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Before the U.S. Senate Banking Committee on the "Crypto Crash: Why Financial System Safeguards are Needed for Digital Assets"

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I. Introduction

Chairman Brown, Ranking Member Scott and Members of the Committee: It is a distinct pleasure to be here with you today. The Banking Committee was where I cut my teeth on financial policy a decade ago, working on the response to the global financial crisis. I've always been impressed by, and grateful for, the bipartisanship this Committee has long embraced.

Today's hearing is yet another example. With inflationary pressures not seen since the 1970s[1], and changes to the Federal Reserve's decades-long monetary policies and the financial markets experiencing enormous volatility, I've been invited to talk about how best to strategically think about the regulatory future of digital assets, and how to build that regulatory future to ensure the best outcomes for American consumers. In this light, I am testifying in my personal capacity as an academic and researcher. I am a Visiting Scholar on Financial Technology and Adjunct Professor of Law, Institute of International Economic Law at Georgetown University Law Center. In addition, I am the Chief Global Regulatory Officer of the Crypto Council for Innovation, and a Senior Lecturing Fellow at Duke Law School.

I became interested in FinTech and crypto after a long career as a financial regulator, especially after chairing the Basel Committee on Banking Supervision's working group on open banking during my time at the Federal Reserve Board of Governors. While teaching and conducting research at Georgetown Law, I was approached by a blockchain startup to help design their digital dollar payment solution. I was perhaps one of the first former regulators to work in the crypto ecosystem directly with blockchain engineers.

Prior to my time in the startup ecosystem at the Centre Consortium and Transparent Financial Systems, I spent most of my career working on financial stability and reg reform, including at the Financial Stability Board working on international standards addressing Too-Big-to-Fail, in the U.S. Senate working on the response to the financial crisis, and the U.S. Treasury Department on the international implementation of G20-led reforms. I also worked at the Securities & Exchange Commission, and the Office of the Comptroller of the Currency. In addition to my

[1] https://www.bls.gov/news.release/cpi.nr0.htm; https://www.cbsnews.com/news/inflation-june-cpi-report-hit-new-high-40-years-9-1-percent/

public sector roles, I have worked on these issues in both the private and nonprofit sectors. Last year, I published a book on Open Banking,[2] examining how the Internet is decentralizing traditional banking and issues raised by the role personal data plays in an data-driven economy - issues similar to many raised by blockchain technologies today. Today, I continue to study digital transformation and lecture law students about the myriad of legal issues raised by blockchain technologies.

a. Why I'm here

This is a key moment for our transition to a digital economy. We are at a decision point where how we build our legal and regulatory foundation will determine our digital future for decades to come.

My five-year-old daughter Isabel will be watching this hearing from home later today because I want her to see that I am working towards building the brightest possible financial and economic future for her and her generation. As a former regulator who worked on reg reforms after the 2008 financial crisis here in this very room, I helped build a new framework to ensure financial stability. Later at startup companies, I built financial technology products with engineers to make payments faster, cheaper and more available. And today, I see myself together with all of you in this room as builders of a new regulatory future for digital assets.

Since the 1970s, the Internet and advances in computing power have transformed our economy and the American way of life. When I was a child in 1980s suburban Atlanta, my parents shopped at the local K-Mart. We had to get into a car and drive to the strip mall. Today, I shop on Amazon.com and other online sites with access directly at my fingertips. My parents had to drive to physical bank branches. I now bank online and via my smartphone. My parents used paper cash and wrote paper checks. I now use Zelle, Venmo and my credit cards and rarely even carry cash. My parents commuted to work, sometimes driving long distances. I work remotely from home. Who knows what Isabel and her generation will be doing when they're my age in a few decades - but all signs point to them engaging in some manner with computer networks that operate in increasingly sophisticated ways.

b. What's in this testimony

This testimony proceeds in the following parts.

First, I would like to contextualize the so-called "crypto collapse." I argue that it is important to situate the events within the broader economic moment and to take a nuanced approach to the different players in the ecosystem. Attempts to declare crypto "dead" will only lead to delaying much-needed action.

Second, I discuss why regulation matters, and why it's needed urgently. Regulation matters for: (a) Building the new highways of tomorrow, (b) Supporting the evolution to Web3; (c) Creating a

[2] Jeng, Linda, ed. Open Banking, Oxford University Press (NY 2022). https://global.oup.com/academic/product/open-banking-9780197582879?cc=us&lang=en&

clear and supporting environment for innovation; (d) Ensuring consumer access; and (e) Maintaining a competitive edge, national security, and oversight.

Third, I provide recommendations based on what I call the "Building Blocks" for a digital future. These include: (i) Consumer protection and empowerment; (ii) National security, AML and privacy; (iii) Innovation and international competitiveness; (iv) Building blocks beyond banking like digital money, digital identity, and decentralized finance.

Let me also say what is not in this written testimony. Crypto is a highly technical space with varying models and definitions. It is not my aim to go through definitions in this testimony. Rather, I link to resources that I have found helpful in building out my understanding of this complicated space.

II. Contextualizing the "Crypto Collapse"

I would like to begin by situating the current moment. Americans are facing an extremely difficult economic outlook.[3] The tech industry as a whole has been hit hard with declining share prices, layoffs, and existential questions about their products and services.[4] There is declining trust in institutions and governments around the world.[5]

I am saddened by the human cost of the loss of jobs and assets that we have seen recently, across a variety of sectors. It is, as I will discuss, the reason that I think the need for policy and regulation is so urgent. We do not have time to waste when it comes to protecting consumers and investors, while securing the foundational future of the global digital economy in the U.S.

That is also why I think we need to be very clear and precise about how we frame the current moment. While prices have fallen and individual projects have collapsed, crypto itself has not. As of February 10, 2023, crypto still had a market cap of over $1 trillion USD.[6] The number of full-time developers in the crypto space grew 8% year-over-year in 2022, despite a 70% decline in prices.[7]

Just as we didn't eliminate or ban banking after the collapse of Lehman Brothers, we should not shutter the entire crypto industry because of a small number of bad actors. If we pretend crypto is "dead" and fail to put into place appropriate frameworks, we will only have willful ignorance to blame.

a. Importance of precision and nuance

The "collapse" was a failure of people, not technology.

