

DIGITAL ASSETS AND REGULATORY FRAGMENTATION: THE SEC VERSUS
THE CFTC

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Abstract

In 2022, the White House released a regulatory framework calling for a whole-of-government approach to digital asset innovations. Although justified and necessary, this systems-based strategy discounts the reality that U.S. financial regulation is fundamentally fragmented. There are signs of a turf war between the major digital asset regulators (the SEC and the CFTC). Both agencies claim jurisdiction over overlapping classes of digital assets, and several congressional bills recently proposed to radically redistribute this jurisdiction.

Policy reforms under the conditions of regulatory fragmentation need empirical data comparing the effect of actions of the regulators involved. Empirical literature on digital asset innovations, however, has not paid sufficient attention to the

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impact of the U.S.-specific factors such as regulatory fragmentation. Nor has it explored the importance of U.S. regulators to global digital asset markets. We aim to fill this gap, contribute to the scholarship on financial innovation, and equip policymakers with necessary empirical data.

Our empirical study compares how the SEC and the CFTC regulate crypto primarily via enforcement and how the global digital asset market reacts to the agencies. The market distinguishes between the Commissions and reacts particularly negatively to SEC enforcement. It is erroneous to assume, however, that this is because crypto markets reject formal law or strong enforcement. Digital asset prices exhibit a more positive reaction to U.S.-led antifraud efforts, indicating that investors understand the value of market integrity.

We supply theoretical explanations and underscore that, while U.S.-led enforcement is generally viewed as costly, some types of regulation may have the potential to improve market quality with positive valuation implications. We hope that our analysis will provide new information to scholars and policymakers in evaluating the merits of financial reforms, addressing the current fragmentation in financial regulation, resolving turf wars, and advancing the efforts to promote a “whole-of-government” approach to digital asset innovation.

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A. INTRODUCTION

In 2022, the White House and the Financial Stability Oversight Council (an assembly of regulators created to identify vulnerabilities in the U.S. financial system) proposed major initiatives designed to trigger a tectonic shift in our approaches to financial innovations such as digital assets.¹ The proposals emphasize the need for collaborative and systems-based regulation of technological innovations in finance.

In theory, given the nature of digital asset technology that can be applied across financial markets and industries, adopting whole-of-government policies appears justified.² The spectacular collapse of FTX, a complex cross-border conglomerate toppled by fraud and corporate mismanagement, further underscores this need for a more panoramic approach to cryptoasset markets and their infrastructure.³ However, any comprehensive initiatives may (and most probably will) collide with the primal fragmentation of U.S. financial law.⁴ This collision may undermine attempts at designing more holistic reforms, which appear achievable in other countries.⁵

¹ The White House, *Fact Sheet: White House Releases First-Ever Comprehensive Framework for Responsible Development of Digital Assets* (Sept. 16, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/16/fact-sheet-white-house-releases-first-ever-comprehensive-framework-for-responsible-development-of-digital-assets/> [hereinafter White House Framework]; The White House, *Fact Sheet: President Biden to Sign Executive Order on Ensuring Responsible Development of Digital Assets* (Mar. 9, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/09/fact-sheet-president-biden-to-sign-executive-order-on-ensuring-responsible-innovation-in-digital-assets/> [hereinafter White House Order]; REPORT ON DIGITAL ASSET FINANCIAL STABILITY RISKS AND REGULATION, FINANCIAL STABILITY OVERSIGHT COUNCIL (2022), <https://home.treasury.gov/system/files/261/FSOC-Digital-Assets-Report-2022.pdf> [hereinafter FSOC 2022]. A digital asset covers a broad category and includes “[a]ny asset that is purely digital, or is a digital representation of a physical asset.” Dylan Yaga et al., *Blockchain Technology Overview* 51, NISTIR 8202, National Institute of Standards and Technology (2018), <https://doi.org/10.6028/NIST.IR.8202>. Some digital assets are secured through cryptography and reside on distributed ledgers such as blockchains. These technologies are discussed in *infra* Part B(1).

² See *infra* Part B for a discussion of relevant applications.

³ For an overview of the FTX debacle and preceding events, see, e.g., Candice Choi, *Crypto Crisis: A Timeline of Key Events*, WALL ST. J. (Jun. 6, 2023).

⁴ *Infra* Section B(2).

⁵ See, e.g., *Communication from the Commission to the European Parliament, the Council, and the Committee of the Regions, on a Digital Finance Strategy for the EU*, COM (2020) 591 final (Sept. 24, 2020); *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Shaping Europe’s Digital Future*, COM (2020) 67 final (Feb. 19, 2020); United Kingdom HM Treasury, *Government*

The realities of fragmentation are evident in the increasing competition between the major federal regulators claiming jurisdiction over digital asset markets: the Securities and Exchange Commission (“SEC”) and the Commodity Futures Trading Commission (“CFTC”) (also “Commissions”). These are the watchdogs of American commodity, derivatives, and securities markets.⁶ Both agencies claim jurisdiction over overlapping asset classes and firms in the digital asset market.⁷ Their Chairs diverge on how this market should be regulated and on relevant proposed reforms concerning the Commissions’ respective jurisdictions.⁸

For example, one day before the release of the White House’s Framework that proposed a “whole-of-government” approach to digital assets, the Chairs of the Commissions testified before the two Senate Committees that oversee these similar but separate independent agencies. The CFTC Chair stated that “the CFTC’s expertise and experience make it the right regulator for the digital asset commodity market,”⁹ while the SEC Chair testified that U.S. securities law is a “gold standard that has made our capital markets the most liquid and innovative in the world” and that digital asset issuers and investors should benefit from this gold standard.¹⁰ The line between digital commodities and digital asset securities, however, may be blurred.¹¹

Congress has attempted to address these overlapping jurisdictional concerns. An omnibus bill on cryptoasset markets was proposed in the House in

sets out plan to make UK a global cryptoasset technology hub, NEWS STORY, Apr. 4, 2022, <https://www.gov.uk/government/news/government-sets-out-plan-to-make-uk-a-global-cryptoasset-technology-hub>; UNITED KINGDOM HT TREASURY, KALIFA FINTECH REVIEW, FINAL REPORT (Feb. 26, 2021), <https://www.gov.uk/government/publications/the-kalifa-review-of-uk-fintech>.

⁶ *Infra* Part C.

⁷ *Infra* Part B(2).

⁸ Compare Jesse Hamilton, *CFTC Chief Heaps Praise on Bill That Boosts Agency’s Crypto Reach*, CoinDesk (Jun. 8, 2022), <https://www.coindesk.com/policy/2022/06/08/cftc-chief-heaps-praise-on-bill-that-boosts-agencys-crypto-reach/>; Nikhilesh De & CoinDesk, *The crypto regulation bill could ‘undermine’ market protections, SEC Chief Gary Gensler says*, Fortune (Jun. 14, 2022), <https://fortune.com/2022/06/14/crypto-regulation-bill-gary-gensler-sec-cftc-lummis-gillibrand/>

⁹ Chairman Rostin Behnam, *Testimony Regarding the Legislative Hearing to Review S.4760, the Digital Commodities Consumer Protection Act at the U.S. Senate Committee on Agriculture, Nutrition, and Forestry*, U.S. Comm. Fut. Trading Comm’n (Sept.15, 2022), <https://www.cftc.gov/PressRoom/SpeechesTestimony/opabehnam26>

¹⁰ Chair Gary Gensler, *Testimony Before the United States Senate Committee on Banking, Housing, and Urban Affairs*, U.S. Sec. & Exch. Comm’n (Sept. 15, 2022), <https://www.sec.gov/news/testimony/gensler-testimony-housing-urban-affairs-091522>

¹¹ *Infra* Parts B&C.

June 2023,¹² and at least two major Senate bills were introduced in 2022.¹³ The bills envision a major overhaul of digital asset regulation with the emphasis on securities, derivatives, and commodity markets, and seek to assign more responsibility to the CFTC as a key regulator of “digital commodities.”¹⁴

These developments have stirred up policy debates and provoked an uproar from scholars. Some academics suggest that the CFTC does not have the expertise and resources to oversee digital asset markets,¹⁵ while others challenge the appropriateness of the current strategy of the SEC and ask for more clarity and reform in crypto.¹⁶ The third line of arguments focuses on a joint SEC-CFTC approach and, thus, belongs to a more holistic view on financial regulation.¹⁷

In this article, we contribute to the scholarship on digital financial innovation and seek to assist policymakers operating in a fragmented legal regime. From now on we will use the terms “digital assets,” “cryptoassets,” and “crypto.”¹⁸

¹² See House Committee on Financial Services & House Committee on Agriculture, *Digital Asset Market Structure Discussion Draft, Section-by-Section* (2023), https://financialservices.house.gov/uploadedfiles/market_structure_bill_section_by_section.pdf.

¹³ See, e.g., Elise Hansen, *Senate Bill Would Put Crypto Spot Markets Under CFTC*, LAW360 (Aug. 3, 2022); Joel Seligman, *The Lummis-Gillibrand Responsible Financial Innovation Act*, Columbia Law School Blue Sky Blog, Jun. 27, 2022, <https://clsbluesky.law.columbia.edu/2022/06/27/the-lummis-gillibrand-responsible-financial-innovation-act/>; Arijit Sarkar, *US senator bill seeks to cushion crypto exchanges from SEC enforcement actions*, COINTELEGRAPH (Oct. 1, 2022), <https://cointelegraph.com/news/us-senator-bill-seeks-to-cushion-crypto-exchanges-from-sec-enforcement-actions>.

¹⁴ See, e.g., House Committee on Financial Services & House Committee on Agriculture, Discussion Draft, §§102(2)&301(a) (2023), https://financialservices.house.gov/uploadedfiles/digital_002_xml.pdf (defining the term “digital commodity” and excluding it from the definition of “security”).

¹⁵ See, e.g., Letter from Hilary J. Allen, Mark Hays & Lee Reiners to U.S. Senate Committee on Agriculture, Nutrition, and Forestry Re: S. 4760/ H.R. 8730, the Digital Commodities Consumer Protection Act of 2022, (Sept. 12, 2022).

¹⁶ See, e.g., Petition from J.W. Verret to U.S. Sec. & Exch. Comm’n, Re: Public Request for Rulemaking: Securities Regulation Genesis Block Proposal (Jan. 19, 2022), <https://www.sec.gov/rules/petitions/2022/petn4-782.pdf>; *supra* note 189 and accompanying text.

¹⁷ Professors Massad and Jackson, for example, suggest creating a new self-regulatory organization jointly overseen by both Commissions. Timothy G. Massad & Howell E. Jackson, *How to Improve Regulation of Crypto Today—Without Congressional Action—and Make the Industry Pay For It*, Hutchins Center Working Paper #79 (Oct. 2022), <https://www.brookings.edu/research/how-to-improve-regulation-of-crypto-today-without-congressional-action-and-make-the-industry-pay-for-it/>.

¹⁸ “Cryptoassets are cryptographically secured digital representations of value that can be transferred, stored or traded electronically. They use some form of distributed ledger technology such as blockchain.” New Zealand Inland Revenue, *What Cryptoassets Are* (Jul. 2021),

Although there are distinctions between cryptoassets and digital assets, different agencies seem to use these terms interchangeably.¹⁹ There is also no uniformity in digital asset taxonomy.²⁰

To be successful, policy reforms aiming to create a more comprehensive system for financial innovations such as crypto need empirical research comparing the actions of relevant regulators. We examine this information to help reformers form a more systemic perspective on regulatory frameworks.²¹ Empirical analyses provide objective metrics to policymakers and help alleviate the realpolitik of regulatory fragmentation. Combining regulatory and data analyses enables the Congress and the Administration to gauge the reaction of the regulated not through the eyes of competing agencies or industry lobbyists but based on the feedback from a global market representing thousands of participants.

We also aim to fill a gap in the literature on digital assets. To date, this scholarship has not paid sufficient attention to the interaction of the U.S.-specific factors such as regulatory fragmentation, specific modes of regulation, and the centrality of U.S. agencies in global markets. This omission creates a deep interstice in our understanding of crypto regulation.²²

Both Commissions approach digital innovations mainly through enforcement of existing securities, commodities, and derivatives laws. To assess this distinct regulatory mode, we hand-collect 116 enforcement events from April 2017 through November 2021 and examine market reaction to enforcement.²³ Note that we limit the enforcement actions to pre-2022 period. One significant benefit to

<https://www.ird.govt.nz/cryptoassets/what-cryptoassets-are>. By “crypto,” we mean “cryptoassets” and the infrastructure for their issuance, transfer, trading, and redemption. We provide specific classifications and definitions of cryptoassets in *infra* Part E. We refer to the market for cryptoassets, its ecosystem, infrastructure, and its participants as “crypto market” or “cryptoasset market.”

¹⁹ Cf. White House Framework, *supra* note 1, with FSOC 2022, *supra* note 1.

²⁰ *Infra* Part E.

²¹ Essentially, we aim to supply policymakers with tools to better regulate a whole system. Essentially, we provide new variables for a “systems analysis,” which “is a methodology developed in the fields of engineering, business information systems, and computer programming specifically to manage complexity.” Lynn M. LoPucki, *The Systems Approach to Law*, 82 CORNELL L. REV. 479, 481 (1997). “If the designers regard the systems they design as concrete, rather than as merely conceptual, and operationalize their goals, they make their task more difficult. They must work within the physical limits of the system and make the system work to accomplish an empirically verifiable result. But by doing so, they must make the system infinitely more useful. The system can alter behavior and achieve concrete goals rather than merely express ideas.” *Id.* at 496.

²² *Infra* Part D.

²³ *Infra* Parts E&F.

ending our sample at the end of 2021 is that it enables us to avoid the volatility effects of several major anti-fraud actions and bankruptcies.

Our cross-sectional analyses and event study indicate that the global crypto market (to a surprising degree) is attuned and susceptible to enforcement actions initiated by the Commissions. In addition, market participants react differently to actions brought by the CFTC compared with enforcement initiated by the SEC. Whereas cryptoasset prices exhibit a somewhat negative reaction to enforcement, SEC actions are associated with a strong adverse reaction. Crypto markets detect differences in enforcement paradigms between the agencies within the balkanized network of U.S. financial regulators. SEC regulation is perceived as a particularly negative event, suggesting that a reform of securities law and a less fragmented regulatory regime are needed to produce a more efficient regulatory environment and build on the respective strengths of both Commissions.

From the start, we would like to address one crucial counterargument head-on. Some commentators suggest that crypto markets are partially driven by money laundering and crime and that the crypto community considers law contrary to their libertarian ethos.²⁴ Our results, however, indicate that while investors perceive enforcement as an adverse event, they do not view antifraud actions in a similarly negative light. This indicates that many crypto-market participants understand that fraud undermines market integrity. While crypto investors treat regulation (mainly, enforcement of pre-crypto U.S. securities statutes) as an unfavorable and costly event, these costs of regulation (in some cases) are offset by the benefits of improved market quality and integrity. Ultimately, we hope that this study will not only contribute to the scholarship on innovation but also assist Congress and other policymakers in forming a more comprehensive view on crypto regulation and designing more efficient reforms.

The paper proceeds as follows. Part B discusses financial innovation and regulatory fragmentation. It also explains the importance of the Commissions and their enforcement in the global world of crypto. Part C summarizes the Commissions' jurisdiction and outlines relevant statements and crypto-related actions. Part D discusses our contribution to the financial and economic literature on crypto regulation. Part E provides cryptoasset taxonomies and covers our sample data. Part F presents our empirical results, Part G provides theoretical interpretations, and Part H concludes the article.

²⁴ For relevant arguments, see Kristin N. Johnson, *Decentralized Finance: Regulating Cryptocurrency Exchanges*, 62 WM. & MARY L. REV. 1911, 1951, 1980 (2021).

B. INNOVATION AND THE INTERNATIONAL ROLE OF THE COMMISSIONS

1. The Risks and Benefits of Crypto

In September 2022, the White House released the first-ever Comprehensive Framework for Responsible Development of Digital Assets.²⁵ In the Framework, the Administration describes the considerable economic potential of digital assets based on distributed ledger technology such as blockchains²⁶ and cryptography.²⁷ At the same time, the Framework also underscores several risks, such as the risk of fraud, volatility, and systemic risk, accompanying these innovations. It is against this risk-reward calculus that the White House urges various U.S. regulators to develop new “whole-of-government”²⁸ approaches to digital assets, to mitigate their risks, and to reinforce the “global financial leadership and competitiveness” of the United States.²⁹

Cryptoassets are crucial innovations that for years piqued the curiosity of tech enthusiasts, investors, consumers,³⁰ and financial institutions³¹ around the world. Data reveal that as many as 16% of adult Americans have purchased cryptoassets, and that the numbers remain robust despite the market downturn and

²⁵ White House Framework, *supra* note 1.

²⁶ Yaga *et al.*, *supra* note 1 (“Blockchains are distributed digital ledgers of cryptographically signed transactions that are grouped into blocks. Each block is cryptographically linked to the previous one (making it tamper evident) after validation and undergoing a consensus decision. As new blocks are added, older blocks become more difficult to modify (creating tamper resistance). New blocks are replicated across copies of the ledger within the network, and any conflicts are resolved automatically using established rules.”).

²⁷ “Cryptography is the use of coding to secure computer networks, online systems, and digital data. It is a concept whose endgame is to keep vital information that is subject to potential data breaches safe and confidential.” *What is Cryptography*, Tulane University School of Professional Advancement, <https://sopa.tulane.edu/blog/what-is-cryptography>.

²⁸ White House Order, *supra* note *supra* note 1.

²⁹ White House Framework, *supra* note *supra* note 1.

³⁰ See, e.g., Andrew Perrin, *16% of Americans Say They Have Ever Invested in, Traded or Used Cryptocurrency*, PEW RSCH. CTR. (Nov. 11, 2021), <https://www.pewresearch.org/fact-tank/2021/11/11/16-of-americans-say-they-have-ever-invested-in-traded-or-used-cryptocurrency/>.

