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Jordan Stapleton
rizzok@seattleu.edu

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The Age of the Metaverse: The Need for Consumer Protections in Metaverse Cryptocurrency Transactions

Jordan Stapleton

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I. INTRODUCTION

The metaverse is the next phase of the internet, dubbed Web3, where consumers interact in immersive three-dimensional environments.¹ These interconnected three-dimensional environments rely on blockchain technology—computerized public ledgers that record and store data—which allows consumers to purchase virtual assets and authenticate ownership on a public immutable record.² Blockchain technology, including cryptocurrency (crypto), non-fungible tokens (NFTs), and Decentralized finance (DeFi) protocols, will likely play a crucial role in the development of the metaverse.³ The use of blockchain technology in the metaverse presents systematic risks to consumers because the current regulatory environment of this technology lacks robust consumer protections. The present environment fails to address security risks to consumers’ blockchain assets, fails to address the lack of consumer confidence in blockchain assets due to events such as the collapse of FTX and crypto theft,⁴ and fails to address the need for blockchain interoperability between metaverse environments. With major tech companies such as META, Google, and Microsoft investing billions of dollars into developing the metaverse,⁵ federal regulation of blockchain technologies and private action by companies operating in the metaverse is necessary to adequately protect consumers.

The metaverse has been particularly difficult to define, but one vision for the metaverse is to create decentralized virtual worlds backed by blockchain technologies.⁶ In this vision of the metaverse, crypto and NFTs are the most efficient economic systems where consumers can transact, whether by trading in virtual currency or purchasing virtual assets. If consumers do not feel confident that their assets are protected by proper regulation, or if they do not have trust in the companies providing metaverse environments, then it is unlikely that this vision for the metaverse will materialize.

The current crypto regulatory environment raises financial stability concerns and leaves many consumers open to risks of fraud and deceit. Regulating crypto will ensure consumers have trust and

¹ Steven Ehrlich, *The Metaverse Explained*, FORBES (Mar. 10, 2023), <https://www.forbes.com/sites/digital-assets/article/the-metaverse-explained/?sh=4edc747548bd> [<https://perma.cc/9QNN-FQ2D>]; Shamani Joshi, *What Is the Metaverse? An Explanation For People Who Don't Get It.*, VICE (Mar. 15, 2022), <https://www.vice.com/en/article/93bmyv/what-is-the-metaverse-internet-technology-vr> [<https://perma.cc/4KAU-K799>].

² Ehrlich, *supra* note 1.

³ Thippa Reddy Gadekallu et al., *Blockchain for the Metaverse: A Review*, ARXIV (Mar. 21, 2022), <https://arxiv.org/abs/2203.09738> [<https://perma.cc/WJ7N-39ZF>].

⁴ Mackenzie Sigalos & Ryan Browne, *United States acts as top cop – setting the crypto standards for the world*, CNBC (Dec. 31, 2023), <https://www.cnbc.com/2023/12/31/state-of-crypto-regulation-in-2023-eu-laws-approved-but-us-is-top-cop.html> [<https://perma.cc/KGQ9-FDED>].

⁵ Jack Kelly, *The Metaverse Set Off A Battle Between Tech Giants Google, Apple, Microsoft And Meta To Build Virtual And Augmented Reality Headsets*, FORBES (Jan. 21, 2022), <https://www.forbes.com/sites/jackkelly/2022/01/21/the-metaverse-set-off-a-battle-between-tech-giants-google-apple-microsoft-and-meta-to-build-virtual-and-augmented-reality-headsets/?sh=7cd488f7239c> [<https://perma.cc/627C-6MLR>].

⁶ Michael D. Murray, *Ready Lawyer One: Lawyering in the Metaverse*, SSRN (Apr. 17, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4082648 [<https://perma.cc/4UW2-NFH5>].

confidence that they can safely transact in the metaverse. While agencies such as the Securities and Exchange Commission (SEC) have made efforts to regulate crypto firms—bringing over 40 crypto enforcement actions in 2023—the industry still needs a robust federal regulatory framework.⁷ With few options to recover crypto in situations of fraud or mistaken transfer, crypto fraud has been particularly harmful to consumers and has led to a loss of consumer confidence in transacting with crypto.⁸ 2022 marked the year with the highest crypto theft, with 3.7 billion USD stolen, before falling to 1.7 billion USD in theft in 2023.⁹ Instances of crypto fraud will continue to be commonplace unless proper regulatory protections are implemented.¹⁰

Blockchain regulation is necessary to provide adequate consumer protections and to increase consumer confidence due to the likely use of these assets in the metaverse.¹¹ Without proper processes and procedures in place to protect consumer assets in the metaverse, consumers may be left with few options for recourse if assets are lost or mistakenly transferred to another consumer. Protecting consumer blockchain assets by adopting stablecoin regulation and developing security measures for crypto wallets will provide the needed groundwork to seamlessly transact with crypto in the metaverse.

Furthermore, by regulating blockchain interoperability and allowing the seamless transfer of assets between different blockchains and metaverse environments, consumers will have the assurance that they can move assets out of one virtual environment and into another. Blockchain interoperability will allow consumers to move metaverse assets at their discretion or as a means of protecting their assets if a company operating in the metaverse goes bankrupt or closes a metaverse environment. As crypto is more widely adopted, and with the development of the metaverse, adequate protections must be implemented to ensure consumers are properly protected. Without regulation, major players in the metaverse and crypto industry can pass the risks of crypto and blockchain technology onto the consumer.

Innovation and disruption wait for no one. If regulators are not proactive in developing robust systems to protect consumers and ensure

⁷ Matthew Bultman, *Crypto Firms Take SEC Fight to Texas, With Eye on Supreme Court*, BLOOMBERG (Apr. 5, 2024), <https://www.bloomberglaw.com/product/blaw/bloomberglawnews/bloomberg-law-news/BNA%200000018e-9f32-d148-a1ef-ff737fea0001> [https://perma.cc/3DV5-XQPR].

⁸ Tom Blackstone, *2024 Cryptocurrency Adoption and Sentiment Report*, SECURITY.ORG (Jan. 30, 2024), <https://www.security.org/digital-security/cryptocurrency-annual-consumer-report/> [https://perma.cc/NLM3-3NXF].

⁹ *Id.*; *Funds Stolen from Crypto Platforms Fall More Than 50% in 2023, but Hacking Remains a Significant Threat as Number of Incidents Rises*, CHAINALYSIS (Jan. 19, 2024), <https://www.chainalysis.com/blog/crypto-hacking-stolen-funds-2024/> [https://perma.cc/H44Z-PCPW].

¹⁰ Cheyenne DeVon, *Crypto hackers have stolen nearly \$2 billion this year—Here's why it's a growing problem*, CNBC (Aug. 19, 2022), <https://www.cnbc.com/2022/08/19/crypto-hackers-stole-billions-why-its-a-growing-problem.html> [https://perma.cc/6FTA-NC6U].

