

**Hearing on
“Stablecoins: How Do They Work, How Are They Used, and What Are Their Risks?”
Before the U.S. Senate Committee on Banking, Housing, and Urban Affairs**

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Prepared Statement

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Chairman Brown, Ranking Member Toomey, and Members of the Committee:

Thank you for inviting me to testify at today’s hearing. My name is Hilary Allen, and I am a Professor of Law at the American University Washington College of Law. I teach courses in corporate law and financial regulation, and my research focuses on financial stability regulation. I have authored several law review articles about fintech and financial stability, and I have also written a book, *Driverless Finance: Fintech’s Impact on Financial Stability*, that explores the threats that crypto and other fintech innovations pose for our financial system. Much of my testimony is drawn from this book.

Prior to entering academia, I spent seven years working in the financial services groups of prominent law firms in London, Sydney and New York. In 2010, I worked with the Financial Crisis Inquiry Commission, which was appointed by Congress to study the causes of the financial crisis of 2007-2008.

I am not testifying on behalf of the Washington College of Law or any other institution; the views expressed here are entirely my own.

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1. Executive Summary

The rise of crypto poses very real risks for financial stability, which I have explored at length in research that I would be happy to share with the Committee.¹ In considering its response to crypto, I submit that Congress’s most important goal should be to ensure that crypto does not cause a financial crisis. Proponents of crypto often cite the industry’s potential to create jobs and improve financial inclusion, but financial crises destroy jobs and exacerbate inequality – including for people who never invested in crypto in the first place.

A “stablecoin” is a relatively new form of crypto asset. Stablecoins try to avoid the volatility associated with cryptocurrencies like Bitcoin by pegging their value to the US Dollar (or some other fiat currency). In November of this year, the President’s Working Group on Financial Markets released a report on stablecoins (the “PWG Report”) that identified a number of risks associated with stablecoins, and made three recommendations for addressing those risks. The PWG Report’s first recommendation reads as follows:

To address risks to stablecoin users and guard against stablecoin runs, legislation should require stablecoin issuers to be insured depository institutions, which are subject to appropriate supervision and regulation, at the depository institution and the holding company level.²

In this statement, I will set out why I share the PWG’s general concerns about crypto and financial stability, but disagree with this specific recommendation. In short, stablecoins are not really being used to make payments for real-world goods and services. Instead, the primary use of stablecoins is to support the DeFi ecosystem. DeFi is a type of shadow banking system with fragilities that could – if DeFi reaches significant scale – disrupt our real economy. If lawmakers and regulators treat stablecoins as regulated banking products, that will lend legitimacy to and inspire confidence in stablecoins in a way that is likely to turbocharge the growth of DeFi. While stablecoins do have structural fragilities that may make them vulnerable to runs, the incidence and costs of stablecoin runs can be addressed by other policies that are less likely to encourage the growth of DeFi.

At the conclusion of this statement, I will summarize some of the policy options available to Congress in responding to stablecoins. These policy options range from an outright ban on stablecoins, through a licensing regime for stablecoins, to a multifaceted approach that uses aspects of securities law, antitrust, financial stability regulation, and banking law to respond to stablecoins’ risks. While any regulation will inevitably create some barriers to innovation, this is a necessary trade-off when dealing with money and finance. Use cases for stablecoins and DeFi are often explained with analogies to other digital services – “send money as easily as sending a photograph”, or “send money just like sending an email” – but these analogies underestimate the stakes involved. Because money and finance are the lifeblood of our economy, finance has always been highly regulated in a way that Kodak’s provision of photographs, and FedEx’s delivery of couriered letters, never were.

¹ See, for example, *Driverless Finance*, 10 Harv. Bus. L. Rev. 157 (2020); *Payments Failure*, 62 B.C. L. Rev. 453 (2021); DRIVERLESS FINANCE: FINTECH’S IMPACT ON FINANCIAL STABILITY, Oxford University Press (2021).

² President’s Working Group on Financial Markets, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency, REPORT ON STABLECOINS, 2 (November 2021).

2. Introduction

Today’s hearing is about stablecoins, how they work, how they are used, and their associated risks. A stablecoin is a new type of digital asset that is designed to have a value that is more stable than cryptocurrencies like Bitcoin, which are notoriously volatile (as a result, Bitcoin has never been useful as money or as a payments mechanism, even though it remains a popular investment). There are different ways that the creators of stablecoins seek to stabilize their value. The most widely-used stablecoins are backed by a reserve of real-world assets. This asset reserve is intended to inspire confidence in stablecoin holders that they will be able to redeem their stablecoin at any time at a rate that is pegged to the US Dollar (or some other fiat currency). There are also algorithmic stablecoins which rely on computer programs to adjust the supply of the stablecoins to keep the value stable in the face of demand.³ Algorithmic stablecoins have not yet experienced significant uptake and so they are not the focus of my testimony (although they should still be on regulators’ radar). The focus of my statement is on stablecoins backed by reserves, and how they are being used. Importantly, these stablecoins are not currently being used to pay for real-world goods and services in any meaningful way. Instead, their primary use is in the “decentralized finance” or “DeFi” ecosystem.⁴ I will explain DeFi in more detail in Section 4; for now, it suffices to say that DeFi creates digital versions of existing financial services like loans.

There are many different types of risks associated with stablecoins, and the DeFi ecosystem in which they are primarily deployed. There are risks for investors, whose investments may be vulnerable to fraud, hacks, and glitches; these risks are best addressed by the SEC and CFTC. Then there are risks that stablecoins could thwart public policy objectives, if they are used for money laundering or to avoid tax obligations or sanctions – FinCEN, the IRS, and OFAC are pursuing these issues. This statement, however, will focus on the risks that stablecoins and DeFi pose for financial stability. I will therefore start by elaborating on what “financial stability” is, and why financial stability regulation is important.

Financial stability regulation aims to prevent or mitigate financial crises, and so it must ensure that the financial system is robust enough to absorb future shocks. While some people have already forgotten the cost of the financial crisis of 2008, for others, the trauma of losing jobs and homes is still with them. Furthermore, the wealth disparities exacerbated by the 2008 crisis persist: for most middle-class families, their net worth in 2017 remained lower than it had been in 2007.⁵ These disparities were even more pronounced for middle class African American and Hispanic

³ On algorithmic stablecoins, see Ryan Clements, *Built to Fail: The Inherent Fragility of Algorithmic Stablecoins*, 11 WAKE FOREST L. REV. ONLINE 131 (2021) (available at <http://www.wakeforestlawreview.com/2021/10/built-to-fail-the-inherent-fragility-of-algorithmic-stablecoins/>).