³¹ See, e.g., Tracy Wang, *Goldman Sachs Leading Investor Group to Buy Celsius Assets: Sources*, COINDESK (Jun. 24, 2022), <https://www.coindesk.com/business/2022/06/24/goldman-sachs-raising-funds-to-buy-celsius-assets-sources/>; Ian Allison, *JPMorgan on Its Crypto Plans: ‘The Overall Goal Is to Bring These Trillions of Dollars of Assets into DeFi’*, FORTUNE (Jun. 12, 2022), <https://fortune.com/2022/06/12/jpmorgan-on-its-crypto-plans-the-overall-goal-is-to-bring-these-trillions-of-dollars-of-assets-into-defi/>; George Kaloudis, *BlackRock Has Entered the Chat: Why the \$10 Trillion Asset Manager’s Arrival Would be a Big Deal for Crypto*, COINDESK (Feb. 22, 2022), <https://www.coindesk.com/markets/2022/02/20/blackrock-has-entered-the-chat/>.

a spate of crypto-related enforcement.³² Cryptoassets remain an omnipresent matter on the agenda of regulators in financial markets.

Such popularity and regulatory attention stem from both risks and potential economic applications of crypto. To name a few benefits, crypto may provide better security than traditionally centralized financial systems, reduce the need to rely and expend resources on intermediaries in payments or capital markets, improve transaction speed, and decrease transaction costs.³³ Crypto also holds promise in the fight for economic justice and equality.

Let us consider a few examples. Imagine that Alice, a minority entrepreneur, has a solid business project. She would like to expand, but bank officers, who, as research shows, continue to exhibit implicit and explicit racial biases,³⁴ deny her a loan, even though Alice has a great business project. She is a developer of a Decentralized Application (“DApp”) that could revolutionize and improve tracking carbon offset credits on blockchain. The code underlying her project has been reviewed by independent auditors.³⁵ Yet, for the project to take off, she needs extra funds. What if she could receive a loan through peer-to-peer lending platforms that are enabled by technologies such as blockchain and crypto?³⁶ What if she could raise capital promptly and efficiently via selling some form of assets representing the right to participate in and govern this project to investors

³² White House Framework, *supra* note *supra* note 1; Josh Zumbrun, *Crypto’s Quiet Gains: Ownership Climbs Despite Crash in Prices*, WALL ST. J. (Jun. 9, 2023).

³³ See generally CAROL GOFORTH & YULIYA GUSEVA, REGULATION OF CRYPTOASSETS 1-5, 11-15 (West Academic 2022); PRIMAVERA DE FILIPPI & AARON WRIGHT, BLOCKCHAIN AND THE LAW: THE RULE OF CODE (Harvard University Press 2018). Crypto is also connected to “fintech,” *i.e.*, “financial technology” that improves efficiencies in finance. See, *e.g.*, William Magnuson, *Financial Regulation in the Bitcoin Era*, 23 STAN. J.L. BUS. & FIN. 159, 176 (2018). <https://www.whitehouse.gov/briefing-room/statements-releases/2022/09/16/fact-sheet-white-house-releases-first-ever-comprehensive-framework-for-responsible-development-of-digital-assets/>

³⁴ See, *e.g.*, Alexander W. Butler et al., *Racial Disparities in the Auto Loan Market*, THE REV. OF FIN. STUDIES (May 19, 2022), <https://doi.org/10.1093/rfs/hhac029>; Rachel Atkins et al., *Discrimination in Lending? Evidence from the Paycheck Protection Program*, 58 SMALL BUS. ECON. 843 (2022), <https://link.springer.com/article/10.1007/s11187-021-00533-1>.

³⁵ For a discussion of audits, see, *e.g.*, Yuliya Guseva, *When the Means Undermine the Ends: The Leviathan of Securities Law and Enforcement in Digital-Asset Markets*, 5 THE STANFORD JOURNAL OF BLOCKCHAIN LAW AND POLICY 1 (2022).

³⁶ Although regulatory challenges remain, technology may improve access to finance. Helen Bollaert et al., *Fintech and Access to Finance*, 68 J. OF CORP. FIN. (2021), <https://doi.org/10.1016/j.jcorpfin.2021.101941>.

and market participants who care about the environment and corporate transparency?³⁷

Now imagine that the world of conventional finance has not been kind to Bob. Bob is one of the 31 million Americans who do not have proper access to the traditional banking system.³⁸ What if he could use an app on his phone to safely receive and transfer cryptoassets, pay his bills, or receive government payments such as COVID relief funds in “stablecoins” (*i.e.*, digital assets that purport to maintain stable value and are often pegged to and/or collateralized by fiat currencies)?

Let us also meet John whose relatives reside in an impoverished country. If they wanted to help their relatives by transferring funds via the conventional bank system, the process would be both expensive and time-consuming.³⁹ What if they could transfer funds within seconds with almost no transaction fees by using cryptoassets? Imagine these social and economic possibilities! A proper regulatory framework of crypto could unlock these new avenues to improved economic activity and equality.

Crypto and blockchain are also valuable to enforcement agencies. Our Alice, Bob, and John could work as FBI investigators hunting down criminals who transfer funds from one cryptocurrency “wallet”⁴⁰ to another across borders. They could trace the criminals’ funds back to an original source because transactions on public blockchains are openly accessible and immutable. The investigators (or any other person for that matter) could use what is called an “explorer” (this is a search engine of sorts)⁴¹ to find information about the “state” (the term “state” is similar to the contents of a ledger at any given time) and trace payments.

For instance, “by reviewing the Bitcoin public ledger, law enforcement was able to track multiple transfers of bitcoin” associated with the ransomware attack

³⁷ For an overview of research on these offerings, *see, e.g.*, Moran Ofir & Ido Sadeh, *ICO vs IPO: Empirical Findings, Information Asymmetry and the Appropriate Regulatory Framework*, 53 VAND. J. TRANSNAT’L L. 525 (2020).

³⁸ White House Framework, *supra* note 1.

³⁹ *See* REGULATION, SUPERVISION AND OVERSIGHT OF “GLOBAL STABLECOIN” ARRANGEMENTS, FINAL REPORT AND HIGH-LEVEL RECOMMENDATIONS, FINANCIAL STABILITY BOARD, at 7 (2020), <https://www.fsb.org/wp-content/uploads/P131020-3.pdf>.

⁴⁰ “A crypto wallet is a tool that allows users to interact with blockchain networks. They are necessary when sending and receiving Bitcoin and other digital currencies. Crypto wallets can also be used to generate new blockchain addresses. Unlike the traditional wallets we use in our everyday life, cryptocurrency wallets don’t really store your funds. In fact, your coins (or tokens) are simply part of a blockchain system as pieces of data, and the wallets serve as a means to access them.” Binance Academy, *Glossary*, <https://academy.binance.com/en/glossary/wallet>

⁴¹ *See, e.g.*, <https://www.blockchain.com/explorer>.

that targeted Colonial Pipeline in 2021.⁴² Data and blockchain analytics firms such as TRM Labs⁴³ and Chainalysis⁴⁴ often work with regulators as valuable private industry partners in chasing criminals on chain.

Note, however that, while offering considerable benefits, crypto technologies are inherently Schumpeterian and disruptive to existing financial industries and to regulation.⁴⁵ They spawn new risk nodes, including irrational behavior, excessive volatility, systemic risk, investor and consumer protection concerns, and fraud.⁴⁶ As the technology continues to evolve at lightning speed, it creates new regulatory challenges and more uncertainty. Policymakers must catch up with the industry, while simultaneously promoting socially beneficial innovation, controlling for the risks of crypto, and designing better regulatory approaches to ensure future innovation.⁴⁷

⁴² U.S. Dept. of Justice, Department of Justice Seizes \$2.3 Million in Cryptocurrency Paid to the Ransomware Extortionists Darkside, Press Release (Jun. 7, 2021), <https://www.justice.gov/opa/pr/departments-justice-seizes-23-million-cryptocurrency-paid-ransomware-extortionists-darkside>

⁴³ TRM, *Digital Asset Compliance & Risk Management*, <https://www.trmlabs.com/>

⁴⁴ Chainalysis, *Know What Happens on Blockchains*, <https://www.chainalysis.com/company/>.

⁴⁵ Technologies such as blockchain may disrupt national conventional regulatory approaches. Georgios Dimitropoulos, *The Law of Blockchain*, 95 WASH. L. REV. 1117, 1119 (2020) (“Blockchain has one feature that makes it even more distinctive than any other disruptive innovation: it is by nature and design a global, transnational technology. It was developed explicitly to circumvent national borders and established institutions.”). Technology may reduce “many of the inefficiencies present in traditional financial markets. By eliminating costly intermediaries and reducing transaction costs, fintech allows financial participants to engage in a greater variety of transactions with fewer delays.” Magnuson, *supra* note 33, at 176. These innovative products may be at odds with the traditional financial system. *See, e.g.*, Dan Awrey, *Bad Money*, 106 CORNELL L. REV. 1 (2020).

⁴⁶ *See* FSOC 2022, *supra* note 1. Investor protection and new opportunities for crypto-related fraud have been discussed in the literature. *See, e.g.*, Shaanan Cohnen, et al., *Coin-Operated Capitalism*, 119 COL. L. REV. 591 (2019); Dirk A. Zetzsche, et al., *The ICO Gold Rush: It's a Scam, It's a Bubble, It's a Super Challenge for Regulators*, 60 HARV. INT'L L.J. 267 (2019). Moreover, innovations may aggravate systemic risk concerns. Saule T. Omarova, *New Tech v. New Deal: Fintech as a Systemic Phenomenon*, 36 YALE J. ON REG. 735, 749 (2019); Magnuson, *supra* note 33, at 177 (“Automation also may reduce allocative efficiency by increasing herd behavior. This may occur in several different ways, but perhaps the simplest involves computer programs sharing certain programming templates.”).

⁴⁷ Many regulators, including Secretary Yellen, have expressed these concerns. *See, e.g.*, Fatima Hussein, *Yellen Calls for Crypto Regulation to Reduce Risks, Fraud*, ABCNEWS, Apr. 7, 2022, <https://abcnews.go.com/Business/wireStory/yellen-calls-crypto-regulation-reduce-risks-fraud-83929112>. Scholarship on the intersection of financial regulation and innovation is voluminous. For a sample of this literature, *see, e.g.*, Chris Brummer & Yesha Yadav, *Fintech and the Innovation Trilemma*, 107 GEO. L. J. 235 (2019); Alan McQuinn, *Supporting Financial Innovation Through*

2. Innovations, Regulatory Fragmentation, and Crypto

Theory tells us that properly designed regulations spur innovation, productivity, and growth.⁴⁸ A germane concern is that innovations simultaneously challenge existing regulatory paradigms⁴⁹ as regulators may be asked to deal with “unknown unknowns,” with the radical uncertainty where the future states of the world are unknown.⁵⁰ They also face information asymmetries that unavoidably emerge between public agencies and innovative private markets.⁵¹ It becomes hard for the regulators to catch up with nimble private parties and to properly control for the risks of an innovative practice through effective regulations. Yet, without an effective and clear regulatory system, growth, productivity, and innovations suffer.

In the U.S., this cyclical dilemma is superimposed onto a deeply fragmented network of financial regulators. The U.S. approach to financial regulation spans securities, commodity, derivatives, and banking (and money transmitter) laws within the demesne of respective federal and state authorities. In fact, the U.S. has more than a hundred relevant agencies in finance, forcing firms to comply “with a

Flexible Regulation, ITIF (Nov. 4, 2019), <https://itif.org/publications/2019/11/04/supporting-financial-innovation-through-flexible-regulation> (suggesting that “[m]any fintech firms caught in regulatory tugs of war are unable to launch in the United States due to the uncertainty over whether their products could draw enforcement action from risk-adverse regulators”); Carol R. Goforth, *Regulation of Crypto: Who Is the SEC Protecting?*, 58 AM. BUS. L. J. 643 (2021) [hereinafter Goforth, *Who Is the SEC Protecting?*] (emphasizing the importance of the SEC in the global world of crypto).

⁴⁸ One relevant hypothesis was developed in the 1990s by Michael Porter, although the evidence on regulation and innovation is mixed. See, e.g., Stefan Ambec, et al., *The Porter Hypothesis at 20: Can Environmental Regulation Enhance Innovation and Competitiveness?*, Scientific Series 2010s-29, CIRANO (2010), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682001. See also *infra* notes 161-62 and accompanying text.

⁴⁹ See generally, CRISTIE FORD, *INNOVATION AND THE STATE: FINANCE, REGULATION, AND JUSTICE* 144 (Cambridge Univ. Press 2017) (“A regulatory regime would be incoherent if it did not rest on some set of general theories and assumptions about its context, object, and purpose. But difficulties arise when, thanks to innovation, the assumptions that undergird a regulatory regime no longer hold true.”). On the disruptive impact of fintech on regulations, see, e.g., Saule Omarova, *Technology v. Technocracy: Fintech as a Regulatory Challenge*, 6 J. OF FIN. REG. 75, 77 (2020).

⁵⁰ Cristie Ford, *A Regulatory Roadmap for Financial Innovation*, in *THE ROUTLEDGE HANDBOOK OF FINANCIAL TECHNOLOGY AND LAW*, 62, 64 (Iris H-Y Chiu & Gudula Deipenbrock, eds., 2021). On the effect of radical and dynamic uncertainty on financial regulation, see Roberta Romano, *Pitfalls of Global Harmonization of Systemic Risk Regulation in a World of Financial Innovation*, YALE L. & ECON. RSCH. PAPER (2019).

⁵¹ On the problem of asymmetrical expertise, see, e.g., Awrey, *supra* note 77; Dan Awrey, *Complexity, Innovation, and the Regulation of Modern Financial Markets*, 2 HARV. BUS. L. REV. 235 (2012).

confluence of several legal regimes.”⁵² Its “highly fragmented and arguably Balkanized structure of financial regulation... approaches creating a different regulator for every class of financial institution.”⁵³

Fragmentation may create redundancies and turf wars⁵⁴ that prevent public agencies from designing more systemic, whole-of-government policies whenever an innovation transcends regulatory boundaries and falls within the overlapping baronies of several legacy regulators.⁵⁵ To date, crypto innovations in the U.S. have been regulated through this legal framework.⁵⁶ Even when some crypto-firms and fintechs (*i.e.*, financial technology firms) attempt to operate outside regulatory perimeters, they “have not always been able to escape the scrutiny and oversight of financial regulation”⁵⁷ at one level or another.⁵⁸

⁵² Yesha Yadav, *Looking for the Silver Lining: Regulatory Reform After the “Credit Crunch,”* 15 STAN. J.L. BUS. & FIN. 314, 323–24 (2010).

⁵³ John C. Coffee, Jr. & Hillary A. Sale, *Redesigning the SEC: Does the Treasury Have a Better Idea?*, 95 VA. L. REV. 707, 716 (2009).

⁵⁴ See, e.g., RONALD FILLER & JERRY W. MARKHAM, REGULATION OF DERIVATIVE FINANCIAL INSTRUMENTS (SWAPS, OPTIONS AND FUTURES) 39 (West Academic 2014); Todd E. Petzel, *Derivatives: Market and Regulatory Dynamics*, 21 J. CORP. L. 95, 98, 100–101 (1995); Laura M. Homer & Robert P. Lord, Jr., *Observations on the SEC-CFTC Accord Legislation*, 30 FED. B. NEWS & J. 335 (1983); Christopher L. Culp, *OTC-Cleared Derivatives*, 2 APPLIED FIN. 1, 5 (2010); Alan McQuinn & Daniel Castro, *A Policymaker’s Guide to Blockchain*, ITIF (Apr. 30, 2019), <https://itif.org/publications/2019/04/30/policymakers-guide-blockchain>.

⁵⁵ Cryptoassets, for instance, can be both commodities and securities. See, e.g., Letter from Robert A. Schwartz, Deputy Gen. Couns., U.S. Comm. Fut. Trading Comm’n, to the Hon. P. Kevin Castel (Feb. 18, 2020), <https://www.docdroid.net/okmUUBS/cftc-letter-in-telegram-case.pdf> [hereinafter Letter from Robert A. Schwartz].

⁵⁶ In this sense, crypto is not a lawless Wild West, contrary to some public statements. See, e.g., Katanga Johnson, *U.S. SEC Chair Gensler Calls on Congress to Help Rein in Crypto “Wild West,”* REUTERS (Aug. 3, 2021), <https://www.reuters.com/technology/us-sec-chair-gensler-calls-congress-help-rein-crypto-wild-west-2021-08-03/>.

⁵⁷ Howell E. Jackson, *The Nature of the Fintech Firm and Its Implications for Financial Regulation*, in FINTECH LAW: THE CASE STUDIES 8, 13 (July 2020).

⁵⁸ “[T]he legal system has ways of counteracting innovations that appear egregious.” *Id.* at 14. Overall, the whole financial system is subject to detailed regulation. “[D]ue to the highly regulated nature of the financial sector—especially in the aftermath of the financial crisis—financial services companies have seen their compliance costs steadily rise over the last decade due to enhanced regulatory scrutiny.” McQuinn, *supra* note 47. Feinstein and Werbach observe that “[t]he complex web of legal obligations for securities issuance, broker-dealers, investment companies, exchanges, money transmitters, and other regulated entities must be mapped onto digital assets that operate on fundamentally novel foundations.” Brian D. Feinstein & Kevin Werbach, *The Impact of Cryptocurrency Regulation on Trading Markets*, 7 J. OF FIN. REG. 48, 55 (2021). See also Benjamin Geva, *The e-Banknote as a “Banknote”: A Monetary Law Interpreted*, 41 OXFORD J. LEG. STUDIES 1119 (2021) (discussing application of financial regulation to cryptocurrencies).

Cryptoassets may be considered securities falling within the remit of the SEC; commodities implicating the bailiwick of the CFTC;⁵⁹ or funds and value that substitute for currency, enabling payment and lending services and falling under bank and money transmitter regulation.⁶⁰ Sometimes an asset may be both a commodity and a security,⁶¹ and sometimes applicable regulatory regimes are uncertain or overlapping.

The complaints filed against major exchange Binance in March and June 2023 by the CFTC and the SEC, respectively, illustrate this regulatory uncertainty and fragmentation. Both Commissions rely on similar facts and even refer to identical assets. Consider, for example, how the complaints describe BUSD, a stablecoin.⁶² The SEC states that “[s]ince its inception, BUSD has been offered and sold as an investment contract and, therefore, as a security.”⁶³ The CFTC, however, avers that “[c]ertain digital assets, including BTC, ETH, LTC, and at least two fiat-backed stablecoins, tether (“USDT”) and the Binance USD (“BUSD”), as well as other virtual currencies as alleged herein, are ‘commodities’....”⁶⁴ The same asset – BUSD – is thus a commodity in the complaint filed by one regulator and a security according to another agency’s complaint.