[3] https://www.imf.org/en/News/Articles/2023/01/31/tr-13123-world-economic-outlook-update
[4] https://news.crunchbase.com/startups/tech-layoffs/
[5] https://www.edelman.com/trust/2023/trust-barometer
[6] https://coinmarketcap.com/
[7] https://www.developerreport.com/developer-report

What we saw with FTX and other collapses within the crypto ecosystem was a failure of humans. We are not strangers to the issues that caused the failures: fraud, manipulation, and irresponsible actors. These are all issues that regulators, including myself, have been fighting for decades. It is why we have put frameworks in place to deter bad actors, and why we now have a path to hold them accountable.

It was not, that is to say, a failure of technology.[8] A reason I remain excited about the potential of areas like decentralized finance (DeFi) is because the system is, by design, meant to mitigate potential fallout from centralized, bad actors. Indeed, DeFi has survived the contagion we have seen from recent events directly as a result of deliberate design choices.[9] There has been a higher volume of activity, and applications have remained fully functional.[10] Decentralization is the concept that was core to the creation of the Internet[11] – and continuing its spirit in applications like financial services could be revolutionary.

Since the space is so new, definitions, categories, and boundaries remain unclear.[12] While there have been some attempts to map out distinctions, there is still a lot of debate both within and outside the industry on fundamental classification questions. So, when events like this occur, it is especially important to look under the surface of calling something a "crypto service" to understand how it was really operating, and consequently, what the nature of any failures was.[13]

As someone who has worked on these issues, I know how much your teams are juggling and the challenges associated with staying up to speed on such a technically complex space. But, the investment of time at the outset will pay dividends. This distinction between governance of technology and the technology itself is critical as we build regulatory frameworks for the digital economy.

b. Crypto's social value

Innovative applications of crypto are being used now to help others.

As I have discussed, part of what excites me about crypto is what it will mean for our digital future. The other part is crypto's social value in action today.

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[8] Unique DeFi users have risen by 40% in 2022. Despite market conditions, DeFi users have gone from 4.7 million at the start of 2022 to more than 6.5 million. The number of unique DeFi users has increased by nearly 700% over a two-year period, with just 940,000 users at the start of 2021. Cumulative DeFi revenue grew from $3.7 billion at the beginning of 2022 to $5.22 billion at the end of the year, meaning DeFi generated north of $1.5 billion in 2022. These figures are up from $239 million at the start of 2021: cumulative DeFi revenue has increased by more than 2,100% since 2021. https://www.nansen.ai/guides/defi-statistics-in-2022 *see also* https://www.economist.com/by-invitation/2022/12/06/a-crypto-exchange-founder-makes-his-case-for-decentralised-finance.

[9] https://www.coindesk.com/layer2/2022/07/22/why-defi-might-be-safer-than-traditional-finance/

[10] https://www.galaxy.com/research/insights/ftx-contagion-impact-on-defi/

[11] https://internethealthreport.org/v01/decentralization/

[12] See, for example: A model of the "DeFi stack" in: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3843844

[13] https://www.bis.org/publ/work1066.pdf

A substantial percentage of adults around the world today lack access to basic banking and financial opportunities. An oft-cited World Bank report found that 1.4 billion people worldwide are unbanked (i.e., does not have a bank account).[14] Despite progress, almost 30% of individuals in developing countries have no bank accounts.

Although lack of access is more significant in developing countries, it is also common in advanced economies. Almost one in five U.S. adults is at least partially constrained in their ability to use traditional financial services: 4.5% are unbanked and another roughly 14% are underbanked (i.e., has a bank account but conducts some or all of their financial transactions outside of the mainstream banking system, relying on alternative financial services providers, cash or other financial arrangements).[15]

Most adults who are unbanked or underbanked represent communities that have historically been the victim of discriminatory or exclusionary financial practices, including those with low education or low income, and people of color.[16] Digital assets, which have lower barriers to entry and do not suffer from a legacy of exclusionary practices and stigmas, offer people from historically-excluded or unbanked/underbanked communities new access to secure, low-cost, and effective financial services—and members of those communities have already shown a strong interest in and adoption of digital assets.[17]

As a recently-released report from the Crypto Research and Design Lab or CRADL highlights:

> "It turns out that the popular narrative of the 'crypto bro' is misleading. Purchasers of digital assets actually vary widely in terms of demographics:
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> - Average cryptocurrency buyer is under 40 (mean age is 38);
> - 55% do not have a college degree;
> - 44% of crypto traders are not white;
> - 41% of traders are women; and

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[14] https://www.worldbank.org/en/news/feature/2022/07/21/covid-19-boosted-the-adoption-of-digital-financial-services

[15] https://www.fdic.gov/analysis/household-survey/index.html

[16] In 2019, 7.1 million households in the U.S. were unbanked. Unbanked rates were higher among lower-income households, less-educated households, Black households, American Indian or Alaska Native households, working-age disabled, and households with volatile income. Among the unbanked, 29% stated that they don't have enough money to meet the minimum balance requirement (48.9% cited this as a reason), while 16.1% expressed a distrust of banks (36.3% cited it as a reason). https://www.atlantafed.org/-/media/documents/research/publications/policy-hub/2021/08/02/09-digital-payments-and-unbanked.pdf

[17] Founded in Kenya, the M-Pesa demonstrates some of the unique benefits offered by a digital payment and money transfer service via mobile phones for the underbanked. Notably, M-Pesa is not a deposit-taking institution like a bank. M-Pesa had not only been quickly adopted by most Kenyans over the previous few years, but one impact was that 2% of households were lifted out of poverty as a result. Moreover, the M-Pesa has aided in increasing the country's financial inclusion from only 26% in to 84% in 2021. https://www.mckinsey.com/industries/financial-services/our-insights/driven-by-purpose-15-years-of-m-pesas-evolution; *see also* https://www.atlantafed.org/-/media/documents/research/publications/policy-hub/2021/08/02/09-digital-payments-and-unbanked.pdf.

- 35% have household incomes of less than $60K annually."[18]

Further, in many places in the world, especially where people are living under authoritarian regimes or suffer from hyperinflation or strife, crypto can provide a lifeline to store value out of the reach of corrupt or poorly run governments.[19] Crypto has also been used as a tool to quickly mobilize resources during times of acute need with examples in Ukraine (following Russia's invasion)[20], India (for COVID Relief)[21] – and even in the last week, in Syria and Turkey (following the devastating earthquakes)[22]. More specifically, during my time at the Centre Consortium, we supported Stellar's partnership with the United Nations High Commissioner for Refugees (UNHCR) to distribute USD Coin on the Stellar blockchain as a form of financial assistance to Ukrainian refugees.[23]

Meanwhile, in the energy space, blockchain can be used to improve the transparency, accountability, and traceability of greenhouse gas emissions. Governments and businesses can also use blockchain to better report, track and calculate in real-time the reduction of the carbon footprint across the entire value chain.[24] For example, the World Bank Group's International Finance Corp is exploring a blockchain solution with Chia Network[25] that can enable transparent, instant sharing and reporting of information among governments and climate registry systems about climate projects.[26]

While the collapse has had devastating effects, we must also keep in mind that crypto is servicing some very real needs around the world. A nuanced and global outlook is key.

