CLARIFYING CRYPTO: A UNIFIED MARKET STRUCTURE TAXONOMY

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This Article confronts a fundamental paradox of today's digital economy: crypto has become a multi-trillion-dollar sector increasingly central to federal policy, yet consensus on basic legal and economic questions remains dangerously thin. As Washington considers sweeping market-structure reforms, that disconnect undermines effective oversight, leaving policymakers struggling to distinguish genuine innovation from speculative ambiguity.

The Article bridges these doctrinal and regulatory gaps through a comprehensive, data-driven taxonomy that organizes the universe of 10,000-plus crypto instruments into distinct categories based on legal and economic reality—substance, not label or form. The framework demonstrates that most legitimate crypto assets closely parallel familiar constructs—such as debt, equity, and loyalty rewards—and should be regulated as such. The analysis also shows how crypto assets lacking discernible rights or coherent analogs often reflect obfuscation rather than novelty.

Leveraging this multi-faceted framework, the Article proposes a policy blueprint of actionable reforms to rationalize the regulatory architecture, enhance consumer protection, and harmonize jurisdictional frictions at a most critical legislative juncture.

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INTRODUCTION

*"**Crypto regulations will be written by people who love the industry**."* – President Donald J. Trump[2]

> *"**You start with a [box] . . . dress it up . . . .[but] it does literally nothing**"* – Samuel Bankman-Fried, former CEO of FTX[3]

Imagine two friends, similarly situated in all relevant respects. Watching a football game, they see two ads: Peyton Manning explaining how Nationwide is "more than insurance," followed by Tom Brady pitching FTX.[4] One purchases a Nationwide product, automatically benefiting from a highly developed, time-tested regulatory architecture governing nearly all facets of the investment. The other buys crypto—and gets nothing. No oversight or protection. Oftentimes, none of their money back.

Why? What justifies treating these parties so differently?

That is the unresolved—and increasingly urgent—challenge at the heart of modern crypto policy. For years, sector oversight has been paralyzed by the gating question of whether to treat crypto as *sui generis* or to utilize existing regulatory frameworks. That indecision has proven costly, with millions of defrauded customers, trillions in value destruction – and little actual innovation to show for it.

This Article argues that the answer is far simpler than most assume. As Judge Frank Easterbrook famously explained, we did not need new law for "property in cyberspace" for broadly similar reasons that we did not have a "law of the horse."[5] That is to say, our existing common law frameworks have consistently proven quite capable of addressing the most nuanced of issues, agnostic as between bits, atoms, or stallions. Indeed, he cautioned against adopting "new law" for new issues to avoid isolating technology from the essential context and institutional guideposts provided by existing systems.[6] Treating crypto as exceptional risks committing the very error Judge Easterbrook warned against.

Electric vehicles, for instance, represent a clear change relative to internal combustion. Substantive technological and policy considerations may warrant distinct treatment across some dimensions. Yet, we

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[2] President Donald J. Trump, *Keynote Speech at the Bitcoin 2024 Conference* (July 27, 2024), BITCOIN MAGAZINE. https://www.pbs.org/newshour/politics/what-does-a-trump-administration-mean-for-crypto
[3] Matt Levine, *Sam Bankman-Fried on How to Make Money in Crypto*, ODD LOTS PODCAST (2022), https://www.youtube.com/watch?v=KZYqL79GDXU
[4] Nationwide Mutual Insurance Company, *Nationwide is So Much More (Paintin' Manning),* YOUTUBE (Sept 5, 2024), https://www.youtube.com/watch?v=_fyuCB0sxMQ; FTX, *You In? Tom Brady, Gisele Bundchen*, YOUTUBE (Sept 9, 2021), https://www.youtube.com/watch?v=-2nqN3uGi98
[5] Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, U. CHI. LEGAL F. (1996) ("Only by putting the law of the horse in [] context . . . could one really understand the *law* about horses.").
[6] *Id.*; *See also* J.B. Ruhl & James Salzman, *Climate Change Meets the Law of the Horse*, 62 DUKE L.J. 975–1027 (2013).

do not default to scrapping existing regimes to start from scratch. EVs still have wheels and airbags; their drivers are subject to speed limits and DUI laws.

Why entertain the premise of crypto being exempt from basic logic underlying market regulation?

The disconnect has familiar antecedents. Oversight has long struggled to keep pace with technology, from railroads to dotcoms and derivatives. The crypto sector's scale and political momentum, however, amplify the stakes, particularly as Congress considers sweeping market-structure reforms that could lock in key policy decisions for years to come.[7]

Indeed, even after disasters like FTX, crypto oversight continues to fail consumers – and the abuses are only growing.[8] More ominously, legislative proposals predicated on crypto exceptionalism risk not only exempting the sector from oversight but also upending broader financial regulation in the process. For instance, through so-termed "tokenization," existing assets like stocks, bonds and real estate can be represented on blockchain rails and, voilà, they become crypto. If crypto-favorable legal treatment turns on labels rather than substance, tokenization risks becoming a $30 trillion conduit for regulatory arbitrage and the circumvention of long-standing safeguards.[9]

Global policymakers have long recognized that better understanding crypto starts with a robust asset taxonomy.[10] However, reflecting the challenges of operating at the cutting edge of law, technology and finance, existing attempts have fallen short.[11] This Article fills that critical void with a comprehensive, unifying framework for the full universe of crypto assets. The model synthesizes and expands upon prior approaches, drawing from multi-disciplinary insights, regulatory first principles and empirical analyses to bridge gaps in scholarship and advance the policy conversation.

The Article begins with a brief background, focusing on technological terms and financial concepts that are often misapplied in the crypto realm.[12] It then traces the sector's rapid evolution from a single fringe instrument to a 10,000-asset, multi-trillion-dollar market.[13] That growth funded sophisticated advocacy that exploited balkanized oversight to create a regulatory grey area where crypto scaled rapidly, often

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[7] Rana Foroohar, *The Coming Crypto Crisis*, FIN. TIMES, (July 27, 2025), https://www.ft.com/content/efc848c0-0990-4623-98ed-1176e97f04cb (arguing that crypto will "cause the next financial crisis . . . It's all too reminiscent of 2000").
[8] *See infra* n. 165 (describing recent "Presidential Meme Coin").
[9] Steven Hu, *Real World Asset Tokenization: A Game Changer for Global Trade*, STANDARD CHARTERED (2024) (estimating $30 trillion tokenization market by 2034).
[10] The IMF has observed that "no internationally agreed taxonomy exists for crypto assets" despite the fact that "[a] globally consistent taxonomy would help create common regulatory standards and approaches." *See* PARMA BAINS ET AL., REGULATING THE CRYPTO ECOSYSTEM, THE CASE OF UNBACKED CRYPTO ASSETS (2022).
[11] *See infra* Appendix I.
[12] *See infra* Part I.
[13] *See infra* Part I.C.

normalizing practices plainly impermissible in traditional markets.[14] In retrospect, crypto's lobbying may have been too effective, as industry-developed jargon created definitional uncertainty that continues to confound regulators, jurists, and market participants alike.

The Article then presents its foundational contribution: a substance-over-form framework to segment crypto assets and map them to existing legal classification.[15] Methodologically, the taxonomy is organized as a three-tier hierarchy with increasing levels of specificity. First, it segments the crypto universe into three core (Tier 1) groups: (i) Infrastructure & Stored Value, reflecting mature assets comprising over 80% of sector value; (ii) Security & Utility Crypto, encompassing the most legally fraught assets; and (iii) Liability-Based Instruments. Second, it divides the Tier 1 groups into 10 categories (Tier 2), including Infrastructure Coins, Store of Value Coins, Stablecoins and Meme Coins. Finally, the Tier 2 categories are further divided into 17 unique sub-categories (Tier 3) – creating the first mutually exclusive and collectively exhaustive taxonomy of crypto assets.

Subsequent analyses build on that organizing framework to illustrate the demarcations between sub-categories which, in turn, facilitates appropriate regulatory classification within existing paradigms.[16] The analysis shows that most crypto assets have clear traditional finance analogs that represent the logical baseline for regulatory treatment. Crypto without substantive parallels often simply lacks substance.

Long-standing legal principles emphasize consistency between asset-specific economic reality, market understanding and regulatory categorization. Reflecting crypto's lawless roots, however, the analysis finds a sector plagued by stark incongruencies across these dimensions. That disconnect explains and exacerbates crypto's contemporary challenges – and must be reconciled for it to move forward.

After diagnosing these issues, the Article turns to solutions, offering practical and empirically grounded recommendations to harmonize treatment for comparable risks and assets – treating "like alike," irrespective of form or label.[17] It then outlines steps to rationalize regulatory architecture,[18] improve asset oversight and protect consumers while supporting productive innovation.[19]

This Article is organized in four parts. Part I sets the stage with a brief background regarding crypto's technology, financial concepts and regulatory challenges. Part II details the Article's foundational crypto asset taxonomy and presents associated market analyses. Part III delves into the taxonomy's asset

[14] *See infra* Part I.D.
[15] *See infra* Part II.
[16] *See infra* Part III.
[17] *See infra* Part IV.
[18] *See infra* Part IV.A.
[19] *See infra* Part IV.B.

categories, detailing the economics, market perception and regulatory treatment, while emphasizing salient discrepancies. Part IV presents proposals to rationalize sector oversight and enhance consumer protection.

I. CRYPTO IN CONTEXT

Crypto is complicated. The hodgepodge of acronyms, memes and get-rich-quick schemes is objectively confusing – and oftentimes intentionally so. Further, as cynics have long suspected, and calamities like FTX confirmed, the sector suffers from no shortage of snake oil. Yet, notwithstanding the skepticism, crypto is also a nearly $4 trillion sector, poised for significant further growth through tokenization – forecast to reach up to $30 trillion of assets by 2034 – as well as the adoption and maturation of adjacent technologies, including blockchain, smart contracts and generative AI.[20]

Part I of the Article sets the stage for the broader discussion with a brief background, organized in four sections. First, it outlines some technical and terminological background relevant for subsequent analyses. Then, it discusses foundational finance concepts, focusing on currency and other core asset classes. Third, it briefly charts the sector's evolution and associated growing pains. Finally, it discusses the regulatory schema, focusing on crypto's uneasy fit within America's notoriously complex regulatory system.

A. Tech: Blockchain ≠ Crypto

During the depths of the 2008 financial crisis, a now-seminal, anonymously authored paper presented a system where "online payments [could] be sent from one party to another without going through a financial institution."[21] Building off earlier research,[22] this system – later dubbed "Blockchain 1.0" – introduced key innovations to overcome challenges that plagued earlier iterations of digital 'money,'[23]

[20] Steven Hu, *Real World Asset Tokenization: A Game Changer for Global Trade*, STANDARD CHARTERED (2024) (estimating $30 trillion tokenization market by 2034); *Approaching the Tokenization Tipping Point*, BCG (Apr. 2025) (estimating $18 trillion of tokenized assets by 2033); *Money, Tokens, and Games: Blockchain's Next Billion Users and Trillions in Value,* CITI GPS (Mar. 2023) (estimating $5 trillion of tokenized assets by 2030).
[21] Satoshi Nakamoto, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM (2008). Satoshi Nakamoto is understood to be pseudonym for a developer or group of developers, the identity of which remains unknown.
[22] *See* DAVID CHAUM, COMPUTER SYSTEMS ESTABLISHED, MAINTAINED, AND TRUSTED BY MUTUALLY SUSPICIOUS GROUPS (1982); NICK SZABO, BITGOLD (1998).
[23] Early 1980s vintage "cryptocurrencies" like Digicash and Ecash failed because of the "double spend" problem (multiple uses of the same digital key), which Bitcoin solved. Matt Levine, *The Crypto Story*, BLOOMBERG (Oct. 25, 2022), https://www.bloomberg.com/features/2022-the-crypto-story/?sref=OOpRUZ8l#life-in-databases ("Bitcoin demonstrated a way for me to send you a computer message so that you'd have it and I wouldn't, to move items of computer information between us in a way that limited their *supply* and transferred *possession*.")

including the so-termed "double spend" problem.[24] Bitcoin,[25] the first modern crypto asset launched in 2009 to serve as the associated unit of account.[26]

Taking a step back, blockchain is a specific type of distributed ledger technology (DLT). DLT represents the "foundational innovation underlying the crypto-asset ecosystem"[27] because it can facilitate "nearly immutable" transactions between parties who do not trust each other—without an intermediary between them. Removing that intermediation layer drives much of the excitement around value creation through DLT and crypto.[28] Amongst DLT sub-types, blockchain is distinguished by its data structure, which records transaction information as sequential cryptographically-linked data blocks, creating an immutable but independently verifiable record.[29]

Operationally, blockchain's complex technology achieves the conceptually straightforward utility of "providing a distributed yet provably accurate record."[30] In simplest terms, it is not unlike *an advanced database technology*[31] with sophisticated cryptography[32] providing distributed, streamlined and secure recordkeeping.[33]

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[24] The challenge stems from a game theoretical issue termed the "Byzantine General Problem." *See* LESLIE LAMPORT, ET AL, THE BYZANTINE GENERAL PROBLEM (1982), https://lamport.azurewebsites.net/pubs/byz.pdf

[25] "Bitcoin" is capitalized in reference to the system as a whole, and lowercase when referencing a unit of currency.

[26] As Professor Werbach observes, "many of the concepts in Nakamoto's paper were familiar to cryptographers, but the system was implemented in a novel and elegant way to create a private, decentralized form of digital cash, called bitcoin." Kevin Werbach, *Trust, But Verify: Why the Blockchain Needs the Law*, 33 BERK. TECH. L.J. 489, 493, 500 (2018) [henceforth, 'TRUST BUT VERIFY].

[27] FIN. STABILITY OVERSIGHT COUNCIL, REPORT ON DIGITAL ASSET FINANCIAL STABILITY RISKS AND REGULATION 7 (2022), https://home.treasury.gov/system/files/261/FSOC-Digital-Assets-Report-2022.pdf.

[28] Appreciating the potential requires taking a step back. If a company represents a nexus of contracts, the global economy reflects networks of companies, linked by billions of transactional counterparty obligations. The complexities and contingencies underlying transactions drive the need for intermediation, adding costs and frictions—which DLT can theoretically mitigate.

[29] The technical architecture consists of: (i) blocks; (ii) cryptographic hashes; (iii) consensus mechanisms; and (iv) network nodes. *See*, U.S. GOV'T ACCOUNTABILITY OFF., GAO-19-704SP, *Science & Tech Spotlight: Blockchain & Distributed Ledger Technologies* (Sept. 16, 2019), https://www.gao.gov/assets/gao-19-704sp.pdf.

[30] TRUST BUT VERIFY, *supra* note 25, at 491.

[31] That observation is intended to contextualize rather than trivialize blockchain's significance—after all, "[m]odern life consists in large part of entries in databases." Matt Levine, *The Crypto Story*, BLOOMBERG (Oct. 25, 2022), https://www.bloomberg.com/features/2022-the-crypto-story/?sref=OOpRUZ8l#life-in-databases ("Saying that modern life is lived in databases means, most of all, that modern life involves a lot of trust.").

[32] IBM, *What Is Cryptography?*, https://www.ibm.com/think/topics/cryptography (last visited July 4, 2025) ("Cryptography is the practice of developing and using coded algorithms to protect and obscure transmitted information . . . .so that unauthorized parties are unable to access them.")

[33] Blockchain offers two benefits relative to existing tools: (1) allows confidence in transactions without trusting individual counterparties; (2) reduced transaction costs through single distributed ledger (replacing multiple private ledgers). TRUST BUT VERIFY, *supra* note 25, at 491 ("The software enabling this uses digital cryptography and game-theoretic incentives to make it difficult to cheat the system.").

The structural relationship between crypto and blockchain is that permissionless (public) ledgers—open systems available to anyone—"incentivize activity"[34] through internal "currency" broadly termed "utility tokens," as described below.[35] Permissioned ledgers (closed systems) do not require such incentives and thus do not use internal currency.[36]

A logical corollary is that blockchain is not analogous to crypto. To the contrary, the former is a broad enabling technology, while the latter is a facet relating to a sub-set of applications of that technology.[37] Indeed, some have posited that "[t]he worst use that ever came out for blockchain was currency. . . its halted a lot of innovation."[38]

Terminologically, it is important at the onset to clearly delineate some commonly used but often conflated concepts, for which this Article generally incorporates internationally recognized standards developed by multi-lateral organizations, including the IMF, FSB and IOSCO:

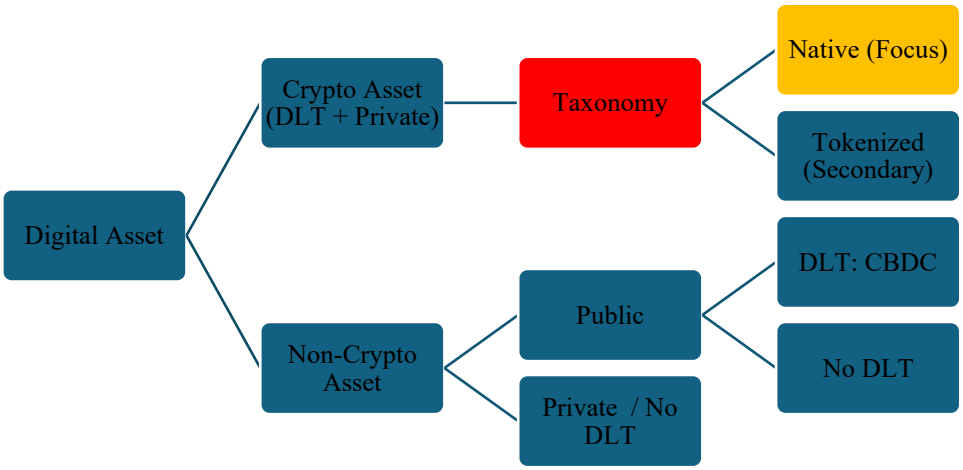
- "Digital Asset," is a broad umbrella term that refers to "[a] digital representation of value or contractual rights which can be used for payment or investment purposes."[39]
- "Crypto Asset" is a sub-set of digital assets, issued by the private sector and "that depends primarily on cryptography and distributed ledger or similar technology."[40]

In essence, all crypto assets are digital assets, but not all digital assets are crypto assets. The key distinction is that crypto assets specifically use cryptographic technology (usually blockchain) as their foundation, whereas digital assets include any digitally stored or capture item of value, regardless of the underlying