⁴ “At the time of publication of this report, stablecoins are predominantly used in the United States to facilitate trading, lending, and borrowing of other digital assets.” PWG Report, *supra* Note 2 at 8. See also the Bank for International Settlements finding that “The growth of stablecoins has been exponential since mid-2020, when DeFi activities started to take off.” Sirio Aramonte *et al.*, *DeFi Risks and the Decentralization Illusion*, BIS QUARTERLY REVIEW, 25 (Dec. 2021).

⁵ Nelson D. Schwartz, *The Recovery Threw the Middle Class Dream Under a Benz*, N.Y. TIMES, Sept. 12, 2018, <https://www.nytimes.com/2018/09/12/business/middle-class-financial-crisis.html>.

families.⁶ In short, the harm of the 2008 crisis fell disproportionately on the most vulnerable members of society. While supporters of crypto regularly cite its ability to create jobs and promote financial inclusion, a crypto-inspired financial crisis would destroy these, and more.⁷

To be clear, financial stability regulation does *not* aim to eliminate all risks from the financial system. Instead, the focus of financial stability regulation is on eliminating *systemic* risks that could compromise the ability of financial institutions and markets to perform the risk management, capital intermediation and payments processing functions necessary for broader economic growth.⁸ In short, the endgame of financial stability regulation is sustainable economic growth, and ensuring the stability of financial markets and institutions is a means to that end. In the context of stablecoins and DeFi, this means that financial stability regulation should focus on protecting everyone who could be harmed by the impact of stablecoins and DeFi on our broader economy – especially those who have chosen not to invest in stablecoins or DeFi, but could nonetheless be harmed by fallout from a crypto market failure.

There is significant uncertainty about how the markets for stablecoins, DeFi, and other crypto applications will develop. One possible response when faced with uncertainty is to wait and see what will happen. However, given the potential harm that crypto could cause for the broader economy, “wait and see” is not good policy. It is therefore commendable that the PWG has proactively engaged with the risks that stablecoins might pose for financial stability, and that Congress is proactively contemplating legislation on this issue. However, in my view, the PWG’s recommendation that Congress enact legislation requiring “stablecoin issuers to be insured depository institutions” reflects an approach that is too microprudential in nature.

“Microprudential” regulation describes regulation that focuses on the stability of individual institutions, on the assumption that if an institution is stable, the financial system as a whole will benefit.⁹ The PWG Report proceeds from the view that as long as there’s no run on an individual stablecoin, then that will benefit financial stability. An important lesson from the financial crisis of 2008, though, is that financial stability regulation should be “macroprudential” in orientation, meaning that we should think through the systemic consequences of regulatory decisions¹⁰ – for example, that microprudential regulation of stablecoins could fuel the growth of destabilizing DeFi. Macroprudential regulation also requires collaboration among regulators overseeing different parts of the financial system, with different perspectives on “how different developments fit together and where the unseen risks might be hidden.”¹¹ In my statement today, I will highlight

⁶ *Id.*

⁷ A recent research paper found that “inequality rises following recessions and that rapid credit growth in the run up to a downturn exacerbates that effect... These links between inequality, credit and downturns are particularly significant for recessions associated with financial crises.” Jonathan Bridges *et al.*, *Credit, Crises and Inequality*, Bank of England Staff Working Paper No. 949 (Nov. 2021) (available at <https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2021/credit-crises-and-inequality.pdf?la=en&hash=9FC00E0CEA234D1E2C7C34A589A64183294F8FD6>).

⁸ For further discussion of financial stability as a regulatory goal, see Hilary J. Allen, *Putting the “Financial Stability” In Financial Stability Oversight Council*, 76 OHIO ST. L. J. 1087, 1098 *et seq.* (2015).

⁹ For a discussion of macroprudential and microprudential approaches to regulation, see Armour *et al.*, PRINCIPLES OF FINANCIAL REGULATION (2016) 416-18.

¹⁰ *Id.*

¹¹ Martin Hellwig, *Financial Stability and Monetary Policy*, 20 (Aug. 2015) (available at https://www.coll.mpg.de/pdf_dat/2015_10online.pdf).

the dangers inherent in taking too microprudential an approach to regulating stablecoins, and suggest alternative policy responses that are informed by securities law, antitrust, and financial stability regulation, as well as banking regulation.

3. Stablecoins and financial stability

The PWG Report considers a number of risks associated with stablecoins, including the potential for runs on stablecoins. Put simply, a “run” is a self-fulfilling prophecy that arises when the holders of a seemingly safe asset start to lose confidence that they will be able to withdraw or redeem that asset at the expected value when they need to. Fearing the worst, they seek to withdraw or redeem the asset early – which means that the issuer of the purportedly safe asset has to sell off assets in order to raise enough cash to satisfy the withdrawal/redemption requests. Because the issuer has to sell quickly, assets are often sold at a discount, which depresses the price of the issuer’s portfolio of assets and may ultimately drive the issuer into insolvency.

The paradigmatic example of this is a bank run, which occurs when panicking bank depositors seek to withdraw all of their funds from a bank, forcing that bank (which has invested the depositors’ funds in long-term assets like loans) to start selling assets at a discount to raise the funds necessary to meet withdrawal requests. If the bank’s assets shrink so much – as a result of these discounted fire sales – that the bank’s liabilities outnumber its assets, the bank will fail, and then it will be unable to perform its usual functions of managing risk, intermediating capital, and facilitating payments for its customers. Furthermore, the discounted fire sales will not only affect the bank experiencing the run; they will also affect the market price of the assets that are sold, which (in a vicious cycle) can threaten the solvency of other institutions that have invested in similar assets.

In short, runs can cause financial stability problems in two ways: they can deprive the economy of capital intermediation services on which it relies, and they can ignite fire sales that drive down the prices of financial assets in a way that drags down other institutions and markets. As the PWG report and others have observed, asset-backed stablecoins may be vulnerable to runs because they purport to be redeemable against a fiat currency at a fixed value.¹² If something were to shake confidence in a stablecoin (as the PWG report identifies, this ‘something’ could range from a hack to a problem with the reserve assets),¹³ then holders might come to doubt that the stablecoin could retain a stable value against their preferred fiat currency. We could then expect holders to redeem their stablecoins for fiat currency, forcing the issuer of the stablecoin to start liquidating the reserve of assets backing the stablecoin, depressing the market value of those assets, and incapacitating the stablecoin as a means of transacting.

