powell's Message on Developments in the U.S. Payments System, May 20, 2021 https://www.federalreserve.gov/videos.htm.

[7] Lael Brainard, Member Board of Governors of the Federal Reserve System, "Private Money and Central Bank Money as Payments Go Digital: An Update on CBDCs," Remarks at the Consensus by CoinDesk 2021 Conference Washington, D.C. (May 24, 2021), https://www.federalreserve.gov/newsevents/speech/brainard20210524a.htm.

banks today provide a broad array of essential financial and economic functions that benefit their communities, most notably, safekeeping deposits and making loans. For other countries, a CBDC could enhance their payment systems. The United States, however, has one of the most efficient, safe, and modern payments systems in the world. Banks have invested significant resources in expanding faster, safer, more inclusive options, including P2P, real-time payments systems (*e.g.*, The Clearing House Real Time Payment Network (RTP) and the Federal Reserve's FedNow), and upgraded Automated Clearing House (ACH) products. Solutions to pay gig workers instantly and put funded bank accounts into the hands of disaster victims have recently come online, addressing key use cases proffered for CBDC.

The United States should not implement a CBDC simply because we can or because others are doing so. Policy changes of this magnitude should be driven by a careful analysis of the benefits and risks. A CBDC may be beneficial in an economy that does not have an advanced payment system or a robust banking system, or in jurisdictions where the central government is already a major provider or facilitator of financial services and expectations of individual privacy are not strong. **However, after a careful review of the benefits and risks of various proposals to implement a CBDC, it does not appear that a CBDC is well-positioned to enhance underlying financial capabilities or extend the reach of financial services in well-developed markets, at least not in the U.S. context, despite the overly optimistic promises from proponents.**

Policymakers Should Proceed with Extreme Caution

Given the important policy implications of CBDC and the potential to disrupt the U.S. financial system, we support the Federal Reserve's thoughtful and considered approach. The forthcoming Federal Reserve Bank of Boston findings will be an important next step for understanding the feasibility of this novel technology in our unique economy.[8] We further support the Federal Reserve's recognition that the development of a CBDC would require input, engagement, and support from a range of stakeholders in both the public and private sectors. To this end, we look forward to responding to the discussion paper the Federal Reserve intends to issue this summer, which, according to Chairman Powell, will outline the Federal Reserve's current thinking on digital payments, with a particular focus on the benefits and risks associated with CBDC in the U.S. context.[9] Before the introduction of a CBDC, we believe the Federal Reserve Board, with input from the Treasury and the other banking regulators, should publish a rigorous analysis that assesses the benefits and risks of a CBDC and that convincingly

[8] *See* "The Federal Reserve Bank of Boston Announces Collaboration with MIT to Research Digital Currency" (Aug. 13, 2021), https://www.bostonfed.org/news-and-events/press-releases/2020/the-federal-reserve-bank-of-boston-announces-collaboration-with-mit-to-research-digital-currency.aspx.

[9] The authority of the Federal Reserve to issue CBDC remains an open—and fundamental—question in this policy debate, which must be resolved before Federal Reserve action on this issue. Chairman Powell has expressed reluctance to proceed with a CBDC without Congressional approval. *See* American Banker, "'We don't need to rush' on Fed digital dollar, Powell says" (Mar. 22, 2021), https://www.americanbanker.com/news/we-dont-need-to-rush-on-fed-digital-dollar-powell-says (quoting Powell as saying, "I think that would ideally come in the form of an authorizing law, rather than us trying to interpret our law, to enable this").

establishes (if findings warrant) that a CBDC would not create adverse impacts on consumers, markets, or the economy.

In the remainder of this testimony we will:

- Outline the risks and benefits of CBDC designs being considered today, and
- Highlight the challenging tradeoffs policymakers face in achieving their intended goals.

CBDC Design Choices Matter

The potential benefits and risks of a CBDC depend heavily on the way it is structured, making it impossible to evaluate the merits of CBDC in the abstract. Design choices involve tradeoffs, and so we must avoid a rush to action driven by cherry-picked benefits. By contrast, some of the disadvantages and risks of CBDC carry across all designs.