[34] One way of looking at it is that while blockchain can reduce the power of intermediaries, it cannot create altruists; market participants still need incentives to make the systems operable, which crypto provides. *See id.*at 498.
[35] As detailed below, "currency" is something of a misnomer, as most crypto assets are more analogous to other constructs. *See infra* Part III.
[36] LACChain, *Framework for Permissioned Public Blockchain Networks: From Blockchain Technology to Blockchain Networks* 12 (2020), https://publications.iadb.org/publications/English/document/LACChain-Framework-for-Permissioned-Public-Blockchain-Networks-From-Blockchain-Technology-to-Blockchain-Networks.pdf ("In permissioned networks there is no need to simulate validator nodes by rewarding them with a cryptocurrency.").
[37] David Solomon, *Blockchain Is Much More Than* Crypto, WALL ST. J. (Dec. 6, 2022), https://www.wsj.com/articles/blockchain-is-much-more-than-crypto-david-solomon-goldman-sachs-smart-contracts-11670345993.
[38] *See* Casper Labs, *Blockchain Hub Davos | Day 0 (Bonus Day!)*, YOUTUBE (Jan. 16, 2023), https://www.youtube.com/watch?v=zyTeQKnu1tA (Panel Interview with David Branch, Consensus Capital).
[39] INT'L MONETARY FUND & FIN. STABILITY BD., *IMF-FSB Synthesis Paper: Policies for Crypto-Assets* (Sept. 7, 2023) at 43.
[40] *See id.* at 42 (defining "crypto-asset ecosystem" as "[t]he entire ecosystem that encompasses all crypto-asset activities, market and participants").

technology. The diagram below summarizes the hierarchy, with the portions in red and orange highlighted as the focus of this Article:[41]

Figure 1. Digital Assets v. Crypto Assets



The evolution of blockchain technology has introduced two new and increasingly important concepts:

- "Smart contracts," which refer to "[c]ode deployed in a distributed ledger technology environment that is self-executing and can be used to carry out certain "if/then" type computations."[42]
- "Tokenization," which refers to "the process of generating and recording a digital representation of traditional assets on a programmable platform."[43]

In other words, there are two ways an asset can be recorded on a cryptographic technology: (i) it can start "digitally native" (on-chain) or (ii) it can be "tokenized," starting as a "real world asset (RWA)" (off-chain) and subsequently transitioned on-chain.[44] A critical implication is that tokenization, rather than digitally

[41] As discussed in Part II, this framework also illustrates why certain assets (such as CBDCs and NFTs) are expressly excluded from this Article's taxonomical framework and analyses.
[42] INT'L ORG. OF SEC. COMM'NS, POLICY RECOMMENDATIONS FOR CRYPTO AND DIGITAL ASSET MARKETS FINAL REPORT (2023).
[43] BANK FOR INT'L SETTLEMENTS & COMM. ON PAYMENTS & MKT. INFRAS., CPMI Papers No. 225, TOKENISATION IN THE CONTEXT OF MONEY AND OTHER ASSETS: CONCEPTS AND IMPLICATIONS FOR CENTRAL BANKS (Oct 2024).
[44] In computer science, "Tokenization" is defined as the process of breaking text into smaller units called tokens, which serve as the basic units of processing for natural language processing (NLP) systems – a fundamental technique with applications across computational linguistics, machine learning, and information retrieval. The definition (and substantive processes) are, however, conceptually adjacent and technically related. *See* Yonghui Wu, et al., *Google's Neural Machine Translation System: Bridging the Gap between Human and Machine Translation* (Sept. 26, 2016); Taku Kudo & John Richardson, *SentencePiece: A simple and language independent subword tokenizer and detokenizer for Neural Text Processing*, in *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing: System Demonstrations* 66–71 (2018).

native issuance, is likely to drive crypto asset growth, with forecasts of an $18-30 trillion tokenization market by the mid-2030s.[45] As discussed in Part IV, while this has the potential to significantly improve legacy operations, it introduces immense legal risks and potential for regulatory arbitrage in connection with prospective crypto-specific legal frameworks and legislation.

B. Finance: Crypto ≠ Currency

Continuing with untangling the substantive and terminological incongruencies plaguing crypto, this section focuses on foundational finance concepts. In simplest terms for our present purposes, four core asset types can be understood to represent the fundamental building blocks underlying global financial markets and products:[46]

- **Equity** (or "stock"). An ownership interest in an asset, which may include a company, real estate or a diversified fund.[47]
- **Debt**. Contractual and liability-based instruments, ranging from bonds and loans to contingent claims, referencing entities including (but not limited to) corporates, sovereigns and real assets.[48]
- **Commodity**.[49] A fungible good or standardized intangible interest – including raw materials (such as grain, metals, energy product or mineral) or agricultural products – often traded, or capable of being traded, in organized spot or derivative markets.[50]

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[45] Steven Hu, *Real World Asset Tokenization: A Game Changer for Global Trade*, STANDARD CHARTERED (2024) (estimating $30 trillion tokenization market by 2034); *Approaching the Tokenization Tipping Point*, BCG (Apr. 2025) (estimating $18 trillion of tokenized assets by 2033); *Money, Tokens, and Games: Blockchain's Next Billion Users and Trillions in Value,* CITI GPS (Mar. 2023) (estimating $5 trillion of tokenized assets by 2030).

[46] There are many variations on the asset class taxonomy, with modern finance practitioners (or at least marketers) seemingly recognizing an ever-expanding menu, from private equity to hedge funds and private credit. However, from first principles, these branding innovations are firmly rooted in the above foundations – as are crypto assets.

[47] Global total of $123.6 trillion ($60Tr US). *See* Christina Kostandi, *The $124 Trillion Global Stock Market, Sorted by Region*, VISUAL CAPITALIST (Feb. 26, 2025), https://www.visualcapitalist.com/124-trillion-global-stock-market-by-region/

[48] SEE INT'L MONETARY FUND, CHAPTER 4: CLASSIFICATION OF FINANCIAL ASSETS AND LIABILITIES, IN MANUAL ON FINANCIAL SOUNDNESS INDICATORS 4.72, 4.66 (2006) (defining debt securities such as bonds and credit-linked notes backed by loans, bonds, mortgages, and other assets types); *see also* Investment & Loans Guide, RSM US LLP, at 3 (Dec. 2023) (listing convertible debt, commercial paper, securitized debt [CMOs, RMICs], corporate and municipal bonds).

[49] This category is often (and perhaps not unreasonably) termed "alternatives." However, for purposes of this article "commodity" is used due to the regulatory operation of that term, as well as its innate ties to core crypto concepts.

[50] See Black's Law Dictionary (11th ed. 2019) (defining 'commodity' as "A fungible article of commerce that can be bought and sold; esp. a raw material (such as grain, metals, or a mineral) or an agricultural product."); Commodity Exchange Act, 7 U.S.C. § 1a(9) ("The term 'commodity' means wheat, cotton, rice, corn … and all other goods and articles … and all services, rights, and interests in which contracts for future delivery are presently or in the future dealt in."); Markets in Financial Instruments Regulation (MiFIR), Art. 2(1)(30) (cross-referenced by MiFID II, Art. 4(1)(50)) ("Commodity derivative' means a derivative contract relating to a commodity or to an underlying . . . enumerated in Annex I, e.g., energy, metals, agriculturals [sic], climatic variables, freight, inflation, etc.)"); HULL, OPTIONS, FUTURES & OTHER DERIVATIVES 11th ed. (2022), ch 5 ("A commodity is a physical asset—often a raw material or energy product—traded in standardized form on organized spot or derivative markets.")

- **Currency**.[51] Physical or dematerialized medium of exchange that circulates in commerce, including coins, banknotes, scriptural money, and e-money.[52] Statutory and academic definitions consistently include a requirement of authorization as legal tender by a sovereign or monetary union.[53]

Of the four asset classes, "currency" is in many respects the most complex and misunderstood. As a threshold matter, per modern accepted academic and regulatory definitions, "currency" formally has a governmental nexus. Substantively, as discussed in greater detail below, "currency" is commonly understood to serve three basic purposes as: (i) a unit of account; (ii) store of value; and (iii) medium of exchange. The medium of exchange function inherently drives some category confusion in respect of other asset classes.[54] For instance, a dollar can be retained as a unit of U.S. currency, or exchanged for equity, debt, commodities or a foreign currency.[55]

Crypto's critical terminological challenge has been that it not only collectively straddles aspects of each asset class, but also that it does so in an exceptionally ill-defined manner inconsistent with regulatory and market practices. The nomenclature mismatch starts with the term "cryptocurrency,"[56] which poorly describes any crypto assets, let alone the entire sector. Correspondingly, it represents a logical starting point for correcting misconceptions.[57]

There is indeed a strange dissonance underlying the premise of digital "money" without institutions, in that it is preposterous yet also strangely pedestrian. Logically, it makes little sense to ascribe value to newly-

[51] From an accounting perspective, this category may be termed "cash & cash equivalents" and include short-term US Treasuries, money market funds and certain bank deposits. Certain of those categories are expressly excluded here to zero-in on the fundamental first-principles elements of 'currency.'
[52] Black's Law Dictionary, 11th ed. (2019) ("*Currency*—coined money and such bank-notes or other paper money as are authorized by law and do in fact circulate from hand to hand as the medium of exchange.")
[53] See, Uniform Commercial Code § 1-201(b)(24) ("*Money* means a medium of exchange currently authorized or adopted by a domestic or foreign government."); Bank-Secrecy-Act rules, 31 C.F.R. § 1010.100(m) ("*Currency* means the coin and paper money of the United States or of any other country that is designated as legal tender and that circulates and is customarily used and accepted as a medium of exchange in the country of issuance."); Mann & Proctor, *The Legal Aspect of Money* (8th ed. 2020) §2.02 (describing currency as "that portion of a state's money supply which has legal-tender status and circulates hand-to-hand in everyday commerce.")
[54] While certain types of debt (particularly U.S. Treasuries) can be used as a medium of exchange, and companies may use their own equity to fund transactions, these other variations of overlap are far more limited in scale.
[55] The formal position of USD as an obligation of the U.S. also in some respects makes it a debt, but that raises questions beyond our present scope. *See* JAROMIR BENES & MICHAEL KUMHOF, THE CHICAGO PLAN REVISITED (2022) (describing the narrow banking model advocated by many scholars following the Great Depression).
[56] TRUST BUT VERIFY, *supra* at 491 n.7. (defining "cryptocurrency" as "a form of digital money secured not through the backing of a state or financial institution, but through cryptography").
[57] See, Part III.A (discussing Security & Utility Crypto assets).

created digital assets. Yet, humans have a long history of doing just that—from shiny metals[58] to tulips[59] to Pokémon cards and beanie babies.[60] After all, what is the immutable logic of gold having value but not Bitcoin?[61]

Furthermore, while "currency" formally has a government nexus, the long history of "quasi-currency" in various forms – from cowrie shells, to gold, bank-issued 'currency,' and loyalty programs – makes the idea far less novel than it initially appears. For instance, before the Civil War, individual U.S. banks often issued their own "money," [62] resulting in 8,000 or so vintages with geographically limited utility.[63] This state of affairs persisted until the North's push for a central currency though the 1863 National Currency Act[64] and taxation levels that drove local bank currencies "out of existence."[65] In the modern era, near-ubiquitous loyalty program points have evolved into a "valuable, aspirational currency" and key profit center for issuers and financial institutions.[66] In many respects, crypto represents an evolution of that construct with the distinct innovation of technology and decentralization disintermediating dependence third parties, be they governments (U.S. Dollars), financial institutions (pre-Civil War U.S. currency) or other entities (rewards programs).[67]

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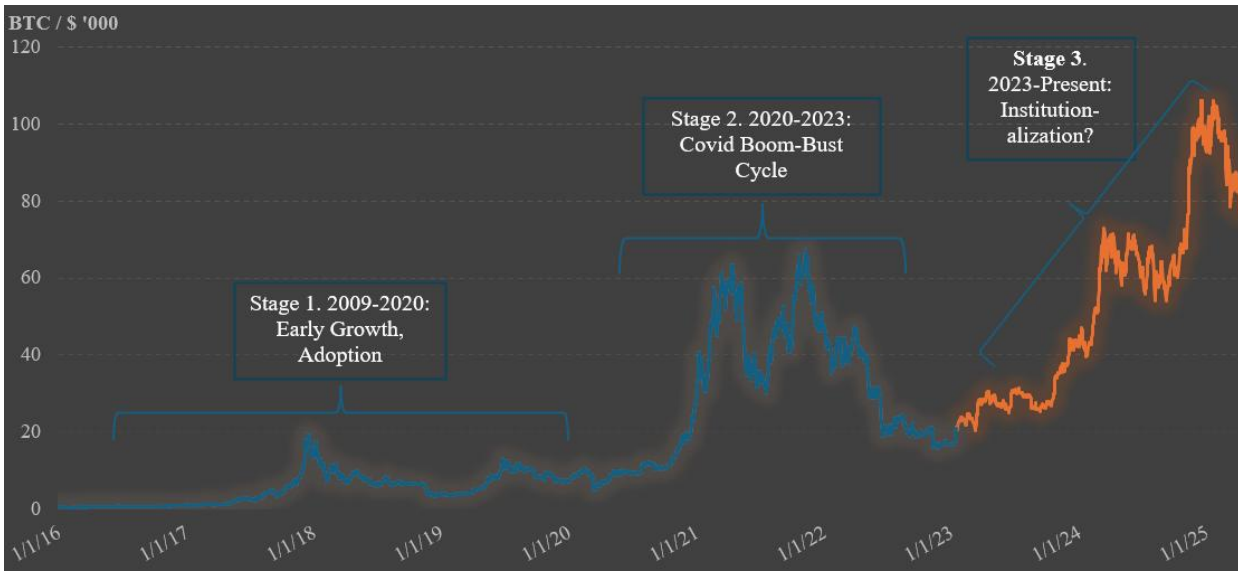
[58] *See generally* Eric Rauchway, Opinion, *Why Republicans Still Love the Gold Standard*, N.Y. TIMES (Nov. 13, 2015), https://www.nytimes.com/2015/11/13/opinion/campaign-stops/why-republicans-still-love-the-gold-standard.html.
[59] *See* Ryan Vlastelica, *Why Bitcoin Is Now the Biggest Bubble in History: In One Chart*, MARKETWATCH (Dec. 14, 2017), https://www.marketwatch.com/story/why-bitcoin-is-now-the-biggest-bubble-in-history-in-one-chart-2017-12-13 (until Bitcoin in 2017, "the Dutch tulip mania in the 1600s [] previously reigned as history's biggest" bubble).
[60] Jamie Powell, *Looking Back at The Beanie Baby Bubble*, FIN. TIMES (Oct. 8, 2019), https://www.ft.com/content/1563d643-332f-3887-8c6e-caf7435f396a.
[61] *See supra*, Part III.A (discussing gold and Bitcoin as constituting the "store of value market").
[62] Rose Eveleth, *Before The Civil War, There Were 8,000 Different Kinds of Money in the U.S.*, SMITHSONIAN MAG. (Dec. 12, 2012), https://www.smithsonianmag.com/smart-news/before-the-civil-war-there-were-8000-different-kinds-of-money-in-the-us-158310489/; Planet Money, *Episode 421: The Birth Of The Dollar Bill*, NAT. PUB. RADIO (Dec. 7, 2012), https://www.npr.org/sections/money/2012/12/07/166747693/episode-421-the-birth-of-the-dollar-bill.
[63] This is because merchants located far from the issuing bank were reluctant about its value, requiring "a discount or wouldn't take it at all." *See*, Livia Gershon, *Banks' Own Private Currencies In 19th-Century America*, JSTOR DAILY (May 29, 2021), https://daily.jstor.org/banks-own-private-currencies-in-19th-century-america.
[64] *1863–1865: Founding of the National Banking System*, OFFICE OF THE COMPTROLLER OF THE CURRENCY, https://occ.gov/about/who-we-are/history/1863-1865/index-occ-history-1863-1865.html (Aug. 9, 2023).
[65] Eric Foner, *The Hidden Story Of The North's Victory In The Civil War*, N.Y. TIMES (Mar. 8, 2022), https://www.nytimes.com/2022/03/08/books/review/ways-and-means-roger-lowenstein.html ("[during the Civil War, Treasury Secretary Salmon] Chase and the bankers were 'fighting over the definition of money' and who should issue and control it, the government or private institutions.").
[66] *See supra*, Part III. *See also*, Lev E. Breydo, *The Broken Token Problem*, Part III.B. *See also*, Steve Saxon & Thorsten Spickenreuther, *Miles Ahead: How to Improve Airline Customer-Loyalty Programs*, MCKINSEY & CO. (Sept. 10, 2018), https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/miles-ahead-how-to-improve-airline-customer-loyalty-programs.
[67] It is difficult to appreciate the socio-cultural phenomenon around crypto generally, and Bitcoin specifically, without the 2008 financial crisis – "a moment that cleaved our country. It broke a social contract . . . a sense of trust [including] in financial institutions and [] government." Andrew Ross Sorkin, *From Trump to Trade, The Financial Crisis Still Resonates 10 Years Later*, N.Y. TIMES (Sept. 10, 2018),

C. Sector Evolution

Over the last 15 years crypto has experienced a volatile yet ferocious ascent, capturing the zeitgeist of the 2010s inter-crisis decade while benefiting from powerful tailwinds including tech sector growth, distrust of institutions and accommodative monetary policy.[68] For our purposes, crypto's evolution can be described through three stages, shown in Figure 2 below, which charts the price of Bitcoin from 2014 (the first year with available data) to 2025.[69] Stage 1 began in 2009 and reflects in large part an ongoing technology story. Stage 2 was a finance story, evidenced by a boom-bust cycle of historic magnitude. Stage 3, starting from mid-2023 may be a regulation-driven story, with the sector now seemingly on a glidepath towards institutionalization.

Figure 2. Sector Growth Phases



Stage 1 reflects three partially over-lapping sub-phases of technological evolution, critical to understanding the current crypto asset landscape:

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https://www.nytimes.com/2018/09/10/business/dealbook/financial-crisis-trump.html. Concerns around trust in government permeated the original Bitcoin white paper and subsequent culture of crypto adopters.

[68] It is difficult to appreciate the socio-cultural phenomenon around crypto generally, and Bitcoin specifically, without the 2008 financial crisis – "a moment that cleaved our country. It broke a social contract . . . a sense of trust [including] in financial institutions and [] government." Andrew Ross Sorkin, *From Trump to Trade, The Financial Crisis Still Resonates 10 Years Later*, N.Y. TIMES (Sept. 10, 2018), https://www.nytimes.com/2018/09/10/business/dealbook/financial-crisis-trump.html. Concerns around trust in government permeated the original Bitcoin white paper and subsequent culture of crypto adopters.

[69] The chart begins in 2014 (rather than 2009) for illustrative purposes, and to due to limited availability of reliable data before late 2014. In an earlier Article, focusing on the collapse of FTX and sector contagion, I present the 2014-2023 period as a five-phase model which is modified here to reflect a distinct orientation consistent with the focus of this Article. BTC prices are based CoinMarketCap data.