Because of this potential for a run on stablecoins, the PWG Report has recommended that stablecoins should be treated more like bank deposits and brought within the sphere of banking regulation.¹⁴ However, in my view, this recommendation misses some key context. Stablecoins

¹² PWG Report, *supra* Note 2 at 2.

¹³ *Id.* at 12.

¹⁴ The report recommends that “legislation should require stablecoin issuers to be insured depository institutions, which are subject to appropriate supervision and regulation, at the depository institution and the holding company level.” *Id.* at 2.

differ from deposits in two important ways: (i) the expectations of the parties using them are different; and (ii) they play different roles in intermediating capital. Because of these differences, stablecoins should not be brought within the perimeter of banking regulation (at least, not now – the Financial Stability Oversight Council (“FSOC”) and the Office of Financial Research (“OFR”) should monitor stablecoins for changes in expectations and usage). Regulating stablecoins like bank deposits will lend them implicit government backing – and with it, confidence and legitimacy far beyond what stablecoin issuers could generate on their own.¹⁵ Inspiring this type of confidence in the stability of stablecoins may counterproductively make runs more likely. Furthermore, legitimized stablecoins will turbocharge the growth of the DeFi (which relies upon stablecoins to facilitate “fund transfers across platforms and between users”).¹⁶

Expectations surrounding stablecoins

Runs happen when people lose confidence that a particular asset (like a dollar in a deposit account) will continue to remain accessible at the expected value. This “confidence” aspect of runs means that runs are unlikely to occur if the people holding an asset never expected it to have a stable value in the first place. Right now, stablecoins are not being used for payments for real world goods and services in any meaningful way, and so the people using them do not need them to maintain a stable value. The recent exponential growth in stablecoin usage has been driven by people who have purchased stablecoins to speculate in the DeFi markets,¹⁷ suggesting that they do not care whether their stablecoins will maintain a consistent value.¹⁸ Investor protection regulation can help tamp down on any limited expectations of stability that do exist, by preventing stablecoin issuers from advertising their stablecoins as being more stable than they really are, and by mandating disclosure of the assets in the reserve.

If stablecoins start to become widely used as payments mechanisms for real-world goods and services, then expectations will shift, and runs will be more likely. The FSOC and the OFR should monitor the stablecoin market for such a shift. However, (with some caveats I will discuss shortly) this seems unlikely to happen in the near term. Payments mechanisms benefit from network effects, meaning that they become more useful as more people and businesses use them. Stablecoins therefore have a “chicken and egg” problem when it comes to paying for real world goods and services: they need to develop a critical mass of merchants and users in order to become useful enough to attract more merchants and users. Before merchants and users are willing to start embracing stablecoins in this way, stablecoin issuers will have to address concerns about the ability of distributed ledger technology to process payments on a large scale. Changes in the size and usage of a payment system often create problems, and it will be particularly challenging for decentralized distributed ledger to respond to these changes.¹⁹ If there is nobody “in charge” of

¹⁵ The PWG report recommends that “with respect to stablecoin issuers, legislation should provide for supervision on a consolidated basis; prudential standards; and, potentially, access to appropriate components of the federal safety net.” *Id.* at 16.

¹⁶ Aramonte, *supra* Note 4 at 24.

¹⁷ *See* Note 4.

¹⁸ As one reporter observed about the stablecoin Tether, “It wasn’t that they trusted Tether, I realized. It was that they needed Tether to trade and were making too much money using it to dig too deeply. “It could be way shakier, and I wouldn’t care,” said Dan Matuszewski, co-founder of CMS Holdings LLC, a cryptocurrency investment firm.” Zeke Faux, *Has Anyone Seen Tether’s Billions*, BLOOMBERG’S BUSINESSWEEK (Oct. 7, 2021).

¹⁹ Hilary J. Allen, *Payments Failure*, 62 B.C. L. Rev. 453, 494 (2021)

the ledger on which the stablecoins are used, no fix can take effect unless and until it is adopted by the majority of the nodes that control that ledger. If majority approval cannot be achieved, the gridlock can be addressed by a “hard fork” that splits the distributed ledger in two, but given the network effects of payments systems, hard forks can be a very problematic response to governance problems.

While stablecoins face major hurdles to becoming a viable payments mechanism, there are two obvious scenarios in which these hurdles could be overcome more quickly. One is for lawmakers to follow the PWG’s recommendation to regulate stablecoins like bank deposits, which would lend stablecoins greater credibility as a payments mechanism and attract merchants and users. It is perhaps telling that Jeffrey Allaire (the CEO of Circle, issuer of the USDC stablecoin) has welcomed this type of banking regulation for stablecoins.²⁰ In my view, this approach would be unwise – if the government wishes to promote better and faster payments frameworks for underserved consumers, there are simpler technological solutions to explore that don’t require an inherently fragile asset like the stablecoin running on a distributed ledger with complex governance issues (complexity is itself a source of financial instability, and simpler solutions are less likely to cause problems).²¹ Simpler technological solutions will also avoid the environmental costs of crypto mining.²²

The second way in which a stablecoin could quickly become a widely-used payments system is if it is launched by a firm that already has a well-established network of users. Most pressing, large tech firms already have large networks of users that they could encourage to adopt any stablecoin they issue. If a tech giant introduced a stablecoin, it could quickly become an important payments system that becomes critical to the real-world economy (particularly if the tech firm is willing to use a permissioned distributed ledger that will allow it to easily make changes to the underlying distributed ledger as its scale of usage changes). People *would* expect such a stablecoin to have a stable value, and in this sense, Meta/Facebook’s Diem could pose a real threat to financial stability. That does not mean, though, that all stablecoins should be regulated like bank deposits. Instead, the problems related to Diem (and Meta/Facebook’s other financial projects) should be dealt with directly – as should any other attempt by a tech giant to provide payments services. This may involve using antitrust law; a complementary approach would be to use the FSOC’s designation power under Section 113 of Dodd-Frank to designate the tech giant in question as a systemically important financial institution and subject it to supervision by the Federal Reserve. Congress could also consider strengthening existing legislation that

²⁰ “But I would say at the highest level, the proposal that dollar stablecoin issuers in the US financial system should be regulated as banks at the federal level by the Federal Reserve is something that we think represents significant progress in the growth of this industry.” *Circle CEO discusses stablecoin regulation and the bank charter process*, YAHOO NEWS (Nov. 9, 2021)

(available at <https://news.yahoo.com/circle-ceo-discusses-stablecoin-regulation-213747962.html>).