III. Regulation matters

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18 https://www.kansascityfed.org/research/payments-system-research-briefings/the-cryptic-nature-of-black-consumer-cryptocurrency-ownership/

19 https://www.thenationalnews.com/business/money/2022/07/27/why-cryptocurrencies-are-a-lifeline-for-people-in-developing-countries/

20 https://www.economist.com/the-economist-explains/2022/04/05/how-is-ukraine-using-crypto-to-fund-the-war

21 https://cryptorelief.in/

22 https://hub.elliptic.co/analysis/turkey-and-syria-earthquakes-crypto-exchanges-and-donors-raise-12-million-in-aid/

23 https://www.stellar.org/press-releases/unhcr-launches-pilot-cash-based-intervention-using-blockchain-technology-for-humanitarian-payments-to-people-displaced-and-impacted-by-the-war-in-ukraine; *see also*: https://cointelegraph.com/news/stellar-partners-with-unhcr-to-give-ukrainian-refugees-cash-via-usdc

24 https://digital-strategy.ec.europa.eu/en/policies/blockchain-climate-action

25 https://www.reuters.com/business/environment/exclusive-world-banks-ifc-taps-blockchain-carbon-offsets-2022-08-17/

26 https://www.coindesk.com/business/2021/11/05/chia-network-to-develop-prototype-for-world-banks-climate-warehouse/

a. Building the new highways of tomorrow

We are in the middle of building new digital highways – blockchains.

In 1919, a convoy of 81 Army vehicles set out from Washington, D.C., to see if they could cross the country to San Francisco. They averaged about 6 miles an hour, about only 58 miles a day, and did not arrive in San Francisco until 62 days and 3,251 miles later.[27]

On that truck convoy was future President Dwight D. Eisenhower, who later signed the Federal-Aid Highway Act of 1956, which led to the building of the U.S. Interstate System. The Interstate System transformed the American way of life.[28] Not only did it add jobs[29] through its construction project, but it also changed our way of life as motorists, the food we eat, and nearly every item we purchase.

We are right now building new digital highways – blockchains. Technological innovation enhances people's lives in meaningful ways. In the financial sector, policy should focus on consumer benefits, including empowering individuals to make informed financial decisions, ensuring competitive and open markets for products and services, increasing efficiency and reducing costs, minimizing abuse, and expanding access and opportunities for those who have been underserved by traditional financial providers. In short, technological innovation should be harnessed to improve access, efficiency, and equity for digital consumers.

To facilitate the growth of a resilient and sustainable digital future, policymakers need to be intentional in their choice of building blocks to lay down as the foundation for a digital economy. I discuss this further in the "Recommendations" section of my testimony.

Developing a flourishing digital ecosystem ultimately relies upon not only a foundation of optimistic innovators, but also on laws, regulations, and policies that guide policymakers, investors, and businesses to facilitate long term value. While the building blocks of principles I describe below are by no means exhaustive, they nevertheless provide a valuable starting point when formulating more granular rules, design choices, economic incentive structures, and governance structures for the future.

b. Supporting the evolution to Web3

The Web3 digital future depends on openness, interoperability and composability.

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[27] https://www.washingtonpost.com/history/2019/07/07/driving-cross-country-was-crazy-idea-an-army-convoy-set-out-show-it-could-be-done/

[28] https://www.archives.gov/milestone-documents/national-interstate-and-defense-highways-act

[29] https://highways.dot.gov/public-roads/summer-1996/federal-aid-highway-act-1956-creating-interstate-system

Web3, which builds on decentralization, blockchain, and tokens and other digital assets, is the next stage in the evolution of the Internet.[30] Web3 can foster new creative and economic opportunities and systems for creators, investors, and consumers.[31] The technological revolution arising out of the invention of the Internet was based on the Internet's ability to move information nearly in real-time. Web3 will be based on community-governed, decentralized networks that will allow us to move value at these speeds without losing control of our personal data.[32]

Web3's success depends on having standards that promote openness, interoperability, and composability.[33] Open source code allows anyone to examine and verify the technical underpinnings of service provision, which furthers the integrity of the code and the system. Open APIs also facilitate interoperability—the reliable exchange of information between nodes in a system. And composability ensures that system components can be evaluated independently and combined in various ways with other components to meet evolving user needs. Together, these features enable effective and trustworthy products and services. In contrast, market asymmetries and monopolies flourish when there are closed, proprietary technical standards. The associated costs and friction can lead to suboptimal products for consumers and deprive creators of control over their work and data.[34]

c. Creating a clear and supporting environment for innovation

We need regulation by public rulemaking, not regulation by enforcement.

Importantly, regulators should set rules via clear regulations through a considered public rulemaking process rather than after-the-fact enforcement. Enforcement actions enforce regulations, but regulations should be promulgated through a public notice and comment period. Congress devised this public process because we require our agencies to be accountable to the American people. When U.S. regulators consider a rulemaking, they must provide public notice of its draft rule for public comment. The public is given generally 30 to 90 days to comment.[35] After the comment period ends, the agency must carefully consider all the public comments received and provide a written response to these comments when the finalized rule is issued.

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[30] https://future.com/why-web3-matters/

[31] https://www.cnbc.com/2022/04/20/what-is-web3-gavin-wood-who-invented-the-word-gives-his-vision.html

[32] https://onezero.medium.com/why-decentralization-matters-5e3f79f7638e

[33] https://a16z.com/wp-content/uploads/2022/04/principles-and-models-of-decentralization_miles-jennings_a16zcrypto.pdf

[34] For example, the web browser Mozilla Firefox, which adheres to open standards of the World Wide Web Consortium, surpassed Microsoft's Internet Explorer, which followed a proprietary standard and had dropped to 20% of the market by 2014. https://www.4ipcouncil.com/application/files/3615/4357/3178/4iP_Council_-_Proprietary-vs-Open-Standards_-_Nov18.pdf

[35] https://www.federalregister.gov/uploads/2011/01/the_rulemaking_process.pdf

As I will elaborate, other countries are not waiting for the U.S. to act. Rather, they are proposing comprehensive frameworks and engaging in consultations with the public and industry on key issues. Innovation will move, and is moving, where innovators feel that their voices can be heard and that they will not be surprised by enforcement actions, when they are acting in good faith.

