

# CRYPTOCURRENCY: USING DARK MARKETS TO SHINE LIGHT ON THE PROPRIETY OF REGULATION

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## I. INTRODUCTION

A caring and charismatic 24-year-old found dead in Seattle.<sup>1</sup> A baby-faced Russian immigrant and aspiring tech entrepreneur discovered lifeless on his bedroom floor.<sup>2</sup> A 29-year-old, recently-engaged software engineer found blue-

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1. Claire Galofaro & Lindsay Whitehurst, *The Rise and Fall of an Eagle Scout's Deadly Fentanyl Empire*, ASSOCIATED PRESS (Sept. 15, 2019), <https://apnews.com/article/ce51cf7c958643629bce76764f71058d>.

2. *Id.*

faced in his bathroom.<sup>3</sup> A Georgetown University lacrosse star known for his big smile and infectious laugh who passed in his sleep.<sup>4</sup> In all of these instances, the decedents had recently purchased fentanyl-laced oxycodone from PharmaMaster, a virtual enterprise run by clean-cut, millennial, drug kingpin, Aaron Shamo.<sup>5</sup>

Ninety deaths can be traced to Shamo's illicit operations, but this is a mere fraction of the nearly 500,000 Americans who have died from opiate overdoses in the last two decades.<sup>6</sup> While efforts to intervene have become a public policy priority, identifying vendors and distributors is complicated by the obscure channels that are used to buy and sell drugs.<sup>7</sup> Shamo and other traffickers use the dark markets, or dark web marketplaces not indexed by search engines which feature encrypted online content, to peddle drugs, launder money, and finance other illegal activity.<sup>8</sup> Transactions in dark markets utilize cryptocurrencies as their primary medium of exchange.<sup>9</sup>

The popularity of cryptocurrencies has soared since their debut ten years ago.<sup>10</sup> A decade ago, Bitcoin was the lone crypto-asset.<sup>11</sup> It is difficult to determine exactly how many cryptocurrencies are currently in existence but counts as of January 2021 range from 6,241 to 7,812 unique coins.<sup>12</sup>

Cryptocurrencies are promising in many respects. As censorship-resistant digital cash, cryptocurrencies offer a trustless alternative to traditional, centralized financial institutions.<sup>13</sup> Moreover, the medium offers users enhanced

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3. *Id.*

4. See Testimony of Virginia Keys at 30–32, *United States v. Shamo*, No. 2:16-cr-631-DAK-PMW, 2019 WL 4110481 (D. Utah Aug. 29, 2019) (No. 2:16-cr-631-DAK-PMW), available at <https://www.safemedicines.org/wp-content/uploads/2019/09/Shamo-Agent-Keys-Testimony.pdf> (connecting Shamo to the death of Blatz Jr.); Edward Lee, *Friends of Deceased Lacrosse Player Honor Him with New Jersey Number*, BALTIMORE SUN (Mar. 16, 2017, 3:49 PM), <https://www.baltimoresun.com/sports/college/lacrosse/bsp-lacrosse-feature-0317-20170316-story.html> (describing Ed Blatz Jr.).

5. Galofaro & Whitehurst *supra* note 1.

6. See *Opioids: Data Analysis & Resources*, CTNS. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/opioids/data/analysis-resources.html>, (last updated Mar. 10, 2021) (“Nearly 500,000 people died from overdoses involving any opioid, including prescription and illicit opioids, from 1999-2019.”).

7. Ylan Mui & Karen James Sloan, *How Bitcoin Is Fueling America's Opioid Crisis*, CNBC (Apr. 15, 2018, 10:16 AM), <https://www.cnbc.com/2018/04/13/how-bitcoin-and-cryptocurrencies-are-fueling-americas-opioid-crisis.html>.

8. *Id.*

9. *Id.*

10. In 2013, the market capitalization of cryptocurrencies peaked at 15.37 billion dollars. The market cap grew to 3,048.57 billion dollars in November, 2021 and is 1,906.61 billion dollars as of March 2022. Raynor de Best, *Overall Cryptocurrency Market Capitalization per Week from July 2010 to March 2022*, STATISTA (Jan. 11, 2021), <https://www.statista.com/statistics/730876/cryptocurrency-market-value>.

11. See Paulina Likos & Coryanne Hicks, *The History of Bitcoin, the First Cryptocurrency*, U.S. NEWS & WORLD REP. (Feb. 4, 2022), <https://money.usnews.com/investing/articles/the-history-of-bitcoin> (reciting a history of bitcoin).

12. John Wanguba, *How Many Cryptocurrencies Are There in 2021?*, E-CRYPTO NEWS (Jan. 28 2021), <https://e-cryptonews.com/how-many-cryptocurrencies-are-there-in-2021>. CoinMarketCap, a price-tracking website for crypto-assets, found 9,552 distinct cryptocurrencies with a market cap totaling \$1.76 trillion dollars USD. COINMARKETCAP, <https://coinmarketcap.com> (last visited Mar. 4, 2022). Coinlore, a competitor price-tracking and measurement website, identified 7,074 cryptocurrencies. COINLORE, <https://www.coinlore.com> (last visited Mar. 4, 2022).

13. See Primavera De Filippi et al., *Blockchain as a Confidence Machine: The Problem of Trust & Challenges of Governance*, 62 TECH SOC'Y 1, 1 (2020) (discussing the historical basis of blockchain-based systems that underpin many cryptocurrencies).

privacy, protection against fraud, cryptographically secure transactions, and increased freedom in the marketplace.<sup>14</sup>

However, cryptocurrencies also enable activity that many regulators and crypto-critics view as a threat.<sup>15</sup> As illustrated by the Shamo case, cryptocurrencies have facilitated the proliferation of dark markets which support nefarious and criminal activities.<sup>16</sup> Critics also voice concerns over the erosion of trust and confidence in fiat-based monetary systems.<sup>17</sup> Similarly, the anonymity offered by cryptocurrency and the lack of a central authority make it difficult to identify a party to hold accountable in the event of system failures.<sup>18</sup> If a system failure were to occur, confidence in the ability of the government to enforce the law could be undermined.<sup>19</sup>

While cryptocurrencies have gained widespread recognition in the international monetary system, their treatment in the regulatory space is unsettled.<sup>20</sup> The question of whether cryptocurrencies can or should be regulated has been hotly debated over the last ten years.<sup>21</sup> This Note will identify and analyze the benefits offered and the risks posed by cryptocurrencies under the current federal regulatory framework. Ultimately, this Note will argue that the patchwork regulatory posture under which the United States currently operates is an ineffective approach to cryptocurrency regulation given the diverse, complex, and intersectional nature of the threats posed by cryptocurrency.

Section II of this Note will define and examine the nature of cryptocurrencies and the crypto ecosystem as a whole.<sup>22</sup> It will also provide an overview of their current regulatory treatment. Section III will look at the

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14. *See id.* (outlining the numerous advantageous of blockchain technology in digital transactions, such as mitigating principal-agent problems).

15. Allison Murray, *Cryptocurrency Scams Pose Largest Threat to Investors*, ZDNET (Jan. 11, 2022), <https://www.zdnet.com/finance/blockchain/cryptocurrency-scams-pose-largest-threat-to-investors/> (“According to a new report from the North American Securities Administrators Association (NASAA), cryptocurrency scams are the number one top investor threat ‘by far.’”).

16. Galofaro & Whitehurst *supra* note 1.

17. *See* Di Fillippi et al., *supra* note 13, at 1. (“Blockchain technology, in particular, has emerged as a potential solution to the erosion of trust in traditional institutions and online intermediaries more generally, as it allegedly eliminates the need for trust between parties.”).

18. Ariel Deschapell, *Why Regulating Bitcoin Won’t Work*, COINDESK (Sept. 11, 2021, 5:23 AM), <https://www.coindesk.com/why-regulating-bitcoin-will-not-work> (explaining the decentralized nature of cryptocurrency making it hard to hold one person accountable for them).

19. *See* Avik Roy, *Bitcoin and the U.S. Fiscal Reckoning*, NAT’L AFFS., Fall 2021 <https://nationalaffairs.com/publications/detail/bitcoin-and-the-us-fiscal-reckoning> (using a quote from Senator Elizabeth Warren to express the concern over cryptocurrency putting the U.S. financial system at the whim of decentralized forces and causing a loss of confidence in enforcement).

20. Sheelah Kolhatkar, *The Challenges of Regulating Cryptocurrency*, NEW YORKER (Oct. 6, 2021), <https://www.newyorker.com/business/currency/the-challenges-of-regulating-cryptocurrency> (“The lack of regulations over this burgeoning area has created an opening for widespread fraud . . .”).

21. *See* Timothy Smith, *Cryptocurrency Regulations Around the World*, INVESTOPEDIA (Feb. 21, 2022), <https://www.investopedia.com/cryptocurrency-regulations-around-the-world-5202122> (discussing different approaches to regulating cryptocurrencies around the world).

22. Sources use various terms when referring to cryptocurrencies, including cryptocurrencies, crypto-assets, digital money, digital cash, digital currency, and virtual currency. Similarly, some sources use bitcoin (the lower case “b” being of importance) as a proprietary eponym for cryptocurrency. This Note defines the term “cryptocurrency” in Section II, and that is the definition that applies throughout the article. The words crypto-economy and crypto-ecosystem refer to the social and financial systems that support the use of crypto-assets (which encompasses more financial instruments cryptocurrency, as defined in this note, would permit).

demand for cryptocurrency and the accompanying threats. These risks and benefits will be analyzed in the context of the current U.S. regulatory framework. Finally, Section IV of this Note will recommend the development of a working group or task force composed of representatives of otherwise-siloed agencies in an effort to promote interdepartmental communication and pave the way for the development of a comprehensive regulatory framework.

## II. BACKGROUND

### A. *Cryptocurrency: Shifting the Monetary Paradigm*

#### 1. *What is Money?*

“Money makes the world go round.”<sup>23</sup> In an economic sense, this is undoubtedly true. Without it, the world would be reduced barter economies orchestrated by mutual coincidences of wants.<sup>24</sup> Money overcomes the obstacles of a barter economy by facilitating transfers of ownership through a commonly agreed upon medium of exchange.<sup>25</sup>

At its most basic, money can be whatever parties mutually agree to accept as a representation of value.<sup>26</sup> More specifically, money serves three core functions: (1) a medium of exchange, (2) a store of value, and (3) a unit of account.<sup>27</sup> Serving as a medium of exchange means the token is a payment mechanism that can be used to procure goods, services, and financial asset.<sup>28</sup> A store of value refers to a token’s ability to hold wealth overtime.<sup>29</sup> That is, the value of a token today will be similar to its value in the future.<sup>30</sup> A unit of account provides a common standard for prices, and therefore a means for comparing value.<sup>31</sup> Even among forms of money, a token may be more or less useful depending on its characteristics, namely its durability, portability, divisibility, uniformity, scarcity, and acceptability.<sup>32</sup> Thus, whether something is money is

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23. JOEL GREY & LIZA MINNELLI, *Money Money*, on CABARET: ORIGINAL SOUNDTRACK RECORDING (ABC Records 1972).

24. A double coincidence of wants is defined as “Each participant in an exchange is willing to trade what he or she has in exchange for what the other participant is willing to trade.” Scott A. Wolla, *Money and Inflation: A Functional Relationship*, FED. RSRV. BANK OF ST. LOUIS: PAGE ONE ECON. (Mar. 2013), <https://research.stlouisfed.org/publications/page1-econ/2013/03/01/money-and-inflation-a-functional-relationship>.

25. See SERGIO M. FOCARDI, MONEY: WHAT IT IS, HOW IT’S CREATED, WHO GETS IT, AND WHY IT MATTERS 7 (2018) (discussing the nature, creation, and distribution of money).

26. See DAVID W. PERKINS, CONG. RSCH. SERV., R45427, CRYPTOCURRENCY: THE ECONOMICS OF MONEY AND SELECTED POLICY ISSUES 2 (2020) (discussing the functions of money).

27. See, e.g., IMF, MONETARY AND FINANCIAL STATISTICS MANUAL AND COMPILATION GUIDE, at 179–80 (2016) (describing the basic functions of money) [hereinafter IMF Manual].

28. *Id.*

29. *Id.*

30. Wolla, *supra* note 24.

31. IMF Manual, *supra* note 27, at 179–80.

32. The Economic Lowdown Podcast Series, *Functions of Money*, FED. RSRV. BANK OF ST. LOUIS, at 5:55 (Sept. 3, 2012), <https://www.stlouisfed.org/education/economic-lowdown-podcast-series/episode-9-functions-of-money>.

not a binary question; rather, a token's moneyness is a better framed as a question of degree.<sup>33</sup>

## 2. *Traditional Money*

Money has a rich history that dates back thousands of years.<sup>34</sup> Some theorize that before the invention of money, societies operated in barter economies, wherein goods and services were exchanged for other goods and services of value.<sup>35</sup> Barter economies eventually gave way to commodity money, or an object, such as cattle or precious metal, whose value is intrinsic to the token itself.<sup>36</sup> When transportation and storage constraints made commodity money transactions difficult, representative money—a token whose value is secured by a claim on an underlying valuable item—provided a solution.<sup>37</sup>

By the early eighteenth century, banknotes, a form of representative money, had become the chief instrument of exchange, and remained so until the abandonment of the gold standard in 1973.<sup>38</sup> This period also saw the emergence of central banks, which were instrumental in the adoption of the fiat money system.<sup>39</sup> The fiat money system is one of free floating exchange rates between

33. IMF Manual, *supra* note 27, at 181–183.

34. See generally GLYN DAVIES, A HISTORY OF MONEY: FROM ANCIENT TIMES TO THE PRESENT DAY (3d ed. 2002) (discussing a detailed history of money).