¹¹ Max Dilendorf, *5 Key Regulatory Challenges Facing Web3 and Metaverse P2P Transactions (And How to Overcome Them)*, DILENDORF LAW FIRM (Jun. 13, 2022), <https://dilendorf.com/resources/5-key-regulatory-challenges-facing-web3-and-metaverse-p2p-transactions-and-how-to-overcome-them.html> [https://perma.cc/5EV7-B3DM].

financial stability in metaverse-related crypto transactions, then the technology will gain mainstream adoption without vital consumer protections. This article will address the need for increased consumer protections in metaverse-related blockchain transactions by (1) discussing what the metaverse is and the technologies backing the metaverse; (2) reviewing the current regulatory environment of crypto and traditional financial systems; (3) examining the need for federal regulation of crypto and other security measures to protect United States (U.S.) consumers, such as adopting stablecoin regulation; (4) considering the need for blockchain interoperability across metaverse environments; (5) evaluating the arguments against regulating the crypto markets; and (6) reflecting on the impact of crypto regulation on metaverse firms and consumers.

II. BACKGROUND ON THE METAVERSE AND BLOCKCHAIN TECHNOLOGIES

a. The Metaverse

The metaverse comprises digital environments where consumers can interact in three-dimensional virtual settings.¹² Conceptually, the goal of the metaverse is to create an online environment in which consumers can interact, shop, work, and socialize.¹³ Interacting in the metaverse requires virtual reality or artificial reality technologies.¹⁴ The metaverse has applications for everyday users through entertainment, education, and other leisure activities;¹⁵ as well as commercial uses for business, medical, and industrial applications.¹⁶ Users maneuver an avatar or character that represents themselves to navigate and interact with others in the metaverse.¹⁷ For example, the singer Travis Scott hosted a 9-minute online concert on Fortnite's virtual platform.¹⁸ The 9-minute concert reached 27.7 million unique users and grossed an estimated \$20 million USD.¹⁹ Currently, no central metaverse exists. However, there are various metaverse companies developing platforms where individuals can immerse themselves in a three-dimensional digital environment.²⁰ These companies and platforms include Axie Infinity, Decentraland, Epic Games (creator of Fortnite), Meta, Roblox, Sandbox,

¹² *Welcome to the Metaverse: Legal Issues Marketers Need To Consider*, DAVIS+GILBERT LLP (Jun. 2022), <https://www.dglaw.com/wp-content/uploads/2022/06/Welcome-to-the-Metaverse.pdf> [perma.cc/P9GU-92K4] [hereinafter *Welcome to the Metaverse*]; Neal Stephenson, SNOW CRASH (Penguin Group, 2011). (The metaverse was originally envisioned in the 1990s science-fiction book *Snow Crash* by Neal Stephenson. This book was the first reference to the idea of the metaverse and coined the term).

¹³ David Needle, *The metaverse explained: Everything you need to know*, TECHTARGET (Oct. 3, 2022), <https://www.techtargget.com/whatis/feature/The-metaverse-explained-Everything-you-need-to-know> [https://perma.cc/KL36-ER4V].

¹⁴ Gadekallu, *supra* note 3.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Rebekah Valentine, *Travis Scott reportedly grossed roughly \$20m for Fortnite concert appearance*, GAMES INDUSTRY (Dec. 1, 2020), <https://www.gamesindustry.biz/travis-scott-reportedly-grossed-roughly-usd20m-for-fortnite-concert-appearance> [https://perma.cc/AY8Q-V2SZ].

¹⁹ *Id.*

²⁰ Gadekallu, *supra* note 3.

and Upland.²¹ While those are a few of the major metaverse companies, more than 160 companies are operating in the metaverse, with new companies likely to continue entering the space.²² Meta founder Mark Zuckerberg believes that the metaverse will become “mainstream” in the coming five to ten years.²³ Companies like Microsoft and Google are expanding into the metaverse, with Microsoft acquiring metaverse-related companies²⁴ and Google’s subsidiary, YouTube, hiring metaverse engineers.²⁵ Current estimates indicate that by 2030, the metaverse could add \$1.3 trillion USD to the global economy.²⁶

b. Web3

The metaverse is a virtual environment that runs using blockchain on what is termed Web3.²⁷ Web3 is in its infancy stages of development and has yet to attain mass adoption by consumers.²⁸ Web1 was the first iteration of the internet and is what is otherwise referred to as the “World Wide Web.” This is different from the internet consumers use today, which is Web2. The major difference between Web1 and Web2 is the introduction of social media.²⁹ Web3 technology differs from Web2 in that Web3 is decentralized and shifts the internet underpinning to blockchain technology, meaning data is no longer stored in a central database as compared to Web2.³⁰ Web2 transactions require intermediaries such as PayPal, Visa, or Mastercard to organize a transaction within the centrally managed banking network.³¹ Web3 differs in that smart contract blockchain technology removes the middleman to allow for more efficient transactions.³² Web3 allows for virtual ownership, which encompasses digital items that have value in a specific environment—for example, purchasing sunglasses for a character in a metaverse environment.³³ Web3’s use of blockchain

²¹ *Who is Building the Metaverse? A Group of 160+ Companies, and You*, XR TODAY (Dec. 7, 2021), <https://www.xrtoday.com/virtual-reality/who-is-building-the-metaverse-a-group-of-160-companies-and-you/> [<https://perma.cc/N5J7-MS5K>] [hereinafter *Who is Building the Metaverse*]; *Welcome to the Metaverse*, *supra* note 12.

²² *Who is Building the Metaverse*, *supra* note 21.

²³ Veronica Combs, *Meta CEO Zuckerberg predicts the metaverse will be mainstream in 5-10 years*, TECH REPUBLIC (Oct. 28, 2021), <https://www.techrepublic.com/article/meta-ceo-zuckerberg-predicts-the-metaverse-will-be-mainstream-in-5-10-years/> [<https://perma.cc/57JM-NYFK>].

²⁴ John Letzing, *What Microsoft’s acquisition of Activision Blizzard means for the metaverse*, WORLD ECONOMIC FORUM (Jan. 19, 2022), <https://www.weforum.org/agenda/2022/01/microsoft-buy-activision-blizzard-metaverse/> [<https://perma.cc/R7N9-SDZQ>].

²⁵ Dillendorf, *supra* note 11.

²⁶ Bernard Marr, *How The Metaverse Will Change Cryptocurrency*, FORBES (Apr. 25, 2022), <https://www.forbes.com/sites/bernardmarr/2022/04/25/how-the-metaverse-will-change-cryptocurrency/?sh=2e26febb4fe4> [<https://perma.cc/7GHN-63PB>].

²⁷ William Anderson, *Does The Metaverse Need Blockchains?*, FORBES (Oct. 25, 2022), <https://www.forbes.com/sites/williamanderson/2022/10/25/does-the-metaverse-need-blockchains/?sh=40d57bd31686> [<https://perma.cc/8NGL-2GYK>].

²⁸ *Welcome to the Metaverse*, *supra* note 12.

²⁹ Marr, *supra* note 26.

³⁰ *Welcome to the Metaverse*, *supra* note 12.

³¹ Jackie Wiles, *What Is Web3?*, GARTNER (Feb. 15, 2022), <https://www.gartner.com/en/articles/what-is-web3/> [<https://perma.cc/QC8D-5UKZ>].