Last year, there were a number of enforcement actions from both the SEC and CFTC, but only very limited engagement on proactive rulemaking. There were approximately 30 cases brought forth by the SEC[36] and 18 cases brought forth by the CFTC[37]. By comparison, there were two proposed rules on limited issues from the SEC and two from the CFTC[38].

A patchwork approach to regulation will not work.

While there is an important role for state governments to play, leadership must come at the national level and from the legislative branch. Having vastly different approaches and regulations across states presents a big problem for companies that are looking to headquarter in the U.S. We are, for instance, already seeing divergent approaches when it comes to data protection, which has significant implications for financial services. Similarly, separate licensing processes and requirements in each state could cause a significant amount of friction.

This is concerning for a few reasons. First, there should be basic customer protection for individuals, regardless of where they live. National policymakers and regulators who have decades of experience in this type of rulemaking should be involved in setting the standard. Second, a patchwork approach could drive activity offshore. Offshore activity has been a major concern and risk for crypto and consumers. Third, because crypto is global, it will be critical to have an internationally-coordinated approach. This requires the U.S. to come to the table with a unified stance, in order to maintain its position of leadership in these standard-setting and cooperative bodies.

d. Ensuring consumer access

Web3 has the potential to go beyond consumer protection into consumer empowerment through greater access, efficiency and improved distribution of control or ownership interests.

Digital assets have already proved capable of furthering these goals. Digital assets often serve as a medium of exchange that is faster, more secure, and less expensive than traditional mediums.[39] Digital assets, which can be accessed and used by anyone with a

[36] https://decrypt.co/119448/nearly-half-sec-crypto-enforcement-actions-2022-were-against-icos
[37] https://www.cftc.gov/PressRoom/PressReleases/8613-22
[38] https://www.federalregister.gov/documents/search?conditions%5Bagencies%5D%5B%5D=commodity-futures-trading-commission&conditions%5Bagencies%5D%5B%5D=securities-and-exchange-commission&conditions%5Bpublication_date%5D%5Byear%5D=2022&conditions%5Bterm%5D=%22digital+asset%22&conditions%5Btype%5D%5B%5D=PRORULE
[39] Automated Clearing House (ACH) in the U.S. has phased in a twice-a-day clearing and settlement system, whereas blockchain can process transactions in-real time. Using ACH data, a research report

smartphone, are also more widely available than traditional banking and investment mechanisms.[40] Continued collaboration between governments and industry can further develop mechanisms to realize the full benefits of digital assets for all.

e. Maintaining a competitive edge, national security, and oversight.

Other countries are making significant policy, regulatory, and technological advancements.

As someone who has worked in the international arena, I have particular interest in following global developments and international standard-setting by bodies like the Financial Stability Board and the Basel Committee. We saw a large uptick in activity both at the national level and the international level in 2022. Last year, Japan adopted the first piece of legislation for stablecoins and crypto exchange registration.[41] The European Union is adopting its own comprehensive crypto framework (the "Markets in Crypto-Assets Regulation" or MiCA).[42] The United Kingdom has announced its first consultation on digital assets, including crypto lending.[43] In Asia-Pacific, Singapore closed its consultation period in December on additional crypto rules, and Australia recently proposed a taxonomy of digital assets for public comment.[44] And Hong Kong is expected to release a proposal for public comment in the next few months.[45]

In the meantime, international standard setters working under the auspices of the G20 and G7 have been working toward globally-consistent rules for crypto-assets. The Financial Stability Board is finalizing its recommendations after closing its public comment period in December.[46] The Basel Committee on Banking Supervision (BCBS) is also finalizing its capital framework for

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calculated the annual opportunity cost of using a *real-time* model such as blockchain versus ACH's discrete, *twice-a-day* clearance and settlement procedure. For 2016, the real-time protocol would have resulted in benefits for businesses and customers of $10 billion. This figure may even be an underestimate to the true value, as the assumption in this calculation does not take into account cost savings from transactions larger than $25,000 or international exchanges. https://www.ingentaconnect.com/contentone/nai/ti/2019/00000021/00000001/art00002?crawler=true&mimetype=application/pdf.

[40] It turns out that the popular narrative of the "crypto bro" is misleading. Purchasers of digital assets actually vary widely in terms of demographics: Average cryptocurrency buyer is under 40 (mean age is 38); 55% do not have a college degree; 44% of crypto traders are not white; 41% of traders are women; 35% have household incomes of less than $60K annually. https://www.kansascityfed.org/research/payments-system-research-briefings/the-cryptic-nature-of-black-consumer-cryptocurrency-ownership/

[41] https://www.bloomberg.com/news/articles/2022-06-03/japan-passes-stablecoin-bill-that-enshrines-investor-protection

[42] https://data.consilium.europa.eu/doc/document/ST-13198-2022-INIT/en/pdf

[43] https://www.gov.uk/government/consultations/future-financial-services-regulatory-regime-for-cryptoassets

[44] https://www.mas.gov.sg/news/media-releases/2022/mas-proposes-measures-to-reduce-risks-to-consumers-from-cryptocurrency-trading-and-enhance-standards-of-stablecoin-related-activities

[45] https://www.reuters.com/technology/hong-kong-set-shortlist-crypto-tokens-retail-trading-2023-01-11/

[46] https://www.fsb.org/2022/10/regulation-supervision-and-oversight-of-crypto-asset-activities-and-markets-consultative-report/

banks holding crypto-assets.[47] The International Organization of Securities Commissions (IOSCO) is currently drafting separate sets of regulatory principles for crypto exchanges and DeFi, respectively,[48] and had jointly issued guidance with the Committee on Payments and Market Infrastructure (CPMI) on how the *Principles for Financial Market Infrastructures* (PFMI), could apply to stablecoin arrangements.[49] The Financial Action Task Force (FATF) is continuing to push for countries to implement its 2019 guidance for anti-money laundering and combating the financing of terrorism (AML/CFT) regulation of virtual asset service providers and is monitoring and evaluating implementation across jurisdictions.[50]

Central Banks are experimenting directly with digital asset activities. For example,

