Program on International Financial Systems

PIFS



A Review of Cryptoasset Market Structure and Regulation in the United States

FEBRUARY 2023



The Program on International Financial Systems (PIFS) is a 501(c)(3) organization that conducts research on issues impacting the global financial system. PIFS also hosts international symposia, executive education programs and special events that foster dialogue and promote education on these issues. PIFS was founded in 1986, by Hal S. Scott, now Professor Emeritus of Harvard Law School. Over thirty years later, Hal Scott continues to lead PIFS.

This report was prepared by Hal Scott, Chairman and President of PIFS, John Gulliver, Executive Director of PIFS, and Connor Kortje, Senior Research Fellow at the Committee on Capital Markets Regulation.

In addition, PIFS assembled an advisory committee on cryptoasset market structure and regulation in the Unites States, the members of which assisted in the preparation of this report by reviewing drafts and providing commentary and insight to our team. The members of the advisory committee are listed on the next page.

The Program on International Financial Systems would like to thank Fidelity Investments for supporting this research.

© Program on International Financial Systems 2023. All rights reserved. Limited extracts may be reproduced or translated provided the source is stated.

Advisory Committee

Douglas Cifu	Chief Executive Officer, Virtu Financial
Jay Clayton	Former Chairman, Securities and Exchange Commission
Christopher Giancarlo	Former Chairman, Commodity Futures Trading Commission
William Hinman	Former Director, Division of Corporation Finance, Securities and Exchange Commission
Timothy Massad	Former Chairman, Commodity Futures Trading Commission
Annette Nazareth	Former Commissioner, Securities and Exchange Commission
Heath Tarbert	Former Chairman, Commodity Futures Trading Commission

A Review of Cryptoasset Market Structure and Regulation in the United States

FEBRUARY 2023

Table of Contents

Introduction 1
I. Overview of the existing cryptoasset market structure 2
A. What is a cryptoasset? 2
Transferring ownership of a cryptoasset 5
B. Taxonomy of cryptoassets and related investment products 6
i) Cryptoassets generally 6
ii) Stablecoins 7
iii) Other cryptoassets 11
iv) Cryptoasset derivatives 11
v) Cryptoasset investment funds 13
C. Overview of cryptoasset trading venues 15
i) Centralized trading platforms 16
ii) Decentralized trading protocols 19
iii) The role of brokers and OTC trading 21
iv) Cryptoasset transaction fees 23
II. Overview of the current regulatory framework for cryptoassets in U.S. markets. 25
A. The classification of cryptoassets under current U.S. law and U.S. federal regulation of the primary market for cryptoassets 25
i) The status of cryptoassets as commodities under the CEA 26
ii) The status of cryptoassets as securities under the Securities Acts 28
B. U.S. federal regulation of secondary market trading of cryptoassets 36
i) CFTC regulation of trading venues and brokers for cryptoasset derivatives 36
ii) U.S. federal regulation of trading venues and brokers in securities markets 38
iii) Regulation of cryptoasset spot market trading venues and brokers under U.S. securities law 41
iv) Other limited aspects of U.S. regulation applicable to cryptoasset trading venues 45
III. Conclusion 47

INTRODUCTION

This is the first in a series of reports by the Program on International Financial Systems dedicated to cryptoassets (also referred to as "digital assets"). This initial report defines and describes cryptoassets and the market structure for trading cryptoassets in the United States. It also provides an overview of the U.S. regulatory structure for the issuance and trading of cryptoassets and related financial products. A subsequent report will provide specific recommendations for improving the regulation of cryptoassets in the United States.

In recent months, U.S. government officials have sharpened their focus on the policy issues raised by cryptoassets. For example, in fall 2022, U.S. financial regulators released a set of four reports on digital assets pursuant to the Biden Administration's Executive Order 14067.[1] The three Treasury Department reports address (1) the potential role of a central bank digital currency ("**CBDC**") in the U.S. system of money and payments, (2) the implications for consumers, investors, and businesses from cryptoassets, and (3) countering the use of cryptoassets in illicit financing. In October 2022, the Financial Stability Oversight Council issued a report addressing the interconnectedness between cryptoasset markets and other financial markets and the financial stability risks arising from those connections.[2] Our report is unique and complementary to these efforts in being the first to provide a comprehensive review of the market structure for trading cryptoassets and the regulation of cryptoassets in the United States.

We also note that our report follows the November 2022 failure of Bahamian-based cryptoasset trading platform FTX, formerly the third largest such platform by global volume. The failure of FTX, which had U.S. operations and many U.S. investors and customers, underscores the timely need for enhanced public understanding of the market structure for trading cryptoassets and the regulation of cryptoassets in the United States.

---

[1] Executive Order on Ensuring Responsible Development of Digital Assets (Mar. 9, 2022), https://www.whitehouse.gov/briefing-room/presidential-actions/2022/03/09/executive-order-on-ensuring-responsible-development-of-digital-assets/; DEP'T OF THE TREASURY, THE FUTURE OF MONEY AND PAYMENTS (2022), https://home.treasury.gov/system/files/136/Future-of-Money-and-Payments.pdf; DEP'T OF THE TREASURY, CRYPTO-ASSETS: IMPLICATIONS FOR CONSUMERS, INVESTORS, AND BUSINESSES (2022), https://home.treasury.gov/system/files/136/CryptoAsset_EO5.pdf; DEP'T OF THE TREASURY, ACTION PLAN TO ADDRESS ILLICIT FINANCING RISKS OF DIGITAL ASSETS (2022), https://home.treasury.gov/system/files/136/Digital-Asset-Action-Plan.pdf.

[2] FINANCIAL STABILITY OVERSIGHT COUNCIL, REPORT ON DIGITAL ASSET FINANCIAL STABILITY RISKS AND REGULATION (2022), https://home.treasury.gov/system/files/261/FSOC-Digital-Assets-Report-2022.pdf.

I. OVERVIEW OF THE EXISTING CRYPTOASSET MARKET STRUCTURE

In **Part I** we provide an overview of the current state of cryptoasset markets. Although our primary focus is the cryptoasset market in the United States, we also describe certain aspects of global cryptoasset markets to the extent relevant to understanding U.S. markets and the U.S. regulatory environment.

Part I(A) defines cryptoassets and provides an overview of the basic functions of cryptoassets as well as how ownership of a cryptoasset can be transferred. **Part I(B)** overviews the universe of cryptoassets available to market participants. It also describes the unique role of stablecoins and the principal alternative methods by which U.S. investors obtain economic exposure to cryptoassets other than through direct investment, namely investment funds and derivative contracts. **Part I(C)** overviews the trading venues in which U.S. investors buy and sell cryptoassets and cryptoasset-related instruments. **Part I(D)** reviews transaction fees associated with the purchase and sale of cryptoassets.

A. What is a cryptoasset?

The term "cryptoasset" has been defined as an asset that exists "in digitally native forms of cryptographically stored units of value based on public blockchain infrastructure."[3]

A "blockchain" refers to a database of transaction records maintained by a network of computers ("nodes"). Cryptographic keys, which are strings of data, typically numbers or letters, are used to secure ownership of cryptoasset units ("tokens"). New transactions are periodically aggregated into "blocks" which are verified pursuant to a cryptographic protocol and added to the records of previous transactions, thus forming a new link in a continuous "chain," hence the term "blockchain."[4]

Blockchain-based databases are distinguished by the ability of cryptographic protocols to maintain a secure record of transactions without a central authority. To take bitcoin, the largest cryptoasset by market capitalization, as an example: As transactions take place, they are broadcast to the network of nodes. Each node aggregates new transactions into sets of a stipulated size referred to as "blocks." In a process referred to as "mining," the nodes then apply complicated mathematical functions ("hash functions") to the transaction records. The first node to derive the solution ("proof of work") broadcasts its solution and the proposed block of transactions to the network of nodes. If a majority of nodes agree that the proposed transactions are valid, the proposed block is added to the transaction ledger. The first node to derive the solution and broadcast it to the network

---

[3] CHRIS GIANCARLO & JUSTIN BROWDER, IFLR, FOUNDATIONAL PRINCIPLES FOR US CRYPTO ASSET REGULATION (2022), https://www.iflr.com/article/2a647jipe3beilnllq77k/foundational-principles-for-us-crypto-asset-regulation.

[4] MATT HOUGAN & DAVID LAWANT, CFA INSTITUTE RESEARCH FOUNDATION, CRYPTOASSETS, THE GUIDE TO BITCOIN, BLOCKCHAIN, AND CRYPTOCURRENCY FOR INVESTMENT PROFESSIONALS (2021), https://www.cfainstitute.org/-/media/documents/article/rf-brief/rfbr-cryptoassets.pdf.

(i.e., the "winning" node) receives a number of bitcoin tokens as a reward, thus incentivizing miners to compete to process transactions as quickly as possible. The complexity of the mathematical problem that miners must solve is designed to make it more difficult to falsify past transactions. So long as no dishonest person or group of persons acting in concert controls a majority of the computing power underlying the blockchain network, no one should have the unilateral control over the contents of the database that would be necessary to falsify past transactions.

The proof of work consensus mechanism described above for bitcoin relies on computer processing power to solve mathematical functions. An alternative consensus mechanism known as "proof of stake" has more recently been developed whereby nodes commit (i.e., "stake") a certain number of tokens for the right to validate a block of transactions. Such mechanisms generally select a node to validate a particular transaction based on the number of tokens that the node has staked and the amount of time they have been staked. The selected node has the right to validate the transactions for the block and receives additional tokens as a reward. In some proof of stake mechanisms, if a node processes an invalid transaction, tokens are deducted ("slashed") from their stake as a penalty.

Proof of stake is now the governing mechanism for the Ethereum network, home to ether, the second largest cryptoasset by market capitalization. One of the advantages of a proof of stake mechanism is that it consumes substantially less energy than a proof of work mechanism and potentially reduces transaction processing times: By switching from a proof of work to proof of stake mechanism, the energy consumed by the Ethereum network reportedly declined by 99.9% from 200 to 0.01 terawatt hours per year.[5] Moreover, any owner of a basic computer can run a proof-of-stake node, whereas a proof-of-work node can only be profitably run on expensive application-specific machines.

However, because proof of stake awards transaction validation rights based on the amount of tokens staked, it allows a node operator to increase its likelihood of securing validation rights by borrowing the right to stake tokens from other token owners, thus amassing a larger stake.[6] As a result, even if there are many dispersed nodes, transaction validation rights can become concentrated in the hands of a smaller set of those nodes.[7] Indeed, it is reported that as of late 2022 centralized trading platforms held 60% of the ether staked on the Ethereum blockchain.[8] Proof of stake mechanisms have thus been criticized as potentially enabling one or more nodes to effectively monopolize validation

---

[5] Arijit Sarkar, *The Merge brings down Ethereum's network power consumption by over 99.9%* COINTELEGRAPH (Oct. 29, 2022), https://cointelegraph.com/news/the-merge-brings-down-ethereum-s-network-power-consumption-by-over-99-9.

[6] Sage Young, Will a Proof-of-Stake Ethereum Lead to More Centralization COINDESK (May 18, 2022), https://www.coindesk.com/layer2/2022/05/18/will-a-proof-of-stake-ethereum-lead-to-more-centralization/.

[7] Stacy Elliott, *Has Proof of Stake Made Ethereum More Centralized* DECRYPT (Oct. 9, 2022), https://decrypt.co/111485/has-proof-of-stake-made-ethereum-more-centralized.

[8] *Id*.

rights and exercise unilateral control over which transactions are processed, and thus as being less secure than proof of work mechanisms.[9]

The blockchains that underlie bitcoin and ether – the most traded cryptoassets by volume and the largest by market capitalization – are intended to be decentralized. Other cryptoassets reside in blockchains where majority control of the nodes is by design held by one or more related entities.[10]

Bitcoin, ether, and other fungible tokens are often referred to as "cryptocurrencies" because of their purported potential to perform the functions of cash – that is, acting as mediums of exchange, stores of value, and units of account. The extent to which these tokens have achieved adoption as mediums of exchange is limited, though there are some signs of growth: according to one estimate, over 2,000 U.S. businesses accept bitcoin.[11] Similarly, their role as stores of value is arguably impeded by their volatility. A subset of cryptoassets known as "stablecoins" are intended specifically to maintain a constant value relative to a fiat currency or other asset. They are thus commonly used as mediums of exchange to facilitate trading of other cryptoassets but have yet to achieve widespread adoption as currencies in economies more broadly.[12] More generally, use cases for these cryptoassets and the networks on which they reside are often broader than their use as currencies. For example, ether was created not to act as a general use currency in its own right but rather to facilitate the development of additional user-created protocols, both financial and non-financial, on the Ethereum network, such as for executing smart contracts, storing data, or creating other cryptoassets.[13] For these reasons, this report adopts the more general term "cryptoasset."

Cryptoassets also include other types of blockchain-based tokens that can be used to record the ownership and transfer of items of value or rights of use and ownership with respect to digital or physical assets. These include utility tokens, governance tokens, and non-fungible tokens ("NFTs") among others. Recently, there have been nascent efforts to replace traditional ownership records for stocks, bonds and other common financial instruments with blockchain-based tokens.[14] Cryptoassets consisting of fungible tokens

---

[9] *See, e.g.*, SEEKING ALPHA, *Proof of Work vs. Proof of Stake: Why Their Differences Matter* (Oct. 6, 2022), https://seekingalpha.com/article/4544968-proof-of-work-vs-proof-of-stake-why-their-differences-matter.

[10] Hougan & Lawant, *supra* note 4.

[11] DELOITTE, The Rise of Using Cryptocurrency in Business, https://www2.deloitte.com/us/en/pages/audit/articles/corporates-using-crypto.html (last visited Jan. 19, 2023).

[12] El Salvador adopted bitcoin as legal tender in 2021, though its use reportedly remains limited to 5% of all sales. NATIONAL BUREAU OF ECONOMIC RESEARCH, *El Salvador's Experiment with Bitcoin as Legal Tender* (Jul. 7, 2022), https://www.nber.org/digest/202207/el-salvadors-experiment-bitcoin-legal-tender.

[13] VITALIK BUTERIN, ETHEREUM: A NEXT-GENERATION SMART CONTRACT AND DECENTRALIZED APPLICATION PLATFORM (2014), https://ethereum.org/669c9e2e2027310b6b3cdce6e1c52962/Ethereum_Whitepaper_-_Buterin_2014.pdf.

[14] *See, e.g.*, KKR, *Securitize Launches Fund Providing Tokenized Exposure to KKR Fund for The First Time in the U.S.* (Sept. 13, 2022), https://media.kkr.com/news-details/?news_id=5aa593b4-0063-4e7b-a0cc-b9d2d1668d21.

that do not grant a right to an underlying non-crypto-related product or service are the focus of this report.

Transferring ownership of a cryptoasset

Ownership of each of a cryptoasset's available tokens is recorded by associating the token with a blockchain address. Transferring a token from one blockchain address (the "origination" address) to another blockchain address (the "destination" address) requires the private cryptographic key of the origination address. The private key is a series of alphanumeric characters associated with a blockchain address, serving a similar function as a password. Possession of cryptoasset tokens is thus effectively determined by possession and control of the private key, leading to a common cryptoasset refrain: "Not your keys, not your coins."[15]

Private keys are typically stored in an electronic repository referred to as a "wallet." "Hot" wallets are those which reside within a device that is connected to the internet, such as a desktop computer, smartphone, or on a cloud-based service. "Cold" wallets are those which reside within a device that is not connected to the internet. A "cold" wallet may become "hot" while it is connected to the blockchain network via an internet-connected device for the purpose of transferring or receiving tokens, though certain cold wallets are able to execute transactions without connecting directly to the internet. The beneficial owner of a cryptoasset may not necessarily control the wallet that holds custody of its cryptoassets. Many owners of cryptoassets instead make use of wallets controlled by a service provider such as a cryptoasset trading platform or a dedicated cryptoasset custodian.