³² *Id.*

³³ Robert Sheldon, *What is a Virtual Asset?*, TECHTARGET, <https://www.techtargget.com/whatis/definition/virtual-asset/> [<https://perma.cc/GCS2-UJRP>] (last visited Mar. 14, 2024); Anderson, *supra* note 29.

technology permits the metaverse to operate by implementing virtual ownership with NFTs and allowing for crypto to function as a system for transacting.³⁴

c. *Blockchain*

Blockchain is the underlying technology of crypto and the metaverse. Blockchain is a “public distributed ledger in which transactions are recorded in chronological order.”³⁵ Transactions are recorded with hash arrangements, which allow data to be stored in blocks that are unassailable and timestamped.³⁶ Blockchain transactions are recorded publicly and are unalterable.³⁷ Because of the decentralized nature of blockchain, no centralized entity validates a block, but validation occurs by the participants in the blockchain itself.³⁸ Each new block of data is validated by a peer-to-peer network of other participants in the chain.³⁹ A new block maintains all the data from previous blocks and thus creates a highly secure network for data to be recorded.⁴⁰ Data on the blockchain cannot be removed without agreement from a plurality of participants in a blockchain.⁴¹ The use of blockchain in the metaverse protects the validity of consumer information with an immutable record and ensures the responsibility of metaverse actors by verifying digital asset ownership and transaction data.⁴²

d. *Cryptocurrency, Stablecoins, and NFTs*

i. *Cryptocurrency*

Cryptocurrency, or crypto, is digital currency that allows peer-to-peer transactions.⁴³ Crypto uses blockchain technology, which means transactions are decentralized and require little interference from intermediaries such as governments, banks, or brokers.⁴⁴ Bitcoin and Ethereum are two of the most well-known and traded cryptocurrencies, though there are thousands of crypto options available to consumers.⁴⁵ Each crypto may have different functions; some may operate as a store of value, while others may operate as a method of transacting.⁴⁶ Bitcoin, for example, has value because it is scarce, with a limited total supply

³⁴ Anderson, *supra* note 27.

³⁵ Shivam Arora, *What is Bitcoin Mining? How Does It Work, Proof of Work and Facts You Should Know*, SIMPLILEARN (Oct. 17, 2022), <https://www.simplilearn.com/bitcoin-mining-explained-article> [<https://perma.cc/ND3S-VPEL>].

³⁶ Gadekallu, *supra* note 3.

³⁷ Arora, *supra* note 35.

³⁸ Gadekallu, *supra* note 3.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *Id.*

⁴³ Arora, *supra* note 35.

⁴⁴ *Id.*

⁴⁵ Kat Tretina, *Top 10 Cryptocurrencies Of 2022*, FORBES ADVISOR (Nov. 15, 2022), <https://www.forbes.com/advisor/investing/cryptocurrency/top-10-cryptocurrencies> [<https://perma.cc/EG66-3QP6>].

⁴⁶ Gadekallu, *supra* note 3.

available.⁴⁷ Bitcoin can be used to transact but is not typically efficient for transactional purposes.⁴⁸ Bitcoin was the first iteration of blockchain technology, allowing for a decentralized network for transactional data to be recorded.⁴⁹ Ethereum is a derivatives blockchain that builds on Bitcoin's blockchain technology and implements smart contracts.⁵⁰ Smart contracts are an important development in blockchain technology because they allow for automated functions to execute if activated by a transaction.⁵¹

ii. NFTs

Non-fungible tokens (NFTs) are digital assets where ownership of the asset is verified using smart contract blockchain technology.⁵² NFTs allow for digital assets to be bought, sold, and held just as physical objects in the real world. NFTs are non-dividable assets that represent a specific item or product that cannot be distorted.⁵³ Because NFTs are stored on the blockchain, the record of the NFT is available on a public ledger which cannot be altered and is distributed among numerous blockchain users so there is not a single point of failure for the NFTs record.⁵⁴ NFTs allow consumers to buy and sell assets in the metaverse, creating a new form of digital economy.⁵⁵ Metaverse assets and services can be purchased, sold, and exchanged using NFTs.⁵⁶ As of 2022, approximately 9.3 million people have purchased NFTs.⁵⁷

iii. Stablecoins

Stablecoins are a form of crypto pegged to a fiat currency or other financial instrument.⁵⁸ By maintaining reserves of an underlying currency or financial instrument, stablecoins are better suited for everyday transactions due to their price stability.⁵⁹ The U.S. dollar and gold are examples of assets to which a stablecoin may be pegged.⁶⁰ Tether (USDT), one of the largest cryptocurrencies by market cap, is backed 1:1 by the U.S. dollar and collateralized by gold reserves.⁶¹ Stablecoins are beneficial to the metaverse as they serve as a medium of

⁴⁷ Arora, *supra* note 35; John Kelleher, *Why Do Bitcoins Have Value?*, INVESTOPEDIA (Mar. 15, 2022), <https://www.investopedia.com/ask/answers/100314/why-do-bitcoins-have-value.asp> [<https://perma.cc/LK5N-PYMC>].

⁴⁸ Jacob Bernstein, *What Can You Actually Buy With Bitcoin?*, NY TIMES (Jan. 18, 2022), <https://www.nytimes.com/2021/02/03/style/what-can-you-actually-buy-with-bitcoin.html> [<https://perma.cc/KT2R-VNYK>].

⁴⁹ Gadekallu, *supra* note 3.

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² Murray, *supra* note 6.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ Welcome to the Metaverse, *supra* note 12.

⁵⁶ Murray, *supra* note 6.

⁵⁷ Gadekallu, *supra* note 3.

⁵⁸ Adam Hayes, *Stablecoins: Definition, How They Work, and Types*, INVESTOPEDIA (Oct. 4, 2022), <https://www.investopedia.com/terms/s/stablecoin.asp> [<https://perma.cc/7H78-PK5T>].

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ *Id.*

exchange that is less volatile than other assets, like Bitcoin or Ethereum, which may be difficult to transact with due to highly fluctuating prices. Additionally, they serve to remove inefficiencies in the metaverse because consumers can transact and hold currency in the form of a stablecoin, whereas they otherwise may have to convert fiat currency to more volatile crypto assets to make purchases.⁶²

e. Decentralized Finance

DeFi protocols are systems that operate outside of the traditional financial system.⁶³ DeFi operates using blockchain technology and can function with no centralized body and no regulatory scheme; however, many DeFi transactions take place on centralized exchanges, like Binance or Coinbase.⁶⁴ Because DeFi incorporates blockchain technology, a public ledger records all the transactions.⁶⁵ This is beneficial because it allows for issues with the technology to be easily identified and corrected.⁶⁶ Conversely, this also means that illicit actors have access to the same records and can look for vulnerabilities in the technology.⁶⁷ Illicit actors continue to target decentralized finance protocols because of the potential vulnerabilities in the technology that have not been addressed.⁶⁸ Currently, DeFi systems face numerous risks, as there are few industry regulations, numerous instances of fraud, systemic abuse, and investor loss of funds.⁶⁹ It is paramount that governments work to ensure that proper regulatory systems are in place to avoid the potential for instability in financial markets.

i. Cryptocurrency Wallets

A crypto wallet, sometimes called a blockchain wallet, is a software-based program that allows users to store, send, and receive crypto on a DeFi network.⁷⁰ In the metaverse, crypto wallets facilitate transactions on the blockchain and hold users' crypto assets.⁷¹ Users access their funds using a private key. A private key is similar to a password and is used to prove ownership of a blockchain address where

⁶² Garth Baughman et al., *The stable in stablecoins*, THE FEDERAL RESERVE (Dec. 16, 2022), <https://www.federalreserve.gov/econres/notes/feds-notes/the-stable-in-stablecoins-20221216.html> [<https://perma.cc/MWC9-GTQK>].