Depending on the fragmented regulatory bucket/s into which a crypto-firm’s activity or assets are assigned, the firm may need to comply with the rules

⁵⁹ *Infra* Part C.

⁶⁰ If cryptoasset arrangements provide services similar to those offered by banks, state bank regulators, the Federal Reserve, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency are possible regulators. *See, e.g.,* Steven T. Mnuchin & Craig S. Phillips, *A Financial System That Creates Economic Opportunities: Nonbank Financials, Fintech, and Innovation*, U.S. DEP’T TREASURY (July 2018), <https://home.treasury.gov/sites/default/files/2018-08/A-Financial-System-that-Creates-Economic-Opportunities---Nonbank-Financials-Fintech-and-Innovation.pdf>; GOFORTH & GUSEVA, *supra* note 33, at 68-88, 133-64, 167-94, 640-56; OFFICE OF THE COMPTROLLER OF THE CURRENCY, JOINT STATEMENT ON CRYPTOASSET POLICY SPRINT INITIATIVE, Nov. 23, 2021, <https://www.occ.gov/news-issuances/bulletins/2021/bulletin-2021-56.html>. States regulate many crypto businesses as money transmitters and through special purpose charters. *See, e.g., Is Kraken Licensed or Regulated?*, KRAKEN, <https://support.kraken.com/hc/en-us/articles/360031282351-Is-Kraken-licensed-or-regulated>; *Legal*, COINBASE, INC., <https://www.coinbase.com/legal/licenses>. Many crypto firms must comply with FinCEN’s rules under the Bank Secrecy Act (31 U.S.C. §310). *FinCEN’s Mandate from Congress*, FINCEN, <https://www.fincen.gov/resources/fincens-mandate-congress>.

⁶¹ *See, e.g.,* Letter from Robert A. Schwartz, *supra* note 55.

⁶² Stablecoins are defined in *infra* note 67 and accompanying text.

⁶³ Complaint, at 77, *Security & Exchange Commission v. Binance Holdings Limited et al.*, Case No. 1:23-cv-01599 (D.D.C. June 5, 2023) [hereinafter *Binance SEC Complaint*].

⁶⁴ Complaint, at 9, *Commodity Futures Trading Commission v. Changpeng Zhao et al.*, Case: 1:23-cv-01887, (N.D. Ill. Mar. 27, 2023) [hereinafter *Binance CFTC Complaint*].

of the SEC, the CFTC, and/or various state and federal bank regulators. This is the classic U.S. approach to financial market regulation.⁶⁵

Stablecoins such as BUSD are an illustrative example of the application of this classic approach to digital assets.⁶⁶ Stablecoin arrangements (*i.e.*, arrangements for issuing, transferring, and redeeming stablecoins, as well as reserve management)⁶⁷ may be regulated within the ambit of banking law.⁶⁸ At the same time, as the 2021 Report of the President's Working Group on Financial Markets observes, the SEC and the CFTC may also have jurisdiction over stablecoins.⁶⁹ Similar fragmentation trends are discussed in the 2022 FSOC Report.⁷⁰

To sum up, U.S. crypto regulation covers a substantial part of cryptoasset markets and services⁷¹ and is as balkanized as U.S. financial law with its possible overlaps and jurisdictional uncertainties. We take no normative position on whether this overlapping and fragmented system entails wasteful costs for firms.⁷² Our argument here is different: “whole-of-government” approaches naturally should be more difficult under the conditions of regulatory fragmentation, and market

⁶⁵ The classic “approach to financial regulation is based on the regulation of entities. If a firm engages in some core financial function — like banking, insurance, or the securities business — then the firm itself (often along with all affiliated entities) is subject to strict regulation, such as activities restrictions and capital requirements, as well as supervisory oversights, typically reporting, examination, and an enforcement regime.” Jackson, *supra* note 57, at 11. *See also* Coffee & Sale, *supra* note 53.

⁶⁶ On stablecoins, see generally Andreas Kokkinis & Andrea Miglionico, *Open Banking and Libra: A New Frontier of Financial Inclusion for Payment Systems?*, 2020 SING. J. LEGAL STUD. 601 (2020); Craig Calcaterra, et al., *Stable Cryptocurrencies: First Order Principles*, 3 STAN. J. BLOCKCHAIN L. & POL'Y 62 (2020).

⁶⁷ A stablecoin arrangement is “[a]n arrangement that combines a range of functions (and the related specific activities) to provide an instrument that purports to be used a means of payment and/or store of value.” *Regulation, Supervision and Oversight of “Global Stablecoin” Arrangements: Final Report and High-Level Recommendations*, FIN. STABILITY BD. (Oct. 13, 2020), at 5.

⁶⁸ PRESIDENT'S WORKING GRP. ON FIN. MKT., REPORT ON STABLECOINS, U.S. DEPT. TREASURY (Nov. 2021), <https://home.treasury.gov/news/press-releases/jy0454>.

⁶⁹ *Id.*

⁷⁰ FSOC 2022, *supra* note 1.

⁷¹ FSOC 2022, *supra* note 1.

⁷² *See, e.g.*, Yadav, *supra* note 52, at 325 (“[T]he multiplicity of bodies has fostered inter-agency competition, easily translating to turf conflict, with the potential to undermine appropriate disclosure, information sharing, systemic risk assessments, and the development of a holistic understanding of market mechanisms and products.”). *But see* Zachary Clopton, *Redundant Public-Private Enforcement*, 69 VAND. L. REV. 285, 311 (2016) (“[A]lthough redundancy has direct costs and risks over-enforcement, it also can be effective at fighting under-enforcement resulting from errors, resource constraints, information problems, or agency costs, if agents are sufficiently diverse.”).

reaction to separate agencies supplies valuable feedback to policymakers working on a systemic reform.

It is essential to aid holistic, systemic initiatives by considering innovations through the lens of several regulatory regimes. In this article, we focus on commodities, derivatives, and securities regulation that is the focal point of ongoing legislative efforts. There are two dimensions in our analysis: measuring inter-agency outcomes and assessing U.S.-led enforcement effect cumulatively.

3. Inter-Agency Differences

The first dimension of our analysis is to compare and juxtapose the effects of each Commission. Together, the Commissions represent a considerable chunk of the balkanized regulatory regime within the U.S. Despite previous calls for merging the agencies,⁷³ they remain separate independent regulators of the U.S. securities and derivatives markets.

Although being separate regulators, the Commissions pursue similar overarching goals of sound and safe regulation. The SEC's statutory objectives encompass protecting investors; maintaining fair, orderly, and efficient markets; and facilitating capital formation.⁷⁴ The CFTC's goals, painted with broad strokes, are "to promote the integrity, resilience, and vibrancy of the U.S. derivatives markets through sound regulation," ultimately serving as a "global standard for sound derivatives regulation."⁷⁵ Both agencies assert their jurisdiction over the cryptoasset market, its infrastructure, and its participants and stand ready to further expand their reach, possibly colliding with one another.⁷⁶

⁷³ See generally Coffee & Sale, *supra* note 53.

⁷⁴ *Agency and Mission Information*, U.S. SEC. & EXCH. COMM'N (2014), <https://www.sec.gov/about/reports/sec-fy2014-agency-mission-information.pdf>. For scholarship examining interconnections between the SEC's general and specific objectives, see, e.g., Brummer & Yadav, *supra* note 47, at 264-82; George S. Georgiev, *The Human Capital Management Movement in U.S. Corporate Law*, 95 TUL. L. REV. 639 (2021).

⁷⁵ *Mission Statement*, U.S. COMMODITY FUT. TRADING COMM'N, <https://www.cftc.gov/About/AboutTheCommission#:~:text=The%20mission%20of%20the%20Commodity,derivatives%20markets%20through%20sound%20regulation.>

⁷⁶ Statements by the agencies' respective Chairs support this view. Bob Pisani, *SEC Chairman Gary Gensler Embarks on Ambitious Regulatory Agenda. What It Means for Investors*, CNBC (Feb. 4, 2022), <https://www.cnbc.com/2022/02/04/sec-chair-gary-gensler-embarks-on-ambitious-regulatory-agenda-what-it-means-for-investors.html>; Chairman Rostin Behnam, *Examining Digital Assets: Risks, Regulation, and Innovation*, Testimony Before the U.S. Senate Committee on Agriculture, Nutrition, and Forestry, U.S. Comm. Fut. Trading Comm'n (Feb. 9, 2022),

Despite the similarities between their foundational objectives, it has been suggested that the CFTC and the SEC are fundamentally different agencies operating under contrasting philosophies, with the CFTC being more principles-based in its regulation⁷⁷ and more open to innovative experimentation, which evidently includes crypto products.⁷⁸ The statutes that the Commissions enforce are also distinct.⁷⁹ As discussed further in this paper, the global crypto market distinguishes between the Commissions: the reaction is more negative in respect to enforcement of federal securities law by the SEC compared with enforcement of commodity and derivatives law by the CFTC.

4. Why Is U.S.-Led Enforcement Impactful?

The second dimension of this paper involves measuring investors' reaction to U.S.-led enforcement cumulatively. This line of inquiry is particularly important because U.S. regulators occupy a special place in global financial markets. U.S.

<https://www.cftc.gov/PressRoom/SpeechesTestimony/opabehnam20>; Nikhilesh De, *CFTC Should Oversee Crypto Spot Markets, Chief Reiterates Before Congress*, COINDESK (Feb. 10, 2022), <https://www.coindesk.com/policy/2022/02/09/cftc-should-oversee-crypto-spot-markets-chief-reiterates-before-congress/>; Gary Gensler, *Remarks Before the Aspen Security Forum*, U.S. SEC. & EXCH. COMM'N (Aug. 3, 2021), <https://www.sec.gov/news/public-statement/gensler-aspen-security-forum-2021-08-03> [hereinafter Gensler, *Aspen*]. An SEC rule proposal released in January 2022 demonstrated this trend by aiming to extend SEC jurisdiction over digital asset trading platforms. U.S. SEC. & EXCH. COMM'N, REL. No. 34-94062 (Jan. 26, 2022), <https://www.sec.gov/rules/proposed/2022/34-94062.pdf>.

⁷⁷ See, e.g., Jerry W. Markham, *Merging the SEC and CFTC—A Clash of Cultures*, 78 U. CIN. L. REV. 537, 552–53 (2009) (comparing the agencies and the proposed regulatory reform (the Treasury Department's Blueprint), which “recognize[d] that such a merger will be effective only if the new regulator can operate under a principles-based regulatory system. Such a system is employed by the CFTC and is better than the rules-based system of the SEC, which has proved to be a costly failure.”); Dan Awrey, *Regulating Financial Innovation: A More Principles-Based Proposal?*, 5 BROOK. J. CORP., FIN. & COM. L. 273, 311 (2011) (observing that the CFTC's approach to market exchange and clearinghouse regulation is based on broad principles, while the SEC follows a more rules-based approach).

⁷⁸ For example, Bitcoin futures were self-certified for trading as early as 2017. U.S. Comm. Fut. Trading Comm'n., *CFTC Statement on Self-Certification of Bitcoin Products by CME, CFE and Cantor Exchange*, Release Number 7654-17 (Dec. 1, 2017), <https://www.cftc.gov/PressRoom/PressReleases/7654-17>. By contrast, the SEC has been consistently rejecting applications to register Bitcoin exchange-traded funds. See GOFORTH & GUSEVA, *supra* note 33, at 580-87.

⁷⁹ *Infra* Part C.

markets has long served as sizeable financial “chokepoints.”⁸⁰ Today, about a half of the largest technology companies are domiciled here.⁸¹

As Professor Verdier suggests, political economy triggers an interplay among national regulators, the financial industry, and great national powers, which ultimately shapes regulatory systems.⁸² Viewed in this light, the U.S. CFTC and SEC are among the main agents of a great financial power (the United States) with its developed financial markets.⁸³ Following the acknowledgement by the White House that “U.S. agencies will... continue and expand their leadership roles on digital assets work at international organizations and standard-setting bodies,”⁸⁴ crypto markets may expect that U.S. regulators will play a crucial, if not pivotal, role.

The Commissions are active participants in the International Organization of Securities Commissions and its Fintech Task Force⁸⁵ and engage in cross-border enforcement.⁸⁶ Their enforcement divisions, as well as the Department of Justice with which the Commissions collaborate, have evolved into major international players.⁸⁷ Enforcement naturally bolsters the central role of U.S. regulators in global financial markets. It has even become their distinctive trademark. Scholars underscore that U.S. regulatory agencies (particularly the SEC) invest considerable resources in enforcement and that consequences of U.S.-based enforcement are not contained within the borders of the U.S.⁸⁸

In keeping with this philosophy, the Commissions have exhibited the same fervor by engaging in intensive and often extraterritorial enforcement in crypto

⁸⁰ See generally Henry Farrell & Abraham L. Newman, *Choke Points*, HARV. BUS. REV. (2020), <https://hbr.org/2020/01/choke-points>.

⁸¹ White House Framework, *supra* note *supra* note 1.

⁸² See, e.g., Pierre-Hugues Verdier, *The Political Economy of International Financial Regulation*, 88 IND. L. J. 1405 (2013).

⁸³ PIERRE-HUGUES VERDIER, *GLOBAL BANKS ON TRIAL: U.S. PROSECUTIONS AND THE REMAKING OF INTERNATIONAL FINANCE 3* (Oxford University Press 2020).

⁸⁴ *Id.*

⁸⁵ IOSCO *Crypto-Asset Roadmap for 2022-2023*, OISCU-IOSCO, Jul. 7, 2022, <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD705.pdf>.

⁸⁶ Verdier, *supra* note 82, at 1419-20.

⁸⁷ See generally Verdier, *supra* note 83.

⁸⁸ Rafael La Porta, et al., *What Works in Securities Laws?*, 61 J. FIN. 1, 11-13 (2006); Verdier, *supra* note 83; Howell E. Jackson & Mark J. Roe, *Public and Private Enforcement of Securities Laws: Resource-Based Evidence*, 93 J. FIN. ECON. 207 (2009); Howell E. Jackson, *Variation in the Intensity of Financial Regulation: Preliminary Evidence and Potential Implications*, 24 YALE J. ON REG. 253 (2007); John C. Coffee, Jr., *Law and the Market: The Impact of Enforcement*, 156 U. PA. L. REV. 229, 242 (2007).

markets.⁸⁹ Actions against major foreign crypto-exchanges, a global stablecoin, and developers illustrate this point.⁹⁰ In the complaints filed in March and June 2023 against Binance, the Commissions provide evidence of the attempts to evade the application of U.S. regulation and document that the management of the defendant understood the reach of U.S. enforcement.⁹¹ As powerful extraterritorial agencies, the Commissions have yet to lose a case against a crypto-firm, whether domestic or foreign.⁹² This international impact of U.S. regulators (and the differences between the Commissions) further emphasizes the need for an effective reform to oversee geography-agonistic crypto markets.

⁸⁹ See, e.g., James J. Park & Howard H. Park, *The Rise of Fintech: Regulation by Selective Enforcement: The SEC and Initial Coin Offerings*, 61 WASH. U. J.L. & POL'Y 99 (2020); Douglas Eakeley & Yuliya Guseva, with Leo Choi & Katarina Gonzalez, *Crypto-Enforcement Around the World*, 94 SOUTH. CAL. L. REV. POSTSCRIPT 99 (2021); Yuliya Guseva, *The SEC, Digital Assets, and Game Theory*, 46 J. CORP. L. 629 (2021) [hereinafter Guseva, *Game Theory*]; Simona Mola, *SEC Cryptocurrency Enforcement*, CORNERSTONE (2021), <https://www.cornerstone.com/wp-content/uploads/2022/01/SEC-Cryptocurrency-Enforcement-2021-Update.pdf>. The Commissions have broad extraterritorial jurisdiction. See, e.g., Yuliya Guseva, *The SEC and Foreign Private Issuers: A Path to Optimal Public Enforcement*, 59 B.C. LAW REV. 2055 (2018).

⁹⁰ See *S.E.C. v. Telegram Grp. Inc.*, 448 F.Supp.3d 352 (SDNY Mar. 24, 2020); Consent Order for Permanent Injunction, Civil Monetary Penalty, and Other Equitable Relief Against Defendants HDR GLbal Trading Limited, 100x Holdings Limited, Shine Effort Inc Limited, and HDR Global Services (Bermuda Limited), *CFTC v. HDR Global Trading Limited*, No. 1:20-cv-08132 (SDNY Aug. 10, 2021); In the Matter of: Tether Holdings Limited, Tether Operations Limited, Tether Limited, and Tether International Limited, *CFTC Docket No. 22-04* (Oct. 15, 2021); In the Matter of: iFinex Inc., BFXNA Inc., and BFXWW Inc., *CFTC Docket No. 22-05* (Oct. 15, 2021).

⁹¹ See Binance SEC Complaint, *supra* note 63, at 2-4; Binance CFTC Complaint, *supra* note 64, at 3, 35-38.

⁹² Many other jurisdictions issue light-touch warnings and blacklists in crypto and engage in (at least ostensibly) cooperative regulatory programs. As early as 2014, for instance, the U.K. Financial Conduct Authority issued a call for comments from innovators and launched a hub for regulatory cooperation. *Project Innovate: Call for Input*, FIN. CONDUCT AUTH. (July 11, 2014), <https://www.fca.org.uk/publication/call-for-input/project-innovate-call-for-input.pdf>; *Early Lessons on Regulatory Innovations to Enable Inclusive FinTech: Innovation Offices, Regulatory Sandboxes, and RegTech*, UNSGSA (2019), https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2019-early-lessons-regulatory-innovations-enable-inclusive-fintech.pdf. The CFTC and the SEC have also opened cooperative innovation hubs. U.S. Comm. Fut. Trading Comm'n, *LabCFTC Overview*, <https://www.cftc.gov/LabCFTC/Overview/index.htm>; U.S. Sec. & Exch. Comm'n, *Strategic Hub for Innovation and Financial Technology (FinHub)*, <https://www.sec.gov/finhub>. Yet, the Commissions simultaneously engage in extensive enforcement.

C. THE TWO COMMISSIONS IN CRYPTO

This Part explains the jurisdiction and actions of the Commissions in crypto and sets the scene for our empirical analysis. This is not a casebook disquisition on the Commissions' general jurisdiction. Readers familiar with the authority of the Commissions and their crypto-related actions may wish to proceed to Part D.