- Project mBridge - the BIS Innovation Hub Hong Kong Centre, the Hong Kong Monetary Authority, the Bank of Thailand, the Digital Currency Institute of the People's Bank of China, and the Central Bank of the United Arab Emirates are building a multi-central bank digital currencies platform that could enable cross border trade without going through traditional correspondent banking of foreign exchange markets.[51]
- Project Dunbar - led by the BIS Innovation Hub in partnership with the Reserve Bank of Australia, Central Bank of Malaysia, Monetary Authority of Singapore, and South African Reserve Bank, is testing the use of central bank digital currencies for improving international settlement.[52]
- Project Mariana - a joint project between the Switzerland, Singapore, and Eurosystem BIS Innovation Hub Centres, the Bank of France, the Monetary Authority of Singapore, and the Swiss National Bank, is exploring the use of DeFi for the cross-border exchange of hypothetical Swiss franc, euro, and Singapore dollar wholesale Central Bank Digital Currencies (CBDCs) between financial institutions to settle foreign exchange trades in financial markets.[53]

At the national level, China has been leading the way on CBDCs, being the largest economy with a CBDC pilot already involving hundreds of millions of transactions.[54] Other jurisdictions are following a similar trajectory. The European Union is moving swiftly in its CBDC exploration and has already outlined design options for a digital euro.[55] And the Bank of England last week announced a consultation period to review options for a digital pound, which it assessed will

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[47] https://www.bis.org/bcbs/publ/d545.htm
[48] https://www.iosco.org/news/pdf/IOSCONEWS649.pdf
[49] https://www.bis.org/cpmi/publ/d206.htm
[50] https://www.fatf-gafi.org/en/publications/Fatfrecommendations/Targeted-update-virtual-assets-vasps.html
[51] https://www.bis.org/about/bisih/topics/cbdc/mcbdc_bridge.htm
[52] https://www.rba.gov.au/payments-and-infrastructure/central-bank-digital-currency/pdf/project-dunbar-report-2022-03.pdf
[53] https://www.bis.org/about/bisih/topics/cbdc/mariana.htm
[54] https://www.wired.com/story/chinas-digital-yuan-ecny-works-just-like-cash-surveillance/ *see also* https://www.lawfareblog.com/china-making-smart-money
[55] https://www.consilium.europa.eu/en/press/press-releases/2023/01/16/eurogroup-statement-on-the-digital-euro-project-16-january-2023/

eventually be necessary.[56] These developments by central banks make it more important for the U.S. policymakers to become more familiar with the array of technologies and approaches that are likely to impact the future of digital finance and commerce. The technical ingenuity and resources within the crypto asset space can help U.S. policymakers identify an approach to digital finance that reflects principles of market openness and financial privacy.

Mainstream financial institutions are entering the fray as well.

- Banks in the Regulated Liability Network (RLN) and the New York Fed are exploring how to use bank deposits to tokenize money.[57] The RLN includes Citi, BNY Mellon, Wells Fargo, HSBC, and Mastercard are among the participants.
- Another project is Project Guardian – a collaborative initiative with the financial industry that seeks to test the feasibility of applications in asset tokenization and DeFi while managing risks to financial stability and integrity.[58] DBS, JP Morgan, and SBI Digital Asset Holdings explored how they were able to launch the first industry pilot where the banks conducted foreign exchange and government bond transactions against liquidity pools comprising of tokenized Singapore Government Securities Bonds, Japanese Government Bonds, Japanese Yen (JPY), and Singapore Dollar (SGD) on public blockchain networks.
- Last week, JPMorgan Chase released a white paper, arguing for "deposit tokens" over stablecoins.[59]

Segregating the crypto sector from the traditional financial sector would present national security and oversight risks.

We are at a crossroads today with the transformation of money and assets, and their overall implications for the financial services sector and society at large. The rise of the Internet and advances in modern computing power have led to the creation of blockchain and other types of distributed ledger technologies. They have also led to the unbundling of financial services and fintech firms finding innovative ways to disintermediate, providing services and tokenizing assets along the financial services stacks. Make no mistake, this is a revolution.

Furthermore, this policy stance further segregates crypto finance from traditional finance, dangerously bifurcating our financial system as it continues to grow and transform. This could lead to distortions in market integrity and efficiencies.[60] We may end up with part of the economy transacting in Fed-sanctioned U.S. dollars while the other part transacts in non-USD digital

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[56] https://www.bankofengland.co.uk/paper/2023/the-digital-pound-consultation-paper
[57] https://www.newyorkfed.org/aboutthefed/nyic/facilitating-wholesale-digital-asset-settlement
[58] https://www.mas.gov.sg/schemes-and-initiatives/project-guardian
[59] https://cointelegraph.com/news/jpmorgan-sees-deposit-token-advantages-over-stablecoin-for-commercial-bank-blockchains
[60] Evidence has demonstrated that derisking in other contexts, such as terminating CBRs, carries severe economic impacts which include harms to financial inclusion, financial integration, and financial transparency with pronounced impacts on poor populations, small businesses, and women. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/17496/1162_SIDS_CBR_derisking.pdf?sequence=1; *see also* https://www.csis.org/analysis/there-new-normal-de-risking-caribbean

assets outside the governance and monitoring of the Fed.[61] As this shadow economy grows, this erodes the Fed's ability to do its job - implementing effective monetary policies and ensuring economic stability.[62]

Practices like "de-risking" this space generally have led more often than not to unfavorable outcomes. We have seen, in the past, U.S. banks terminate relationships with certain countries or industries due to concerns about money-laundering and failure to comply with U.S. regulations. However, this harmed those economies – as they no longer have access to banks – leading to lowered financial inclusion and, importantly, a push into shadow banking that the U.S. has no control over. The FATF itself has acknowledged that de-risking driven financial exclusion presents a risk to the financial system. Analogously, if we place crypto outside the U.S. regulatory perimeter, similar issues would arise. We will no longer have the ability to oversee or influence an ever-increasing asset class. This oversight gap gives illicit actors like terrorists, traffickers, and sanctions evaders more not less room to operate.[63]

Also, we have clear evidence that attempts to exclude crypto markets from the regulated financial sector do not deter crypto activity. China banned crypto trading in 2021, but blockchain analysis shows that such activity continues underground.[64] Also in 2021, Nigeria prohibited its banking sector from servicing crypto businesses. However, crypto usage there continues to soar through informal and peer-to-peer trading.[65]

IV. Recommendations: Building Blocks for a Digital Future

To build a strong and secure digital future, we need to put down the right building blocks.