⁶³ Rakesh Sharma, *What Is Decentralized Finance (DeFi) and How Does It Work?*, INVESTOPEDIA (Sep. 21, 2022), <https://www.investopedia.com/decentralized-finance-defi-5113835> [<https://perma.cc/6PE7-W7JG>].

⁶⁴ Samantha Altschuler, *Should Centralized Exchange Regulations Apply to Cryptocurrency Protocols?*, 5 Stan. J. Blockchain L. & Pol'y 92, 95 (2022); Steven Ehrlich, *Crypto Exchanges: What Investors Need To Know*, FORBES (May 8, 2023), <https://www.forbes.com/sites/digital-assets/article/crypto-exchanges-what-investors-need-to-know/?sh=74e86e4a1ef4> [<https://perma.cc/R3NG-4Q7D>].

⁶⁵ DeVon, *supra* note 10.

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ Martin Boyd, *Regulating The Metaverse: Can We Govern The Ungovernable?*, FORBES (Oct. 28, 2021), <https://www.forbes.com/sites/martinboyd/2022/05/16/regulating-the-metaverse-can-we-govern-the-ungovernable/?sh=d6483b719619> [<https://perma.cc/FG96-LJJM>].

⁷⁰ Jake Frankenfield, *Cryptocurrency Wallet: What It Is, How It Works, Types, Security*, INVESTOPEDIA (May 27, 2022), <https://www.investopedia.com/terms/b/bitcoin-wallet.asp> [<https://perma.cc/Y7WW-ZV6R>].

⁷¹ Dilendorf, *supra* note 11.

funds are located.⁷² Anyone with access to the private key has access to the funds.⁷³ Crypto wallets, however, put much of the responsibility on the user to ensure the security of their wallet.⁷⁴ Software wallets, which are wallets where the private key information is stored online, are generally non-custodial, and thus, the onus is on the user to ensure they keep track of their wallet's private key.⁷⁵ If a consumer loses or forgets their private key information, the crypto assets held in that wallet are likely unrecoverable. Some companies offer custodial wallets, where the company stores the private key information and retains responsibility for the security of consumers' private keys.⁷⁶ Custodial wallets are analogous to a traditional banking structure where the company is responsible for holding and managing the funds.⁷⁷ However, with little regulation in this area, few checks and balances exist for custodial wallets unlike traditional financial institutions. Companies offering custodial wallets are not required to maintain uniform standards for protecting information or required to take responsibility when funds are lost. Consumers and companies may also consider storing crypto on hardware wallets.⁷⁸ Hardware wallets are physical devices that store crypto funds offline, comparable to keeping funds in a safety deposit box.⁷⁹ Funds held offline are generally safer from hacking but are not as functional for transacting. Hardware wallets also do not eliminate the risk of losing funds, as was apparent for a United Kingdom resident who accidentally discarded a hardware wallet holding 7,500 Bitcoin.⁸⁰

ii. *Cryptocurrency Exchanges*

Crypto exchanges are where users buy, sell, and exchange cryptocurrencies on the open market.⁸¹ Crypto exchanges are analogous to a stock or commodity exchange platform, working as a broker to help a user buy and sell crypto.⁸² Companies such as Binance, Coinbase, Gemini, and Kraken are a few of the crypto exchanges available to consumers today.⁸³ Consumers can purchase crypto tokens that are specific to a metaverse platform on crypto exchanges. Currently,

⁷² Frankenfield, *supra* note 70.

⁷³ Brian Nibley, *What is a crypto wallet? Understanding the software that allows you to store and transfer crypto securely*, BUSINESS INSIDER (Jul. 26, 2022), <https://www.businessinsider.com/personal-finance/crypto-wallet> [<https://perma.cc/ZB4M-MTZX>].

⁷⁴ Frankenfield, *supra* note 70.

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ Nibley, *supra* note 73.

⁷⁹ *Id.*

⁸⁰ Shawn M. Carter, *Man accidentally threw away \$127 million in bitcoin and officials won't allow a search*, CNBC (Dec. 20, 2017), <https://www.cnbc.com/2017/12/20/man-lost-127-million-worth-of-bitcoins-and-city-wont-let-him-look.html> [<https://perma.cc/8T4U-3RZ8>].

⁸¹ Kendall Little, *Want to Buy Crypto? Here's What to Look for In a Crypto Exchange*, NEXT ADVISOR (May 3, 2022), <https://time.com/nextadvisor/investing/cryptocurrency/what-are-cryptocurrency-exchanges> [<https://perma.cc/SG2E-B34N>].

⁸² Nathan Reiff, *Cryptocurrency Exchanges: What They Are and How To Choose*, INVESTOPEDIA (Oct. 5, 2022), <https://www.investopedia.com/tech/190-cryptocurrency-exchanges-so-how-choose> [<https://perma.cc/7C3E-D945>].

⁸³ *Top Cryptocurrency Spot Exchanges*, COIN MARKET CAP, <https://coinmarketcap.com/rankings/exchanges> [<https://perma.cc/Q27A-JSMN>] (last visited Mar. 20, 2024).

exchanges operate outside the traditional regulatory framework of financial institutions, and therefore, it can be hard for users to know that their money is protected. For example, FTX, formerly the second-largest international crypto exchange, filed for bankruptcy in November 2022 after overleveraging customer assets.⁸⁴ Consumers who hold crypto assets on an exchange risk their assets disappearing entirely—due to fraudulent activities or mismanagement by companies—with few options for recourse. Consumers also risk their assets being held up in bankruptcy proceeds where they likely have no creditor preference and may ultimately lose their crypto assets.

III. BACKGROUND ON THE U.S. REGULATORY ENVIRONMENT OF CRYPTO AND TRADITIONAL FINANCIAL SYSTEMS

As the metaverse grows and is used by more consumers, existing risks associated with crypto may threaten the stability of financial markets if a federal regulatory framework is not developed. On October 3, 2022, the U.S. Financial Stability Oversight Council (FSOC) released a report stating there are broad financial stability concerns posed by crypto markets under the current regulatory structure.⁸⁵ The report discussed key regulatory gaps and areas in which cryptocurrency threats exist, including threats due to the lack of risk control, the speculative nature of crypto assets, and the risky business models of crypto firms.⁸⁶ A major concern of the FSOC report is the centralization of crypto services.⁸⁷ The FSOC report indicates that centralizing key services or vulnerabilities of blockchain technology could lead to operational challenges.⁸⁸ The report notes that many of these vulnerabilities could be addressed if crypto firms took “appropriate risk controls” and other governance actions to reduce financial stability risks.⁸⁹

Crypto exchanges and crypto wallet providers take few steps to protect consumers from transferring funds to illicit actors and do not protect consumers in situations of fraud or insolvency. Crypto exchange customer agreements, such as Coinbase’s user agreement, state that the exchange takes no responsibility for loss of funds.⁹⁰ This is equally the case for crypto wallets, even for custodial wallets where companies

⁸⁴ Ryan Browne, *Collapsed crypto exchange FTX owes top 50 creditors over \$3 billion, new filing says*, CNBC (Nov. 21, 2022), <https://www.cnbc.com/2022/11/21/collapsed-crypto-exchange-ftx-owes-top-50-creditors-3-billion-filing.html> [<https://perma.cc/28UG-SAFB>].