Transferring ownership of a blockchain-based token between two blockchain addresses can be accomplished very quickly compared to common transfer processes for traditional financial assets. Executing the transfer takes only the time necessary to electronically broadcast the details of the transfer to the blockchain network. For Bitcoin and Ethereum transactions, settlement of the transfer consists of verifying the transfer via the mining or proof of stake process and can occur within minutes at any time on any day. For example, a transfer on April 12, 2020 of 161,500 bitcoin worth $1.1 billion settled on the Bitcoin blockchain in only 10 minutes.[16] By contrast, transfers of traditional financial assets will typically take one or more days (and sometimes weeks) to settle and can often only take place within certain trading hours. However, current blockchain technology has much lower aggregate transaction processing capacity than the most well-developed systems that prevail in traditional financial markets: the Bitcoin network can process seven transactions per second and the Ethereum network can process 20 per second. By

---

[15] *See, e.g.*, Kirsty Moreland, *Not Your Keys, Not Your Coins. It's That Simple* LEDGER ACADEMY (Sept. 5, 2022), https://www.ledger.com/academy/not-your-keys-not-your-coins-why-it-matters.

[16] MATT HOUGAN & DAVID LAWANT, CFA INSTITUTE RESEARCH FOUNDATION, CRYPTOASSETS: THE GUIDE TO BITCOIN, BLOCKCHAIN, AND CRYPTOCURRENCY FOR INVESTMENT PROFESSIONALS (2021), https://www.cfainstitute.org/-/media/documents/article/rf-brief/rfbr-cryptoassets.pdf.

contrast, the two main settlement agencies in U.S. equities markets – Depository Trust Company and National Securities Corporation, process 300 million shares per second during peak trading; VISA can process 24,000 transactions per second.[17]

It is also possible to transfer ownership of a cryptoasset without recording the transfer on the blockchain by transferring ownership of the wallet that holds the cryptoasset or recording the transfer on a separate ledger maintained by an intermediary. Centralized cryptoasset trading platforms effect users' transactions using the latter method, by recording the transfer in a separate ledger that the trading platform maintains. The transferred cryptoassets are thus not transferred between wallets but remain within a wallet controlled by the trading platform or a custodian that the trading platform contracts to hold users' cryptoassets. These "off blockchain" transfers avoid blockchain transfer fees and can reduce transaction processing time because they do not require validation by a proof of work or proof of stake protocol. They can therefore allow trading platforms to operate more efficiently and reduce transaction fees for users. However, transfers that are not recorded on the blockchain may be less secure, since they do not benefit from the consensus validation mechanism that renders blockchain transfers extremely difficult to falsify. They moreover require users to cede custody of their cryptoassets to the trading platform or a custodian. This can expose the user to counterparty risk with respect to the trading platform or custodian, as demonstrated by the failure of FTX and discussed further in **Part II**. A trading platform's use of a qualified independent custodian to hold users' assets, such as a prudentially regulated bank or registered broker-dealer can mitigate this risk. The role of centralized trading platforms and other trading venues for cryptoassets is described further in **Part I(C)** below.

B. Taxonomy of cryptoassets and related investment products

i) Cryptoassets generally

The design of the first major cryptoasset – bitcoin – was described in a white paper published pseudonymously on the internet in 2008.[18] The first bitcoins were minted on January 3, 2009.[19] New cryptoassets have since proliferated and as of 2022, there were an estimated 13,000-16,500 cryptoassets available to be traded worldwide.[20] Despite this variety, virtually all of their combined market capitalization is attributable to a small subset of the existing tokens. Based on median market capitalization for the period of May 2021 through May 2022, the largest 10 tokens constitute approximately 80% of the total market

---

[17] COMMITTEE ON CAPITAL MARKETS REGULATION, BLOCKCHAIN AND SECURITIES CLEARING AND SETTLEMENT (2019), https://www.capmktsreg.org/wp-content/uploads/2019/04/CCMR_statement_Blockchain_Securities_Settlement-Final.pdf.

[18] SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM (2008), https://bitcoin.org/bitcoin.pdf.

[19] HOUGAN & LAWANT, *supra* note 4.

[20] Measured using CoinGecko on May 26, 2022. *See also* Koray Caliskan, *The Elephant in the Dark: A New Framework for Cryptocurrency Taxation and Exchange Platform Regulation in the US* 15(3) J. OF RISK FIN. MGMT. 118 (2022), https://www.mdpi.com/1911-8074/15/3/118/htm.

capitalization, while the top 25 tokens constitute more than 90%.[21] Among the largest tokens, bitcoin, and to a lesser extent ether, predominate.[22] As of November 23, 2022, bitcoin represented approximately 38% of the total $848 billion market capitalization of all cryptoassets. **Table 1** below illustrates the market capitalization of the top five cryptoassets, including as a percentage of total market capitalization of all cryptoassets, as well as global trading volume in the spot market.

Table 1

Cryptoasset Market Capitalization[23]

Cryptoasset	Market Cap (billions)	Market Share	24-hr Global Trading Volume (billions)
Bitcoin (BTC)	$318	37.5%	$32.8
Ether (ETH)	$144	17.0%	$11.2
Tether (USDT)	$65	7.7%	$45.6
BNB (BNB)	$48	5.7%	$1.9
USD Coin (USD)	$44	5.2%	$4.0

ii) Stablecoins

The value of cryptoassets can vary significantly relative to currencies issued by national governments ("fiat" currencies). This volatility can limit a cryptoasset's ability to act as a reliable store of value for market participants who have assets and liabilities denominated in a fiat currency. Stablecoins are a subset of cryptoassets that seek to address this problem by maintaining a fixed price in another asset, often a fiat currency. For example, each USD Tether token is pegged to the value of one U.S. dollar.[24] Other stablecoins are linked to the value of other assets, such as a commodity (e.g., Tether Gold, SilverTokens, PlatinumCoin) or another cryptoasset (e.g., Wrapped Bitcoin, a stablecoin issued on the

[21] Measured using CoinGecko on May 26, 2022.
[22] This report uses the capitalized terms "Bitcoin" and "Ethereum" when referring to the relevant blockchain networks, and the lower-case terms "bitcoin" and "ether" to refer to the units of the cryptoassets native to those networks.
[23] Market capitalization data reported from Messari.io as of November 23, 2022. Volume data reported from Coinmarketcap.com as of November 23, 2022. Volume data includes all global trading, including cross-cryptocurrency trading (e.g., bitcoin-to-ether trades are included and are reflected in both bitcoin and ether volumes).
[24] Tether, What are Tether tokens and how do they work? https://tether.to/en/how-it-works (last visited Sept. 19, 2022).

Ethereum blockchain backed by bitcoin). However these non-fiat linked stablecoins have achieved comparatively limited market capitalization and trading volume to date.[25]

A primary function of stablecoins is that they enable market participants to transact in other cryptoassets without the use of fiat currency. This can reduce the amount of time necessary to execute transactions in cryptoassets and allow market participants to avoid transaction costs associated with crypto-fiat conversions. They also allow buyers and sellers of assets to conclude transactions without the intermediation of a bank, including across borders,[26] and in this respect are akin to digital cash.

Stablecoin market capitalizations indicate that the U.S. dollar is currently the most popular fiat currency peg for stablecoins by a significant margin. As shown in **Table 2**, Tether ("USDT"), and USD Coin ("USDC"), both of which are pegged to the U.S. dollar, accounted for 77% of the total market capitalization of all stablecoins as of November 2022. The third and fourth most prominent stablecoins, Binance USD ("BUSD") and Dai ("DAI"), are also pegged to the U.S. dollar.

The total market capitalization of stablecoins has increased rapidly, from $20 billion in 2020[27] to nearly $150 billion as of November 2022.[28] Although growth has been rapid, this is still a relatively small figure. For comparison, $150 billion is approximately 7% of the value of the total USD cash in circulation as of year-end 2020.[29]

---

[25] Gordon Y. Liao & John Caramichael, *Stablecoins: Growth Potential and Impact on Banking*, International Finance Discussion Papers, Board of Governors of the Federal Reserve System (2022), https://www.federalreserve.gov/econres/ifdp/files/ifdp1334.pdf.

[26] *Id*. at 6.

[27] TIMOTHY MASSAD, BROOKINGS, REGULATING STABLECOINS ISN'T JUST ABOUT SYSTEMIC RISK (2019), https://www.brookings.edu/research/regulating-stablecoins-isnt-just-about-avoiding-systemic-risk/.

[28] CoinCodex, Stablecoins by Market Cap and Volume, https://coincodex.com/cryptocurrencies/sector/stablecoins/ (last visited Nov. 22, 2022).

[29] *See* U.S. Currency Education Program, U.S. Currency in Circulation, https://www.uscurrency.gov/life-cycle/data/circulation (last visited Nov. 22, 2022).

Table 2

Stablecoin Market Capitalization[30]

Stablecoin	Market Cap (billion)	Market Share
Tether (USDT)	$65	45.8%
USD Coin (USDC)	$44	31.0%
Binance USD (BUSD)	$23	16.2%
Dai (DAI)	$5	3.5%
19 others	$5	3.5%

Stablecoins typically seek to maintain their parity with their target fiat currencies by granting all or a subset of token holders the right to redeem the stablecoin for the relevant value in fiat currency. The stablecoin issuer holds assets consisting of cash or other financial assets denominated in the target fiat currency to support those redemption rights. For example, USDC's issuer indicates that it holds a portfolio consisting of U.S. dollars or "equivalent . . . USD-denominated assets" in "segregated accounts."[31] Tether's issuer indicates that it holds a portfolio of Treasury bills and other USD-denominated assets.[32] Tether initially claimed to be "100% backed" by fiat currencies and that its reserves were regularly audited. However, in 2021, Tether paid $41 million to the CFTC to settle allegations that these claims were misleading and that it failed to disclose that its reserves in fact included unsecured receivables and other non-fiat assets.[33] Though it subsequently amended these claims to reflect the nature of its reserve assets, until recently Tether's reported reserves continued to consist mostly of commercial paper, which are short-term loans to commercial entities that can be subject to credit risk.[34]

---

[30] Data reported from Messari.io as of November 23, 2022.
[31] Circle, USDC Terms, https://www.circle.com/en/legal/usdc-terms (last visited Dec. 7, 2022).
[32] TETHER, *Tether Slashes Commercial Paper to Zero* (Oct. 13, 2022), https://tether.to/en/tether-slashes-commercial-paper-to-zero/#:~:text=Today%2C%20Tether%20announced%20that%20it,the%20management%20of%20Tether's'%20reserves.
[33] COMMODITY FUTURES TRADING COMMISSION ["**CFTC**"], *Tether to Pay $41 million over Claims that Tether Stablecoin Was Fully Backed by US Dollars*, Release No. 8450-21, https://www.cftc.gov/PressRoom/PressReleases/8450-21.
[34] Bill Nelson & Paige Pidano Paridon, *Op-Ed: Stablecoins Are Backed by 'Reserves'? Give Us a Break*, BANK POLICY INSTITUTE (Dec. 10, 2021), https://bpi.com/stablecoins-are-backed-by-reserves-give-us-a-break/; *see also* Christian Nwobodo, *Tether reduces commercial paper exposure to below $50M, Treasury bills rise to 58.1% of reserve* CRYPTOSLATE (Oct. 3, 2022), https://cryptoslate.com/tether-reduces-commercial-paper-exposure-to-below-50m-treasury-bills-rise-to-58-1-of-reserve/.

More generally, though the assets that support stablecoins are often referred to as "reserves," there are no federal regulations requiring the issuer to hold assets of a particular type or quantity or to segregate these assets from its other assets and liabilities.[35] The entities issuing stablecoins and holding stablecoin "reserves" often report that they undergo voluntary audits, but these audits are not subject to the same standards as those that commonly apply to financial institutions and pooled investment vehicles.[36] Moreover, redemption rights are often possessed only by holders affiliated with the token's issuer, and the issuer often has the right to delay or suspend redemptions.[37] Some commentators have thus contended that "reserve" is a misnomer when applied to stablecoins,[38] and indeed that the term "stablecoin" is itself a misnomer, given the various instances in which stablecoins have failed to maintain parity with their target assets.[39]

Certain other stablecoins hold "reserve" assets in the form of other cryptoassets. Dai, for example, seeks to maintain a stable price using a portfolio of other, less liquid, cryptoassets. To account for the risk that the cryptoasset reserves depreciate relative to the target fiat currency, cryptoasset-backed stablecoins are typically "overcollateralized," meaning that they maintain reserves with a market value more than the total redemption value of the outstanding stablecoin tokens. There is thus a buffer that allows for some depreciation of the reserve cryptoassets without causing the value of the reserves to dip below the redemption value of the outstanding stablecoin tokens. However, if the reserve cryptoassets depreciate sufficiently, the buffer will be depleted and the stablecoin risks failing to maintain parity with its target fiat currency.

The important role played by stablecoins in cryptoasset markets is evidenced by their primacy in the trading of bitcoin. Bitcoin trading does not require the use of a stablecoin since bitcoin trading platforms offer trading in fiat currencies. Nonetheless, most global bitcoin trading is conducted with stablecoins rather than fiat currency. Stablecoins are preferred for this purpose because they avoid the delays and costs associated with converting cryptoassets back and forth into fiat currencies.[40] Cryptoasset research firm Kaiko has estimated that bitcoin trading denominated in USDT accounts for 70% of the value of all bitcoin transactions where bitcoin is the base asset (i.e., the asset being

---

[35] Nelson & Paridon *supra* note 34. The money transmitter laws of certain states and the New York "BitLicense" virtual currency regulation contain permissible investment restrictions that apply to stablecoin operators but these requirements vary by state and apply only to operators registered in the state in question.

[36] Sean Stein Smith, *Stablecoin Failures Highlight The Need for Crypto Audit Standards*, FORBES (May 29, 2022), https://www.forbes.com/sites/seansteinsmith/2022/05/29/stablecoin-failures-highlight-the-need-for-crypto-audit-standards/.

[37] *See, e.g.*, Niall Ferguson & Manny Rincon-Cruz, *Stablecoins Can't Infect Financial Markets* WALL STREET JOURNAL (June 12, 2022), https://www.wsj.com/articles/stablecoins-infect-financial-markets-janet-yellen-terra-luna-tether-crypto-run-risk-collapse-recession-investment-dollar-stability-inflation-11655057043.

[38] *Id.*

[39] Jay Clayton & Timothy Massad, *How to Start Regulating the Crypto Markets – Immediately* THE WALL STREET JOURNAL (Dec. 4, 2022), https://www.wsj.com/articles/how-regulate-cryptocurrency-markets-11670110885.