35. There is a debate among scholars as to whether barter economies ever actually existed. Compare *id.* at 9 (“Throughout by far the greater part of man’s development, barter necessarily constituted the sole means of exchanging goods and services.”) with DAVID GRAEBER, DEBT: THE FIRST 5,000 YEARS (2011) (noting that anthropologists have not found evidence of societies based on barter).

36. See, e.g., NIAZ CHOWDHURY, INSIDE BLOCKCHAIN, BITCOIN, AND CRYPTOCURRENCIES 206 (2019) (discussing commodity and representative money).

37. *Id.*

38. See *id.* at 209 (following the price revolution of the mid-seventeenth century, goldsmith-bankers in London began to issue banknotes as receipts payable to the holder of the note. The value of the note was secured by the assets of the goldsmith rather than the account holder. The Bank of England was established just a few years later, and in 1695, it issued the world’s first permanent banknotes, which represented a promise to pay a quantity of specie or other commodity on demand); A History of Central Banking in the United States, FED. RSRV. BANK OF MINNEAPOLIS, <https://www.minneapolisfed.org/about-us/our-history/history-of-central-banking> (last visited Mar. 26, 2022) (stating that in the United States, the path to a uniform currency was more tumultuous. Until 1816, individual states issued their own currency. The Second Bank of the United States was established when state-chartered banks began suspending specie conversions in the wake of the mounting debt from the War of 1812. This brought a uniform currency and functioned as a bank for banks. After President Andrew Jackson refused to renew the charter in 1832, a system of “free banking” emerged. Under free banking, states could operate banks under less-demanding charters so long as they agreed to redeem their notes on demand in specie. Hundreds of different notes flooded the markets, and inefficiencies, counterfeiting, and panic led to frequent bank failures. The establishment of a national banking system during the Civil War improved efficiency by providing a uniform currency. However, panics throughout the latter half of the nineteenth century underscored the need for a central bank); Michael D. Bordo, A Brief History of Central Banks, FED. RSRV. BANK OF CLEVELAND (Dec. 1, 2007), <https://www.clevelandfed.org/en/newsroom-and-events/publications/economic-commentary/economic-commentary-archives/2007-economic-commentaries/ec-20071201-a-brief-history-of-central-banks.aspx> (stating the Federal Reserve System was established in 1913 under a mandate to provide a uniform, elastic currency and to be a lender of last resort. By the 1950s, the United States had entered the Bretton Woods Agreement (tying the U.S. Dollar to the gold standard and the world’s other major currencies to the U.S. Dollar), and the Fed gained independence from the Treasury, paving the way for more mature monetary policy. The Fed operated under this system until 1971, when President Nixon cancelled conversions of the U.S. Dollar to gold, effectively abandoning the Bretton Woods Agreement); Chowdhury, *supra* note 36, at 213 (discussing the impact of cryptocurrencies and commodity money).

39. Troy Segal, Central Bank, INVESTOPEDIA (Sept. 29, 2020), <https://www.investopedia.com/terms/c/centralbank.asp>.

major currencies which are not backed by any commodity.<sup>40</sup> The value of fiat currency is determined by monetary policy, a prerogative of a central bank, and its status as legal tender.<sup>41</sup> For example, in the United States, the Federal Reserve Bank determines monetary policy and is the sole issuer of U.S. Dollars.<sup>42</sup>

Central banks have been the subject of criticism since their inception.<sup>43</sup> Many believe that errant policies of the Federal Reserve have caused harm to the economy.<sup>44</sup> Some scholars have even argued that the misplaced monetary policy in the United States precipitated the housing bubble collapse and ensuing recession in 2007.<sup>45</sup> Cryptocurrencies, a novel form of money, have been a response to these criticisms.<sup>46</sup>

### 3. *Cryptocurrency, Bitcoin, and Digital Money*

Digital money is a definitional minefield.<sup>47</sup> The literature from myriad domestic and international stakeholders illuminates the lack of consensus over terminology.<sup>48</sup> Not only is there no standardized definition of cryptocurrency, but supervisory bodies commonly use FinTech jargon in disparate—even contradictory—ways.<sup>49</sup>

Consider the following domestic sources, which despite variation in terminology and scope, largely refer to the same instrument. The Congressional Research Service defines cryptocurrency as “digital money in an electronic payment system in which payments are validated by a decentralized network of system users and cryptographic protocols instead of by a centralized intermediary (such as a bank).”<sup>50</sup> They also distinguish cryptocurrencies from virtual currencies and digital currencies, which refer to broader classes of currencies.<sup>51</sup> Pursuant to their authority under the Bank Secrecy Act, the Financial Crimes Enforcement Network (FinCEN) of the U.S. Department of

40. See, e.g., James Chen, *Fiat Money*, INVESTOPEDIA (Oct. 26, 2021), <https://www.investopedia.com/terms/f/fiatmoney.asp> (describing modern fiat money systems).

41. Dong He, *Monetary Policy in the Digital Age: Crypto Assets May One Day Reduce Demand for Central Bank Money*, 55 INT’L MONETARY FUND: FIN. & DEV. 13, 14, (June 2018).

42. See generally BD. OF GOVERNORS OF THE FED. RSRV. SYS., *THE FED EXPLAINED: WHAT THE CENTRAL BANK DOES* (11th ed., 2021) (explaining the purposes and functions of the Federal Reserve System at length).

43. See generally ROGER T. JOHNSON, *HISTORICAL BEGINNINGS ... THE FEDERAL RESERVE* (Mary Jane Coyle & Suzanne Cummings eds., 2010) (discussing the early criticisms of the Federal Reserve Systems).

44. See, e.g., DANIELLE DiMARTINO BOOTH, *FED UP: AN INSIDER’S TAKE ON WHY THE FEDERAL RESERVE IS BAD FOR AMERICA* (2017) (detailing how the core policies of the Fed are harmful to the American economy).

45. *Id.* at 6.

46. He, *supra* note 41, at 14.

47. See Kolhatkar, *supra* note 20 (discussing the difficulty regulating cryptocurrencies because how to define terms, such as tokens, presents a regulatory challenge to even quantify what cryptocurrencies are).

48. Helen Partz, *Cambridge Study: Lack Of Standard Terms for Crypto Hampers Global Regulatory Response*, COINTELEGRAPH (Apr. 17, 2019), <https://cointelegraph.com/news/cambridge-study-lack-of-standard-terms-for-crypto-hampers-global-regulatory-response> (“The lack of standard global terminology for crypto assets is a major impediment for the adoption of clear regulatory policies in the industry, according to a study by the Cambridge Centre for Alternative Finance. . .”).

49. See *id.* (discussing how the term “crypto-asset” is commonly used to describe multiple types of digital money in ways that do not capture the nuance or variance between those uses).

50. PERKINS, *supra* note 26, at 1.

51. *Id.* at 1 n.2.

the Treasury defines “convertible virtual currencies” (“CVC”) as, “a medium of exchange (such as cryptocurrency) that either has an equivalent value as currency, or acts as a substitute for currency, but lacks legal tender status.”<sup>52</sup> The notice further clarifies that “[b]lockchain-based types of CVC (*e.g.*, Bitcoin) are peer-to-peer systems that allow any two parties to transfer value directly with each other without the need for a centralized intermediary . . . .”<sup>53</sup> The Internal Revenue Service (IRS) defines a virtual currency as “a digital representation of value that functions as a medium of exchange, a unit of account, and store of value other than a representation of the United States dollar or a foreign currency.”<sup>54</sup> They consider cryptocurrency to be a subset of virtual currency that “utilizes cryptography to secure transactions that are digitally recorded on a distributed ledger, such as a blockchain.”<sup>55</sup>

International authorities show similar variation in their definitions of cryptocurrency.<sup>56</sup> The European Central Bank defines virtual currency as “a digital representation of value, not issued by a central bank, credit institution or e-money institution, which in some circumstances can be used as an alternative to money.”<sup>57</sup> They also specify that virtual currencies are not full forms of money from an economic or legal perspective.<sup>58</sup> According to the European Banking Authority, cryptocurrencies are a subset of crypto-assets—a “type of private asset that depend primarily on cryptography and distributed ledger technology as part of their perceived or inherent value”—that “typically do not provide rights . . . but are used as a means of exchange . . . or for investment purposes or for the storage of value.”<sup>59</sup> The Financial Action Task Force, an intergovernmental body that sets global anti-money laundering and terrorist financing standards, defines a virtual asset as “a digital representation of value that can be digitally traded, or transferred, and can be used for payment or investment purposes.”<sup>60</sup>

Clearly defining cryptocurrency is necessary for effective regulation. The theoretical basis, technological nature, and operation of a cryptocurrency differ from traditional assets and therefore may warrant different regulatory approaches. Moreover, if traditional assets are tokenized, their treatment should

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52. Requirements for Certain Transactions Involving Convertible Virtual Currency or Digital Assets, 85 Fed. Reg. 83840 (proposed Dec. 23, 2020) (to be codified at 31 C.F.R. 1010.316(c)).

53. *Id.*

54. I.R.S. Rev. Rul. 2019-24, 26 C.F.R. § 1.61-1 (2019).

55. *Id.*

56. REBECCA M. NELSON, CONG. RSCH. SERV., R45440, INTERNATIONAL APPROACHES TO DIGITAL CURRENCIES 13 (2018).

57. *Belgium and Cryptocurrency*, FREEMAN L., <https://freemanlaw.com/cryptocurrency/belgium> (last visited Mar. 26, 2022).

58. *Id.*

59. EUROPEAN BANKING AUTHORITY, EUROPEAN BANKING AUTHORITY REPORT WITH ADVICE FOR THE EUROPEAN COMMISSION ON CRYPTO-ASSETS 4, 7 (2019) [hereinafter EBA Report].

60. FINANCIAL ACTION TASK FORCE, INTERNATIONAL STANDARDS ON COMBATING MONEY LAUNDERING AND THE FINANCING OF TERRORISM & PROLIFERATION: THE FATF RECOMMENDATIONS 132 (Mar. 2022) (originally published Feb. 2012).

be distinguished from novel cryptocurrencies, and this distinction should be rooted in a clear definition of the term.<sup>61</sup>

The definitions of the institutions vary in their approach—functional, technical, or systems-based—and scope.<sup>62</sup> However, most cryptocurrencies incorporate key concepts relating to the protocols that determine the function and operation of the system, the networks over which the systems operate, the data to be recorded, and the functional use of the native assets.<sup>63</sup> Drawing from recent publications from various domestic and international supervisory bodies, this Note will define cryptocurrency as a decentralized, distributed ledger system that enables a peer-to-peer exchange of valuable native assets for transactional or investment purposes.

“Decentralized, distributed ledger system” refers to the record keeping system that provides the infrastructure for the system’s operation.<sup>64</sup> Researchers at the Cryptoasset and Blockchain Research Programme at the Cambridge Centre for Alternative Finance have provided a formal definition of a distributed ledger technology (DLT) system:

A system of electronic records that enables a network of independent participants to establish a consensus around the authoritative ordering of cryptographically-validated (‘signed’) transactions. These records are made persistent by replicating the data across multiple nodes, and tamper-evident by linking them by cryptographic hashes. The shared result of the reconciliation/consensus process—the ‘ledger’—serves as the authoritative version for these records.<sup>65</sup>

Moreover, a DLT system allows multiple parties to make secure transactions without the assistance of a trusted third-party, like a central bank, by recording those transactions in an immutable ledger.<sup>66</sup> In the world of Bitcoin, this architecture is referred to as the blockchain.<sup>67</sup>

The Bitcoin blockchain is a self-sufficient, open-source system which operates via software run on a peer-to-peer network.<sup>68</sup> Peers, known as “nodes,” store and continually update a copy of the blockchain.<sup>69</sup> When a user makes a

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61. See APOLLINE BLANDIN ET AL., CAMBRIDGE CTR. FOR ALT. FIN., GLOBAL CRYPTOASSET REGULATORY LANDSCAPE STUDY 12 (2019) (recommending that traditional assets recorded on a distributed ledger be distinguished from natively digital crypto-assets with unique characteristics in a regulatory framework).

62. NELSON, *supra* note 56, at 2–3.

63. These elements overlap with the systems-based framework used by Cryptoasset and Blockchain Research Programme at the Cambridge Centre for Alternative Finance in developing their taxonomy of distributed ledger technology systems. MICHEL RAUCHS ET AL., CAMBRIDGE CTR. FOR ALT. FIN., DISTRIBUTED LEDGER TECHNOLOGY SYSTEMS: A CONCEPTUAL FRAMEWORK 24, 33–39 (2018).

64. *Id.* at 24.

65. *Id.*

66. *Id.*

67. Though not termed “blockchain” in the original document, the Bitcoin white paper lays out the architecture of the ledger. See generally SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM (2008); see also CHOWDHURY, *supra* note 36, at 3 (“Blockchain was first introduced to facilitate the virtual currency Bitcoin.”).

