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March 3, 2023

BY E-MAIL

Rachel Wallace
Deputy General Counsel
Office of Science and Technology Policy
725 17th Street NW
Washington, DC 20503

Re: Request for Information: Digital Assets Research and Development (2023-01534)

Dear Ms. Wallace,

Andreessen Horowitz ("a16z") welcomes the opportunity to reply to the Request for Information, entitled "Digital Assets Research and Development" (the "Request"), issued by the Office of Science and Technology Policy (the "OSTP") on January 25, 2023.[1] Federal investments in research and development ("R&D") are essential to maintaining the United States' technological leadership in the world, and we applaud the OSTP for transparently soliciting information from the private sector about how the government can best deploy its limited resources to support R&D in the blockchain ecosystem.

At a16z, we believe that blockchain technology is a momentous achievement in the development of the Internet and that it has incredible potential to promote innovation and economic growth. Since it was first developed in 2008, the blockchain ecosystem has grown rapidly, and our firm has been at the forefront of advancing the industry through investments in web3 companies. Like the OSTP, we are also deeply committed to technology R&D. As part of that commitment, we announced the formation of a16z crypto research last year, which includes a team of academic researchers from Columbia, Georgetown, Harvard, and Stanford Universities who specialize in cryptographic protocols, zero-knowledge proofs, computer and web security, and many other subjects.[2] We hope that our observations, drawn from our experience in investing in the blockchain ecosystem and internal R&D projects, can be of assistance to the OSTP in accomplishing its aims.

Our comment letter is divided into three parts: ***First***, we discuss R&D opportunities for lowering the environmental costs of participating in the blockchain ecosystem, as well as how leveraging

[1] Off. of Sci. & Tech. Pol'y, *Request for Information: Digital Assets Research and Development*, 88 FR 5043 (Jan. 26, 2023), *available* here.
[2] Ali Yahya & Chris Dixon, *Announcing a16z crypto research*, Andreessen Horowitz (Apr. 21, 2022), *available* here.

blockchains can improve traditional climate solutions. ***Second***, we describe the benefits of privacy-preserving technologies and how R&D related to zero-knowledge proofs could mitigate certain illicit finance risks. ***Lastly***, we discuss the resilience of well-functioning decentralized finance ("DeFi") protocols to recent market pressure, and how R&D relating to collateralization requirements and algorithmic settlement mechanisms for borrowing and lending protocols as well as algorithmic stablecoin protocols can help increase consumer protection and confidence.

A. About a16z

Andreessen Horowitz, also referred to as a16z, is a venture capital firm that backs entrepreneurs building the future through technology. We invest in seed, venture, and late-stage technology companies, focused on bio/healthcare, consumer, crypto, enterprise, fintech, and games. The firm currently has $35 billion in committed capital under management across multiple funds.

A16z aims to connect entrepreneurs, investors, executives, engineers, academics, industry experts, and others in the technology ecosystem. We have built a network of experts, including technical and executive talent, top media and marketing resources, Fortune 500/Global 2000 companies, as well as other technology decision makers, influencers, and key opinion leaders. A16z uses this network to help our portfolio companies grow their businesses.

At a16z, we believe we need an Internet that can help the United States retain leadership in a world of increasing competition, unlock opportunity for the millions on the margins of the innovation economy, and enable people to take control of their digital information. The solution is web3 — the third generation of the Internet — a group of technologies that encompasses digital assets, decentralized applications and finance, blockchains, tokens, and decentralized autonomous organizations. Together, these tools enable new forms of human collaboration. They can break through the stalemates that define too many aspects of public life and help communities make better collective decisions about critical issues, such as how networks will evolve and how economic benefits will be distributed. We are radically optimistic about the potential of web3 to restore trust in institutions and expand access to opportunity.

I. Climate

We strongly support the efforts of the Biden administration to address climate change and work toward a future of net-zero carbon emissions, and we believe that blockchain technology has an essential role to play in this regard. Based on our experience, we suggest that the best way to approach climate

R&D in the blockchain ecosystem is to focus on two research topics.[3] The first is how to lower the environmental costs of participating in the blockchain ecosystem, and the second is how to leverage blockchain technology to address carbon emissions across industries.

