US SENATE COMMITTEE

ON

BANKING, HOUSING AND URBAN AFFAIRS

"The Digitization of Money and Payments"

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Testimony of

Hon. J. Christopher Giancarlo

Thank you, Chairman Crapo, Ranking Member Brown and members of the Committee, for the opportunity to testify today.

I am Chris Giancarlo, Senior Counsel at Willkie Farr & Gallagher. I am also a founder and principal in the Digital Dollar Project.

Three Observations

As you know, I served until recently as Chairman of the US Commodity Futures Trading Commission. During my five years of service at the CFTC, I was struck by several observations. The first stems from the fact that so much of America's physical infrastructure – its bridges, tunnels, airports and mass transit systems – that were state-of-the-art in the twentieth century, have been allowed to age, deteriorate and become obsolete in the twenty-first century.

Sadly, the same is true about too much of America's financial infrastructure. Systems for payment and settlement, shareholder and proxy voting, investor access and disclosure, and indeed, financial system regulatory oversight, that were once state of the art and global models in the twentieth century, have fallen behind the times and, in some cases, embarrassingly so in the twenty-first century.

For example, it typically takes days in America to settle and clear retail bank transfers. In many other countries it takes minutes, if not seconds. It also takes days to clear and settle securities transactions, and weeks to obtain land title insurance. And, nothing reveals the limits of our existing financial system more starkly than the US government's response to the current COVID-19 pandemic. Tens of millions of Americans had to wait a month or more to receive relief payments by paper check, while an estimated 1.1 million payments totaling nearly $1.4 billion were distributed to deceased Americans.

A second observation is that the world is indeed entering a new era when things of value, such as money, contracts, stock certificates, land records, cultural assets like art and music, our personal identities, and even our votes, will be stored, managed and moved around in a secure way instantaneously from person to person without central validators. This is what some people call the Internet of Value.

That first Internet wave over the past few decades was an internet of information.[1] It is about to be superseded by the next wave, the internet of value. In this new era, trust will be less often provided by established, central institutions as is the case in most of the world's existing financial market infrastructure. Rather, with proper governance it will be achieved by collaborative cryptography and a decentralized network of computational algorithms. In the same way that the first wave of the Internet enabled immediate transfer of words and information through decentralized computer networks, the second wave will enable instantaneous person to person transfer of things of value, be they shares of stock, automobile titles or US Dollars.

A third observation is that, unless we act, this coming wave of the Internet will put enormous strain on our aged, centralized financial systems. If we do act, however, we can harness this wave of innovation for greater financial inclusion, capital and operational efficiency and economic growth for generations to come

These three observations - the aging of our existing financial market infrastructure, the coming Internet of value, and the economic and social benefits if we do act - drive my professional engagements since leaving the CFTC. I am proud to serve on the Advisory Board of the Chamber of Digital Commerce and as non-executive Chairman of the Board of Common Securitization Solutions, a joint venture between Fannie Mae and Freddie Mac helping to build a more modern, competitive and lower cost housing finance market to support American home ownership.

I also serve as an independent member of the board of the *American Financial Exchange*, the sponsor of Ameribor® and Ameribor® Futures. I came to this role with direct experience with the diminishment and discredit of LIBOR, the decades-old benchmark used to set the rate of interest charged on more than half of US home mortgages. The AMERIBOR® benchmark rate is a "fully appropriate" substitute for LIBOR,[2] reflecting the credit weighted borrowing costs of thousands of banks across America.

I am also proud to be associated with the International law firm of Willkie Farr & Gallagher. Having spent three and a half decades building global businesses and regulatory structures in the junction of trading markets, technology and public policy, I am pleased to be with a law firm that is a center of excellence in all three areas.

The Digital Dollar Project

Early this year, I created the Digital Dollar Foundation, a not-for-profit enterprise, along with my brother, Charles Giancarlo, a veteran Silicon Valley engineer, entrepreneur and corporate executive and Daniel Gorfine, the CFTC's former Chief Innovation Officer. The Foundation partnered with David Treat and his innovation team

[1] An early example of the first Internet wave is Wikipedia, which is composed collaboratively by largely anonymous volunteers who share information and compose peer reviewed entries without pay. A later example is Facebook, an online social community that is valued largely for its prowess in analyzing and merchandising large data sets.
[2] Answer by Federal Reserve Board Chairman Jerome H. Powell, dated May 28, 2020, to Question for the Record from Sen. Tom Cotton (R-AR) following Chairman Powell's testimony to the US Senate Committee on Banking, Housing and Urban Affairs held on February 12, 2020.

at Accenture on a pro bono basis as lead architect and technology advisor[3].