68. RAUCHS ET AL., at 80.

69. *Id.* As of March 26, 2022, there were 14,859 reachable nodes operating the Bitcoin client software. Addy Yeow, *Reachable Bitcoin Nodes*, BITNODES, <https://bitnodes.io> (last visited Mar. 26, 2022).

transaction, it is broadcast to nodes across the globe.<sup>70</sup> Before the transaction can be added to the blockchain, a node must bundle it with other transactions in a block through a process known as mining.<sup>71</sup> Cryptographic hashes are used to order the blocks so that they may be appended to the chain.<sup>72</sup> Miners compete with one another to have their block added to the ledger through a cryptographic puzzle competition known as Proof-of-Work.<sup>73</sup> The winning miner has their block broadcast to the network, and receives a number of bitcoins as a reward for their work.<sup>74</sup> This reward is intrinsic to the system and incentivizes nodes to participate in the process.<sup>75</sup> When each node receives the new block, they verify that the block is valid and update their copy of the ledger accordingly.<sup>76</sup>

The Bitcoin blockchain is a distributed ledger, meaning that the storage and computational processes are divided into parts and parallelized across multiple nodes.<sup>77</sup> It is a decentralized system, in that the process is replicated across multiple nodes which are controlled by different parties.<sup>78</sup> It is also a public, permissionless blockchain, meaning that anyone can participate in the bookkeeping process without needing approval from a gatekeeper or providing identifying information.<sup>79</sup>

A “peer-to-peer exchange” is one in which parties can transact without the assistance of a third-party intermediary.<sup>80</sup> In many cryptocurrency systems,

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70. CHOWDHURY, *supra* note 36, at 80.

71. *Id.*

72. The cryptographic hashing process mathematically manipulates transaction data in a block to generate a hash value, or an alphanumeric, digital output akin to a fingerprint used to identify that block. When new blocks are created, miners must include the previous block’s hash in their current block. This process orders the blocks, ensuring that all participants record transactions in the same sequence. This process is considered immutable because if a participant were to tamper with data contained in a block, the hash function would fail, and the system would reject the block. ANTONY LEWIS, *THE BASICS OF BITCOINS AND BLOCKCHAINS: AN INTRODUCTION TO CRYPTOCURRENCIES AND THE TECHNOLOGY THAT POWERS THEM* 175–80 (2018).

73. Proof-of-Work is the consensus mechanism for Bitcoin, as only the first miner to solve the puzzle has their block broadcast to the network, after which the competition starts over. CHOWDHURY, *supra* note 36, at 81–82.

74. Successful miners are rewarded with newly minted bitcoins. This is the only method by which bitcoins are created. *Id.* at 65. As of May 11, 2020, miners received 6.25 new bitcoins for successfully mining a block. The reward is halved every 210,000 blocks, and only twenty-one million bitcoins will ever be created. Wolfie Zhao, *Bitcoin Halving Arrives: Mining Rewards Drop for Third Time in History*, COINDESK (Sept. 14, 2021, 3:40 AM), <https://www.coindesk.com/bitcoin-halving-arrives-mining-rewards-drop-for-third-time-in-history>. As of March 2022, 18.9 million bitcoins have been mined, leaving just over 2 million to be released. *Bitcoin (BTC)*, BITCOIN.COM, <https://markets.bitcoin.com/crypto/BTC> (last visited Mar. 7, 2022).

75. CHOWDHURY, *supra* note 36, at 62.

76. RAUCHS ET AL., *supra* note 63, at 74.

77. *See id.* at 45 (distinguishing decentralized systems from distributed systems).

78. *Id.* (noting that distributed systems are not necessarily decentralized and may rely on a centralized coordinator).

79. LEWIS, *supra* note 72, at 23.

80. In the context of cryptocurrency, “peer-to-peer” often refers to two distinct but related features of a system. Peer-to-peer *networks* are those in which every participating node function as a client and a server, thereby eliminating the need for a central authority. CHOWDHURY, *supra* note 36, at 11. A peer-to-peer *transaction* is one in which parties can transact directly with any other party without requiring a third-party intermediary. PWC, *BLOCKCHAIN—AN OPPORTUNITY FOR ENERGY PRODUCERS AND CONSUMERS?* 4–7 (2016). [https://www.pwc.ru/publications/blockchain/blockchain\\_opportunity-for-energy-producers-and-consumers.pdf](https://www.pwc.ru/publications/blockchain/blockchain_opportunity-for-energy-producers-and-consumers.pdf). This is an important distinction, but one which is overlooked in much of the cryptocurrency literature.

parties are identified by their public key.<sup>81</sup> Parties use their private key, which is cryptographically related to their public key, in order to digitally sign transactions, which are validated by nodes in the network.<sup>82</sup> The use of cryptographic digital signatures and DLT prevents the manipulation of the ledger and ensures that users can only spend cryptocurrency that they currently hold,<sup>83</sup> which allows users to make secure, direct transactions without the assistance of a third-party intermediary.<sup>84</sup> In effect, cryptocurrency is digital cash.

“Valuable native assets” refers to the transferable payment-type crypto-assets that are endogenous to the given system.<sup>85</sup> Crypto-assets, a broader class of digital assets which encompasses cryptocurrencies, are a type of private asset whose perceived or intrinsic value is derived from the use of cryptography and DLT systems.<sup>86</sup> Crypto-assets include payment-type tokens, which are tokens of value used for monetary exchange or payment purposes; investment-type tokens, which resemble financial instruments that provide rights such as ownership or entitlement to dividends; and utility-type tokens, which enable access to a product or service but are not accepted as a form of payment.<sup>87</sup> Cryptocurrencies necessarily must be payment-type tokens and thus provide for the exchange of monetary value,<sup>88</sup> but they may also function as investment-type and utility-type tokens in some systems.<sup>89</sup> A bitcoin token is an example of a valuable native asset.<sup>90</sup>

“Transactional and investment purposes” refers to the functional use of cryptocurrency<sup>91</sup> and revisits the question of whether cryptocurrency is money or a financial asset. There is considerable debate over whether Bitcoin is

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81. PERKINS, *supra* note 26, at 7. For an in-depth explanation of public key cryptography as it relates to cryptocurrency, PEDRO FRANCO, UNDERSTANDING BITCOIN: CRYPTOGRAPHY, ENGINEERING, AND ECONOMICS 51–76 (2014).

82. See FRANCO, *supra* note 81, at 53–58 (discussing public-private key encryption and digital signatures).

83. *Id.*

84. PERKINS, *supra* note 26, at 7–8.

85. Cf. RAUCHS ET AL., *supra* note 63, at 100 (Native assets are “the primary digital asset(s), if any, specified in the protocol that are typically used to regulate record production, pay transaction fees on the network, conduct ‘monetary policy,’ or align incentives.”).

86. FIN. STABILITY BD., CRYPTO-ASSET MARKETS: POTENTIAL CHANNELS FOR FUTURE FINANCIAL STABILITY IMPLICATIONS 17 (2018).

87. As with cryptocurrencies, there is no consensus on the definition of crypto-assets. Compare EUR. SECS. & MKTS. AUTH., ADVICE ON INITIAL COIN OFFERINGS AND CRYPTO-ASSETS, at 7–8, (2019) (categorizing crypto-assets as payment-type assets, investment-type assets, and utility type assets) and EBA Report, *supra* note 59, at 7 (categorizing crypto-assets as payment/exchange/currency tokens, investment tokens, and utility tokens) with FIN. MKTS. L. COMM., TAXONOMICAL APPROACHES TO CRYPTOASSETS: RESPONSE TO EUROPEAN COMMISSION CONSULTATION—PART I 6 (2020) (arguing that the European Securities & Markets Authority’s approach to categorizing crypto-assets is “reductive and does not take into account cryptoassets which do not neatly fall into one or another category . . .”).

88. Rod Garratt et al., *Token- or Account-Based? A Digital Currency Can Be Both*, FED RSRV. BANK OF NEW YORK: LIBERTY STREET ECON. (Aug. 12, 2020), <https://libertystreeteconomics.newyorkfed.org/2020/08/token-or-account-based-a-digital-currency-can-be-both>.

89. *Id.*

90. Madana Prathap, *Know Your Cryptocurrency Lingo – Crypto Coins and Tokens Are not the Same Thing*, BUS. INSIDER INDIA (Dec. 24, 2021, 12:29 AM), <https://www.businessinsider.in/investment/news/difference-between-cryptocurrency-coins-and-tokens/articleshow/86552746.cms>.

91. *The Rise of Using Cryptocurrency in Business: Considering the Benefits of Crypto*, DELOITTE, <https://www2.deloitte.com/us/en/pages/audit/articles/corporates-using-crypto.html> (last visited Mar. 7, 2022).

money.<sup>92</sup> The majority of cryptocurrency transactions are for investment or speculative purposes,<sup>93</sup> with some estimates reaching 90 percent.<sup>94</sup> Whereas transactional purposes are those in which a token functions as money, or is exchanged for goods or services,<sup>95</sup> investment purposes are those in which a token functions as a financial asset, which involves procuring or holding an asset with the intention of realizing gain from that asset in the future.<sup>96</sup> Nonetheless, the ability to use Bitcoin for peer-to-peer payments and the increasing number of merchants who accept Bitcoin as a method of payment provides ample evidence for its use as a medium of exchange.<sup>97</sup> Where Bitcoin has performed remarkably as a speculative asset, the volatility makes it a poor store of value.<sup>98</sup> Bitcoin's function as a unit of account is perhaps even worse than its function as a store of value given the volatility vis-à-vis the U.S. Dollar.<sup>99</sup> Moreover, a consumer or business wouldn't denominate the value of their accounts in Bitcoin because the number would be meaningless in the real economy given the rapid fluctuation of the price of the token against the Dollar.<sup>100</sup> Accordingly, Bitcoin is perhaps best viewed as a speculative financial asset that shares some characteristics of money.<sup>101</sup>

### B. Current Regulatory Posture

As the crypto economy has evolved over the last ten years, governments have focused their attention on how to effectively regulate cryptocurrencies.<sup>102</sup>

92. Compare LEWIS, *supra* note 72, at 39–52 (arguing that Bitcoin is not money because while it is a medium of account, it is a poor store of value and unit of account) and Scott A. Wolla, *Bitcoin: Money or Financial Investment*, FED. RESRV. BANK OF ST. LOUIS (Mar. 2018), <https://research.stlouisfed.org/publications/page1-econ/2018/03/01/bitcoin-money-or-financial-investment> (arguing that Bitcoin is a medium of exchange but not a stable store of value or unit of account) with Clem Chambers, *Bitcoin Really Is Money, Here's Why*, FORBES (Feb. 15, 2019, 9:19 AM), <https://www.forbes.com/sites/investor/2019/02/15/bitcoin-really-is-money-heres-why/?sh=14c43b879d22> (arguing that Bitcoin has all three functions of money).

93. Dirk G. Baur et al., *Bitcoin: Medium of Exchange or Speculative Assets?*, 54 J. INT'L FIN. MKTS., INSTS., & MONEY 177, 177 (2018) (concluding that a minority of Bitcoin users use Bitcoin as a medium of exchange, and Bitcoins, in general, are held for investment purposes); see also Olga Kharif, *Bitcoin Is Rallying Again, but It's Still Not Used to Buy Much of Anything*, L.A. TIMES (May 31, 2019, 1:48 PM), <https://www.latimes.com/business/la-fi-bitcoin-rally-blockchain-speculation-20190531-story.html> (“Data from blockchain researcher Chainalysis Inc. show that only 1.3% of economic transactions came from merchants in the first four months of 2019. . .”).

94. SQUAWK BOX EUROPE, *Crypto Exec: The Vast Majority of People Are Using Bitcoin for Trading*, CNBC (Aug. 26, 2019, 4:51 AM), <https://www.cnbc.com/video/2019/08/26/crypto-exec-the-vast-majority-of-people-are-using-bitcoin-for-trading.html> (Marcus Swanepoel, CEO of Luno, stating, “Roughly about 90% [of Luno transactions] . . . I would put in the category of investment slash speculation.”).

95. See James Chen, *Transaction*, INVESTOPEDIA (Jan. 1, 2022), <https://www.investopedia.com/terms/t/transaction.asp> (defining transaction); see also FOCARDI, *supra* note 25, at 25 (“[A] financial asset is a contract that gives its owner the right to receive a future stream of cash flows.”).

96. See Adam Hayes, *Investment*, INVESTOPEDIA (Aug. 20, 2021), <https://www.investopedia.com/terms/i/investment.asp> (defining investment).

97. See, e.g., LEWIS, *supra* note 72, at 39–52 (comparing Bitcoin's properties to the function of money).

98. *Id.*

99. *Id.*

100. *Id.*

101. *Id.*

102. Rakesh Sharma, *What Does Government Regulation Mean for Privacy-Focused Cryptocurrencies*, INVESTOPEDIA (Jan. 28, 2022), <https://www.investopedia.com/news/what-does-increased-government-regulation-mean-privacy-focused-coins>.