²¹ Allen, *supra* Note 19 at 464 *et seq.*

²² “According to Marion Laboure, a Deutsche Bank analyst, mining one bitcoin consumes a larger carbon footprint than nearly two billion Visa transactions. Another incredible stat: an individual bitcoin transaction could power the average U.S. household for 61 days. Adding in the energy consumption of Ethereum, and the two major cryptocurrencies would rank 15th in the world, nearly equivalent to Mexico.” Steve Goldstein, *Here’s how many Visa transactions can be completed using the energy to mine one bitcoin*, MARKETWATCH (Dec. 10, 2021).

prevents commercial firms from accepting deposits so that commercial firms are prohibited from accepting deposits *and* from offering payments services.

The Role of Stablecoins in Intermediating Capital

When considering the problems associated with runs on stablecoins, it's important not to lose sight of why runs are a problem. Runs are not intrinsically bad, but they do become a problem when they interfere with the capital intermediation on which the broader economy depends (either by igniting fire sales that drag down the prices of assets held by other institutions and markets, or by disabling a capital-intermediating service for which there are no ready substitutes). For example, bank runs are a problem because they prevent banks from extending the credit that individuals and businesses rely upon for growth. In the worst case, runs can generalize into a broad-scale bank panic at multiple institutions, causing a widespread collapse in lending. Deposit insurance was adopted in 1934 to prevent this kind of panic and protect the flow of credit, notwithstanding valid objections from economists about moral hazard (in this context, "moral hazard" means that deposit insurance gives banks incentives to engage in riskier behavior in order to multiply their profits in good times, knowing that there is a government safety net that will absorb the losses in bad times).²³

The moral hazard associated with deposit insurance was ultimately deemed a price worth paying to keep banks stable and funds flowing through them to the broader economy. But the value proposition for stablecoins is much less clear: what economic growth do they propel? And what moral hazard would government backing for stablecoins create? Right now, stablecoins are primarily being used to facilitate DeFi, and so the issue of whether we're worried about stablecoins' continuing ability to intermediate capital will depend on our conclusions about the utility of DeFi, and whether or not DeFi deserves implicit government support. These issues will be addressed in the next Section.

The remaining concern about stablecoins, from a financial stability perspective, is whether run-inspired fire sales will have systemic consequences. This will depend on what assets are in stablecoins' reserves. The PWG Report observes that "[b]ased on information available, stablecoins differ in the riskiness of their reserve assets, with some stablecoin arrangements reportedly holding virtually all reserve assets in deposits at insured depository institutions or in U.S. Treasury bills, and others reportedly holding riskier reserve assets, including commercial paper, corporate and municipal bonds, and other digital assets."²⁴ It is possible that mass withdrawals by stablecoins from insured deposit accounts could trigger runs on the institutions that provide those deposit accounts, but that doesn't mean that stablecoins need to be brought inside the perimeter of banking regulation. This possibility could be dealt with by prudential

²³ Moral hazard is the "tendency of an insured to relax his efforts to prevent the occurrence of the risk that he has insured against because he has shifted the risk to an insurance company." RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 121 (5th ed. 1998). Lovett expressed the application of moral hazard in the banking context as follows: "If governments and modern nations do not allow most banks to [fail], how can the leaders and managements of banking institutions be disciplined and avoid unduly risky, negligent, or adventurous lending policies (or simply poor asset-liability management)?" William A. Lovett, *Moral Hazard, Bank Supervision and Risk-Based Capital Requirements*, 49 OHIO ST. L.J. 1365, 1365 (1989).

²⁴ PWG Report, *supra* Note 2 at 4.

regulation of existing insured depository institutions: they could be prohibited from accepting deposits from stablecoin issuers on the grounds that it is an unsafe and unsound practice (there are already banking regulations that limit acceptance of other volatile deposits, like brokered deposits).²⁵

To the extent that stablecoins invest in other assets types like U.S. Treasuries, commercial paper, corporate and municipal bonds, and other digital assets, the impact of stablecoin runs will depend on the size of the stablecoin reserve. This is another argument for why Congress and regulators should not adopt policies that encourage the growth of stablecoins (and should take measures to keep tech giants out of the stablecoin business). If a stablecoin were to gain significant traction, then fire sales of its reserve assets would obviously be of significant concern, but if stablecoins remain modestly sized, then any fire sales will have limited impact on broader asset markets. Interestingly, the reserves of Tether, which currently has by far the largest market value of any stablecoin, may not actually be as big as expected. As one recent report put it: “[e]xactly how Tether is backed, or if it’s truly backed at all, has always been a mystery. For years a persistent group of critics has argued that, despite the company’s assurances, Tether Holdings doesn’t have enough assets to maintain the 1-to-1 exchange rate, meaning its coin is essentially a fraud.”²⁶ If true, this would be highly problematic for investors in Tether, but it would also limit the systemic impact of any fire sale of Tether’s reserve assets – because there wouldn’t be so many of them. A run on Tether could, however, be disastrous for DeFi investors, as tens of billions of dollars of Tether are locked into DeFi protocols.²⁷

4. DeFi and financial stability

DeFi, like any new and evolving business model or technology, is hard to pin down with a precise definition. Right now, the term is used to describe any simulacrum of traditional financial services performed using blockchain technology (relying in particular on smart contracts and stablecoins).²⁸ It can sometimes be hard to disentangle DeFi’s aspirations from its realities. The term “decentralized finance” speaks to an aspiration – the hope that blockchain technology can be used to deliver financial services “without centralized intermediaries or institutions.”²⁹ The expansion of DeFi is sometimes described as the foundation of “web3”, an idealized vision for an internet that would run on a distributed ledger and therefore avoid the concentrated power of tech giants like Meta/Facebook and Google. In reality, though, distributed ledger technology is not as decentralized as claimed.³⁰

²⁵ “The OCC does...discourage brokered deposits because of their high volatility and cost, and banks may pay a higher FDIC deposit insurance premium for such items” Richard Scott Carnell *et al.*, *THE LAW OF FINANCIAL INSTITUTIONS*, 118 (2021).

²⁶ Faux, *supra* Note 18.

²⁷ Aramonte, *supra* Note 4 at 24.

²⁸ The Wharton Blockchain and Digital Asset Project, *DEFI BEYOND THE HYPE: THE EMERGING WORLD OF DECENTRALIZED FINANCE*, 2-3 (May 2021) (available at <https://wifpr.wharton.upenn.edu/wp-content/uploads/2021/05/DeFi-Beyond-the-Hype.pdf>).