⁸⁵ Samuel Wan, *US consumer protection watchdog warns crypto could pose risk to financial stability*, CRYPTOSLATE (Oct. 5, 2022), <https://cryptoslate.com/us-consumer-protection-watchdog-warns-crypto-could-pose-risk-to-financial-stability/> [<https://perma.cc/6X4L-ND55>]; *FACT SHEET: The Financial Stability Oversight Council’s Report on Digital Asset Financial Stability Risks and Regulations*, UNITED STATES DEPARTMENT OF TREASURY (Oct. 3, 2022), <https://home.treasury.gov/system/files/261/Fact-Sheet-Report-on-Digital-Asset-Financial-Stability-Risks-and-Regulation.pdf> [<https://perma.cc/WCTU-CCTL>] [hereinafter *Report on Digital Asset Financial Stability Risks*].

⁸⁶ Wan, *supra* note 85.

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ *Report on Digital Asset Financial Stability Risks*, *supra* note 85.

⁹⁰ *Coinbase User Agreement*, COINBASE (Nov. 10, 2022), https://www.coinbase.com/legal/user_agreement/united_states [perma.cc/XQH4-BC6B].

manage private keys.⁹¹ Most crypto wallets do not protect consumers if funds are lost or stolen and there is no regulatory framework to protect or insure consumers in these instances. This differs from fiat currency exchanges and other companies operating within the traditional banking system, where there are many regulations protecting consumers and industry professionals.

Current financial systems transact in fiat currency—currency with government backing—which requires numerous intermediaries and significant banking regulations to operate seamlessly.⁹² Traditional banking services are highly regulated to ensure customer funds are protected.⁹³ Banking institutions must abide by minimum capital-holding requirements to promote stability and lower the risk of insolvency.⁹⁴ Regulations also call for anti-money laundering (AML) protocols, know-your-customer (KYC) requirements, and Federal Deposit Insurance Corporation (FDIC) insurance.⁹⁵ AML rules are intended to prevent illegal activity, such as money laundering, and require banks and other financial institutions to report and maintain records of suspicious transactions.⁹⁶ KYC requirements help to ensure that companies know the identity of the consumers who are holding funds with them and allow companies to trace fund transfers.⁹⁷ Furthermore, FDIC insurance protects customer funds in cases where a bank or other financial institution becomes insolvent.⁹⁸ Accounts with FDIC protection secure customer funds up to \$250,000 per account.⁹⁹

Financial exchanges that trade in securities or deal in commodities have regulatory oversight to control how these assets are bought and sold. The SEC regulates securities and oversees securities exchanges in the U.S. Further, the Commodity Futures Trade Commission (CFTC) regulates the purchase and sale of commodities in the U.S. These regulatory bodies help create a secure system that protects consumers from fraud, set standards for companies to follow, and allows for funds to be traced whenever a concern arises.

⁹¹ *Id.*

⁹² Marr, *supra* note 26.

⁹³ Matthew Johnston, *A Brief History of U.S. Banking Regulation*, INVESTOPEDIA (Oct. 6, 2021), <https://www.investopedia.com/articles/investing/011916/brief-history-us-banking-regulation.asp> [<https://perma.cc/2HKY-8EBH>].

⁹⁴ Steven Nickolas, *What Is the Minimum Capital Adequacy Ratio Under Basel III?*, INVESTOPEDIA (Apr. 30, 2021), <https://www.investopedia.com/ask/answers/062515/what-minimum-capital-adequacy-ratio-must-be-attained-under-basel-iii.asp> [<https://perma.cc/QWX2-JJBY>].

⁹⁵ Benedict George, *What Is KYC and Why Does It Matter For Crypto?*, COINDESK (Mar. 25, 2022), <https://www.coindesk.com/learn/what-is-kyc-and-why-does-it-matter-for-crypto/> [<https://perma.cc/T8PQ-WR57>]; Minimum Capital Requirements, 12 CFR 3.10; *The Importance of Deposit Insurance and Understanding Your Coverage*, FDIC (Sept. 7, 2022), <https://www.fdic.gov/resources/consumers/consumer-news/2022-08.html> [<https://perma.cc/ZF74-A7WG>] [hereinafter FDIC].

⁹⁶ Katherine Lemire, *Cryptocurrency and anti-money laundering enforcement*, REUTERS, (Sep. 26, 2022), <https://www.reuters.com/legal/transactional/cryptocurrency-anti-money-laundering-enforcement-2022-09-26/>.

⁹⁷ George, *supra* note 95.

⁹⁸ FDIC, *supra* note 95.

⁹⁹ *Id.*

Crypto has inadequate regulatory oversight in the U.S., which has led to confusion regarding which agency has regulatory authority.¹⁰⁰ However, several agencies currently regulate crypto to varying degrees. The United States Treasury’s Financial Crimes Enforcement Network (FinCEN) has a regulatory system in place for crypto to protect against money laundering and financial terrorism, which includes AML and KYC requirements.¹⁰¹ The SEC has limited regulatory control of crypto assets that qualify as securities under the Howey test, which defines a security as “the investment of money in a common enterprise with a reasonable expectation of profits to be derived from the efforts of others.”¹⁰² The CFTC also has limited regulatory control of crypto assets that are considered commodities. The Officer of the Controller of Currency (OCC) regulates bank institutions that participate in crypto transactions.¹⁰³ Finally, the Consumer Financial Protection Bureau (CFPB) regulates nonbanking payment providers, which includes some crypto firms.¹⁰⁴

President Biden’s administration has acknowledged the need to regulate blockchain technology and crypto assets. In March 2022, President Biden signed an executive order asking federal agencies to investigate crypto and other digital assets and report back with their findings, including instructing the Federal Reserve to evaluate the need for the U.S. to create a digital currency.¹⁰⁵ This order aimed to reduce the use of crypto for illicit activities and called for mitigating financial risks associated with crypto.¹⁰⁶ As a result of the March 2022 executive order,¹⁰⁷ the White House released a framework for the responsible development of crypto assets.¹⁰⁸ The framework specifies that “[t]he president will evaluate whether to call upon Congress to amend the Bank Secrecy Act (BSA), anti-tip-off statutes, and laws against unlicensed

¹⁰⁰ Ryan Browne, ‘Very good chance’ that U.S. passes stablecoin laws this year, Circle CEO says, CNBC (Jan. 15, 2024), <https://www.cnbc.com/2024/01/15/good-chance-us-passes-stablecoin-laws-this-year-circle-ceo-says.html> [https://perma.cc/L3FR-UMA6].