There are various building blocks for constructing a legal and regulatory framework that would support the growth of a resilient and sustainable digital economy. Any framework must address a range of issues, including: consumer and investor protection, digital money, decentralized

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[61] Bifurcation between crypto and tradfi may create what's known as a regulatory paradox, as it pushes crypto operations to less regulated and less monitored markets, creating net more opacity and risk in the financial system. https://www.asbasupervision.com/es/bibl/i-publicaciones-asba/i-2-otros-reportes/1598-an-overview-on-de-risking-drivers-effects-and-solutions/file; derisking historically has also made it more difficult for humanitarian organizations to operate in countries and provide humanitarian assistance to refugees from political conflicts or natural disasters. https://www.worldbank.org/en/topic/financialsector/brief/de-risking-in-the-financial-sector

[62] IMF economists estimated that the shadow economy of Europe's major economies could *already* be as high as 20% to 35%. https://www.reuters.com/article/uk-global-digitalcurrency/column-central-bank-digi-cash-spooking-shadow-economy-to-crypto-idUSKBN2AH0RR; *see also* https://cryptoforinnovation.org/what-recent-banking-agencies-statements-could-mean-for-crypto/

[63] See also, https://cryptoforinnovation.org/what-recent-banking-agencies-statements-could-mean-for-crypto/

[64] https://asia.nikkei.com/Spotlight/Cryptocurrencies/Chinese-crypto-activity-slows-but-not-dead-despite-ban

[65] https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/cryptocurrency-usage-soars-in-nigeria-despite-bank-ban-70497781

finance (DeFi), digital identity, private commercial law, bankruptcy, accounting, tax, energy, technology standards, illicit finance and national security.

While some of these are not in the direct scope of the Banking Committee, it is important to remain vigilant to the many interrelated issues that crypto policy and regulation raises.

Coordination is key. To avoid unintended consequences, regulatory arbitrage, and the fallout from pushing activity offshore, it is critical to have both intra-government coordination – across our relevant Departments and Agencies, and in partnership with legislators – and intergovernmental coordination – through international bodies as discussed above.

Some of the top areas of consideration are:

a. Consumer protection and empowerment

There should be a comprehensive consumer protection framework to allow individuals to have a right to control their digital assets.

Property rights are the basis of our modern economy. They are fundamental in the physical world, and they should have the same status in the digital world as well. Consumers should be able to maintain control of their digital assets, including the right to transfer, give, host, and display their assets. Earlier Internet platforms typically provided only some of these rights, but the successful implementation of a Web3 ecosystem can provide this entire bundle of rights to empower consumers in new ways, such as consumer data rights, so that consumers can control what personal data to share, with whom and for how long.[66]

The meaningful protection of these rights depends on many safeguards and practices: there should be disclosure requirements for token issuers, safeguards against risks, clear governance, and operational resilience processes. These regimes should be accessible and comprehensible by the average customer without the need for a lawyer to interpret complex terms and conditions.

Web3 has the potential to go beyond consumer protection toward consumer empowerment.

Instead of simply re-creating and digitizing the systems of today, we should be thinking about how technology can create a *better* financial system. To me, this means going beyond consumer protection and thinking about consumer empowerment. How can individuals own and control their financial data – and reap themselves the benefits of its value? How can we create a marketplace of options, where customers have greater choice? How can related aspects, like identification, be managed in a manner that preserves privacy and autonomy?

[66] Jeng, Linda, ed. Open Banking, Oxford University Press (NY 2022). https://global.oup.com/academic/product/open-banking-9780197582879?cc=us&lang=en&#; https://www.zdnet.com/finance/blockchain/how-web3-is-driving-new-relationships-with-your-customers/

Features of Web3, as discussed in the "Beyond Banking" section of my testimony, can enable some of these realities, which can seem like a fantasy today. But, if we get this foundation right, I believe we can build a digital economy that looks different than the one we see today. I am especially excited about this potential for those who have been left out of or under-served by the current systems.

For this to become a reality, we need the appropriate frameworks and investments in place. A transition to a better digital economy cannot happen without corresponding investments in digital public infrastructure, digital literacy, and innovation for the public good. For example, we have seen localized efforts to provide crypto education to users so that engagement takes place in a risk aware manner.[67] But, we need more education to avoid any potential harm to those that may be new to engaging with these types of services and assets.[68] So, consumer protection and empowerment must be viewed as a multi-pronged and holistic endeavor.

Private commercial law should provide legal clarity to transactions in digital assets.

The legal characterization and treatment of digital asset transactions should provide parties with confidence over key transactional issues, such as property rights, settlement finality, how to legally protect oneself from adverse claims in digital asset sales, or how to perfect and enforce security interests in digital assets against third parties, where applicable.

In common law countries, private commercial laws govern private transactions. For example, the U.S. has the Uniform Commercial Code, which was recently revised to take into account digital assets and is in the process of being adopted by the 50 states. In the United Kingdom, the UK Law Commission has proposed a new asset class: "data objects".[69] Private commercial law around the globe should be flexible enough to cover the many different types of digital assets: ranging from digital money to digital securities to digital art along with new types of assets.

The legal recognition of property rights over digital assets should not hinge on impractical transfer mechanics or complex categorical definitions, as this can lead to uncertainty over the legal validity of transfers. Moreover, a successful crypto ecosystem cannot operate without digital money free of security interests. To the extent possible, perfecting a security interest in a digital asset should parallel the process of perfecting a security interest in the digital asset's analogous, physical counterpart. Private law should outline straightforward procedures that good faith purchasers can undertake to ensure the acquisition of digital assets free from any prior security interests.

Insolvency rules should put consumers first as technologies evolve.

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[67] https://www.oak.community/; *see also:* https://www.businessinsider.com/jay-z-jack-dorsey-bitcoin-academy-marcy-houses-2022-9?r=US&IR=T

[68] https://web3athon.xyz/

[69] https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2022/07/Digital-Assets-Consultation-Paper-Law-Commission-1.pdf

Insolvency respects property rights granted under either private commercial laws or regulatory regimes. Distinct features of digital assets necessitate insolvency rules for digital assets that differ from the insolvency rules for cash, securities, commodities, and associated accounts.

Within the broader class of crypto, however, insolvency rules should be drawn flexibly to cover different crypto platforms, both as they exist today and as they might evolve, to provide continued predictability and integrity to investors and customers alike. And as with traditional insolvency rules, crypto-oriented insolvency rules should reflect investor and customer interests, not internal organization, technology, or business models, except to the extent needed to promote investor and customer interests.