- **Blockchain 1.0** (2008-2013). Bitcoin marked the introduction of the first practical blockchain implementation, though its limited functionality constrained ecosystem development and mainstream adoption.
- **Blockchain 2.0** (2013-2017). The next phase expanded blockchain functionality beyond simple transactions with the 2015 introduction of Ethereum, a blockchain platform with built-in programming capabilities and newly-introduced "Smart Contracts." Ethereum[70] significantly expanded use cases[71] while providing a technological foundation that facilitated a proliferation of new crypto assets, often through so-termed "Initial Coin Offerings."[72]
- **Blockchain 3.0** (2015-present). This currently ongoing evolution of blockchain focuses on permissioned ledgers and enterprise applications, including the introduction of Corda, the Hyperledger Project and JPMorgan's Quorum,[73] as well as interoperability through cross-chain protocols like Polkadot and Cosmos.[74]

Stage 2 was characterized by an unprecedented Covid-era bull-market, followed by a violent sector collapse with $2 trillion of value destruction and cascading Crypto Platform bankruptcies that cost millions their lifesavings.[75] The chart below shows the proliferation of new crypto assets between 2010 and 2025. The most remarkable takeaway is that while Blockchain 2.0 and 3.0 facilitated new use cases, it was arguably the run-up in crypto prices that drove growth. Between 2020 and 2022, the number of crypto assets skyrocketed four-fold, from 2,403 to 8,714.[76]

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

[71] Many tokens use Ethereum's ERC-20 technical standard. *See ERC-20 Token Standard*, ETHEREUM (May 30, 2023), https://ethereum.org/en/developers/docs/standards/tokens/erc-20.

[72] *See* Shaanan Cohney, et al., *Coin-Operated Capitalism*, 119 COLUM. L. REV. 591, 661-676 (2019) (detailing 50 largest ICOs of relevant period).

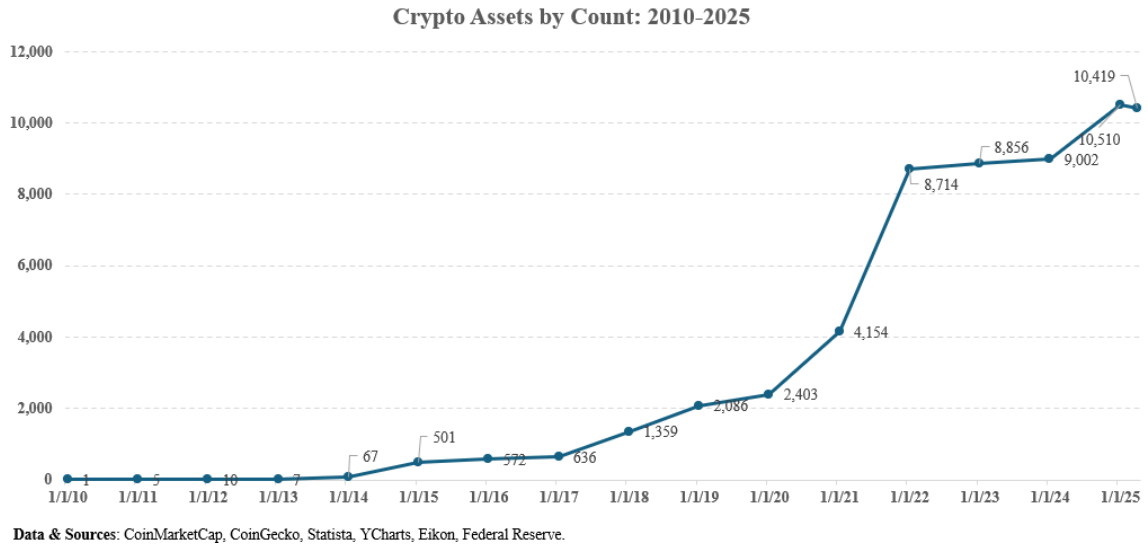
[73] "These permissioned systems offer advantages in transaction throughput, privacy, and regulatory compliance compared to public blockchains, at the cost of some degree of decentralization." *See* Vincent Gamoli, *From Blockchain Consensus Back to Byzantine Consensus*, 107 FUTUR. GENER. COMPUT. SYST. 760–769 (2020).

[74] *See infra* Part III.

[75] *See* Lev E. Breydo*, Contagion. FTX, A Sector's Crisis & Crypto's Silent Victims*, 98 AM. BANKR. L.J., 97 (2024) (detailing sector collapse, including that of FTX, Celsius, and Voyager).

[76] It is difficult to estimate the precise number of crypto assets given a lack of reliable centralized data sources as well as the propensity for 'zombie crypto' assets to linger in existence despite effective dormancy. (This presents a contrast to OTC stocks, for instance, given limited costs of maintaining an asset on-chain as well as potential difficulties in extinguishing it.) Some sources provide estimates in excess of 20,000 crypto assets. Methodologically, this Article's analysis overcomes the data quality challenges by cross-checking multiple sources and using volume-based measures to ensure ongoing activity. Data based on CoinMarketCap, CoinGecko, Statista, YCharts, Eikon, Federal Reserve.

Figure 3. Assets Outstanding by Count (2010-25)



Yet, just as many left the sector for dead, crypto showed its unique resilience, with Stage 3 marked by stabilization followed by record-breaking prices driven by the exogenous boon of a uniquely receptive White House. Indeed, the administration now appears poised to enact sweeping legislation that may not only institutionalize crypto – but also transform the nature of global markets for decades to come.

Unfortunately, many of the proposals appear shortsighted and ill-informed, with the potential to significantly harm consumers, financial markets and the crypto ecosystem itself. To avoid such outcomes before they become a fait accompli, this Article presents a sensible, empirically grounded and intellectually rigorous alternative path, as discussed in Parts III and IV.

D. Oversight Challenges

The challenges of crypto oversight begin with America's notoriously balkanized financial regulatory system, which spans hundreds of limited-scope agencies across levels of government.[77] The 2022 crypto crisis and subsequent bankruptcy challenges exposed a confluence of failures, driven by supervisory fragmentation, regulatory arbitrage, and agency missteps.[78]

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[77] U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-09-1049T, FINANCIAL REGULATION: RECENT CRISIS REAFFIRMS THE NEED TO OVERHAUL THE U.S. REGULATORY SYSTEM 4 (2009) ("almost a dozen federal regulatory agencies, numerous self-regulatory organizations, and hundreds of state financial regulatory agencies share responsibility for overseeing the financial services industry.").

[78] Kevin Werbach, *Demystifying Crypto: Digital Assets and the Role of Government*, JOINT ECONOMIC COMMITTEE, WRITTEN STATEMENT, (Nov. 17, 2021) [henceforth, 'WERBACH DIGITAL ASSET TESTIMONY'] (noting "Federal digital asset regulation in the U.S. to date has involved a number of agencies and offices: the Financial Crimes Enforcement Network (FinCEN), Office of the Comptroller of the Currency (OCC), and Internal Revenue Service

1. Who Regulates Whom?

Formally, the full suite of financial regulatory agencies at both the federal and state levels have varying degrees of oversight over aspects of the crypto ecosystem. In practice, the market regulators – i.e., the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) – have been most deeply involved with crypto oversight.

The market regulators oversee financial products and associated entities – including issuers, intermediaries and infrastructure – with emphasis on disclosure and market conduct.[79] However, the divided purview between the SEC and CFTC has caused frictions, including perennial instrument classification questions as to whether crypto assets constitute securities.[80]

As a result, nearly fifteen years after the sector's advent, crypto lacks not only clear guiding principles but even unambiguous answers to seemingly first-order questions around assets' legal status and relevant regulatory jurisdiction. As detailed in the figure below,[81] the most glaring issues concern the Security & Utility asset grouping (as defined in Part II). Recent SEC Staff Letters (which do not carry the force of law) and legislative efforts have attempted to begin clarifying the treatment of certain assets[82], however much of the approach may prove substantively counterproductive, as discussed in Part IV.[83]

(IRS) in the Treasury Department," the SEC, CFTC and FDIC the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC), and the Federal Deposit Insurance Corporation (FDIC).").

[79] WHO REGULATES WHOM? AN OVERVIEW OF THE U.S. FINANCIAL REGULATORY FRAMEWORK, AT 1 CONG. RSCH. SERV. (2023).

[80] The SEC has jurisdiction over "securities" while industry preference has been CFTC oversight. *See* Yuliya Guseva & Irena Hutton, *Digital Assets and Regulatory Fragmentation: The SEC versus the CFTC*, 64 B.C. L. REV. 1555, 1572 (2023).

[81] "Regulators themselves cannot seem to agree as to whether cryptocurrencies are commodities that may be subject to regulation by the CFTC, or whether they are securities that are subject to securities laws, or neither, or even on what criteria should be applied in making the decision." *In re Voyager*, 649 B.R. at 119; *see also* WERBACH DIGITAL ASSET TESTIMONY at 78.

[82] See Infra Part III.A.3 (discussing GENIUS Act changes to StableCoin oversight); See also, Appendix III.

[83] See Infra, Part IV.

Figure 4. Regulatory Architecture (Q3 2025)

Category	Legal Status	Regulator
1. 'True' Utility Tokens	Unclear	**Unclear (SEC / CFTC)**
2. Broken Tokens	Security / Unclear	
3. Equity Coins	Security / Unclear	
4. Meme Coins	Unclear[1]	
5. Store of Value Coins	Commodity (Bitcoin)	CFTC
6. Stable Coins		
Payment StableCoins	Tailored Category / Treatment	Banking Regulators[3]
Other StableCoin Types	Unclear (SEC has argued Security)[2]	Unclear[3]
7. InfraCoins	Unclear / Commodity (Ether)	Unclear (CFTC / SEC)
8-10. Liability-Based Instruments[4]	Unclear (SEC has argued Security)	Unclear / SEC

[1] *February 2025 SEC Staff Statement (which lacks force of law) indicated not a security.*

[2] *April 2025 SEC Staff Statement (which lacks force of law) indicated USD-Covered not a security.*

[3] *Per the 2025 GENIUS Act, banking regulators have oversight of Payment Stable Coins. Regulatory status of other Stable Coin types remains unclear.*

[4] *Consolidated due to more limited legal clarity.*

Broadly speaking, the U.S. financial regulatory system emphasizes constituent-driven registration.[84] Financial groups generally self-organize legal entities circumscribed by activity and oversight agency. Similarly, financial products – and particularly securities – default to registration, barring no action relief or an applicable exemption, typically articulated in a legal opinion from reputable counsel.

Crypto short-circuited this fragile construct at both the asset and entity levels.[85] The 2017 ICO wave brought a flood of legally problematic activity, based on largely industry-conjured exemptions unrecognized by the SEC. Crypto Platforms like FTX also exacerbated jurisdictional frictions by cutting across domains, leaving multiple agencies with oversight but none unambiguously in charge. Further complicating matters, crypto's ability to technologically bypass traditional payment systems has allowed

[84] Lev E. Breydo, *Structural Foundations of Financial Stability*, 17 U. PA. J. BUS. LAW 973, 1004 (2015).
[85] *See infra* Part II.D (detailing crypto sector organization).

high-risk activity to migrate beyond U.S. jurisdiction while still targeting U.S.-based customers and exacerbating AML, KYC and sanctions-related challenges.[86]

2. What is a Security?

A central uncertainty underlying crypto markets is the asset-specific legal classification and associated regulatory treatment—particularly, the threshold inquiries of whether and when crypto constitutes a security. The question is critical. If deemed securities, crypto assets fall under the SEC's regulatory purview, requiring registration, reporting and oversight. If they are not securities, SEC registration is not required, though complex legal and jurisdictional questions would nonetheless remain.[87]

The Supreme Court's foundational *Howey* test is applied to determine whether an asset is an investment contract (and thus a security).[88] "The test is whether the scheme involves an investment of money in a common enterprise with profits to come solely from the efforts of others,"[89] with emphasis on substance and "economic reality" rather than form.[90] Subsequent appellate decisions have formalized the *Howey* test as a three-part analysis,[91] with the third prong often sub-divided into two components,[92] resulting in a four-part test for our present purposes:[93] (i) the investment of money; (ii) a common enterprise; (iii) reasonable expectation of profits; (iv) derived solely from the efforts of others.[94]

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[86] The CFTC has accused Binance of establishing procedures to deliberately circumvent these safeguards for U.S.-based investors. Complaint, CFTC v. Changpeng Zhao, Binance Holdings Limited, et al., No. 23-cv-01887 (N.D. Ill. Mar. 27,2023), ECF No. 1 (arguing that "[m]uch of Binance's reported trading volume, and its profitability, has come from its extensive solicitation of and access to customers located in the United States.").

[87] Such threshold questions include be whether the assets are commodities under CFTC jurisdiction, and if not, which agency would (or should) have oversight. *See generally* Part III.

[88] Some have suggested using state-law tests in this context, a suggestion worth exploring, but this Article applies the traditional *Howey* analysis given its SEC/federal focus. *See* Scott W. Maughan, Comment, *Utility Token Offerings: Can a Security Transform into a Non-Security?*, 2019 BYU L. REV. 1113, 1130–31.

[89] SEC v. W.J. Howey Co., 328 U.S. 293, 298, (1946) ("An investment contract thus came to mean a contract or scheme for 'the placing of capital or laying out of money in a way intended to secure income or profit from its employment.' This definition was uniformly applied by state courts to a variety of situations where individuals were led to invest money in a common enterprise with the expectation that they would earn a profit solely through the efforts of the promoter or of some one other than themselves." (citation omitted) (quoting *State v. Gopher Tire & Rubber Co*., 177 N.W. 937, 938 (1920)).

[90] Tcherepnin v. Knight, 389 U.S. 332, 336 (1967).

[91] SEC v. SG Ltd., 265 F.3d 42, 46 (1st Cir. 2001).

[92] The SEC's Digital Asset-specific guidelines take this approach. *See Framework for "Investment Contract" Analysis of Digital Assets*, SEC [hereinafter *SEC Digital Assets Framework*], https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets (last updated July 5, 2024).

[93] *See Howey*, 328 U.S. at 301.

[94] The third prong formally refers to "an expectation of profits to be derived solely from the efforts of the promoter or a third party." *SEC v. LBRY, Inc*., 639 F. Supp. 3d 211, 216 (D.N.H. 2022).

In an April 2025 Staff Statement, the SEC's Division of Corporate Finance applied the Supreme Court's test from *Reves* to assess whether a Stablecoin is a "note" (and thus presumptively a security).[95] The "family resemblance" test articulated in *Reves* considers four factors: (i) motivations of seller and buyer; (ii) plan of distribution; (iii) reasonable expectations of the investing public; and (iv) risk-reducing features.[96]

II. TAXONOMY & MARKET ANALYSES

Crypto's enormous heterogeneity and incongruence with existing financial and regulatory frameworks presents a threshold hurdle to understanding the evolving ecosystem, exacerbating uncertainties for policymakers, market participants, and the public at large. This Article broadly posits that most crypto assets have logical analogues in traditional finance and should be regulated accordingly – based on instrument-level economic substance and legal attributes.[97] Crypto that lacks such analogues, the evidence suggests, more likely reflects legally problematic assets rather than true innovation.

The Article's essential contribution to the literature and public discourse is its unique unifying taxonomy of crypto assets.[98] This powerful framework is then used to analyze market and asset-level dynamics, facilitating empirically-grounded recommendations for tailored regulation that reflects underlying system economics and operations, detailed in Part IV.[99]

This Part of the Article is organized in four sections. First, it details the Article's primary taxonomical model. Second, it discusses the advantages of the model relative to alternate approaches, which are detailed further in Appendix I. Third, leveraging the taxonomical framework, it provides a comprehensive analysis

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[95] *Reves v. Ernst & Young* 328 U.S. 293 (1946). See also, SEC Division of Corporate Finance, Statement on Stablecoins (April 4, 2025), https://www.sec.gov/newsroom/speeches-statements/statement-stablecoins-040425*; But see*, Caroline A. Crenshaw, "Stable" Coins or Risky Business? Statement of SEC Commissioner (April 4, 2025) https://www.sec.gov/newsroom/speeches-statements/crenshaw-statement-stablecoins-040425 (arguing that the Staff Statement "legal and factual errors paint a distorted picture of the USD-stablecoin market that drastically understates its risks.")

[96] Courts generally apply *Reves* as a holistic, fact-intensive balancing test. *See, e.g., SEC v. J.T. Wallenbrock & Assocs*., 313 F.3d 532, 537 (9th Cir. 2002) ("Failure to satisfy one of the factors is not dispositive; they are considered as a whole.").

[97] *Investigating the Collapse of FTX*: *Hearing Before the House Fin. Serv. Comm.,* 117th Cong. (Dec. 13, 2022) (Remarks of Senator Elizabeth Warren, calling for uniform treatment of similar transactions with the "same kind of risks").

[98] The framework builds upon and synthesizes a number of existing approaches, including those from regulators, scholars, and the private sector with express terminological differences intended to clearly label and differentiate amongst crypto assets. *See* KATE GOLDMAN & ARNAV KUMAR, A TAXONOMY OF DIGITAL ASSETS 11 (2021), https://milkeninstitute.org/sites/default/files/2021-10/A%20Taxonomy%20of%20Digital%20Assets.pdf. @basiccrypto, *Is Your Crypto Digital Gold, Gas, or Something Else?*, STEEMIT (Aug. 12, 2017), https://steemit.com/cryptocurrency/@basiccrypto/is-your-crypto-digital-gold-gas-or-something-else .

[99] As the IMF has observed, "no internationally agreed taxonomy exists for crypto assets" despite the fact that "A globally consistent taxonomy would help create common regulatory standards and approaches." *See* PARMA BAINS ET AL., REGULATING THE CRYPTO ECOSYSTEM, THE CASE OF UNBACKED CRYPTO ASSETS (2022)

of crypto market dynamics, composition and evolution. Finally, building on the author's prior work, it briefly presents relevant facets of crypto-specific industrial organization.[100]

A. Model Overview

This Article's novel, unifying taxonomy provides the first mutually exclusive collectively exhaustive ("MECE")[101] mapping of the full universe of crypto assets[102] segmented by asset-level economics and legal rights – substance, rather than form or labels.[103]

The framework employs a three-tier hierarchy of increasing specificity. At the first level (tier 1), it divides crypto assets into three core groups: (1) Infrastructure & Stored Value; (2) Security & Utility Crypto; and (3) Liability-Based Instruments. At the second level, each tier 1 group is segmented into asset-level categories (tier 2), of which there are 10, with examples including Stable Coins, Meme Coins, and Crypto Debt. Finally, the tier 2 categories are further divided into sub-categories (tier 3), of which there are 17.[104]

Importantly, as noted above in Part I, the framework intentionally excludes certain related but distinct concepts and assets, including: (i) Central Bank Digital Currencies (CBDC), as they are not "crypto assets," as per the IMF and FSB definitions adopted by this Article; and (ii) Non-Fungible Tokens (NFTs) as they are best understood not as a distinct asset category, but rather representations of associated anchor assets (which may already be encompassed in the taxonomy).[105]

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[100] *See generally*, Breydo, *Contagion; See also,* Breydo, *The Broken Token Problem*.

[101] The MECE nature of the model is methodologically important component based on the social sciences literature and consistent with business strategy applications. Robert C. Nickerson, Upkar Varshney & Jan Muntermann, *A Method for Taxonomy Development and its Application in Information Systems*, 22 EUR. J. INFO. SYS. 336 (2013), https://doi.org/10.1057/ejis.2012.26 (defining a taxonomy as a set of n dimensions each consisting of mutually exclusive and collectively exhaustive characteristics).