1. The CFTC

The CFTC was first to assert its jurisdiction over cryptoassets and market participants engaged in cryptoasset trading.⁹³ As early as March 2014, the agency announced that it was considering regulating Bitcoin, and in 2015, in a first ever enforcement action against a crypto trading platform operating unregistered facilities for trading and processing bitcoin option, futures contracts, and swaps, the CFTC stated that virtual currencies were commodities.⁹⁴ The term “commodity” covers agricultural products,⁹⁵ “and all services, rights, and interests (except motion picture box office receipts . . .) in which contracts for future delivery are presently or in the future dealt in.”⁹⁶

In 2016, the CFTC followed up with a major settlement with Bitfinex, a key foreign “player” in crypto. Bitfinex operated an online platform for exchanging and trading cryptocurrencies and failed to register as a futures commission merchant and a designated contract market.⁹⁷ Once again, the CFTC repeated that “virtual currencies are encompassed in the definition and properly defined as commodities, and are therefore subject as a commodity to applicable provisions” of the Commodity Exchange Act (“CEA”) and relevant regulations.⁹⁸

In addition to these early enforcement actions, the CFTC also released the Primers on Virtual Currencies (in 2017)⁹⁹ and on Digital Assets (in 2020),¹⁰⁰ as

⁹³ See, e.g., James Michael Blakemore, *New Things Under the Sun: How the CFTC Is Using Virtual Currencies to Expand Its Jurisdiction*, 73 ARK. L. REV. 205 (2020).

⁹⁴ In the Matter of: Coinflip, Inc., d/b/a Derivabit, and Francisco Riordan, C.F.T.C. No. 15-29 (Sept. 17, 2015).

⁹⁵ 7 U.S.C. § 1a(9).

⁹⁶ *Id.* See also 7 U.S.C. § 1a(19)(i); *Bd. Of Trade of City of Chicago v. S.E.C.*, 677 F. 2d 1137, 1142 (7th Cir. 1982), *vacated on other grounds*, 459 U.S. 1026 (1982) (“This language was also meant to encompass futures markets that were expected to be expanded to cover non-traditional goods and services . . .”).

⁹⁷ *In re BFXNA Inc. d/b/a Bitfinex*, C.F.T.C. Docket No. 16–19 (Jun. 2, 2016).

⁹⁸ *Id.* at 5-6.

⁹⁹ U.S. COMM. FUT. TRADING COMM'N, PRIMER ON VIRTUAL CURRENCIES (2017), https://www.cftc.gov/sites/default/files/idc/groups/public/documents/file/labcfrc_primercurrencies100417.pdf.

¹⁰⁰ U.S. COMM. FUT. TRADING COMM'N, DIGITAL ASSETS PRIMER (2020), <https://www.cftc.gov/PressRoom/PressReleases/8336-20>.

well as virtual asset guidance in 2020.¹⁰¹ These statements declare that virtual currencies are commodities, a position that appears well-accepted (although not unquestionable)¹⁰² in part because several federal courts have supported the CFTC's view on virtual currencies and jurisdiction over crypto markets.¹⁰³

Many CFTC cases in our database fall into two categories: (1) impermissible derivatives transactions and violations of registration provisions applicable to derivatives market participants; and (2) market manipulation and fraud. This dichotomy is explained by the specifics of the jurisdiction of the CFTC in spot markets for commodities and derivatives markets.

Namely, spot markets are not subject to CFTC jurisdiction except instances of fraud or market manipulation.¹⁰⁴ By contrast, regulatory jurisdiction of the CFTC does extend over transactions involving futures, options, and swaps. It is implicated with respect to derivatives contracts in virtual currencies, "or if there is fraud or manipulation involving a virtual currency traded in interstate commerce. Beyond instances of fraud or manipulation, the CFTC generally does not oversee 'spot' or cash market exchanges and transactions involving virtual currencies that do not utilize margin, leverage, or financing."¹⁰⁵

The 2021 settlements with BitMEX and Bitfinex, large foreign trading platforms, illustrate these points. A derivatives exchange must register with the CFTC, and those two exchanges were not designated or registered by the CFTC as contract markets.¹⁰⁶ The CEA provides, in relevant parts, that it is unlawful for any person not designated or registered by the CFTC as a designated contract market

¹⁰¹ U.S. Comm. Fut. Trading Comm'n, Retail Commodity Transactions Involving Certain Digital Assets, 85 Fed. Reg. 37734 (Jun. 24, 2020).

¹⁰² For relevant arguments, *see, e.g.*, GARY E. KALBAUGH, DERIVATIVES LAW AND REGULATION (3rd ed. 2021).

¹⁰³ C.F.T.C. v. McDonnell, 287 F. Supp. 3d 213, 228 (E.D.N.Y. 2018) ("Virtual currencies are 'goods' exchanged in a market for a uniform quality and value. They fall well-within the common definition of 'commodity' as well as the [Commodity Exchange Act]'s definition of 'commodities' as 'all other goods and articles ... in which contracts for future delivery are presently or in the future dealt in.' "); C.F.T.C. v. My Big Coin Pay, Inc., et al., 334 F. Supp. 3d 492, 494 (D. Mass. 2018); Dekrypt Capital, LLC v. Uphold Ltd., 2022 WL 97233, at *3 (Wash.App. Div. 1, 2022); Ox Labs, Inc. v. Bitpay, Inc., 2020 WL 1039012, at *6 (C.D. Cal., 2020) (observing in dicta that "Bitcoin is not merely an 'idea' that is entirely divorced from any physical form. Rather, it is dependent on blockchain, a public ledger which records all the transactions. While not directly on point, the Court also finds support from *Commodity Futures Trading Comm'n v. McDonnell*....").

¹⁰⁴ There is a debate on the extent and scope of this jurisdiction. *See, e.g.*, KALBAUGH, *supra* note 102, at 99. Specifics of the debate are outside the scope of this article.

¹⁰⁵ PRIMER ON VIRTUAL CURRENCIES, *supra* note 99, at 11.

¹⁰⁶ In the Matter of: iFinex Inc., BFXNA Inc., and BFXWW Inc., C.F.T.C. Docket No.22-05 (Oct. 15, 2021); CFTC v. HDR Global Trading Limited, No. 1:20-cv-08132 (SDNY Aug. 10, 2021).

(“DCM”) to execute or offer to enter into business for the purpose of soliciting or accepting orders in connection with commodity futures.¹⁰⁷ The 2023 complaint against Binance explains:

Binance has operated and is continuing to operate a trading system or platform in which more than one market participant has the ability to execute or trade swaps with more than one other market participant on the system or platform, including the trading or processing of swap on digital assets that are commodities without being registered as a DCM or [swap execution facility].¹⁰⁸

In cases where a crypto-exchange does not provide facilities for futures and other derivatives trading and instead facilitates spot market transactions, the CFTC jurisdiction is currently limited. In such markets, additional protections are provided to retail customers, who are not eligible contract participants and commercial entities (which are typically smaller institutions and individuals)¹⁰⁹ and participate in transactions on a leveraged basis, on margin, or financed by the offeror.¹¹⁰ These transactions with smaller retail traders (“retail commodity transactions”) are treated as futures except cases where “actual delivery” takes place within a limited number of days.¹¹¹ These retail commodity transactions should be conducted or subject to the rules of a board of trade.

U.S. residents were trading on Bitfinex, which did not sufficiently safeguard U.S. residents (and incidentally violated the 2016 Commission order). As a result, in 2021 the CFTC imposed a fine and requested that the respondents implement procedures protecting U.S. persons and closing all margined or leveraged positions held by U.S. non-eligible contract participants.¹¹²

The next market institution within the ambit of the CFTC is futures commission merchants¹¹³ (“FCM”), *i.e.*, firms and individuals that engage in soliciting or accepting orders or acting as counterparty in derivatives transactions, including futures and options. FCMs also must register with the CFTC,¹¹⁴ which

¹⁰⁷ 7 U.S.C. § 6(a).

¹⁰⁸ Binance CFTC Complaint, *supra* note 64, at 65.

¹⁰⁹ Eligible contract participants and eligible commercial entities are defined in Sections 1a(18) and 1a(17) of the CEA. 7 U.S.C. §§ 1a(17), (18).

¹¹⁰ 7 U.S.C. § 2(c)(2)(D).

¹¹¹ 85 Fed. Reg. 37734 (2020).

¹¹² In the Matter of: iFinex Inc., BFXNA Inc., and BFXWW Inc., C.F.T.C. Docket No.22-05 (Oct. 15, 2021).

¹¹³ 7 U.S.C. § 1a(28).

¹¹⁴ 7 U.S.C. § 6d(a)(1).

Bitfinex did not do while continuing to execute orders to buy and sell cryptoassets and margining transactions.

Recall also that the CFTC has broad antifraud and antimanipulation jurisdiction.¹¹⁵ The order released concurrently with the order against Bitfinex is a case in point. It involved a group of companies affiliated with Bitfinex and operating USDT (also called “Tether”), the largest global stablecoin arrangement.¹¹⁶ Stablecoins underlying an arrangement (*i.e.*, issuance, redemption, transfer, and payment mechanisms) often serve as a medium of exchange, may be used as collateral for loans and for other purposes, and are traded on various crypto-exchanges. The CFTC considers stablecoins commodities, and Tether’s misrepresentations of material facts and omissions brought it within the antifraud and antimanipulation authority of the CFTC.

Tether issued its stablecoin, claiming to have maintained a 100% reserve pegged to the U.S. dollar and representing that the stablecoin was regularly audited and could always be redeemed. These false and misleading representations led to an enforcement action even though no affiliated entities within the Tether group were registered with the CFTC in any capacity. Our database includes these types of market manipulation and fraud cases together with the aforementioned failures to register. Since the broad extraterritorial jurisdiction of the CFTC allows it to proceed against many foreign parties, cases within our database involve many international and foreign entities in addition to domestic firms.

Note, however, that some derivatives on cryptoassets are within the ambit of securities law and jurisdiction of the SEC, and some assets *simultaneously* represent commodities and securities.¹¹⁷ As the next section explains, the SEC’s jurisdiction over securities and securities derivatives is broader than the authority of the CFTC in derivatives markets and encompasses both regulatory authority and enforcement authority, including complicated approval processes for securities offerings.

2. The SEC

The SEC joined the crypto-related enforcement fracas only in mid-2017, with a release of the Report of Investigation concerning The DAO, a crypto-based decentralized autonomous organization whose purpose was to seek capital contributions for further investment in revenue-generating projects. The DAO project originated in Germany. The Report described the application of securities law to “virtual organizations or capital raising entities that use distributed ledger or

¹¹⁵ 7 U.S.C. § 9(1); 17 C.F.R. § 180.1(a)(2).

¹¹⁶ In the Matter of: Tether Holdings Limited, C.F.T.C. Docket No. 22-04 (Oct. 15, 2021).

¹¹⁷ See, e.g., Letter from Robert A. Schwartz, *supra* note 55.

blockchain technology to facilitate capital raising and/or investment and the related offer and sale of securities.”¹¹⁸ Using smart contracts (*i.e.*, computerized protocols to execute transactions) and reliance on code, as a threshold matter, do not shield transactions and conduct from the application of federal securities law and SEC jurisdiction.¹¹⁹

The jurisdiction of the SEC extends only over securities, securities markets, and their participants. Consequently, it was important to bring cryptoassets within the scope of the definition of securities. The DAO Report achieved this result by applying the decades-old *Howey* investment contract test¹²⁰ to the digital assets at issue and concluding that The DAO offered and sold investment contracts. The four-prong *Howey* test¹²¹ has been consistently applied by the SEC to cryptoassets ever since. To clarify the application of the *Howey* test to crypto, the SEC staff also issued the 2019 Framework for “Investment Contract” Analysis of Digital Assets.¹²² At least two crypto-related court decisions against foreign firms supported this position of the regulator.

In the first decision, *SEC v. Telegram Group*, viewing the transactions “in their totality for the purpose of the *Howey* analysis,”¹²³ the court concluded that the series of transactions and undertakings of the issuer satisfied the *Howey* test and were investment contracts.¹²⁴ Consequently, the court granted the SEC’s motion for a preliminary injunction, and Telegram, a foreign company facing this international injunction, had to return investor contributions to both domestic and foreign parties.

In the second decision, *SEC v. Kik Interactive*, the federal court for the Southern District of New York also conducted its analysis under the *Howey* test and granted the SEC’s motion for summary judgment against Kik, a Canadian company. This case concerned an issuance of utility tokens almost simultaneously with a sale of investment agreements. Under those circumstances, according to the court, “*Howey* provide[d] a clearly expressed test for determining what constitutes

¹¹⁸ U.S. SEC. & EXCH. COMM’N, *Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO*, at 2 (July 25, 2017), <https://www.sec.gov/litigation/investreport/34-81207.pdf> [hereinafter “The DAO Report”].

¹¹⁹ *Id.* at 2.

¹²⁰ *S.E.C. v. W. J. Howey Co.*, 328 U.S. 293, 298 (1946).

¹²¹ *Id.* (defining an “investment contract” as “a contract, transaction, or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party”).

¹²² Strategic Hub for Innovation & Fin. Tech., *Framework for “Investment Contract” Analysis of Digital Assets*, SEC. & EXCH. COMM’N 12 n.2 (Apr. 3, 2019), <https://www.sec.gov/files/dlt-framework.pdf> [hereinafter The Framework].

¹²³ *Telegram Grp.*, 448 F.Supp.3d at 367.

¹²⁴ *Id.* at 368.

an investment contract” and “an objective test that provides the flexibility necessary for the assessment of a wide range of investment vehicles.”¹²⁵

Howey, however, is not the only test that the SEC may apply to cryptoassets even though it has been used successfully, serving as a reliable functional framework in the Commission’s crypto-related enforcement.¹²⁶ In February 2022, in an enforcement action against BlockFi, a company offering crypto-based lending products,¹²⁷ the SEC examined the cryptoassets at issue under the *Reves* test.¹²⁸ Under *Reves*, debt instruments, namely, notes, are presumed to be securities unless they fall under a list of financial instruments that are not securities or bear a “family resemblance” to those excluded categories.¹²⁹ In that cease-and-desist order issued as a result of a settlement agreement, the SEC simultaneously conducted its analysis under both *Reves* and *Howey* and concluded that the crypto program of the respondent was an unregistered security under either test.

After it has been determined that an issuer is offering and selling securities, the issuer is subject to a variety of registration and reporting obligations under securities law.¹³⁰ In addition to these primary markets for securities, SEC jurisdiction also covers secondary market trading and exchanges,¹³¹ as well as various market participants, including investment companies.¹³² Several

¹²⁵ S.E.C. v. Kik Interactive, 492 F.Supp.3d 169, 183 (SDNY Sept. 30, 2020).

¹²⁶ For a discussion of *Howey*’s broad and functional approach, see generally Howell E. Jackson, *Regulation in a Multisector Financial Services Industry: An Exploratory Essay*, 77 WASH. U. L. REV. 319 (1999).

¹²⁷ In the Matter of: BlockFi Lending, LLC, Securities Act Rel. No. 11029 (Feb. 14, 2022), <https://www.sec.gov/litigation/admin/2022/33-11029.pdf>.

¹²⁸ *Reves v. Ernst & Young*, 494 U.S. 56, 64–66 (1990).

¹²⁹ The “family resemblance” is determined through a four-pronged approach, including motivations of reasonable sellers and buyers, the plan of distribution of the instrument leading to common trading for speculation or investment, reasonable expectations of investors, and the presence of alternative regulatory regimes. *Reves*, 494 U.S. at 66-67.

¹³⁰ For a discussion of the current registration requirements and exemptions, see generally Guseva, *When the Means Undermine the Ends*, *supra* note 35.

¹³¹ The term “exchange” means “any organization, association, or group of persons, whether incorporated or unincorporated, which constitutes, maintains, or provides a market place or facilities for bringing together purchasers and sellers of securities or for otherwise performing with respect to securities the functions commonly performed by a stock exchange as that term is generally understood, and includes the market place and the market facilities maintained by such exchange.” 15 U.S.C. § 78c.

¹³² An investment company is any issuer that “is engaged or proposes to engage in the business of investing, reinvesting, owning, holding, or trading in securities, and owns or proposes to acquire investment securities having a value exceeding 40 per centum of the value of such issuer’s total assets (exclusive of Government securities and cash items) on an unconsolidated basis.” 15 U.S.C. § 80a-3(a)(1)(C).

enforcement actions in our database implicate the Securities Exchange Act,¹³³ the Investment Company Act,¹³⁴ and the Investment Advisers Act¹³⁵ and involve unregistered crypto-exchanges, broker-dealers, and investment companies.

By way of example, the BlockFi settlement discussed above underscores that in addition to selling unregistered securities (a threshold matter determined by applying the *Howey* and *Reves* tests), the respondent violated the Investment Company Act that makes it unlawful for an investment company to “[o]ffer for sale, sell, or deliver after sale... any security or any interest in a security” or “engage in any business in interstate commerce”¹³⁶ unless the company is registered as an investment company or, among other things, excluded from the definition of an investment company.¹³⁷

By the same token, SEC enforcement actions have made it clear that crypto-exchanges are required to register with the SEC or seek exemption from registration, including being qualified and registered as an alternative trading system (“ATS”), pursuant to the Securities Exchange Act.¹³⁸ One of the first pronouncements to this effect was made in the DAO Report, which reiterated that rules “provide[...] a functional test to assess whether a trading system meets the definition of exchange....”¹³⁹ Our database includes several events involving exchanges.

By way of example, in one of the first orders against a crypto-exchange, the SEC described how unregistered crypto-exchange Poloniex displayed an order book and provided facilities for order execution on its website, through the order book, and via encoded trading protocols.¹⁴⁰ In its 2023 complaints, the SEC continued to focus on the failures of crypto-firms to register as a securities exchange and also added a failure to register as a broker-dealer and a clearing agency.¹⁴¹ (Since we limit our sample to pre-crash markets, we exclude these complaints.)

¹³³ 15 U.S.C. § 78a et seq.

¹³⁴ 15 U.S.C. § 80a–1 et seq.

¹³⁵ 15 U.S.C. § 80b–1 et seq.

¹³⁶ 15 U.S.C. § 80a–7.

¹³⁷ In the Matter of BlockFi Lending, LLC, Securities Act Rel. No. 11029 (Feb. 14, 2022), <https://www.sec.gov/litigation/admin/2022/33-11029.pdf>.