While a number of factors affect the theorized operation of a CBDC (*e.g.*, whether to use distributed ledger technology or a centralized database), the most important factors are *architecture,* or the role of the central bank in the distribution of CBDC, and *access*, or consumer's utilization of CBDC.[10] The following identifies some of the most significant potential benefits and risks of each architecture and access design choice that policymakers should consider as they determine whether to implement a CBDC in the United States.

Architecture Choices

Architecture goes to the operational role of the central bank in the CBDC. There are a number of different CBDC architectures, but the two principal models are (1) a "direct" CBDC that provides retail consumers with central bank accounts and (2) an "intermediated or hybrid" CBDC (or "two-tiered" model) where the distribution of CBDC would be through a commercial bank or other financial intermediary, such as a nonbank digital wallet provider.[11]

The following sets forth some of the purported benefits and potential risks of these models.

Direct CBDC	
Potential Benefits	***Potential Risks***
➢ Provides additional monetary policy tools (*e.g.*, increases	➢ Takes money out of the real economy, diverts deposits and

[10] We assume that, in whatever form it takes, CBDC will be compatible with other forms of money (cash, bank notes) and interoperable with pre-existing payment systems that choose to interface with it. Financial institutions, consumers, and end users also should remain free to use CBDC or continue to use conventional digital or physical currency.

[11] A wholesale CBDC model, which focuses on cross-border payments, also raises a number of difficult policy issues, but is beyond the scope of this testimony. Depending on its structure, including whether such a payments system would be interoperable with existing systems, this could adversely affect U.S. payments systems.

influence on deposit rates and reduces the risk of alternative units of account—such as privately-issued cryptocurrencies—dominating) ➢ May improve access to financial services and enhance financial inclusion ➢ May facilitate direct government disbursements to citizens ➢ May improve efficiency of payment system by some measures	stymies money creation, thereby undermining commercial lending and the deposit insurance system ➢ Makes the Federal Reserve a massive retail bank, introducing significant costs and operational burdens (*e.g.*, interfacing with customers, building front-end wallets, fraud resolution/mitigation), as well as fundamentally changing the mission of the central bank ➢ Likely would lead to less privacy than for those using cash or other forms of digital payments

Intermediated or Hybrid CBDC	
Potential Benefits	***Potential Risks***
➢ Decentralized relative to other models (*e.g.*, central bank will not have customer relationship) ➢ Facilitates compliance with anti-money laundering (AML)/combating the financing of terrorism (CFT) and know your customer (KYC) frameworks ➢ Provides a more convenient and modern alternative to paper cash ➢ Means of countering new private digital currency	➢ Potential for CBDC to move out of banks into non-bank financial institutions ➢ If counted as cash, likely would not be available to support lending in the real economy ➢ Raises information security risks and the potential for fundamental design mistakes ➢ Changes the economics of the payments system, potentially reducing incentives for product innovation

Takeaways:

Policymakers throughout the world have generally concluded that the direct model is not feasible because of the increased costs and operational burdens placed on central banks.[12] A direct CBDC model would effectively set the Federal Reserve up as a retail bank to every household in the nation. This would present an immense operational burden on the central bank, which would be responsible for onboarding customers and servicing those accounts. Today U.S. banks employ over 2 million employees to accomplish the same goal. Among the most critical technical and operational challenges that would need to be dealt with is the risk of creating a global target for cyberattacks or a new avenue for money laundering. A CBDC could be a very attractive target for cyberattacks.[13]

If policymakers determine that a CBDC is warranted to address payments system gaps, a "two-tier" CBDC architecture should form the basis of further work. Under this approach, the Federal Reserve would continue to focus on monetary policy and the underlying design of CBDC, and only commercial banks and appropriately regulated and supervised financial institutions should be permitted to distribute CBDC.[14]

Access Choices

Access addresses how consumers can utilize CBDC. Generally speaking, CBDCs may be account-based or token-based.[15] A key difference between the two types of access is the mode of verification when a transaction takes place. Account-based CBDCs are tied to an identity scheme, similar to existing bank accounts. In an account-based system, the accountholders on either end of the transaction are authenticated. Token-based CBDC is more similar to cryptocurrencies and would be freely transferrable tokens, which may be held in an "unhosted"

---

[12] This appears to be the approach the ECB is taking. *See, e.g.*, Fabio Panetta, Member of the Executive Board of the ECB, "Evolution or Revolution? The Impact of the Digital Euro on the Financial System," Bruegel Online Seminar (Feb. 10, 2021), https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210210~a1665d3188.en.html ("[t]he ECB does not plan to interact directly with potentially hundreds of millions of users of a digital euro. We simply would not have the capacity or the resources to do so. Financial intermediaries—in particular banks—would provide the front-end services, as they do today for cash-related operations. We would provide safe money, while financial intermediaries would continue to offer additional services to users.").