Within this framework, bankruptcy rules for crypto should protect customer interests while minimally impeding counterparty transactional flexibility. Insolvency rules should honor commercially-agreed terms for digital assets. Those terms should define the specifics of the relationship between entities that transact with crypto and those customers. Customers should be provided with default customer protections, but customers should have the ability to opt-out of this default relationship and its protections.

Default customer protections should include: i) mandated segregation of customers' digital assets from proprietary custodian assets, which can be achieved through the custodian's books and records; (ii) prohibitions on encumbrances on the digital assets, other than as directed by and for the benefit of the customer; and (iii) fast and easy netting of customer positions and transferring of net custodied digital assets.[70]

b. National security, AML, and privacy

U.S. national security and law enforcement officials need to be familiar with crypto to mitigate risks

Crypto is a global technology that by its very nature cannot be contained within borders. As various state and non-state actors seek to take advantage of crypto's borderless nature to harm the United States, U.S. personnel need the expertise to combat them. U.S. law enforcement and intelligence agencies must understand how blockchains work, they must have the technical tools to monitor illicit finance, and they must remain on the cutting edge of crypto to foresee how national security threat actors will evolve in Web3 environments. U.S. national security officials will also need familiarity with decentralized technology stacks in order to create more innovative and agile tech approaches for keeping our country safe. The U.S. government needs blockchain expertise and will benefit from a robust private crypto sector located in the United States that can provide support via talent and tools to the public sector.

Also, in order for policymakers to ensure that U.S. regulators continue to maintain efficacy in their mission to prevent money laundering, terrorist financing, and sanctions evasion, regulators

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70 https://cryptoforinnovation.org/wp-content/uploads/2023/01/FSB-Comment-Letter-and-Global-Regulatory-Blueprint.pdf

need to be deeply familiar with finance as it is evolving. If the regulators remove themselves from the oversight of crypto assets by segregating crypto from the traditional financial sector, it will be difficult to develop the regulatory frameworks which will address internet-based financial innovation.

There should be privacy-preserving technologies that respect national security interests.

Privacy is a fundamental human right and social good. Privacy-preserving technology allows data computation and targeted analysis while remaining encrypted to those performing the computation and malicious actors who might seek to steal or corrupt that information.

Crypto has been on the cutting edge of experimentation in this area. Zero-knowledge rollups and configurable privacy blockchains are emerging forms of privacy-preserving technologies that balance individuals' privacy interests with broader public policy and societal requirements, such as effective compliance, transparency, and safety.[71] Private crypto should not be exempt from all regulations, but rather, the regulatory perimeter should extend to crypto in a manner similar to how it already covers anonymous cash transactions.[72]

Governments should adopt laws and policies that allow for the development and use of privacy-preserving technologies, while also enabling appropriate compliance. For example, regulators could establish processes to evaluate the way novel mechanisms can be used to create and maintain digital identity records, including the adoption of digital identity verification techniques that can use a combination of decentralized blockchain-based technologies and secure "off-chain" data repositories. Regulators could also encourage zero-knowledge proof technologies[73], which allow users to interact with systems without revealing specific personal identifying information. Concurrently, governments should respect personal privacy themselves by accessing or using data on individuals only when doing so is necessary to further a specific, narrowly tailored, and legitimate governmental objective. In 2016, the European Union adopted its General Data Protection Regulation (GDPR), which provides EU citizens with active consumer data rights, including the rights to delete and correct. California followed suit with its adoption of the California Consumer Privacy Act of 2018 (CCPA). In the past year, several states passed broad privacy laws that go into effect this year:

- Virginia Consumer Data Protection Act ("Virginia Act"), which became effective January 1, 2023;
- Colorado Privacy Act ("Colorado Act"), which becomes effective July 1, 2023;
- Connecticut Act Concerning Personal Data Privacy and Online Monitoring ("Connecticut Act"), which becomes effective July 1, 2023; and
- Utah Privacy Act ("Utah Act"), which becomes effective December 1, 2023.[74]

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[71] https://ethereum.org/en/developers/docs/scaling/zk-rollups/
[72] https://www.coincenter.org/the-case-for-electronic-cash/
[73] https://ethereum.org/en/zero-knowledge-proofs/
[74] https://www.gunder.com/news/start-preparing-for-new-state-privacy-laws-that-take-effect-in-2023/#:~:text=This%20alert%20highlights%20key%20requirements,Connecticut%20and%20Utah%20in%202023

c. Innovation and international competitiveness

Web3 is the evolution of the Internet, and the U.S. risks being left behind in innovation and new markets by not fostering its development.

If the crypto ecosystem were de-banked, it would have dire consequences for the U.S. financial industry and the U.S.'s ability to be a leader in digital innovation. The industry would be driven off-shore to other countries or into shadow banking where regulators would lose the ability to monitor and regulate digital asset activities - thus bifurcating the U.S. financial system. Such siloing of crypto activities would stifle innovation and suppress our leadership in the digital innovation.

Failure to enact rules – either through rulemaking or legislation – that protect consumers and investors and allow digital assets to develop in the U.S. would risk offshoring innovation and putting American businesses, consumers, and the economy at a competitive disadvantage with our foreign peers. It could also jeopardize an important national security lever of the U.S. government – the preeminence of our financial system.

d. Building blocks beyond banking: Considering the future of crypto

(i) Digital money

Fiat-backed payment tokens should be treated as cash-equivalents for legal and accounting purposes.

Payment tokens, including stablecoins, power the digital assets ecosystem[75]. Fiat-backed stablecoins issued by centralized issuers should be backed by fiat currency 1:1, secure, audited, and subject to sufficient risk management practices. Such fiat-backed payment tokens should be backed only by segregated cash, bank deposits, or high-quality liquid assets ("HQLA"), such as short-term U.S. Treasuries or other internationally liquid denominated government debt instruments (Euro, GBP, CHF, JPY).[76] Issuers should also be required to publish quarterly third-party attestations and an annual third-party audit. Accordingly, regulations and accounting rules should treat fiat-backed tokens as cash-equivalent and avoid double-counting and capital charges. Correspondingly, such payment tokens should be subject to appropriate taxation policies. And private commercial law should prohibit secured interests in such payment tokens.[77]

(ii) Digital identity

Decentralized, self-custodied identity is critical to the digital economy.