¹⁰¹ *FinCen Cryptocurrency Regulation Part 1: Foundations and Four Key MSB Considerations*, INNREG (May 31, 2022), <https://www.innreg.com/blog/fincen-cryptocurrency-regulation-foundations-four-key-msb> [https://perma.cc/DTD9-RV8E] [hereinafter INNREG]; Dilendorf *supra* note 11.

¹⁰² Nathan Reiff, *Howey Test Definition: What It Means and Implications for Cryptocurrency*, INVESTOPEDIA (Sep. 30, 2022), <https://www.investopedia.com/terms/h/howey-test.asp> [https://perma.cc/5BZS-QFHL].

¹⁰³ INNREG, *supra* note 101.

¹⁰⁴ Nikhilesh De, *U.S. Consumer Finance Watchdog Wants to Oversee Major Tech, Some Crypto Payments*, COINDESK (Nov. 7, 2023), <https://www.coindesk.com/policy/2023/11/07/us-consumer-finance-watchdog-wants-to-oversee-major-tech-some-crypto-payments/> [https://perma.cc/H8JB-Y8NF].

¹⁰⁵ *FACT SHEET: President Biden to Sign Executive Order on Ensuring Responsible Development of Digital Assets*, THE WHITE HOUSE (Mar. 9, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/09/fact-sheet-president-biden-to-sign-executive-order-on-ensuring-responsible-innovation-in-digital-assets/> [https://perma.cc/4HDU-TRKT]; *Executive Order on Ensuring Responsible Development of Digital Assets*, THE WHITE HOUSE (Mar. 9, 2022), <https://www.whitehouse.gov/briefing-room/presidential-actions/2022/03/09/executive-order-on-ensuring-responsible-development-of-digital-assets/> [https://perma.cc/N6QT-7DLJ].

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ *FACT SHEET: White House Releases First-Ever Comprehensive Framework for Responsible Development of Digital Assets*, THE WHITE HOUSE (Sep. 16, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/16/fact-sheet-white-house-releases-first-ever-comprehensive-framework-for-responsible-development-of-digital-assets/> [https://perma.cc/4G4U-RNLQ] [hereinafter *Framework for Responsible Development of Digital Assets*].

money transmitting to apply explicitly to digital asset service providers—including digital asset exchanges and non-fungible token (NFT) platforms.”¹⁰⁹ Changes to this legislation could reduce instances of fraud and other illicit financial activity related to crypto. The framework also called upon the U.S. Treasury to “complete an illicit finance risk assessment on decentralized finance.”¹¹⁰ The result of the U.S. Treasury assessment indicates that current AML structures may not be sufficient to cover all decentralized crypto firms that operate outside of the existing regulatory framework.¹¹¹ Furthermore, the framework acknowledges that stablecoins may pose financial stability risks without proper regulation, as was further noted by the previously mentioned FSOC report issued in October 2022.¹¹²

Congress has introduced several bills concerning stablecoins regulation including the Stablecoin Transparency Act and the Clarity for Payment Stablecoins Act of 2023.¹¹³ Announced in March 2022 by Senator Bill Hagerty, the Stablecoin Transparency Act would require that stablecoin issuers hold reserves for each fiat currency-backed stablecoin they issue in either government securities, fully collateralized security repurchase agreements, or other non-digital currency including U.S. dollars.¹¹⁴ Introduced by Patrick McHenry in July 2023, the Clarity for Payment Stablecoins Act of 2023 provides a broader framework for regulating, supervising, and enforcing stablecoin issuers. This legislation is the most comprehensive stablecoin regulatory framework introduced by Congress to date and would provide much-needed guidance for stablecoin issuers and protections for consumers.¹¹⁵ If passed, the bill would require stablecoin issuers to hold one-to-one reserves for each fiat currency-backed stablecoin and offer custodial services for private keys and stablecoins.¹¹⁶ Additionally, the bill clarifies that stablecoins are not securities under the jurisdiction of the SEC or commodities under the jurisdiction of the CFTC.¹¹⁷

There has been progress in prosecuting crypto crimes in recent years; however, many crimes still go unpunished. Federal prosecutors brought the first insider trading case for digital assets in June of 2022, claiming a former engineer for the largest NFT exchange, OpenSea, profited by purchasing NFTs with inside knowledge that they would

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *Illicit Finance Risk Assessment of Decentralized Finance*, UNITED STATES DEPARTMENT OF TREASURY (April 2023), <https://home.treasury.gov/system/files/136/DeFi-Risk-Full-Review.pdf> [<https://perma.cc/SD59-PUMP>].

¹¹² *Framework for Responsible Development of Digital Assets*, *supra* note 108; *FACT SHEET: The Financial Stability Oversight Council’s Report on Digital Asset Financial Stability Risks and Regulation*, UNITED STATES DEPARTMENT OF TREASURY (Oct. 3, 2022), <https://home.treasury.gov/system/files/261/Fact-Sheet-Report-on-Digital-Asset-Financial-Stability-Risks-and-Regulation.pdf> [<https://perma.cc/LGX4-EPVX>].

¹¹³ Stablecoin Transparency Act, 117th Cong. § 3970 (2022); Clarity for Payment Stablecoins Act of 2023, 118th Cong. H.R. 4766 (2023).

¹¹⁴ Stablecoin Transparency Act, *supra* note 113.

¹¹⁵ Clarity for Payment Stablecoins Act of 2023, *supra* note 113.

¹¹⁶ *Id.*

¹¹⁷ *Id.*

soon thereafter be advertised on the company’s homepage.¹¹⁸ The SEC has taken action against crypto exchanges, charging firms such as Genesis and Celsius with selling unregistered securities.¹¹⁹ Kraken, which sold crypto asset staking services, was also charged by the SEC and agreed to settle by ceasing to offer crypto asset staking services and paying a \$30 million USD penalty.¹²⁰ In 2023, the SEC took enforcement action against several high-profile crypto firms for crypto-related misconduct.¹²¹ The SEC filed charges against the largest crypto exchange, Binance, and its CEO and co-founder, Changpeng Zhao, for selling illegal securities and commingling customer assets.¹²² Binance and its CEO plead guilty to the charges, admitting to “prioritizing growth and profits over compliance with U.S. law.”¹²³ They failed to implement an effective AML program to monitor transactions, including not implementing a comprehensive KYC protocol or filing suspicious activity reports (SARs) with FinCEN.¹²⁴ The case was settled for \$4 billion USD.¹²⁵ Further, the SEC sued Coinbase for failing to register at least 13 crypto assets available on the exchange as securities, including Cardano’s coin ADA, and Solana’s coin SOL.¹²⁶

IV. THE NEED FOR FEDERAL CRYPTOCURRENCY REGULATION AND OTHER SECURITY MEASURES TO PROTECT CONSUMERS TRANSACTING IN THE METAVERSE

To protect the security of crypto assets and make blockchain technology a functional transactional tool in the metaverse, federal crypto regulation is needed. This regulation should include adopting the Clarity for Payment Stablecoins Act of 2023, creating FDIC insurance for cryptocurrency wallets, and developing private key recovery protocols. Additionally, the U.S. should cooperate with other nations and private metaverse companies to promote compliance and ensure regulations can be effectively enforced. Federal regulation regarding blockchain and crypto will support security, trust, stability, and protect consumers as they exchange and make purchases in the metaverse. Regulation in this area will bring clarity to crypto firms as to their

¹¹⁸ Dilendorf, *supra* note 11.