[13] *See, e.g.,* Lael Brainard, Member Board of Governors of the Federal Reserve System Cryptocurrencies, "Digital Currencies, and Distributed Ledger Technologies: What Are We Learning?" Remarks at the Decoding Digital Currency Conference Sponsored by the Federal Reserve Bank of San Francisco, San Francisco, California (May 15, 2018), https://www.federalreserve.gov/newsevents/speech/files/brainard20180515a.pdf.

[14] The Federal Reserve is keenly aware of the longstanding legal and policy framework maintaining the separation of banking and nonbank commercial activities. If it decides that private-sector financial intermediaries should play a role in CBDC distribution and transactions as intermediaries, it should assure that this separation is maintained, taking into consideration whatever aspects of banking functions such intermediaries ultimately play.

[15] *See* Alexander Lee, Brendan Malone, and Paul Wong, FEDS Now, "Tokens and Accounts in the Context of Digital Currencies" (Dec. 23, 2020), https://www.federalreserve.gov/econres/notes/feds-notes/tokens-and-accounts-in-the-context-of-digital-currencies-122320.htm (highlighting some issues with the "tokens vs. accounts" dichotomy).

digital wallet on the holder's smartphone.[16] In a token-based system, the token itself is authenticated. This makes the token a bearer instrument, much like cash today.

The following sets forth some of the purported benefits and potential risks of these models.

Token-Based CBDC	
Potential Benefits	***Potential Risks***
➢ More consumer privacy in comparison to account-based models ➢ Promotes ease of transfer ➢ More resilient to infrastructure outages and cyberattacks ➢ Most like digital cash ➢ Frees the central banks from the duties of large-scale account keeping and reconciliation	➢ Complicates compliance with AML/CFT and KYC frameworks ➢ May drain deposits from banks and the real economy, reducing the amount available for banks to lend. ➢ May lead to destabilizing runs on bank deposits into central bank money ➢ Introduces risk of loss or theft of the private key for the token

Account-Based CBDC	
Potential Benefits	***Potential Risks***
➢ Most akin to traditional bank accounts ➢ Facilitates compliance with AML/CFT and KYC frameworks ➢ Helps to preserve banks' deposit base, and money creation function that is essential to lending and economic growth	➢ May not achieve the potential benefits of introducing CBDC ➢ May pose threat to financial anonymity and privacy for citizens ➢ May not be available to support lending in the real economy

[16] An "unhosted" wallet describes situations where transactions from the wallet do not require the use or involvement of a financial institution.

Takeaways:

In considering the trade-offs between account-based and token-based CBDC, including the ability to use unhosted wallets and engage in offline transactions, policymakers should ensure they are not facilitating money laundering or more generally impeding the ability of financial institutions to comply with AML/CFT and KYC frameworks, or to respond to lawful government orders. They should also be mindful of privacy concerns related to direct government oversight of consumer accounts. These two objectives are difficult to reconcile and may be mutually exclusive.

Policymakers Face Challenging Tradeoffs to Achieve Desired Outcomes

As discussed above, the various designs of CBDC being considered today all come with significant tradeoffs. As policymakers consider how to achieve their desired outcomes, they must seriously consider these tradeoffs. The intended benefits of implementing a CBDC are often less than expected, given these tradeoffs. In some cases, these benefits may be effectively non-existent because they come at such a high cost. Below, we briefly describe some key considerations for policymakers as they look to achieve their desired outcome.

Risks

Financial Intermediation:

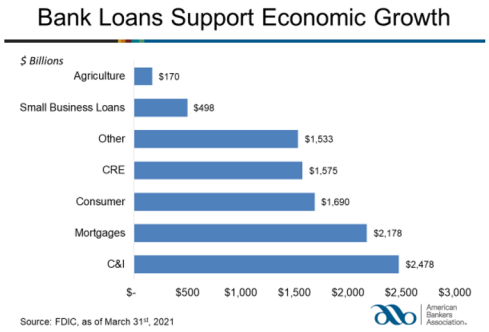
As noted above, every construction of CBDC requires moving funds from banks' balance sheets to the Federal Reserve. Regardless of the model chosen, a CBDC is a direct liability of the central bank. This contrasts to bank deposits, which are a liability on an individual bank insured by the Federal Deposit Insurance Corporation (FDIC).