However, the decentralized and disintermediated nature of cryptocurrencies presents a unique challenge to regulation. Most cryptocurrencies operate via open-source software, meaning that anyone with access to the internet can download and operate the technology.<sup>103</sup> There is no centralized server, and more importantly, there is no single, accountable person operating a centralized server.<sup>104</sup> Regulating a decentralized system would be impractical, if not impossible, and enforcement would be a nightmare.<sup>105</sup> Thus, in lieu of command-and-control limitations on the technology itself, governments must aim their efforts at the users and uses of cryptocurrencies.<sup>106</sup>

While global cryptocurrency schemes are far from homogenous, four different regulatory responses can be identified. First, in existing regulation schemes, countries apply existing laws and regulation to crypto-activities, with clarification on applicability typically coming from guidance.<sup>107</sup> These systems typically involve securities laws, but the approach is also seen with banking regulations and money transmitter rules.<sup>108</sup> Second, retrofitted regulation approaches amend existing laws and regulations to explicitly incorporate crypto-activities.<sup>109</sup> Third, bespoke regulation involves enacting new laws or regulations for the specific purpose of regulating cryptocurrencies.<sup>110</sup> Fourth, bespoke regulatory regimes apply a unique regulatory framework to a class of activities (i.e., fintech activities), which include crypto-activities.<sup>111</sup> Bespoke regulatory regimes are considered the most advanced regulatory framework and are typically seen in small countries with historically permissive approaches to business regulation.<sup>112</sup> A 2019 survey of 108 countries found that of countries with high crypto-asset activity levels, ten percent prohibit crypto-activities, fourteen percent use bespoke regulation, five percent use a bespoke regulatory regime, forty-seven percent use retrofitted regulation, and twenty-four percent apply existing laws or are unregulated.<sup>113</sup> In practice, countries often use more than one approach in regulating the crypto ecosystem.<sup>114</sup>

Regulations may also be classified as activity-based or entity-based approaches. Whereas activity-based regulations are applied based on how the cryptocurrency is being used, entity-based regulations target a particular type of entity.<sup>115</sup> Most jurisdictions use an activity-based approach because the risks of cryptocurrencies lie in the nature of their use rather than the legal posture of the

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103. Peter Van Valkenburgh, *What Is "Open Source" and Why Is It Important?*, COIN CTR. (Oct. 17, 2017), <https://www.coincenter.org/education/advanced-topics/open-source>.

104. Deschapell, *supra* note 18.

105. *Id.*

106. Ryan Haar, *U.S. Officials Send Mixed Messages on Crypto Regulation. Here's What it all Means for Investors* TIME: NEXTADVISOR (Nov. 2, 2021), <https://time.com/nextadvisor/investing/cryptocurrency/crypto-regulation-talks-heat-up>.

107. BLANDIN ET AL., *supra* note 61, at 41.

108. *Id.*

109. *Id.*

110. *Id.*

111. *Id.* at 42.

112. *Id.*

113. *Id.* at 42, fig.9.

114. *Id.*

115. *Id.*

actor.<sup>116</sup> However, in some cases a hybrid approach is used to target systemic risk.<sup>117</sup> For example, in 2018, India banned regulated financial institutions from dealing in cryptocurrencies.<sup>118</sup>

In the United States, a piecemeal approach—incorporating existing, retrofitted, and bespoke regulation—has resulted in a patchwork regulatory framework and fragmented enforcement.<sup>119</sup> As Congress has not enacted substantive cryptocurrency legislation, and there has been little formal rulemaking, most of the law governing cryptocurrencies is activity-based administrative guidance.<sup>120</sup> When agencies have acted, they have done so cautiously, so as to avoid driving technological investment overseas.<sup>121</sup>

The SEC has jurisdiction over issuance or resale of cryptocurrencies that constitute securities.<sup>122</sup> Securities include investment contracts, which have been defined as a “transaction or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party. . . .”<sup>123</sup> In addition to being subject to further SEC regulation, there are two implications for tokens that are deemed securities. First, the person facilitating their sale must be a broker-dealer licensed with the SEC and a member of the Financial Industry Regulatory Authority, and second, the token can only be traded on licensed securities exchanges or SEC-approved alternative trading systems.<sup>124</sup>

While it is the function, not the form, that determines the ultimate classification, Initial Coin Offerings (“ICOs”) are generally considered to be securities.<sup>125</sup> It may also be possible for the classification of a token to evolve

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116. *Id.* at 42–43.

117. *Id.*

118. Reserve Bank of India, Prohibition on Dealing in Virtual Currencies (VCs), RBI/2017-18/154 (Issued on Apr. 6, 2018).

119. In the United States, the several states and the federal government share jurisdiction over cryptocurrencies. However, the discussion in this Note is limited to regulatory efforts of the federal government.

120. Congress has enacted three minor measures concerning cryptocurrencies. In the FY2018 Defense Bill, Congress directed the Departments of State and Defense to develop a strategy to counter malign influence, including their coercive use of cryptocurrencies, in the Defense Bill for FY2018. National Defense Authorization Act for Fiscal Year 2018, Pub. L. No. 115-91, 131 Stat. 1283 (2017). They also mandated a briefing on whether cryptocurrency was being used to circumvent U.S. sanctions against Venezuela. Further Consolidated Appropriations Act, 2020, Pub. L. No. 116-94, 133 Stat. 3046 (2020). Finally, Congress called for the development of a national defense strategy which includes a trend analysis of illicit financial threats “including evolving forms of value transfer such as so-called cryptocurrencies.” Countering America’s Adversaries Through Sanctions Act, Pub. L. No. 115-44, 131 Stat. 936 (2017). However, none of these provisions directly regulate the cryptocurrency activities or entities in the United States. *See also* Joe Dewey, *Blockchain & Cryptocurrency Regulation 2022 / USA*, in *BLOCKCHAIN & CRYPTOCURRENCY REGULATION 2022* (Joe Dewey ed., 4th ed. 2022) (ebook) (“While there has been significant engagement by these agencies, little formal rulemaking has occurred.”). Where formal notice-and-comment rulemaking has the force of law, administrative guidance documents are “freestanding, nonbinding statements of policy and interpretation issued by agencies.” Administrative Conference Recommendation 2014-3: Guidance in the Rulemaking Process, 57 Fed. Reg. 30101, 30103-04 (July 8, 1992).

121. Dewey, *supra* note 120, at 384.

122. 15 U.S.C. § 78c.

123. *SEC v. Howey Co.*, 328 U.S. 293, 298–99 (1946).

124. Dewey, *supra* note 120, at 387.

125. Notably, even if a token is labelled a “utility token,” as opposed to a payment or investment token, the token is still deemed a security if it functions as such. Per William Hinman, SEC Director of Corporate Finance,

over time.<sup>126</sup> For example, a token that is initially purchased as an investment but operates on a network which later becomes sufficiently decentralized such that there are no managerial efforts necessary to operate may lose its status as a security.<sup>127</sup> Thus, whether or not a token is a security subject to SEC regulation is a question of use and best decided on a case-by-case basis.<sup>128</sup>

The Commodity Futures Trading Commission (“CFTC”) is responsible for the regulation of futures, options, swaps, and derivatives of cryptocurrencies. Under the Commodity Exchange Act, the CFTC has jurisdiction over “transactions involving swaps or contracts of sale of a commodity for future delivery.”<sup>129</sup> It also has authority over any attempts at fraud or market manipulation which concern the sale of commodities.<sup>130</sup> Cryptocurrencies can be classified as commodities and are thus subject to such regulation.<sup>131</sup> Most regulatory and enforcement action by the CFTC concerns fraud and market abuse.<sup>132</sup>

Both FinCEN, the financial intelligence unit of the United States, and the Treasury’s Office of Foreign Assets Control (“OFAC”) have authority to regulate money transmission.<sup>133</sup> Under the Bank Secrecy Act, FinCEN regulates money services businesses (“MSB”).<sup>134</sup> MSBs that are money transmitters must implement risk-based anti-money laundering (“AML”) programs.<sup>135</sup> Such programs are designed to prevent MSBs from being used to launder money or finance terrorist activities.<sup>136</sup> FinCEN has determined that cryptocurrency exchanges are MSBs, and unless otherwise exempted, exchanges are money

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“Central to determining whether a security is being sold is how it is being sold and the reasonable expectations of the purchasers.” Moreover, if investors have a reasonable expectation of seeing profits through the work of others, an ICO is a security. William Hinman, Dir. of Corp. Fin., SEC, Remarks at the Yahoo Finance All Markets Summit: Crypto, Digital Asset Transaction: When Howey Met Gary (Plastic) (June 14, 2018) (<https://www.sec.gov/news/speech/speech-hinman-061418>).

126. *Id.*

127. *Id.*

128. *Id.*

129. 7 U.S.C. § 2(a)(1)(A).

130. 7 U.S.C. § 9(1).

131. CFTC v. My Big Coin Pay, Inc., 334 F. Supp. 3d 492, 497 (D. Mass. 2018).

132. MATTHEW BLUMENFELD ET AL., PWC: REGULATORY BRIEF, CARVING UP CRYPTO: REGULATORS BEGIN TO FIND THEIR FOOTING 2 (2018).

133. 31 U.S.C. § 310(a), (b)(2)(A) (establishing FinCEN delegating the power to “[a]dvise and make recommendations on matters relating to financial intelligence, financial criminal activities, and other financial activities”); *see also* 31 C.F.R. § 501 (2020) (establishing the reporting requirements for the Office of Foreign Assets Control); *see also* Robert B. Matchette et al., *Records of the Office of Foreign Asset Control*, NAT’L ARCHIVES, <https://www.archives.gov/research/guide-fed-records/groups/265.html#265.1> (last visited Mar. 27, 2022) (establishing the Records of the Office of Foreign Assets Control “by Treasury Department order, October 15, 1962.”).

134. A money services business is a person doing substantial business in the United States as a dealer in foreign exchange, check casher, issuer or seller of traveler’s checks or money orders, provider of prepaid access, money transmitter, U.S. Postal Service, or seller of prepaid access. 31 C.F.R. § 1010.100(ff) (2020).

135. 31 C.F.R. § 1010.100(ff) (2020); § 1022.210. A money transmitter is a person that accepts currency or other tokens of value from one person *and* transmits currency or other tokens of value to another location or person, or “[a]ny other person engaged in the transfer of funds.” 31 C.F.R. § 1010.100(ff)(5)(i).

136. 31 C.F.R. § 1022.210(a).

transmitters if they accept, transmit, buy, or sell cryptocurrency.<sup>137</sup> Additionally, ICO issuers not registered with the SEC are money transmitters, and subject to AML requirements.<sup>138</sup> FinCEN can bring an enforcement action for AML violations, which carry serious penalties.<sup>139</sup> In one instance, they fined a coin issuer \$110 million for failing to detect and report suspicious transactions.<sup>140</sup>

All U.S. persons are prohibited from doing businesses with persons on the Specially Designated Nationals and Blocked Entities List.<sup>141</sup> Amidst growing concerns over foreign entities using cryptocurrencies to avoid sanctions and facilitate criminal activities, the OFAC has begun issuing enforcement actions against U.S. persons who transact with listed entities.<sup>142</sup> Notably, all U.S. persons, both legal and natural, are subject to OFAC regulations.<sup>143</sup> Accordingly, ordinary cryptocurrency users may be penalized for violations. As unauthorized dealings with sanctioned parties are subject to a strict liability standard,<sup>144</sup> lack of knowledge is no defense, and it is incumbent upon the person using cryptocurrency to verify the identity of their trade partners.<sup>145</sup>

Taxation presents yet another regulatory challenge for the crypto ecosystem.<sup>146</sup> The Internal Revenue Service currently taxes cryptocurrency as property, rather than currency.<sup>147</sup> As such, any person owning cryptocurrency will need to pay taxes on gains realized upon the exchange of cryptocurrency, gains made upon payment for goods and services with cryptocurrency, and the fair market value at the time of receipt of any mined tokens.<sup>148</sup> Taxable gains and losses must also be recognized any time cryptocurrency is exchanged for another token.<sup>149</sup> Cryptocurrency held as an asset is taxed at a person's marginal

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137. U.S. DEP'T OF THE TREASURY, FIN. CRIMES ENF'T NETWORK, FIN-2013-G001, APPLICATION OF FINCEN'S REGULATIONS TO PERSONS ADMINISTERING, EXCHANGING, OR USING VIRTUAL CURRENCIES 2-3 (Mar. 18, 2013), <https://www.fincen.gov/sites/default/files/shared/FIN-2013-G001.pdf>. Notably, individual cryptocurrency users are not subject to this regulation.

138. Jason Tashea, *U.S. Treasury Says Money Transmitter Rules Apply to Initial Coin Offerings*, ABA J. (Mar. 8, 2018, 7:30 AM), [https://www.abajournal.com/news/article/u.s.\\_treasury\\_says\\_money\\_transmitter\\_rules\\_apply\\_to\\_initial\\_coin\\_offerings](https://www.abajournal.com/news/article/u.s._treasury_says_money_transmitter_rules_apply_to_initial_coin_offerings).

139. 31 C.F.R. § 1010.810-1010.850 (2020).

140. BTC-E, FinCEN No. 2017-03 (July 26, 2017).

141. 31 C.F.R. § 594.201 (2020).

142. Harry Clark et al., *Cryptocurrency and OFAC: Beware of the Sanctions Risks*, ORRICK, <https://blogs.orrick.com/blockchain/cryptocurrency-and-ofac-beware-of-the-sanctions-risks> (last visited Mar. 27, 2022).

143. See *Frequently Asked Questions: Basic Information on OFAC and Sanctions*, U.S. DEP'T OF THE TREASURY (June 17, 2021), <https://home.treasury.gov/policy-issues/financial-sanctions/faqs/topic/1501> ("U.S. persons must comply with OFAC regulations, including all U.S. citizens and permanent resident aliens regardless of where they are located . . .").

144. See SANCTIONS COMPLIANCE GUIDANCE FOR THE VIRTUAL CURRENCY INDUSTRY, OFF. OF FOREIGN ASSETS CONTROL 6 (Oct. 2021), [https://home.treasury.gov/system/files/126/virtual\\_currency\\_guidance\\_brochure.pdf](https://home.treasury.gov/system/files/126/virtual_currency_guidance_brochure.pdf) (explaining the strict liability regulations standard governing OFAC violations).