¹¹⁹ *SEC Announces Enforcement Results for Fiscal Year 2023*, UNITED STATES SEC. AND EXCH. COMM’N (Nov. 14, 2023), <https://www.sec.gov/news/press-release/2023-234> [<https://perma.cc/ZZ9T-AXUT>] [hereinafter SEC].

¹²⁰ Matt Levine, *The SEC Cracks Down on Crypto*, BLOOMBERG (Feb. 13, 2023), <https://www.bloomberg.com/opinion/articles/2023-02-13/the-sec-cracks-down-on-crypto#xj4y7vzkg> [<https://perma.cc/9M37-CZTD>].

¹²¹ SEC, *supra* note 110.

¹²² Sigalos, *supra* note 4.

¹²³ *Binance and CEO Plead Guilty to Federal Charges in \$4B Resolution*, OFF. OF PUB. AFF. UNITED STATES DEPT. OF JUST., <https://www.justice.gov/opa/pr/binance-and-ceo-plead-guilty-federal-charges-4b-resolution> [<https://perma.cc/KEK4-Q2HF>] (last visited Dec. 1, 2023).

¹²⁴ *Id.*

¹²⁵ *Id.*

¹²⁶ Sigalos, *supra* note 4.

regulatory requirements, and for consumers as to their regulatory protections.

a. Adopt Clarity for Payment Stablecoins Act of 2023

The adoption of stablecoin regulation by Congress through the Clarity for Payment Stablecoins Act of 2023 would be a positive first step towards regulating blockchain networks.¹²⁷ This would provide a level of security in crypto transactions that is not currently in place. Stablecoins do not have any defined regulatory requirements nor minimum asset holding requirements for the asset to which the stablecoin is pegged. The Clarity for Payment Stablecoins Act of 2023 would mandate holding requirements regarding the collateralized security backing the stablecoin and give consumers added security that the crypto they are transacting in is protected. Stablecoin legislation would help alleviate two major issues with crypto today that negatively impact its use in the metaverse: crypto instability and leverage used by crypto firms. The Clarity for Payment Stablecoins Act of 2023 would bring needed uniformity and assurance to crypto markets and allow consumers transacting in the metaverse to have reliable blockchain currencies to transact in without the volatility and risks present with other types of crypto assets.

b. Modify Existing Financial Regulations and Create FDIC Insurance for Cryptocurrency

Congress should modify existing financial regulations to apply to blockchain transactions. Federal banking, securities, and commodities regulatory systems should be modified to incorporate blockchain transactions, allowing crypto to be a safe method of transacting in the metaverse within a comprehensive regulatory environment. Federal regulation is needed to create FDIC insurance for crypto holdings so consumers can feel comfortable transacting with crypto in the metaverse. Consumers using crypto wallets currently have no insurance protection, unlike deposits held at banking and savings institutions with FDIC insurance.¹²⁸ Therefore, the FDIC should be tasked with creating a similar system applicable to crypto wallets. This FDIC insurance should protect crypto wallets at the same level of guarantee as banks, which currently provide protection up to \$250,000 per account.¹²⁹ By developing similar standards, consumers can hold money in crypto

¹²⁷ Clarity for Payment Stablecoins Act of 2023, *supra* note 113.

¹²⁸ Coryanne Hicks, *Are Crypto Exchange Accounts Insured?*, FORBES (Apr. 1, 2024), <https://www.forbes.com/advisor/investing/cryptocurrency/crypto-exchange-account-insurance/#:~:text=FDIC%20and%20SIPC%20Do%20Not,with%20Federal%20Deposit%20Insurance%20orp.> [<https://perma.cc/6YJU-59L4>].

¹²⁹ FDIC, *supra* note 95.

wallets without fear that their money could vanish because of bankruptcy of a crypto firm or illicit activity.

c. Private Key Recovery

Private key recovery is necessary to safeguard consumer assets in the metaverse and reduce the risk of a loss of users' crypto funds. Developing a system where private key recovery is available will require regulating custodial wallets. Regulation would entail making crypto firms liable for a wallet's private key. This would incentivize crypto firms to protect consumer information to ensure it is not lost or stolen, and if it is lost or stolen, crypto firms would bear the financial consequences of such losses. Currently, there are no requirements on custodial wallets to ensure they properly protect users' personal information and private keys. In fact, many crypto firms specifically state they are not responsible for the loss of consumer funds. Crypto wallets must be regulated so users in the metaverse experience a frictionless user interface: one where they have trust in the safety and security of their assets while also allowing consumers to conduct transactions quickly and efficiently.

d. International Cooperation in Regulation of Cryptocurrency

Regulating the metaverse and crypto transactions also requires global cooperation. International cooperation could accelerate the process of developing crypto regulation. The U.S. must work with foreign nations to develop standardized regulations worldwide. If the metaverse and crypto assets are not regulated at a global level, companies will inevitably move offshore and operate virtual currency markets from countries with less regulation.¹³⁰ Coinbase CEO Brian Armstrong has suggested that he would consider moving the company offshore if the regulatory environment is more favorable elsewhere.¹³¹ The U.S. Department of the Treasury has considered the importance of international cooperation and issued a framework for international engagement on blockchain assets in June 2022.¹³² This framework was developed in response to President Biden's March 2022 executive order on Ensuring Responsible Development of Digital Assets.¹³³ Working with foreign governments to ensure international standards are developed will help dissuade crypto firms from relocating to countries where little or no regulation exists to avoid compliance.

e. Develop Metaverse Industry Standards

The process of setting standards in the metaverse and with blockchain assets may be started by independent metaverse companies

¹³⁰ Boyd, *supra* note 69.

¹³¹ Emily Nicolle, *Coinbase CEO Won't Rule Out Relocating Company Away From US*, BLOOMBERG (Apr. 18, 2023), <https://www.bloomberg.com/news/articles/2023-04-18/coinbase-ceo-won-t-rule-out-relocating-company-away-from-us?embedded-checkout=true> [<https://perma.cc/EH6E-ZPWD>].

¹³² *Id.*

¹³³ Dilendorf, *supra* note 11.

collaborating to develop those standards.¹³⁴ Epic Games, Meta, and Microsoft, are just a few of the founding members of the Metaverse Standards Forum (MSF), which intends to set metaverse industry standards.¹³⁵ This organization is in the process of developing standards related to interoperability, privacy, and security.¹³⁶ The goal of the MSF is to create a metaverse that is safe, secure, and sustainable for all consumers.¹³⁷ Organizations like MSF and major metaverse companies may be able to persuade crypto firms to adopt stricter security protocols to protect consumers' blockchain assets. While metaverse companies may acknowledge that protecting consumer funds is a key goal and needed for mass adoption of the metaverse, federal regulation may still be required to ensure consumer protections are placed above companies' profit motives.