Together, the Foundation and Accenture launched the *Digital Dollar Project (https://www.digitaldollarproject.org)*. The Project's purpose is to lead public discussion of the merits of a tokenized form of a US CBDC or, what we alliteratively termed in January of this year, a "Digital Dollar." The Project is not a commercial enterprise, but an effort to encourage research and public discussion on the potential advantages of a US CBDC, convene private sector thought leaders and actors and propose possible models to support the public sector as it considers development, testing and adoption. The Project looks to advance the public interest in future-proofing the dollar for consumers and institutions here in America and around the world.

To gain diverse perspectives from key stakeholders, the Digital Dollar Project formed a non-partisan advisory group that includes a broad array of economists, business leaders, technologists, innovators, lawyers, academics, and consumer advocates across the social and political spectrums.[4] The Advisory Group helps explore design options and approaches for creating a US CBDC through a deliberative process, including stakeholder meetings, roundtable discussions and open forums.

Last month, the Project published its inaugural white paper detailing a path forward and considerations for the development of a US CBDC. I ask that a copy of the Project's white paper attached hereto be made a part of the record with my testimony.

The white paper proposes for consideration as a champion model a tokenized US CBDC that operates alongside existing monies, is primarily distributed through the existing two-tiered architecture of commercial banks and regulated money transmitters and is recorded on new transactional infrastructure informed by distributed ledger technology (DLT). The white paper outlines the benefits of a CBDC in the context of the US dollar, and proposes potential use cases and pilots.

Among the multitude of highly effective payment options in the United States (e.g., cash payment, credit, debit, etc.), a CBDC would offer a new choice for digital transactions, instantaneous peer-to-peer payments and in-person transactions. It could also potentially lower costs and further diversify payment rails. A US CBDC could be distributed to end-users through commercial banks and trusted payment intermediaries. It would facilitate financial inclusion by broadening access to services through additional mechanisms, such as digital wallets. In particular, a US CBDC could expand the ability of currently un-or-underbanked populations to access digital financial services and transact on e-commerce platforms that do not deal in physical cash.[5]

Central Bank Digital Currencies: Decentralized Fiat Money

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[3] Globally, Accenture's work on central bank digital currency includes engagements with the Bank of Canada, the Monetary Authority of Singapore, the European Central Bank, and Sweden's Riksbank.

[4] Members of the Advisory Board are listed here: https://www.digitaldollarproject.org/advisory-group.

[5] Bank notes are often used to make small payments in the physical world, although, on average, physical cash usage is in decline compared against other payment methods. This dynamic is likely to progress in a post-COVID 19 world, thereby making it increasingly important for digital financial options to extend more broadly.

Before delving further into the benefits of a US CBDC, it may be helpful to review the ability to distribute money with existing financial infrastructure. Practically speaking, traditional dollar bank notes are local instruments. They are distributed by the Federal Reserve to local banks and restricted to physical transactions in the presence of payer and payee, making them impractical for large value payments. Traditional dollar banknotes do not work in modern eCommerce.

A US CBDC would represent a new format of central bank money to complement bank notes and reserves while integrating seamlessly with existing banking and payment functions. The innovation rests in the adoption of properties akin to a token or digital bearer instrument, allowing the dollar to become digital and portable. Distributed ledger technology (DLT) may offer the most effective approach to issue, distribute, transfer and redeem tokens. It would enable the dollar to be sent in real time anywhere in the physical and virtual worlds as easily as sending a text message.

The Digital Dollar Project proposes that issuance, distribution and redemption of a US CBDC take place just as cash does today. It would be issued by the Federal Reserve to domestic banks or regulated entities against reserves. Banks would distribute digital dollars to domestic end-users' digital wallets against bank deposits and against collateral to non-resident banks. It would be redeemed against bank deposits and collateral at banks and against reserves at the central bank. The token-based properties would allow digital dollars to be intermediated through existing channels.

For domestic end-users, digital wallets would offer essential payment functionalities and be integrated with existing banking services to enable a seamless integration with the financial system. Payments at points of sale could still be conducted through conventional terminals or fully contactless solutions. Regulated entities would extend such wallets to their customers through existing outlets for mobile phone applications covering required know-your-customer and anti-money laundering provisions. For unbanked end-users, wallet services could come pre-loaded on mobile phones. Advanced off-line capabilities are possible to allow local transactions to take place when the telecommunication networks are down.