In effect, these accounts will serve as an advantaged competitor to retail bank deposits that will move money off bank balance sheets where it can be lent back into the economy and into accounts at the Federal Reserve. Philadelphia Fed Research referenced above found that these proposals would create a "deposit monopoly" that would "attract deposits away from the commercial banking sector."[17]

While depositors at FDIC insured banks have never lost a penny of an insured deposit, it is hard to compete with a government agency that prints that money. Philadelphia Federal Reserve research found that depositors value this and will, in equilibrium, choose to hold their funds at the Federal Reserve instead of at retail banks, establishing the Federal Reserve as a "deposit monopolist."

[17] https://www.philadelphiafed.org/-/media/frbp/assets/working-papers/2020/wp20-19.pdf.

These bank deposits are the primary funding source of bank loans. These loans are critical drivers of economic growth and prosperity. In the United States today, banks fund more than $10 trillion in loans. This includes $2.1 trillion in consumer mortgages, $1.6 trillion in consumer loans, and $498 billion in small business loans.[18] Any reduction in this deposit base would quickly impact consumers and small businesses in the form of reduced credit availability and increased cost, undermining the goal of financial inclusion and undercutting economic growth.



Some models seek to minimize this effect by capping the amount of funds that can be held in CBDC. However, this limits the potential benefits of a CBDC account. These limits would reduce the business use cases often cited as in arguments for CBDC's ability to promote international competitiveness. It also does little to offset the problem. For example, the ECB estimates that a CBDC with account limits of €3,000 would lead to deposit outflows of €1 trillion.

Unlike retail banks, the Federal Reserve is not prepared to make loans to consumers and businesses. As deposits migrate from bank balance sheets to the Federal Reserve, capital that fuels economic growth will be severely restricted.

In times of economic hardship, the bank balance-sheet driven model is even more important. Banks' balance sheets and strong capital position allow them to make long-term investments and continue lending throughout a downturn, just when it is needed most.

A digital currency also creates a risk to financial stability. In times of economic stress, depositors are likely to prefer holding their money at the Federal Reserve. This creates a risk of bank runs that would undermine financial stability.

Anti-Money Laundering, Sanctions Enforcement, and Countering the Financing of Terrorism:

One significant challenge associated with many CBDC models is whether the central bank has the ability to identify users and track funds held in CBDC. Today, it is difficult to track the movement of physical cash throughout the economy. There is significant investment in programs to address this; however, any of those rely on the fact that is logistically challenging

[18] Federal Deposit Insurance Corporation Quarterly Banking Profile (May 26, 2021).

to move large amounts of physical cash. Simply put, it is difficult to move large volumes of physical cash. Digitizing that cash as a CBDC allows users to more easily move larger sums, making a CBDC more attractive to those looking to circumvent these important measures.

In the case of a direct CBDC, the Federal Reserve would be able to control for account onboarding and implement these checks itself. However, the operational burdens of doing so are significant. Today U.S. banks employ an estimated 20,000 employees to accomplish this.

Moving to an indirect model does not solve this challenge either. A token-based CBDC presents even more challenges to implementing these controls. Token-based CBDCs are authenticated by the token (not the user) similar to many cryptocurrencies in the market today. These tokens are held in software-based programs like "unhosted" digital wallets. Regulators could police the access points to these assets but will have little control once they leave that controlled environment.

Minimizing this risk would point to an indirect, account-based CBDC. These would function similarly to bank accounts today; however, as discussed below this also minimizes many of the purported benefits associated with CBDC.

Privacy

Another challenging question around the implementation of a CBDC is the level of insight that governments have into the use of CBDC. Unlike physical cash, many constructions of CBDC allow the government to directly track and monitor the use of these assets. This raises important public policy questions around the appropriate role of government.

Pervasive government surveillance of consumer and commercial payments may be considered a benefit to some governments issuing CBDC, but this feature should not be taken lightly in a democracy where the government is not meant to have access to the details of financial transaction without proper legal cause.