A. Lowering the Environmental Costs of Blockchain Technology

Consensus Mechanisms: Consensus mechanisms — the technological methodology that governs how blockchain network participants agree on transactions to verify and add to a network[4] — should be a focus of R&D, as advancements in this area have already proven to significantly decrease energy consumption in blockchain ecosystems. When developers first introduced blockchains more than one decade ago, the networks consumed significant electricity because they relied on an energy-intensive consensus mechanism known as "Proof of Work."[5] But, as discussed below, that is generally no longer necessary because industry has developed newer consensus mechanisms, including "Proof of Stake,"[6] that do not require significant energy expenditure. The success of these efforts suggests that blockchains need not have seriously detrimental effects on the environment, and that there is considerable value from investing public resources into R&D on how to further lower the environmental costs of blockchains.

Industry's shift toward greater environmental responsibility has become particularly apparent in the last three years. Arguably, the most important example of this occurred last year with the conversion of Ethereum, the second-largest blockchain network, to the Proof of Stake consensus mechanism.[7] As a result, Ethereum's energy consumption decreased by approximately 99.95%,[8] which in practical terms is equivalent to the difference between the total energy requirements of Finland and that of a small town of 2,100 homes.[9] Notably, other networks have also made significant strides toward energy efficiency. The Avalanche network, for instance, uses a novel consensus model that requires only a small fraction of the

[3] For more information, *see* Jai Ramaswamy et al., *Comments in Response to the Commission's Request for Information on Climate-Related Financial Risk*, Andreessen Horowitz (Oct. 25, 2022), *available* here.
[4] *See Consensus Mechanisms*, Ethereum (Jan. 13, 2023), *available* here.
[5] *See Proof-of-Work*, Ethereum, *available* here (last updated Sept. 26, 2022).
[6] *See Proof-of-Stake*, Ethereum, *available* here (last updated Jan. 12, 2023).
[7] *See The Merge*, Ethereum, *available* here (last updated Mar. 1, 2023).
[8] Carl Beekhuizen, *Ethereum's Energy Usage Will Soon Decrease by ~99.95%*, Ethereum (May 18, 2021), *available* here.
[9] *See id.*; Sam Kessler, *The Ethereum Merge Is Done, Opening a New Era for the Second-Biggest Blockchain*, CoinDesk (Sept. 14, 2022), *available* here (last updated Nov. 7, 2022).

energy used by the Bitcoin network.[10] And there are many other network examples as well,[11] which suggests that consensus mechanisms are still fertile ground for further R&D.

Sharding: R&D should also focus on a network update known as "sharding." Sharding refers to the splitting of a database or network horizontally into different hubs, i.e., "shards," to handle large amounts of data and transaction loads.[12] Each shard comprises different nodes on the network, and those nodes are responsible for verifying only a portion of a network's transactions, instead of all of the network's transactions. Separating nodes into shards reduces the burden on each node, increases throughput (i.e., capacity), and decreases hardware requirements. The overall effect is a more energy-efficient network.[13] The emergence of this network update has also given rise to certain challenges, like the potential for malicious actors to manipulate individual shards,[14] but for that reason, increased R&D is essential to making sharding a more widespread network feature.

Zero-Knowledge Proofs: We discuss zero-knowledge proofs in further detail below in Section III, but we note here that advancements in such proofs could also help lower the environmental costs of blockchains because they allow for more scalable execution of transactions and thus a lower carbon footprint.[15]

B. Leveraging Blockchain Technology to Address Carbon Emissions Across Industries

Carbon Credits: Carbon credits represent reductions of carbon emissions that may be utilized to offset emissions produced by a corporate entity. The market for carbon credits is largely unregulated and

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[10] Avalanche, *CCRI Finds Avalanche to Consume 35,000x Less Energy Than Ethereum and 200,000x Less Than Bitcoin*, Medium (Feb. 2, 2022), *available* here. A16z crypto is an investor in Avalanche. *See* Avalanche, *AVA Labs Newsletter #1*, Medium (June 10, 2019), *available* here. A list of investments made by funds managed by a16z is available here.