[40] Massad *supra* note 27.

quoted in terms of the value of the other asset in the trading pair), while bitcoin to fiat (USD) trading only accounts for 8% of such transactions.[41]

Although stablecoins are an integral part of the functioning of cryptoasset markets, they implicate unique policy issues that do not apply to other cryptoassets. In particular, their role as a digital replacement for cash raises significant illicit finance issues that are the focus of financial regulation and national security efforts, including with respect to anti-money laundering and anti-financing of terrorism.[42] As such, although our report describes the role of stablecoins in cryptoasset markets, a full analysis of the regulation of stablecoins is beyond the scope of this report.

iii) Other cryptoassets

"Utility tokens" are cryptoassets that are intended to grant the holder the right to access a product or service on a trading venue or otherwise. For example, the cryptoasset trading platform Binance issues a token (Binance Coin) as a reward for use of Binance trading platforms and which grants a right to future discounts on trading fees.[43] "Governance tokens" are intended to provide "voting rights to holders regarding decisions to influence the operation of a decentralized autonomous organization ("DAO") or to govern proposed code changes to other decentralized protocols."[44] For example, the Compound network, a decentralized finance protocol that allows users to lend and borrow cryptoassets, issues a governance token (COMP). The issuer explains that tokens grant holders the right to vote on significant decisions related to the design and administration of the protocol, and that tokens are issued in proportion to use of the protocol, so that greater use of the protocol results in more votes.[45] NFTs are cryptoassets where each token is associated with a unique identification code that distinguishes it from all other individual tokens on the same blockchain.

iv) Cryptoasset derivatives

Investors in the U.S. and internationally can gain economic exposure to cryptoassets not only through the direct purchase of the relevant cryptoasset tokens but also through a variety of derivative contracts that are linked to the value of underlying cryptoassets. In the United States, the Chicago Mercantile Exchange ("**CME**") lists bitcoin futures and ether futures, as well as micro-bitcoin and micro-ether futures. The CME also lists options on bitcoin futures and options on both micro-bitcoin and micro-ether futures. Micro-futures

---

[41] KAIKO, *Half of All Bitcoin Trades Are Executed Using Tether* (Oct. 11, 2021), https://blog.kaiko.com/half-of-all-bitcoin-trades-are-executed-using-tether-9d7595304ca2.

[42] DEPARTMENT OF THE TREASURY, ACTION PLAN TO ADDRESS ILLICIT FINANCING RISKS OF DIGITAL ASSETS (2022), https://home.treasury.gov/system/files/136/Digital-Asset-Action-Plan.pdf.

[43] Binance, What is BNB? https://www.binance.com/en/bnb (last visited Dec. 12, 2022).

[44] DEPARTMENT OF THE TREASURY, CRYPTO-ASSETS: IMPLICATIONS FOR CONSUMERS, INVESTORS AND BUSINESSES *supra* note 1.

[45] COMPOUND, *COMP Distribution* (last visited Jan. 30, 2023); BINANCE, *What Are Governance Tokens?* (Jun. 13, 2022), https://academy.binance.com/en/articles/what-are-governance-tokens.

and micro-options represent 1/10 of the underlying cryptoasset. **Table 3** illustrates the relative daily trading volumes as of November 22, 2022 for each of the CME futures offerings with bitcoin futures clearly dominating crypto futures trading on the CME.

Table 3

CME crypto futures daily trading volume[46]

Derivative	Daily Volume	
	# of contracts	approx. $ (million)
Bitcoin futures	20,074	$332
Micro bitcoin futures	12,374	$20
Ether futures	7,286	$9
Micro ether futures	19,891	$2
Total		**$363 million**

Outside the United States, substantially more venues exist for trading cryptoasset derivatives. The most prominent cryptoasset derivative product on these non-U.S. venues is the perpetual future, which has no expiry or maturity date. Perpetual futures can be useful for market participants seeking to maintain exposure to an underlying cryptoasset over an extended period without needing to continually enter into new contracts. However, none of the platforms on which perpetual futures trading is offered (e.g., Binance and Kraken[47]) currently offer such products to U.S. investors. This is generally understood to be consequence of these platforms' desire to avoid U.S. regulation, as we further describe in **Part II**.[48]

Binance is the global trading venue for cryptoassets with the most trading volume and, as demonstrated by **Table 4**, the trading volume on Binance for perpetual futures can exceed

[46] CME daily trading volume on November 22, 2022. Approximated dollar volume is calculated using the 3:00pm CT price for bitcoin and ether as reported by Messari.io.

[47] *See* Kraken, Where can I use Kraken?, https://support.kraken.com/hc/en-us/articles/360001368823-Where-can-I-use-Kraken-#h_01FFFG58H0XMJN2PMHX46MNVCH (last visited Dec 12, 2022).

[48] *See, e.g.*, Benjamin Pirus, *Crypto Exchanges Barring US Citizens Is Heartbreaking and Frustrating*, FORBES (Sept. 30, 2020), https://www.forbes.com/sites/benjaminpirus/2020/09/30/crypto-exchanges-barring-us-citizens-is-heartbreaking-and-frustrating/?sh=2687a577c97e; Oluwaseun Adeyanju, *Unregulated Crypto Futures Aren't Going Anywhere* FORBES (Jan. 15, 2020), https://www.forbes.com/sites/oluwaseunadeyanju/2020/01/15/unregulated-crypto-futures-arent-going-anywhere/?sh=6fc62dd82150.

the volume for spot trading of equivalent crypto-to-crypto and crypto-to-fiat pairs. For example, as illustrated in **Table 4**, on November 24, 2022, the 24-hour global trading volume on Binance was $5.4 billion for a perpetual future contract based on the value of a trade of one USDT token for one bitcoin, versus $3.2 billion for spot BTC-USDT.

Table 4

Perpetual Futures vs. Spot Trading Daily Trading Volume[49]

Platform	Perpetual Future (billions)	Spot BTC (billions)
Binance	$5.4 (BTC-USDT)	$3.2 (USDT)
Binance	$0.909 (BTC-BUSD)	$1.6 (BUSD)
Binance	$0.754 (BTC-USD)	$0.084 (USD)

v) Cryptoasset investment funds

Although U.S. retail investors can legally purchase and hold cryptoassets and cryptoasset derivatives directly, certain investors in both the U.S. and internationally prefer to obtain economic exposure to cryptoassets by purchasing interests in pooled investment vehicles that hold cryptoassets or cryptoasset-linked instruments. This method of investment in cryptoassets is growing in popularity. Although U.S.-specific data is not readily available, according to one estimate, there was USD $9.3 billion in net inflows to cryptoasset-linked investment funds worldwide in 2021, which represented a 36% increase over 2020 net inflows and brought total assets under management of such funds to USD $62.5 billion in 2021.[50] However, this is before the significant decline in value of bitcoin and other major cryptoassets by more than 50% in 2022,[51] which likely reduced total assets under management substantially.

The types of pooled funds available to U.S. investors are limited relative to non-U.S. investors. In particular, the U.S. Securities and Exchange Commission ("**SEC**") has not permitted exchange-traded products ("**ETPs**") that are offered to U.S. investors to hold spot positions in bitcoin or other cryptoassets.

More specifically, the SEC has determined that a public listing of a commodity-based ETP is permissible under the Investment Company Act of 1940 only if the exchange (1) has in

[49] Data reported from coinmarketcap.com.

[50] James Butterfill, *Crypto Asset Inflows Hit $9.3B In 2021*, ETF.COM (Jan. 4, 2022), https://www.etf.com/sections/bitcoin-crypto/crypto-asset-inflows-hit-93b-2021. Data on the extent to which these figures are attributable to US-domiciled funds was not readily available.

[51] Wayne Duggan, *Crypto Crash: Why Is Crypto Down Today?* FORBES (Sept. 19, 2022), https://www.forbes.com/advisor/investing/cryptocurrency/why-is-crypto-down-today/.

place a "comprehensive surveillance-sharing agreement with a regulated market of significant size related to the underlying assets" or (2) demonstrates that the "underlying market inherently possesses a unique resistance to manipulation beyond the protections that are utilized by traditional commodity or securities markets."[52] When Cboe BZX Exchange sought to satisfy the second of these two prongs by showing that bitcoin spot markets are uniquely resistant to manipulation on the basis that bitcoin markets are highly liquid, the SEC dismissed the assertion as "general and conclusory" and not being supported with sufficient data.[53] The SEC also noted that the level of regulation of spot bitcoin trading venues is inadequate compared to the "obligations, authority, and oversight of national securities exchanges or futures exchanges," which undermined the applicant's assertion.[54] We address the regulation of spot bitcoin trading venues at length in **Part II** of this report.

On the other hand, the SEC has approved ETPs that hold bitcoin or cryptoasset-linked derivatives. The largest U.S. bitcoin futures ETP is the ProShares Bitcoin Strategy ETF with approximately $528 million under management as of November 23, 2022. The fund discloses prominently that it invests in bitcoin futures, does not hold bitcoin directly, and that the "price and performance of bitcoin futures should be expected to differ from the current 'spot' price of bitcoin."[55] Indeed, it is important to note that derivatives-based strategies can fail to precisely replicate the desired spot market exposure and can involve complex hedging formulas and leverage such that the strategy is riskier and more expensive than investing directly in the underlying asset in the spot market.

Mutual funds are generally unable to invest in cryptoasset spot markets for tax-related reasons. These funds typically seek to qualify as regulated investment companies under the U.S. tax code and this status limits the percentage of gross income that the fund may derive from commodities. As discussed in **Part II**, the largest cryptoassets are currently understood to be commodities. Investment funds that invest directly in cryptoasset spot markets are thus often structured as grantor trusts, which are not subject to restrictions on commodities income. The Grayscale Bitcoin Trust ("**GBTC**") is the largest trust entity by assets under management that invests in bitcoin spot markets. As of November 2022, GBTC held approximately $10.5 billion of assets under management and its shares are available to retail investors.

---

[52] SECURITIES & EXCHANGE COMMISSION ["**SEC**"], *Order Disapproving a Proposed Rule Change, as modified by Amendment No. 1, to List and Trade Shares of the ARK 21Shares Bitcoin ETF under BZX Rule 14.11(e)(4), Commodity-Based Trust Shares* (Mar. 31, 2022), https://www.sec.gov/rules/sro/cboebzx/2022/34-94571.pdf.
[53] *Id.*
[54] *Id*.
[55] PROSHARES, *Bitcoin Strategy ETF Summary Prospectus* (Oct. 1, 2022), https://www.proshares.com/our-etfs/strategic/bito.

C. Overview of cryptoasset trading venues

The trading of cryptoasset and cryptoasset-linked derivatives in the United States and worldwide takes place both through centralized trading platforms and in over-the-counter ("**OTC**") markets, much like the trading of traditional financial assets. However, cryptoasset trading venues are distinguished from traditional financial markets by allowing trades to be denominated in both fiat currencies (for crypto-to-fiat trading) as well as cryptoassets (for crypto-to-crypto trading) and by allowing investors to directly access order books and execute transactions without the intermediation of a broker. Furthermore, as we describe throughout this **Part I(C)**, U.S. investors are excluded from the global centralized trading platforms with the most trading volume.

The unique blockchain-based architecture of cryptoassets also allow trading venues to operate without a central organizing party. Hence the existence of "decentralized" cryptoasset trading protocols. A decentralized trading protocol consists most basically of a software application that operates automatically on a blockchain network to process trades. Such protocols allow traders to maintain custody of their cryptoassets, conducting trades in a peer-to-peer fashion with no handling of the assets by an intermediary, whereas in a centralized trading platform, customer fiat currency and cryptoassets are typically held by the platform or a custodian with the platform conducting the trade.

The following discussion overviews centralized and decentralized trading platforms as well as the role of brokers and OTC markets. In describing these venues, we refer mostly to trading in bitcoin, due to bitcoin's current predominance in cryptoasset markets in terms of market capitalization and liquidity.

We have provided data on trading volume and liquidity with respect to individual venues and venue types, however comprehensive data on volumes across all venues and ownership is sparse and often unavailable. For example, we cannot determine the share of volume attributable to retail as compared to institutional investors. However, disclosure by publicly offered trading platform operators provides some detail as to the breakdown of trading volume between retail and institutional traders. In Q3 2022, institutional investors owned 50% of assets stored on Coinbase's platform and accounted for 84% of Coinbase's trading volume.[56]

In this **Part I(C)** we rely primarily on market data provided by Messari because its reports seek to exclude volume that constitutes "wash trading."[57] Wash trades are trades between affiliated parties that have been carried out for purposes other than increasing or decreasing exposure to an asset, such as inflating a trading platform's volume in an attempt to attract additional traders or artificially increasing the price of an asset. Wash

---

[56] COINBASE, *Shareholder Letter* (Third Quarter, 2022), https://s27.q4cdn.com/397450999/files/doc_financials/2022/q3/Q32022-Shareholder-Letter.pdf

[57] MESSARI, *Messari Proprietary Methods* (May 26, 2021), https://messari.io/article/messari-proprietary-methods.

trading can thus distort prices as well as measures of trading volume on cryptoasset trading platforms.[58]

i) Centralized trading platforms

Centralized trading platforms may offer trading transacted in U.S. dollars or other fiat currencies (fiat-to-crypto trading), similar to the purchase and sale of other financial assets (e.g., equities, Treasuries), as well as trades where one cryptoasset (e.g., bitcoin) is exchanged for another cryptoasset (e.g., Tether) (crypto-to-crypto trading). Unlike trading platforms in traditional financial markets, centralized cryptoasset trading platforms allow investors to directly access their order books and execute trades without the intermediation of brokers. While many platforms admit both retail and institutional customers, certain platforms are limited to institutional customers.[59]

Crypto-to-fiat trading volume

Before the collapse of FTX in November 2022, global USD fiat-to-crypto bitcoin trading ("BTC-USD") was largely concentrated on two centralized platforms: FTX and Coinbase, with at times approximately 70% of BTC-USD trading occurring on one of these two platforms. Most of the volume on FTX was concentrated on its main global platform, which was located in the Bahamas and excluded U.S. residents. With the bankruptcy of FTX, Coinbase, which is located in the United States and open to U.S. residents, now accounts for two thirds of the total global volume for BTC-USD trading. **Table 5** illustrates the distribution of the daily global volume of BTC-USD trading among the ten largest platforms as reported on November 23, 2022. As shown in the table, Coinbase accounted for $604 million (66.1%) of the approximately $915 million in global daily trading volume on these platforms. Each of the platforms listed in **Table 5** is available to U.S. residents, except for Bitfinex and bitFlyer, which are not open to U.S. residents.[60]

---

[58] *Id.*

[59] *See, e.g.*, LMAX DIGITAL, https://www.lmaxdigital.com/overview/ (last visited Jan. 31, 2023).

[60] Bitfinex, U.S. Person – Frequently Asked Questions, https://support.bitfinex.com/hc/en-us/articles/115003461254-U-S-Person-Frequently-Asked-Questions-FAQ-#:~:text=Can%20I%20open%20an%20account,opening%20an%20account%20on%20Bitfinex (last visited Dec. 20, 2022); Bitflyer, FAQ, https://bitflyer.com/en-jp/faq/1-5 (last visited Dec. 20, 2022).