145. Clark et al., *supra* note 142.

146. *Taxation May be a Bigger Issue in Crypto Regulation Than Anticipated*, PYMNTS.COM (Feb. 28, 2022), <https://www.pymnts.com/cryptocurrency/2022/taxation-may-be-a-bigger-issue-in-crypto-regulation-than-anticipated>.

147. I.R.S. Notice 2014-21, 2014-16 I.R.B. 938, 938.

148. *Id.* at 939.

149. This applies to cryptocurrency that was received after December 31, 2017. It is unclear whether the conversion of tokens purchased before this date into another form of cryptocurrency would be recognized as a taxable gain or loss. Income Tax Reform Act, Pub. L. No. 115-97, 131 Stat. 2123 (2017) (codified at 26 U.S.C. § 1031).

income tax rate if it is held for one year or less and at the capital gains tax rate if it is held for more than a year.<sup>150</sup>

One gaping hole in U.S. cryptocurrency regulation was the policy of the Federal Reserve (“The Fed”).<sup>151</sup> The Fed did not take an official policy until November 2021 regarding the regulation of cryptocurrencies.<sup>152</sup> Recent developments suggest further changes may be afoot. Federal Reserve Chair Jerome Powell voiced support for “responsible private sector innovation in the financial system so long as that is carried out in a way that addresses the associated risks and preserves safety and soundness.”<sup>153</sup> However, this support is tempered by serious concerns over privacy, money laundering, and consumer protection.<sup>154</sup> Powell addressed the need for a singular regulatory body that can oversee the entire cryptocurrency enterprises but noted that there is no agency that currently has that authority.<sup>155</sup> Where the Federal Reserve has acted, their efforts seem to be directed at curtailing the use of cryptocurrency for criminal purposes.<sup>156</sup> For example, a notice of proposed rulemaking in October 2020 proposes to reduce the reporting threshold for fund transfers under the Bank Secrecy Act from \$3,000 to \$250 and clarifies that the meaning of “money” when used in the rule applies to cryptocurrency transactions.<sup>157</sup> The Fed does not, however, seem to be concerned with the possibility of cryptocurrency undermining the stability or hegemony of the American dollar.<sup>158</sup>

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150. DEP’T OF THE TREASURY, I.R.S., PUBL’N 544, SALES AND OTHER DISPOSITION OF ASSETS: FOR USE IN PREPARING 2019 RETURNS (2020).

151. See Andrew Ross Sorkin et al., *Regulators Feel Torn About Cryptocurrencies*, N.Y. TIMES: DEALBOOK (Nov. 1, 2021), <https://www.nytimes.com/2021/07/16/business/dealbook/crypto-powell-regulators.html> (noting Chairman Powell was “‘legitimately undecided’ about the benefits of” regulating stablecoins).

152. Press Release, Board of the Governors of the Federal Reserve System, Agencies Issue Joint Statement on Crypto-Asset Policy Initiative and Next Steps (Nov. 23, 2021), <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20211123a.htm>.

153. *The Semiannual Monetary Policy Report to the Congress: Hearing Before the S. Comm. on Banking, Housing, and Urban Affairs*, 116th Cong. 8 (2019) [hereinafter *2019 Monetary Policy Report*] (responding to a question from Sen. Mike Crapo regarding data protection and cryptocurrencies).

154. *Id.*

155. This exchange specifically concerned the regulation of Libra, Facebook’s proposed cryptocurrency. Powell noted that the Fed has no authority over private entities like Facebook, and they do not have the authority to apply banking rules to private actors. *Id.*

156. Rebecca Heilweil, *Feds Are Seizing Cryptocurrency from Criminals. Now They Have to Figure Out What to Do with It*, VOX: RECODE (July 30, 2021, 10:50 AM), <https://www.vox.com/recode/2021/7/30/22600574/cryptocurrency-bitcoin-ethereum-asset-seizure-crimes-bank-storage-password-department-of-justice>.

157. Threshold for the Requirement to Collect, Retain, and Transmit Information on Funds Transfers and Transmittals of Funds that Begin or End Outside the United States, and Clarification of the Requirement to Collect, Retain, and Transmit Information on Transactions Involving Convertible Virtual Currencies and Digital Assets with Legal Tender Status, 85 Fed. Reg. 68005 (proposed Oct. 27, 2020) (to be codified at 31 C.F.R. § 1010, 1020).

158. See *2019 Monetary Policy Report*, *supra* note 153 (giving an example of Chairman Powell’s repeated statements that cryptocurrencies are not a bona fide threat to the American monetary system, such as when asked if cryptocurrencies could diminish the need for reserve currencies, stating, “I think things like that are possible, but we really have not seen them. We have not seen widespread adoption. I mean, bitcoin is a good example. Really almost no one uses bitcoin for payments. They use it more as an alternative to gold, really.”); see also Janet Yellen, *Monetary Policy and the Economy*, C-SPAN (Dec. 13, 2017), <https://www.c-span.org/video/?438385-1/outgoing-federal-reserve-chair-janet-yellen-holds-news-conference> (echoing

What is clear is that Bitcoin does not fit nicely into the existing U.S. regulatory framework.<sup>159</sup> The SEC and CFTC have made bona fide efforts to enforce regulations covering cryptocurrency activities that fall within their jurisdiction.<sup>160</sup> Nonetheless, the heads of these agencies themselves have questioned their enforcement capabilities from both legal and budgetary perspectives.<sup>161</sup> Despite agencies' best efforts to navigate a novel financial ecosystem, there are numerous regulatory gaps and effectively no coordinated efforts among government agencies to deal with the crypto economy.<sup>162</sup>

### III. ANALYSIS

Much like investing in cryptocurrency itself, regulating a novel industry inherently involves some amount of risk. Most regulators in the United States have largely followed a wait-and-see approach.<sup>163</sup> This may have been effective early on, as it allowed the industry to grow naturally, which has not only spurred investment and innovation, but also exposed looming threats.<sup>164</sup> However, as demand for cryptocurrency increases, the risk that technological advancement, network development, and mass adoption will outpace attempts at regulatory intervention increases.<sup>165</sup> This section will begin by identifying the factors driving demand and the potential threats posed by cryptocurrencies. The risks

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Powell's perspective, former Chairwoman Janet Yellen, when asked if the Fed should take a more active role in identifying Bitcoin counterparty threats, responded, "I really don't see that as creating a full-blown financial stability risk."). *But see* Lalita Clozel, *Fed Official Steps Up Concern over Bitcoin*, WALL ST. J. (Nov. 30, 2017, 1:09 PM), <https://www.wsj.com/articles/fed-official-steps-up-concern-over-bitcoin-1512065364> (documenting how a small minority of Federal Reserve Governors have expressed more serious concerns, including Randal Quarles, who has suggested that cryptocurrencies risk liquidity shortfalls which could create financial catastrophes akin to bank runs).

159. *See* Kevin V. Tu, *Perfect Bitcoin*, 52 GA. L. REV. 505, 524–38 (2018) (describing regulatory efforts for cryptocurrencies and the challenges policy makers face).

160. *See* SEC. & EXCH. COMM'N, CYBER ENFORCEMENT ACTIONS, <https://www.sec.gov/spotlight/cybersecurity-enforcement-actions> (last modified Feb. 14, 2022) (showing raw data for how the SEC has increased enforcement actions against ICOs, growing from an average of 1.66 actions a year between 2014 and 2016 to an average of 18.66 annual actions between 2018 and 2020); Abe Chernin et al., CORNERSTONE RSCH., *The CFTC's Approach to Virtual Currencies*, NAT'L L. REV. (Dec 21, 2020), <https://www.natlawreview.com/article/cftc-s-approach-to-virtual-currencies> (documenting data which shows the CFTC has increased cryptocurrency enforcement actions from an average of 1.3 annual actions between 2015 and 2017 to an average of 5 actions per year between 2017 and 2020).

161. *See Virtual Currencies: The Oversight Role of the U.S. Securities and Exchange Commission and the U.S. Commodity Futures Trading Commission: Hearing Before the S. Comm. on Banking, Hous., & Urb. Affs.*, 115th Cong. (2018) (statements of Hon. J. Christopher Giancarlo, Chairman, CFTC, and Hon. Jay Clayton, Chairman, SEC) [hereinafter *Virtual Currencies*] (stating that the Chairmen of the SEC and CFTC agree that the current patchwork regulatory framework is insufficient to address concerns, given the international nature of the market).

162. *See* Tu, *supra* note 159, at 512–15 (discussing gaps in regulatory frameworks between agencies).

163. *See, e.g., Federal Trade Commission Considers the Implications of AI and Blockchain Technologies*, REED SMITH (Mar. 15, 2017), <https://www.reedsmith.com/en/perspectives/2017/03/federal-trade-commission-considers-the-implication> (capturing the sentiment of regulators at the FTC, noting "it is difficult to determine the scope of the consumer protection risks posed by blockchain technology because it is in a very early stage of development").

164. *See* Tu, *supra* note 159, at 514–15 (discussing how Article 9 of the Uniform Commercial Code, concerning secured transactions, is silent on how to properly categorize cryptocurrency as collateral).

165. *See id.* at 515 ("The need to fit virtual currency into an existing collateral type increases the potential risk of failing to attach and perfect because creditors may mistakenly categorize virtual currency and use an unauthorized method of attaching or perfecting.").

and benefits will then be analyzed in the context of the current regulatory framework in order to identify gaps.

### A. Demand for Cryptocurrency

On May 22, 2010, Laszlo Hanyecz, a programmer in Florida, paid Jeremy Sturdivant 10,000 bitcoins in exchange for two Dominos pizzas.<sup>166</sup> This seemingly innocuous event marked the first time in history that cryptocurrency was successfully used to pay for real goods.<sup>167</sup> A little more than a decade ago, Bitcoin was the vernal brainchild of a small community of cypherpunks.<sup>168</sup> Since then, cryptocurrencies have exploded in popularity, quickly becoming a global phenomenon.<sup>169</sup>

#### 1. Who Are the Participants?

The global cryptocurrency community today has evolved considerably from its technophilic beginnings. Individuals, businesses, institutions, and governments from across the world actively participate in the crypto ecosystem. As of June of 2021, there were more than 221 million verified crypto-asset users worldwide, representing a 531% increase from 2018.<sup>170</sup> It is estimated that between six and sixteen percent of U.S. adults own cryptocurrency.<sup>171</sup> A 2020 study of U.S. consumers found that cryptocurrency owners are more likely to be high-income, well-educated men; millennials and GenXers; and Bank of America customers.<sup>172</sup> Respondents who intend to invest in the near future were

166. laszlo, Comment to *Pizza for Bitcoins?*, BITCOIN FORUM (May 22, 2010, 7:17 PM), <https://bitcointalk.org/index.php?topic=137.msg1195#msg1195> (“I just want to report that I successfully traded 10,000 bitcoins for pizza . . . thanks jercos!”); LEWIS, *supra* note 72, at 159–60. At the time, 10,000 BTC was valued at roughly \$41.00 USD. As of March 6, 2022, 10,000 BTC is worth \$388.3 million dollars. See *Bitcoin and Cryptocurrency Calculator*, COINDESK, <https://www.coindesk.com/calculator> (last visited Mar. 6, 2022).

167. LEWIS, *supra* note 72, at 159–60.

168. See generally JAMIE BARTLETT, *THE DARK NET: INSIDE THE DIGITAL UNDERWORLD* (2014) (describing the history and philosophy of cypherpunks, a community of coders, developers, and cryptographers, with political philosophies ranging from freedom-minded libertarians to antidemocratic crypto-anarchists, who advocate for the vigilant protection of privacy and autonomy via the use of cryptography and code).

169. See Rebekah Moss, *Cryptocurrency Around the World*, TOTAL PROCESSING LTD. (June 26, 2019), <https://www.totalprocessing.com/blog/cryptocurrency-around-the-world> (“Cryptocurrency has become a global phenomenon and something that seems confusing to most.”).

170. Raynor de Best, *Number of Identity-Verified Cryptoasset Users from 2016 to June 2021*, STATISTA (last updated Jan. 14, 2022), <https://www.statista.com/statistics/1202503/global-cryptocurrency-user-base/#statisticContainer>.

171. Compare Katharina Buchholz, *How Common Is Crypto?*, STATISTA (Mar. 17, 2021), <https://www.statista.com/chart/18345/crypto-currency-adoption> (finding that six percent of U.S. survey respondents have used or owned cryptocurrency), with Andrew Perrin, *16% of Americans Say They Have Ever Invested in, Traded or Used Cryptocurrency*, PEW RSCH. CTR. (Nov. 11, 2021), <https://www.pewresearch.org/fact-tank/2021/11/11/16-of-americans-say-they-have-ever-invested-in-traded-or-used-cryptocurrency> (finding 16% of U.S. survey respondents have invested in, traded, or used cryptocurrency).