[11] *See, e.g.*, Celo, Chia Network, Solana. A16z crypto is an investor in Celo, the Chia Network, and Solana. *See* Katie Haun & Denis Nazarov, *Celo*, Andreessen Horowitz (Apr. 2, 2019), *available* here; *Our Investors*, Chia Network, *available* here; Austin Federa, *Solana Labs Completes a $314.15M Private Token Sale Led by Andreessen Horowitz and Polychain Capital*, Solana (June 9, 2021), *available* here. Note that Celo is also the first carbon-negative blockchain. In addition to using Proof of Stake, Celo contributes daily carbon offsets through its network, making the operational resources powering its platform carbon-negative from the outset. Celo Foundation, *A Carbon Negative Blockchain? It's Here and it's Celo.*, The Celo Blog (May 26, 2021), *available* here.

[12] *What is sharding?*, Ethereum, *available* here (last updated on Mar. 1, 2023).

[13] For example, the NEAR Protocol has a fully-sharded network. *See* Near Team, *Blockchain & Sustainability: How NEAR Uses Sharding for a More Sustainable Future*, Medium (Dec. 29, 2021), *available* here. A16z crypto is an investor in the NEAR Protocol. Mike Butcher, *NEAR Protocol raises $21.6M from A16Z and launches its MainNet, beating Ethereum 2.0*, TechCrunch (May 4, 2020), *available* here.

[14] *See* Vitalik Buterin, *Why sharding is great: demystifying the technical properties* (Apr. 7, 2021), *available* here.

[15] *Zero-Knowledge Rollups*, Ethereum, *available* here (last updated Jan. 22, 2023).

notoriously opaque,[16] making it possible for entities to purchase and claim offsets that either have a dubious connection to bona fide reductions in carbon emissions, or have already been claimed.[17] But by using digital tokens to represent a carbon credit, it is possible to establish an inalterable, easily accessible, and publicly available record for carbon credits.

One of our portfolio companies, Flowcarbon, has led industry efforts to develop tokens for reliable, voluntary carbon credits. Earlier last year, in a comment to the OSTP, Flowcarbon and others described the potential for blockchains to improve the markets for carbon credits by increasing liquidity and transparency and lowering costs of engaging in transactions, among other things.[18] Since then, Flowcarbon has continued its vital work, raising an additional $70 million in a fundraising round led by our fund[19] and announcing new efforts to advance the tokenized carbon credit market, including originating the first-ever on-chain syndication of a forward carbon contract[20] and leading blockchain advocacy efforts with Verra and Gold Standard, two major voluntary carbon crediting agencies. These achievements indicate an increasing likelihood of success for integrating blockchain in carbon credit markets, and that additional R&D could help boost the process.

Peer-to-Peer Energy: Micro-grid or off-grid energy is energy that is not generated on a main power grid, but rather is produced by autonomous individuals through wind, sunlight, and other sources. In recent years, individuals have increased production of micro-grid and off-grid energy,[21] but the peer-to-peer market for it has remained largely nascent because such individuals cannot efficiently transfer excess energy to others. This results in significant inefficiencies because small scale and retail producers are treated differently than utility scale producers, effectively forcing potential consumers to depend on increasingly unreliable centralized power sources.[22]

Blockchains could potentially address these inefficiencies. More specifically, producers of micro-grid and off-grid energy could use digital tokens to record data regarding energy generation and consumption, which would both aggregate the data and make it available and transparent for potential consumers. And blockchain project developers could program smart contracts to enable the delivery of