Table 5
Global BTC-USD daily trading volume[61]

Platform	Volume (million)	Market Share
Coinbase Exchange	$604	66.1%
Binance.US	$136	14.9%
Bitstamp	$58	6.3%
Kraken	$54	5.9%
Bitfinex (unavailable in US)	$38	4.2%
Gemini	$15	1.6%
itBit	$6	0.6%
Bittrex	$2	0.2%
bitFlyer (unavailable in US)	$1	0.1%
CEX.io	$1	0.1%
Total:	$915	

Crypto-to-crypto trading volume

As noted earlier, the majority of global trading volume on centralized trading platforms consists of crypto-to-crypto trades rather than fiat-to-crypto trades. In a crypto-to-crypto trade, one of the cryptoassets traded is typically a stablecoin linked to the value of a fiat currency, primarily Tether (USDT) and USD Coin (USDC). Trading in stablecoins allows cryptoasset investors to execute trades more quickly and at a lower cost than fiat-to-crypto trades. Investors are also able to move funds easily between various trading platforms and applications without the need for fiat currency, which cannot be moved as quickly and efficiently, and without the need to engage with traditional financial institutions, which can increase costs.

[61] 24-hour trading volumes of BTC-USD for the 10 largest trading platforms by trading volume, calculated as of November 23, 2022. Data reported from coinmarketcap.com (data for itbit reported from Messari.io).

U.S. investors are barred from accessing the global trading platforms that contain most crypto-to-crypto volume. Binance and other centralized platforms that have excluded U.S. residents from their main platforms have not made the reasons for this exclusion explicit, though it likely relates to (1) their combination of trading of spot and derivatives positions within a single platform, which could require registration of the entire global platform with the CFTC (their U.S. spot and derivatives platforms are by contrast separate), and (2) insulating their main platforms from the risk of facilitating a trade in a "security" and being required to register with the SEC. These regulatory factors are discussed in greater detail in **Part II**.

As illustrated in **Table 6**, on November 23, 2022, global daily bitcoin-to-USDT trading on the largest global cryptoasset trading platform, Binance, was $1.3 billion. This is more than twice the daily bitcoin trading volume denominated in USD (fiat-to-crypto) on the most active venue for such trades - $604 million on Coinbase (see **Table 5** above). This trading volume is not available to U.S. investors, because Binance restricts accounts of U.S residents to its smaller U.S. platform: Binance.US.[62] In **Table 6**, only the trading venues marked in bold text are available to U.S. residents. **Table 6** shows that most stablecoin-denominated crypto-to-crypto trading volumes on centralized platforms is not accessible to U.S. investors. For example, the daily volume of bitcoin trading denominated in Tether is $38 million on Binance.US and $27 million on Coinbase Exchange, which are available to U.S. customers, but is $1,270 million on Binance, which is not available to U.S. customers.

[62] Binance, Binance Terms of Use, https://www.binance.com/en/terms (last updated Dec. 20, 2022).

Table 6

Global BTC-stablecoin trading volume[63]

Platform	BTC-USDT (million)	Platform	BTC-USDC/BUSD (million)
Binance	$1,270	Binance (BUSD)	$639
OKEx	$272	OKEx	$21
Huobi Global	$81	Huobi Global	$7
Binance.US	$38	**Binance.US** (USDC)	$4
Coinbase	$27	**Kraken**	$3
Bithumb	$10	**Binance.US** (BUSD)	$3
Bitfinex	$7	Poloniex	<$1
Kraken	$7	**Bitstamp**	<$1
Poloniex	$4	Bittrex	<$1
Bitstamp	$1	Poloniex (BUSD)	<$1

ii) Decentralized trading protocols

Decentralized trading protocols ("decentralized exchanges" or "DEXs") have emerged in cryptoasset trading as an alternative to centralized exchanges. DEXs are not owned or operated by a central party but rather consist of a shared set of computer protocols that govern the execution and settlement of trades. They do not conduct customer verification and thus do not limit access to their venues based on residence, such that these venues are accessible to U.S. investors.[64] However because accessing and using DEXs is relatively more complex, firms have developed user interfaces that facilitate use and access of DEXs.[65] The operators of these interfaces could in theory engage in customer verification or transaction monitoring with respect to their users' DEX trading.

[63] 24-hour trading volumes of BTC-stablecoins for top 10 exchanges by trading volume, calculated as of November 23, 2022. Data reported from Messari.io.
[64] DEPARTMENT OF THE TREASURY, *supra* note 44.
[65] *See, e.g.*, Ariel Shapira, DEXs and KYC: A Match Made in Hell or a Real Possibility? COINTELEGRAPH (Mar 23, 2022), https://cointelegraph.com/news/dexs-and-kyc-a-match-made-in-hell-or-a-real-possibility.

As noted above, in a centralized trading platform, the custody of fiat currency and cryptoassets are held by the platform or its custodian, with the platform operator conducting the trade. A DEX allows traders to maintain custody of their cryptoassets, conducting trades in a peer-to-peer fashion with no handling of the assets by an intermediary. As a result, fees on a DEX can be significantly lower than fees on centralized platforms. For example, analysis by KPMG estimated that fees on the most popular DEX, Uniswap, were 0.05% of total trade value, based on a $100,000 trade, versus 0.2% on Coinbase and Kraken.[66] Trading venue fees are discussed in greater detail in **Part I(D)**. It is estimated that 60%-75% of DEX trading volume occurs on one DEX – Uniswap.[67] Unlike centralized trading platforms, trading on DEXs is not dominated by bitcoin trades. **Table 7** below shows that, as of November 24, 2022, the trading volume on Uniswap is primarily ether trades denominated in USDC stablecoin.

Table 7

Uniswap DEX trading volume[68]

Crypto pair	Volume (million)	Volume Share
ETH-USDC	$311	50.4%
USDC-USDT	$81	13.1%
ETH-BTC	$61	9.9%
ETH-USDT	$36	5.8%
DAI-USDC	$17	2.7%
BTC-USDC	$17	2.7%
DAI-ETH	$16	2.6%
BUSD-USDC	$10	1.6%
1,558 other pairs	$67	10.9%
Total	**$616 mil**	

[66] *See* Benedict George, *Centralized Exchange (CEX) vs. Decentralized Exchange (DEX): What's the Difference?* COINDESK (Aug. 5, 2022) https://www.coindesk.com/learn/centralized-exchange-cex-vs-decentralized-exchange-dex-whats-the-difference/.

[67] *See* Dominic Basulto, *Is Now the Time to Buy Uniswap?* NASDAQ (Oct. 5, 2022), https://www.nasdaq.com/articles/is-now-the-time-to-buy-uniswap.

[68] 24-hour trading volumes for Uniswap, calculated as of June 29November 24, 2022. Data reported from https://www.coingecko.com/en/exchanges/uniswap.

Despite the potential for lower fees, in 2021 estimated total trading volume on DEXs accounted for only approximately 7% of total cryptoasset trading volume. The ability to retain custody over one's own cryptoassets rather than entrusting custody to a third party is a reason that many users of DEXs prefer such venues.[69] However, customers of centralized exchanges may consider third-party custody to be more convenient, secure, and cost-effective as well as more familiar to them if they have previously traded traditional financial assets.[70] Such preferences likely contribute to the predominance of centralized trading platforms, and thus contribute to the lower volume on DEXs, which may in turn make DEXs less attractive to users seeking to execute large trades.[71] However, as demonstrated by the recent failure of FTX, there are significant risks associated with the custody of customer cryptoassets by centralized trading platforms.

In summary, U.S. investors currently have access to several centralized and decentralized trading platforms, and as noted below, OTC markets, but are excluded from some of the most liquid global venues, which do not accept U.S. customers.

iii) The role of brokers and OTC trading

A U.S. investor seeking to sell or buy cryptoassets can do so through a cryptoasset broker, like the process of purchasing or selling equities or other traditional financial assets. However, as noted earlier and unlike other traditional financial assets, the major cryptoasset trading platforms (e.g., Coinbase; Kraken) also permit direct access by both retail and institutional investors, without employing the services of a broker. In traditional financial assets, customers are unable to trade on exchanges directly without the intermediation of a broker.[72] Comprehensive data on the extent to which users choose to directly access a trading platform's order book as compared to doing so through a broker is currently unavailable.

Institutional investors can also engage a prime broker for their cryptoasset trading. Examples of institutional prime brokers include Gemini Prime and Coinbase Prime, which provide institutional investors with trading, settlement, custody, and other financial services, similar to the prime brokerage services offered to institutional investors in traditional asset classes.[73]

When a trader uses a cryptoasset broker, the broker either routes the order to a trading platform or fills the cryptoasset order from its own inventory, in which case the broker is

---

[69] COINTELEGRAPH, What are decentralized exchanges, and how do DEXs work? https://cointelegraph.com/defi-101/what-are-decentralized-exchanges-and-how-do-dexs-work (last visited Dec. 12, 2022).
[70] *Id.*
[71] *Id.*
[72] 17 CFR § 240.15c3-5.
[73] Gemini Prime, https://www.gemini.com/prime (last visited Dec. 20, 2022); Coinbase Prime, https://www.coinbase.com/prime (last visited Dec. 20, 2022).

the counterparty to the customer's trade. Examples include brokers who exclusively broker cryptoasset transactions, such as Coinbase, and brokers that broker cryptoasset transactions along with a broader set of financial assets, such as Fidelity, eToro, Robinhood, and Interactive Brokers.[74] As described further in **Part II**, to the extent cryptoasset brokers do not facilitate transactions in cryptoassets classified as securities, they are not required by law to route their customers' orders to the trading venue with the best available price, because there is no best execution obligation currently with respect to such non-security cryptoassets.[75] Data on whether an order is filled from a broker's own inventory or filled in a third-party trading venue, including both volume data and price data, is not publicly available, potentially making it difficult for certain investors to evaluate the quality of their trade execution. The fees charged by crypto brokers are discussed in **Part I(D)**.

OTC trading

Brokers also play an important role in cryptoasset markets by facilitating over-the-counter ("**OTC**") markets for cryptoasset trading. OTC trading can be particularly useful for investors seeking to carry out large trades of cryptoassets. Executing such a transaction through a centralized trading platform can result in "slippage" – that is, it will only be possible to execute a portion of the trade at the initially prevailing market price before the demand to purchase or sell at that price is exhausted and the remainder of the trade must be executed at a less favorable price.[76] Slippage can be a significant factor in cryptoasset trading due to the comparatively smaller volume on cryptoasset trading venues relative to trading venues for traditional financial assets. The OTC market relies on brokers, which identify and facilitate transactions between buyers and sellers, with transacting parties remaining anonymous to one another. Trading through OTC markets is thus of great importance to investors seeking to acquire or sell large quantities of cryptoassets.[77] OTC markets can be distinguished from DEXs by the presence of a third-party broker that arranges the trade; in DEXs, customers interact directly with one another.[78]

Certain operators of cryptoasset trading platforms also maintain OTC trading desks that facilitate such off-platform trading in the OTC market, including Coinbase and Kraken. There are also specialized cryptoasset OTC brokers that are not affiliated with a

[74] Fidelity Crypto, https://www.fidelity.com/crypto/trading (last visited Dec. 12, 2022); eToro, Cryptocurrency Trading, https://www.etoro.com/discover/markets/cryptocurrencies (last visited Dec. 12, 2022); Robinhood, Commission Free Cryptocurrency Investing, https://robinhood.com/us/en/support/articles/commission-free-cryptocurrency-investing/ (last visited Dec. 12, 2022); Interactive Brokers, Cryptocurrencies https://www.interactivebrokers.com/en/pricing/products-cryptocurrencies.php (last visited Dec. 12, 2022).

[75] Jasmin Sethi, *How Safely Are You Trading Cryptocurrencies?* MORNINGSTAR (Nov. 19, 2021), https://www.morningstar.com/articles/1064782/how-safely-are-you-trading-cryptocurrencies.

[76] Connor Dempsey, *How Does Crypto OTC Actually Work?* (Mar. 25, 2019), https://medium.com/circle-research/how-does-crypto-otc-actually-work-e2215c4bb13

[77] Elias Ahonen, *What Really Goes at a Crypto OTC Desk* COINTELEGRAPH (May 16, 2022), https://cointelegraph.com/magazine/explained-what-really-crypto-otc-desk/.

[78] WonderFi, What are Decentralized Exchanges? https://www.wonder.fi/resources/what-are-decentralized-exchanges (last visited Dec. 21, 2022).

cryptoasset trading platforms, such as Genesis,[79] B2C2, Cumberland, Circle, DVChain, Jump Trading and XBTO.[80] Certain of these operators have begun to facilitate OTC trading in cryptoasset derivatives.[81]

iv) Cryptoasset transaction fees

In general, there are three types of transaction fees that can apply to the transfer of cryptoassets, depending on the method and venue by which the trader transacts: (i) blockchain fees, (ii) trading platform fees, and (iii) broker fees.

Blockchain transaction fees generally apply to any transfer of tokens from one blockchain address to another. These fees are separate from any applicable platform or broker fees but are usually very small. In the case of bitcoin, the average blockchain transaction fee has ranged from $0.55 to $4.72 over the past year - less than 0.01% of the average transaction size.[82]

Whenever a trader is transacting on a trading platform, the platform will usually charge a platform fee. Amounts vary depending on the platform, but they are usually based on a "maker-taker" model whereby the fee for posting an offer to buy or sell is less than the fee for traders executing against offers to buy and sell, thus incentivizing posting liquidity rather than taking liquidity, which can increase platform trading volumes. These fees are generally additive to any applicable blockchain transaction and broker fees. For example, taker fees range from 0.05-0.6% of the trade value for Coinbase and from 0.01-0.05% of the trade value for Kraken.[83] Maker fees range from 0-0.4% of the trade value for Coinbase and 0-0.02% of the trade value for Kraken.[84]

Finally, if a trader is using a broker to execute its transaction, broker fees may apply. Brokers can charge a flat fee or percentage fee on the order (a "displayed fee"). Brokers can also charge a fee by adding a spread to the execution price (a "spread fee"). Whereas a displayed fee is typically itemized separately, spread fees are usually built into the price the broker provides to the customer and are often not immediately visible. If an investor is instead transacting directly on a trading platform or other venue without the

---

[79] On January 20, 2023, the cryptoasset lending unit of Genesis filed for bankruptcy. *Crypto Lending Unit of Genesis Files for U.S. Bankruptcy*, REUTERS (Jan. 20, 2023), https://www.reuters.com/technology/crypto-lending-unit-genesis-files-us-bankruptcy-2023-01-20/.
[80] SFOX, *14 Bitcoin OTC brokers you need to know* (Aug. 4, 2020), https://www.sfox.com/blog/13-bitcoin-otc-brokers-you-need-to-know/.
[81] *See, e.g.*, B2C2, *OTC Products* (last visited Jan. 30, 2023).
[82] BitInfoCharts, Bitcoin Average Transaction Value Historical Chart, https://bitinfocharts.com/comparison/bitcoin-transactionvalue.html (last visited Dec. 20, 2022).
[83] COINBASE, Exchange Fees, https://help.coinbase.com/en/exchange/trading-and-funding/exchange-fees (last visited Jan. 31, 2023); KRAKEN, Fee Schedule, https://support.kraken.com/hc/en-us/articles/360048917612-Fee-schedule (last visited Jan. 31, 2023.
[84] *Id.*

intermediation of a broker, broker fees do not apply, though the investor may have to pay additional fees to obtain direct access to the trading platform.[85]

[85] *See* Chandan Lodha, *2022 Crypto-Exchange Fee Comparison* COINTRACKER (Jul. 22, 2022), https://www.cointracker.io/blog/2019-crypto-exchange-fee-comparison.

II. OVERVIEW OF THE CURRENT REGULATORY FRAMEWORK FOR CRYPTOASSETS IN U.S. MARKETS.

In **Part II** we describe the current regulatory environment for cryptoassets in the United States.