172. See Ron Shevlin, *The Coronavirus Cryptocurrency Craze: Who’s Behind the Bitcoin Buying Binge?*, FORBES (July 27, 2020, 8:00 AM), <https://www.forbes.com/sites/ronshevlin/2020/07/27/the-coronavirus-cryptocurrency-craze-whos-behind-the-bitcoin-buying-binge> (finding that nearly 80% of people who purchased cryptocurrencies in 2020 were men with an average income of \$130,000. Of these men, 70% had at least a Bachelor’s degree, and 40% had a Master’s degree or higher. Of buyers, 57% percent were Millennials, aged twenty-six to forty, and 30% were Gen Xers, aged forty-one to fifty-five. Nearly half of cryptocurrency purchasers surveyed banked with Bank of America, as compared to 21% of the general population).

more diverse and included larger percentages of women and minorities, spanning a wider range of ages and education levels.<sup>173</sup> Nonetheless, while cryptocurrency community is expanding, the demographic composition is not representative of American consumers at large.<sup>174</sup>

Governments and institutions have also become increasingly interested in cryptocurrency.<sup>175</sup> The Bitcoin surge in late 2020 has been attributed to institutional investment, which has resulted in a 105% increase in the number of Bitcoin addresses<sup>176</sup> and returns of more than 160%.<sup>177</sup> In the past, institutional investors have hesitated with cryptocurrency, but against the backdrop of a fragile economy and a global pandemic, many have turned to Bitcoin as a hedge against the American dollar.<sup>178</sup> Additionally, many states leverage blockchain technology as a tool for modernizing traditional ledger-based systems across a number of sectors. For example, the United States uses a private blockchain for federal grantmaking, and the Joint Chiefs of Staff have implemented a pilot program to use blockchain to transmit 3D printing files to military bases.<sup>179</sup> Additionally, government agencies and regulated entities are also actively participating in the crypto ecosystem.<sup>180</sup> Federally chartered banks are permitted to offer custody services for customers' cryptocurrency,<sup>181</sup> and the Federal Reserve is even considering the development of a central bank cryptocurrency.<sup>182</sup> In all, increased institutional and government investment

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173. See *id.* (finding that women accounted for 22% of current investors and 35% of future investors; 23% of current investors and 37% of future investors were African American or Hispanic; 7% of Gen Zers currently own cryptocurrency, and 17% intend to purchase within the next year; 3% of Baby Boomers currently own cryptocurrency, but an additional 11% intend to buy; only 18% of cryptocurrency holders have less than an Associate's degree, but 36% of future investors have an equivalent level of education).

174. See, e.g., *id.* ("African-American and Hispanic consumers, who comprise 28% of all Americans, account for 23% of current crypto investors.").

175. See Kejal Vyas & Santiago Pérez, *Can Bitcoin Be a National Currency? El Salvador Is Trying to Find Out.*, WALL ST. J. (Feb. 16, 2022, 10:59 AM), <https://www.wsj.com/amp/articles/bitcoin-national-currency-el-salvador-11645026831> (analyzing El Salvador's attempt to adopt Bitcoin as legal tender).

176. Nate Maddrey et al., *The State of the Network 2020 Year in Review*, COIN METRICS (Dec. 22, 2020), <https://coinmetrics.substack.com/p/coin-metrics-state-of-the-network-3d3>.

177. Bradley Keoun, *Bitcoin Prices in 2020: Here's What Happened*, COINDESK (Dec. 30, 2020, 11:39 AM), <https://www.coindesk.com/bitcoin-prices-in-2020-heres-what-happened>.

178. See *id.* ("[W]hat changed bitcoin's price trajectory in 2020 was its growing adoption as a hedge against the potential currency debasement that might come from trillions of dollars of coronavirus-related stimulus payments from central banks and governments around the world.").

179. *GrantSolutions Takes the Stage at Blockchain Event*, GRANTSOLUTIONS (June 12, 2019), <https://home.grantsolutions.gov/home/event-recap/grantsolutions-takes-the-stage-at-blockchain-event>; HOMELAND SEC. ADVISORY COUNCIL, INTERIM REPORT OF THE EMERGING TECHNOLOGIES SUBCOMMITTEE (May 21, 2019), [https://www.dhs.gov/sites/default/files/publications/ope/hsac/19\\_0521\\_hsac\\_final-hsac-emerging-technology-interim-report.pdf](https://www.dhs.gov/sites/default/files/publications/ope/hsac/19_0521_hsac_final-hsac-emerging-technology-interim-report.pdf).

180. See, e.g., MacKenzie Sigalos, *The U.S. Government Has a Massive, Secret Stockpile of Bitcoin — Here's What Happens to It*, CNBC (Dec. 19, 2021, 7:54 PM), <https://www.cnn.com/2021/12/19/what-the-us-government-does-with-its-secret-bitcoin-stockpile.html> (reporting on the U.S. government's Bitcoin stockpile).

181. Dep't of the Treasury, Office of the Comptroller of the Currency, Interpretive Letter #1170 on the Authority of a National Bank to Provide Cryptocurrency Custody Services for Customers (July 22, 2020), <https://www.occ.gov/topics/charters-and-licensing/interpretations-and-actions/2020/int1170.pdf>.

182. Lael Brainard, Governor, Bd. of Governors of the Fed. Rsv. Sys., *An Update on Digital Currencies* (Aug. 13, 2020), <https://www.federalreserve.gov/newsevents/speech/brainard20200813a.htm>.

could positively benefit the crypto-industry by helping stabilize and legitimize the assets.<sup>183</sup>

## 2. *What Are They Buying?*

Since its inception, Bitcoin has been, and continues to be, the dominant specie of cryptocurrency.<sup>184</sup> The price of Bitcoin grew from \$7,000 in January 2020 to more than \$61,300 at its latest peak in October 2021, an increase of more than 775%.<sup>185</sup> Its capitalization also increased by almost 580% over that same time span.<sup>186</sup> However, Bitcoin's share of the total crypto market capitalization fell from 69.47% to 44.85% over this same period of time.<sup>187</sup> This indicates that while there was incredible demand for Bitcoin in 2020, there has been considerable activity with other tokens as well.<sup>188</sup>

The demand for altcoins and stablecoins has also ballooned.<sup>189</sup> For example, Ethereum is an altcoin that is favored among businesses.<sup>190</sup> In addition to supporting the payment and investment functions of a cryptocurrency, Ethereum offers a suite of blockchain-based business applications executed by smart contracts.<sup>191</sup> In January 2020 there were more than 84 million unique addresses listed on the Ethereum blockchain, and the token was valued at \$186.<sup>192</sup> One year later, there were more than 131 million addresses, and the value had grown to \$1,385.<sup>193</sup> Stablecoins—which are cryptocurrencies backed by a reserve asset, usually gold or the U.S. Dollar—have had similar growth,

183. See Maddrey et al., *supra* note 176 (discussing institutional adoption and concluding “[B]itcoin is in its strongest position yet closing out 2020.”).

184. ANDREW HAYNES & PETER YEOH, CRYPTOCURRENCIES AND CRYPTOASSETS: REGULATORY AND LEGAL ISSUES 9 (2020).

185. See Raynor de Best, *Bitcoin (BTC) Price per Day from October 2013 to March 4, 2022*, STATISTA (last visited Mar. 6, 2022), <https://www.statista.com/statistics/326707/bitcoin-price-index> (providing raw data on Bitcoin price).

186. See Raynor de Best, *Market Capitalization of Bitcoin from April 2013 to February 28, 2022*, STATISTA (last visited Mar. 6, 2022), <https://www.statista.com/statistics/377382/bitcoin-market-capitalization> (providing raw data on Bitcoin capitalization).

187. See *Cryptocurrency Market: Market Cap: Total Market Capitalization Dominance*, TRADINGVIEW, <https://www.tradingview.com/markets/cryptocurrencies/global-charts> (last visited Mar. 6, 2022) (providing raw data on total crypto market capitalization).

188. *Id.*

189. See Maddrey et al., *supra* note 176 (“Many factors contributed to the staggering stablecoins growth.”).

190. See CHOWDHURY, *supra* note 36, at 86 (describing altcoins as alternative cryptocurrencies which function as substitutes for Bitcoin); Christina Comben, *Three Huge Names That Are Making Ethereum Their Platform of Choice*, YAHOO! FIN. (May 16, 2019), <https://finance.yahoo.com/news/three-huge-names-making-ethereum-140010121.html> (reporting that JP Morgan, Amazon, and Microsoft are all using Ethereum to support blockchain-enabled services).

191. See *What Is Ethereum?*, ETHEREUM (last visited Mar. 6, 2022), <https://ethereum.org/en/what-is-ethereum/> (providing an overview of blockchain-based applications and describing Ethereum as “the world’s programmable blockchain”).

192. See *Ethereum Unique Addresses Chart*, ETHERSCAN (last visited Mar. 6, 2022), <https://etherscan.io/chart/address> (providing raw data on the number of Ethereum addresses); Raynor de Best, *Ethereum (ETH) Price per Day from August 2015 to March 4, 2022*, STATISTA (last visited Mar. 6, 2022), <https://www.statista.com/statistics/806453/price-of-ethereum> (providing raw Ethereum price data).

193. See ETHERSCAN, *supra* note 191; Raynor de Best, *supra* note 191.

with their total value surging nearly 495% between October 2020 and October 2021.<sup>194</sup>

The distribution of wealth provides a more nuanced understanding of the demand for cryptocurrency.<sup>195</sup> The Gini coefficient is a statistical dispersion metric used to compare the distribution of wealth distribution across populations.<sup>196</sup> The coefficient ranges from zero to one, with zero representing perfect equality and one representing perfect inequality.<sup>197</sup> The distributions of U.S. net worth, U.S. financial assets, and global financial assets are widely considered to be inequitable and have Gini coefficients of 0.74, 0.77, and 0.85 respectively.<sup>198</sup> However, these numbers are dwarfed by the extreme inequality in Bitcoin holdings, which has a Gini coefficient of 0.98.<sup>199</sup> As illustrated in Chart 1, nearly 90% of the value is held by 1% of wallets, and since individuals can hold multiple wallets, it is possible that this number is far smaller than one percent.<sup>200</sup>

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194. *What are Stablecoins?*, CBINSIGHTS: RESEARCH REPORT (Jan. 25, 2022), <https://www.cbinsights.com/research/report/what-are-stablecoins>.

195. See Ashish Rajendra Sai et al., *Characterizing Wealth Inequality in Cryptocurrencies*, FRONTIERS BLOCKCHAIN (2021) (analyzing crypto markets by examining wealth inequality via econometric measures).

196. See *id.* at 4 (defining Gini coefficient)

197. *Id.*

198. See *Shares of Wealth by Wealth Percentile Groups*, FED. RESRV. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/release/tables?rid=453&eid=813804> (last viewed Dec. 28, 2020) (providing percentile-based breakdowns of the distribution of U.S. total net worth and U.S. financial assets); MICHAELA GRIMM ET AL., ALLIANZ, ALLIANZ GLOBAL WEALTH REPORT 2020 45 (Sept. 23, 2020), [https://www.allianz.com/content/dam/onemarketing/azcom/Allianz\\_com/economic-research/publications/specials/en/2020/september/2020\\_09\\_23\\_AllianzWealthReport2020.pdf](https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/economic-research/publications/specials/en/2020/september/2020_09_23_AllianzWealthReport2020.pdf) (providing a decile-based breakdown of the distribution of global financial assets). Compare with Slovakia, which has the most equitable distribution of wealth and a Gini coefficient of 0.53. See *infra* Appendix 1.

199. See *Bitcoin Rich List*, BITINFOCHARTS, <https://bitinfocharts.com/top-100-richest-bitcoin-addresses.html> (last viewed February 17, 2021) (raw data was extracted from BitInfoCharts and used to write an equation to estimate shares. Data, equation, and calculations are on file with the author).

200. See Scott Chipolina, *How Much Bitcoin Does it Take to Break Into the 1% Club?*, DECRYPT (Jan. 8, 2021) (discussing the difficulties in creating a model for Bitcoin wealth holdings because Bitcoin is not evenly distributed among addresses, multiple of which can be held by a single individual).

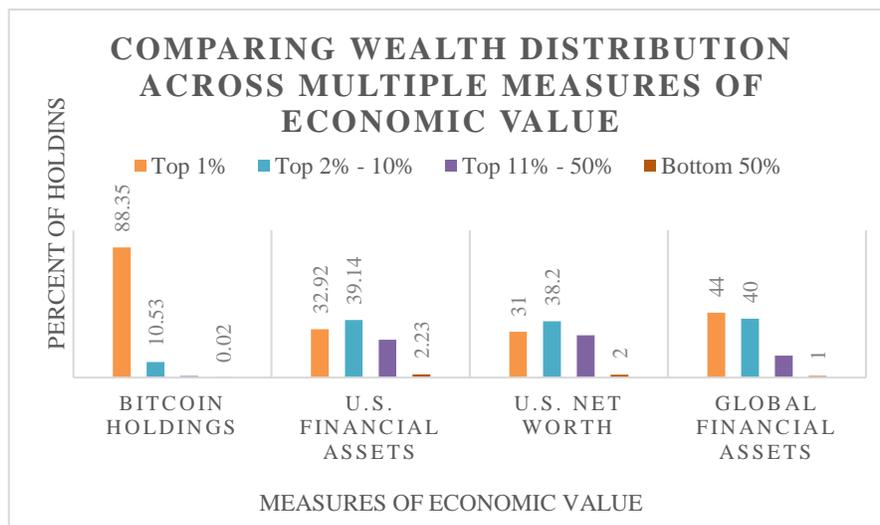


Chart 1. Comparing Wealth Distribution Across Multiple Measures of Economic Value.<sup>201</sup>

The comparative inequality in the distribution of Bitcoin vis-à-vis more traditional wealth measurements is foreseeable.<sup>202</sup> Whales—investors with more than 1,000 Bitcoins—fueled the Bitcoin surge of 2020.<sup>203</sup> Large capital investments also drive up the price of Bitcoin, further adding to the wealth disparity.<sup>204</sup> Between January 2020 and January 2021, the supply of Bitcoin held by whale entities has increased by 13.4% and their number increased by 27%.<sup>205</sup>

201. Composite data for the chart was taken from the following sources: MICHAELA GRIMM ET AL., ALLIANZ, ALLIANZ GLOBAL WEALTH REPORT 2020 45 (Sept. 23, 2020), [https://www.allianz.com/content/dam/onemarketing/azcom/Allianz\\_com/economic-research/publications/specials/en/2020/september/2020\\_09\\_23\\_AllianzWealthReport2020.pdf](https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/economic-research/publications/specials/en/2020/september/2020_09_23_AllianzWealthReport2020.pdf) (providing a decile-based breakdown of the distribution of global financial assets); and *Shares of Wealth by Wealth Percentile Groups*, FED. RSRV. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/release/tables?rid=453&eid=813804> (last viewed Dec. 28, 2020) (providing percentile-based breakdowns of the distribution of U.S. total net worth and U.S. financial assets). For Bitcoin, raw data was extracted from BitInfoCharts and used to write an equation to estimate shares. *Bitcoin Rich List*, BITINFOCHARTS, <https://bitinfocharts.com/top-100-richest-bitcoin-addresses.html> (last updated February 17, 2021) (data, equation, and calculations are on file with the author).