V. BLOCKCHAIN INTEROPERABILITY

The interoperability of blockchain is essential for the future of transacting in the metaverse. Blockchain integration has yet to be fully achieved.¹³⁸ Currently, cross-chain bridges are needed to transfer assets from one metaverse blockchain to another.¹³⁹ Cross-chain bridges are software systems that allow crypto assets, such as digital tokens, to be moved across different blockchains.¹⁴⁰ Thus, in the metaverse, cross-chain bridges are used to facilitate the transfer of crypto assets from one metaverse to another.¹⁴¹

Creating an interoperable blockchain will dissipate the need for cross-chain bridges, which have been the cause of several major hacks.¹⁴² In 2021, roughly \$1 billion USD was lost to cross-chain bridge hacks.¹⁴³ Binance, which is currently the largest crypto exchange, lost roughly \$100 million USD in a cross-chain bridge hack in October 2022 alone.¹⁴⁴ Chainalysis, which investigates crypto crimes, estimates that as of 2022, around \$2 billion USD has been lost in cross-chain hacks.¹⁴⁵ Making cross-chain bridges safer is a major issue impacting the viability of

¹³⁴ Boyd, *supra* note 69.

¹³⁵ David Matthews, *Metaverse giants form new standards to address lack of interoperability*, DIGITAL TRENDS (Jun. 21, 2022), <https://www.digitaltrends.com/computing/metaverse-standards-to-address-interoperability> [https://perma.cc/98FE-R7JJ].

¹³⁶ *Id.*

¹³⁷ *Id.*

¹³⁸ Janine Yorio & Zach Hungate, *Using Crypto to Bring the Metaverse Into Reality*, COINDESK (May 23, 2022), <https://www.coindesk.com/layer2/metaverseweek/2022/05/23/using-crypto-to-bring-the-metaverse-into-reality> [perma.cc/A8G5-5KB3].

¹³⁹ *Id.*

¹⁴⁰ Sidhartha Shukla & Anna Irrera, *Hackers Feast on Crypto Weak Link and Even Binance Isn't Spared*, BLOOMBERG (Oct. 7, 2022), <https://www.bloomberg.com/news/articles/2022-10-07/binance-coin-100-million-hack-is-reminder-crypto-bridges-are-weak-link> [https://perma.cc/5ZDU-ACTA].

¹⁴¹ Yorio, *supra* note 138.

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ Shukla, *supra* note 140.

¹⁴⁵ *Chainalysis for Crypto Investigations*, CHAINALYSIS (2022), <https://www.chainalysis.com/solutions/investigations> [https://perma.cc/WA7W-54Z5]; *Id.*

transacting in the metaverse. Without cross-chain bridges, many cryptocurrencies remain isolated from one another. For the metaverse to be equitable to all participants, companies and users alike, interoperability of metaverse platforms is necessary.

By making the metaverse interoperable, users on one metaverse platform can transfer crypto assets to other metaverse platforms. Because companies may not be economically incentivized to make individual metaverse platforms interoperable with others, federal regulation is likely necessary to achieve this outcome. Without the ability to move crypto assets between metaverse platforms, control of those assets on a metaverse platform would be centralized; thus, users would be limited in their options for selling or moving those assets. While self-governance among metaverse platforms is possible, federal regulation would help ensure that consumers' metaverse crypto assets are not at the mercy of one or a few metaverse platforms.

VI. ARGUMENTS AGAINST REGULATING CRYPTOCURRENCY

Advocates against regulating crypto see regulation as mere government intrusion and believe it ultimately would not deliver the consumer protections promised. Free market enthusiasts and privacy advocates argue that crypto does not require government regulation because the technology inherently reduces transactional risks as information on blockchain and other distributed ledger technology cannot be falsified.¹⁴⁶ Blockchain technology not only records information in a manner that prevents the information from being falsified but also makes the transaction public knowledge.¹⁴⁷ Former CIA director Michael Morell conducted research on crypto and financial services and found that less than 1% of cryptocurrency transactions between 2017 and 2020 were categorized as “illicit activity.”¹⁴⁸ In fact, data suggests that AML and KYC regulations catch very little criminal activity.¹⁴⁹ Further, the issue of regulating crypto using current regulatory systems may not be an effective solution for resolving blockchain-related issues.¹⁵⁰ Accordingly, decentralized problems may be better solved with decentralized solutions.¹⁵¹

However, given the significance of crypto fraud and situations like the bankruptcy of FTX, where the company overleveraged customer funds, events such as these may continue to occur without a strong

¹⁴⁶ Boyd, *supra* note 69.

¹⁴⁷ *Id.*

¹⁴⁸ Michael Morell, Josh Kirshner & Thomas Schoenberger, *An Analysis of Bitcoin's Use in Illicit Finance*, THE CIPHER BRIEF (Apr. 13, 2021), https://cryptoforinnovation.org/resources/Analysis_of_Bitcoin_in_Illicit_Finance.pdf [<https://perma.cc/66WW-C2HE>].

¹⁴⁹ Samantha Altschuler, *Should Centralized Exchange Regulations Apply to Cryptocurrency Protocols?*, 5 STAN. J. BLOCKCHAIN L. & POL'Y 92, 101 (2022).

¹⁵⁰ *Id.* at 6.

¹⁵¹ *Id.*

regulatory scheme in place. Additionally, customers may not trust that their money is protected from financial risks if crypto exchanges do not have to abide by strict financial regulations.

VII. THE IMPACT OF REGULATION ON METAVERSE FIRMS AND CONSUMERS

Until crypto regulation is passed, the risks to users in metaverse transactions will remain elevated and prevent metaverse crypto transactions from being a safe, efficient, and reliable method for consumers to interact and make purchases in Web3. Creating a secure framework for protecting consumers' metaverse assets by regulating stablecoins, creating FDIC insurance for crypto wallets, developing private key recovery systems, and requiring blockchain interoperability across metaverse platforms is crucial to the success of the metaverse. These regulations will positively impact consumers and metaverse companies alike: consumers will be more confident placing funds within these organizations, and metaverse companies will be at a lower risk of fraudulent activities occurring on their platforms.

Finally, regulating the crypto industry benefits metaverse companies and participants because of the overall reduced risk to the financial markets. Regulation of traditional financial institutions was created for an important purpose: to preserve the stability of financial markets. If more companies enter the crypto space without adequate protections and the metaverse gains mainstream adoption, risks to the greater financial market could lead to widespread financial destruction. By developing regulation ahead of these industries gaining widespread adoption, the risk to consumers, metaverse companies, and the overall financial markets will be significantly reduced.

VIII. CONCLUSION

Companies building the metaverse must act proactively to ensure proper consumer protections are in place for a seamless transition to Web3. The technology backing the metaverse—blockchain technology, cryptocurrency, NFTs, and DeFi protocols—currently lacks the regulations needed to protect consumers. Federal blockchain regulation is needed before the metaverse gains mainstream adoption. Congress should adopt the Clarity for Payment Stablecoins Act of 2023 as a first step towards regulating the blockchain technology underpinning the metaverse. Additionally, FDIC insurance for crypto wallets and private key recovery regulations should be introduced to protect consumer assets in the metaverse. Furthermore, by developing and regulating blockchain interoperability systems, consumers will have the protection that their virtual assets will be available to transfer across metaverse platforms, preventing companies from holding users' assets hostage on one platform. Government regulation and private action together is critical to

protect consumer assets and allow the metaverse to flourish in the new age of the internet.