Part II(A) discusses the classification of bitcoin, ether, and other cryptoassets as commodities and securities under current U.S. law. First, we explain how the classification of cryptoassets as commodities places cryptoasset derivatives markets under the jurisdiction of the CFTC but does not provide for comprehensive CFTC regulation of cryptoasset spot markets. Second, we examine the case for the classification of cryptoassets as securities under U.S. securities law, which would place the offering and trading of cryptoassets in spot markets under the comprehensive jurisdiction of the SEC. We then review the effect of SEC enforcement actions against individual cryptoasset offerings when such offerings constitute unregistered securities offerings.

Part II(B) discusses the regulatory environment for the secondary market trading of cryptoassets and the venues and brokers that facilitate such trading. We observe that trading platforms and brokers in cryptoasset spot markets currently operate outside the regulatory regimes for the trading of securities and derivatives. We identify the resulting lack of customer protections compared to the equivalent markets for traditional financial assets.

A. The classification of cryptoassets under current U.S. law and U.S. federal regulation of the primary market for cryptoassets

An asset's status as a "security" or "commodity" is of fundamental relevance under U.S. financial regulation. Commodities derivatives markets and limited aspects of commodities spot markets are subject to regulation under the Commodity Exchange Act of 1936 ("**CEA**") and the rules thereunder, which are administered by the Commodity Futures Trading Commission ("**CFTC**"). The issuers of instruments classified as "securities," as well as the platforms and brokers that facilitate the trading of securities, are subject to regulation under the Securities Act of 1933 and the Securities Exchange Act of 1934 (the "**1934 Act**" and together with the 1933 Act, the "**Securities Acts**") and the rulemaking authority of the SEC thereunder. Assets that are classified neither as securities, commodities, or derivatives thereof, are outside the ambit of these federal financial regulatory structures.

The legislation, regulation, and jurisprudence that defined the terms "commodity" and "security" and created the regulatory structures for these asset classes were crafted when ownership and transfers were recorded on paper, decades before the development of blockchain technology, and do not specifically contemplate the unique and novel blockchain-based ownership and transfer aspects of cryptoassets. As a result, there can

be uncertainty as to how existing regulations apply to cryptoassets.[86] Contributing to this uncertainty is the tendency of many cryptoassets to evolve through a process of decentralization such that a cryptoasset that constitutes a security at its initial issuance may gradually lose the characteristics that resulted in its initial classification as such. We describe this unique "evolution" of cryptoassets in **Part II(A)(ii)**.

As we describe throughout **Part II(A)(i)**, the CFTC has determined that the most widely traded cryptoassets, namely bitcoin, ether, and similar "virtual currencies" are commodities, and a federal court has upheld the CFTC's determination.[87] This characterization has placed markets for derivatives contracts on those cryptoassets, to the extent they are not also classified as securities, within the comprehensive enforcement and rulemaking authority of the CFTC.[88] However, the CFTC's authority over commodities spot markets is limited to enforcement of anti-fraud and market manipulation rules. Therefore, cryptoasset spot markets are not subject to comprehensive regulation by the CFTC.

We then describe the SEC's position as to whether cryptoassets are securities. Importantly, an asset can be a commodity *and* a security, and an interest in a pooled investment vehicle that holds commodities can also be considered a security, as we explain in further detail below. Therefore, the classification of bitcoin, ether and other cryptoassets as commodities is not prohibitive of their treatment as securities.

i) The status of cryptoassets as commodities under the CEA

The Commodity Exchange Act (the "**CEA**") defines "commodity" as all "goods and articles . . . and all services, rights, and interests . . . in which contracts for future delivery are presently or in the future dealt in."[89] In the 2015 "Coinflip" enforcement action, the CFTC determined for the first time that it viewed bitcoin and other similar cryptoassets (more specifically "virtual currencies", which it defined as a "digital representation of value that functions as a medium of exchange, a unit of account, and/or a store of value but does not have legal tender status in any jurisdiction") as "commodities" within the meaning of the CEA.[90] The CFTC has since confirmed this view in numerous enforcement actions,

---

[86] TIMOTHY G. MASSAD, BROOKINGS, IT'S TIME TO STRENGTHEN THE REGULATION OF CRYPTO-ASSETS 29 (2019), https://www.brookings.edu/research/its-time-to-strengthen-the-regulation-of-crypto-assets/.
[87] CFTC, *In the Matter of: Coinflip, Inc., d/b/a Derivabit, and Francisco Riordan*, CFTC Docket No. 15-29, https://www.cftc.gov/sites/default/files/idc/groups/public/@lrenforcementactions/documents/legalpleading/enfcoinfliprorder09172015.pdf; CFTC Orders Tether and Bitfinex to Pay Fines Totaling $42.5 Million, Release No. 8450-21 (Oct. 15, 2021), https://www.cftc.gov/PressRoom/PressReleases/8450-21; *Commodity Futures Trading Commission v. My Big Coin Pay, Inc. et al*., No. 18-10077-RWZ (D. Mass. Sept. 26, 2018).
[88] *CFTC v. McDonnell*, 287 F. Supp. 3d 213, 226 (E.D.N.Y 2018).
[89] 7 U.S.C. § 1a(9).
[90] CFTC, *In the Matter of: Coinflip, Inc., d/b/a Derivabit, and Francisco Riordan*, CFTC Docket No. 15-29, https://www.cftc.gov/sites/default/files/idc/groups/public/@lrenforcementactions/documents/legalpleading/enfcoinfliprorder09172015.pdf.

including in a 2016 enforcement action finding that "[b]itcoin and other virtual currencies are . . . properly defined as commodities, and are therefore subject [to the CEA]."[91]

In 2018, a federal court upheld the CFTC's position. In *McDonnell v. CFTC* the Eastern District of New York found that "virtual currencies" are "goods exchanged in a market for a uniform quality and value" and thus "bitcoin, ether, Litecoin, and Tether tokens, along with other digital assets" meet the common definition of commodity as well as the CEA's definition.[92] As a result, "[v]irtual currencies can be regulated by [the] CFTC as a commodity."[93] The CFTC's and the *McDonnell* decision's characterization of bitcoin and certain other cryptoassets as commodities rests in part on the view that these cryptoassets are "currency" or "money" as commonly defined – that is, a unit of account, store of value, or medium of exchange. However as noted above the extent to which any cryptoassets at present function as mediums of exchange, units of account, or stores of value remains limited, as they have yet to achieve widespread adoption as accepted means of payment for other goods or services.

In the 2015 Coinflip enforcement action the CFTC alleged that the respondents were operating an unregistered exchange for the trading of derivatives contracts based on bitcoin. The CFTC's jurisdiction in this and other similar enforcement actions is based in its general authority to regulate commodities derivatives markets and enjoin the operation of unregistered commodities derivatives exchanges. The classification of bitcoin as a commodity was thus necessary to the CFTC's jurisdiction over cryptoasset derivatives exchanges but does not entail general CFTC jurisdiction over cryptoasset spot markets. This is because the CFTC's jurisdiction regarding the underlying commodity markets, as opposed to commodity derivative markets, is limited to enforcement authority under the rules for the prevention of market manipulation and fraud in commodities spot markets.[94]

The CFTC has undertaken several enforcement actions under its enforcement authority over cryptoasset spot markets alleging, for example, fraudulent solicitation of bitcoin investments (2022)[95] and market manipulation in cryptoasset spot markets (2021).[96] The CFTC's suit against FTX also alleges violations of the anti-fraud provisions of the CEA and the regulations thereunder.[97] However the mere classification of bitcoin and other

---

[91] *In re BFXNA INC. d/b/a BITFINEX*, CFTC Docket No. 16-19 (June 2, 2016).
[92] *CFTC v. McDonnell*, 287 F. Supp. 3d at 226.
[93] *Id*.
[94] CEA Section 9(1); Dawn D. Stump, CFTC, Digital Assets: Clarifying CFTC Regulatory Authority & the Fallacy of the Question, "Is it a Commodity or a Security?" https://www.cftc.gov/media/6306/DigitalAssetsAuthorityInfographic_CommStump082321/download.
[95] CFTC, CFTC Charges Four Operators for $44 Million Bitcoin Ponzi and Misappropriation Schemes (Mar. 8, 2022), https://www.cftc.gov/PressRoom/PressReleases/8498-22.
[96] ROPES & GRAY LLP, *The CFTC Signals New Era in Enforcement of Cryptocurrency Trading with Action Against Antivirus Software Pioneer John McAfee* (Mar. 11, 2021), https://www.ropesgray.com/en/newsroom/alerts/2021/March/The-CFTC-Signals-New-Era-in-Enforcement-of-Cryptocurrency-Trading-with-Action-Against-Antivirus.
[97] CFTC, *Complaint: FTX Trading et al*, S.D.N.Y. (Dec. 13, 2022), https://www.cftc.gov/PressRoom/PressReleases/8638-22.

cryptoassets as commodities does not empower the CFTC to require trading platforms that facilitate trading solely in cryptoasset spot markets to register with the CFTC or to promulgate rules for such trading platforms or the marketing of cryptoassets to investors.

ii) The status of cryptoassets as securities under the Securities Acts

The classification of bitcoin, ether, and other cryptoassets as commodities under the CEA does not preclude the application of other regulatory frameworks under U.S. law.[98] In particular, because the definition of "commodity" under the CEA and "security" under the 1933 Act are not mutually exclusive, the classification of a cryptoasset as a commodity is not prohibitive of its classification as a security subject to the Securities Acts. The drafters of the Securities Acts took a rigorous view with respect to the offering of securities investments to the public, especially retail investors. As such, the definition of "security" under the Securities Act is intentionally broad and has consistently been interpreted to be broad by the courts.

If a cryptoasset is a security, the public issuance and trading of that cryptoasset in the spot market would be subject to comprehensive regulation under the Securities Acts and the SEC's powers to issue new rules thereunder. The 1933 Act requires that offerings of securities in the United States be registered with the SEC unless certain limited exceptions apply. The registration process requires the security's issuer to disclose publicly in a prospectus and registration statement information about the issuer's properties, business, and management, information about the securities to be offered for sale, and the issuer's audited financial statements.[99] Issuers are subject to strict liability for material misstatements and omissions in their disclosure. Investors are granted private rights of action against issuers and can sue issuers for damages arising from such material misstatements. Private offerings of securities to a limited number of persons are one of the exceptions from these registration and associated disclosure requirements, though they remain subject to the anti-fraud provisions of the federal securities laws.[100] To qualify for this exemption, the offering generally must be made only to "accredited investors" – namely, institutional investors and individuals meeting certain minimum wealth or income levels.

The 1933 Act empowers the SEC to seek injunctions to stop unregistered securities offerings and to seek civil penalties to sanction those who conduct such offerings.[101] The classification of a cryptoasset as a security would also subject trading venues and brokers that facilitate transactions in that cryptoasset to comprehensive regulation: The 1934 Act imposes registration and other requirements on the venues and brokers that facilitate

---

[98] *CFTC v. McDonnell*, 287 F. Supp. 3d 213, 226 (E.D.N.Y 2018) ("[T]he jurisdictional authority of [the] CFTC to regulate virtual currencies as commodities does not preclude other agencies from exercising their regulatory power when virtual currencies function differently than derivative commodities.").

[99] SEC, The Laws that Govern the Securities Industry, https://www.investor.gov/introduction-investing/investing-basics/role-sec/laws-govern-securities-industry#secact1933 (last visited Dec. 1, 2022).

[100] *Id.*

[101] 15 U.S.C. § 77t.

trading in securities, which are discussed in greater detail in **Part II(B)**. The Securities Acts also empower the SEC to promulgate new rules regulating the issuance and trading of securities.

On various occasions, the SEC itself acknowledged that U.S. law "does not provide for direct, comprehensive Federal oversight of underlying bitcoin or virtual currency spot markets."[102] This could be viewed as an acknowledgment that bitcoin, ether and other similar cryptoassets are not securities, since if they were, there would be federal regulation of these spot markets under the Securities Acts. However, the SEC has repeatedly noted that the definition of "security" is broad and involves a facts and circumstances analysis and has not otherwise taken an official position on whether these cryptoassets are securities.

The classification of a cryptoasset as a security is relevant to the regulatory status of cryptoasset trading platforms and brokers, because if these intermediaries facilitate trades in cryptoassets that are securities without registering as a securities exchange or broker-dealer then they are operating in violation of U.S. securities laws. This would expose these trading platforms and broker-dealers to sanctions and jeopardize their ability to continue operating. Indeed, SEC Chair Gensler recently asserted that "the probability is quite remote that any given platform has zero securities," suggesting that many cryptoasset trading platforms and brokers are in fact operating in violation of U.S. securities laws.[103]

We now review the "Howey" test used by the courts and the SEC for determining whether cryptoassets are securities and a non-binding framework released by the SEC staff that discusses the Howey analysis in the context of cryptoassets. We then discuss how cryptoassets that exist on decentralized blockchains, such as bitcoin and ether, are unlikely to be classified as securities, whereas those that exist on blockchain networks maintained or under development by a centralized management team are much more readily classified as securities. Next, we describe the SEC's actions with respect to "initial coin offerings," which involve the issuance of cryptoassets that are clearly securities. Finally, we briefly consider how cryptoassets can function as securities at the time of issuance but evolve over time so that they become decentralized and no longer qualify as securities.

a) The *Howey* test

The definition of "security" found in the Securities Acts refers by name to various financial instruments, including stocks and bonds. It also includes a "catch-all" term – "investment contract" – that covers instruments that may not be otherwise identified by name in the

[102] SEC *supra* note 52 at 28.
[103] Chair Gary Gensler, SEC, *Prepared Remarks of Gary Gensler on Crypto Markets*, Penn Law Capital Markets Association Annual Conference (Apr. 4, 2022), https://www.sec.gov/news/speech/gensler-remarks-crypto-markets-040422.

definition.[104] The definition also includes other "catch-alls," including, for example, "transferable share," "certificate of interest or participation in any profit-sharing agreement," and "in general, any interest or instrument commonly known as a 'security', or any certificate of interest or participation in, temporary or interim certificate for, receipt for, guarantee of, or warrant or right to subscribe to or purchase, any of the foregoing." Despite the presence of these multiple catch-alls, commentators and regulators have generally focused on the application of the "investment contract" catch-all when analyzing cryptoassets under the Securities Acts.[105]

In the 1946 case of *Howey* the U.S. Supreme Court specified the criteria that determines whether an asset constitutes an "investment contract" under the 1933 Act.[106] In *Howey*, the owner of an orange grove development offered to investors units bundled with a contract for "cultivating, marketing, and remitting the net proceeds" of the orange trees to the investor. Under criteria the Court articulated (the "**Howey test**"), an instrument is an "investment contract" if it constitutes (1) an investment of money, (2) in a common enterprise, (3), with the expectation of profit, (4) from the managerial efforts of others. The court held that the unit/contract bundles at issue were properly considered "investment contracts" under these criteria.

b) SEC FinHUB's Framework

In 2019 the SEC's Strategic Hub for Innovation and Financial Technology ("**FinHUB**") released a "Framework for 'Investment Contract' Analysis of Digital Assets" (the "**Framework**") that sets out general principles for applying the 1933 Act's definition of "security," and specifically "investment contract," to cryptoassets, which it refers to as "digital assets."[107] The Framework focuses on the application of the *Howey* test, but also incorporates additional jurisprudence bearing on the "investment contract" analysis.[108] The Framework cites over 60 factors relevant to the analysis of cryptoassets but explains that its list is not exhaustive and that no set of factors is necessarily determinative, because the application of the definition of "investment contract" and the *Howey* test depends on the facts and circumstances of each case.[109] The Framework explains that the primary question in applying the "investment contract" test to cryptoassets is usually whether, under *Howey*, there exists an expectation of profits from the managerial efforts

---

[104] 15 U.S.C. § 77b.