¹³⁸ 15 U.S.C. § 78e; 15 U.S.C. § 78c(a)(1); 17 C.F.R. § 240.3b-16 (a); 17 C.F.R. § 240.3a1-1 (a)(2).

¹³⁹ The DAO Report, *supra* note 118, at 16.

¹⁴⁰ In the Matter of Poloniex, LLC, Exchange Act Rel. No. 92607, at 7 (Aug. 9, 2021), <https://www.sec.gov/litigation/admin/2021/34-92607.pdf>.

¹⁴¹ See Binance SEC Complaint, *supra* note 63, at 123–24, 133 (note that the complaint against Binance also includes allegations of fraud); Complaint, at 80, Securities and Exchange Commission v. Coinbase, Inc., & Coinbase Global, Inc., Case 1:23-cv-04738 (S.D.N.Y. Jun. 6, 2023).

The progression of enforcement actions is unmistakable: First, the SEC expressed its views on whether cryptoassets were securities by interpreting decades-old case law through enforcement actions and staff statements. In doing so, it has informed cryptoasset issuers around the globe that they must comply with the registration and reporting requirements of securities law. Second, using enforcement and statements, the SEC has signaled that crypto market participants, including exchanges, broker-dealers, investment companies, and others, must register with the SEC.

D. EMPIRICAL RESEARCH ON CRYPTOASSET REGULATION

In our study of how crypto markets react to commodity, derivatives, and securities law enforcement, we contribute to economic and financial literature on crypto in the following way. We have identified several studies examining how cryptoasset markets react to the news of regulation or anticipated regulation. All of them compared news and regulations in several jurisdictions. None of the studies focused on enforcement within a single major jurisdiction, *i.e.*, the U.S., and its central financial regulators. Since there are no new U.S. regulations (instead, the Commissions heavily rely on enforcement), and because of the international importance of the Commissions' impact, we examine the effect of U.S.-led enforcement.

In addition, this article focuses on cryptoassets that fall within the jurisdiction of the Commissions as securities, commodities (and derivatives), or both.¹⁴² These regulatory classifications encircle various types of tokens and coins¹⁴³ and help us examine the effect of U.S.-specific regulatory fragmentation in finance.

In our analysis, we focus on global market prices. Relatedly, Feinstein and Werbach have conducted a study of cross-border trading volumes following regulatory events, including, among others, securities law announcements, anti-

¹⁴² In this sense, our analysis differs from the literature that examines cryptoassets with characteristics of different financial assets like shares of stock, currencies, *etc.* See, e.g., Elise Alfieri, et al., *On the Nature and Financial Performance of Bitcoin*, 20 J. RISK FIN. 114 (2019) (showing that Bitcoin may be examined like stock); Dirk G. Baur, et al., *Virtual Currencies: Media of Exchange or Speculative Asset?*, Swift Inst. Working Paper, Paper No. 2014-007 (2016); Saifedean Ammous, *Can Cryptocurrencies Fulfil the Functions of Money?*, 70 Q. REV. ECON. & FIN. 38 (2018); David Yermack, *Is Bitcoin a Real Currency? An Economic Appraisal*, in HANDBOOK OF DIGITAL CURRENCY: BITCOIN, INNOVATION, FINANCIAL INSTRUMENTS, AND BIG DATA 31 (Acad. Press, 2015) (questioning if Bitcoin may function as a currency).

¹⁴³ See *infra* Part E.

money-laundering (“AML”) regulation, “bespoke licensing” for crypto activities and firms, and antifraud enforcement.¹⁴⁴

In contrast to Feinstein and Werbach, we do not examine volume-related information. Instead, we examine price reaction and focus on the role of enforcement by major U.S. regulators (the SEC and the CFTC). Nor do we cover AML and “bespoke licensing.” For one, there is no “bespoke licensing” by the Commissions. Moreover, AML regulation is undergoing international harmonization due to the prominence of standard-setters such as the Financial Action Task Force¹⁴⁵ providing guidelines on crypto.¹⁴⁶ Consequently, it is important to zero in on commodity law and securities law, given that the merits and specifics of applying these regimes to crypto are still debated in the literature and in Congress.

Some of our findings support prior research demonstrating a negative market price reaction to the news of regulation, particularly securities law, in various jurisdictions.¹⁴⁷ Chokor and Alfieri, for example, examine cryptoassets using the methodology applicable to stock markets and measure cryptoasset market’s reaction to news of regulation in various countries.¹⁴⁸ Using event studies, they estimate abnormal returns of thirty top cryptocurrencies between 2015 and 2019 in relation to 63 regulatory news events from jurisdictions including the E.U., the U.S., and others. The authors find that the market reaction to regulatory news is negative and statistically significant, with a stronger negative reaction associated with securities law announcements.

Koenraadt and Leung also determine that the overall market reaction to regulatory news events is negative, particularly if the announcements are related to securities regulation and exchange trading. These findings comport with a study by

¹⁴⁴ Feinstein & Werbach, *supra* note 58. Feinstein and Werbach observe that regulatory events do not impact trading volume in several major jurisdictions and globally but may “at least hint at the possibility that regulations negatively affect global cryptocurrency prices.” *Id.* at 85.

¹⁴⁵ See, e.g., Chris Brummer, *How International Financial Law Works (and How it Doesn’t)*, 99 GEO. L. J. 257 (2010).

¹⁴⁶ FATF, *Guidance for a Risk-Based Approach—Virtual Currencies* (2015); FATF, *Second 12-Month Review Virtual Assets and Virtual Asset Service Providers* (Jul. 2021); FATF, *Updated Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers* (Oct. 28, 2021).

¹⁴⁷ See Raphael Auer & Stijn Claessens, *Regulating Cryptocurrencies: Assessing Market Reactions*, 2018 BIS Q. REV. 51; Jeroen Koenraadt & Edith Leung, *Investor Reactions to Crypto Token Regulation*, FIN. ACCT. J. (Feb. 22, 2019), <https://ssrn.com/abstract=3339197>; Ahmad Chokor & Elise Alfieri, *Long and Short-term Impacts of Regulation in the Cryptocurrency Market*, 81 Q. REV. ECON. & FIN. 157 (2020).

¹⁴⁸ Chokor & Alfieri, *supra* note 147.

Shanaev and coauthors who find that regulation of exchanges and issuances impacts cryptoasset prices.¹⁴⁹ Similarly, Auer and Claessens, using an event study approach and focusing on major cryptocurrencies such as Bitcoin, XRP, Ether, and others, find that regulatory news regarding a possibility of applying securities law to cryptoasset markets is associated with a strong adverse market impact.¹⁵⁰

The results of our study contribute to this prior work by showing a negative market reaction to enforcement actions as a distinct and prevalent regulatory method of the Commissions. Global crypto markets appear to distinguish between the Commissions, with the reaction to SEC enforcement being more negative. These results also provide support for the scholarship arguing that the CFTC and the SEC are fundamentally different entities and have distinct regulatory philosophies.¹⁵¹ The distinction in price reaction also highlights the sensitivity of global crypto markets to the U.S. enforcement landscape and calls for more research on the respective approaches of the SEC and the CFTC.

We also contribute to the literature on the quality and liquidity of cryptoassets. For instance, Chokor and Alfieri's cross-sectional analysis demonstrates that cumulative market-adjusted returns are less negative for less liquid cryptocurrencies, cryptoassets with more information asymmetry, as well as smaller cryptoassets, suggesting that markets view possible regulation of those cryptoassets more favorably. Our results contribute to Chokor and Alfieri's conclusions. We find that more liquid assets tend to have a more negative reaction to the announcement of enforcement events. We also indicate, however, that risky and volatile assets are more negatively affected by the announcements.

Interestingly, Koenraadt and Leung's cross-sectional analysis indicates that utility tokens (*i.e.*, a separate asset class distinct from what is commonly referred to as "cryptocurrencies")¹⁵² of better quality and with more transparent projects accompanied by voluntary disclosure experience a less negative reaction to

¹⁴⁹ Savva Shanaev, et al., *Taming the Blockchain Beast?, Regulatory Implications for the Cryptocurrency Market*, 51 RES. IN INT'L BUS. & FIN. 1, 2 (2020).

¹⁵⁰ See, e.g., Auer & Claessens, *supra* note 147; Raphael Auer & Stijn Claessens, *Cryptocurrency Market Reactions to Regulatory News* (Globalization Inst., Working Paper No. 381, 2020), <http://dx.doi.org/10.24149/gwp381> [hereinafter Auer & Claessens, *Regulatory News*].

¹⁵¹ On the differences in the philosophies of the Commissions, see, e.g., Markham, *supra* note 77, at 552–94; JERRY W. MARKHAM, *THE HISTORY OF COMMODITY FUTURES TRADING AND ITS REGULATION* 99–100 (1986); Heath P. Tarbert, *Rules for Principles and Principles for Rules: Tools for Crafting Sound Financial Regulation*, 10 HARV. BUS. L. REV. ONLINE 1 (2019-2020).

¹⁵² For classifications and definitions, see *infra* Part E.

regulatory news.¹⁵³ As opposed to Koenraadt and Leung, we do not distinguish between cryptoassets such as tokens and coins and consider all assets targeted by the Commissions in enforcement.

Our results, however, are broadly consistent with Chokor and Alfieri's and Koenraadt and Leung's conclusions that events signaling increased regulation (in our case, enforcement actions, which are often a one-way street portending an increase in regulation) have a negative effect on cryptoasset valuations. We further confirm these conclusions by examining the price reaction of Bitcoin and Ethereum, *i.e.*, the two assets that are decentralized commodities according to the CFTC. Importantly, we show that, even though crypto-investors perceive regulation via enforcement as a costly activity, this negative effect is offset by a more positive reaction to enforcement actions against fraudulent parties, *i.e.*, actions that contribute to better market quality and integrity. The following Parts discuss our analysis in detail.

E. SAMPLE DATA

1. Cryptoasset Classifications

The word "cryptoasset" may refer to cryptocurrencies, virtual currencies, coins, tokens, stablecoins, and non-fungible tokens, among others. From a technological standpoint, coins may be called "native tokens," which indicates that they are intrinsic to their underlying blockchain, while other tokens are built on existing blockchains and in this sense are non-native.¹⁵⁴ The White House's Framework and the SEC cumulatively refer to these assets as "digital assets," "issued and transferred using distributed ledger or blockchain technology,

¹⁵³ Koenraadt and Leung examine market reaction to 174 news events in countries with significant token activity in terms of market capitalization. Koenraadt & Leung, *supra* note 147. Their findings may indicate that investors in utility tokens expect that good-quality and transparent token issuers are better prepared to handle upcoming regulatory challenges. Other research also suggests that crypto projects with better (mostly voluntary) disclosures, corporate governance mechanisms, and crypto-expert vetting have been more successful at raising capital. *See, e.g.*, Thomas Bourveau, et al., *The Role of Disclosure and Information Intermediaries in an Unregulated Capital Market: Evidence from Initial Coin Offerings*, 60 J. ACCT. RSCH. 129 (2021). In addition, projects that have better founders, transparency, and liquidity, among other factors, are associated with operational success in addition to a higher ability to raise capital. Sabrina T. Howell, et al., *Initial Coin Offerings: Financing Growth with Cryptocurrency Token Sales*, 33 REV. FIN. STUD. 3925 (2021).

¹⁵⁴ U.S. Comm. Fut. Trading Comm'n, *LabCFTC Releases Digital Assets Primer*, Rel. No. 8336-20 (Dec. 17, 2020), <https://www.cftc.gov/PressRoom/PressReleases/8336-20> ("Digital token refers to a digital asset that requires another blockchain network to operate and may serve a variety of functions beyond virtual currency, e.g., utility tokens")

including, but not limited to, so-called ‘virtual currencies,’ ‘coins,’ and ‘tokens.’”¹⁵⁵

Let us look at the specific terminology that may apply to different classes of cryptoassets. The first term is “cryptocurrency.” The CFTC defines “cryptocurrency” (also “digital currency” or “virtual currency”) “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.”¹⁵⁶ Put another way, a cryptocurrency performs all or some of the three functions of *money* without being associated with a particular state.¹⁵⁷ It is these virtual currencies that are often called coins or native tokens. Bitcoin is a good example of these cryptocurrencies.

Digital tokens are a broader category. The U.K. Financial Conduct Authority, for instance, sets forth the following classifications: e-money tokens, security or investment tokens, and utility tokens.¹⁵⁸ The E.U. has proposed a similar taxonomy and added to these three categories “asset-referenced” tokens.¹⁵⁹ E-money and asset-referenced tokens are essentially stablecoins whose value is tied to commodities and/or currencies which can be either digital or non-digital assets.¹⁶⁰ Finally, utility tokens are, generally, “a type of crypto-asset which is intended to provide digital access to a good or service, available on DLT [, *i.e.*, distributed ledger technology], and is only accepted by the issuer of that token.”¹⁶¹

Our database covers enforcement actions instigated by the CFTC and the SEC against a variety of parties engaged in issuing, offering, rating, redeeming, and trading most of these diverse classes of assets. Following previous research that suggests that investor reactions to regulatory news do not differentiate between

¹⁵⁵ The Framework, *supra* note 122, at 12 n.2.

¹⁵⁶ In the Matter of: Coinflip, Inc., d/b/a Derivabit, and Francisco Riordan, C.F.T.C. Docket No. 15-29, at 2, n.2 (Sept. 17, 2015).

¹⁵⁷ Economists have questioned these functions of crypto. *See, e.g.*, Yermack, *supra* note 142.

¹⁵⁸ Policy Statement, *Guidance on Cryptoassets: Feedback and Final Guidance to CP 19/3*, FIN. CONDUCT AUTH. PS 19/22 (2019), <https://www.fca.org.uk/publication/policy/ps19-22.pdf>.

¹⁵⁹ *Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937*, COM (2020) 593 final (Sept. 24, 2020) <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0593>.

¹⁶⁰ *Id.* Tit. I, Art. 3, at 34 (defining asset-referenced tokens as “a type of crypto-asset that purports to maintain a stable value by referring to the value of several fiat currencies that are legal tender, one or several commodities or one or several crypto-assets, or a combination of such assets”; defining e-money tokens as “a type of crypto-asset the main purpose of which is to be used as a means of exchange and that purports to maintain a stable value by referring to the value of a fiat currency that is legal tender.”).

¹⁶¹ *Id.*

tokens and coins,¹⁶² we include all types of cryptoassets in our enforcement database.¹⁶³ Moreover, the CFTC and the SEC do not distinguish between these subclasses of cryptoassets and consider tokens and coins commodities and/or securities.

The crypto currency price data are extracted from CoinGecko (www.coingecko.com), which is one of the largest crypto price data aggregators. We extract daily prices, volume, and market capitalization of 2,397 liquid cryptoassets with a minimum market capitalization of \$1 million at the end of the period (-45,-5) preceding the announcement of enforcement actions. We use these data to compute abnormal returns around the announcement dates of the enforcement actions, “normal” returns or pre-announcement returns unaffected by the enforcement action, and volatility of pre-announcement returns as a measure of risk.

2. Enforcement data

Our sample of enforcement data consists of all actions initiated by the SEC and the CFTC between April 1, 2017, and November 1, 2021.¹⁶⁴ Although the DAO Report issued by the SEC¹⁶⁵ is widely regarded in the literature as the first clear policy statement on digital-asset securities, there were one crypto-related securities fraud case and one crypto-related trading suspension predating the Report.

We identify relevant cases by reviewing the Cyber Enforcement Actions database on the SEC’s website,¹⁶⁶ and the CFTC cases reported on its website.¹⁶⁷ We also manually search for cases on Bloomberg Law, Westlaw, and

¹⁶² Chokor & Alfieri, *supra* note 147, at 172.

¹⁶³ We exclude major stablecoins from our cryptoasset data but not from the enforcement database. The main stablecoins, such as USDC and Tether, have generally maintained their pegs over the years and may be less sensitive to enforcement shocks. At the same time, enforcement actions against stablecoins, particularly antifraud actions, may have broader implications for the crypto market.

¹⁶⁴ The sample does not include the 2016 action brought by the CFTC against Bitfinex. Only the 2021 order against Bitfinex is included. Starting our analysis in 2017 enables us to compare the two Commissions side by side. Before 2017, it was unclear whether the SEC would consider cryptoassets securities.

¹⁶⁵ The DAO Report, *supra* note 118, at 143.

¹⁶⁶ *Cyber Enforcement Actions*, U.S. SEC. & EXCH. COMM’N (2021), <https://www.sec.gov/spotlight/cyber.security-enforcement-actions>.

¹⁶⁷ CFTC, *Enforcement Actions*, <https://www.cftc.gov/LawRegulation/EnforcementActions/index.htm>.

LexisNexis.¹⁶⁸ Additionally, we examine Commissions' enforcement releases and annual reports. Each case is manually traced to dockets on Bloomberg Law, Westlaw, and LexisNexis.

Further, we review all complaints, orders, litigation and settlement releases, and final decisions and collect information on the key enforcement action characteristics. Specifically, we collect information about the statutory provisions involved, settlements, penalties, and disgorgement. Further, we identify the defendant and respondent type by assigning them into the following categories:

- "Issuer," which, for simplicity, we refer to as "ICO issuer" although it also includes security token offerings and other types of cryptoasset offerings.
- "Exchange." Crypto-exchanges are online trading platforms listing tokens and coins for trading. Crypto-exchanges may also provide placement and vetting services, similar to those of investment banks, for projects seeking listing. Consequently, they may serve as gatekeepers enabling not only listing and trading but also offerings. Crypto-exchanges may be centralized or decentralized.¹⁶⁹ In the United States, many crypto-exchanges are registered as money transmitters with the states, and several are ATS registered with the SEC.¹⁷⁰
- "Rating agency." Rating agencies in crypto are mainly unregistered platforms and firms providing opinions on the quality and ratings of cryptoassets and/or exchanges.
- "Broker-dealer." The term as used in this article includes not only security broker-dealers but also FCMs in commodity and derivatives markets.
- "Investment fund." The term covers investment companies and other funds in the crypto space.
- "Other" (*e.g.*, attorneys and promoters, including famous actors).