As discussed above, promoting privacy-preserving technology is vital. Emerging

[75] https://www.coindesk.com/learn/what-is-a-stablecoin/
[76] https://www.centre.io/blog/lessons-learned-from-terra
[77] https://www.centre.io/blog/centres-response-to-australian-treasury

decentralization technologies facilitate privacy and control by enabling self-management of digital identity. Self-custodied identity allows individuals to manage their personal digital assets that can attest to their identities. For verifying a user's identity, the user can choose which digital assets to share, with whom to share, and for how long. Self-managed identity in turn enables users to verify their identities remotely and participate in financial activity without having to present personally-identifiable information numerous times to intermediaries and, more broadly, to reap many benefits of online activities without the restrictions, intrusions, and privacy risks posed by intermediaries—which often face strong incentives to harvest, sell, or exploit individuals' personally identifiable data.[78]

Regulators should prioritize appropriate frameworks to ensure access to, respect for, and the integrity of self-managed digital identity. Individuals should be required to share identifiable information only to the extent necessary to perform desired tasks and transactions.[79] including allowing financial institutions to rely on self-custodied identity solutions for KYC purposes.[80]

(iii) Decentralized finance (DeFi)

DeFi has the potential to level the playing field for consumers by removing traditional intermediaries.

Decentralized finance ("DeFi") is an emerging area of blockchain-enabled financial services and products, including brokerage, banking, and exchange services, that do not involve the use of traditional intermediaries.[81] Though historically brokers of trust, financial intermediaries often introduce inefficiency through higher costs, slower execution or both. By eliminating intermediaries – and, instead, relying on tech-enabled models of trust – DeFi holds the potential to level the playing field for many financial actors who have traditionally been disadvantaged, such as lower-income and unbanked/underbanked individuals and small businesses.[82]

To realize these DeFi benefits, an appropriately-tailored regulatory framework for DeFi is necessary and should involve the regulation of the centralized/business-owned applications, or onboarding access points to protocols, not the protocols or software themselves.[83] In a decentralized system, no one particular entity controls the protocol, and a protocol cannot

[78] See, https://www.forbes.com/sites/forbestechcouncil/2021/12/10/how-decentralized-identity-is-reshaping-privacy-for-digital-identities/?sh=256588ab3226; https://www.centre.io/verite

[79] See, Letter from CCI to Himamauli Das, U.S. FinCEN, re: Response to FinCEN's Request for Information on the Modernization of U.S. AML/CFT Regulatory Regime, at 3 (Feb. 13, 2022).

[80] https://www.centre.io/blog/centres-response-to-fincen-rfi

[81] https://cointelegraph.com/defi-101/defi-a-comprehensive-guide-to-decentralized-finance; https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3866699

[82] https://www.cato.org/events/differentiating-defi-understanding-efforts-regulate-decentralized-finance

[83] https://a16zcrypto.com/web3-regulation-apps-not-protocols/ ; https://a16zcrypto.com/regulate-web3-apps-not-protocols-part-ii-framework-for-regulating-web3-apps/

incorporate subjective determinations that traditional financial regulations sometimes require. Unlike the protocol layer, businesses and developers of DeFi applications do not have the same constraints with respect to subjective determinations. They can comply with different jurisdictional regulations and design flexible access points that minimize legal and regulatory risks.

Adoption of a regulatory framework that captures the software infrastructure, rather than the applications which operate as access points, could lead to challenges. These include jeopardizing the benefits of DeFi for millions of people, and pushing lending protocol developers to jurisdictions with particularly loose regulatory frameworks.

Similarly, in the context of Bank Secrecy Act applicability, FinCEN has recognized that suppliers of tools (communications, hardware, or software such as protocols) that may be utilized in money transmission, like anonymizing software, are engaged in trade and *not* money transmission.

If regulators were to impose subjective and globally-inconsistent regulations on DeFi protocols, innovation in decentralization would be stifled. However, these are the very properties that make DeFi protocols, and the Web3 business models they support, functional and useful in the first place. Thus, regulators must account for decentralization when crafting policies and rules, and acknowledge that frameworks for centralized platforms and instruments are unsuitable for decentralized ones.

Governments should take time to carefully study DeFi before making policy frameworks for this quickly-developing space. Governments may consider aspects such as progressive decentralization, varying governance and economic models, and the unique risks and benefits associated with operating financial services in this manner. For example, regulators should carefully consider the practice of progressive decentralization (a process whereby a blockchain-enabled application shifts gradually from centralized to decentralized, aka transmogrification), the diversity of governance and economic models supported by DeFi, and the distinct risks and benefits of DeFi.[84]

Decentralization versus centralization is not binary and is in fact a spectrum of varying levels of decentralization. For example decentralization might be evaluated according to the following multi-pronged test:

- Has the protocol been deployed beyond the developer team's unilateral control?;
- Is the protocol deployed on a blockchain with a high number of unaffiliated validator nodes?;
- Is the governance model of the protocol controlled by hundreds of unaffiliated participants or by only a few participants?; and
- Are users' funds or assets held by a single party or

[84] https://www.weforum.org/whitepapers/decentralized-finance-defi-policy-maker-toolkit/

custodian or in the user's own wallets or bank accounts?[85]

(iv) Additional considerations

In addition to the above issues, areas including taxation and accounting, among others, merit additional consideration in terms of how they intersect with digital assets.[86]

V. Conclusion

Thank you again for the opportunity to discuss these important topics and your support for the regulatory certainty that could be established by legislation.

As I said at the outset of my remarks here today, the crypto ecosystem needs and desires a clear regulatory framework to protect consumers and national security. The future of digital asset regulation will require much more than just defining agency jurisdiction and placing various digital assets into governmental organizational charts. More legal and regulatory brainpower will be needed, and lawmakers have a unique opportunity to step into the void, especially in periods of crisis or uncertainty, to make a real difference for all of our children, including my young daughter. But moving the dial, whether it be on consumer and investor protection, or financial inclusion, requires understanding the technology, its limitations, and opportunities - and having a builder's mentality. Thanks so much to you all for the invitation to speak to you today. I look forward to your questions.

[85] Note: I added a fourth prong to Rebecca Rettig's three-pronged test for measuring decentralization. See, https://cross-chain-examination.simplecast.com/episodes/global-crypto-regulation-and-the-rebecca-decentralization-test-unQWCHsx

[86] See, https://cryptoforinnovation.org/wp-content/uploads/2023/01/FSB-Comment-Letter-and-Global-Regulatory-Blueprint.pdf