of these virtual currencies makes it difficult to subject them to national rules and regulations, especially with respect to investor protection.

REFERENCES FOR THE PRASAD COMMENT

Harvey, Campbell R., Ashwin Ramachandran, and Joey Santoro. 2021. *DeFi and the Future of Finance*. Hoboken, N.J.: John Wiley and Sons.

Prasad, Eswar S. 2021. *The Future of Money: How the Digital Revolution Is Transforming Currencies and Finance*. Cambridge, Mass.: Harvard University Press.

GENERAL DISCUSSION Robert Hall said that the complexity of decentralized finance (DeFi) will make it difficult to implement clear regulations, and that DeFi practitioners are likely to find workarounds to any regulations that are imposed. He also discussed the similarities between DeFi and existing technologies. For example, he noted that the concept of smart contracts already exists, since lawyers can create legally binding agreements via word processing software. Hall also pointed out that stablecoins are almost identical in their function to money market mutual funds. He explained that runs on money market funds occurred during the global financial crisis because they ignored provisions of the Investment Company Act of 1940, and that stablecoins do not provide any additional benefits compared to well-regulated money market funds. Hall described DeFi as a dead end.

Antoinette Schoar replied that crypto technologies are still in their early development. She mentioned that smart contract platforms have the potential to facilitate new types of transactions and offer increased openness, scale, and simplicity compared to current payment systems. However, she noted that many types of transactions do not need the permissionless and anonymous features of the Bitcoin blockchain, and that the benefits of these technologies could be obtained via a regulated system that addresses their externalities. With regard to smart contracts, Schoar explained that their self-executing nature requires them to be complete contracts ex ante, since there is no method for obtaining ex post remediation via the legal system. She remarked that this offers potential benefits—including as a self-commitment mechanism or to reduce legal costs—but does not allow disadvantaged parties to lodge legal complaints or be made whole if they were defrauded.

Donald Kohn agreed with Hall that the regulation of stablecoins could be dealt with similar to money market funds. Kohn wondered about other potential financial stability issues related to DeFi applications. He asked the authors whether a decentralized system would have issues with leverage or maturity transformation, which could lead to a run on or fire sale of assets during a flight-to-liquidity episode like the one that occurred in March 2020. Kohn questioned how central banks might intervene in such a scenario.

Igor Makarov responded to the discussants by expanding upon the different variants of stablecoins. He remarked that they mostly focused on stablecoins backed by traditional (and liquid) assets but that so-called algorithmic stablecoins have no associated collateral, posing a potential stability risk. He described past episodes in which large declines in the price of Ethereum led to amplification effects. In these episodes, stablecoins that used Ethereum as collateral—such as the cryptocurrency Dai—saw contracts get executed and unwound, leading to further declines in Ethereum's price. Makarov said that scenarios like this could require central bank interventions to inject liquidity.

Eswar Prasad agreed that these were serious concerns. He noted that because many stablecoins are collateralized—either by liquid assets or other cryptocurrencies—the risks differ from those faced in a traditional fractional reserve banking system. Prasad remarked that financial stability concerns could instead arise via a crisis of confidence. For example, cyberattacks on blockchains could undermine public trust in these systems and incite widespread redemption requests, leading to similar problems to those faced by money market funds during the global financial crisis. As during that episode, Prasad explained, the central bank does not have obvious conduits to funnel liquidity into the system given its decentralized and nontraditional structure.

Janice Eberly asked the panelists about their views on the policy agenda for DeFi technologies and their recommendations for policymakers.

Gary Gorton expressed his agreement with the conclusions of the 2021 President's Working Group on Financial Markets report on stablecoins.[1] He said that stablecoins have resurrected an issue that has long since been decided about whether governments should be the monopoly supplier of money. Gorton commented that given stablecoins' current prevalence and lobbying power, it is too late to ban them. He argued that the next best option is to declare stablecoins as banks that issue short-term debt and to insure them for the maximum amount possible.

1. President's Working Group on Financial Markets, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency, *Report on Stablecoins*, November 2021, https://home.treasury.gov/system/files/136/StableCoinReport_Nov1_508.pdf.

Prasad expanded upon the potential benefits of cryptocurrency and DeFi. He noted that 5.4 percent of US households are unbanked and that digital payments can help to improve financial inclusion.[2] He added that DeFi technologies offer the potential to improve the current digital payments system in the United States, which he described as inefficient and lagging behind foreign countries like China. In particular, Prasad remarked that DeFi has provided competition to fiat currencies in both its function as a medium of exchange and as a store of value. He concluded that the digital revolution in payments has been successful in forcing policymakers to rethink the current system but that regulators will need to implement appropriate guardrails to prevent financial risks.

Olivier Blanchard asked Gorton about the feasibility of treating stablecoins as banks. He wondered whether the constraints were technical or related to the lobbying power of DeFi companies.

Gorton responded that there was a large lobby and that the current sentiment in Congress is to not limit innovation. He added that stablecoins are difficult to redeem for cash but that sell-off episodes could drop prices to zero. Gorton concluded that this scenario would not have sufficient impact to provoke a financial crisis, but he estimated that it could reach that point within ten years.

Daniel Tarullo asked Gorton whether any other aspects of the DeFi architecture posed risks, and he asked Schoar if the types of governance problems she mentioned could be addressed by the US Securities and Exchange Commission (SEC) rather than by prudential regulators.

Gorton answered that he didn't believe that the leverage associated with borrowing and lending in DeFi apps posed systemic risks. He hypothesized that even if activity in that space ceased entirely, it wouldn't threaten the broader financial system. However, Gorton explained that the short-term debt associated with stablecoins poses a more serious issue. He stated that although their funding is currently only $180–200 billion, activity in stablecoins has influenced the commercial paper market.[3] Gorton expressed his concern that US regulators missed the boat on outlawing stablecoins and that regulations are unlikely to emerge until a future financial crisis.

2. FDIC, "How America Banks: Household Use of Banking and Financial Services," December 17, 2021, https://www.fdic.gov/analysis/household-survey/index.html.

3. Sang Rae Kim, "How the Cryptocurrency Market Is Connected to the Financial Market," working paper, Social Science Research Network, May 13, 2022, https://ssrn.com/abstract=4106815.

Schoar affirmed that certain governance issues could be addressed by the SEC. However, she explained that she views the broader problem as the fact that decentralized autonomous organizations are attempting to operate outside the traditional legal and regulatory systems. Under the current DeFi architecture, she explained, minority shareholders who are defrauded do not benefit from minority shareholder protection or fiduciary duty standards. Schoar also mentioned that the pseudonymous and permissionless aspects of the blockchain could contribute to tax evasion.