²⁹ *Id.* at 2.

³⁰ See Angela Walch, *Deconstructing ‘Decentralization’: Exploring the Core Claim of Crypto Systems*, in *CRYPTO ASSETS: LEGAL AND MONETARY PERSPECTIVES* (ed. Chris Brummer) (2019).

Recent research from the Bank for International Settlements has observed that there is “a “decentralisation illusion” in DeFi due to the inescapable need for centralised governance and the tendency of blockchain consensus mechanisms to concentrate power.”³¹ There have been many illustrations of the lack of real decentralization in the cryptoverse.³² One recent example involves BadgerDAO, which paused all of its smart contracts upon receiving reports of unauthorized withdrawals³³ – if decentralization lived up to the hype, there should be no person who could choose to pause the operation of these smart contracts. In addition to individuals who can control the governance of DeFi apps, many of the investors driving the growth of DeFi are institutional players, often engaging in transactions worth \$10 million or more of cryptocurrency.³⁴ More generally, DeFi relies heavily on centralized crypto services (including stablecoins), which in turn rely on traditional financial services (like banks and fiat currencies).³⁵ DeFi is therefore not particularly decentralized, but using the term “decentralized” to describe these services serves a marketing purpose, and may also be intended to discourage regulation (if policymakers believe the decentralization hype, they may be misled into thinking that there are no intermediaries to regulate, notwithstanding that DeFi relies in part on the regulated financial system, wallets and exchanges are obvious candidates for regulation, and software developers and miners could also be regulated. Furthermore, just as some regulations and fiduciary duties are applied to significant shareholders of a corporation, concentrated owners of tokens could also be regulated).

In reality, DeFi’s defining attribute is the technology it relies on, rather than decentralization. As already stated, DeFi relies on blockchain technology. Stablecoins are essential to DeFi’s operation, as are smart contracts. A “smart contract” is simply a type of computer program that is designed to be self-executing and self-enforcing. These programs establish certain rights and obligations associated with tokens that are hosted on a distributed ledger, and execute on the distributed ledger (although they can be programmed to consult outside data sources, which are referred to as “oracles”, before executing). The crypto industry’s vision is that smart contracts, stablecoins, and distributed ledgers will be used in concert to provide new versions of “payments, lending, trading, investments, insurance, and asset management” services,³⁶ but it is still unclear who will use these services. A recent article in *The Economist* put it this way: “The problem is that all this fancy financial engineering has, as yet, no “real” economy to service. Instead it underpins an incorporeal casino: most of those using DeFi do so to facilitate or leverage their bets on one of many speculative tokens.”³⁷ If stablecoins are primarily used in

³¹ Aramonte, *supra* Note 4 at 22.

³² For examples of actions within the Bitcoin and Ethereum blockchain systems that suggest centralized control, see Walch, *supra* Note 30.

³³ “Badger has received reports of unauthorized withdrawals of user funds. As Badger engineers investigate this, all smart contracts have been paused to prevent further withdrawals. Our investigation is ongoing and we will release further information as soon as possible”, <https://twitter.com/BadgerDAO/status/1466263899498377218> (Dec 1, 2021).

³⁴ Chainalysis, *DeFi Whales Turned Central, Northern & Western Europe into the World’s Biggest Cryptocurrency Economy* (Oct. 14, 2021) (available at <https://blog.chainalysis.com/reports/central-northern-western-europe-cryptocurrency-geography-report-2021-preview/>).

³⁵ “To the extent that DeFi relies on such stablecoins, it remains dependent on CeFi and traditional finance.” Aramonte, *supra* Note 4 at 25.

³⁶ Wharton Blockchain and Digital Asset Project, *supra* Note 28 at 2.

³⁷ Alice Fulwood, *Decentralized Finance is Booming, But it Has Yet to Find Its Purpose*, *THE ECONOMIST* (Nov. 8, 2021).

DeFi, and DeFi is an “incorporeal casino”, then treating stablecoins like regulated deposits will provide implicit government backing to that casino, encouraging its growth.

DeFi Growth

A recent report from the BIS described DeFi as largely self-referential, and concluded that “[g]iven this self-contained nature, the potential for DeFi-driven disruptions in the broader financial system and the real economy seems limited for now.”³⁸ If Tether were to fail right now, for example, that would cause real problems for the DeFi ecosystem that relies upon it, but because DeFi still remains largely disconnected from both real-world economic applications and the established financial system, there would be limited pressure on the government to bail it out. However, as DeFi grows, the possibilities for something to go wrong, and for that something to impact the broader economy, increase.

Before the rise of crypto, the supply of new types of financial assets was always constrained—if only a little bit—because assets had to have some kind of connection to some kind of real-world economic good or service. Now, assets can be created out of thin air by anyone with computer programming knowledge, and an unconstrained supply of financial assets means more opportunities for asset bubbles to grow, and more assets to be dumped during fire sales. More assets also means more trading transactions which means more contractual relationships between counterparties that can transmit shocks through the system. Market practices requiring DeFi transactions to be overcollateralized with stablecoins could theoretically put some limits on the growth of DeFi, but when stablecoins are used as collateral for loans, the proceeds of those loans are often used as collateral for other loans, which can then be used as collateral for further loans, and so on.³⁹ This is multiplying the amount of leverage in the DeFi ecosystem, and the use of derivatives is also increasing the amount of leverage.⁴⁰ As the 2008 crisis amply demonstrated, increased use of leverage makes a system more fragile both by inflating asset bubbles on the upswing, and by causing fire sales on the downswing (if someone buys an asset with mostly borrowed money, then if the price of that asset falls, they will have to sell either that asset or some other asset in order to raise money to repay the loan).

DeFi could also grow as traditional financial institutions become increasingly interested in investing in, and offering, crypto.⁴¹ The head of JPMorgan’s blockchain team, for example, said earlier this year that “[w]e are keeping a very close eye on the DeFi evolution.”⁴² And the interest goes both ways, with some members of the crypto industry welcoming a relationship with traditional finance: the CEO of Circle recently said that “crypto needs to be integrated with the traditional financial system, creating “a hybrid model.”⁴³ Regulated financial institutions could make huge profits by offering DeFi versions of their traditional products and services (in the past,

³⁸ Aramonte, *supra* Note 4 at 21.

³⁹ *Id.* at 29.