The final sample contains 116 enforcement actions, which include 27 CFTC actions and 89 SEC actions. Figure 1 demonstrates the temporal distribution of enforcement actions and shows a marked increase in enforcement activity by both

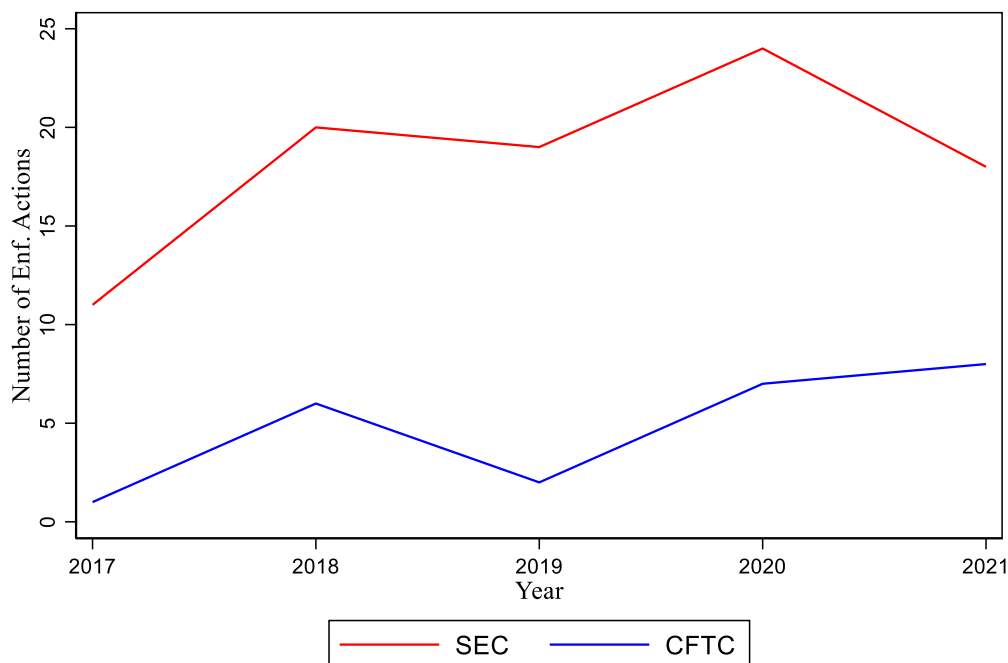
¹⁶⁸ The comprehensive list of keywords for the search includes ICO, Initial Coin Offering, Blockchain, Bitcoin, Crypto, Cryptocurrency, SAFT, Agreement for Future Tokens, Smart Contract, STO, Security Token, Token, Digital Asset, Exchange Offering, Coin, Token Offering, and Virtual Currency.

¹⁶⁹ See generally Johnson, *supra* note 24.

¹⁷⁰ See, *e.g.*, Guseva, *supra* note 130.

agencies. The SEC actions increased from 5 in 2017 to 24 in 2020 and slightly declined after that. The CFTC actions increased from 1 in 2017 to 8 in 2021.

Figure 1. Enforcement Actions by Year



3. Summary Statistics

In Table 1 we provide summary statistics for the variables used in our analyses. In Panel A we report abnormal returns around the announcement dates of enforcement actions (*i.e.*, event dates). We employ a standard event study methodology to construct abnormal returns on date $t=0$ (event date) and cumulative abnormal returns over event windows $(-1,0)$, $(0,1)$, $(-1,1)$ and $(-3,3)$. This approach is similar to that used by Joos and Leung,¹⁷¹ Chokor and Alfieri,¹⁷² and Koenraadt and Leung.¹⁷³ Incorporating additional pre- and post- event days into event windows allows us to account for early information leakage, slow incorporation of

¹⁷¹ Philip P. M. Joos & Edith Leung, *Investor Perceptions of Potential IFRS Adoption in the United States*, 88 THE ACCOUNTING REV. 577 (2013).

¹⁷² Chokor & Alfieri, *supra* note 147.

¹⁷³ Koenraadt & Leung, *supra* note 147.

information into asset prices, and also correct for potential small errors in identification of the announcement date. Moreover, a wider event window (-3,3) allows us to determine the speed of information incorporation into returns.

We define enforcement action announcement by the date of the following actions taken by the SEC or the CFTC: 1) filing a complaint in a federal district court, 2) announcing an administrative enforcement action (*i.e.*, issuing an order instituting SEC cease-and-desist proceedings or instituting proceedings pursuant to the Commodity Exchange Act, often accompanied by a settlement), or 3) publication of a trading suspension. In three cases involving exchanges (Coinbase, Uniswap, and Terraform Labs), we use information about pending investigations and potential enforcement actions that was either leaked by the target (namely, Coinbase in a post)¹⁷⁴ or revealed in media sources.

We compute abnormal returns by subtracting the expected (*i.e.*, normal) return from the event day raw return. Further, we calculate cumulative abnormal returns (“CARs”) by adding up abnormal returns over the event window. The equation below illustrates the CAR methodology:

$$CAR = \sum_{t \in \tau} \left(R_t - \bar{R}_T \right) = \sum_{t \in \tau} \left(R_t - \frac{1}{\#(T)} \sum_{t' \in T} R_{t'} \right)$$

where τ denotes the number of days in the event window affected by the enforcement action, uppercase T contains the days in the pre-event window, R_t is the return at t , R_T is the sample mean of pre-event to approximate the expected return. We define expected return by the average daily return during the pre-event window (-45,-5). The length of the window is short enough to minimize overlap with other enforcement actions. The event window ends 5 days before the event to ensure that pre-event information leakage does not affect the expected return.

The summary statistics for the pre-event and event cumulative abnormal returns are provided in Panel A of Table 1. We report returns over $t=0$ and periods over days (-1,0), (0,1), (-1,1), and (-3,3) event windows and average daily return during the pre-event period (-45,-5). The sample of announcement date abnormal returns contains 82,444 observations. Since the observations in our sample are not independent and the returns are correlated in the cross-section at the asset and event

¹⁷⁴ Paul Grewal, *The SEC has told us it wants to sue us over Lend. We don't know why*, THE COINBASE BLOG (Sept 7, 2021), <https://blog.coinbase.com/the-sec-has-told-us-it-wants-to-sue-us-over-lend-we-have-no-idea-why-a3a1b6507009>.

time level, we cluster standard errors on those two dimensions. This reduces the degrees of freedom to the size of the smallest cluster (number of enforcement actions) and generates conservative t-statistics.

The global crypto market reaction to the announcement of enforcement actions by the U.S. regulators is negative regardless of the event window over which returns are measured. This result is consistent with other related studies' finding that crypto regulation is being generally perceived as a negative event by the market. However, it is interesting that *enforcement* actions of regulators in one market can so significantly move global cryptoasset values. This observation supports the theoretical arguments on the important international role of the U.S. SEC and the CFTC, which we examine in Part B of this article.

At the announcement date $t=0$, the one-day abnormal return ($AR(0)$) is economically small (-0.004) and statistically insignificant (t-statistic=-0.880). However, for the two-day window that includes day $t=-1$, we observe some information leakage. $CAR(-1,0)$ is -0.016 and significant at 5 percent level with a t-statistic of -2.260. The three day $CAR(-1,1)$ is marginally smaller at (-0.015) with a t-statistic of -1.870 suggesting that the effect of the enforcement action attenuates shortly after the announcement. The extended seven-day $CAR(-3,3)$ of -0.014 and statistically insignificant also demonstrates that the effect is concentrated on days $(-1,0)$, has limited pre-event leakage, and is not long-lived.

In Panel B, we provide summary statistics of cryptoasset characteristics. We use median daily market capitalization of each individual cryptoasset during the pre-announcement period $(-45,-5)$ as a measure of size. We use medians rather than means because means are sensitive to high volatility of cryptoasset values. The average value is \$812.185 million, and the median is significantly smaller, at \$10.912 million. This is indicative of considerable size variation in the cryptoasset space where well-established large assets like Bitcoin or Ethereum coexist with thousands of small assets.

Similar to market capitalization, our measure of volume is the median daily value of the pre-event volume. The average of these median values is \$85.985 million shares a day, while the median is only 0.447. This spread in the distribution of size and volume persists despite the exclusion of assets with less than \$1 million in market capitalization at the end of the pre-event period (day=-5). Finally, the average total buy-and-hold return during the pre-event period is large and positive at 0.195. This value is affected by some well-performing assets and the median asset earns a small negative return of -0.011. The average and median volatility of pre-event daily returns is 0.097 and 0.082, respectively.

In Panel C we report several characteristics of enforcement actions, which are likely to affect the market reaction to their announcements. As already described in Figure 1, the majority of enforcement actions are initiated by the SEC (76.8 percent) with the rest coming from the CFTC. Roughly half of the enforcement actions (55.4 percent) involve some form of fraud. We define fraud actions as those dealing with fraudulent and manipulative behavior, including violations of Section 10 of the Securities Exchange Act and Rule 10b-5; Section 17 of the Securities Act; as well as Sections 6c, 6b, 4b, and 9 of the Commodity Exchange Act and Rule 180.1. Further, 63.5 percent of actions are registration violations, which mainly implicate Section 5 of the Securities Act; Sections 5 and 15 of the Securities Exchange Act; Section 7 of the Investment Company Act; and Sections 4(a), 4c, 4d, and 5h of the Commodity Exchange Act. Some actions involve both fraud and registration violations.

Most enforcement actions are focused on four large homogeneous groups of responders or defendants: ICO issuers (which include issuers not only in traditional ICOs but also in other types of cryptoasset offerings), brokers (including securities broker-dealers and futures commission merchants), exchanges, and funds, which account for nearly 86 percent of the sample. The remainder is spread across attorneys, promoters, rating agencies, and crypto-related firms (defined as firms whose business models include blockchain-related products and/or cryptoassets). The actions against ICO issuers dominate the sample at 43.4 percent, followed by brokers at 18.3 percent, exchanges at 13.8 percent, and funds at 10.2 percent. The average action has 2.884 respondents in administrative actions (or defendants in district court cases). The median is 2.000. The financial penalties consisting of fines, settlements, disgorgement awards, and pre-judgment interest average 41.88 million with a median of 0.543. A small percent of actions (3.4 percent) result in trading suspensions of securities of crypto-related firms and one ICO issuer.

In some of our robustness analyses we evaluate the effect of action visibility on the magnitude of the market reaction. We search for respondents' and defendants' names on Twitter over days (-1,1) relative to the action announcement and find that 74.3 percent of all actions have some form of coverage. Finally, in some cases, an agency may initiate separate actions against several respondents. This heightened regulatory activity is likely to attract more attention to the action. In 13.1 percent of enforcement actions there are other simultaneously initiated actions.

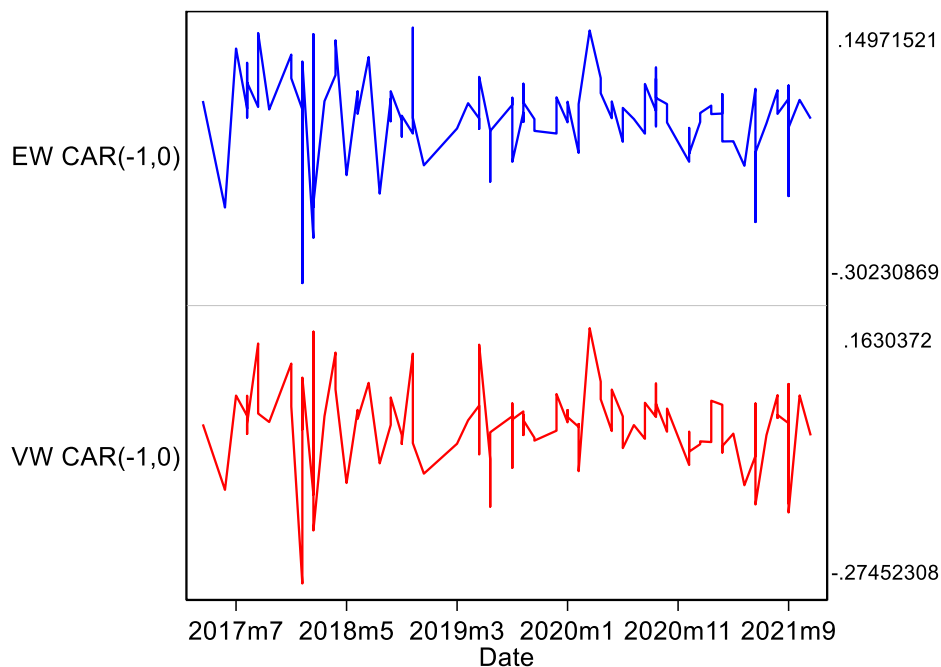
Table 1. Summary Statistics

This table reports summary statistics for variables used in the regression analyses. Panel A reports abnormal returns around enforcement action announcement dates. Panel B and Panel C report characteristics of cryptoassets and enforcement actions, respectively. In Panel A (unreported) standard errors in means tests are based on standard errors clustered at cryptoasset and event level.

Panel A. Filing and Decision Date Cumulative Abnormal Returns									
	Obs.	Mean	t-stat.	St.Dev	P25	P50	P75	Min.	Max.
AR(0)	82340	-0.004	-0.880	0.100	-0.049	-0.005	0.034	-0.561	0.908
CAR(-1,0)	82340	-0.016**	-2.260	0.132	-0.082	-0.014	0.042	-0.934	1.000
CAR(0,1)	82340	-0.003	-0.430	0.126	-0.066	-0.006	0.052	-1.123	1.065
CAR(-1,1)	82340	-0.015*	-1.870	0.147	-0.097	-0.015	0.057	-0.460	0.609
CAR(-3,3)	82168	-0.014	-1.310	0.255	-0.143	-0.010	0.108	-1.744	2.344
Ave. Daily Ret.(-45,-5)	82340	0.006***	5.770	0.017	-0.005	0.003	0.013	-0.183	0.149
Panel B. Pre-Filing Cryptoasset Characteristics									
	Obs.	Mean	St.Dev	P25	P50	P75	Min.	Max.	
Market.Cap.(Mil)	82340	812.185	16589.230	3.456	10.912	48.231	1.000	1,145,912.000	
Volume (Mil)	82340	85.985	1257.159	0.066	0.447	2.996	0.000	67,726.711	
Total Ret.(-45,-5)	82340	0.195	0.839	-0.291	-0.011	0.388	-0.997	6.383	
Volatility	82340	0.097	0.059	0.057	0.082	0.120	0.001	0.574	
Panel C. Enforcement Action Characteristics									
	Obs.	Mean	St.Dev	P25	P50	P75	Min.	Max.	
SEC	82340	0.768	0.422	1.000	1.000	1.000	0.000	1.000	
CFTC	82340	0.232	0.422	0.000	0.000	0.000	0.000	1.000	
Fraud	82340	0.554	0.497	0.000	1.000	1.000	0.000	1.000	
Registration	82340	0.635	0.481	0.000	1.000	1.000	0.000	1.000	
Broker	82340	0.183	0.386	0.000	0.000	0.000	0.000	1.000	
ICO Issuer	82340	0.434	0.496	0.000	0.000	1.000	0.000	1.000	
Exchange	82340	0.138	0.345	0.000	0.000	0.000	0.000	1.000	
Fund	82340	0.102	0.302	0.000	0.000	0.000	0.000	1.000	
Other	82340	0.143	0.350	0.000	0.000	0.000	0.000	1.000	
Number of Defendants	78888	2.884	2.341	1.000	2.000	3.000	1.000	12.000	
Trading Suspension	78402	0.034	0.180	0.000	0.000	0.000	0.000	1.000	
Total Penalties	57364	41.880	165.715	0.000	0.543	7.000	0.000	1242.500	
Twitter	82340	0.743	0.437	0.000	1.000	1.000	0.000	1.000	
Multiple Actions	82340	0.131	0.337	0.000	0.000	0.000	0.000	1.000	

The main focus of our empirical analyses is to examine the global crypto market reaction to the announcement of enforcement actions by the U.S. regulators. In Figure 2 we visually examine the average equal-weighted and value-weighted $CAR(0,-1)$ for all 116 actions aggregated to monthly level. Value-weighted returns are weighted by the market value of cryptoassets at $t=-5$ relative to the announcement date, which marks the end of the pre-event window. Rapid growth in the cryptoasset markets combined with the SEC's shift toward registration violations could have changed the direction and magnitude of market reaction to the enforcement actions during the sample period. However, we observe no directional change in either equal- or value-weighted returns. There is also no discernable size effect and value-weighted returns which are dominated by the returns of the two largest cryptoassets – Bitcoin and Ethereum – which behave in a way similar to equal-weighted returns. The only trend over our sample period is the attenuation of volatility in announcement returns. This suggests that the nature and the outcomes of enforcement actions may have become either more predictable or less impactful.

Figure 2. Announcement Returns by Year



F. EMPIRICAL RESULTS

1. Enforcement Action Characteristics and Market Reaction

The summary statistics demonstrate that the SEC and CFTC enforcement actions have a negative valuation effect for both the median and mean cryptoassets. In this section we explore the cross-sectional determinants of the reaction to the enforcement actions by focusing on the characteristics of both the enforcement actions and cryptoassets themselves. We begin by looking at the average market reaction for different types of enforcement actions. Specifically, we focus on the agency initiating the action and whether the violation constitutes fraud.¹⁷⁵ These results are reported in Table 2.

Table 2. Market Reaction to Enforcement Action by Action Type.

This table presents average abnormal returns by enforcement type. Abnormal returns are returns adjusted by average daily return over days (-45, -5) relative to the filing date. First two columns report actions initiated by the SEC and CFTC. The third and fourth columns report actions involving fraud and non-fraud. The *t*-statistics are computed using standard errors corrected for clustering of observations by cryptoasset and event and are reported in parentheses below the estimates. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	SEC	t-stat	CFTC	t-stat	Fraud	t-stat	Non-fraud	t-stat
AR(0)	-0.008	-1.310	0.007	1.050	0.005	1.080	-0.015*	1.670
CAR(-1,0)	-0.018**	-2.060	-0.010	-0.960	-0.006	-0.610	-0.029***	-2.870
CAR(0,1)	-0.008	1.000	0.012	0.900	0.007	0.930	-0.014	-1.420
CAR(-1,1)	-0.018*	-1.970	-0.005	-0.310	-0.003	-0.320	-0.029**	-2.570
CAR(-3,3)	-0.015	-1.10	-0.010	-0.036	-0.005	-0.320	-0.025	-1.310

These comparisons show that the actions initiated by the SEC are met with a negative reaction regardless of the event window. Event windows (-1,0) and (-1,1) have the largest and statistically significant returns measuring -0.018 in both cases with respective *t*-statistics of -2.060 and -1.970. In contrast, market reaction to the actions initiated by the CFTC is small and either positive or negative; none of the returns is statistically different from 0. Further, in all cases, the SEC actions have more negative returns than the CFTC actions, which is consistent with the investors' negative view of application of securities law to crypto.