There are models that minimize this risk, like an indirect token-based CBDC, but this involves a tradeoff in the ability to monitor for illicit uses of CBDC as discussed above. In many cases privacy is mutually exclusive with the objectives of AML/KYC programs.

Role of Government

By making a governmental body into the nation's near-monopoly provider of currency, bank accounts, and payment services, the Federal Reserve would quickly become politicized as the central control point for monitoring and potentially denying transactions. For controversial but locally-regulated purchases such as cannabis and firearms, a CBDC would entangle the Federal Reserve as a national arbiter of social issues.

Desired Outcomes

Financial Inclusion

A foundational goal of direct CBDC proposals (and similar proposals like postal banking) is to promote financial inclusion. Access to banking services provides people with a means to save for their future and economic opportunity that is critical to promoting social equity. This is an important and urgent goal.

The pandemic has laid bare the consequences of being unbanked, from delays in receiving stimulus payments to navigating additional barriers in the Paycheck Protection Program. Sustainable economic opportunity requires a long-term banking relationship, but according to the FDIC's 2019 "How America Banks" survey, despite some encouraging trends, over 7.1 million US households – 5.4% – remain unbanked, and another 24 million households are underbanked.[19] While the FDIC observed "particularly sharp" declines between 2017 and 2019 for Black and Hispanic households, 13.8% of Black households and 12.2% of Hispanic households remained entirely unbanked in 2019, "substantially above the unbanked rated for White households (2.5 percent). Our nation and industry can do better.

America's banks are committed to promoting financial inclusion and are working to address this challenge. Today, unbanked customers have numerous options to open bank accounts that are designed to address the reasons most unbanked individuals cite as barriers to becoming banked. Through the Bank On program, run by the Cities for Financial Empowerment Fund and other efforts, free and low-cost bank accounts are widely available at banks of all sizes, with new accounts being certified every day. Bank On sets account standards that provide a benchmark for safe, affordable accounts at mainstream financial institutions, setting consumers on a path toward financial inclusion. Today, these accounts are available at over 32,500 branches across the United States. And importantly, they represent the beginning of a banking relationship, which can grow to include lending, saving, investing and other opportunities.

As the government rushed to distribute millions of Economic Impact Payments during the COVID-19 pandemic, the FDIC, the IRS, Bank On and the ABA worked to promote awareness of such accounts so American taxpayers could receive their payments quickly and securely. We have another critical opportunity to promote Bank On-certified accounts ahead of the expanded and newly-advanceable Child Tax Credit payments, which will be available to 36 million taxpayers starting in July.

Unlike programs like Bank On, it is unclear whether access to a direct account at the Federal Reserve would address the reasons families report not having a banking relationship.

[19] Underbanked means that a household has an account at an insured institution but also obtained financial products or services outside of the banking system.

Moreover, by taking too narrow a view of the problem, these proposals risk undermining the real progress underway with Bank On and similar efforts.

In addition, direct CBDC proposals focus solely on the question of access to a deposit account. While it is true that deposit accounts are often the first step towards inclusion, the benefits of a long-term banking relationship go well beyond a deposit account. The same is not true of a CBDC account with the Federal Reserve, which would not grow into a lending or investing relationship.

Not only do direct CBDC proposals not address this serious issue, they will likely exacerbate it. Philadelphia Fed Research referenced above found that these proposals would create a "deposit monopoly" that would "attract deposits away from the commercial banking sector." This has the effect of reducing the funds on banks balance sheets that is available to lend which would reduce access to credit to the communities that need it the most.

Payments system efficiency

Many CBDC proponents cite the need to speed up payments by digitizing them; the reality is that the majority of payments in the U.S. are already digital. Today, consumers and businesses have the option to pay with credit or debit cards, payments applications like Zelle or Venmo, and via ACH.

Efforts to modernize and speed up our payments system have been underway for some time and are already being implemented. The Federal Reserve's 2017 Faster Payments Task Force examined the entirety of the payment system and its experts, including consumer groups, recommended faster networks – not a new currency. As a result of these efforts, the Federal Reserve is building out an instant payments solution called FedNow.

Industry has been driving these improvements as well. The RTP Network is a brand-new instant payment system that represents an advancement equivalent to moving from dial-up to broadband in terms of speed and features. ABA was a strong advocate for using this capability as part of the EIP program to speed electronic payments to those with bank accounts or even prepaid cards.