[16] *Voluntary Carbon Markets: Analysis of Regulatory Oversight in the US*, ISDA (June 2022), *available* here; Brad Denig et al., *Voluntary Carbon Markets in 2023: A Bumpy Road Behind, Crossroads Ahead*, Bain & Co. (Feb. 13, 2023), *available* here.
[17] *See, e.g.*, Ben Elgin, *These Trees Are Not What They Seem*, Bloomberg (Dec. 9, 2020), *available* here.
[18] Dana Gibber et al., *An Open Letter to the Office of Science & Technology Policy* (May 9, 2022), *available* here.
[19] *Flowcarbon Raises $70M to Tokenize Carbon Credits and Build an On-chain Market*, Flowcarbon (May 24, 2022), *available* here.
[20] Flowcarbon Nature Offsets Series 1, *available* here.
[21] *Distributed Generation of Electricity and its Environmental Impacts*, Environmental Protection Agency, *available* here (last updated June 23, 2022).
[22] Katherine Blunt, *America's Power Grid Is Increasingly Unreliable*, Wall St. J. (Feb. 18, 2022), *available* here.

energy.[23] These conceptual tools increase the potential for a blockchain-based peer-to-peer energy market, but importantly, R&D is still needed to address preliminary challenges, like the lack of grid infrastructure and regulatory uncertainty. Given the possibilities for this market, we suggest that the federal government consider deploying its resources in this area.

II. Privacy-Preserving Technologies

Transparency is a significant and frequently praised attribute of blockchains because it virtually exposes fraud and provides real-time access to all of a network's transactions. But full transparency also has important drawbacks. On most public blockchains, for example, all of a person's digital assets and transactions are readily available for anyone to see, including adversaries of the United States, non-state cybercriminals, and others.[24] While it is true that a veneer of anonymity does exist on transparent chains because wallet addresses are pseudonymous, data analytics have become increasingly good at discovering wallet owners' true identities.[25] As a result, without additional privacy, many people will forgo opportunities to use blockchains.[26]

Privacy-preserving technologies, including enhanced layer-1 blockchains and similar technologies, have emerged as an effective solution to this problem, decreasing the risk of bad-actor surveillance, honey-potting data, and other potentially harmful consequences of transparency.[27] But the development of these tools has also raised novel challenges with respect to bad actors taking advantage of these technologies to launder money and engage in financial crimes. Because these legitimate national security concerns could ultimately prevent the American public from realizing the benefits of privacy-preserving technologies, we have invested resources in researching new risk mitigation tools that would help expose nefarious activities. As discussed below, our research indicates that developers can use zero-knowledge proofs to mitigate the most serious risks, and we suggest that federal R&D focus on these proofs as a starting point for further innovation in this area.

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[23] Ayman Esmat et al., *A novel decentralized platform for peer-to-peer energy trading market with blockchain technology*, Appl. Energy (2021), *available* here.
[24] Elena Nadolinski, *Is Bitcoin & Ethereum really private?*, Iron Fish (Mar. 3, 2021), *available* here. A16z Crypto is an investor in Iron Fish. Ali Yahya et al., *Investing in Iron Fish*, Andreessen Horowitz (Nov. 30, 2021), *available* here.
[25] *See* Justin Sherman, *Big Data May Not Know Your Name. But It Knows Everything Else*, Wired (Dec. 19, 2021), *available* here.
[26] Alex Pruden, *What does Transparency Cost You?*, Aleo (Feb. 3, 2021), *available* here. A16z Crypto is an investor in Aleo. Katie Haun & Ali Yahya, *Investing in Aleo*, Andreessen Horowitz (Apr. 20, 2021), *available* here.
[27] Craig Timm, *The Importance of Responsible Privacy in Digital Assets*, Iron Fish (Oct. 6, 2022), *available* here.

A. Using Zero-Knowledge Proof to Mitigate the Risks of Privacy-Preserving Technologies

Zero-knowledge proofs enable private transactions on a public blockchain. At their core, a zero-knowledge proof is a way for one party, called a "prover," to convince another party, a "verifier," that a certain statement is true, while revealing nothing about the underlying data that makes the statement true.[28] As described in our paper linked below, the same zero-knowledge proof technology that enables privacy-preserving technologies could also be used to prevent the abuse of such privacy-preserving protocols by bad actors. In particular, this can be achieved because zero-knowledge proofs could enable selective disclosures of information necessary for regulatory compliance, without compromising sensitive user data.