[105] We note that the SEC has on several occasions alleged that certain cryptoasset lending arrangements, whereby customers are offered the opportunity to lend out their cryptoassets in exchange for interest payments, constitute "notes" and are thus securities. In these cases, however the "security" is not the cryptoasset, but rather the promise to pay interest. *See, e.g.*, SEC, *Nexo Agrees to Pay $45 Million in Penalties and Cease Unregistered Offering of Crypto Asset Lending Product*, 2023-11, (Jan. 19, 2023), https://www.sec.gov/news/press-release/2023-11.

[106] *SEC v. W.J. Howey Co.*, 28 U.S. 9 (1946); Massad, *supra* note 86 at 29.

[107] SEC, FINHUB, FRAMEWORK FOR "INVESTMENT CONTRACT" ANALYSIS OF DIGITAL ASSETS (2019), https://www.sec.gov/files/dlt-framework.pdf.

[108] *Id*. at Note 5, citing *United Housing Found., Inc. v. Forman*, 421 U.S. 837 (1975); *Tcherepnin v. Knight*, 389 U.S. 332 (1967); *SEC v. C. M. Joiner Leasing Corp.*, 320 U.S. 344 (1943).

[109] *Id.* at 2, 11.

of others, which depends on, among other factors, whether a promoter, sponsor, or one or more affiliated third parties ("**APs**"), and not an "unaffiliated, dispersed community of network users," is responsible for the "development, improvement (or enhancement), operation or promotion of the network, particularly if purchasers."[110]

The Framework also identifies factors relevant to the determination of whether the status of a cryptoasset previously sold as a security should be "reevaluated" at the time of later offers or sales. These factors include whether the efforts of an AP "continue to be important to the value of an investment in the digital asset," and whether the network on which the digital asset functions "operates in such a manner that purchasers would no longer reasonably expect an AP to carry out essential managerial or entrepreneurial efforts."[111]

The Framework does not apply the factors that it cites to bitcoin or any other individual cryptoasset. Moreover, the Framework is not binding on the courts or the SEC. The Framework cautions that it solely represents the views of SEC staff, and is "not a rule, regulation of the SEC."[112] Market participants are thus limited in the extent to which they may rely on the Framework, as the Framework only provides guidance as to how the SEC will approach the application of the definition of "investment contract" and *Howey* to cryptoassets.

c) The status of cryptoassets under the *Howey* test and SEC guidance

Control over the blockchain networks that underlie the largest cryptoassets today, namely bitcoin and ether, is dispersed, such that no central administrator or authority has the right or responsibility to maintain the blockchain network or validate or execute transactions. These functions are instead carried out by a network of dispersed and unaffiliated participants. This raises significant doubt as to whether bitcoin, ether, and other cryptoassets existing on decentralized networks would be considered securities under *Howey*.

For example, the Framework indicates that when the development, operation, and oversight of a cryptoasset network are the responsibility of an unaffiliated, dispersed community of network users rather than a promoter, sponsor, or one or more affiliated third parties, there is less likely to be an expectation of profit from the managerial efforts of others and the cryptoasset is less likely to be a security under *Howey*. The Bitcoin and Ethereum networks are consistent with that description. More specifically, Bitcoin is based on open-source computer code that can be amended only by consent of 95% of network nodes. Today there are over ten thousand independent network nodes dispersed across the globe.[113] As of late 2022, the Ethereum network operated similarly, with an estimated

[110] *Id.* at 3.
[111] *Id.* at 5-6.
[112] *Id.*
[113] Bitnodes, https://bitnodes.io/ (last visited Dec. 14, 2022).

9,000 dispersed and independent notes in operation worldwide.[114] However as described in Part II(A)(ii)(f) below, there is a debate as to whether ether was a security at the time of its initial issuance.

Other cryptoassets differ from bitcoin and ether in ways that more clearly implicate *Howey* because they exist on blockchain networks controlled, maintained, or under ongoing development by a management team, such that the value of the cryptoasset is arguably tied to the success or failure of management in carrying out those functions. Tokens that are offered in transactions commonly referred to as "initial coin offerings" ("**ICOs**") are among the types of cryptoassets that have been subject to particular scrutiny under the *Howey* test. Cryptoassets offered in ICOs differ from bitcoin and ether as they currently exist in that the offerors are an identifiable group of individuals or a business entity seeking to raise capital for the further development of a blockchain-based network and who will generally retain special responsibilities for the development of that network following the ICO.

Rather than stock certificates or instruments in a business entity, ICO investors are issued cryptoasset tokens that can be subsequently used to transact on the relevant network. The developers of the network on which these tokens reside typically have a special responsibility to carry out further efforts to develop the network following this investment. Developers will, for example, seek to build in additional features (e.g., superior smart contract capabilities) to their blockchain networks and expand participation in those networks through other efforts, including marketing, that will require an investment of human capital. The continued efforts of the persons who conducted the offering or their employees are generally necessary to achieve these developments and the ICO serves as a mechanism for raising the necessary capital. Offerors also typically tout these efforts as aimed at increasing the value of the offered token. These are all factors cited in the Framework that tend to show that an acquiror of the cryptoasset is looking to profit from the managerial efforts of others and that, accordingly, the cryptoasset should be considered a security.

d) The History of ICOs and SEC Enforcement

The elements that cause ICOs to implicate Howey are exemplified by the first ICO, which occurred in 2012 when J.R. Willet published a white paper that proposed a blockchain-based network that would allow users to develop new cryptoassets.[115] These new cryptoassets would be derived from the infrastructure of an initial token known as "MasterCoin" to be developed, along with the network infrastructure, by a team of software developers. The whitepaper indicated that the "[i]nitial distribution of MasterCoins will essentially be a fundraiser for the trusted entity to provide money to pay

[114] Etherscan, https://etherscan.io/nodetracker (last visited Dec. 14, 2022).
[115] J.R. WILLET, MASTERCOIN (2012), https://github.com/bitsblocks/mastercoin-whitepaper/blob/master/index.md.

developers to write the software which fully implements the protocol."[116] In 2013, the MasterCoin project offered MasterCoin tokens to investors with the aim of raising $500,000 for the purposes described in the white paper.[117]

For several years following 2012 ICOs proliferated without registering as securities offerings and without any enforcement action by the SEC. In 2017 however in response to an unregistered ICO to be conducted by an entity calling itself the "DAO Organization" the SEC released an investigative report (the "**DAO Report**") concluding that the ICO constituted an unregistered securities offering under the 1933 Act. The report explained that, although the technical characteristics of a cryptoasset and the vocabulary used to describe it may differ from traditional financial assets such as equity or debt that are readily classified as securities, under the *Howey* test, it is the economic substance of the transaction that governs. Thus, merely because a virtual organization or capital raising entity is using distributed ledger or blockchain technology, smart contracts, or other computer code to facilitate automated capital raising or investment automation of certain functions through technology, 'smart contracts,' or computer code, "does not remove conduct from the purview of the U.S. federal securities laws."[118]

Following the release of the DAO Report the SEC brought numerous enforcement actions under the 1933 Act with respect to ICOs alleging that they constituted unregistered or fraudulent offerings of securities. In 2021, 14 of the total 20 SEC enforcement actions relating to cryptoassets were enforcement actions against ICOs.[119] From July 2013 through December 2021, the SEC brought a total of 58 cryptoasset-related litigations and 39 administrative proceedings alleging that an ICO constituted an unregistered securities offering, with the majority including a fraud allegation.[120]

The uptick in enforcement actions was succeeded by a precipitous decline in the number of ICOs. According to an estimate by Statista, worldwide ICOs increased from 10 in Q1 2017 to a peak of 6,880 in Q1 2018, before immediately declining throughout the remainder of 2018, and reaching 48 in Q2 2019.[121] The volume of these enforcement actions and their ostensible curtailing effect on the ICO market in the U.S. suggests that, to the extent ICOs constituted unregistered or fraudulent offerings of securities - the SEC has the means to and has been generally effective in recent years in reducing their

---

[116] *Id.*
[116] *Id.*
[117] Michael Mendelson, *From Initial Coin Offerings to Security Tokens: A U.S. Federal Securities Law Analysis*, 22 STAN. TECH. L. REV. 52 (2019), https://law.stanford.edu/wp-content/uploads/2019/01/Mendelson_20180129.pdf.
[118] SEC, REPORT OF INVESTIGATION PURSUANT TO SECTION 21(A) OF THE SECURITIES EXCHANGE ACT OF 1934: THE DAO, Release No. 81207 (2017), https://www.sec.gov/litigation/investreport/34-81207.pdf.
[119] CORNERSTONE RESEARCH, SEC CRYPTOCURRENCY ENFORCEMENT 1 (2021), https://www.cornerstone.com/wp-content/uploads/2022/01/SEC-Cryptocurrency-Enforcement-2021-Update.pdf.
[120] *Id.*
[121] PETROC TAYLOR, BLOCKCHAIN ICO PROJECTS: FUNDS RAISED WORLDWIDE 2017-2019 (2022) https://www.statista.com/statistics/804748/worldwide-amount-crytocurrency-ico-projects/.

number and that issuers that have faced such enforcement actions generally did not wish to litigate the question of their token's status as a security before the courts.

To the extent these SEC enforcement actions have reached the courts, courts have thus far agreed with the SEC's analysis in final adjudications.[122] There are however cases where the *Howey* analysis of a cryptoasset is being contested. For example, in ongoing litigation (often referred to as the "Ripple" case) the SEC has alleged that the creators of a digital currency ("XRP") conducted an unregistered offering of securities when they sold tokens to investors.[123] The defendants have argued, among other things, that the blockchain network on which these tokens traded was already operational and sufficiently decentralized at the time of the offerings such that the token's value was dependent on "market forces of supply and demand" rather than the efforts of the creators to enhance the value of the tokens.[124] The SEC has countered that the presence of third-party market forces does not preclude the reliance of purchasers on the efforts of others.[125] As of the time of this report, the Ripple case has yet to be resolved.

e) The effect of decentralization on the *Howey* analysis

Notwithstanding the clear resemblance of many ICOs to typical securities offerings at their early stages, the goal of the developers in many such offerings is for their blockchain networks to become sufficiently dispersed through the addition of users such that the oversight and management of the initial developers becomes unnecessary for the continued operation of the network and the trading value of the cryptoasset token.

As noted earlier, the Framework acknowledges the possibility that the course of development of a cryptoasset may result in the acquirers of a cryptoasset no longer expecting to profit from the managerial efforts of others, such that the cryptoasset no longer constitutes a security. The Framework identifies factors that are relevant to determining whether a cryptoasset that constitutes a security on its issuance should be "reevaluated" upon a subsequent issuance or offering, including whether the efforts of an AP "continue to be important to the value of an investment in the digital asset," as opposed to the effect of "supply and demand" and whether the network on which the digital asset

---

[122] *SEC v. Kik Interactive Inc.*, 492 F. Supp. 3d 169 (S.D.N.Y. 2020); *SEC v. LBRY*, No. 1:21-cv-00260-PB, 2022 WL 16744741, (D.N.H. Nov. 7, 2022),

[123] Motion to Dismiss, *SEC v. Ripple Labs. Inc.* (Mar. 11, 2022), https://www.nysd.uscourts.gov/sites/default/files/2022-03/Ripple%20-%20Order%20on%20Motion%20to%20Dismiss.pdf.

[124] Dave Michaels, *Ripple's Legal Brawl with SEC Could Help Settle When Cryptocurrencies Are Securities*, WALL STREET JOURNAL (Feb. 2, 2022), https://www.wsj.com/articles/crypto-industry-hopes-looming-legal-brawl-will-thwart-secs-regulation-push-11643724002 https://cointelegraph.com/news/ripple-sec-case-heads-for-conclusion-after-summary-judgment-filed.

[125] Plaintiff Securities and Exchange Commission's Reply Memorandum of Law in Further Support of Its Motion for Summary Judgment, SEC v. Ripple Labs, Inc., 20 Civ 10832, S.D.N.Y (Dec. 2, 2022), https://fingfx.thomsonreuters.com/gfx/legaldocs/myvmoneblvr/SECURITIES%20CRYPTO%20RIPPLE%20sec%20brief.pdf..

functions "operates in such a manner that purchasers would no longer reasonably expect an AP to carry out essential managerial or entrepreneurial efforts."[126]

There has been at least one instance where a creator registered a cryptoasset as a security upon its issuance but thereafter concluded that its blockchain network had evolved such that *Howey* now longer applied: The public disclosure for the Blockstack ICO, which registered as a securities offering in 2019, explains that the cryptoasset tokens it is offering will initially depend on the efforts of the issuer's founders and employees in developing the computer code that supports the underlying blockchain network.[127] However, it is the issuer's objective for its blockchain network to become sufficiently decentralized so that purchasers of the cryptoasset traded on that network no longer reasonably expect the issuer to carry out essential managerial or entrepreneurial efforts and the issuer no longer "retains a degree of power over the governance of the network such that its material non-public information may be of special relevance to the future of the Blockstack network, as compared to other network participants."[128] The issuer explains that it will continually monitor these factors and if the issuer concludes that the offered token no longer constitutes a security, the issuer will file an exit report with the SEC "terminating its reporting obligations" under the Securities Acts, effectively removing any subsequent offering or trading of the token from the ambit of federal securities regulation.[129] In 2021, the creators of the Blockstack network filed such a report with the SEC indicating that they had ceased to provide any essential managerial services to the blockchain network they created, such that their Blockstack cryptoasset was no longer a security under the *Howey* test.[130] Following this announcement, a U.S.-based cryptoasset trading platform (OKCoin) listed the Blockstack tokens.[131] The SEC has thus far neither publicly challenged or validated the position that these tokens are no longer securities. If the SEC were to disagree with this position, it could pursue an enforcement action against the issuer, against a trading venue facilitating transactions in Blockstack token, or against other persons who engage in unregistered offers and sales of the token for themselves.

f) The Evolution of Ether and Bitcoin

Ether, the second largest cryptoasset by market capitalization today, underwent a similar evolution. As noted earlier, the Ethereum network on which ether exists is a decentralized blockchain. The operation of Ethereum thus relies on dispersed network participants and the value of ether relies on forces of supply and demand, not the efforts of a central

---

[126] SEC, *supra* note 107.
[127] BLOCKSTACK TOKEN LLC, PRELIMINARY OFFERING CIRCULAR 11 (Apr. 19, 2019), https://www.sec.gov/Archives/edgar/data/1719379/000110465919020748/a18-15736_1partiiandiii.htm.
[128] *Id.*
[129] *Id.*
[130] HIRO SYSTEMS PBC, FORM 1-U (Jan. 20, 2021), https://www.sec.gov/Archives/edgar/data/1693656/000119312521012574/d111554d1u.htm.
[131] Scott Chipolina, *Hiro, Formerly Blockstack, Says STX Token Is No Longer a Security* DECRYPT (May 5, 2021), https://decrypt.co/69980/hiro-formerly-blockstack-says-its-stx-token-from-security-to-utility-token.

management team. However, development of the Ethereum network began in 2014 with a group of programmers who raised the capital to fund their development efforts by selling ether tokens in an initial offering (before the SEC began taking enforcement actions against unregistered ICOs). Ethereum was not operational until 2015, after the creators had spent over a year developing it, and only at that point did ether become tradeable on the decentralized Ethereum network.[132] Had the developers failed in their task, the ether tokens they sold may well have become worthless. Thus, while it would be difficult to satisfy the *Howey* test with respect to ether as it currently exists, there was a stronger case for its classification as a security at the time of its initial offering. An analysis of whether Bitcoin was a security in 2009 would also be very different than an analysis of whether Bitcoin is a security today, as the value of the Bitcoin network was initially dependent on a smaller group of early adopters rather than the 10,000 dispersed participants today.[133]

B. U.S. federal regulation of secondary market trading of cryptoassets

We now evaluate the regulation of trading venues and brokers in cryptoasset secondary markets in the United States. We begin by briefly reviewing the regulation of trading venues and brokers for cryptoasset derivatives. These entities fall within the CFTC's rulemaking and enforcement jurisdiction over commodities derivatives markets and thus provide customers with protections that exist in derivatives markets. We then turn to trading venues and brokers in cryptoasset spot markets. First, we summarize at a high-level the regulatory framework for trading venues and brokers that facilitate transactions in securities. We then examine how the major trading venues and brokers in cryptoasset spot markets currently operate outside this framework and how as a result cryptoasset spot markets lack many of the customer protections that apply to trading venues and brokers for traditional financial assets. Finally, we describe certain limited regulatory requirements that apply to spot trading venues for cryptoassets, including certain state regulations and anti-money laundering requirements.

i) CFTC regulation of trading venues and brokers for cryptoasset derivatives

The classification of bitcoin, ether and other "virtual currencies" as commodities places the trading of derivatives linked to such cryptoassets, to the extent they are not also securities, within the comprehensive regulatory framework that exists for other commodities derivatives in the United States under the CEA, the regulations thereunder, and the CFTC's enforcement and rulemaking authorities.