The DLT network would operate on an autonomous permissioned network and ensure validity and integrity of all transactions. The verification of transactions would rest on the complete history or lineage of the tokens from original issuance in order to attest tokens are genuine and have not been double spent. The advantages of tokens derive from their bearer instrument nature and the ease with which interactions with existing banking and payment functions can be performed. Participants only need to interact with the tokens and do not require to be connected to a payment system.

DLT network participants would include the central bank and potentially resident banks, other financial intermediaries, and new entities that can help afford greater resilience in payment processing. The distributed nature of the DLT platform would enhance security as manipulation of the network would be computationally near impossible. The DLT platform would add to payment system diversification by operating

on separate payment rails using the Internet, enabling distribution of central bank money independent of the functioning of the banking system.

Financial Inclusion

One area of great promise with respect to a US CBDC is in expanding financial access and inclusion for unbanked populations. A 2017 Federal Deposit Insurance Corporation survey found that roughly 14 million American adults lack a bank account—a figure that has become all the more important in the past few months.

The COVID-19 crisis has revealed fundamental shortcomings in the capacity of existing government payment relationships to swiftly channel financial resources to the non-banked public. The US Federal Reserve has no direct relations or connectivity with the non-banked public. It cannot therefore distribute or coordinate crisis relief to resident households. Away from the Federal Reserve, Federal and State government agencies have only partial direct banking relationships with the general public through tax and social benefits but their reach is not universal.

Had a US CBDC been in circulation during the COVID-19 crisis, it would have enabled the sending of monetary relief instantaneously to the digital wallets of targeted beneficiaries.

During non-crisis conditions, a US CBDC could be a useful tool in the distribution of other government assistance payments, such as social security benefits, school meal vouchers and food stamps, among others. It may also serve to expand financial inclusion for underserved populations due to lower system costs and the ready availability of digital wallets. Given their relatively limited but critical functionality, there are efficiencies associated with digital wallet services that policymakers should consider, particularly given the range of programs and government benefits that can be distributed utilizing wallet services. This would also allow private sector providers certain opportunities and advantages to expand coverage of such services to un-or-underbanked populations that have access to mobile devices.

In order for this to be true, however, the digital wallet will need to prove to be less expensive to offer from a technology, telecommunications, regulatory and administrative perspective, and with manageable risk, particularly with respect to privacy and security. This hypothesis can be tested in real-world pilot programs. In situations where private sector solutions are not viable, policy solutions could be developed around public wallet government programs or services that fill remaining gaps in coverage.

Assuming the technological efficiency and potentially reduced regulatory costs associated with offering a digital wallet, one can imagine smart phones and devices preloaded with such a solution, or at a minimum, the application programming interfaces to allow for mobile applications to function. The wallet could be readily registered through a regulated hosting intermediary performing requisite Know Your Customer/Anti-Money Laundering (KYC/AML) checks. Had this been the case during the COVID-19 crisis, many of the currently underbanked may have had an alternative means of receiving

funding other than by physical check.

In fact, development of a US CBDC along with smart phone wallet services may be only the starting point for financial service providers to offer new and more beneficial services for populations that have historically been underserved by traditional banking services. Georgetown University Law Professor Chris Brummer wrote recently:

> "Indeed, the potential advantages of a tokenized dollar from the standpoint of financial inclusion are impossible to ignore. If the tech could be developed supporting a platform model for money (emphasis on *if*), I see no reason why policymakers should limit a digital dollar's ecosystem to payments. The supporting rails for a digital dollar could be opened up to other kinds of applications that could help contribute holistically to a transformation of the very model of financial inclusion.
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> "It may sound a little sci-fi, but it's not hard to imagine a tokenized dollar of the kind embraced by the payment gurus, but one constructed with some of the immediate policy goals and priorities of the postal-banking advocates**.** Under this model, government agencies, as well as authorized nonprofits and market participants, could try to build out applications for the underbanked on top of the platform on which it is run. I could even imagine a digital dollar ecosystem offering services like government sanctioned digital IDs, alternative credit scoring tools, and savings programs. Situated on top of layer one infrastructure could be even robo-advising and financial education services for low-income people.[6]

The Digital Dollar Project believes the opportunity is at hand not just to *imagine* such an ecosystem, but to actually build it with such services for low-income and underbanked communities as priorities from the start.

Tokenized Money: A Brief History…and a Glimpse of its Future

Yet, a US CBDC is about more than financial inclusion amidst a pandemic. It is about core financial system architecture. A dollar CBDC would take advantage of emerging distributed ledger technology to enable more direct monetary relations and diversified payment systems. It would offer new functionalities and more refined tools to overcome existing limitations of central bank money. It would enhance the dollar's functionality for a new digital age.