Finally, we examine fraud actions versus those involving other violations. While regulation is generally viewed as a costly event and generates a negative

¹⁷⁵ Examining fraud as a separate category is important in light of several studies that suggest that cryptoasset offerings (particularly early ICOs) were riddled with misrepresentations and fraud. See generally Dirk A. Zetsche, et al., *supra* note 46, at 278-79, 287-89; Cohn et al., *supra* note 46.

market reaction, some types of regulation may have the potential to improve market quality with positive valuation implications.¹⁷⁶ We find that abnormal returns associated with fraud cases are positive for AR(0) and CAR(0,1) and are negative for the other three event windows. None of the fraud returns are statistically significant and distinguishable from zero. The non-fraud cases are markedly different with large negative returns, which are statistically significant for AR(0), CAR(-1,0) and CAR(-1,1). CAR(-1,0) and CAR(-1,1) are also economically large at -0.029. This suggests that while investors treat regulation (namely, enforcement of pre-crypto statutes) as an unfavorable and costly event for the crypto market, the cost of regulation in some cases is offset by the benefits of improved market quality and integrity.

To assess how cryptoasset and enforcement action characteristics affect the market reaction to enforcement actions, we estimate an OLS model on a dataset consisting of filing returns for 82,444 cryptoasset-enforcement action pairs. In the interest of brevity, we focus on AR(0), CAR(-1,0), and CAR(0,1). We control for the type of action and crypto characteristics that have been shown to explain cross-section of returns. Our cryptoasset controls include pre-event market capitalization, volume, buy-and-hold return, and volatility. In this dataset, the observations are correlated by the cryptoasset and event levels. This cross-sectional correlation violates the independence assumption of the test statistics and may overestimate the significance of market reaction in our analyses at the cryptoasset level.¹⁷⁷ Therefore, we cluster the standard errors at the event- and cryptoasset-level by implementing the estimator of Correia.¹⁷⁸

2. Multivariate Analyses of Market Reaction

In Table 3 we show the effect of the enforcement action type on returns over days AR(0), CAR(-1,0), and CAR(0,1). For each return, we estimate three models which control for cryptoasset characteristics and enforcement action characteristics. We focus on the following enforcement action characteristics: SEC actions (*i.e.*, not CFTC actions) and fraud or registration violation. We estimate the effect of one action characteristic at a time to determine its independent effect. In two out of three models, SEC actions have a more negative statistically significant effect than CFTC actions. The SEC action return is -0.017 percent more negative than the return associated with CFTC actions (t-statistic is 1.9) in the AR(0) model.

¹⁷⁶ For a theoretical discussion, see *infra* Section G(1).

¹⁷⁷ Stephen J. Brown & Jerold B. Warner, *Measuring Security Price Performance*, 8 J. OF FIN. ECONOMICS 205 (1980).

¹⁷⁸ Sergio Correia, *A Feasible Estimator for Linear Models with Multi-way Fixed Effects* (2016), <http://scorreia.com/research/hdfe.pdf>.

In the CAR(0,1) model, this effect is more economically meaningful at -0.024 with a t-statistic of 1.67.

Enforcement actions focused on fraud mitigate the negative reaction to enforcement actions, which is consistent with the view of regulation as improving disclosure and market quality. The strongest difference in returns between fraud and non-fraud cases is observed for AR(0) with the coefficient estimate of 0.018 with the t-statistic of 1.93. The coefficient estimates of fraud in the other two regressions are also positive and economically large (0.022 and 0.020, respectively) but the t-statistics of 1.63 and 1.55 fall slightly short of meeting traditional levels of statistical significance.

Further, registration violations do not have a strong market reaction. We include in the category *Registration* failures 1) to register securities under Securities Act Section 5 (in actions usually initiated against issuers of cryptoassets); 2) to register with the CFTC as a DCM, swap execution facility, or FCM under the Commodity Exchange Act; and 3) to register as a securities exchange or securities broker-dealer under the Securities Exchange Act.¹⁷⁹ The objective of this category is to distinguish these violations from antifraud cases. We further separate out these markets participants and measure the reaction to actions against each of these categories in a separate model.¹⁸⁰

For combined registration violations, the coefficients are negative in AR(0) and CAR(-1,0) regressions and small and positive in CAR(0,1) regression. None of the coefficients are statistically significant. These results also highlight the stronger differential effect of enforcement characteristics observed on day $t=0$ in AR(0); this effect is then diluted by the information coming out on days $t=-1$ and $t=1$. It is reasonable that $t=-1$ information is incomplete or inaccurate and day $t=1$ return is affected by the new information unrelated to the enforcement action.

Lastly, cryptoasset characteristics have an effect in the individual cryptoasset's response to the enforcement action's announcement. We include a measure of pre-announcement market capitalization, daily trading volume, buy-and-hold return over pre-event window, and standard deviation of daily returns. Surprisingly, asset size has little effect on the market reaction to enforcements. Log(Market Capitalization) coefficients remain small and positive in eight out of nine regression and none of the coefficients are statistically significant or approach conventional levels of statistical significance. The coefficients in log transformed

¹⁷⁹ For the respective statutory frameworks, see *supra* Part C.

¹⁸⁰ *Infra* Section F(4).

models of coefficients may be interpreted as a 1% change in market capitalization associated with a coefficient *1% change in announcement reaction.

We also find that more liquid assets tend to have a more negative reaction to the announcement as in all nine regressions the coefficients are negative, ranging from -0.001 to -0.002 and significant at least at 5 percent level or better. Similarly, assets with the largest pre-filing returns lose more value around the announcement. In AR(0) regressions, the coefficient is around -0.011 to -0.013, and in two-day regressions, they are approximately double those values (*i.e.*, absolute values). In eight out nine regressions, the coefficients are statistically significant. Finally, risky and volatile assets are more negatively affected by the announcements. Similar to returns, the magnitude of volatility coefficients in AR(0) regressions is approximately -0.111 to -0.117. This effect roughly doubles in two-day return regressions. In all cases, the effect is significant at a one-percent level. To summarize, investors view more liquid, better performing, and riskier cryptoassets as more vulnerable to the regulation (through enforcement actions) after controlling for the agency initiating the action or type of enforcement.

Table 3. The Effect of Crypto and Enforcement Action Characteristics on Market Reaction.

This table presents OLS regression estimates of the relation between abnormal filing returns around the enforcement action filing date and enforcement action and cryptoasset characteristics. Abnormal returns are returns adjusted by average daily return over days (-45, -5) relative to the filing date. SEC is a binary variable equal 1 if the action is initiated by the SEC and 0 if the action is initiated by the CFTC. Fraud is a binary variable equal to 1 if the violation constitutes fraud and 0 otherwise. Registration is a binary variable equal to 1 if the action is targeting a registration violation and 0 otherwise. Twitter is a binary variable equal to 1 if the action is covered on Twitter and 0 otherwise. Multiple Actions is a binary variable equal to 1 if other crypto actions were files the same day and 0 otherwise. Log Market Capitalization (Volume) is a natural log of median daily cryptoasset's market capitalization (trading volume) during pre-filing period (-45,-5) during pre-filing period (-45,-5). Pre-filing return is cryptoasset return over pre-filing period (-45,-5). Volatility is standard deviation of daily cryptoasset returns over pre-filing period (-45,-5). The *t*-statistics are computed using standard errors corrected for clustering of observations by cryptoasset and event and are reported in parentheses below the estimates. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	AR(0)			CAR(-1.0)			CAR(0.1)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SEC	-0.017*			-0.014			-0.024*		
	(-1.90)			(-1.13)			(-1.67)		
Fraud		0.018*			0.022			0.020	
		(1.93)			(1.63)			(1.55)	
Registration			-0.006			-0.019			0.001
			(-0.60)			(-1.46)			(0.10)
Log Mkt.Cap	0.000	0.000	0.000	0.000	0.000	-0.000	0.000	0.001	0.000
	(0.09)	(0.38)	(0.09)	(0.00)	(0.22)	(-0.08)	(0.13)	(0.36)	(0.19)
Log Volume	-0.001**	-0.001**	-0.001**	-0.002**	-0.002***	-0.002**	-0.001**	-0.002**	-0.001**
	(-2.10)	(-2.30)	(-2.01)	(-2.42)	(-2.74)	(-2.36)	(-2.02)	(-2.12)	(-1.98)
Pre-filing Ret.	-0.013*	-0.011	-0.013*	-0.031**	-0.029**	-0.032**	-0.028***	-0.026***	-0.027***
	(-1.74)	(-1.51)	(-1.75)	(-2.35)	(-2.21)	(-2.46)	(-2.95)	(-2.72)	(-2.82)
Volatility	-0.117***	-0.117***	-0.111***	-0.260***	-0.262***	-0.254***	-0.219***	-0.217***	-0.211***
	(-2.80)	(-2.76)	(-2.64)	(-3.33)	(-3.39)	(-3.35)	(-3.82)	(-3.73)	(-3.59)
Obs.	82340	82340	82340	82340	82340	82340	82340	82340	82340
R2	0.016	0.019	0.011	0.037	0.041	0.039	0.034	0.034	0.028

3. Enforcement Publicity Measures

So far, our analyses indicate that the current state of U.S. cryptoasset regulation through enforcement is viewed by the global markets as an unfavorable, albeit short-lived, event with the most negative reactions concentrated in the SEC actions and actions that have no substantive effect on market quality (*i.e.*, non-fraud actions). In the next table, we examine the effect of action visibility on the reaction to enforcement announcements. The strength and speed with which value-relevant content of a regulatory action is incorporated into asset values depends on the information being available to investors. Since the crypto-investor base is not only global but also heavily retail, it is unclear how any lack of media coverage may affect returns.

We conduct time-constrained searches of Twitter, a social media platform which retail investors use for financial information sharing, over days (-1,1) relative to the enforcement announcements using the names of respondents/defendants. This information is used to construct a binary variable for Twitter coverage. Additionally, in some cases multiple enforcement actions (which may be launched by the same agency against several entities) are initiated simultaneously. These actions may be more noticeable and perceived as a stronger signal of an agency's enforcement intent.

In Table 4 we estimate six models – two for each of the three return types – using a specification similar to that in Table 3. For each return, we estimate one model that combines *SEC* and *Fraud* variables. The second model adds publicity variables *Twitter* and *Multiple Actions*. Finally, all models have cryptoasset level controls for pre-event size, volume, return, and volatility. Similar to previous results, AR(0) models show the strongest difference in returns between SEC and CFTC cases and fraud and non-fraud actions. Both binary variables have statistically significant coefficients. In model 2, day $t=0$ abnormal return is -0.015 more negative for the SEC actions ($t\text{-stat.}=1.96$) and 0.016 less negative for actions disciplining fraud ($t\text{-stat.}=1.75$). These coefficients maintain their signs in all other models and are either statistically significant or close to significance.

Interestingly, neither measure of publicity is either strongly or convincingly related to announcement returns. For example, *Twitter* is positive in two out of three regressions and is not significant in any of them. *Multiple Actions* is negative in two models and has a negative coefficient of -0.024 with a t -statistic of 1.82, suggesting that the news of more rigorous enforcement negatively affects crypto prices over event days (0,1). Overall, our baseline results are not sensitive to proxies of publicity and our initial result of the negative SEC effect. Similarly, the non-fraud actions' effect continues to hold.

Table 4. The Effect of Enforcement Action Visibility on Market Reaction.

This table presents OLS regression estimates of the relation between abnormal filing returns around the enforcement action filing date and enforcement action and cryptoasset characteristics. Abnormal returns are returns adjusted by average daily return over days (-45, -5) relative to the filing date. SEC is a binary variable equal 1 if the action is initiated by the SEC and 0 if the action is initiated by the CFTC. Fraud is a binary variable equal to 1 if the violation constitutes fraud and 0 otherwise. Twitter is a binary variable equal to 1 if the action is covered on Twitter and 0 otherwise. Multiple Actions is a binary variable equal to 1 if other crypto actions were files the same day and 0 otherwise. Log Market Capitalization (Volume) is a natural log of median daily cryptoasset's market capitalization (trading volume) during pre-filing period (-45,-5) during pre-filing period (-45,-5). Pre-filing return is cryptoasset return over pre-filing period (-45,-5). Volatility is standard deviation of daily cryptoasset returns over pre-filing period (-45,-5). The *t*-statistics are computed using standard errors corrected for clustering of observations by cryptoasset and event and are reported in parentheses below the estimates. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	AR(0)		CAR(-1,0)		CAR(0,1)	
	(1)	(2)	(3)	(4)	(5)	(6)
SEC	-0.014*	-0.015*	-0.010	-0.005	-0.020	-0.028*
	(-1.69)	(-1.96)	(-0.85)	(-0.45)	(-1.46)	(-1.83)
Fraud	0.016*	0.016*	0.020	0.021	0.016	0.017
	(1.75)	(1.75)	(1.48)	(1.45)	(1.34)	(1.54)
Twitter		-0.003		0.004		0.016
		(-0.38)		(0.28)		(1.34)
Multiple Actions		-0.006		0.015		-0.024*
		(-0.66)		(1.02)		(-1.82)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82340	82340	82340	82340	82340	82340
R2	0.022	0.022	0.042	0.044	0.038	0.041

4. Types of Defendants and Respondents and Market Reaction

We have observed a significant amount of variation in the types of respondents/defendants targeted by enforcement actions. The focus on a certain type of respondents or defendants may have implications for further regulatory

activity. In Table 5, we study the effect of the respondent/defendant type on the announcement reaction. Similar to previous regressions, we use a specification with enforcement action characteristics (the respondent/defendant type) and cryptoasset controls. In all models, the errors are clustered at cryptoasset and date levels. We estimate these models for the entire sample (Models 1-3) and a subsample of SEC actions (Models 4-6).

Our key independent variables are dummy variables that capture the respondent/defendant type: *Broker*, *ICO Issuer*, *Exchange*, and *Fund*. Their coefficients will be estimated relative to the remaining category *Other* that consists of other multiple poorly represented parties. In many cases, these parties (promoters, attorneys, rating agencies, and crypto-related firms) are unlikely to have significant value implications for the cryptoasset market. Of these four categories, funds have the least negative reaction relative to the *Other* category and relative to exchanges, brokers, and ICO issuers. The coefficients alternate between positive and negative and are never statistically significant.

The most significant effect is observed for exchanges, which have a broad and critical impact on the trading of cryptoassets. The coefficients are significant in AR(0) and CAR(-1,0) models in the overall sample and in the SEC subsample, at a 5 percent level in both cases. The magnitude of the coefficients ranges from -0.044 to -0.060, and they are larger in the SEC regressions. Brokers and ICO issuers fall in the middle of the range with some statistically significant coefficients and some that are very close to statistical significance. Similar to the other models, these coefficients are more negative in the SEC action subsample. In summary, we find that the enforcement actions that have the potential for the most profound and costly effect on the largest number of crypto market participants are met with the most negative market reaction.

Table 5. The Effect of Respondent/Defendant Type on Market Reaction to Enforcement Actions.

This table presents OLS regression estimates of the relation between abnormal filing returns around the enforcement action filing date and the types of respondents/defendants targeted by the enforcement action. The first three models are estimated using the full sample; the last three columns are estimated using only SEC actions. Abnormal returns are returns adjusted by average daily return over days (-45, -5) relative to the filing date. Broker (ICO Issuer/Exchange/Fund) is a binary variable equal to 1 if the respondent or defendant is a broker (ICO issuer/exchange/fund) and 0 otherwise. Controls include Log Market Capitalization, Volume, Pre-filing Return and Volatility. Log Market Capitalization (Volume) is a natural log of median daily cryptoasset's market capitalization (trading volume) during pre-filing period (-45,-5) during pre-filing period (-45,-5). Pre-filing Return is cryptoasset return over pre-filing period (-45,-5). Volatility is standard deviation of daily cryptoasset returns over pre-filing period (-45,-5). The *t*-statistics are computed using standard errors corrected for clustering of observations by cryptoasset and event and are reported in parentheses below the estimates. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	All Actions			SEC Actions		
	AR(0)	CAR(-1.0)	CAR(0.1)	AR(0)	CAR(-1.0)	CAR(0.1)
	(1)	(2)	(3)	(4)	(5)	(6)
Broker	-0.019 (-1.50)	-0.028* (-1.73)	-0.009 (-0.48)	-0.044** (-2.18)	-0.046* (-1.83)	-0.040 (-1.25)
ICO Issuer	-0.019** (-2.45)	-0.029 (-1.63)	-0.007 (-0.63)	-0.023*** (-2.74)	-0.033 (-1.61)	-0.007 (-0.54)
Exchange	-0.044** (-2.09)	-0.050** (-2.22)	-0.033 (-1.45)	-0.055** (-2.05)	-0.060** (-2.09)	-0.042 (-1.45)
Fund	0.001 (0.10)	-0.009 (-0.46)	0.018 (0.69)	-0.015 (-1.50)	-0.022 (-0.91)	0.012 (0.46)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	82340	82340	82340	63201	63201	63201
R2	0.027	0.047	0.038	0.038	0.043	0.045

5. Are Bitcoin and Ethereum Special?

The cryptoasset market is dominated by the two largest assets – Bitcoin and

Ethereum. For better perspective, the distribution of the entire cryptoasset market capitalization is highly skewed. For example, at the end of our sample period, the top two coins (Bitcoin and Ethereum) account for 57.68% of the entire market share, top 50 coins account for 90.10%, and top 130 coins account for 95.08%. Ethereum and Bitcoin also differ from the rest of the cryptoasset market in terms of their classification as commodities and not securities. As discussed in Part C, several district courts, as well as the CFTC itself, have held that Bitcoin is a commodity. While we are not aware of case law related to Ethereum, the CFTC has long stated that it is a commodity. CFTC Chair Behnam repeated this position in an interview with CNBC as recently as May 2022.¹⁸¹

In Table 6, we examine how these two largest cryptoassets respond to enforcement news. We repeat several of our prior analyses using the market reactions of these two cryptoassets to a sample of 116 enforcement actions. Overall, the statistical significance is much weaker, but the economic significance is similar to our prior results.