[102] This taxonomy excludes certain digital assets, including non-fungible tokens (NFTs) and asset-backed tokens, defined as "digital token[s] based on blockchain technology [signifying] . . . representation of ownership of a physical asset." *See* KRISTEN E. BUSCH, CONG. RSCH. SERV., R47189, NON-FUNGIBLE TOKENS (NFTS*)*, 2 (2022); *see also* PWC, CRYPTOGRAPHIC ASSETS AND RELATED TRANSACTIONS: ACCOUNTING CONSIDERATIONS UNDER IFRS 4–5 (2019), https://www.pwc.com/gx/en/audit-services/ifrs/publications/ifrs-16/cryptographic-assets-related-transactions-accounting-considerations-ifrs-pwc-in-depth.pdf. Central bank digital currencies are not part of the taxonomy herein because they are issued by governments.

[103] *See, e.g.*, Brad Kahn, et al., *The Need for Clarity Regarding the Classification and Valuation of Cryptocurrency in Bankruptcy Cases*, 17 PRATT'S J. BANKR. 228, 229 (2021) ("No universally accepted definition exists for 'coins' or 'tokens,' and some use the terms interchangeably; however, a 'coin' generally refers to a cryptocurrency created on its own native network with its own separate, standalone blockchain.").

[104] As noted below, the Liability-Based Grouping is not divided at the tier 3 level.

[105] *See,* YULIYA GUSEVA, THE ECONOMIC REALITY OF NFT SECURITIES, CAMBRIDGE HANDBOOK ON LAW & POLICY OF NFTS at 6.

Figure 5 below presents a simplified version of the model, displaying just two levels of the hierarchy; Appendix III provides the full, comprehensive 3-tier model.[106] The framework and subsequent analyses illustrate the demarcations at each level, helping isolate and illuminate the salient legal issues.

Figure 5. Two-Tier Economic & Legal Attribute Taxonomy of Crypto Assets

Crypto Assets: Economic & Legal Attribute Taxonomy (2-Tier)

	Category	Description	Examples (Secondary)	% Market: 1/14/23[1]	% Market: 4/25/25	Change
I. Infra & Store of Value	**1. Store of Value Coins**	Early crypto, primarily BTC.*	**Bitcoin**	**41.0%**	**63.4%**	**22.4%**
	2. Stable Coins.	Three sub-categories: Collateralized, Algo and Commodity.	Tether; USDC	13.0%	7.2%	-5.8%
	3. InfraCoins	Highly functional assets; sector 'gas,' quasi-infra	Ether (Cardano, Polygon, Solana)	21.4%	11.8%	-9.6%
			Sub-Total	**75.4%**	**82.4%**	**7.0%**
II. Security & Utility	**4 Equity Coins**	Most equity-like; variation in rights / structure.	Iconomi; Etheroll		-	
	5. Meme Coins	No utility, rights or economics. Akin to collectibles.	DogeCoin, Shiba Inu		1.2%	
	6. 'True' Utility Tokens	NAL Consistent. Economics ~ loyalty program miles.	TKJ Tokens, VCOIN, PoQ[2]			
	7. Broken Tokens	Most legally problematic. Two sub-types:		24.6%	16.4%	
		'Pre-Utility.' Development capital. ~early stage equity, clear legal rights. Likely civil.	FTT, LBRY, Kin			
		'Non-Utility Tokens.' Platform development not intended or impractical. Potential fraudulent conduct.	BCT			
			Sub-Total	**24.6%**	**17.6%**	**-7.0%**
III. Liability Instr-uments	**8. Yield Products**[4]	Above-market rates; high-risk loans. HY BDC parallel.	Genesis/ GEM; CEL	N/A		
	9. Crypto Debt	Quasi-contractual; economics ~ debt instruments.	Aave, IOUBTC/ ETH			
	10. Staking Services	DEX rewards; yield for digital asset loans / liquidity.	Most staked: ETH, SOL and ADA			

[1] *Based on coinmarketcap.com data.*

[2] *TKJ Tokens, VCOIN, PoQ Quarters deemed not securities through SEC No Action Letters.*

[3] *Listed separately to denote distinct features relative to other facets of the crypto universe.*

[4] *Some earn / yield products use the capital for staking; however, this is distinct from DeFi staking due to diversified nature of exposure.*

B. Advantages over Alternatives

Regulators and multilateral organizations like the IMF, World Bank and FSB have long recognized the acute need for a comprehensive taxonomical framework for crypto assets.[107] However, notwithstanding significant legal and financial literatures around specific sub-issues, such as the Howey Test and crypto correlations, there does not yet exist a unifying framework that is comprehensive yet sufficiently flexible for analyzing the full crypto universe and broader asset eco-system.

[106] *See* Appendix III; See also, associated Excel and data files.

[107] As the IMF has observed, "no internationally agreed taxonomy exists for crypto assets" despite the fact that "A globally consistent taxonomy would help create common regulatory standards and approaches." *See* PARMA BAINS ET AL., REGULATING THE CRYPTO ECOSYSTEM, THE CASE OF UNBACKED CRYPTO ASSETS (2022).

This Article fills that most critical gap. The framework builds upon and synthesizes facets of existing approaches -- from regulators,[108] thinktanks[109], scholars[110] and the private sector[111] -- while developing a uniquely comprehensive taxonomy based on technological and economic substance as well as legal rights. It provides a three-dimensional understanding of crypto based on the underlying technology, operative economics and substantive legal rights.

This Article's framework is superior to alternatives for multiple reasons, including that it is: (i) collectively exhaustive, mapping the full crypto universe; (ii) mutually exclusive with no overlap between asset groups, categories or sub-categories;[112] (iii) based on technological and economic substance, rather than labels or marketed technical attributes;[113] (iv) incorporates legal characteristics and regulatory provisions, allowing it to map directly to the U.S. regulatory structure both as it currently exists and in respect of the proposed changes discussed in Part IV; (v) it recognizes and incorporates ambiguities and inconsistencies within crypto, such as Broken Tokens;[114] and (vi) deliberately sufficiently flexible and scalable to account for and adapt to the realities of a fast moving sector. Appendix I provides a detailed summary of existing frameworks, including specific distinctions, disagreements and parallels between models and approaches, and also outlines certain select proposed legislation.

C. Delving into the Data

Leveraging the above taxonomy, the figure below details crypto sector value divided by tier 2 categories and certain tier 3 sub-categories with data availability, including ETH and Meme Coins. The analysis shows clearly three peaks of sector growth, corresponding to each of the stages of sector development discussed in Part I.C., with current market value far in excess of even the Covid-19 era peak.

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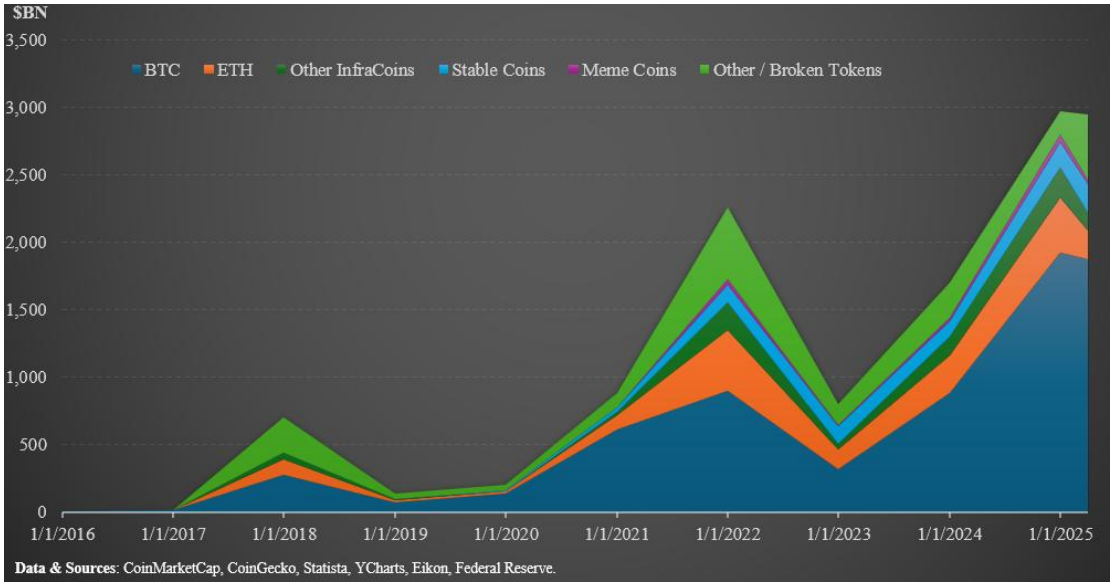
[108] Goldmanm & Kumar, *supra* at 1.
[109] *Id.*
[110] Jens Lausen, *Regulating Initial Coin Offerings? A Taxonomy of Crypto-Assets, Twenty-Seventh European Conference on Information Systems* (Proceedings of the 27th European Conference on Information Systems (ECIS), Stockholm & Uppsala, Sweden, June 8-14, 2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3391764.
[111] Sabry & Franceschelli, *supra*.
[112] The first two items reflect the MECE nature of the framework (just in reversed order). The MECE framework is based on the social sciences literature and consistent with business strategy applications. Robert C. Nickerson, Upkar Varshney & Jan Muntermann, *A Method for Taxonomy Development and its Application in Information Systems*, 22 EUR. J. INFO. SYS. 336 (2013), https://doi.org/10.1057/ejis.2012.26 (defining a taxonomy as a set of n dimensions each consisting of mutually exclusive and collectively exhaustive characteristics).
[113] *Crypto Taxonomy*, COINDESK, https://www.coindesk.com/dacs/ (outlining Digital Asset Taxonomy by technical features).
[114] Lev E. Breydo, *The Broken Token Problem. Why Crypto Classification Remains Elusive,* 55 SETON HALL L. REV. 67 (2024).

Figure 6. Category-Level Crypto Asset Values ($Bn): 2016-2025



The next two analyses zoom in from the above macro view to detail (i) the distribution of value within the sector (Figure 7); and (ii) the composition of the top 10 assets (Figure 8). Both analyses present the information as of March 2023 (corresponding to the end of Stage 2) and April 2025, corresponding to Stage 3, and incorporating the market impact of the recent presidential election.[115]

While the crypto sector is comprised of over 10,000 unique assets, value is highly concentrated with the 10, 100 and 200 largest assets respectively comprising 90.68% (about $2.5 trillion), 98.17% ($2.7 trillion) and 99.83% ($2.745 trillion) of total market value as of April 2025, as shown below. Between the end of Stage 2 in 2023 and the present, sector concentration has grown significantly, particularly for the top 10 assets, which were 84.2% of the total in the prior period.[116]

[115] *See supra* Part I.C.

[116] Raynor de Best, *Number of Cryptocurrencies: 2013-2023*, STATISTA (Aug. 9, 2023), https://www.statista.com/statistics/863917/number-crypto-coins-tokens/.

Figure 7. Aggregate Market Summary Stats: 2023 & 2025

Crypto Market: Aggregate Stats (Mar 2023 & Apr 2025)

Asset Level	Mar-23 Total ($Bn)	Mar-23 % of Market	Apr-25 Total ($Bn)	Apr-25 % of Market
Top 10	999.12	**84.18%**	2,493.63	**90.68%**
Top 100	1,153.07	97.15%	2,699.61	98.17%
Top 200	1,178.97	99.33%	2,745.21	99.83%
Total ($Bn):	**$ 1,186.9**		**$ 2,750.0**	

Source: Investing.com and CMC data.

That distribution means that over 9,000 crypto assets collectively represent well under one percent of sector value, a "long tail" where legally problematic assets including Broken Tokens (as defined below) congregate. Growing concentration in an already highly skewed sector also suggests that, notwithstanding the sector's post-crash recovery, investors remain cautious around new or unproven assets.

The table below details category-level composition of the ten largest crypto assets as of March 2023 and April 2025. Three takeaways are notable. First, Bitcoin constitutes by far the largest asset, historically averaging between 50% and 60% of sector value. Second, five of the ten largest crypto assets are InfraCoins, likely reflecting their broad utilization potential, notwithstanding a collective valuation far below that of Bitcoin alone. Finally, despite significant sector disruption, the composition of the ten largest assets has remained consistent at the category level.[117]

Figure 8. Top 10 Crypto Assets by Category

Top 10 Crypto Assets by Category

Category*	March 2023 Value ($Bn)	March 2023 Count	April 2025 Value ($Bn)	April 2025 Count	% Change
Store of Value	$ 547.4	1	$ 1,750.0	1	219.7%
InfraCoin	$ 276.4	5	$ 429.6	5	55.4%
StableCoin	$ 113.0	2	$ 205.6	2	82.0%
'Broken Token'	$ 52.1	1	$ 84.5	1	62.1%
Meme	$ 10.3	1	$ 24.0	1	133.7%
Total	**$ 999.1**	**10**	**$ 2,493.6**	**10**	**149.6%**

*Includes Ripple within InfraCoin category (per recent decision, SEC action).

Sources: Data from CMC, Investing.com.

[117] There are shifts in the specific InfraCoins constituting the top 10. See associated excel models for further detail.

D. Industrial Organization

As the crypto sector evolved, an associated ecosystem developed alongside it, with distinct entities providing various services and functions.[118] As a result, crypto oversight challenges can be thought to exist at two levels: crypto assets (the focus of this Article) and sector-specific entities. As I detail in earlier work, the 2022 crypto collapse was undoubtedly exacerbated by oversight mismatches, including emphasis on Crypto Projects instead of Crypto Platforms – such as the now-infamous FTX and Celsius – which serve as sector intermediaries and represent the natural nexus of risks. As discussed in Part IV, appropriately delineating legal considerations as between crypto entities and assets is important for regulatory and policy purposes. Broadly speaking, we can segment the crypto industry into six primary types of market participants, which Figure 9 below details and maps to their most closely associated crypto assets (at right):

Figure 9. Core Sector Entities & Associated Assets

Crypto Ecosystem: Core Entities & Associated Assets

Entity Type	Description	Examples	Associated Crypto Assets
1. Crypto Projects	Multi-industry entities applying blockchain and related technologies. Common token / coin issuers.	Wireless (Helium); Electricity (Exergy); Publishing (LBRY)	**Broken Token Issuers**; Security & Utility Crypto
2. Infrastructure Providers	Developers of shared resources for cross-project tools and applications.	Ethereum; Polygon; Algorand	InfraCoins
3. Stablecoin Issuers	Rsponsible for reserve maintenance and coin stability relative to reference assets.	Circle, Tether	Stable Coins
4. Support Services	Miners (which validate blockchain transactions) and specialized providers, incl. data centers and banking.	Compute North; Core Scientific; Silvergate	Store of Value Coins
5. Investment Vehicles	Largely akin to hedge funds. Frequently employ significant leverage.	Three Arrows Capital, Alameda Research	Diversified
6. Crypto Platforms. ***Two primary sub-sectors, with third emerging (DEX):****			
Crypto Lenders	Lend digital assets to crypto market participants. Often offer brokerage and trading.	Celsius, BlockFi	Diversified; **Broken Token Issuers**
Crypto Exchanges	Wide range of activities, incl. intermediary (brokerage), market infrastructure (exchange, clearing) and investment.	FTX, Binance	

**Decentralized exchanges (DEX) are peer-to-peer crypto marketplaces, which raise considerations beyond the scope of this analysis.*

[118] While the underlying activities largely parallel familiar functions in other sectors, crypto entities' distinct market organization raises some unique classification challenges particularly acute for financial service-like functions performed by Crypto Platforms. *See generally*, *Contagion*.

III. ASSET-LEVEL CLASSIFICATIONS

This Part of the Article builds further on the crypto taxonomy introduced in Part II to delve into crypto category (tier 2) and sub-category (tier 3) level analyses. The discussion focuses on three issues specific to each asset type: (i) its substantive nature, from a technical and economic perspective; (ii) the perception and understanding by market participants; and (iii) regulatory classification and treatment.

While all of these should be consistent, that has not been the case for crypto, driving the sector's contemporary challenges. Part IV of the Article builds on these findings with suggestions for rationalizing the regulatory structure to address shortcomings and resolve inconsistency.

This Part of the Article is organized in three sections, sequentially corresponding to each of the tier 1 core groups: (i) Infrastructure & Stored Value; (ii) Security & Utility Crypto, which includes Equity Coins, Meme Coins, Utility Tokens and "Broken Tokens;" and (iii) Liability-Based Instruments, composed of Crypto Debt, Yield Products and Staking Services.

A. Infrastructure & Stored Value

The Infrastructure & Stored Value grouping of assets—comprising Store of Value Coins, Stable Coins and Infrastructure Coins ("InfraCoins")—generally refers to more mature assets with clearer economics and regulatory treatment. Collectively, these three categories constitute over 80% of crypto market value, with Bitcoin alone over 60% as of April 2025. This grouping has in many respects reflected and driven the broader sector, with InfraCoins developed to increase blockchain functionality and Stablecoins introduced to address crypto volatility and limitations on exchange.

1. Store of Value Coins

Store of Value Coins refer to the "original" crypto assets—most notably, sector bellwether Bitcoin, the first and largest crypto asset.[119] Analytically, this Article's taxonomy sub-categorizes Store of Value Coins between Bitcoin and potential alternatives, such as LiteCoin and Monero.[120] The limited adoption of alternatives illustrates Bitcoin's special status and maturation, though the sub-category keeps open the possibility of future attempts proving more successful.

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[119] Anchalee Worrachate, *Goldman Says Bitcoin $100,000 a Possibility by Taking on Gold*, BLOOMBERG (Jan. 4, 2022), https://www.bloomberg.com/news/articles/2022-01-04/goldman-says-bitcoin-100-000-a-possibility-by-taking-on-gold?sref=OOpRUZ8l.

[120] Some close BTC derivatives including Bitcoin cash may also qualify, but are not included for the sake of relative simplicity and due to residual uncertainties.