---

[132] COINTELEGRAPH, History of ETH: The rise of the Ethereum blockchain, https://cointelegraph.com/ethereum-for-beginners/history-of-eth-the-rise-of-the-ethereum-blockchain (last visited Dec. 14, 2022).

[133] For a discussion of the capacity of certain cryptoassets to evolve from something that is a security on initial issuance into something that is not, see TimesTalksDealbook, SEC Chairman Jay Clayton with Andrew Ross Sorkin, New York Times Events (Nov. 30, 2018), https://www.youtube.com/watch?v=YVekxba40ZQ.

Trading in cryptoasset futures contracts (and options thereon) is required to take place on, or pursuant to the rules of a CFTC-registered contract market.[134] Furthermore, trading in cryptoasset swaps must comply with various recordkeeping and reporting requirements along with additional requirements for CTFC registrants.[135] In addition, if a cryptoasset transaction involves a retail participant, and the transaction is executed on a leveraged, margined, or financed basis, the transaction is regulated as a futures contract subject to the CFTC's jurisdiction, unless an exception applies.[136] The CFTC has undertaken numerous enforcement actions against cryptoasset-derivative trading venues alleging failures to abide by these rules.[137]

Most customers access registered derivatives exchanges through an introducing broker or through a "futures commission merchant" ("**FCM**").[138] FCMs are subject to a registration requirement and rules with respect to net capital and recordkeeping.[139] Trading venues that list cryptoasset-linked derivatives must register with the CFTC as a derivatives exchange and brokers that execute transactions in cryptoasset-linked derivatives must register as FCMs. Furthermore, dealers in cryptoasset swaps must register with the CFTC as a swap dealer provided their swap dealing activity exceeds a *de minimis* threshold. Each of these entities are subject to the provisions of the CEA and rules thereunder that apply to commodities derivatives exchanges, FCMs, and swap dealers. Registered exchanges, FCMs, and swap dealers are subject to extensive CFTC regulations that protect participants in these markets. For example, FCMs and swap dealers are barred from front running customer orders - that is, seeking to benefit from the market impact of a non-public order by a customer by executing their own trade before the customer's trade.[140] Registered exchanges themselves and their affiliates are generally barred from trading on their own venues except with CFTC approval,[141] and trading venues and brokers are prohibited from using confidential customer information to trade for their own account,[142] meaning that customers cannot be front run by their broker or the trading venue.

---

[134] 7 U.S.C. § 2.
[135] 7 U.S.C. § 6a.
[136] 7 U.S.C. § 2(c)(2)(D).
[137] CFTC, Release Number 7731-18, CFTC Staff Issues Advisory for Virtual Currency Products, https://www.cftc.gov/PressRoom/PressReleases/7731-18.
[138] GUYLAINE CHARLES, FUNDAMENTALS OF FUTURES TRADING COMPLIANCE FOR BROKER DEALERS (2014), https://charleslawpllc.com/wp-content/uploads/2022/04/Fundamentals-of-Futures-Trading-Compliance-for-Broker-Dealers.pdf.
[139] *Id.*
[140] CFTC, *Order: Classic Energy LLC and Mathew D. Webb* (Oct. 1, 2019), https://www.cftc.gov/PressRoom/PressReleases/8030-19/ .
[141] Rules of CBOE Exchange, Inc., Rule 3.62, https://cdn.cboe.com/resources/regulation/rule_book/C1_Exchange_Rule_Book.pdf; CFTC, *CFTC Designates KalshiEX LLC as a Contract Market* (Nov. 4, 2020), https://www.cftc.gov/PressRoom/PressReleases/8302-20.
[142] 17 CFR § 1.59.

FCMs are also subject to custody requirements that mandate the segregation of customer assets such that they are protected in the event of the FCM's insolvency.[143] The CFTC has issued specific guidelines for the custody of customers' digital assets, which must be deposited only with a bank, trust company, another FCM, or clearing organization, and thus may not be custodied by a trading platform itself.[144] Customers trading on margin (borrowing the funds necessary to enter into trades) do so by receiving credit from their FCMs, subject to minimum margin requirements, not from the derivatives trading venues.

A full analysis of the regulatory structure for the trading of commodity-linked derivatives, including cryptoasset-linked derivatives, is beyond the scope of this report. However, we note that the major cryptoasset trading platforms that offer both spot market and derivatives trading to U.S. customers have registered their derivatives platforms with the CFTC and operate their derivatives platforms separately from their unregistered spot market platforms. For example, Coinbase's cryptoasset derivatives trading platform is a CFTC-registered platform that operates separately from Coinbase's spot cryptoasset trading platform.[145] This was also true of the failed cryptoasset trading platform FTX. FTX's CFTC-registered derivatives platform operated under a corporate structure separate from the spot platform. According to FTX's bankruptcy filings, the derivatives platform remains solvent, and customers of the derivatives platforms are not affected by the insolvency of the spot platform.[146]

ii) U.S. federal regulation of trading venues and brokers in securities markets

The trading venues and brokers that facilitate the trading of stocks, bonds, and other instruments classified as securities under U.S. law are subject to a comprehensive regulatory structure administered and enforced by the SEC, which we now summarize at a high level.

Platforms that bring together purchasers and sellers to trade securities are required under Section 5 of the 1934 Act to register as national securities exchanges, or to qualify for an exemption, such as operating as a registered broker-dealer that is also registered as an "alternative trading system" in compliance with Regulation ATS.[147] The major national

---

[143] CFTC, Futures Commission Merchants, Segregation of Customer Funds https://www.cftc.gov/IndustryOversight/Intermediaries/FCMs/fcmsegregationfunds.html (last visited Dec. 19, 2022).

[144] CFTC, Staff Letter No. 20-34 (Oct. 21, 2020) https://www.cftc.gov/node/234361#:~:text=Title%3A%2020%2D34&text=DSIO%20advisory%20to%20FCMs%20regarding,such%20assets%20as%20customer%20funds.

[145] Aoyon Ashraf, *Coinbase Launches First Crypto Derivatives Product Aimed at Retail Traders* COINDESK (Jun. 23, 2022), https://www.coindesk.com/business/2022/06/24/coinbase-launches-first-crypto-derivatives-product-aimed-at-retail-traders/

[146] *FTX Trading Ltd., Declaration of John J. Ray III in Support of Chapter 11 Petitions and First Day Pleadings*, Case No. 22-11068, https://restructuring.ra.kroll.com/FTX/Home-DocketInfo.

[147] 15 U.S.C. § 78e.

securities exchanges in the United States are the New York Stock Exchange, NASDAQ and CBOE.

The key requirements that apply to national securities exchanges are set forth in the 1934 Act and the regulations thereunder. Exchanges must permit any SEC-registered broker-dealer in good standing to become a member of the exchange,[148] and must deny membership to any person that is not an SEC-registered broker dealer.[149] Non-brokers thus cannot directly access such venues and must trade through an SEC-registered broker. Exchange rules bar the exchange operators themselves and their affiliates from becoming members of, and thus executing transactions on, the exchange. [150] As a result, a securities exchange could not front run a customer order.

As "self-regulatory organizations" ("**SROs**") securities exchanges are responsible for enforcing compliance by their members with the Exchange Act and the exchange's rules[151] through disciplinary proceedings and membership restrictions.[152] Exchanges must file their proposed rules, which cover trading at the exchange and member conduct, for public comment and SEC approval before they become effective.[153]

Certain trading venues referred to as "alternative trading systems" ("**ATSs**") operate according to an alternative framework. ATSs meet the 1934 Act definition of exchange but are exempt from the requirement to register as national securities exchanges if they operate in compliance with Regulation ATS and generally trade less than 5% of total trading volume in any security.[154] Regulation ATS requires, among other things, that an ATS register with the SEC as a broker-dealer.[155] Unlike exchanges, ATSs are permitted to limit access to trading on their platforms to certain subscribers provided trading on their platforms remains below certain volume thresholds.[156] They are also permitted to create and amend trading rules without the SEC's approval but must publicly disclose information about their rules, operations, and fee structures.[157]

Brokers who route or otherwise effect transactions in securities for customers are required to register with the SEC and become a member of the Financial Industry Regulatory Authority ("**FINRA**"), which is an SRO responsible for supervising broker-dealers and monitoring their compliance with securities laws and regulations and FINRA's own

---

[148] *Id.* at § 78f(b)(2)
[149] *Id.* at § 71f(c)(1).
[150] NYSE Rule 2B.1, https://www.nyse.com/publicdocs/nyse/regulation/nyse/NYSE_Rules.pdf; NASDAQ Rule 4(a), https://listingcenter.nasdaq.com/rulebook/nasdaq/rules/Nasdaq%20General%202.
[151] 15 U.S.C. § 78f(b)(1).
[152] *Id*. at § 78f(c),(d).
[153] 15 U.S.C. § 78s(b).
[154] 17 CFR § 242.300.
[155] *Id.* at § 242.301.
[156] 17 C.F.R. § 242.301(b)(5)(ii)(C).
[157] SEC, *Regulation of NMS Stock Alternative Trading Systems*, 83 FED. REG. 38768 (Aug. 7, 2018), https://www.govinfo.gov/content/pkg/FR-2018-08-07/pdf/2018-15896.pdf. .

rules.[158] SEC-registered brokers are required to adhere to customer protection requirements with respect to securities that they carry for the account of customers. As part of these requirements, brokers must either retain possession of customer assets or place those assets with another specified custodian, such as an FDIC-insured bank or certain state-chartered trust companies.[159] In practice, this means that securities exchanges do not take custody of customer assets and customers have no credit exposure to those venues. Brokers who allow customers to borrow to trade securities must obtain from customers minimum amounts of margin (that is, the customers must maintain a minimum amount of equity in their accounts).[160]

Registered brokers are subject to minimum capital requirements that limit the amount of leverage they may incur.[161] They must also segregate customer assets from the assets of the broker and other customers and are not permitted to lend or put up as collateral (rehypothecate) customer assets without the customer's written permission.[162] Segregation is designed to ensure that the customer's assets remain the property of the customer and not part of the bankruptcy estate if the broker were to become insolvent. In the event of insolvency, broker-dealers are subject to a special resolution administered by the Securities Investor Protection Corporation ("**SIPC**") that places customer assets outside the bankruptcy estate and insures customers for losses up to $500,000.[163]

Under the "duty of best execution," an SEC-registered broker must execute customer trades in securities at the most favorable terms reasonably available under the circumstances – it cannot therefore simply route customer orders to a preferred venue if a superior price is available on another venue.[164] Anti-fraud rules under the 1934 Act prohibit securities brokers from engaging in front running customers' trades.[165] Because customers must access exchanges through registered brokers, and ATSs are themselves registered brokers, traders in securities markets are shielded from being front run by their brokers on both types of platform.

Moreover, under 1934 Act Rule 15c2-11, information about the issuer of a security, including recent information about the issuer's financial performance and significant

---

[158] 15 U.S.C. § 78o.
[159] 17 CFR § 240.15c3-3.
[160] SEC, *Investor Bulletin: Understanding Margin Accounts* (June 10, 2021), https://www.sec.gov/oiea/investor-alerts-and-bulletins/ib_marginaccount.
[161] 17 C.F.R. § 240.15c3-3.
[162] 15 U.S.C. § 78h.
[163] SIPC, The Investor's Guide to Brokerage Firm Liquidations, https://www.sipc.org/media/brochures/Liquidations-Web.pdf.
[164] FINRA, *Best Execution: Guidance on Best Execution Obligations in Equity, Options and Fixed Income Markets*, Regulatory Notice 15-46 (2015), http://www.finra.org/sites/default/files/notice_doc_file_ref/Notice_Regulatory_15-46.pdf.
[165] 15 U.S.C. § 78j(b); 17 C.F.R. § 240.10b-5.

events that affect the issuer, must be publicly available for a broker to execute a transaction in that security for its customers.[166]

Certain securities brokers also function as broker-dealer internalizers ("**BDIs**") and compete to offer price improvement to the best publicly displayed price available on an exchange or ATS by executing customer orders from their own inventories of stocks. Although these BDIs are not classified as exchanges, because they primarily execute trades as a principal and only incidentally match the undisplayed orders of their customers, they must also register as members of FINRA and abide by FINRA's examination, licensing, and reporting requirements. Because they are registered brokers, they are subject to the same restrictions on front running and the duty of best execution described above.

Under the "order protection rule," exchanges, ATSs and BDIs must establish and maintain policies and procedures reasonably designed to prevent the execution of orders at a worse price than the best publicly available price ("trade-throughs").[167] They must also publicly disclose monthly reports with standardized information about the order execution quality they achieve for retail-size orders.[168]

iii) Regulation of cryptoasset spot market trading venues and brokers under U.S. securities law

The major spot cryptoasset trading venues in the United States, including Coinbase, Kraken, and Binance.US, have not registered as national securities exchanges or undertaken to operate in compliance with Regulation ATS. They are thus operating outside the ambit of the comprehensive federal regulatory regimes that exist for securities trading venues.