Money has evolved over the span of human civilization. Initially trade was through barter: a chicken for a clay pot. However, what does a society do when a person wants to trade a blanket, but doesn't need a clay pot in return? The answer was a token that society recognized as representing value and could be traded for any good whether a clay pot, a chicken or a blanket. The first token may have been shells or beads. It evolved to things that carried some inherent value such as salt (the currency of the Roman army from which the word "salary" derives) or coins minted from precious metals like silver and gold. In more recent times, tokens of currency were based on

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6 Medium.com, *Thinking Big on Fed Accounts, Digital Dollars and Financial Inclusion*, Jun 23, 2020, Chris Brummer, at: https://medium.com/@chrisbrummer

intangible items of little intrinsic value such as paper or, today, polymer notes. As economies evolve into the future, so will their tokens.

Today, most of the world's tradable commodities, contracts and significant items of value are priced and accounted for in US dollars. Tomorrow, they will be rendered into digitized, tradable tokens and coupled with algorithmically driven smart contracts. We must ask ourselves whether the digital commodities and contracts of the future will still be priced and accounted for in US dollars if the dollar remains exclusively analog. Or will the digital commodities and contracts of the future be priced and accounted for in some other currency that is digitized, decentralized and programmable?

Some of America's major overseas economic competitors are creating sovereign digital currencies to integrate into thousands of such DLT applications. Imagine a large African city in the coming decade with a water filtration station built by one of America's major economic competitors. A computerized sensor in the station will recognize when its reserves of chlorine are running low. Using 5G telecommunications technology, that sensor will instruct a computer to automatically order chlorine supplies from a designated supplier affiliated with the facility's constructor. A digital payment will be made to the overseas supplier in the digital currency of the supplier with little to no human management. It will take place outside of the traditional accounts-based financial system.

With such developments, we are indeed entering a new world. The question is who will design and build those digital systems, what tokenized currency will be utilized within them and what social values will be brought to bear. If the US dollar is to remain the world's primary reserve currency in the unfolding century, then it also must evolve from an analog to a digital currency and a unit of account that measures, supports and transacts with the world's digital tokenized things of value.

Assuring American Values in the Future of Money

This post World War Two period of the dollar's ascendance has been accompanied by another historical rarity: the birth of a truly global market for goods and services. And that birth led to the emergence into the middle class of hundreds of millions of historically impoverished people. It is not a coincidence, but a consequence, I believe, of the ascendancy of the US dollar as a global reserve currency that today more people than ever before in recorded human history enjoy improved health, child welfare, educational and civil liberty attributes that accompany material where-with-all.

I also believe that this remarkable flowering of human well-being has something to do with the global flowering of American ideals of individual liberty, personal privacy, limited government, the rule of law and the aspirational nature of American society, which I frequently cited during my time in public service.

Some of those ideals are set out in America's Constitution. One in particular, the Fourth Amendment's right to privacy is the source of a rich body of jurisprudence defining the balance between individual rights to privacy, including financial privacy, and

the state's ability sometimes to abridge that privacy for legitimate interests in law enforcement, national defense and other overriding concerns. Amongst the major democracies and certainly vis-à-vis autocracies, the United States has some of the most constitutionally established and well developed protections against government infringement of individual financial privacy.

With the proper legal and jurisprudential development around the Fourth Amendment and thoughtful design choices around anonymity and individual privacy, the digital dollar could well enjoy superior Constitutional privacy rights over many competing instruments, whether provided by commercial interests or other sovereigns. This would especially be so compared to a digital instruments of non-democracies which it would be implausible to believe will not be used as an instrument of state surveillance.

It may turn out that the United States has an ace to play in the contest for the future of digital money: privacy rights. Coding traditional American ideals of economic freedom and balanced privacy into a digital dollar will surely enhance its global appeal. Hundreds of millions of people in the developing world may well be reluctant to surrender their growing economic security and autonomy to undemocratic state surveillance, simply for the convenience of digital payments. As it has so often in its history, the US has the opportunity to lead in a way consistent with its finest ideals.

A well-architected, durable and universal US CBDC is in America's national interest. Crafting it will be an enormous and complicated national undertaking. It needs to be done carefully, thoughtfully and deliberately. Something as complex and worthy of the US dollar's global importance should not be completed in a hurried manner. It will take time and seriousness to get it right.