⁴⁰ *Id.*

⁴¹ *Id.* at 31-32.

⁴² Ian Allison, *Remember JPMCoin? Next Step is Programmable Money, Bank Exec Says*, COINDESK (Jun. 7, 2021) (available at <https://www.coindesk.com/business/2021/06/07/remember-jpm-coin-next-step-is-programmable-money-bank-exec-says/>).

⁴³ Ephrat Livni, *Congress Gets a Crash Course on Cryptocurrency*, N.Y. TIMES (Dec. 8, 2021) (available at <https://www.nytimes.com/2021/12/08/business/house-financial-services-crypto.html>).

financial institutions have had significant financial success in offering new versions of existing financial products that are exciting, but not much better at discharging their functions than previous versions).⁴⁴ Now that unlimited crypto assets can be created through computer programming, DeFi provides enormous opportunities for profit that may prove too seductive for the established financial industry to ignore. However, because the real economy relies upon the established financial industry for credit and other services, the government may feel compelled to bail out DeFi if it becomes integrated with the traditional financial system.

There are a number of avenues through which the financial industry's ventures into DeFi could cause problems for the traditional financial system, and ultimately the broader economy. First, financial institutions might make large, leveraged investments in DeFi and other crypto products. If the value of those products were to fall precipitously (for example, because of a hack), then the institutions invested in them would see their overall asset portfolios shrink, and could even experience a run. Either eventuality could have severe real-world consequences if it shuts down the availability of credit for individuals and small businesses, or ignites fire sales of unrelated asset classes. Furthermore, runs and other financial panics tend to be worse if there isn't much information available about the assets involved, or if that information exists but is impossible to understand. Most investors (including established financial institutions) are used to reviewing balance sheets and written disclosures to assess investments, not computer code. While it's possible for written disclosures to describe how smart contracts will operate, one study found that the written disclosure documents provided to crypto investors can be highly inconsistent with how the code of the relevant smart contracts actually functions.⁴⁵ This lack of clarity may exacerbate the problems associated with financial institutions investing in crypto.

Financial institutions might also be inclined to launch their own stablecoins (JPMorgan has already done so with its JPMCoin, although JPMCoin runs on JPMorgan's proprietary ledger rather than on a decentralized ledger).⁴⁶ If bank-issued stablecoins could be used in the DeFi ecosystem, then all the concerns raised in Section 3 about lending implicit government support to DeFi would be realized. There are also monetary policy and safety and soundness concerns associated with bank-issued stablecoins: a bank like JPMorgan has always been able to profit by making US dollar loans to borrowers, but regulations (most importantly reserve and capital requirements) ultimately limit the amount of loans that banks can make. In addition, banks have no right to create US dollars for their own spending—that right belongs solely to the central bank. JPMorgan could create JPMCoins for its own spending, though, and because JPMCoins are not subject to reserve and capital requirements, JPMorgan could also theoretically make unlimited loans in JPMCoins.

Disenchantment with the existing financial system has spurred interest in DeFi, and that disenchantment is understandable and often justified. However, we should be keenly aware that if there is money to be made in any substitute financial system, established financial intermediaries will seek to find a way in. Congress should therefore consider steps to keep regulated depository institutions and their affiliates separate from DeFi. One measure that would contribute to this goal

⁴⁴ Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. 235, 263-4 (2012).

⁴⁵ Shaanan Cohny *et al.*, *Coin-Operated Capitalism*, 119 COLUM. L. REV. 591 (2019).

⁴⁶ Allen, *supra* Note 19 at 495-6.

would be to prevent these institutions from investing in DeFi or any other crypto; another would be to prevent these institutions from issuing any stablecoin that operates on a decentralized ledger. We should also be keenly aware, though, that even without the involvement of established financial intermediaries, DeFi will tend towards centralization and concentration, and that it suffers from many of the same problems as traditional finance – along with some new ones.

Speed and rigidity

As previously noted, DeFi relies heavily on smart contracts as well as stablecoins. There have been a lot of news stories recently about hackers exploiting bugs in the code of these smart contracts, but even flawless code can cause financial stability problems.⁴⁷ In moments of crisis, “the elasticity of law has proved time and again critical for avoiding a complete financial meltdown.”⁴⁸ Smart contracts, however, are designed to be as inflexible as possible, executing their preprogrammed instructions without waiting for any further input from a court or even the parties themselves.

When unexpected events occur, parties to regular financial contracts have the opportunity to amend them or agree not to enforce them. Legal systems have also developed the ability to relax and suspend contractual obligations in the face of a significant unanticipated event, whether through the use of bankruptcy courts, encouraging a contractual party not to enforce their rights, or even by enacting legislation that declares certain contractual terms illegal.⁴⁹ Because of their reliance on smart contracts, DeFi transactions will execute quickly, and will be harder to stop or undo (for example, DeFi loans are often structured so that they are automatically liquidated if there is insufficient collateral posted).⁵⁰ The execution of a smart contract can only be paused, changed, or undone with the consent of whoever controls the relevant distributed ledger, and where the ledger is decentralized and permissionless (like the Ethereum ledger) there is no single individual who can coordinate the process—even if the parties to the smart contract (as well as the public interest) all support it. Instead, any pause, change or reversal of a smart contract will require the consensus of all the nodes in the distributed ledger supporting the smart contract, which will take time (after the DAO hack in 2016, it took over a month for the nodes of the Ethereum distributed ledger to coordinate their response).⁵¹ It seems highly unlikely that this kind of consensus could ever be achieved *before* the smart contract executes, and so any intervention is likely to come too late to prevent runs, fire sales, and other destabilizing harms.

While there are steps that can be taken to better equip a smart contract to adapt to unexpected events (for example, a smart contract can be programmed to consult an external oracle), taking these kinds of steps will increase transaction costs. The Ethereum ledger (which is “the predominant blockchain on which DeFi protocols and applications function”)⁵² charges a “gas

⁴⁷ Mark Hochstein, *The Downside of Programmable Money*, COINDESK (Nov. 30, 2021) (available at <https://www.coindesk.com/business/2021/11/30/the-downside-of-programmable-money/>).

⁴⁸ Katharina Pistor, *A Legal Theory of Finance*, 41 J. COMPARATIVE ECON. 315, 321 (2013).

⁴⁹ Anna Gelpern & Adam J. Levitin, *Rewriting Frankenstein Contracts: Workout Prohibitions in Residential Mortgage-Backed Securities*, 82 S. CAL. L. REV. 1075, 1128–29 (2009).