202. See Sai et al., *supra* note 194 (devising a generic econometric analysis schema for cryptocurrencies).

203. Billy Bambrough, *As Bitcoin Smashes Through \$40,000, Data Reveals What's Behind the Huge 2021 Bitcoin Price Boom*, FORBES (Jan 8., 2021, 6:10 AM), <https://www.forbes.com/sites/billybambrough/2021/01/08/is-this-whats-really-behind-the-huge-2021-bitcoin-price-boom> (finding that Bitcoin addresses holding more than 100 Bitcoins procured an additional 47,500 coins in December 2020).

204. See, e.g., Kate Rooney, *Big Investors New to Cryptocurrencies Appear to be Behind Bitcoin's Rally to a Record*, CNBC (Dec. 18, 2020, 2:49 PM), <https://www.cnbc.com/2020/12/18/new-bitcoin-investors-buying-20-million-or-more-have-flooded-into-crypto-this-year-as-the-price-so.html> (“Investors who bought at least 1,000 bitcoins ... drove significant demand since September . . . .”); Rupert Neate & Rupert Jones, *Tesla Buys \$1.5bn in Bitcoin, Pushing Price to New High*, GUARDIAN (Feb. 8, 2021, 8:53 AM), <https://www.theguardian.com/technology/2021/feb/08/tesla-bitcoin-price-new-high-elon-musk-dogecoin> (“News of Tesla’s [1.5 billion dollar] investment in bitcoin sent the digital currency soaring 14% to a record high of \$43,500”).

205. Rafael Schultze-Kraft, *No, Bitcoin Ownership Is Not Highly Concentrated—But Whales Are Accumulating*, GLASSNODE INSIGHTS (Feb. 2, 2021), <https://insights.glassnode.com/bitcoin-supply-distribution>.

For critics, this trend is a cause for concern, as extreme inequality in a market can create problems with volatility, liquidity, and manipulation.<sup>206</sup>

### 3. *Why Are People Buying?*

The reasons for using cryptocurrency are myriad and have evolved over time. Some supporters believe the appeal of cryptocurrency lies in its theory and design of Bitcoin.<sup>207</sup> That is, proponents believe that the cryptocurrency model offers advantages over conventional monetary systems, including privacy and freedom-enhancing features.<sup>208</sup> In contrast, ordinary users of cryptocurrency are likely to support its adoption for practical reasons.<sup>209</sup> Moreover, buyers believe that Bitcoin offers some advantage as a payment mechanism or as an investment relative to other instruments.<sup>210</sup>

In practice, these features are aimed at eliminating government control of money at a systemic and personal level.<sup>211</sup> Decentralized ledger systems eliminate the need to rely on centralized institutions as intermediaries.<sup>212</sup> In conventional systems, banks perform the requisite bookkeeping functions.<sup>213</sup> With cryptocurrencies, transactions are verified and authenticated by a network of nodes via the consensus mechanism, which looks to the form rather than the content of a transaction.<sup>214</sup> As such, cryptocurrencies are considered censorship resistant because there is no restriction on who you may transact with or what you can buy or sell.<sup>215</sup> Decentralized systems also lack a central point of failure, giving them a security advantage over conventional systems.<sup>216</sup> That is, because the operations are distributed and shared across network, hackers cannot upend the system by attacking a single node.<sup>217</sup> This feature also doubles as further protection against government oversight because there is no single actor to hold

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206. See *infra* Part IV.B.2.

207. See generally BARTLETT, *supra* note 168 (discussing cypherpunks).

208. See JULIAN ASSANGE, CYPHERPUNKS: FREEDOM AND THE FUTURE OF THE INTERNET 85–110 (2012) (discussing how decentralized electronic currencies promote privacy and the fundamental freedoms of movement, communication, and economic interaction).

209. See Rachel McIntosh, *Is Bitcoin a Safe-Haven Asset? The Narrative Shifts After 8 Months of COVID*, FINANCE MAGNATES (Nov. 11, 2020, 7:00 AM), <https://www.financemagnates.com/cryptocurrency/news/is-bitcoin-a-safe-haven-asset-the-narrative-shifts-after-8-months-of-covid> (collecting quotes from investors debating whether Bitcoin's original pitch as a safe-haven asset is still true today).

210. See Nathan Reiff, *What Are the Advantages of Paying with Bitcoin?*, INVESTOPEDIA (Aug. 2, 2021), <https://www.investopedia.com/ask/answers/100314/what-are-advantages-paying-bitcoin.asp> (discussing the potential benefits of using Bitcoin as a payment mechanism, “such as low transaction fees and speedier processing, compared to transactions conducted with fiat currencies.”).

211. PERKINS, *supra* note 26, at 11.

212. BIKRAMADITYA SINGHAL ET AL., BEGINNING BLOCKCHAIN: A BEGINNER'S GUIDE TO BUILDING BLOCKCHAIN SOLUTIONS 4 (2018).

213. LEWIS, *supra* note 72, at 198–248.

214. ANDREAS M. ANTONOPOULOS, MASTERING BITCOIN: UNLOCKING DIGITAL CRYPTOCURRENCIES § 8 (2014) (ebook) (listing the criteria a transaction must meet to be validated).

215. *Censorship-resistance*, BINANCE ACAD., <https://academy.binance.com/en/glossary/censorship-resistance> (last visited Mar. 27, 2022).

216. Rainer Böhme et al., *Bitcoin: Economics, Technology, and Governance*, 29 J. ECON. PERSPS. 213, 219 (2015).

217. *Id.*

accountable.<sup>218</sup> Furthermore, some cryptocurrencies further reduce the opportunity for government intervention through an algorithmically-controlled, fixed money supply.<sup>219</sup> Bitcoin, for example, is capped at 21 million tokens, which are minted in pre-determined amounts at regular intervals.<sup>220</sup> These limits are often styled after Austrian or monetarist policies which assert that government control of the money supply necessarily leads to over inflation.<sup>221</sup> Finally, the anonymizing features of cryptography protect user privacy by shielding the content and parties of a transaction from prying government eyes.<sup>222</sup>

Supporters also claim that cryptocurrency systems are, by design, more accessible, more efficient, and cheaper than conventional money.<sup>223</sup> Permissionless ledgers and open-source protocols mean that anyone with access to the internet can participate as a transactional user, network node, or miner.<sup>224</sup> Additionally, payments can be made and received from anywhere at any time, which provides an alternative to traditional financial systems for unbanked populations.<sup>225</sup> By eliminating intermediaries, parties avoid the fees imposed by banks and credit cards for their roles as a trusted-third party.<sup>226</sup> Additionally, the immutable quality of DLT systems means that sales are non-reversible.<sup>227</sup> A transaction is final at the time of confirmation, and there is no risk of chargebacks.<sup>228</sup> Cryptocurrency is also borderless, meaning that one can purchase goods from anywhere in the world without having to deal with the costs of currency conversion.<sup>229</sup>

As cryptocurrencies have matured, many of the purported benefits of their design have been qualified.<sup>230</sup> Mining consortia have led to concentrations of

218. See PAUL BECKETT, OWNERSHIP, FINANCIAL ACCOUNTABILITY AND THE LAW: TRANSPARENCY STRATEGIES AND COUNTER-INITIATIVES 252 (2019) (noting that cryptocurrencies have the “capacity to function as a counter-initiative to ownership transparency strategies and therefore as a means of avoiding accountability”).

219. Anshu Siripurapu, *Cryptocurrencies, Digital Dollars, and the Future of Money*, COUNCIL ON FOREIGN RELS. (Sept. 24, 2021, 12:55 PM), <https://www.cfr.org/backgrounder/cryptocurrencies-digital-dollars-and-future-money>.

220. Satoshi Nakamoto, Post to *Cryptocurrency Mailing List: Bitcoin v0.1 Released* (Jan. 8, 2009, 7:27 PM), <https://satoshi.nakamotoinstitute.org/emails/cryptography/threads/2/#014994> (“Total circulation will be 21,000,000 coins”).

221. VIRTUAL CURRENCY SCHEMES, EUR. CENT. BANK: EUROSISTEM 22 (Oct. 2012), <https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf>.

222. BECKETT, *supra* note 218, at 215–220.

223. Rob Matheson, *A Faster, More Efficient Cryptocurrency*, MIT NEWS (Jan. 23, 2019), <https://news.mit.edu/2019/vault-faster-more-efficient-cryptocurrency-0124>.

224. *The Benefits of Bitcoin*, BITCOIN.COM, <https://www.bitcoin.com/get-started/the-benefits-of-bitcoin> (last visited Mar. 27, 2022).

225. Dmitri Love, *How Bitcoin Empowers the Unbanked and Combats Injustice*, COINTELEGRAPH (June 26, 2020), <https://cointelegraph.com/news/how-bitcoin-empowers-the-unbanked-and-combats-injustice>.

226. BITCOIN.COM, *supra* note 224.

227. See *id.* (“Bitcoin is a push system: With Bitcoin, there is no risk of charge-backs because once Bitcoin are sent, the transaction cannot be reversed.”).

228. *Id.*

229. Using wire services to move money internationally can be prohibitively expensive, with remittance fees rising as high as sixteen percent. Cryptocurrencies offer a truly borderless solution accessible by anyone with internet access. KALLE ROSENBAUM, GROKING BITCOIN 15 (2019).

230. Siripurapu, *supra* note 219.

power across the network.<sup>231</sup> Third parties, though not necessary for transaction authentication, are necessary to facilitate access for ordinary consumers.<sup>232</sup> Ancillary services that interact with both the crypto economy and traditional financial systems must comply with AML/KYC requirements, which erodes censorship resistance.<sup>233</sup> Real-world linkages and blockchain analysis unveil transaction patterns, making most cryptocurrencies pseudonymous in function.<sup>234</sup> The savings in transaction fees is offset by miner fees and merchant mark-ups.<sup>235</sup> However, while cryptocurrency may not stand up to its theoretical promise, the practical advantages as an investment and payment vehicle nonetheless bolster demand.<sup>236</sup>

The original purpose of cryptocurrency was the use as digital cash.<sup>237</sup> However, a decade after its introduction, it has yet to reach critical mass. As of December 2020, 2,300 U.S. businesses accepted Bitcoin, and there were 328,370 daily transactions.<sup>238</sup> In comparison, Visa is accepted at 10.7 million U.S. locations and processes more than 150 million transactions per day.<sup>239</sup> Volatile prices and scalability problems present problems for merchants accepting Bitcoin.<sup>240</sup> Bitcoin prices often fluctuate more than 10% in a day, some days varying more than 30%.<sup>241</sup> This is problematic for ordinary retailers as they cannot be assured that payment they received in the morning would be worth the same at the end of the day.<sup>242</sup> To avoid a loss in value, some businesses accept

231. See Olga Kharif, *Bitcoin's Network Operations Are Controlled by Five Companies*, BLOOMBERG (Jan. 31, 2020, 1:04 PM), <https://www.bloomberg.com/news/articles/2020-01-31/bitcoin-s-network-operations-are-controlled-by-five-companies> (noting that 50 percent of the network mining power is controlled by five Chinese companies).

232. See Hossein Nabilou, *How to Regulate Bitcoin? Decentralized Regulation for a Decentralized Cryptocurrency*, 27 INT'L J. L. & INFO. TECH. 266, 267 (2019) (“[C]ryptocurrencies have created various forms of new middlemen.”).

233. See, e.g., ridleyreport, *New York BitLicense: Oct. 10 Court Challenge May Have Worldwide Bitcoin Implications*, CRYPTO INSIDER (Oct. 6, 2017), <https://cryptoinsider.media/ny-oct-10-court-challenge-may-worldwide-bitcoin-implications> (quoting Theo Chino, a crypto-business entrepreneur: “Bitcoin is not censorship resistant since the government made it illegal to create a business if one doesn’t apply AML/KML rules (know your customer).”).

234. See generally Angela S.M. Irwin & Adam B. Turner, *Illicit Bitcoin Transactions: Challenges in Getting to the Who, What, When, and Where*, 21 J. MONEY LAUNDERING CONTROL 297 (2018) (discussing law enforcement experiences with illicit Bitcoin transactions).