In Panel A, we replicate Table 2 for the sample of Bitcoin and Ethereum. Regardless of the type of enforcement, the abnormal returns are not consistently negative and never statistically significant. In Panel B, we replicate Table 3 and find evidence of statistically significant and negative SEC effect in AR(0) regression. The coefficient of SEC is negative in two other regressions. The coefficient estimate on fraud is positive but not significant, and the registration coefficient has a mix of positive and negative coefficients.

This weak effect is not surprising. As these two cryptocurrencies are well-established, decentralized, and global, investors may be viewing U.S. enforcement risk to Bitcoin and Ethereum as low. Finally, in Panel C, we replicate Table 5. Interestingly, Bitcoin and Ethereum also react negatively to enforcement actions targeting exchanges and, to a lesser extent, brokers. The coefficient estimate on *Exchange* dummy is significant in all regressions and ranges from -0.047 to as large as -0.070. All coefficients of *Brokers* dummy are significant in two out of six regressions.

¹⁸¹ *Bitcoin, ethereum are commodities, says CFTC Chair Rostin Behnam*, CNBC, SQUAWK BOX, May 16, 2022, <https://www.cnbc.com/video/2022/05/16/bitcoin-ethereum-are-commodities-says-cftc-chair-rostin-behnam.html?&qsearchterm=cryptocurrency>.

Table 6. Bitcoin and Ethereum Market Reaction to Enforcement Actions.

This table presents summary statistics and OLS regressions of the abnormal filing returns for Bitcoin and Ethereum. In Panel A we provide summary statistics for abnormal returns grouped by types of enforcement action. In Panels B and C we report OLS regressions of enforcement action announcement returns. Abnormal returns are returns adjusted by average daily return over days (-45, -5). SEC is a binary variable equal 1 if the action is initiated by the SEC and 0 if the action is initiated by the CFTC. Fraud is a binary variable equal to 1 if the violation constitutes fraud and 0 otherwise. Registration is a binary variable equal to 1 if the action is targeting a registration violation and 0 otherwise. Broker (ICO Issuer/Exchange/Fund) is a binary variable equal to 1 if the respondent or defendant is a broker (ICO issuer/exchange/fund) and 0 otherwise. Log Market Capitalization (Volume) is a natural log of median daily cryptoasset's market capitalization (trading volume) during pre-filing period (-45,-5) during pre-filing period (-45,-5). Pre-filing return is cryptoasset return over pre-filing period (-45,-5). Volatility is standard deviation of daily cryptoasset returns over pre-filing period (-45,-5). The *t*-statistics are computed using standard errors corrected for clustering of observations by event date and are reported in parentheses below the estimates. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A. Filing Date Cumulative Abnormal Returns by Action Type for Bitcoin and Ethereum								
	SEC	t-stat	CFTC	t-stat	Fraud	t-stat	Non-fraud	t-stat
AR(0)	0.001	0.310	0.004	0.800	0.004	0.890	0.001	0.160
CAR(-1,0)	-0.000	-0.060	-0.004	-0.520	-0.001	-0.140	-0.003	-0.390
CAR(0,1)	0.004	0.620	0.008	1.100	0.006	1.020	0.004	0.610
CAR(-1,1)	0.002	0.250	-0.000	-0.050	0.002	0.180	0.000	0.040
CAR(-3,3)	-0.001	-0.050	-0.004	-0.300	-0.002	-0.140	-0.002	-0.180

Panel B. Determinants of Filing Returns for Bitcoin and Ethereum								
	AR(0)			CAR(-1,0)			CAR(0,1)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SEC	-0.017*			-0.002			-0.019	
	(-1.72)			(-0.16)			(-1.37)	
Fraud		0.006			0.004			0.008
		(0.73)			(0.28)			(0.65)
Registration			-0.008			-0.013		0.002
			(-0.91)			(-1.02)		(0.14)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	232	232	232	232	232	232	232	232
R2	0.014	-0.003	-0.001	0.038	0.038	0.045	0.017	0.008

Panel C. The Effect of Respondent/Defendant Type on Market Reaction to the Filing.

	All Actions			SEC Actions		
	AR(0)	CAR(-1,0)	CAR(0,1)	AR(0)	CAR(-1,0)	CAR(0,1)
	(1)	(2)	(3)	(4)	(5)	(6)
Broker	-0.012 (-0.98)	-0.036* (-1.89)	-0.013 (-0.76)	-0.016 (-1.26)	-0.040** (-2.20)	-0.020 (-0.99)
ICO Issuer	-0.016 (-1.62)	-0.026 (-1.32)	-0.015 (-1.01)	-0.016 (-1.52)	-0.026 (-1.28)	-0.015 (-0.93)
Exchange	-0.047** (-2.38)	-0.069*** (-3.07)	-0.049** (-2.32)	-0.047** (-2.23)	-0.070*** (-2.90)	-0.050** (-2.24)
Fund	0.004 (0.35)	-0.010 (-0.40)	0.012 (0.42)	0.005 (0.40)	-0.010 (-0.37)	0.017 (0.60)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	232	232	232	208	208	208
R2	0.043	0.081	0.032	0.044	0.078	0.039

6. Penalties and Other Measures

Our last analysis zeroes in on the effect of disclosed or anticipated penalties on market reaction to enforcement actions. If the penalties are viewed as a potential regulatory cost that can affect other crypto market participants, it is interesting to examine which components of penalties are affecting valuation of the crypto market.

In Table 7, we model the announcement reaction as a function of multiple penalties and cryptoasset characteristics as control variables. Our dependent variable continues to be the three types of announcement returns because in most actions announcement and completion dates coincide.¹⁸² In untabulated analyses,

¹⁸² This typically happens when the SEC or the CFTC release an order instituting proceedings, making findings, imposing sanctions, and often simultaneously settling the matter.

we have used completion date returns, which produced qualitatively similar results. The penalties consist of both financial and nonfinancial penalties, and this part of our analysis includes the number of respondents/defendants, the binary indicators for officers charged, cease-and-desist order or injunctions, and court cases or administrative actions. We also include natural logs for financial penalties measuring fines and settlements and a binary variable for the disgorgement of funds. We use a binary variable for disgorgement because it usually signals an end of a project and a continuous variable is effectively a measure of project size, which is already captured by market capitalization.

The effects of penalties are noisy across different return models, but, in general, cease-and-desist orders or injunctions and settlements are associated with a more negative reaction. In CAR(0,1) model, we also observe a significant positive coefficient on the number of respondents/defendants charged in one or several related actions. However, taken together, these findings do not paint a coherent picture of the penalties capitalized into the values of cryptoassets.

It is possible that the market reacts to an initial news of an enforcement action, which in itself is a clear signal of a more expansive regulatory approach. The SEC and the CFTC have an unbroken (so far) track record of success in crypto-related enforcement, which strongly suggests, *inter alia*, that once a case is initiated, some penalties are forthcoming. By contrast, specifics of ultimate penalties differ depending on cooperation of individual defendants and respondents, the facts of a case, and other factors, which make penalties less certain and quantifiable at the time of case filing.

Table 7. Market Reaction to Penalties

This table presents OLS regression estimates of the relation between abnormal filing returns around the enforcement action completion date and imposed penalties. Abnormal returns are returns adjusted by average daily return over days (-45, -5) relative to the decision date. Number of Resp./Def. is the number of defendants or respondents listed in the filing. Officers Charged is a binary variable equal to 1 if the officers/directors are charged and 0 otherwise. Court is a binary variable equal to 1 if the action is litigated and 0 if is administrative. Cease and Desist/Injunction is a binary variable equal to 1 if there is a cease and desists or injunction order and 0 otherwise. Disgorgement is a binary variable equal to 1 if disgorgement of funds is ordered and 0 otherwise. Log (Fine, Settlement) is the natural log of Fine or Settlement. Controls include Log Market Capitalization, Volume, Pre-filing Return and Volatility. Log Market Capitalization (Volume) is a natural log of median daily cryptoasset's market capitalization (trading volume) during pre-filing period (-45,-5) during pre-filing period (-45,-5). Pre-filing Return is cryptoasset return over pre-filing period (-45,-5). Volatility is standard deviation of daily cryptoasset returns over pre-decision period (-45,-5). The *t*-statistics are computed using standard errors corrected for clustering of observations by cryptoasset and event and are reported in parentheses below the estimates. ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	AR(0)	CAR(-1,0)	CAR(0,1)
	(1)	(2)	(3)
Num.Resp./Def.	-0.000	0.000	0.004*
	(-0.02)	(0.13)	(1.81)
Officers Charged	-0.000	0.004	0.001
	(-0.04)	(0.26)	(0.05)
Court	-0.001	-0.024	-0.001
	(-0.15)	(-1.47)	(-0.07)
Cease and Desist/ Injunction	-0.019**	-0.026*	-0.016
	(-2.25)	(-1.96)	(-1.39)
Disgorgement	-0.004	-0.003	-0.006
	(-0.37)	(-0.18)	(-0.38)
Log Fine	-0.000	-0.000	-0.001
	(-0.13)	(-0.36)	(-0.45)
Log Settlement	-0.001*	0.000	-0.001
	(-1.83)	(0.30)	(-1.49)
Controls	Yes	Yes	Yes
Observations	56,939	56,939	56,939
R2	0.029	0.051	0.060

G. THEORETICAL INTERPRETATIONS

1. Summary of the Results

To summarize our results, global crypto markets are sensitive to U.S.-led enforcement efforts and regulatory fragmentation. The price reaction is particularly negative with respect to several categories of actors, such as issuers and developers of cryptoassets, brokers, and (especially) crypto-exchanges. The markets react differently to *who* enforces U.S. law: the SEC (in securities law enforcement actions) or the CFTC (in commodity and derivatives law enforcement). The SEC actions are met with a more negative market reaction. These effects, however, are somewhat weaker for Bitcoin and Ether, which have traditionally been viewed as well-established, decentralized, and global cryptocurrencies. Both are typically

classified as commodities and may be less sensitive to U.S.-based enforcement risks.

In addition, while crypto-investors view enforcement as a costly activity for the markets, this negative effect is offset by a more positive reaction to antifraud actions which improve market integrity. The results also depend on the quality characteristics of the assets. Market reaction depends on the differences among highly heterogeneous cryptoasset classes. For instance, markets perceive more liquid, better performing, and risky cryptoassets as more vulnerable to U.S. enforcement after controlling for the agency initiating enforcement actions. These observations confirm that regulation and enforcement may improve market quality. In this Part, we consider several possible explanations.

2. Regulation, Enforcement, and Fragmentation

Our results lend support to the theories about the crucial role U.S. regulators play in global financial markets.¹⁸³ It appears that U.S. commodity and securities regulators are on the crypto markets' radar. But why is that overall reaction negative?

One germane line of scholarship warns that regulation may stifle economic growth and innovation.¹⁸⁴ Not all regulation, however, is counterproductive. Properly designed rules may improve market integrity, correct market failure,¹⁸⁵ foster future innovation,¹⁸⁶ protect consumers and investors, and reduce transaction costs, information asymmetry, and agency costs.¹⁸⁷ Instead of a rejection of regulation and enforcement, our results should be interpreted as a signal from crypto markets that some regulatory efforts exhibit, metaphorically speaking, a low

¹⁸³ *Supra* Part B.

¹⁸⁴ See, e.g., Cary Coglianese & Christopher Carrigan, *The Jobs and Regulation Debate* in DOES REGULATION KILL JOBS? (Cary Coglianese, Adam M. Finkel and Christopher Carrigan eds., 2013); Michael Sherlock, *BitCoin: The Case Against Strict Regulation*, 36 REV. OF BANKING & FIN L. 975 (2016-17).

¹⁸⁵ Market failure "is a situation in which a market left on its own fails to allocate resources efficiently." N. GREGORY MANKIW, PRINCIPLES OF MICROECONOMICS 12 (2015).

¹⁸⁶ *Supra* note 48 and accompanying text.

¹⁸⁷ See, e.g., Bruce G. Carruthers & Naomi R. Lamoreaux, *Regulatory Races: The Effects of Jurisdictional Competition on Regulation*, 54 J. OF ECON. LIT. 52 (2016); Mike Orcutt, *New Money-Laundering Rules Change Everything for Cryptocurrency Exchanges*, MIT TECHNOLOGY REVIEW (Aug. 15, 2019), <https://www.technologyreview.com/2019/08/15/102778/new-money-laundering-rules-change-everything-for-cryptocurrency-exchanges/>; Feinstein & Werbach, *supra* note 144, at 61-62.

“goodness of fit.”¹⁸⁸ An explicit need for updated law and regulation may explain our results and a negative reaction to enforcement efforts based on fragmented pre-crypto statutory frameworks.

Similarly, the relevant differences in price reaction to the SEC versus the CFTC may be explained by the scholarship that underscores that the pre-crypto securities statutes are not an ideal framework for crypto innovations. Those articles span the whole cryptoasset ecosystem: from better definitions of cryptoassets as securities to the outdated rules on primary markets (*i.e.*, distribution of tokens and coins by issuers to investors and consumers) and the need for better secondary market and infrastructure regulation.¹⁸⁹

If substantive securities laws were indeed more outdated, unsuitable for crypto, or rigid¹⁹⁰ than commodity and derivatives regulation, SEC enforcement naturally would be associated with a higher risk and a more negative market

¹⁸⁸ In the same vein, prior research demonstrates that regulatory proposals tailored specifically to crypto are associated with positive returns. Auer & Claessens, *Regulatory News*, *supra* note 150.

¹⁸⁹ The literature on these subjects is considerable. *See, e.g.*, Goforth, *Who Is the SEC Protecting?*, *supra* note 47 (examining the regulatory framework, suggesting that the SEC applies its regulatory authority too broadly, and emphasizing the costs of this approach); Carol R. Goforth, *Cinderella’s Slipper: A Better Approach to Regulating Cryptoassets as Securities*, 17 HASTINGS BUS. L.J. 271 (2021) (proposing a reform of securities law to and creating a separate category of cryptoassets and also discussing commodity regulation); Carol R. Goforth, *Using Cybersecurity Failures to Critique the SEC’s Approach to Crypto Regulation*, 65 S. D. L. REV. 433 (2020); Guseva, *Game Theory*, *supra* note 89; Eric C. Chaffee, *Securities Regulation in Virtual Space*, 74 WASH. & LEE L. REV. 1387 (2017) (examining statutory language and suggesting that context may require different interpretations and approaches in crypto); Lewis Rinaudo Cohen, *Ain’t Misbehavin’: An Examination of Broadway Tickets and Blockchain Tokens*, 65 WAYNE L. REV. 81 (2019) (pointing out that an investment scheme that may be a security is not the same as its object that is not a security); Shlomit Azgad-Tromer, *Crypto Securities: On the Risks of Investments in Blockchain-Based Assets and the Dilemmas of Securities Regulation*, 68 AM. U. L. REV. 69 (2018) (calling for balancing of costs of securities law and structural assessments of cryptoassets); Kevin Werbach, *Trust, but Verify: Why the Blockchain Needs the Law*, 33 BERKELEY TECH. L.J. 487, 519 (2018) (agreeing with the need for regulation but suggesting that not all token offerings are securities); Jonathan Rohr & Aaron Wright, *Blockchain-Based Token Sales, Initial Coin Offerings, and the Democratization of Public Capital Markets*, 70 HASTINGS L.J. 463 (2019) (calling for regulatory certainty and proposing reforms and safe harbors); Carol R. Goforth, *Securities Treatment of Tokenized Offerings Under U.S. Law*, 46 PEPP. L. REV. 405 (2019) (calling for reforming the current approach to crypto and the application of the investment contract test); Johnson, *supra* note 24 (examining crypto-exchanges). *But see* Usha R. Rodrigues, *Embrace the SEC*, 61 WASH. U. J.L. & POL’Y 133 (2020); Marco Dell’Erba, *From Inactivity to Full Enforcement: The Implementation of the “Do No Harm” Approach in Initial Coin Offerings*, 26 MICH. TECH. L. REV. 175 (2020).

¹⁹⁰ Recall that securities law is more rules-based compared with regulation of commodity derivatives. *See supra* Part B. Innovators may prefer the more flexible *principles-based* policies pursued by the CFTC to rules-based securities regulation.

reaction. The intensity of SEC enforcement would only exacerbate these trends (indeed, the SEC launches more enforcement actions and imposes larger penalties than the CFTC or its foreign counterparts).¹⁹¹

It also does not seem likely that the SEC, which is larger than the CFTC, has been addressing information asymmetry and a possible asset bubble in crypto more skillfully than the CFTC.¹⁹² If that were the case, the effect of SEC enforcement would be stronger and more persistent than a few days around the event date.

It would be wrong to assert that the SEC were less effective in regulating crypto than the CFTC. In fact, the SEC has been successfully overseeing the largest capital market in the world for almost a century.¹⁹³ It is possible, however, that digital asset markets challenge the agency in novel ways as investors do not react positively to enforcement of securities law. Reconsidering and redesigning regulatory fragmentation in crypto markets could address possible inefficiencies of securities law and yield benefits from the *joint* efficiency of the Commissions in crypto markets where asset classifications overlap.

H. CONCLUSION

We hope that our analysis will contribute to the scholarship on financial regulation and provide new information to the Congress, the Commissions, and other stakeholders in evaluating the merits of financial reforms addressing the fragmentation in U.S. financial regulation, resolving turf wars, and advancing efficient reforms. Due to the economic potential of blockchains and other relevant technologies, regulation of crypto will remain one of the important topics on the agenda of policymakers, the SEC, and the CFTC. Our empirical evidence supports the call for a comparative reassessment and reform of the currently fragmented regulatory approaches to cryptoassets. The central role of U.S. regulators in the global world of finance makes this need for reform more pressing.

¹⁹¹ Eakeley & Guseva, *supra* note 89.

¹⁹² It has been argued, however, that the SEC stemmed the tide of unregulated, unregistered ICOs and possibly pierced the emerging asset bubble. *See, e.g.,* Dell’Erba, *supra* note 189; Daniel Roberts, *SEC Quietly Widens Its Crackdown on Token Sales*, DECRYPT (Oct. 10, 2018), <https://decrypt.co/3622/sec-tightens-the-noose-on-ico-funded-startups>.

¹⁹³ Securities & Exchange Commission, *Our Goals* (Apr. 6, 2023), <https://www.sec.gov/our-goals>.