⁵⁰ Aramonte, *supra* Note 4 at 27.

⁵¹ Primavera De Filippi & Aaron Wright, *BLOCKCHAIN AND THE LAW: THE RULE OF CODE*, 188 (2018).

⁵² PWG Report, *supra* Note 2 at 9.

cost” for any computing done, and consulting an oracle would increase the amount of computing power (and thus the gas charge) necessary to execute a smart contract. Participants in the DeFi markets will probably be willing to bear these charges up to a certain point, but eventually, these ongoing operational costs will discourage measures that cater for very unusual events. Unfortunately, when we’re talking about financial stability, low-probability high-consequence tail events are the ones we’re most concerned about.

5. An illustration: AIG’s credit default swaps in the DeFi era

It can be hard to conceptualize DeFi’s implications for financial stability in the abstract. I therefore offer an illustration here, by explaining what would have happened in 2007-8 if credit default swaps issued by AIG had been issued as a form of DeFi.⁵³

In the lead-up to the 2008 financial crisis, the insurance giant AIG had issued an estimated \$1.8 trillion of credit default swaps (“CDS”) that would require it to make payments if the mortgage-backed securities (“MBS”) underlying those CDS suffered some type of credit event. AIG was not in a position to actually pay out on all of those CDS – at the time, AIG’s parent company reported total capital of \$95.8 billion – but AIG had assumed that the underlying MBS would never default and that payments would never be required. However, as time progressed, and the mortgages backing those MBS began to default in alarming numbers, people started to admit the possibility that MBS themselves might default, which made AIG’s position riskier. Worried that AIG might not be able to make payments on its CDS if the MBS failed, the banks and other investors that had bought CDS from AIG turned to provisions in their contracts that required AIG to provide them with collateral if the risks associated with MBS increased.

It was these calls for collateral that ultimately forced a government bailout – to the tune of tens of billions of dollars – to prevent AIG from failing. In particular, the investment bank Goldman Sachs demanded on several occasions that AIG post collateral in response to downgrades of the MBS referenced in the CDS that AIG had issued to Goldman. Pursuant to the agreements governing the arrangements between Goldman Sachs and AIG, these collateral calls were authorized if Goldman Sachs believed that the value of the underlying MBS had decreased. However, AIG had dismissed the possibility of such collateral calls – in fact, many senior people at AIG were unaware that the contracts authorized these collateral calls at all – and so no one at AIG had developed any way of assessing what the appropriate amount of collateral should be. As a result, Goldman Sachs was largely in a position to dictate how much collateral it was entitled to in a collateral call.

When Goldman Sachs did make its collateral call, AIG objected, the parties negotiated, and they ultimately agreed that AIG could post much less collateral than Goldman Sachs had initially demanded. However, if this had happened in an era of DeFi and the parties had used smart contracts to automate the collateral call process, Goldman Sachs would simply have had to inform

⁵³ This account of events relating to the credit default swaps that AIG issued to Goldman Sachs is drawn from Rena S. Miller & Kathleen Ann Ruane, Congressional Research Service, R41398, THE DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT: TITLE VII, DERIVATIVES (2012); and Financial Crisis Inquiry Commission, THE FINANCIAL CRISIS INQUIRY REPORT: FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL AND ECONOMIC CRISIS IN THE UNITED STATES, 265-274 (2011).

a so-called “oracle” of the amount of desired collateral (remember that AIG didn’t negotiate for any rights with respect to collateral calls). Upon consulting the oracle, the smart contract would immediately have withdrawn stablecoins from AIG’s wallet on the distributed ledger and transferred them to Goldman Sachs. There would have been much less scope for flexibility or negotiation in Goldman Sachs’ treatment of AIG, and AIG’s solvency might have been in jeopardy as early as 2007.

When AIG ultimately did reach the brink of failure in September 2008, again as a result of collateral calls in connection with the many CDS it had issued, AIG’s insolvency was averted by the government pledging to provide AIG with the funds necessary to cover those collateral calls. If the relevant CDS provisions had been automated as smart contracts, though, would there have been a way to suspend collateral calls until AIG received its infusion of government funds, or would collateral (in the form of stablecoins) already have been transferred away from AIG, rendering AIG insolvent before government aid could arrive? Parties to a paper contract can agree among themselves not to enforce a contract when it is not in their best interests to do so, but there is much less flexibility in a smart contract. Unless a smart contract were programmed in advance to delay execution following the announcement of a government bailout of a counterparty (an unlikely event that would probably not have been contemplated at the time the smart contract was programmed), such news would not prevent default – even though, in reality, the announcement of government support succeeded in saving AIG in 2008.

6. A note on monetary policy

This testimony is primarily focused on the impact of stablecoins and DeFi on financial stability. However, financial instability is not the only threat to broader economic growth. Central banks like the Federal Reserve carry out monetary policy functions in order to match the supply of money to the needs of the economy, and the rise of stablecoins has the potential to disrupt these functions. For example, central banks manage the money supply to respond to inflation. When there is a lot of money available in the economy, it is cheaper to borrow, and cheaper money increases purchasing power which can drive up inflation. The converse is also true: when there is less money available, inflation is reduced. If money increasingly takes the form of stablecoins issued by private entities, then that could displace the use of fiat currencies and limit the ability of central banks to match the money supply to the economic situation. Private sector institutions – who have no mandate to serve the public interest – will have usurped control over the money supply, undermining central banks’ ability to rein in inflation or address deflation. This is yet another reason to avoid policies that encourage the growth of stablecoins.

Central banks are certainly concerned about the impact that widely-used stablecoins could have on their monetary policy. As a result, many central banks are contemplating adopting central bank digital currencies (“CBDCs”) to compete with privately-issued stablecoins, notwithstanding that they have misgivings about the financial stability implications of CBDCs (particularly their potential to encourage runs from bank deposits to CBDCs).⁵⁴ Given these financial stability concerns (and also concerns about user privacy), if CBDCs are nothing more than a defensive

⁵⁴ Bank for International Settlements, CENTRAL BANK DIGITAL CURRENCIES: FOUNDATIONAL PRINCIPLES AND CORE FEATURES, 8-9 (2020).

response designed to outcompete the Diems of the world, that is another reason for Congress to consider whether Diem should be permitted in the first place. The need to protect monetary policy is also another justification for measures that prohibit regulated depository institutions from issuing stablecoins: if significant volumes of transactions are consummated in JPMCoins, for example, the Federal Reserve will also have lost some of its control of the money supply.