Operating outside the 1934 Act has allowed U.S. spot cryptoasset trading venues to permit direct access to their order books by retail and institutional customers without the intermediation of a broker. They are also able to trade on their own platforms and are not subject to the prohibition under the securities laws on front running. Similarly, the order protection rule, execution disclosure requirements, and customer protection requirements do not apply to U.S. spot cryptoasset trading venues.[169]

Customer protection standards also do not apply to brokers that route or execute transactions in cryptoassets that are not securities. As a result, cryptoasset brokers are not subject to the duty of best execution, qualified custodian requirements, or prohibitions

---

[166] 17 CFR § 240.15c2-11.
[167] 17 C.F.R. § 242.611.
[168] 17 C.F.R. § 242.605.
[169] *See* PROGRAM ON INTERNATIONAL FINANCIAL SYSTEMS, INTERNATIONAL REVIEW OF EQUITY MARKET STRUCTURE REGULATION: PHASE I 92 et seq. (2019), https://www.pifsinternational.org/international-review-of-equity-market-structure-regulation-phase-i-2019/#part6.

on front running, that apply to an SEC-registered broker that routes or executes a transaction in a security for its customer. They are also not subject to the minimum margin requirements under the Securities Acts that apply to brokers who allow their customers to incur leverage to trade securities. Moreover, unlike securities exchanges, customers can obtain leverage directly from trading venues, exposing those venues to credit risk with respect to their customers, though margin trading by retail investors is effectively prohibited by the CFTC rules that apply to levered retail commodity transactions.[170]

Public filings suggest that the major exchanges seek to avoid facilitating trades in any cryptoassets that are classified as securities. As Coinbase discloses in its Form 10-K:

> "Because our platform is not registered or licensed with the SEC or foreign authorities as a broker-dealer, national securities exchange, or ATS (or foreign equivalents), and we do not seek to register or rely on an exemption from such registration or license to facilitate the offer and sale of cryptoassets on our platform, we only permit trading on our core platform of those crypto assets for which we determine there are reasonably strong arguments to conclude that the crypto asset is not a security."[171]

Kraken, and the other centralized trading platform operators active in the United States likely take a similar position with respect to their U.S. platforms, since to date, no spot cryptoasset trading venue has registered as a national securities exchange under the 1934 Act.[172]

However, as noted earlier, SEC Chair Gensler has publicly asserted that all such platforms very likely facilitate trades in one or more cryptoassets that constitute securities, and has thereby suggested that they are operating out of compliance with the 1934 Act.

The desire to contain the risk of incurring a 1934 Act registration obligation is likely a significant factor in causing other global centralized trading platforms, such as Binance, to segregate their U.S. platforms and exclude U.S. residents from their larger global platforms. Excluding U.S. residents allows these operators' larger global platforms to facilitate transactions in any cryptoasset without regard to whether it constitutes a security under U.S. law and to engage in leveraged or margined transactions and derivatives, without being subject to CFTC regulation. The exclusion of U.S customers is generally accomplished by excluding any IP address associated with a location in the United States.

---

[170] *See, e.g.*, CFTC Imposes $250,000 Penalty Against bZeroX, LLC and Its Founders and Charges Successor Ooki DAO for Offering Illegal, Off-Exchange Digital-Asset Trading, Registration Violations, and Failing to Comply with Bank Secrecy Act, Release No. 8590-22 (Sept. 22, 2022), https://www.cftc.gov/PressRoom/PressReleases/8590-22.

[171] COINBASE, FORM 10-K (Feb. 25, 2022), https://investor.coinbase.com/financials/sec-filings/sec-filings-details/default.aspx?FilingId=15601874.

[172] DEPARTMENT OF THE TREASURY, *supra* note 44.

The extent to which DEXs are currently facilitating transactions in cryptoassets that constitute securities under U.S. law is unclear. In its recent report the U.S. Treasury Department suggests that there may be DEXs that permit such trades and that may thus be operating as unregistered exchanges in contravention of the 1934 Act.[173]

The absence of the restrictions and customer protections described above with respect to securities trading venues and brokers were instrumental in the likely extent of customer losses from the failure of the Bahamian-based cryptoasset trading platform FTX. FTX operated both a global spot platform with approximately 7.6 million users that was officially closed to U.S. customers, and a separate U.S. spot platform (FTX.US) with approximately 2.7 million users.[174] Neither platform was registered as an exchange or broker-dealer under U.S. law. Both such platforms directly custodied customer assets, a practice that would be prohibited in securities markets.[175] FTX customers, including U.S. customers, thus had direct credit exposure to FTX. Moreover, the FTX platforms were not subject to the customer protection requirements that apply to broker-dealers that carry customer accounts and did not adhere to similar standards: FTX and FTX.US reportedly commingled customer assets with FTX assets and those of other customers and loaned customer assets to an affiliated proprietary trading firm, Alameda Research, without customer permission.[176] FTX and FTX.US also operated outside the scope of the securities laws that prohibit front running, and it is reported that Alameda engaged in front running on the FTX platforms.[177] By contrast, a customer that trades on a registered securities exchange, such as NYSE or NASDAQ, or a securities ATS, trades through a registered broker that must segregate customer assets and adhere to minimum capital requirements, and is prohibited from lending customer assets without permission or engaging in front running.

In addition, much of the trading activity on the FTX platforms was reportedly generated by its affiliate Alameda, which also benefited from unique and undisclosed preferences when trading on the FTX platforms that allowed it to incur leverage without limitation.[178]

---

[173] *Id*.

[174] Jacquelyn Melinek, *FTX's New CEO, John Ray, Details Crypto Exchange's Downfall in US House Testimony* TECHCRUNCH (Dec. 13, 2022), https://techcrunch.com/2022/12/13/ftxs-new-ceo-john-ray-details-crypto-exchanges-downfall-in-us-house-testimony/.

[175] CFTC, *Complaint: FTX Trading, et al*, S.D.N.Y (Dec. 13, 2022), https://www.cftc.gov/PressRoom/PressReleases/8638-22; SEC, *Complaint: Sam Bankman-Friend*, S.D.N.Y. (Dec. 13, 2022), https://www.sec.gov/news/press-release/2022-219.

[176] *Id*.

[177] Caitlinn Ostroff, *Alameda Amassed Crypto Tokens Ahead of FTX Listings, Public Data Shows* WALL STREET JOURNAL (Nov. 14, 2022), https://www.wsj.com/livecoverage/stock-market-news-today-11-14-2022/card/alameda-amassed-crypto-tokens-ahead-of-ftx-listings-public-data-shows-z6KFN051ToEpFohTXA89?mod=Searchresults_pos1&page=1.

[178] Angus Berwick et al., *Exclusive: How a secret software change allowed FTX to use client money* Reuters (Dec. 13, 2022), https://www.reuters.com/technology/how-secret-software-change-allowed-ftx-use-client-money-2022-12-13/; Oluwapelumi Adejumo & Ryan James, *Alameda Research Withdrew $204 Million From FTX.US Before Bankruptcy Filing* (Nov. 26, 2022), https://beincrypto.com/alameda-withdrew-204m-ftx-bankruptcy-filing/.

The activities of Alameda thus placed customers at greater risk, while potentially making FTX a seemingly more active, and thus more attractive, trading venue for customers. These activities would be prohibited in securities markets by the rules barring the membership of affiliated entities on exchanges.

Regulatory Limitations on the Provision of Custodial Services in Cryptoasset Markets

The provision of custodial services by prudentially regulated banks and other qualified custodians to cryptoasset trading platforms or their customers could address the significant risks associated with the approach to custody that currently prevails in cryptoasset markets. These traditional custodians are required to adhere to specified standards and best practices that are designed to safeguard customer assets and shield customers from bankruptcy risk. For example, national banks and registered broker-dealers must segregate custodial assets from their own assets and maintain accounting records and internal controls to verify compliance with those requirements.[179] They are also subject to special resolution regimes in bankruptcy that separate customer assets from the bankruptcy estate if the custodian were to become insolvent.[180] However, regulators have limited the extent to which these traditional custodians can provide custodial services for cryptoassets, and in doing so may be conflating the risks of a bank custodying a cryptoasset for a customer with the risks of a bank holding an asset on its own balance sheet. These measures have, directly and indirectly, largely caused banks and broker-dealers to avoid custodying cryptoassets.

In particular, the Office of the Comptroller of the Currency ("**OCC**") has issued interpretive guidance suggesting that the OCC will apply heightened scrutiny to the provision of cryptoasset custody services by OCC-supervised banks. This guidance requires that before providing cryptoasset custody services, a bank must demonstrate to the satisfaction of the OCC that the bank "has controls in place to conduct the activity in a safe and sound manner" but does not provide specific guidance as to how banks can satisfy this requirement.[181] Acting Comptroller of the Currency Michael Hsu has also suggested that banks' involvement in custody and other services for cryptoassets raises "red flags" and that the OCC plans to apply a "cautious approach" to such activities "for the foreseeable future."[182] Such statements combined with the lack of specific guidance

---

[179] SIFMA ET AL., *Update on Efforts to Implement Staff Accounting Bulletin No. 121*, 15 (Jun. 27, 2022), https://www.sifma.org/wp-content/uploads/2022/06/SIFMA-ABA-SAB-121-Follow-Up-Letter-to-SEC.pdf.

[180] *Id.* at 12; DAVID LOPEZ ET AL., A CUSTODIAL ANALYSIS OF STAKING, BLOCKCHAIN & CRYPTOCURRENCY REGULATION 5th ed. (2023, forthcoming).

[181] OFFICE OF THE COMPTROLLER OF THE CURRENCY, *Chief Counsel's Interpretation Clarifying: (1) Authority of a Bank to Engage in Certain Cryptocurrency Activities; and (2) Authority of the OCC to Charter a National Trust Bank*, Interpretive Letter # 1179 (2021), https://www.occ.gov/topics/charters-and-licensing/interpretations-and-actions/2021/int1179.pdf.

[182] LEDGER INSIGHTS, *US banking regulator OCC plans cautious approach to crypto, stablecoins 'for foreseeable future'* (Sept. 8, 2022), https://www.ledgerinsights.com/occ-banks-cautious-crypto-stablecoins-

for satisfying the OCC's criteria has likely discouraged banks from providing cryptoasset custody services.[183] Indeed, Bank of America has cited these factors as a significant impediment to providing any services in the cryptoasset sector.[184] Recent reports by the Department of the Treasury and Financial Services Oversight Committee on the regulation of cryptoassets do not provide further guidance as to whether or how banks should approach the provision of cryptoasset custody services.[185]

In addition, SEC accounting guidance ("**SAB 121**") requires custodians to treat customer assets as assets of the custodian ("on-balance sheet" asset), which would expand the custodian's balance sheet. This approach departs from the accounting principles that apply to the custody of traditional financial assets. It has disincentivized the provision of custody services to cryptoasset trading platforms by banking institutions and registered broker-dealers, as these entities are subject to higher capital and liquidity requirements when their balance sheets increase in size. One of the two largest providers of custody services for traditional financial assets, BNY Mellon, introduced a cryptoasset custody service in October 2022, but reports that SAB 121 limits its ability to provide this service at a large scale.[186]

iv) Other limited aspects of U.S. regulation applicable to cryptoasset trading venues

Although cryptoasset trading venues are currently operating outside the ambit of federal securities law, secondary trading in cryptoasset spot markets is subject to other discrete aspects of federal and state regulation. First, as noted earlier, under the CEA, the CFTC has authority to enforce existing anti-fraud and anti-market manipulation rules with respect to spot commodities markets. In 2022 the CFTC applied this authority to bring charges against the insolvent cryptoasset exchange FTX and its former CEO, alleging fraudulent and deceptive practices in connection with the operation of FTX's spot cryptoasset trading platform.[187]

---

for/. *See also* BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, FEDERAL DEPOSIT INSURANCE CORPORATION, OFFICE OF THE COMPTROLLER OF THE CURRENCY, *Joint Statement on Crypto-Asset Risks to Banking Organizations* (Jan. 3, 2023), https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20230103a1.pdf.

[183] Transcript, Senate Banking, Housing, and Urban Affairs Committee hearing Oversight of Financial Regulators: A Strong Banking and Credit Union System for Main Street, (Nov. 15, 2022), https://www.banking.senate.gov/hearings/oversight-of-financial-regulators-a-strong-banking-and-credit-union-system-for-main-street.

[184] Anifowoshe Ibrahim, *No Plans to Venture Into Crypto, Says Bank Of America CEO* BITCOINIST (2022), https://bitcoinist.com/no-plans-to-venture-into-crypto-says-bank-of-americ/.

[185] *See supra* notes 1 and 2.

[186] Yueqi Yang, *Wall Street Courts Crypto Custody, But with Fingers Crossed*, BLOOMBERG (Oct. 27, 2022), https://www.bloomberg.com/news/newsletters/2022-10-27/bny-mellon-bk-state-street-stt-court-crypto-custody-with-fingers-crossed?sref=2lCQoM0A.

[187] CFTC, *Complaint: FTX Trading et al.*, S.D.N.Y. (Dec. 13, 2022), https://www.cftc.gov/PressRoom/PressReleases/8638-22.

Second, because cryptoasset trading venues are generally classified as money services businesses under the supervision of the Department of the Treasury's Financial Crimes Enforcement Network, they are subject to "know your customer" and anti-money laundering requirements designed to prevent illicit transactions and the use of financial intermediaries to conceal the proceeds of, or to finance, crime, and terrorism. The Department of the Treasury and others have however questioned whether many DEXs are complying with these regulations, since many appear to allow customers to conclude transactions without collecting any information about their identities.[188]

Certain states have also developed regulations applicable to cryptoasset trading venues. New York currently has the most developed state regime. It requires cryptoasset trading platforms and wallet providers that serve New York residents to be registered with state authorities and subjects them to capital and custody requirements, among other requirements.[189] However it seems unlikely that a state-level government has the jurisdiction necessary to bring about a change in overall market structure.[190] Indeed, the inconsistency in state-level regulation has caused some major service providers simply to avoid doing business in states that require crypto exchanges to register. CEX.IO, for example, has indicated that it does not permit residents of New York to access its trading platform due to regulatory restrictions.[191]

[188] DEPARTMENT OF THE TREASURY, ACTION PLAN TO ADDRESS ILLICIT FINANCING RISKS OF DIGITAL ASSETS *supra* note 1 at 6-7; MASSAD, *supra* note at 86 at 51-52.
[189] MASSAD, *supra* note at 86 at 34-35.
[190] *Id*.
[191] CEX.IO, The following countries and territories are currently not supported by CEX.IO https://support.cex.io/en/articles/4560858-the-following-countries-and-territories-are-currently-not-supported-by-cex-io (last visited Jan. 31, 2023).

III. CONCLUSION

This report has sought to provide a high-level and comprehensive overview of cryptoasset market structure and the current U.S. federal regulatory treatment of cryptoassets.

Part I overviewed the various categories of cryptoassets and their basic technical features. We highlighted the continued predominance of bitcoin and ether in terms of market capitalization and trading volume, and the important role of stablecoins in facilitating the trading of these and other cryptoassets. We also described how investors gain indirect economic exposure to cryptoassets through derivatives and investment funds. We then reviewed the methods and venues through which market participants trade cryptoassets, including centralized and decentralized trading platforms, as well as the role of brokers and over-the-counter markets.

In Part II we reviewed the classification of cryptoassets under current U.S. federal law as commodities and securities. We explained that the classification of bitcoin, ether and certain other cryptoassets as commodities places the regulation and trading of derivatives linked to those cryptoassets within the comprehensive regulatory jurisdiction of the CFTC. We then explained that the major trading platforms for the spot trading of cryptoassets continue to operate outside the ambit of federal securities laws. Secondary spot markets for cryptoassets thus lack several key customer protections that exist in secondary markets for securities and other traditional financial assets.

The following report in this series will explore how the current regulatory structure for cryptoassets can be enhanced to promote efficiency and investor protection.

Program on International Financial Systems (PIFS)
134 Mount Auburn Street, Cambridge, MA 02138
www.pifsinternational.org