While not the first attempt at a "currency" outside the remit of government, Bitcoin remains revolutionary because it simultaneously solved several problems associated with prior iterations of digitally-native 'money.' Taking a step back, currencies are understood to have three core functions, including serving as: (i) a unit of account; (ii) a store of value; and (iii) a medium of exchange.[121] For much of the history of commerce, this role was filled by gold or other precious metals, with government currencies a subsequent innovation initially tied to and backed by gold.[122]

Though the "currency" label remains formally incorrect, Bitcoin's innovations indeed provided two of the three associated utilities, including solving the double spend problem that limited prior iteration's ability to serve as a unit of account. At the same time, prominent market participants increasingly view Bitcoin and gold as collectively composing the "store of value market," where Goldman Sachs analysts believe Bitcoin will "continue to take market share from gold."[123]

Indeed, as shown in the figure below, Bitcoin has been the crypto sector's sole constant, averaging over 60% of total value for the period after ETH introduction and rarely dipping below 40%.[124] Furthermore, Bitcoin's volatility has decreased over time, while that of other assets, including the S&P 500, has gone in the opposite direction.[125]

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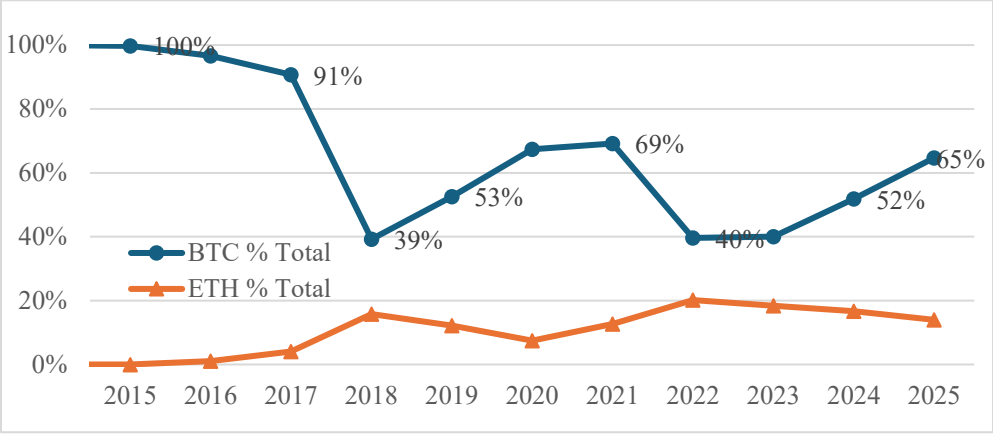
[121] *See* PARMA BAINS ET AL., REGULATING THE CRYPTO ECOSYSTEM, THE CASE OF UNBACKED CRYPTO ASSETS (2022), https://doi.org/10.5089/9798400221361.063.
[122] *See* Perry v. United States, 294 U.S. 330 (1934); *See also,* Gerard Magliocca, *The Gold Clause Cases and Constitutional Necessity*, 64 FL. L. REV. 1243 (2012); SEBASTIAN EDWARDS, AMERICAN DEFAULT: THE UNTOLD STORY OF FDR, THE SUPREME COURT, AND THE BATTLE OVER GOLD (2018).
[123] *Goldman Sachs Says Bitcoin Will Compete with Gold as "Store Of Value*,*"* REUTERS (Jan. 5, 2022, 12:43 PM), https://www.reuters.com/business/finance/goldman-sachs-says-bitcoin-will-compete-with-gold-store-value-2022-01-05; *But see,* GOLDMAN SACHS, CONSUMER & WEALTH MGMT. DIV., INV. STRATEGY GRP., *Digital Assets: Beauty Is Not in the Eye of the Beholder—Parsing the Beauty from the Beast* (June 21, 2021) https://privatewealth.goldmansachs.com/content/dam/pwm/direct-links/isg-calls/client_call_materials_21June21.pdf [hereinafter '*Goldman Sachs Digital Assets Report*'] ("We do not believe that Bitcoin is a long-term store of value or "digital gold.").
[124] Period prior to 2015 is not shown because BTC represented 100% of the sector. *Crypto Market Overview*, COINCODEX.COM, https://coincodex.com/market-overview/. See Appendix and associated financial models for further detail.
[125] See Appendix V, detailing volatility data and charts.

Figure 10. BTC and ETH % Crypto Sector (2015-2025)



The biggest challenge to Bitcoin as a "currency" is that, not unlike gold itself, it is structurally a poor medium of exchange in a modern economy. Bitcoin transactions are highly secure, but also expensive and slow – a pace of 10 per second, relative to 65,000 for Visa's network[126] – limiting the value proposition in mature markets with many alternatives.[127] At the same time, while growing, Bitcoin acceptance (a form of network effects) remains limited, further complicating usability.[128]

2. Infrastructure Coins

Infrastructure Coins ("InfraCoins")[129] represent highly functional crypto assets – often termed digital 'gas' – required to utilize crypto networks, facilitating transactions, powering digital contracts and providing collateral. Conceptually, they reflect efforts to expand blockchain applications beyond Bitcoin, with the two InfraCoin sub-categories broadly corresponding to Blockchain 2.0 (Ethereum) and Blockchain 3.0 (ETH alternatives and competitors, such as Cardano and PolkaDot). Similar to the treatment of Bitcoin, the taxonomy places Ethereum in a sub-category of its own (3A), with Blockchain 3.0 competitors reflected in the second sub-category (3B).

InfraCoins are issued by Infrastructure Providers, or developers of shared cross-project resources, such as the Ethereum Foundation, a Swiss non-profit entity that houses Ethereum's organizational structure.[130] In

[126] *See Goldman Sachs Digital Assets Report*, *supra* note 120, at 5.
[127] This may be distinct in certain emerging markets with less developed domestic payment systems and/or currency controls.
[128] It is accepted by thousands of vendors and is legal currency in limited jurisdictions. *See El Salvador's Bitcoin Experiment Is Not Paying Off*, THE ECONOMIST (Nov. 17, 2022), https://www.economist.com/the-americas/2022/11/17/el-salvadors-bitcoin-experiment-is-not-paying-off.
[129] This grouping is sometimes termed "Platform Coins" in industry parlance. See Appendix I.
[130] ETHEREUM FOUNDATION, *Our Story*, https://ethereum.foundation/ourstory (last visited July 4, 2025).

many respects, InfraCoins are the most unique feature of the crypto ecosystem, with energy commodities reflecting perhaps the economically closest analog.[131]

Ethereum – "Blockchain 2.0" – was developed as open-source software to expand "the blockchain concept [beyond] just money."[132] Analogized to a "decentralized computer," Ethereum allows user-uploaded code to be utilized by others as "a form of decentralized application []akin to running "apps" on a cellphone," significantly expanding crypto use cases. [133] As a result ETH serves as the sector's quasi-infrastructure, providing a technological foundation for many crypto assets[134] and illustrating a functionality distinct from other asset types.[135]

The advent of Blockchain 3.0 led to the development of new InfraCoins,[136] including Cardano[137] and Polkadot (for cross-chain functionality).[138] Ethereum nonetheless remains the quintessential InfraCoin, constituting about 14% of crypto market value as of early 2025, while other InfraCoins correspond to about 7%, as shown below. Ethereum's relative decline (from 20% in 2022) may be attributable to the increased competition, which all things considered, is a healthy indicator for crypto innovation.

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[131] Another analog may be multi-platform points which derive value from embedded optionality and transferability. *See*, *Broken Token Problem*.

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

[133] "The Ethereum blockchain is more complex than the Bitcoin blockchain and does much more than just record transfers of [ether]." *See* Report of Shoba Pillay, Examiner at 54, In re Celsius Network LLC, 649 B.R. 87 (Bankr. S.D.N.Y. 2023) (No. 22-10964), ECF No. 1956.

[134] Many tokens use Ethereum's ERC-20 technical standard. *See ERC-20 Token Standard*, ETHEREUM (May 30, 2023), https://ethereum.org/en/developers/docs/standards/tokens/erc-20.

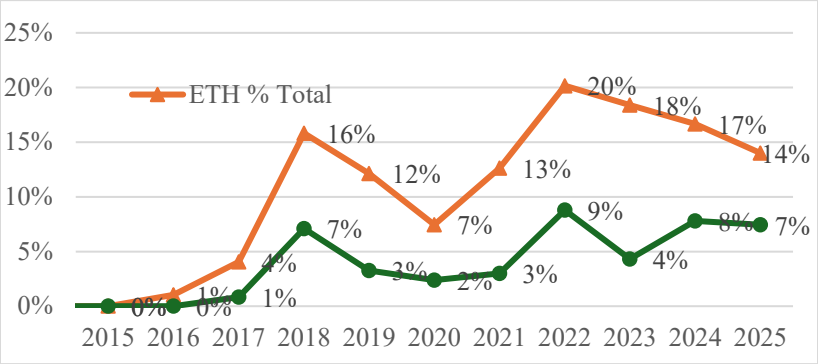
[135] The contrast may be analogized to that between gold (Bitcoin) and oil (Ether); both are commodities, but serve fundamentally different ends from both financial and practical perspectives.

[136] It has been reported that founder disagreements regarding governance, project goals and functionalities led to a split with departing team members developing the respective competitors. *See* https://cointelegraph.com/magazine/joe-lubin-the-truth-about-eth-founders-split-and-crypto-google/

[137] Cardano is overseen by the Cardano Foundation. https://www.forbes.com/sites/angelauyeung/2018/02/07/charles-hoskinson-ethereum-iohk-blockchain-crypto-cryptocurrency/; https://www.ft.com/content/949ee788-6630-4aac-9c4d-b6b0a45f4e25

[138] https://techcrunch.com/2017/10/17/polkadot-passes-the-140m-mark-for-its-fund-raise-to-link-private-and-public-blockchains/

Figure 11. ETH + InfraCoins as % Total Crypto Assets



Regulatory treatment of InfraCoins has oscillated wildly across administrations. Under the first Trump administration, the SEC indicated that Ethereum was a commodity, rather than a security. [139] Subsequently, the Biden SEC appeared to shift course, in direct contrast to the CFTC's position.[140] With the second Trump administration, the SEC's view on Ethereum appears to be shifting back; however, uncertainty remains for other InfraCoins.[141]

3. Stablecoins

Stablecoins are digital assets "designed to maintain a stable value relative to a national currency or other reference assets."[142] They were developed to address crypto asset volatility and medium of exchange limitations while providing a user-friendly bridge between crypto and fiat.[143] Prominent examples include USDT ("Tether"),[144] USDC ("Circle USD Coin")[145] and BUSD ("Binance USD"),[146] all of which are

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[139] Previously, the SEC has described Bitcoin and Ether as "sufficiently decentralized" to no longer meet the requirements of securities classification at that time. *See* Bill Hinman & Valerie Szczepanik, *Statement on "Framework for 'Investment Contract' Analysis of Digital Assets*," SEC (Apr. 3, 2019), https://www.sec.gov/news/public-statement/statement-framework-investment-contract-analysis-digital-assets. The SEC's shift in position (with Ether now presumably on the agenda) is beyond the scope of this analysis, though appears consistent with a case brought by New York's Attorney General. *See* Verified Petition, *supra* note 148.

[140] *See* Ankush Khardori, *Can Gary Gensler Survive Crypto Winter? D.C.'s Top Financial Cop on Bankman-Fried Blowback*, N.Y. MAG. (Feb. 23, 2023), https://nymag.com/intelligencer/2023/02/gary-gensler-on-meeting-with-sbf-and-his-crypto-crackdown.html (noting "[e]verything other than bitcoin" is a security.)

[141] Early evidence included dropping long-running litigation against Ripple. https://www.reuters.com/legal/ripple-ceo-says-us-sec-will-drop-appeal-against-crypto-firm-2025-03-19/

[142] PRESIDENT'S WORKING GRP. ET AL., REPORT ON STABLECOINS 1 (2021), https://home.treasury.gov/system/files/136/StableCoinReport_Nov1_508.pdf; *see also* Catherine Liston-Heyes, *Pie in the sky? Real versus Perceived Values of Air Miles*, 25 J. OF CONSUMER POL'Y 1, 1–26 (2002), https://doi.org/10.1023/A:1014594718701 (describing characteristics of an "ideal form of money" to include seven attributes: (1) acceptability, (2) convenience, (3) durability, (4) divisibility, (5) uniformity, (6) difficulty to reproduce, and (7) stability of value).

[143] Gary B. Gorton & Jeffrey Y. Zhang, *Taming Wildcat Stablecoins*, 90 U. CHI. L. REV. 909 (2023).

[144] TETHER, *Why use Tether?*, https://tether.to/en/why-tether/ (last visited July 4, 2025).

[145] *USDC: Digital Dollars Backed 1:1 with USD*, CIRCLE, https://www.circle.com/en/usdc (last visited Aug. 12, 2023).

[146] *Binance USD Price*, CRYPTO.COM, https://crypto.com/price/binance-usd (last visited Aug. 12, 2023).

digitally native assets redeemable on demand at a one-dollar par value. Collectively, the category represents about 7.2% of crypto sector value,[147] with three main sub-categories organized by stabilization mechanism:

i. **Collateralized** (or "Covered")[148], the largest and most important sub-category, characterized by stabilization through reserve assets, typically fiat currency (i.e., USD, EUR)[149];
ii. **Algorithmic**, with the pegged value maintained through a trading strategy;[150] and
iii. **Commodity**, collateralized by physical assets, including oil or gold (most common).[151] Fairly limited market penetration as underlying asset-level volatility complicates stability and intended functionalities.[152]

Algorithmic Stablecoins attempt to maintain their peg through self-executing code that automatically adjusts supply based on market demand as well as programmatic trading of the stablecoin and associated token.[153] The 2022 collapse of algorithmic Stablecoin issuer Terraform Labs – which wiped out $50 billion of value,[154] setting off sector-wide contagion[155] – reduced market confidence in the structure, with April 2025 aggregate value down to about $500M.

In contrast, collateralized Stablecoins maintain their value by holding currency reserves as collateral, with each token redeemable on demand into the refence currency at a 1:1 ratio. Along with responsibility for token issuance and redemption, Stablecoin Issuers play the critical asset stabilization role, including through reserve maintenance, as the stability mechanism is predicated on their promise to redeem each token for

[147] *See* Figure 6.
[148] Recent legislation uses the term "Payment Stablecoins" to reference a largely analogous set of instruments. *See* S. 1582 — 119th Congress: GENIUS Act of 2025.
[149] Collateralized Stablecoins have significant overlap with Payment StableCoins as defined by the GENIUS Act.
[150] *See* Ryan Clements, *Built to Fail: The Inherent Fragility of Algorithmic Stablecoins*, 11 WAKE FOREST L.R. 131, 131–132 (2021) (describing algorithmic stablecoins as "un-collateralized digital assets, which attempt to peg the price of a reference asset using financial engineering, algorithms, and market incentives").
[151] Examples include Paxos Gold (PAXG) and Tether Gold (XAUT), where each token represents ownership rights to a specific amount of gold held in custody
[152] KRAKEN, *What Are the Different Types of Stablecoins?* (Mar. 5, 2025), https://www.kraken.com/learn/different-types-stablecoins ("A less popular variant of collateralized stablecoins are backed by fungible commodities such as gold, silver or oil.").
[153] Mechanically, these protocols typically involve contraction and expansion mechanisms where the system mints new tokens when the price exceeds the target and burns tokens when the price falls below it. *See*, Sams, R. (2015). "A Note on Cryptocurrency Stabilisation: Seigniorage Shares." *Brave New Coin;* Moin, A., Gün Sirer, E., & Sekniqi, K. (2020). "A Classification Framework for Stablecoin Designs." *Financial Cryptography and Data Security*, p. 181.
[154] Liu, Jiageng and Makarov, Igor and Schoar, Antoinette, *Anatomy of a Run: The Terra Luna Crash* (April 11, 2023). MIT Sloan Research Paper No. 6847-23, Available at SSRN: https://ssrn.com/abstract=4416677 (2023); David Yaffe-Bellany & Erin Griffith, *How a Trash-Talking Crypto Founder Caused a $40 Billion Crash,* N.Y. TIMES (June 22, 2023), https://www.nytimes.com/2022/05/18/technology/terra-luna-cryptocurrencydo-kwon.html.
[155] *See Contagion*, 130-136.

the underlying fiat.[156] Crypto-collateralized stable coins operate similarly, just with crypto as the collateral typically with over-collateralization to account for the volatility of the backing assets.

Collateralized Stablecoins use a relatively straightforward issuance and redemption model where an Issuer such as Tether or Circle intermediates (often through Smart Contracts) customer fiat deposits for Stablecoins as well as redemptions back to fiat.[157] In this respect, Stablecoin operations and economics have many parallels to money market funds, as scholars have recognized.[158] For purchasers, the value proposition is that Stablecoins allow easier access to crypto markets.[159] For the Stablecoin Issuer, the economic incentive is that, like a bank, it collects float income through interest on the fiat in its custody (but unlike a bank, it does not pay interest to depositors).[160]

Due to their payment system use cases, Stablecoins are seeing growing mainstream adoption from both established players like Fidelity as well as FinTechs like Stripe.[161] The potential value proposition appears particularly strong in emerging and frontier markets without robust domestic payment networks and limited dollar accessibility.

Regulators worldwide have identified several concerns regarding Stablecoins, including financial stability due to "run risk" as well as potential longer-term monetary policy transmission implications.[162] Because of

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[156] FIN. STABILITY BD., *Review of the FSB High-Level Recommendations of the Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements: Consultative Report* 15 (Oct. 11, 2022).
[157] More formally, when a user deposits collateral, the system mints new stable coins and transfers them to the user. Conversely, when a user wishes to redeem, they return the Stablecoins to the Issuer, who burns them and releases the equivalent collateral. FIN. ACTION TASK FORCE, *FATF Report to the G20 Finance Ministers & Central Bank Governors on "So-Called Stablecoins"* 18 (June 2020).
[158] The structure (particularly when considering arbitrage) also shares some features with currency pegs, which are a long-standing measure used by emerging markets to tie their currency to a more stable reserve currency, such as USD or Euros. The idea is that the sovereign can gain the benefits of monetary stability as well as independence and flexibility from retaining their own currency. See RUSSELL WONG, WHY STABLECOINS FAIL: AN ECONOMIST'S POST-MORTEM ON TERRA, RICHMOND FED. RSRV. BANK (2022), https://www.richmondfed.org/publications/research/economic_brief/2022/eb_22-24.
[159] See Dan Awrey, *Bad Money*, CORNELL L. REV, at 40-45 (noting parallels to money market funds).
[160] Matt Levine, *Tether Keeps Lending Tethers*, BLOOMBERG (Sept. 21, 2023), https://www.bloomberg.com/opinion/articles/2023-09-21/tether-keeps-lendingtethers?sref=OOpRUZ8l (noting "what a good business Tether, the big stablecoin issuer, is. It is an unregulated bank that does not pay interest, rates are going up, and its depositor base is quite stable").
[161] *See, The Stablecoin Future, Milei's Memecoin, DOGE for the DoD, Grok 3, Why Stripe Stays Private*, All-In Podcast (Feb. 21, 2025) (hereinafter *All-In Podcast*) (interview with John & Patrick Collision, noting stable coins as "most interesting" for cross-border payments.)
[162] FIN. STABILITY BD., *Addressing the Regulatory, Supervisory and Oversight Challenges Raised by 'Global Stablecoin' Arrangements* 8 (Oct. 13, 2020); Markus K. Brunnermeier, Harold James & Jean-Pierre Landau, *The Digitalization of Money*, NAT'L BUREAU ECON. RSCH. WORKING PAPER NO. 26300 17 (Aug. 2019).

these clear financial linkages,[163] as well as murky governance,[164] stablecoin reserve maintenance and monitoring represent critical market policy issues.[165]

Recent actions have attempted to address a decade-long domestic regulatory uncertainty, with an April 2025 SEC Staff Statement[166] finding that USD-collateralized Stablecoins are generally not securities, and the June 2025 GENIUS Act establishing a framework for what it terms "Payment Stablecoins."[167] Nonetheless, many questions remain, including treatment of Stablecoins outside of the relatively narrow scope of recent actions, cross-border matters and enforcement. The potential for regulatory arbitrage is also ever present particularly in the event of a perceived disparity in treatment.[168]

B. Security & Utility Crypto

The "Security and Utility Crypto" grouping includes four categories: Equity Coins, Meme Coins, Utility Tokens and Broken Tokens. The group constitutes about 18% of crypto asset value (as of April 2025), but encompasses over 90% of individual assets by count, including a vast majority of the most legally problematic instruments, which are largely Broken Tokens and Meme Coins.