Together, RTP, FedNow, and faster ACH systems are forming a web of super-fast, low-cost or free digital payment options that will make waiting for days to receive a payment a thing of the past.

Conclusion

A U.S. CBDC could fundamentally change the role of the central bank in the United States and reshape the banking system. Given the additional complexity, delay, and transition costs involved in creating a new form of money, there are strong efficiency interests that suggest

CBDC should only be pursued as a final option to meet clearly-defined public policy goals that cannot be achieved through payments innovations that leverage existing digital dollars. As of today, those use cases have not emerged.

If a viable use case for CBDC in the United States does emerge in the future, design choices must be carefully considered to ensure that the benefits as well as the risks of introducing a CBDC are fully appreciated.

ELECTRONIC TRANSACTIONS ASSOCIATION
1620 L Street NW, Suite 1020
Washington, DC 20036
202.828.2635
electran.org

June 15, 2021

The Honorable Stephen Lynch
Chairman, Task Force on
Financial Technology
Committee on Financial Services
U.S. House of Representatives
Washington, DC 20515

The Honorable Warren Davidson
Ranking Member, Task Force on
Financial Technology
Committee on Financial Services
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Lynch and Ranking Member Davidson:

On behalf of the Electronic Transactions Association (ETA), I appreciate the opportunity to submit this statement for the record before the Task Force on Financial Technology's hearing, "Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies."

We are engaged in ongoing conversations about the promise and challenges of central bank digital currencies (CBDCs), and we believe there is a common set of principles against which any proposed CBDC should be measured. As policymakers assesses a potential CBDC, you should carefully consider these principles and ensure that any proposal best serves the needs of consumers, furthers financial inclusion, preserves and strengthens the financial system, and ensures that consumers continue to have access to a robust and innovative array of secure banking and payment options.

Although various benefits are cited as reasons for adoption of a CBDC, the federal government should also consider the inherent costs and risks, which vary depending on the design and structure of the CBDC. ETA proposes our *7 Guiding Principles to a CBDC*:

1. Innovation: Continual investment in innovation is at the heart of past, present, and future improvements to the financial ecosystem — enabling new capabilities, strengthening cybersecurity and consumer protection, increasing efficiencies, and expanding access to financial services. Any public sector engagement with the financial sector, including the deployment of a CBDC, should serve as a catalyst and a platform for continued innovation.

2. The Right Tool for the Job: Policymakers should compare the suitability of a CBDC with existing systems and other ongoing improvements to payments infrastructure — such as real-time payments systems — to find the approach that best fits their country's transactions needs.

3. Private Sector Participation: Expanded financial inclusion, ongoing payments innovation, and the efficiency of national and international payment flows all depend on vibrant private sector competition in payments. A CBDC should seek to preserve those functions and minimize effects on the broader financial system through a two-tiered ecosystem that includes the private sector in its design, piloting, and distribution.

ELECTRONIC TRANSACTIONS ASSOCIATION
1620 L Street NW, Suite 1020
Washington, DC 20036
202.828.2635
electran.org

4. Interoperability: Any CBDC would be introduced into an established, robust, well-functioning payments ecosystem. Ensuring interoperability between a CBDC and other forms of national and international payments systems is necessary to avoid weakening existing mechanisms and harming consumers and businesses. Any CBDC must be able to interoperate seamlessly across the existing landscape.

5. Open Acceptance: Consumers will be more likely to adopt a CBDC if it can be used on existing acceptance infrastructure and is supported by known and identifiable payment methods (e.g., in-person and online) that are linked to the user's existing devices and accounts. To be useful to consumers, any CBDC would need to take advantage of existing acceptance networks and acceptance infrastructure to allow any merchant that accepts cards to also accept the CBDC.

6. Consumer Protection: A CBDC should require a framework of standards and rules that safeguards the privacy and security of every transaction, protects consumers' interests, and gives consumers the confidence necessary for in-person and online transactions. It should also ensure that consumers understand those protections and how they may differ from those offered by other payment methods.

7. Regulation Tailored to the Risk Profile of the Participant: Entities engaging with a CBDC should be subject to regulation that is tailored to the activities and risks that they pose due to their position in the payments ecosystem. Appropriate regulation should consider potential harm to consumers as well as safety, soundness, and financial stability risks.