Based on our research, we suggest the following potential methods for mitigating risks associated with privacy-preserving technologies: (1) *Withdrawal screening* to prevent withdrawals from sanctioned addresses or addresses associated with illegal activity; (2) *Voluntary selective de-anonymization*, which provides persons who believe that they have been erroneously added to a sanctions list with the option to de-anonymize the details of their transaction to selected or designated parties; and (3) *Involuntary selective de-anonymization*, which involves a private-key-sharing arrangement between a gatekeeper entity (like a non-profit or other trusted organization) and the government, where the gatekeeper entity evaluates requests from the government to use the private keys to de-anonymize wallet addresses.[29] These options above all utilize zero-knowledge proofs.

At this preliminary stage of research, we believe that these are the best available options for using zero-knowledge proofs to mitigate the risks of illicit activities and other financial crimes. But we suggest that additional government R&D focus on whether a particular one of these methods, a combination of them, or an entirely different method altogether is best suited to provide the optimal safeguards. A diversity of activity in the blockchain ecosystem may require developers to consider multiple approaches, and investment of public resources would be of significant value to them in finding the correct approach.

III. Decentralized Finance

While still in their early days, DeFi protocols have shown enormous potential to provide significant advantages over traditional financial institutions. These advantages include real-time value movement, cheaper settlement, incentive alignment, automation of multi-party operational activities, increased liquidity and transparency, less asymmetric information, and many others.[30] Importantly,

[28] *What are zero-knowledge proofs?*, Ethereum, *available* here (last updated Mar. 1, 2023).
[29] For more information on mitigation methodologies using zero-knowledge proofs, *see* Joseph Burleson et al., *Privacy-Protecting Regulatory Solutions Using Zero-Knowledge Proofs*, Andreessen Horowitz (Nov. 16, 2022), *available* here.
[30] Jason Ekberg et al., *It's Time to Explore Institutional DeFi*, Oliver Wyman (Nov. 2, 2022), *available* here.

millions of market participants already benefit from these advantages. In spite of recent market turbulence, DeFi protocols have demonstrated significant resilience to pressure,[31] and the total value locked ("TVL") in DeFi platforms was $42 billion at the end of last year.[32]

Given DeFi's large market share of web3 activity, its potential for growth, and its potential importance to the United States' financial system, the government should focus R&D on ways to encourage further development in the sector. Many research opportunities are available, but we suggest that the government focus its efforts on collateralization and algorithmic settlement tools utilized in borrowing and lending protocols (e.g., Compound Finance[33] and Aave), as well as in algorithmic stablecoin protocols (e.g., Maker[34] and Frax). In particular, the government should conduct research regarding the types and amounts of collateral as well as the algorithmic settlement mechanisms that would make such protocols sufficiently safe for public use. This research topic is particularly important because borrowing and lending protocols and algorithmic stablecoin protocols are an essential part of the DeFi ecosystem, but also are frequently misunderstood and sometimes the target of legislative proposals that seek to ban them. As discussed further below, we believe that these proposals are highly misguided because current evidence, drawn from the performance of borrowing and lending protocols and algorithmic stablecoin protocols in recent market volatility, already suggests that reasonable collateralization requirements and algorithmic settlement mechanisms are sufficient to protect consumers, and increased R&D in this area could help in determining standards and specifications that would ensure consumer safety.

A. Algorithmic Settlement Mechanisms Are Not Inherently Problematic

As mentioned above, lawmakers and regulators commonly focus on stablecoins that employ algorithms, i.e., algorithmic stablecoins, as a risk area. But that overly broad concern is largely misplaced because it focuses on algorithms as a source of instability, rather than the real problem — under-collateralization. Nearly one year into the current market volatility, we now know that the vast majority of algorithmic stablecoin projects have performed remarkably well, and the exceptional few that did not were significantly under-collateralized, and they relied on collateral created by the issuers

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[31] Shai Bernstein & Scott Duke Kominers, *Why Decentralized Crypto Platforms Are Weathering the Crash*, Harv. Bus. Rev. (Dec. 7, 2022), *available* here.