For this grouping in particular, classification uncertainties have vastly complicated supervision, leading to misplaced focus and pervasive enforcement gaps readily exploited by less ethical operators. Due to high issuance volume and continued expansion – including now Meme Coins issued by political figures[169] – Security and Utility Crypto represents the grouping in most dire need of regulatory action.

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[163] "The composition of reserves can generate not only risks to consumers and investors but also financial contagion and instability." PARMA BAINS ET AL., REGULATING THE CRYPTO ECOSYSTEM, THE CASE OF UNBACKED CRYPTO ASSETS (2022).
[164] Tether, one of the largest stablecoin issuers, is controlled by a small group of individuals. Ben Foldy, et al.., *The Unusual Crew Behind Tether, Crypto's Pre-Eminent Stablecoin*, WALL ST. J. (Feb. 2, 2023), https://www.wsj.com/articles/tether-ownershipand-company-weaknesses-revealed-in-documents-11675363340.
[165] Stablecoin oversight could present a productive initial step, including requiring issuers to provide audited reserves, while also potentially incorporating prudential supervision commensurate with entity size and risk profiles. *See* FITCH RATINGS, *Stablecoin Risks Extend Beyond Reserving Practices* (Jan. 12, 2023), https://www.fitchratings.com/research/banks/stablecoin-risks-extend-beyond-reservingpractices-12-01-2023 ("pressure from regulators [has] driven a trend towards more conservative reserving and some improvement in transparency"). *See also,* Abdelaziz Fathi, *Circle Publishes a Breakdown of USDC Reserves for December*, FINANCE FEEDS (Jan. 30, 2023), https://financefeeds.com/circle-publishes-a-breakdown-of-usdc-reserves-fordecember.
[166] *See, supra* n. 92, discussing and applying the Reeves and Howey analyses. The SEC Staff Statement found that, with respect to Reves, collateralized ("Covered") Stablecoins are not securities because "the offer and sale [] is to advance a commercial or consumer purpose." For purposes of Howey, the underlying logic is that stablecoins are unlikely purchased with a profit objective.
[167] *See supra*, n. 145 and associated text.
[168] For instance, given SEC oversight of money market funds as Investment Companies, there are logical reasons to treat Stablecoin Issuers similarly to avoid exacerbating financial system risks and disparate regulatory treatment.
[169] David Yaffe-Bellany, et al., *Trump Offers Private Dinner to Top 220 Investors in His Memecoin,* N.Y. TIMES (Apr. 23, 2025), https://www.nytimes.com/2025/04/23/technology/trump-private-dinner-crypto-memecoin.html

1. Equity Coins

"Equity Coins" refer to crypto assets conceptually most analogous to digital stock in that they broadly confer holders with legal rights and/or equity-like economic exposure.[170] Within Security & Utility Crypto, "Equity Coins" are the least legally ambiguous and likely smallest category. Broken Tokens are the most legally problematic; however, as discussed below, at least some Broken Tokens are in fact Equity Coins.[171]

Equity Coins include three sub-categories: (i) Traditional, encompassing features of both economics and governance; and (ii) Economic Share, which broadly lack governance rights, with some parallels to non-voting stock;[172] and (iii) Governance Tokens, which confer certain voting or governance rights but no direct economics, with some parallels to non-profit governance as well as so-termed "empty creditors" in the CDS context.[173]

Certain early iterations of Traditional Equity Coins were straightforwardly securities; however, relatively few crypto assets are this unambiguous regarding their underlying nature and the associated allocations of economic rights. For instance, ICN tokens issued by ICONOMI's represented[174] "ownership of the ICONOMI platform, comprising of all assets and liabilities . . . including . . . intellectual property rights, branding and trademarks."[175] Similarly, Etheroll entitled token holders to earnings directly "[p]roportional to the number of tokens they hold," as well as "voting rights" allowing "holders to vote on proposals set-forth by the Etheroll team."[176] A more recent iteration is Distributed Autonomous Organization (DAO)[177]

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[170] Such equity rights may be distinct from, and potentially inferior to, typical shareholders' rights, particularly with respect to voting and control (though not wholly distinct from market practice, including dual-class and non-voting shares, à la Snap). *See generally,* Pedram P. Momtaz, *Initial Coin Offerings, Security Tokens, and the Democratization of Finance*. 147 J. FIN. ECON. 379-404 (2023).

[171] *See supra* Part III.

[172] As discussed below, certain instruments include features distinct from equity securities, warranting a stand-alone sub-category.

[173] In simplified terms, an "empty creditor" is a debtholder who, through the use of financial derivatives like credit default swaps (CDSs), has largely or entirely transferred their economic risk of a borrower's default but still retains the legal rights and control associated with the debt. See https://www.nber.org/system/files/working_papers/w15999/w15999.pdf

[174] The original ICN token was phased out in 2018-2019, as the company transitioned to a corporate structure with eICN representing equity shares in the company.

[175] TIM M. ZAGAR, ET AL., ICONOMI: OPEN FUND MANAGEMENT PLATFORM TO DISRUPT THE INVESTMENT INDUSTRY 8 (2016).

[176] ETHEROLL, ETHEROLL DICE GAME WHITEPAPER 11 (2017). The project shut down in 2019-2020, and the DICE token is no longer actively traded on major exchanges. The team announced a voluntary wind-down of operations and distributed remaining ETH to token holders.

[177] DAOs are envisioned as something of a distinctive organizational form characterized by an integration of ownership and control, with direct voting and smart contract-enabled operational autonomy and typically no traditional board of directors.

tokens, which represent ownership and governance rights with voting power typically proportional to holdings.[178]

Economic Share tokens reflect Equity Coins allocated only economic rights, including certain revenue or profit shares, as well as more problematic "token burning" programs.[179] In a recent tokenization example, Overstock's blockchain subsidiary issued the TZROP token, which entitles holders to quarterly dividends from tZERO's profits. As a legal matter, the token reflects the economic equivalent of tZERO's Series-A preferred equity securities, which do not have voting rights.[180]

Governance Tokens refer to instruments that confer certain governance rights without direct economic exposure. While relatively common earlier in crypto's evolution, over time many Governance Tokens transitioned to incorporate economics (thus fitting within the 'Traditional' category). A prominent example is the WLFI Governance Token issued by World Liberty Financial, an entity associated with the Trump family. LFI's "Gold Paper" unequivocally states that the token provides "no ownership, no revenue share, no equity or profit claim, and no expectation of financial return" and that its "sole function is participation in certain governance processes."[181]

2. Meme Coins

Meme Coins correspond to crypto assets without legal rights or clear financial value.[182] The quintessential example is Elon Musk favorite Dogecoin,[183] which is self-described as an "accidental crypto movement that makes people smile."[184] Nonetheless, Dogecoin has consistently been one of the ten largest crypto assets, with an April 2025 aggregate value of about $20 billion – far larger than the

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[178] Examples include Curve's CRV token and MakerDAO's MKR.
[179] Tokens that do not offer (or are unable to offer) traditional economic rights in the form of profit or revenue distributions often utilize so-called "buy-and-burn" programs to repurchase outstanding tokens. In a prior Article, I argue that despite oft-repeated (and incorrect) analogies to stock buybacks, token burning in reality represents supply-side price machinations to artificially prop up asset prices and create the appearance of value creation. *See*, Lev E. Breydo, The Broken Token Problem.
[180] See TZERO GROUP, INC. PREFERRED EQUITY TOKENS SERIES A, ARTICLE VIII, available at: https://www.tzrop.com/terms.html; *see also* J.D. Alois, *tZERO Group Announces Full Tokenization of Series A Preferred Equity Security; tZROP Will Occur March 14,* CROWDFUND INSIDER (Mar. 7, 2025) https://www.crowdfundinsider.com/2025/03/237090-tzero-group-announces-full-tokenization-of-series-a-preferred-equity-security-tzrop-will-occur-march-14/.
[181] World Liberty Financial, Gold Paper (2024); https://static.worldlibertyfinancial.com/docs/intl/gold-paper.pdf
[182] *Top Memes Tokens by Market Capitalization*, CRYPTO.COM, https://crypto.com/price/categories/memes (last visited Aug. 12, 2023).
[183] "Dogecoin's value today isn't tied to real-world capital or the desire to make money off of the currency." Frank Gogol, *Should I Buy Dogecoin? This is What You Need to Know*, STILT BLOG (June 19, 2023), https://www.stilt.com/blog/2021/12/should-i-buy-dogecoin.
[184] Mike Murphy, *Dogecoin Co-Create Blasts Crypto Blasts Crypto as a Scam to Help the Rich Get Richer*, MARKETWATCH (July 14,2021) https://www.marketwatch.com/story/dogecoin-co-creator-blasts-crypto-as-a-scam-to-help-the-rich-get-richer-11626310808.

market capitalizations of leading companies, such as the New York Times.[185] While some have touted Dogecoin's payment system potential,[186] its utilities are largely entertainment, community, and a low-price crypto entry point.[187] To put it differently, Meme Coins serve largely aesthetic purposes[188]—"akin to collectibles" with "limited or no use or functionality," as per an SEC staff statement.[189] In that regard, Meme Coins arguably have some conceptual parallels to broader gamification of risk-based activities, from in-app investing to sports betting.[190]

A February 2025 SEC staff statement provided a measure of regulatory clarity, indicating that Meme Coins generally are not securities. However, it also stressed that "fraudulent conduct related to the offer and sale of meme coins may be subject to enforcement action or prosecution."[191] Such concerns are highly material, given sector propensity for various machinations impermissible with traditional assets. For instance, in late February 2025, Argentine President Javier Milei appeared to engage in a so-termed "rug-pull," through which he allegedly promoted and quickly sold a Meme Coin pocketing a quick profit at the expense of unsuspecting supporters.[192]

Correspondingly, though the SEC statement is silent on the issue, the fact that Meme Coins are generally not securities should not mean that they are simply left unsupervised. As detailed in Part IV, the regulatory framework should instead match the nature of the asset, in this case reflecting a digital collectible with associated guidelines. In other words, from a legal and policy perspective, the critical concerns are around disclosure and representations: *are consumers buying these items expecting something closer to a stock than a trinket?*

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[185] DOGECOIN, https://dogecoin.com/ (Aug. 12, 2023).
[186] David Rodeck, *Meet Dogecoin, the Meme Cryptocurrency*, FORBES ADVISOR (last visited Apr. 3, 2023), https://www.forbes.com/advisor/investing/cryptocurrency/what-is-dogecoin.
[187] *Id.*
[188] Certain Broken Tokens may functionally be Meme Coins, however potential issuance conduct concerns complicate classification in this respect.
[189] U.S. SEC. & EXCH. COMM'N, DIV. CORP. FIN., *Staff Statement on Meme Coins* (Feb 27, 2025), https://www.sec.gov/newsroom/speeches-statements/staff-statement-meme-coins (hereinafter *SEC Meme Coin Statement*) (noting Meme Coins "typically are purchased for entertainment, social interaction, and cultural purposes, and their value is driven primarily by market demand and speculation.").
[190] *All-In Podcast*, supra note 157.
[191] *SEC Memecoin Statement*, *supra* note 183.
[192] Nicolás Misculin, *Argentina Meme Coin Scandal Dents Milei's Hunt for Election Allies*, REUTERS (Feb. 27, 2025) https://www.reuters.com/world/americas/argentina-meme-coin-scandal-dents-mileis-hunt-election-allies-2025-02-27/.

3. Utility Tokens

Utility Tokens are crypto assets intended to provide functionality or utility within a specific ecosystem, platform or project.[193] As discussed below, they are subject to significant terminological and legal uncertainty due to overlap with "Broken Tokens." As used in this Article, "true" Utility Tokens are crypto assets consistent with prior SEC guidance (the "Utility Token NALs"), with the following attributes: (i) they are not intended as investments and do not confer potential profits; (ii) they have a fundamentally consumptive use case; and (iii) they are marketed accordingly.[194]

As I detail in an earlier article, from a legal and economic perspective, Utility Tokens closely resemble a familiar construct: miles and points issued by loyalty programs such as airlines and hotels ("Miles").[195] For consumers, both Utility Tokens and Miles reflect consumptive assets without means for profit but certain "currency-like" value for a circumscribed universe of products and services.[196] For issuers, Miles (like Utility Tokens) generate significant revenue – indeed, airline loyalty programs have 50% margins and valuations exceeding the operating business – but are not securities requiring registration.[197]

Unfortunately, the SEC and crypto industry appear irreconcilably at odds regarding the nature and definition of Utility Tokens, with particular complications arising from the prevalence of Broken Tokens. Many of the challenges can be addressed by treating Utility Tokens akin to Miles, rather than a wholly new construct necessitating bespoke legal frameworks, as discussed further in Part IV.

4. Broken Tokens

A long-standing problem underlying crypto markets is that many assets labeled "utility tokens" are, in reality, what this Article terms "Broken Tokens." Indeed, such legally-problematic assets constitute the

[193] Utility Tokens have some parallels to InfraCoins but are less versatile with functionality on a circumscribed system. Though some taxonomies present both as sub-categories of a broader Network Utilization Coin category, this Article does not due to significant legal differences between the assets.
[194] TurnKey Jet, Inc., SEC Staff No-Action Letter, 2019 WL 1471132 (Apr. 3, 2019); Pocketful of Quarters, Inc., SEC Staff No-Action Letter, 2019 SEC No-Act. LEXIS 319, at *2 (July 25, 2019); IMVU, Inc., SEC Staff No-Action Letter, 2020 SEC No-Act. LEXIS 339 (Nov. 19, 2020) (collectively, the "Utility Token NALs").
[195] *See, The Broken Token Problem*, Parts III.B,C.
[196] As detailed in a prior article, the consumptive utility (amongst other factors) distinguishes these assets from securities. *See, The Broken Token Problem,* Part III.B,C.
[197] They are of course inherently intertwined businesses. Claire Bushey, *US Airlines Reveal Profitability of Frequent Flyer Programmes*, FIN. TIMES (Sept. 16, 2020), https://www.ft.com/content/1bb94ed9-90de-4f15-aee0-3bf390b0f85e; STIFEL, VALUING AIRLINE LOYALTY PROGRAMS—AIRLINES ARE INTRINSICALLY UNDERVALUED 1 (2017), https://stifel2.bluematrix.com/docs/pdf/bfcbb9a0-ed7f-41de-89ea2b97d3afe082.pdf; So Yeon Chun & Evert de Boer, *How Loyalty Programs Are Saving Airlines*, HARV. BUS. REV. (Apr. 2, 2021), https://hbr.org/2021/04/how-loyalty-programs-are-saving-airlines.

majority of individual crypto instruments by count (though not value). Broken Tokens have the following core attributes:

- Use of Capital. The token sale is, for practical purposes, a capital raise for a then-unbuilt or unfinished platform (running afoul of clear SEC guidance).
- Labels. The asset is labeled a "Utility Token," but cannot meet the Utility Token NAL standard because it offers no immediate consumptive "utility" at issuance.
- Marketing. Disclosures most closely resemble that of equity securities, including references to potential profit, ownership, and alignment of interests with project management.
- Limited Legal Rights. Unlike Equity Coins or true Utility Tokens, Broken Tokens confer limited (or non-existent) legal rights, making them in effect legally closest to Meme Coins, distinguished only by the stated intention of future platform development.[198]

Broken Tokens thus strangely straddle all Security & Utility categories, as they are labeled "Utility Tokens" (for ostensible regulatory purposes), marketed like equity but in reality substantively closest to Meme Coins. They are the most legally problematic crypto because, often through borderline-fraudulent marketing, they reflect the largest and most persistent delta between economic substance, market perception, and regulatory treatment. These issues underscore and exacerbate overarching apprehensions regarding crypto assets' intrinsic value and productive uses.[199]

Broken Tokens encompass two distinctive sub-categories: (1) "Pre-Utility Tokens," which reflect unregistered securities offerings for purposes of funding platform development; and (2) "Non-Utility Tokens" which reflect at best bad faith, but more likely fraudulent conduct.[200] While both are problematic, the nature of why the token is "broken" can have regulatory and legal implications. "Pre-Utility" Tokens broadly fall within the civil line under SEC jurisdiction as unregistered offerings typically punishable by fines. "Non-Utility Tokens," in contrast, may represent fraud, with potential for criminal charges within DOJ purview.[201]

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[198] In reality, many crypto projects are unable to achieve this, resulting in a strange limbo for investors.
[199] FTX founder Sam Bankman-Fried posited that most crypto lacks intrinsic value. *See Bankman-Fried on Crypto Downturn & Acquisition Landscape*, BLOOMBERG (July 19, 2022), https://www.bloomberg.com/news/videos/2022-07-19/bankman-fried-on-crypto-downturn-acquisition-landscape.
[200] The normatively hardest cases are likely to be those that begin as broadly good faith unregistered offerings, but devolve into problematic conduct. *See*, *The Broken Token Problem*, Part IV.
[201] One example of the Non-Utility Token offering may be the Blockchain Terminal ICO, and associated BCT token. The BCT token was marketed as facilitating a competitor to the Bloomberg Terminal but in reality reflected closer to a ponzi scheme. *See* https://www.justice.gov/usao-nj/press-release/file/1235956/dl; https://www.theblock.co/post/4553/two-identities-one-man-the-story-of-800-million-hedge-fund-fraudster-boaz-manor-who-led-the-alleged-31-million-blockchain-terminal-ico. A separate early-stage research project plans to analyzes these issues and associated regulatory implications in depth.