We look forward to working with you and your staff to implement these principles. If you have any questions, please contact me or ETA's Senior Vice President of Government Affairs, Scott Talbott at stalbott@electran.org.

Sincerely,

Jeff Patchen
Senior Manager of Government Affairs
Electronic Transactions Association

From: Carmelle Cadet – Founder & CEO, EMTECH Solutions, Inc (EMTECH)

Regarding: Hearing: "Digitizing the Dollar: Investigating the Technological Infrastructure, Privacy, and Financial Inclusion Implications of Central Bank Digital Currencies" - Tuesday, June 15, 2021

On Date: *July 30, 2021*

Dear Ms. Williams, thank you for the opportunity to answer your thoughtful and insightful questions, as I share the same conviction that financial inclusion is the centerpiece and in fact, the key policy objective of a potential retail CBDC introduction. Furthermore, it is of utmost importance that financial innovation and technology doesn't leave anyone behind, or even worsens present wealth and societal gaps.

1. **Mrs. Cadet, in researching a potential U.S.-issued central digital bank currency, what factors should be kept in mind to center the discussion on ensuring folks who may have barriers to using technology - like our seniors - would experience financial inclusion?**

The utilisation of smartphones is key element of financial inclusion with a CBDC – statistics show that many unbanked or underbanked do not hold or use bank account, but they do have smartphones. However, as I mentioned in my testimony, it is equally important to ensure feasibility of a "No phone" access for the use of CBDC in order to guarantee universal access. Indeed, CBDC can be designed inclusively, such that access does not depend on smartphone ownership, other tools are bank card and low-cost (or Fed/state provided) token devices. So, in my view, the Federal Reserve in researching a potential CBDC should put a strong focus on design choices for Universal Access. This is in fact the case at its peer institutions.

The Bank of England, for instance, is looking into these factors its CBDC research, namely, to ensure that a digital currency is:

> *User friendly:* users should be able to make a payment intuitively, in the minimum number of steps, with a minimum required level of technical literacy.
>
> *Transparent:* the costs of making payments in CBDC should be clear to all users.
>
> *Inclusive:* CBDC payment systems should be designed to minimise barriers to use from (a) technical literacy, (b) disabilities, and (c) access to hardware (eg avoiding reliance on latest smartphones) or (d) access to mobile data networks (eg in rural areas).[1]

The Bank of Canada is specifically investigating an inclusive CBDC payment tool, stating that:

---

[1] Bank of England: Discussion Paper: Central Bank Digital Currency Opportunities, challenges and design March 2020 https://www.bankofengland.co.uk/-/media/boe/files/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design.pdf

> A CBDC could be used through a dedicated universal access device (UAD). One potential concept the Bank is investigating is a custom device that is engineered for universal access while securely storing and transferring a CBDC. The device could incorporate attributes of cash and take advantage of specialized technologies. Such a device should be manufactured at a low cost and issued by the Bank to ensure maximum inclusion.
>
> A universal access device (UAD) could be resilient in ways that a smartphone is not. A UAD could embed a local, secure store of value, be network-independent and operate for long periods on a local power source. If there is an infrastructure failure, a UAD may prevent the interruption of digital transactions.[2]

In addition, there is enhanced role to be given to established organizations, specifically to Community Centres and Post Offices. These should be enabled, trained and incentivized to support unbanked, underbanked and all low-income citizens in financial education and financial technology user skills development. The Fed itself could also be asked to play greater role in Financial Education and Financial Literacy.

Also, as stressed in my testimony, I believe that digital cash infrastructure should be developed and implemented as a complement to paper cash. As securing ongoing reliable access and availability of paper cash is also key to ensuring universal access to a non-digital payment option for everyone. Rep. Payne, Jr.'s introduction of the 'Payment Choice Act'[3] to protect cash is step in the right direction.

2. What opportunities exist to address these specific challenges (high and untransparent fees) and focus attention on greater inclusion for the unbanked and underbanked as research around a central bank digital currency develops?