[32] DeFi's TVL lost 76% in dollar terms in 2022, but the total figure is up 6,900% since 2020 and 264% since the start of 2021. *See* Nansen Team, *DeFi Statistics [updated in 2023]*, Nansen (Dec. 29, 2022), *available* here. A16z crypto is an investor in Nansen. Nansen Team, *Nansen Raises $12 Million in Series A Funding*, Nansen (June 29, 2021), *available* here.

[33] A16z Crypto is an investor in Compound. *See* Leigh Cuen, DeFi Startup Compound Finance Raises $25 Million Series A Led by A16z, CoinDesk (Nov. 14, 2019), *available* here (last updated Sept. 13, 2021).

[34] A16z Crypto is an investor in Maker. *See* Katie Haun & Jesse Walden, *Maker*, Andreessen Horowitz (Sept. 24, 2018), *available* here.

themselves.[35] Importantly, the reason for the relative safety of algorithmic stablecoins was precisely because of the blockchain programmability that creates certain key risk controls typical in traditional clearing infrastructure, including, among other things, the liquidation of collateral, which protected investors and protocol safety and soundness far more transparently and efficiently than a manual process would have.

One of the core principles of DeFi is that automated smart contract safeguards of user funds are a suitable replacement for human intermediaries. For borrowing and lending protocols as well as algorithmic stablecoin protocols, such safeguards depend on algorithmic settlement mechanisms that function similarly. These protocols typically allow users to deposit approved collateral (e.g., bitcoin, ether, etc.). Borrowing and lending protocols then enable users to borrow other cryptocurrencies up to the approved collateralization ratios of the protocol's decentralized autonomous organization ("DAO") for such deposited collateral (the "Collateralization Ratio"). Meanwhile, algorithmic stablecoin protocols enable users to mint a stablecoin up to the Collateralization Ratio approved by the protocol's DAO for such deposited collateral.

The minting of stablecoins entails essentially the same process of borrowing; the main difference is that the stablecoin protocol creates the stablecoin, whereas the borrowing and lending protocols lend to other users. In each case, the protocols utilize Collateralization Ratios to establish how much a user can borrow based on deposited collateral. The algorithmic settlement mechanisms of these protocols (sometimes referred to as "liquidation mechanisms") then automatically execute if the value of cryptocurrency issued by the protocols relative to the value of the collateral falls below the required Collateralization Ratios. Such algorithms automatically liquidate the user's collateral and sell or exchange it for the borrowed asset.

To help illustrate this point, we can use an example of an algorithmic stablecoin protocol that requires users to deposit ether as collateral. The protocol requires a Collateralization Ratio of 150% (i.e., that the value of the collateral be worth at least 150% of the value the users intend to mint in the stablecoins of the protocol). While those stablecoins are outstanding, if the price of ether declines such that the value of users' collateral falls below the Collateralization Ratio for the protocol, the users' collateral is automatically liquidated, and the ether is sold to close out the loaned stablecoin that the users minted. All of this happens automatically and autonomously, ensuring that the protocols' collateral never falls below the value of the outstanding stablecoin.[36] These algorithmic settlement mechanisms utilized by borrowing and lending protocols and algorithmic stablecoin protocols are a fundamental building block of DeFi, and hundreds of DeFi protocols use similar mechanisms. As a result, blunt and broad

[35] *See* Miles Jennings, *In defence of stablecoins*, Financial Times (Aug. 7, 2022), *available* here.
[36] *See* Robert Leshner & Geoffrey Hayes, *Compound: The Money Market Protocol*, Compound (Feb. 2019), *available* here.

attacks on algorithmic settlement mechanisms like those that enable the functioning of algorithmic stablecoin protocols could destabilize the DeFi ecosystem. And that destabilization will likely result in substantial losses to users, drive innovation offshore, and jeopardize the United States' ability to influence the blockchain ecosystem.

Accordingly, R&D should be conducted as to the types of algorithmic settlement mechanisms that provide the greatest protection for consumers. For example, certain DeFi protocols utilize mechanisms that sell liquidated collateral automatically in order to extinguish the liabilities of the protocol. Others use manual auctions that rely on third-party participants to purchase the collateral. Investigation into the robustness and appropriateness of these mechanisms could significantly increase consumer protection among DeFi protocols and provide ample evidence that broad bans of algorithmic settlement mechanisms are unnecessary.