Nevertheless, now is the time to get started. The recent launch of SpaceX reminds us that the United States explored outer space and the lunar surface through a series of pilot programs known as Mercury, Gemini and Apollo. So too, should the US explore a digital dollar in a series of well-conceived and executed pilot programs.

The Federal Reserve is already looking thoughtfully at central bank digital currency. It has assembled some fine researchers. It should now take the next step and work with the US Treasury to kick off a series of pilot programs drawing upon the innovativeness of the private sector to test various design options and specific approaches, technologies and protocols.

Among other imperatives, the pilot programs should explore how a central bank digital currency can:

- Preserve the effectiveness of US monetary policy and financial stability;
- Enable ease of payments and provision of financial services to those parts of the American population that are financially underserved or excluded;
- Enhance scope, access, diversification and resilience in US dollar payments;

- Provide needed scalability, security and privacy in retail, wholesale and international payments;

- Unlock further innovation by creating the public infrastructure for tokenized and programmable money, upon which the private sector can develop;

- Offer comprehensive and seamless integration with the financial infrastructure and interoperability with central bank digital currency infrastructures being developed outside of the United States;

- Adhere to existing KYC/AML requirements amid distribution through regulated payment intermediaries and banks, preserving the two-tiered banking system;

- Ensure requisite individual privacy and security laws and regulations in payments is preserved and enhanced;

- Enhance economic policy insights through greater transparency offered via digital payments; and

- Develop US leadership and best-in-class technology to support needed digital currency functionalities.

In addition, the US Treasury and the Federal Reserve could regularly update Congress on the progress of these pilot programs and their achievement of these objectives, including enhancing financial inclusion, and offer proposals to further build out and implement a US CBDC across the financial system.

When the US has led the world in technological innovation – whether exploring outer space in the last century or cyber space in the turn of this century – it has done so through public/private partnerships.[7] In these partnerships, the US government has directed central policy frameworks to further the public interest while the private sector supplied technological innovativeness, large project management capability and competitive urgency. Without the blending of the two, exploration of the lunar surface and cyber space may have slipped beyond the twentieth century into the twenty-first.

It may be argued that developing a dollar CBDC is so important to the national interest that it should be the exclusive work of the public sector and not involve the private sector. I disagree. It is because the development of a dollar CBDC is so important to the national interest that it *must* involve the private sector. It is the way America succeeds in doing big technological things. It was the basis for successful

[7] In the 1960s, NASA partnered with a host of private sector vendors, engineering firms and contractors to land a man on the moon and accomplish America's then highest priority. Also in the 1960s, the Pentagon's Defense Advanced Research Projects Agency (DARPA) contracted to the private sector development of key Internet components while, later in the century, the National Science Foundation created NSFNET to contract with both private companies and public universities to lay the groundwork for the Internet as we know it today.

exploration of both outer and cyber space. It is the right way to explore the future of money.

Conclusion

A new technological age is unfolding, bringing with it the digitization of things of value that can be tokenized, decentralized and programmed. Across the globe, governments and private entities are experimenting with tokenized commodities, contracts, legal titles and, most critically, commercial and central bank digital currencies.

A US CBDC would address limitations in the ability to distribute emergency monetary relief revealed by the COVID-19 crisis. It can provide the tools and infrastructure to make emergency liquidity distribution work better and faster. It can provide advantages over traditional bank accounts in terms of expanding access for underserved populations and a foundation for new and more inclusive financial services.

Yet, a US CBDC is about more than financial relief amidst a pandemic. It is about the architecture of money in this new digital era. It offers new functionalities and more refined policy tools. It takes advantage of emerging distributed ledger technology to enable more direct monetary relations and a more diversified payments infrastructure. It recrafts the architecture of central bank money and, in effect, reimagines the future of money itself.

Throughout its history, the United States has been a leader in innovation and building systems for the next generation. Whether launching the space program or building the internet, the United States has conducted large technological endeavors through public and private partnerships reflecting longstanding American values of free enterprise, economic stability, technological innovation, individual liberty and privacy, and the rule of law. It is how America does big things.

This global wave of digital currency innovation is quickly gaining momentum. The questions for the United States are what role it will play in this wave of the Internet and to what degree will its core values be brought to bear. The United States must take a leadership role in this next wave of digital innovation or be prepared to accept that the innovation will incorporate the values of America's global competitors.

The launch of a US CBDC is a logical and critical next step to increase financial inclusion, enshrine democratic values in the future of money, drive societal and economic benefits and future-proof the US dollar for generations to come.

Attachment A

White Paper: "Exploring a US CBDC"

The Digital Dollar Project

May 2020