7. Possible Congressional approaches to stablecoins

Ban or licensing regime

Given stablecoins' inherent fragility, limited utility outside of the DeFi ecosystem, and potential to cannibalize monetary policy, Congress should consider whether banning stablecoins is appropriate. If Congress does not wish to enact a full ban, it could also consider a licensing regime for stablecoins whereby stablecoins will only be authorized if their issuers can demonstrate: (i) that the stablecoins have a purpose that is connected to real-world economic growth (i.e. growth outside of the DeFi ecosystem); (ii) that the issuers have the institutional capacity to manage the risks associated with the stablecoin's reserve and technology; (iii) that a run on the stablecoin would not impact financial stability; and (iv) that the stablecoin does not pose a threat to U.S. monetary policy. Although a ban or a licensing regime would need to be designed carefully to limit regulatory arbitrage, it would not be impossible to implement. As this statement has explored, stablecoins and DeFi are not as decentralized as advertised, and so there are intermediaries to whom regulation could be applied.

When considering measures like a ban or a licensing regime, Congress will no doubt wish to consider the impact of such measures on innovation. Innovation is important, but Congress should think critically about the type of innovation it wants to encourage. It would be wrong to assume that all crypto-related innovation is intended to make financial services more accessible to underserved populations. Stablecoins and DeFi services are used predominantly by people who already have access to the traditional banking system. If stablecoins and DeFi only provide marginal improvements over the financial services that are already available, but end up making our financial system more fragile, then chilling their development would be good public policy. It is worth noting that a World Economic Forum White Paper recently concluded that stablecoins currently offer limited benefits for financial inclusion:

The principal finding of this white paper is that stablecoins are subject to many of the same barriers that constrain citizens from accessing other financial products and services, such as bank accounts, mobile money accounts or fully digital remittance providers. Where stablecoins are accessible, they generally address financial inclusion barriers to a similar degree as other digital financial services...stablecoins as currently deployed would not provide compelling new benefits for financial inclusion beyond those offered by pre-existing options.⁵⁵

If Congress wants to encourage financial inclusion, it could consider focusing on supporting innovation in simpler mobile payments and remittance technologies, which might satisfy consumers' needs without the complications of runnable stablecoins, or distributed ledgers

⁵⁵ World Economic Forum, *What is the Value Proposition of Stablecoins for Financial Inclusion*, DIGITAL CURRENCY GOVERNANCE CONSORTIUM WHITE PAPER SERIES, 8 (Nov. 2021) (available at https://www3.weforum.org/docs/WEF_Value_Proposition_of_Stablecoins_for_Financial_Inclusion_2021.pdf).

with convoluted governance structures. Simpler technologies would also avoid the environmental costs of crypto mining.

More limited interventions

A ban or licensing regime would respond to all of the financial stability risks identified in this statement (including the risk of runs on stablecoins), as well as responding to concerns about monetary policy. More limited interventions would inevitably entail tradeoffs. I have advocated against bringing stablecoins within the perimeter of banking regulation, which means that stablecoins will remain more fragile than they would be if regulated more like bank deposits. To limit the fallout of any run on a stablecoin, measures will therefore need to be considered to: (i) limit investors' expectations about the stability of stablecoins; (ii) monitor changes in the usage of stablecoins; (iii) prevent large tech firms and regulated depository institutions from issuing stablecoins; and (iv) prevent regulated depository institutions from accepting deposits from stablecoin issuers.

I will set out here some suggestions for measures that can be taken to address these objectives, and other objectives identified in my testimony.

- The SEC and CFTC should continue to oversee the stablecoins under their jurisdiction to ensure that investors are protected. More specifically:
 - The SEC and CFTC should prevent stablecoin issuers from misrepresenting that stablecoins are more stable than they are (for example, enforcement actions would be appropriate against stablecoins that claim they are covered by FDIC insurance).
 - The SEC and CFTC should compel disclosure of the contents of the reserves backing any stablecoin under their jurisdiction.
 - While various crypto industry members have asked that Congress create a dedicated crypto regulator, doing so would be problematic for many reasons, including that:
 - The US already has too many financial regulators, which leads both to duplicative regulatory efforts and issues falling through regulatory gaps. Adding another regulator would exacerbate this issue.
 - The more specialized the regulator, the more opportunities there are for the industry to “capture” the regulator. Concerns about captured regulators were an important impetus for the abolition of the Office of Thrift Supervision in 2010, and would be a real concern with a dedicated crypto regulator.
- The Office of Financial Research (“OFR”) and the Financial Stability Oversight Council (“FSOC”) should be charged with monitoring the growth of stablecoins. If a stablecoin becomes a widely-used and accepted payment service, the FSOC should consider:
 - Designating the stablecoin issuer as a systemically important financial institution, utilizing the designation power bestowed by Section 113 of Dodd-Frank. This would subject the issuer to supervision by the Federal Reserve.
 - If the stablecoin is decentralized, it may be more appropriate for the FSOC to use its authority under Section 804 of Dodd-Frank to designate the associated payment

service as systemically important, and therefore subject to supervision by the Federal Reserve.

- Steps should be taken to prevent large tech firms like Meta/Facebook from issuing stablecoins:
 - The FSOC should explore how its designation power under Section 113 of Dodd-Frank could be applied to a large tech firm. The possibility of designation (and subsequent regulation by the Federal Reserve) may be enough to discourage Meta/Facebook from pursuing its Diem stablecoin.
 - A tech firm's size and the availability of substitutes for its stablecoins would obviously be relevant to determining its systemic importance, but the FSOC should also take into account the size of the firm's network, the breadth of the firm's non-financial services, and the firm's unique access to certain kinds of data.
 - Antitrust regulators should consider prohibiting a large tech firm from leveraging its network (as developed in a market where it has monopoly or near-monopoly power) into a payments platform.
 - Congress should consider amending existing legislation that prevents commercial firms from accepting deposits to prohibit such commercial firms from accepting deposits *and* offering payments services.
- Regulators of insured depository institutions and their holding companies should issue rules (or at the very least, guidance) designating the following practices as unsafe and unsound:
 - Holding stablecoin reserves in a deposit account.
 - Investing in any crypto asset.
- Insured depository institutions should be prohibited from issuing their own stablecoins. This could be achieved by legislation amending national banks' powers as specified in 12 USC Section 24 (seventh) (equivalent amendments would need to be made to the powers of state-chartered banks as well). Alternatively, banking regulators could effect this prohibition through a joint rulemaking.