One of the main sources of high fees for low-income citizens is the mistrust of credit institutions in their repayment ability and reliability. Low-income citizens very often lack the needed credit score or don't participate in a credit scoring process at all, as their payments are not digitally tracked, because largely paper based. Hence, firstly, a digital cash Fed Payment Wallet (as an app, card or device) would allow for creation and improvement of credit scoring with new digital cash transactions track record, enabling low-income citizens to take advantage of a broader and cheaper array of financial services. Secondly, with a Fed run CBDC getting relief payments and benefits to households will be achieved more quickly, cheaply, and seamlessly. This would avoid costly overdraft high fees that so many low-income families face.

Fed's Mrs Lael Brainard, Member, Board of Governors, highlighted this herself in a recent speech: "Today 5.4 percent of American households lack access to bank accounts and the associated payment options they offer, and a further 18.7 percent were underbanked as of 2017. The lack of access to bank accounts imposes high burdens on these households, whose financial resilience is often fragile. At the height of the pandemic, the challenges associated with getting relief payments to hard-to-reach households highlighted that it is important for all households to have transactions accounts. The Federal Reserve's proposals for strengthening the Community Reinvestment Act emphasize the value of banks providing cost-free, low-balance accounts and other banking services

---

[2] Miedema, J, C Minwalla, M Warren and D Shah (2020): "Designing a CBDC for universal access", Bank of Canada Staff Analytical Note, no 2020-10, June
https://www.bankofcanada.ca/2020/06/staff-analytical-note-2020-10/

[3] Rep. Payne, Jr. Introduces Payment Choice Act to Protect Cash, July 9, 2021 Press Release
https://payne.house.gov/media/press-releases/rep-payne-jr-introduces-payment-choice-act-protect-cash

targeted to underbanked and unbanked communities. [...] CBDC may be one part of a broader solution to the challenge of achieving ubiquitous account access."[4]

To address the problem of untransparent bank fees new regulations could be investigate that would make bank fees of traditional banks as well as payment services providers more transparent. An example of such regulation is the EU Payment Account Directive which establishes basic transparency requirements for fees. The lack of trust would be further alleviated by the trust in the public and secure authority of the Federal Reserve, as well as by the engagement of Community Centres and Post Offices.

3. Mrs. Cadet, what guiding financial inclusion principles could the Federal Reserve consider to ensure research of a central digital bank currency centers the goal of closing the racial wealth gap?

To 'leave no one behind' is a core pillar of the Sustainable Development Goals (SDGs) in order to specifically target policies to uplift the most marginalized. However, though technology is a key facilitator, it cannot solve social or economic issues on its own.

Research shows that financial and technological inclusion and wealth gaps are closely linked to geographical and racial issue in the United States: "Breaking down broadband access by county and demographics, the study found that broadband availability "tends to be lower in counties that have significant Black and Native Am11erican populations," noting that broadband access is 16 percentage points higher in majority-white counties compared to majority-Black counties and is 45 percentage points higher compared to majority-Native American counties. If only those with mobile phones and internet access can benefit from CBDCs, it is likely to reach the same groups of populations who already benefited from private digital payment solutions and fail to promote financial access. It can end up perpetuating the negative consequences of the digital divide."[5]

This inequality in broadband access and resulting barriers to economic development and mobility in disadvantaged communities could be addressed by infrastructure investment and development at the state and public policy level. Furthermore, as highlighted above, the Fed in its research should investigate leveraging the Postal Office network. The physical presence of these local and trusted institutions in underserved communities would significantly contribute to a universal CBDC adoption. Which then leading to better benefits distribution with CBDC would also help closing the (racial) wealth gap.

Overall, I strongly believe, the focus of the Federal Reserve System's investigation into a retail CBDC needs to have as the main focus universal access and financial inclusion and the required infrastructure needed to support those outcomes.

Kind regards,

Carmelle Cadet
Founder and CEO

---

[4] Private Money and Central Bank Money as Payments Go Digital: an Update on CBDCs Remarks by Lael Brainard Member Board of Governors of the Federal Reserve System at the Consensus by CoinDesk 2021 Conference Washington, D.C. (via webcast) May 24, 2021
https://www.federalreserve.gov/newsevents/speech/files/brainard20210524a.pdf

[5] The Racial Equality and Economic Opportunity Case for Expanding Broadband – Third Way, February 1, 2019
https://www.thirdway.org/report/the-racial-equality-and-economic-opportunity-case-for-expanding-broadband

EMTECH Solutions Inc.

New York, 30 July 2021