B. The Types of Collateral and Collateralization Ratios Utilized In DeFi Protocols Are Critical For Consumer Safety

Given the success of borrowing and lending protocols utilizing conservative Collateralization Ratios and over-collateralized stablecoins during heavily volatile periods, the focus of R&D should be on their relative safety to assess which collateral and Collateralization Ratios might be sufficient to permit safe public use of borrowing and lending protocols and algorithmic stablecoin protocols. For example, R&D could feasibly determine that only digital assets with a market capitalization in excess of a certain dollar threshold should be used as collateral to ensure that bad actors cannot easily manipulate the collateralized assets. Further, Collateralization Ratios above 125% have proven to be effective for highly liquid digital assets (e.g., bitcoin, ether, etc.) in the recent volatility and are worth further exploration.

R&D on types of collateral and Collateralization Requirements will also help undermine harmful attempts to broadly ban algorithmic settlement mechanisms, including those utilized by algorithmic stablecoin protocols. While we appreciate the government's interest in ensuring consumer protection in the DeFi ecosystem, we note that a ban of such mechanisms may hurt the international financial system for numerous reasons. For one, banning such mechanisms could substantially undermine the promises and benefits of DeFi, including financial inclusion. Second, stablecoins, both custodial and algorithmic, provide stability in countries where centralized monetary policy has failed.[37] And as more countries face growing inflation pressures, we expect stablecoin usage to increase.[38] In addition, because algorithms are key not only to DeFi but also to other aspects of the digital asset markets, a disproportionate regulatory

[37] Chainalysis Team, *Latin America's Key Crypto Adoption Drivers: Storing Value, Sending Remittances, and Seeking Alpha*, Chainalysis (Oct. 20, 2022), *available* here.
[38] The top five worst countries for inflation are Argentina (98.8%), Lebanon (124%), Syria (139%), Venezuela (156%), and Zimbabwe (230%). *See Inflation Rate / World*, Trading Economics, *available* here.

focus on algorithms as a source of instability could be perceived by industry as a threat to blockchain projects broadly. Engaging in appropriately focused R&D will help avoid these unintended results.

IV. Importance of Government Involvement in Blockchain R&D

We strongly agree with the policies outlined in President Biden's Executive Order on Digital Assets calling for the United States to maintain "technological leadership" in the digital asset space,[39] and we believe that prioritizing R&D in the blockchain ecosystem is essential to accomplishing that goal. We urge the OSTP to act expeditiously to account for the industry's national security importance to the United States.[40]

Specifically, many of our adversaries, including Russia and China, are developing government-backed blockchain protocols that, if exported and adopted at scale, like some current app-based products, could provide the associated foreign government with access to personally identifiable information, sensitive financial data, and data on shipping and cargo flows (for enterprise blockchains and, potentially, payment blockchains). In addition, American leadership in the economic sector and the dominance of the dollar could be threatened by the development of other national and regional central bank digital currency projects.[41] Without prompt R&D, we risk losing ground in the crypto space to other countries. For that reason, we reiterate our wholehearted support for the OSTP's efforts, and we welcome further discussion on how to keep the United States ahead of the crypto technology curve.

[39] Exec. Order No. 14067, 87 Fed. Reg. 14143 (Mar. 14, 2022), *available* here.
[40] *See* Faryar Shirzad, *National Security in the Age of Digital Innovation: The Critical Role of Crypto*, Coinbase (Jan. 20, 2023), *available* here.
[41] Georgia Quinn, *How Washington can protect U.S. dollar hegemony with stablecoins*, American Banker (Aug. 8, 2022), *available* here.

V. Conclusion

R&D is critical to the development of the blockchain ecosystem, as the technology rapidly becomes a key pillar of the global financial system and the Internet. We greatly appreciate the opportunity to provide comments on these matters, and we look forward to continuing engagement with the OSTP.

Respectfully submitted,

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