C. Liability-Based Instruments

The third asset grouping, Liability-Based Instruments, encompasses Crypto Debt, Yield Products and Staking Services. All three categories are economically fixed income-adjacent structures predicated on bearing risk for a typically passive return, without equity-like features or exposure.[202] Liability-Based Instruments are somewhat less developed relative to the other two groupings and are thus not sub-categorized below the category (tier 2) level.[203]

Importantly, given their information and intermediation-heavy nature, Liability-Based Instruments appear well-suited for blockchain applications, particularly when combined with other tools, such as generative AI and smart contracts. Indeed, many forecast significant growth with respect to both digitally native issuance as well as tokenization of existing traditional market instruments, such as corporate bonds and loans.[204]

1. Crypto Debt

Crypto Debt refers to crypto tokens that exhibit legal and economic characteristics broadly analogous to traditional debt instruments, including varying degrees of explicit and implicit repayment obligations. The arrangements vary significantly, ranging from relatively simpler quasi corporate bonds to structured and synthetic product analogs.[205]

In recent years, a number of financial institutions have issued digitally native or tokenized bonds, often with automated interest payments through smart contracts.[206] Examples include BBVA's 2019 $40 million green bond issuance,[207] UBS's 2022 $370 million issuance under Swiss law,[208] and DBS Bank's May 2021 $11.3 million digital bond.[209] More complex structures include protocol-related tokens explicitly structured as debt to finance operations or expansions[210] as well as tokenized protocol lending,

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[202] *See* Gary Plastic Packaging Corp. v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 756 F.2d 230, 240 (2d Cir. 1985) ("In the present case, the certificates of deposit sold through the CD Program satisfy the *Howey* test for determining what constitutes an investment contract within the meaning of the Acts.").
[203] As discussed below, certain sub-categories appear to be emerging, and the classification may be revisited in the future to reflect this.
[204] *See supra*, Part I.
[205] For instance, Yield-Bearing Synthetic Assets are tokens that track the value of traditional assets while accruing yield from DeFi strategies. *See*, J. Xu, et al, *SoK: Decentralized Exchanges (DEX) with Automated Market Maker (AMM) Protocols.* ACM COMPUTING SURVEYS, (2022).
[206] V. Mohan (2022). Automated market makers and decentralized exchanges: a DeFi primer. *Financial Innovation*, 8(1), 1-27.
[207] https://cointelegraph.com/news/major-spanish-bank-bbva-issues-40-million-green-bond-based-on-blockchain-platform
[208] The bonds represented a direct debt obligation of UBS with a 3-year maturity and were traded on both blockchain infrastructure and traditional exchanges.
[209] The bond was issued through DBS's Digital Bond issuance platform.
[210] Examples include Maple Finance's Pool Tokens and Ribbon Finance's rvTokens.

with lent deposits reflected by tokenized claims that also incorporate accrued interest, reducing frictions.[211] Tranched yield tokens separate principal and yield components to create crypto analogs to zero-coupon bonds and interest-only strips, introducing explicit DeFi term structures and creating tradable yield curves.[212]

2. Yield Products

Yield Products represent financial arrangements where digital asset holders provide temporary access to their assets in exchange for interest, often at rates far above traditional markets.[213] These products proliferated as the crypto ecosystem matured, creating opportunities for passive income generation while introducing novel risk factors.[214] Typically, Yield Products are offered by centralized Crypto Platforms that intermediate between lenders (depositors) and borrowers of digital assets. Crypto Platforms often maintain custody (and sometimes legal ownership) of user deposits and manage asset allocations to generate returns in excess of depositor yields, with the goal of earning profit on the spreads.[215] The business model resembles aspects of traditional financial intermediation but operates in largely or partially unregulated environments.[216]

The policy issue, as is common with crypto, is not the nature of the risk itself but rather frequent product mis-marketing of Yield Products as akin to bank deposits or other low-risk investments. In reality, the first-principles economics are closest to high-yield or distressed-focused Business Development Companies. Just as with traditional finance, the promise of above-market yields requires above-market risks, including exposure to speculative endeavors.

The dynamics are well illustrated by offerings from Celsius and a Gemini/Genesis collaboration, both of which were popular during the Covid-19 crypto boom, but ultimately left investors stranded in lengthy bankruptcy proceedings.[217] Celsius, a now-defunct unregulated 'crypto bank' operated one of the largest

[211] Examples include Compound's cTokens, which accrete in value as interest accrues on underlying assets deposited into Compound's lending pools and Alchemix's alTokens, which represent self-repaying loans where yield from deposited collateral gradually pays down the debt. See, Leshner, R., & Hayes, G. (2019). "Compound: The Money Market Protocol White Paper (2019); Alchemix, Synthetic Token Generation Through Self-Repaying Loans. Technical Documentation (2021)
[212] Examples include Element Finance's Principal and Yield Tokens and Pendle Finance's PT and YT tokens.
[213]Joshua Oliver, *Investors warned that crypto 'yield' products are not bonds,* FIN. TIMES (Nov. 7, 2021) https://www.ft.com/content/cfc4eece-df0f-479f-ad51-56300dfa3149
[214] Sirio Aramonte, Wenqian Huang & Andreas Schrimpf, *DeFi risks and the Decentralisation Illusion*, BIS Q. REV. (Dec. 2021).
[215] Steven M. Werner et al., *SoK: Decentralized Finance (DeFi)*, PROC. 3D ACM CONF. ADVANCES FIN. TECH. 1 (2022).
[216] Dirk A. Zetzsche, Ross P. Buckley & Douglas W. Arner, *Decentralized Finance*, 6 J. FIN. REG. 172 (2020).
[217] During the Covid-19 crypto boom, "Earn" was a common industry marketing term for what this Article classifies as "Yield Products."

deposit-like Yield Products through which customers could earn rates of up to 17% on crypto deposits.[218] This required Celsius to seek out increasingly high-risk investments, many of which quickly soured during sector's 2022 downturn.[219] Celsius filed for Chapter 11 in July 2022, resulting in a highly contentious process with extensive fraud allegations, particularly around the status and marketing of the Earn accounts. Ultimately, despite alleged misrepresentation, the court found about 600,000 Earn Accounts with $4.2 billion constituted property of the Celsius bankruptcy estate.[220] The Gemini/Genesis Yield Product ("Gemini Earn") operated more akin to a brokerage product, exposing customers to distinct legal issues but similar economic risk that materialized when Genesis filed for bankruptcy.[221]

3. Staking Services

Staking represents a fundamentally different mechanism from Yield Products, rooted in blockchain consensus rather than financial intermediation. In proof-of-stake (PoS) blockchain networks, validators must "stake" (commit) a certain amount of the network's native cryptocurrency as collateral to participate in the consensus process.[222] The primary purpose of staking is securing the network through economic incentives, with rewards compensating validators who contribute to consensus formation -- providing what are in effect network security-like services.[223] The mechanism also creates an alternative to proof-of-work that avoids its energy consumption issues while attempting to maintain decentralization properties.[224]

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[218] Alex Mashinsky, First Day Dec'l in Support of Chapter 11 Petitions & First Day Motions at 2, 4, 17 ¶ 47, *In re Celsius Network LLC*, No. 22-10964 (MG) (Bankr. S.D.N.Y. July 13, 2022), ECF No. 23 [hereinafter *Mashinsky First Day Decl.*]. After scrutiny from the SEC and state regulators, Celsius replaced the "Earn" program with a hastily-established "Custody" program through which users would retain legal ownership of the assets. *See* Lev E. Breydo, *Contagion*, Part III; *See also* Sissi Cao, *Was Celsius a Massive Scam From the Start?*, OBSERVER (Jan. 4, 2023), https://observer.com/2023/01/was-celsius-a-massive-scam-from-the-start/.
[219] Mashinsky First Day Decl at 5.
[220] *See*, Lev E. Breydo, *Contagion*, Part III.B (detailing Celsius bankruptcy proceedings as well as the Earn account decision and its impact). *See also, See also Interim Report of the Examiner* at 1–2, *In re Celsius Network LLC*, No. 22-10964 (MG) (Bankr. S.D.N.Y. Nov. 19, 2022), ECF No. 1153 [hereinafter '*Celsius Interim Examiner Report'*] (describing transition away from Earn Accounts).
[221] The SEC argued that starting in February 2021, Gemini (a crypto brokerage) and Genesis (a lender) raised billions through the "unregistered offer and sale of securities to U.S. retail investors" via a jointly offered debt-like product ("Gemini Earn" program) where "investors tendered crypto assets to Genesis" and, in exchange, Genesis promised to pay interest on those assets to investors. *SEC Charges Genesis and Gemini for the Unregistered Offer and Sale of Crypto Asset Securities Through the Gemini Earn Lending Program*, UNITED STATES SEC. & EXCH. COMM'N (Jan. 12, 2023), https://www.sec.gov/news/press-release/2023-7.
[222] Giulia Fanti et al., *Proof of Stake: A Mechanism Design Approach*, 68 MGMT. SCI. 949–968 (2022).
[223] BUTERIN, ETHEREUM 2.0 SPECS: INCENTIVES, ETHEREUM FOUND. (2020).
[224] Fahed Saleh, *Blockchain Without Waste: Proof-of-Stake*, 34 REV. FIN. STUD. 1156–1190 (2021).

Staking services are popular because direct staking requires significant technical expertise and substantial capital.[225] Service providers abstract away the technical complexity of staking, allowing users to delegate their otherwise dormant assets to professional validators, with some parallels to securities lending programs.[226]

From a regulatory perspective, Staking Services occupy something of a gray area as they combine elements of infrastructure provision with investment-like characteristics.[227] The SEC's approach thus far has largely appeared to focus on the marketing, expectations of profit, and the level of effort contributed by service providers rather than the underlying staking mechanism itself. In February 2023, the SEC reached a $30 million settlement with Kraken regarding its staking service, which the SEC characterized as an unregistered securities offering.[228] Some have argued that this action signaled increased regulatory attention to the distinction between direct and serviced staking in respect of the latter exhibiting characteristics of investment contracts.[229]

IV. POLICY RECOMMENDATIONS

The hodgepodge of confusion around crypto has proven extraordinarily value destructive for all constituencies, including consumers, good faith entrepreneurs and the innovation ecosystem. Deep understanding of a sector represents a prerequisite to effective oversight and this Article provides exactly that, with a comprehensive and empirically rigorous framework to guide policy makers addressing these critical challenges. Normatively, the guiding principle is consistent treatment for comparable risks, assets and similarly situated consumers – treating "like alike" based on form, irrespective of form or labels.

This Part IV of the Article focuses on prescriptive solutions. It is organized in two parts. First, at a macro-prudential level, leveraging the Article's crypto asset taxonomy, it provides recommendations for recalibrating regulatory classifications to harmonize asset-specific characteristics with regulatory treatment and jurisdiction. Second, it outlines measures for enforcement and oversight, focusing on appropriate disclosure and consumer protection for both new and legacy assets.

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[225] Some have argued that this creates entry barriers that concentrate validation power. D. Park, et al., *The Anatomy of a Cryptocurrency Pump-and-Dump Scheme*, *USENIX Security Symposium*, 1609-1625 (2019).
[226] Staking service models include exchange-based staking, staking as a service and liquid staking protocols. See Brünjes, et al., "Reward Sharing Schemes for Stake Pools." *IEEE European Symposium on Security and Privacy Workshops*, 256-265; Crain, et al, "DBFT: Efficient Byzantine Consensus with a Weak Coordinator and its Application to Consortium Blockchains." *IEEE 37th Symposium on Reliable Distributed Systems* (2021).
[227] Carla Reyes, *Creating Cryptolaw for the Uniform Commercial Code*, W&L L Rev, 78, 1521 (2020).
[228] Securities and Exchange Commission. (2023). "Payward Ventures, Inc. d/b/a Kraken." Administrative Proceeding File No. 3-21288, February 9, 2023.
[229] Walch, A. (2022). "The Gap Between the Concept and Reality of Decentralization in Blockchain Governance." *Journal of Financial Regulation*, 8(1), 136-169. *See also*, Part I.C.

A. Rationalize Regulatory Treatment

The complexity of crypto forms and labels has long paralyzed regulators, preventing analysis of substance. As this Article's analysis illustrates, the vast majority of crypto assets have readily identifiable traditional market analogs that should serve as the baseline for regulatory treatment – in other words, "same activity, same risk, same regulations."[230] However, largely due to industry machinations, there is often a vast disconnect between: (i) the substantive nature of an asset; (ii) its perception by market participants; and (iii) the regulatory treatment. Addressing these disconnects starts with rationalizing the oversight framework. Building on the analysis from Part I, Figure 12 below presents the current regulatory treatment (middle) as well as the Article's proposed approach, at right. Two core principles underlie the proposal. First, the regulatory treatment of each asset must match its economic substance. Second, oversight should be within the purview of the most appropriately situated agency.

Figure 12. Regulatory Architecture: Current (Q3 2025) & Proposed

	Current (Q3 2025)		Proposed Changes	
Category	**Legal Status**	**Regulator**	**Legal Status**	**Regulator**
1. Utility Tokens	Unclear*	**Unclear (SEC / CFTC)**	Rewards Program	CFPB
2. Broken Tokens:	Security / Unclear			
'Pre-Utility'			Security / Legal Claim[4]	SEC
'Non-Utility'			Likely Legal Claim	SEC / DOJ
3. Equity Coins	Security / Unclear		Security	SEC
4. Meme Coins	Unclear[1]		Digital Collectible	CFPB
5. Store of Value Coins	Commodity (Bitcoin)	CFTC	Commodity	CFTC
6. Stable Coins	Payment StableCoin / Other Types Unclear[2]	Banking Regulators / Unclear[5]	Security / MMF	SEC
7. InfraCoins	Unclear / Commodity (Ether)	Unclear (CFTC / SEC)	Commodity	CFTC
8-10. Liability-Based Instruments[3]	Unclear (SEC Argues Security)	Unclear / SEC	Largely Securities	SEC

[1] *February 2025 SEC Staff Statement (which lacks the force of law) indicated not a security.*

[2] *April 2025 SEC Staff Statement (which lacks the force of law) indicated USD-Covered not a security.*

[3] *Consolidated due to more limited legal clarity.*

[4] *Fact, context and disclosure-specific.*

[5] *The 2025 GENIUS Act gave banking regulators oversight of Payment Stable Coins. Classification of other StableCoins remains unclear.*

* *While true Utility Tokens should not be considered securities, practical uncertainties limit this proposition.*

[230] *Investigating the Collapse of FTX*: *Hearing Before the House Fin. Serv. Comm.,* 117th Cong. (Dec. 13, 2022) (Remarks of Senator Elizabeth Warren, calling for uniform treatment of similar transactions with the "same kind of risks"); Tobias Adrian, et al., *Crypto Needs Comprehensive Policies to Protect Economies and Investors*, IMF BLOG (July 18, 2023), https://www.imf.org/en/Blogs/Articles/2023/07/18/crypto-needs-comprehensive-policies-to-protect-economies-and-investors (providing principle of "same activity, same risk, same regulations").

Four facets of the above proposal are important to highlight. First, recognizing the importance of clear regulatory domains – particularly given long-running SEC-CFTC jurisdictional frictions – the proposal allocates responsibility consistent with traditional markets. To that end, the CFTC is responsible for crypto assets most akin to commodities, including Store of Value and InfraCoins, while the SEC would have oversight around assets closest to securities. Second, given the pervasive nature of past misconduct – and particularly abuses around Broken Tokens – the framework envisions avenues for pursuing both civil and criminal claims, including a potential DOJ role for matters that may fall within its purview.[231]

Third, system-wide oversight is imperative, including for assets that are neither securities nor commodities and thus outside of SEC and CFTC jurisdiction. In other words, even if an asset is not a security, it does not follow that it should be left without supervision. To the contrary, pervasive abuses across the crypto sector illustrate the acute need for consumer protection. Correspondingly, marketing practices and disclosures for crypto such as Meme Coins and Utility Tokens should be supervised through a tailored framework by an appropriately positioned regulatory body.[232]

Finally, to avoid repeating past mistakes, oversight should be forward looking. Correspondingly, the proposal adopts a rebuttable presumption that Crypto Debt instruments are securities by default. That baseline can be adjusted based on subsequent developments, including potentially incorporating prudential oversight or elements thereof.

B. Oversight & Enforcement

Following calibration of the regulatory architecture, policy emphasis can shift to asset-level oversight, focusing on ensuring consumer protection, fostering innovation and safeguarding market stability. To that end, regulatory activity should focus on two primary areas: (i) addressing legacy problem assets, including Broken Tokens; and (ii) ensuring best practices for new assets at the time of sale, as well as through ongoing monitoring and disclosures.

1. Legacy Assets

For regulators untangling the Broken Token Problem, the guiding principle must be protecting consumers—not grandfathering industry practices inconsistent with the law. Based on the SEC's positions and market

[231] For further discussion of policy proposals, *See The Broken Token Problem* Part IV.
[232] The Consumer Financial Protection Bureau ("CFPB") appears conceptually logical; however, changes to its structure may suggest engaging or developing a specialized group within another regulatory agency such as the FTC.

realities, a reasonable starting point may be a rebuttable default presumption that assets within the Security and Utility Crypto category are securities that must be registered and treated as such.[233] Following procedures similar to those in place for "no action relief," issuers could rebut the presumption by demonstrating appropriate classification (and associated oversight) as true Utility Tokens or Meme Coins.

Following a transition period, there must be clear consequences for entities that fail to comply, including enforced penalties and appropriate conduct-specific distinctions in legal treatment, particularly as between Pre-Utility and Non-Utility Tokens.[234] This forced delineation and resulting regulatory clarity will benefit stakeholders across the crypto ecosystem — particularly existing and prospective projects seeking to operate in a legally compliant manner.

2. New Innovations

Regulators must ensure that the development, marketing and distribution of new crypto assets is consistent with holistic regulatory compliance in accordance with standards developed to reasonably account for asset-specific distinctions. In other words, while appropriate disclosures may logically differ for Meme Coins relative to Utility Tokens relative to securities, all asset types must provide factually accurate and legally comprehensive information to consumers.

For instance, while Meme Coins are neither securities nor Utility Tokens, the problem is that it is unclear whether purchasers understand this. While the law should not per se preclude parties from purchasing Dogecoin based on their own subjective preferences, the critical consideration is whether they are fully informed and understand that they are purchasing digital aesthetics, not investment assets. To that end, regulators should ensure that project sponsors are correctly and clearly representing the substantive nature of each asset, including through independent third-party technical audits.

Certain crypto, like Utility Tokens, may require ongoing oversight over the course of the asset lifecycle to ensure compliance. That is because it is possible for an asset to meet certain requirements at issuance but then fail to do so subsequently. Given the crypto sector's recent history, regulators should not assume that the sector is sufficiently developed to have in place organic market-driven corrective mechanisms and thus must err accordingly.

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[233] This is consistent with some scholarly proposals. *See* Carol R. Goforth, *Regulation by Enforcement: Problems with the SEC's Approach to Cryptoasset Regulation*, 82 MD. L. REV. 107, 152 (2022) (suggesting "all tokens, however classified, should to some extent be regulated as securities. . . . [to] avoid[]the lack of clarity inherent in the current system," as well as certain registration requirements "to avoid the perils of over-regulation and concomitant stifling of innovation").

[234] A limited, time-bound safe harbor is an option, but implicates considerations beyond the scope of this analysis.

While regulators should encourage productive innovation, experience shows the importance of remaining vigilant regarding new technologies and the potential for regulatory arbitrage. Tokenization appears to perfectly encapsulate these considerations, with the potential to improve important aspects of the financial system, while also creating material risks. Accordingly, proactive oversight and industry engagement are critical to ensure that consumers and market participants are protected from undue risks while benefiting from productive innovation.

CONCLUSION

Crypto can be confusing. Understanding of seemingly simple questions – including *what is crypto?* – remains elusive. Heterogeneity presents a gating challenge, as crypto is a 10,000-asset universe that lives at the intersection of technology, finance and law.

By developing the first truly comprehensive crypto asset taxonomy, this Article fills a critical gap long recognized by policymakers. The framework builds upon and synthesizes facets of existing approaches – from scholars, regulators, and the private sector – with essential contributions to the literature and public discourse. The implications, as the Article details, extend far beyond the sector as we understand it today, as ostensibly crypto-focused legislative proposals have the potential to fundamentally transform markets.

The stakes could not be higher. Fortunately, the Article's taxonomical framework provides a powerful tool for understanding market structure, unearthing problematic industry practices and identifying areas for regulatory action. Leveraging these tools, the Article details a proposed recalibration of the regulatory architecture as well as robust measures for crypto oversight going forward.

APPENDIX I. SUMMARY OF EXISTING TAXONOMIES

This Article's framework builds upon and synthesizes a number of existing approaches, including those from regulators,[235] thinktanks[236], scholars[237] and the private sector.[238]

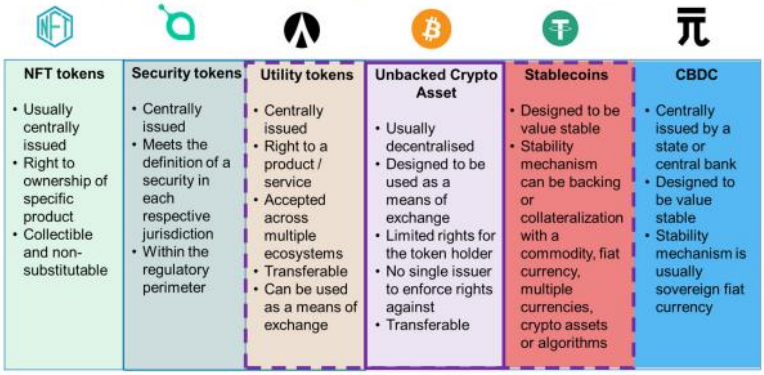
While each of the approaches has its merits, the fundamental advantages of this Article's taxonomy include that it: (i) is based on economic substance, rather than technical attributes[239] or stated labels; (ii) encompasses ambiguities and inconsistencies, including with respect to areas like Broken Tokens and Pre-Utility Tokens; (iii) reflects legal characteristics, allowing it to map directly to the U.S. regulatory structure; and (iv) provides a mutually exclusive collectively exhaustive ("MECE")[240] mapping of the full universe of crypto assets.[241]

Some of the most relevant approaches are discussed, compared, contrasted and critiqued below:

- **International Monetary Fund ("IMF")**.[242] The IMF divides crypto assets into six categories: (i) NFT tokens; (ii) Security Tokens, which "provide the holder with rights like that of a traditional security"; (iii) Utility Tokens, which "provide the token holder with access to an existing or prospective product or service"; (iv) Unbacked Crypto Assets, decentralized and designed as medium of exchange, including Bitcoin and Ether; (v) Stablecoins, defined similarly as in this Article; and (vi) Central Bank Digital Currency ("CBDC").
    - The primary differences relative to this Article's framework are that: (i) this Article does not include NFTs and CBDCs; (ii) this Article views the unbacked crypto assets category as far too broad (though factually accurate); and (iii) this Article recognizes the prevalence and significance of Broken Tokens, reflecting the economic substance of many assets.

[235] Goldmanm & Kumar, *supra*, at 1.
[236] *Id.*
[237] Jens Lausen, *Regulating Initial Coin Offerings? A Taxonomy of Crypto-Assets, Twenty-Seventh European Conference on Information Systems*, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3391764.
[238] Sabry & Franceschelli, *supra*.
[239] *Crypto Taxonomy*, COINDESK, https://www.coindesk.com/dacs/ (outlining Digital Asset Taxonomy by technical features).
[240] *See supra*, n. 98.
[241] The Milken framework, for instance, includes bitcoin in both digital and virtual currency, making it a non-MECE framework.
[242] Parma Bains et al., *Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets*, INT'L MON. FUND: FINTECH NOTES (2022), https://doi.org/10.5089/9798400221361.063.

Figure 1. A Taxonomy of Crypto Assets, NFTs, and CBDCs and Scope of This Note



Legal Scholarship:

- **Amongst legal scholars,**[243] Professor Guseva provides perhaps the most comprehensive summary of frameworks within the legal literature, with the approaches delineating crypto assets along three dimensions:[244]
    - Native and Non-Native Tokens
    - Functional and regulatory classifications
    - Fungible and non-fungible tokens

- Others, including Professor Goforth, have suggested that "An excellent first step would be to divide tokens into something like the following general categories: (1) currency or payment tokens; (2) securities tokens; and (3) utility tokens."[245]
- Professor Ibrahim distinguishes between bitcoin, ether and 'alt-coins' as a whole.[246]

Private Sector:

- **Steemit**. This framework divides crypto assets into five main types:[247] Stores of Value (StoVa Coins), PlatformCoins, ProductCoins, Equity Coins (EquiCoins), and Stable Coins:
    - StoVa Coins correspond to the "first generation of cryptocurrencies," and encompass per this framework assets beyond bitcoin.

[243] The legal literature does not appear to include an attempt at a comprehensive crypto framework, though a significant literature discusses the treatment of crypto assets generally, and of bitcoin in particular. *See, e.g.*, Thomas Lee Hazen, *Tulips, Oranges, Worms, and Coins – Virtual, Digital, or Crypto Currency and the Securities Laws,* 20 N.C. J. L. & TECH. 493, 496 (2019); Ruoke Yang, *When Is Bitcoin A Security Under U.S. Securities Law?,* 18 J. TECH. L. & POL'Y 99, 111 (2013).
[244] Yuliya Guseva, *A Conceptual Framework for Digital-Asset Securities: Tokens and Coins As Debt and Equity*, 80 MD. L. REV. 166, 175–79 (2020).
[245] Carol R. Goforth, *Regulation by Enforcement: Problems with the SEC's Approach to Cryptoasset Regulation,* 82 MD. L. REV. 107, 151 (2022) (citing Lavnya Rathnam, *What Is the Difference Between Utility, Security and Payment Tokens?*, PLANET COMPLIANCE, https://www.planetcompliance.com/what-is-the-difference-between-utility-security-and-payment-tokens/).
[246] Darian M. Ibrahim, *A Tokenized Future: Regulatory Lessons from Crowdfunding and Standard Form Contracts,* 74 HASTINGS L.J. 45, 53 (2022), https://doi.org/10.2139/ssrn.4053968.
[247] It is formally four, but UtiliCoins are sub-divided between PlatformCoins and ProductCoins.

        - This Article does not take this approach because, labels notwithstanding, it does not fully match the economic substance and legal characteristics of some such assets.
    - PlatformCoins reflect what this Article terms InfraCoins, though this Article diverges regarding category components (aside from with Ether).
    - ProductCoins encompass both Utility Tokens and Pre-Utility Tokens; the category is not used due to the economic substance of Pre-Utility Tokens.
    - EquiCoins reflect what this Article terms EquityCoins, though this Article diverges regarding category components.
    - StableCoins correspond to this Article's Tier 2 Stablecoin category. However, the Steemit framework does not provide sub-categories, which is limiting particularly in light of material distinctions between collateralized stablecoins and the other sub-categories.

- **Milken Institute**.[248] The Milken Institute framework splits digital assets by legal tender, including "digital currency," corresponding to typically state-backed digital assets with legal standing, and "virtual currency," without state backing. The framework then sub-divides virtual currency by technology, with different buckets for blockchain, hedera and "other DLTs," with particularly strong stablecoin mapping.

[248] *See* KATE GOLDMAN & ARNAV KUMAR, A TAXONOMY OF DIGITAL ASSETS, MILKEN INSTITUTE 11 (2021), https://milkeninstitute.org/sites/default/files/2021-10/A%20Taxonomy%20of%20Digital%20Assets.pdf.

APPENDIX II. ANALYSIS OF U.S. REGULATORY FRAMEWORKS & PROPOSALS

The tempo of U.S. crypto-focused legislative efforts significantly accelerated in 2025 with two important vehicles: (i) the Guiding and Establishing National Innovation for U.S. Stablecoins Act (GENIUS Act), which focuses on StableCoins and was passed in July 2025, and (ii) the proposed Digital Asset Market Clarity Act of 2025 (CLARITY Act), which is focused on market structure and is currently pending before a Senate Committee. While distinct in scope, both attempt to resolve jurisdictional friction with statutory classification rooted in technical functionality.

The GENIUS Act (enacted July 2025) creates a dedicated regulatory lane for "Payment Stablecoins," explicitly removing them from the definition of securities and commodities.[249] The Act defines a Payment Stablecoin as a digital asset that is redeemable on a one-to-one basis for a fixed monetary value, backed by segregated reserves of high-quality liquid assets (such as U.S. Treasury bills), and does not pay yield to holders.[250] Regulatory oversight is assigned to federal and state banking agencies rather than market regulators like the SEC or CFTC.[251]

The CLARITY Act (currently pending before a Senate Committee) seeks to delineate jurisdiction over digital assets between the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC).[252] The proposed legislation's core mechanism is the creation of a statutory definition for "Digital Commodities," which are placed under exclusive CFTC jurisdiction.[253]
To qualify as a Digital Commodity, an asset must be associated with a "Mature Blockchain System"—a network certified to be decentralized, such that no single person or affiliated group controls more than 20 percent of the outstanding units or voting power.[254] Assets that do not meet this maturity standard remain subject to SEC oversight as "Restricted Digital Assets" until they can demonstrate sufficient decentralization.[255] The Act further creates a "safe harbor" regime, allowing projects to raise capital and develop networks under limited SEC supervision before transitioning to the CFTC regime.[256]

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[249] *Guiding and Establishing National Innovation for U.S. Stablecoins Act (GENIUS Act)*, Pub. L. No. 119-XX, 139 Stat. XXX (2025). Signed into law by the President on July 18, 2025.
[250] *Id.* § 3(b)
[251] *Id.* § 5.
[252] *Digital Asset Market Clarity Act of 2025*, H.R. 3633, 119th Cong. (2025). As of Jan 5, 2026, the CLARITY Act passed the House of Representatives on July 17, 2025, and is currently pending before the Senate Committee on Banking, Housing, and Urban Affairs.
[253] *Id.* § 102.
[254] *Id.* § 204(a).
[255] *Id.* § 301
[256] *See generally Crypto Legislation: An Overview of H.R. 3633, the CLARITY Act*, Cong. Rsch. Serv. (Sept. 30, 2025)

This approach aligns with the Article's recommendation for jurisdictional clarity between the SEC and CFTC, though the reliance on decentralization as the primary classification criterion risks obscuring economic substance—particularly the distinction between functional infrastructure assets (InfraCoins) and non-functional "Broken Tokens."

Limitations. Despite certain advances, the emerging U.S. regime largely functions as a series of targeted interventions layered atop a fragmented architecture. The fundamental deficiency is a reliance on binary classification systems that often fail to account for the economic nuance of the broader asset universe. This piecemeal approach creates material incongruities that preserve vectors for regulatory arbitrage and distort enforcement priorities.

Indeed, the prevailing legislative impulse is to resolve jurisdictional allocation rather than foundational classification. The result is a regulatory perimeter that addresses specific asset classes, such as payment stablecoins, while remaining porous regarding others. This Article’s taxonomy resolves these deficiencies by prioritizing economic substance over technical topology, ensuring that regulatory outcomes align with the actual rights and risks transferred to the consumers.

APPENDIX III. THREE-TIER FULL CRYPTO ASSET TAXONOMY

Crypto Asset Taxonomy: Comprehensive, 3-Tier Economic & Legal Attribute Framework

	Category	Description	Examples (Secondary)	% Market: 1/14/23[1]	% Market: 4/12/25	Change
Infra-structure & Store of Value	**1. Store of Value Coins**	Early crypto, primarily BTC.*		**41.0%**	**63.4%**	**22.4%**
		1A. Bitcoin	BTC			
		1B. Potential Alternatives	Litecoin; Monero			
	2. Stable Coins.	Three sub-categories:		13.0%	7.2%	-5.8%
		2A. Collateralized. Pegged value, USD/EUR reserve (or crypto)	Tether; USDC; BUSD			
		2B. Algorithmic. Pegged value through trading strategy.	TerraClassic; Frax			
		2C. Commodity. Value pegged to natural resource, such as oil.				
	3. InfraCoins	Highly functional; sector 'gas;' quasi-infrastructure.		21.4%	11.8%	-9.6%
		3A. ETH. Original Blockchain 2.0 protocol	ETH			
		3B. Blockchain 3.0 Alternatives	Cardano, Polygon, Solana			
			Sub-Total	**75.4%**	**82.4%**	**7.0%**
Security & Utility	**4 Equity Coins**	Most substantively similar to equity.		24.6%	-	
		4A. 'Traditional'	Iconomi; Etheroll DICE			
		4B. Econ Share	TZROP			
		4C. Governance Token	WLFI			
	5. Meme Coins	No utility, rights or clear economics. Most akin to collectibles.	DogeCoin, Shiba Inu		1.2%	
	6. Utility Tokens	NAL Consistent. Economics ~ loyalty program miles.	TKJ, VCOIN, PoQ[2]		16.4%	
	7. Broken Tokens	Most legally problematic. 'Pre-Utility' and 'Non-Utility' Tokens.				
		7A. 'Pre-Utility Tokens.' Development capital. ~early stage equity, unclear legal rights. Likely civil.	FTT, LBRY, Kin			
		7B. 'Non-Utility Tokens.' Platform development not intended or impractical. Potential fraudulent conduct.	BCT			
			Sub-Total	**24.6%**	**17.6%**	**-7.0%**
Liability -Based Instr-uments	**8. Yield Products**[4]	Above-market rates; high-risk loans. HY BDC parallels.	Genesis/ GEM; CEL	N/A		
	9. Crypto Debt	Quasi-contractual, economics ~ debt instruments.	Aave, IOUBTC/ ETH			
	10. Staking Services	DEX rewards; yield for digital asset loans / liquidity.	Most staked: ETH, SOL and ADA			

[1] *Based on coinmarketcap.com data.*

[2] *TKJ Tokens, VCOIN, PoQ Quarters deemed not securities through SEC No Action Letters.*

[3] *Listed separately to denote distinct features relative to other facets of the crypto universe.*

[4] *Some earn / yield products use the capital for staking; however, this is distinct from DeFi staking due to diversified nature of exposure.*

APPENDIX IV. CATEGORY-LEVEL MARKET DATA TABLES

Crypto Asset Value by Category ($Bn): 2010-2025

Date	BTC	ETH	Other InfraCoins	Stable Coins	Meme Coins	Other / Broken Tokens	Crypto Asset Total	Number of Crypto Assets
1/1/2010								1
1/1/2011	0.0						0.0	5
1/1/2012	0.1						0.1	10
1/1/2013	0.2						0.2	7
1/1/2014	11.4				0.0	0.0	11.4	67
1/1/2015	4.4				0.0	0.0	4.4	501
1/1/2016	6.9	0.1			0.0	0.2	7.2	572
1/1/2017	16.1	0.7	0.1		0.0	0.8	17.7	636
1/1/2018	276.6	111.7	50.0		2.0	265.5	705.7	1,359
1/1/2019	71.2	16.4	4.4	1.9	0.3	41.1	135.4	2,086
1/1/2020	134.5	14.9	4.8	4.1	1.0	40.4	199.6	2,403
1/1/2021	609.4	111.3	26.3	26.9	0.5	106.2	880.7	4,154
1/1/2022	895.7	455.7	198.5	135.6	41.8	532.7	2,260.0	8,714
1/1/2023	320.0	147.0	34.5	133.1	13.8	150.3	798.7	8,856
1/1/2024	880.6	283.1	132.5	121.9	19.2	262.7	1,700.0	9,002
1/1/2025	1,920.0	415.8	221.0	181.5	63.4	168.2	2,970.0	10,510
4/25/2025	1,870.0	217.1	129.8	213.8	35.7	483.7	2,950.0	10,419
Avg (2010-25)	343.1							3,055.2
Avg (2016-25)	513.1	155.7	74.7	86.4	14.2	156.8	967.5	4,829.2

Data & Sources: CoinMarketCap, CoinGecko, Statista, YCharts, Eikon, Federal Reserve.

Crypto Asset Category as % of Sector Total: 2010-2025

Date	BTC	ETH	Other InfraCoins	Stable Coins	Meme Coins	Other / Broken Tokens
1/1/2010						
1/1/2011	100.0%					
1/1/2012	100.0%					
1/1/2013	100.0%					
1/1/2014	100.0%					
1/1/2015	99.8%					
1/1/2016	96.7%	1.0%				2.3%
1/1/2017	90.7%	4.0%	0.8%		0.1%	4.3%
1/1/2018	39.2%	15.8%	7.1%		0.3%	37.6%
1/1/2019	52.6%	12.1%	3.3%	1.4%	0.2%	30.4%
1/1/2020	67.4%	7.5%	2.4%	2.1%	0.5%	20.2%
1/1/2021	69.2%	12.6%	3.0%	3.1%	0.1%	12.1%
1/1/2022	39.6%	20.2%	8.8%	6.0%	1.9%	23.6%
1/1/2023	40.1%	18.4%	4.3%	16.7%	1.7%	18.8%
1/1/2024	51.8%	16.7%	7.8%	7.2%	1.1%	15.5%
1/1/2025	64.6%	14.0%	7.4%	6.1%	2.1%	5.7%
4/25/2025	63.4%	7.4%	4.4%	7.2%	1.2%	16.4%
Avg (2010-25)	74.11%					
Avg (2016-25)	61.18%	12.24%	4.99%	6.07%	0.89%	17.04%

Data & Sources: CoinMarketCap, CoinGecko, Statista, YCharts, Eikon, Federal Reserve.

APPENDIX V. TOP 10 CRYPTO ASSETS

Top 10 Crypto Assets (April 2025)

	Name	Value $Bn (4/22/25)		% Total
1	Bitcoin	$	1,750.00	63.64%
2	Ethereum	$	190.59	6.93%
3	Tether USDt	$	144.73	5.26%
4	XRP	$	121.60	4.42%
5	BNB	$	84.46	3.07%
6	Solana	$	72.04	2.62%
7	USDC	$	60.90	2.21%
8	Dogecoin	$	23.95	0.87%
9	TRON	$	23.35	0.85%
10	Cardano	$	22.01	0.80%
	Total	**$**	**2,493.63**	**90.7%**

APPENDIX VI. BTC, SPX: VOLATILITY ANALYSES & CHARTS

BTC / SPX Volatility (Rate & 2-Period Change): 2014-2025

Bitcoin (BTC)	Avg Daily LN Change	σ	σ²
Full Period (2014-2025)	0.15%	3.93%	0.15%
1H (12/1/14 to 1/1/20)	0.16%	4.41%	0.19%
2H (1/1/20 to 4/25/25)	0.13%	3.41%	0.12%
1H / 2H Change	**-0.03%**	**-1.00%**	**-0.08%**

S&P 500 (SPX)	Avg Daily LN Change	σ	σ²
Full Period (2014-2025)	0.04%	1.14%	0.01%
1H (12/1/14 to 1/1/20)	0.03%	0.83%	0.01%
2H (1/1/20 to 4/25/25)	0.04%	1.35%	0.02%
1H / 2H Change	**0.004%**	**0.519%**	**0.011%**