235. See, e.g., Jacob Bernstein, *What Can You Actually Buy With Bitcoin?*, N.Y. TIMES (Jan. 18, 2022), <https://www.nytimes.com/2021/02/03/style/what-can-you-actually-buy-with-bitcoin.html> (describing how fees for a third party processor for Amazon completely offset any discount).

236. Siripurapu, *supra* note 219.

237. *Id.*

238. The total number of global daily transactions is 328,370. Maddie Shepherd, *How Many Businesses Accept Bitcoin? Full List (2021)*, FUNDERA (Dec. 16, 2020), <https://www.fundera.com/resources/how-many-businesses-accept-bitcoin>.

239. Alexandria White, *99% of Merchants in the U.S. Who Accept Credit Cards Now Take American Express*, CNBC (Oct. 19, 2021), <https://www.cnbc.com/select/american-express-merchant-acceptance>; *Visa Acceptance for Retailers*, VISA, <https://usa.visa.com/run-your-business/small-business-tools/retail.html> (last visited Mar. 27, 2022).

240. The vast majority of retailers that accept cryptocurrency directly take Bitcoin. However, some retailers use payment gateways, which support a wide variety of tokens. See, e.g., *About Us*, COINPAYMENTS, <https://blog.coinpayments.net/about-us> (last visited Mar. 27, 2022).

241. Dirk G. Baur & Thomas Dimpfl, *The Volatility of Bitcoin and Its Role as a Medium of Exchange and a Store of Value*, 61 EMPIRICAL ECON. 2663, 2677 (2021), <https://link.springer.com/content/pdf/10.1007/s00181-020-01990-5.pdf>.

242. *Id.*

Bitcoin converted to fiat through a cryptocurrency exchange.<sup>243</sup> However, this service can be costly and erode any cost savings that would otherwise be had by using Bitcoin.<sup>244</sup> Additionally, the limit on block sizes can slow down Bitcoin processing times. On average, a single block is mined once every ten minutes and contains roughly 2,000 transactions.<sup>245</sup> An increase in the number of daily transactions can interfere with the network's ability to process them fast enough. With Bitcoin, if the number of transactions exceeds the space in the block, users must pay a fee to incentivize their transaction's inclusion.<sup>246</sup> This can be problematic for small retail transactions, as the fees quickly stack up.<sup>247</sup> Cryptocurrencies do have promise in niche industries where banking and payment processing services are limited.<sup>248</sup> For example, the Money Laundering Control Act of 1986 makes it unlawful to knowingly engage in transactions where the money is the product of an unlawful activity, including the sales of cannabis where otherwise permitted under state law.<sup>249</sup> Accordingly, most federally regulated banks and payment processors refuse to do business with cannabis companies.<sup>250</sup> In response, some cannabis businesses have integrated cryptocurrency as an alternative payment option in what is otherwise a cash-only business.<sup>251</sup>

Despite their original intent, cryptocurrencies are increasingly purchased for investment purposes.<sup>252</sup> In 2020, seventy-seven percent of Bitcoin holdings were investor-held, meaning that the wallet has sent less than 25% of the Bitcoin ever received.<sup>253</sup> This is an increase from 2018, when just 52% of coins were held for speculative or long-term investment.<sup>254</sup> Bitcoin's performance as an investment has been studied at length. Across the board, research has

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243. *Id.* at 2678.

244. *Id.*

245. In 2020, the average transactions per block ranged from 1,453 to 2,613. *Average Transactions Per Block*, BLOCKCHAIN.COM, <https://www.blockchain.com/charts/n-transactions-per-block> (last visited Mar. 27, 2022).

246. Recently, the average transaction fee peaked at \$62.79 in April 2021, but has dropped to \$1.61 as of March 2022. *Bitcoin Average Transaction Fee*, YCHARTS, [https://ycharts.com/indicators/bitcoin\\_average\\_transaction\\_fee](https://ycharts.com/indicators/bitcoin_average_transaction_fee) (last updated Mar. 26, 2022).

247. PERKINS, *supra* note 26, at 21.

248. Agustin Carstens, General Manager, Bank for International Settlements, Remarks at the Hoover Institution Policy Seminar: Digital Currencies and the Future of the Monetary System (Jan. 27, 2021), <https://www.bis.org/speeches/sp210127.pdf>.

249. Money Laundering Control Act of 1986, 18 U.S.C. § 1956.

250. See Madison Margolin, *Banks Are Adamant That They Will Not Work with New York's Legal Cannabis Companies*, VILLAGE VOICE (Sept. 24, 2015), <https://www.villagevoice.com/2015/09/24/banks-are-adamant-that-they-will-not-work-with-new-yorks-legal-cannabis-companies/> ("Major federally regulated banks stated that they have no plans to do business with New York's five medical marijuana companies licensed under the Compassionate Care Act. . .").

251. See *Cannabis Clinics That Accept Bitcoin in United States*, SPEND BITCOINS, <https://spendbitcoins.com/places/c/cannabis-clinics> (last visited Mar. 27, 2022) (listing 40 cannabis industry vendors that accept Bitcoin in the United States).

252. Chainalysis Team, *Why Bitcoin Is Surging and How This Rally Is Different From 2017 (Hint: It's Who's Buying)*, CHAINALYSIS (Nov. 19, 2020), <https://blog.chainalysis.com/reports/bitcoin-price-surge-explained-2020>.

253. *Id.*

254. Chainalysis Team, *Bitcoin Investors and Speculators Hold Their Positions Over the Summer*, CHAINALYSIS (Sept. 24, 2018), <https://blog.chainalysis.com/reports/money-supply-q3>.

demonstrated comparatively high volatility relative to other financial assets,<sup>255</sup> and some scholars have argued that extreme volatility undermines cryptocurrency's role as an investment.<sup>256</sup> Studies have found that Bitcoin markets are susceptible to bubbles characteristic of speculative assets.<sup>257</sup> Researchers disagree on whether Bitcoin is an effective diversification tool,<sup>258</sup> and evidence of its promise as a hedge is also inconsistent.<sup>259</sup> Nonetheless, despite its erratic performance, the investment-like qualities of Bitcoin and the potential for high yields strongly contribute to rising demand.<sup>260</sup>

### B. Concerns Over Cryptocurrency

The complexity and novelty of cryptocurrency opens the door to numerous concerns. While there are valid concerns over everything ranging from security of the technology itself to exit scams by ancillary services, the risks which most concern regulators can be categorized as criminality, consumer protection, and financial stability.<sup>261</sup>

#### 1. Criminality

The Internet has revolutionized the way that people across the world communicate and share data.<sup>262</sup> The development of email and the World Wide Web in the early 1990s provided novel opportunities for uncensored, multilateral

255. See Baur & Dimpfl, *supra* note 241, at 2664 (“All authors conclude that the volatility level is comparatively high, offering different explanations such as cyber attacks, information asymmetry, decentralization, or the absence of regulation.”).

256. *Id.* at 2680 (“The high volatility does not only adversely affect Bitcoin’s role as a currency but also as an investment.”).

257. See generally Eng-Tuck Cheah & John Fry, *Speculative Bubbles in Bitcoin Markets? An Empirical Investigation into the Fundamental Value of Bitcoin*, 130 ECON. LETTERS 32 (2015) (discussing econometric models of Bitcoin pricing).

258. Compare Marie Brière et al., *Virtual Currency, Tangible Return: Portfolio Diversification with Bitcoin*, 16 J. ASSET MGMT. 365, 371 (2015) (finding that already well-diversified portfolios can benefit from the inclusion of Bitcoin) and Khaled Guesmi et al., *Portfolio Diversification with Virtual Currency: Evidence From Bitcoin*, 63 INT’L REV. FIN. ANALYSIS 431 (2019) (finding that Bitcoin offers diversification benefits for investors) and Syed J. Hussain Shahzad et al., *Safe Haven, Hedge and Diversification for G7 Stock Markets: Gold Versus Bitcoin*, 87 ECON. MODELLING 212, 222 (2020) (finding that Bitcoin is a diversifier but the benefits are comparatively weaker than gold) with Baur & Dimpfl, *supra* note 241, at 2680 (concluding that “Bitcoin’s excess volatility does not make it a good risk-diversifier in portfolios”).

259. Compare Guesmi et al., *supra* note 258 (finding that in a short position, Bitcoin is a good hedge against all other financial assets) and Ender Demir et al., *Does Economic Policy Uncertainty Predict the Bitcoin Returns? An Empirical Investigation*, 26 FIN. RSCH. LETTERS 145, 147 (finding that Bitcoin can hedge economic uncertainty in extreme times) with Anders Stensås et al., *Can Bitcoin Be a Diversifier, Hedge, or Safe Haven Tool?*, 7 COGENT ECON. & FIN. 1, 15 (2019) (finding that Bitcoin is a strong hedge for investors in developing countries, but not for investors in developing countries or against commodities) and Elie Bouri, *On the Hedge and Safe Haven Properties of Bitcoin: Is It Really More Than a Diversifier?*, 20 FIN. RSCH. LETTERS 192, 192 (finding that Bitcoin is a poor hedge).

260. Chainalysis Team, *supra* note 252.

261. Jason Healey, et al., *The Future of Financial Stability and Cyber Risk*, BROOKINGS (Oct. 10, 2018), <https://www.brookings.edu/research/the-future-of-financial-stability-and-cyber-risk>.

262. *Id.*

communications on a global scale.<sup>263</sup> However, the increasing volume of communication and e-commerce also increases the opportunity for crime.<sup>264</sup> From the perspective of the state, global channels for encrypted, instant communication shift the balance of power and interfere with the ability to enforce the law.<sup>265</sup>

While the Internet has been a forum of crime since its inception, two more recent developments have the dramatically increased the popularity of dark markets: the development of the dark web and the creation of cryptocurrency.<sup>266</sup> The dark web is accessed via The Onion Router (TOR), a browser that was developed to conceal users' identities, browsing patterns, and locations, thereby anonymizing their online activities.<sup>267</sup> Parties use a TOR browser to access a website where private vendors list the products they have available for purchase with cryptocurrency.<sup>268</sup> Using TOR and cryptocurrency provides a double layer of protection, obscuring any identifying information that might be gleaned from usage or transaction data.<sup>269</sup>

Dark markets are ripe fora for buying and selling criminal goods and services. Drugs, including banned substances and scheduled pharmaceuticals, are the most popular products, but sites typically host a cornucopia of different goods and services. For example, World Market, one of the more popular marketplaces,<sup>270</sup> offers a plethora of drugs, including stimulants, opioids, psychedelics, and prescription; fraud-related goods and services, such as bank logins, social security numbers and stolen credit cards; digital goods, such as gift card generators, malware, and commercial software; counterfeit items, including

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263. The Internet is the hardware over which the software, the World Wide Web, hosts digital content. PUNAM BEDI ET AL., *Dark Web: A Boon or a Bane*, in ENCYCLOPEDIA OF CRIMINAL ACTIVITIES AND THE DEEP WEB 152 (Mehdi Khosrow-Pour ed., 2020 ed.).

264. Healey et al., *supra* note 261.

265. See HOLLIS STAMBAUGH ET AL., U.S. DEP'T OF JUST., STATE AND LOCAL LAW ENFORCEMENT NEEDS TO COMBAT ELECTRONIC CRIME 1 (2000), <https://www.ojp.gov/pdffiles1/nij/183451.pdf> (asserting that technology has created a resource gap between law enforcement and criminals).

266. JULIA BUXTON & TIM BINGHAM, GLOB. DRUG POL'Y OBSERVATORY, THE RISE AND CHALLENGE OF DARK NET DRUG MARKETS 5 (2015), <https://idhdp.com/media/400190/darknet-20markets.pdf> (attributing the rise in dark markets to the creation of TOR in 2002); see Chowdhury, *supra* note 36, at 297 (explaining that dark markets are virtual marketplaces which serve as a middleman for buying and selling illicit goods and services, and while the deep web does ripen the environment for illicit dealings, it also serves a number of legitimate purposes, including shielding whistleblowers and providing secure, private communication channels); BEDI ET AL., *supra* note 263, at 152 ("To preserve user anonymity, TOR encrypts its traffic several times. This encrypted traffic is then directed through multiple TOR servers that are part of the TOR network. These servers (sometimes referred to as relays/routers) are always selected randomly during connection establishment in order to create a private and secure communication pathway. At each relay node, one layer of encryption is removed so that the current node can discover the address of the next destination node. ...[E]ach node only knows from which node it received data packets and to which node the received packets must be forwarded.").

267. BEDI ET AL., *supra* note 263, at 152.

268. Adrian Chen, *Underground Website Lets You Buy Any Drug Imaginable*, WIRED (June 1, 2011, 2:25 PM), <https://www.wired.com/2011/06/silkroad-2>.

269. *Id.*

270. See John Crooks, *Deep Web Market Links | Darknet Market Links | Onion Marketplace 2021*, DEEPWEBSITESLINKS, <https://www.deepwebsiteslinks.com/deep-web-markets-links> (last visited Mar. 27, 2022) (listing popular dark markets).

forgeries, jewelry, and bank notes; and services, such as hacking, carding, and social media followers.<sup>271</sup>

Dark markets tend to be short-lived.<sup>272</sup> In some cases, markets voluntarily close, usually employing an exit scam designed to pilfer all user cryptocurrency currently held in escrow.<sup>273</sup> In other cases, law enforcement intervenes, seizing servers and infrastructure, effectively closing the network.<sup>274</sup> These efforts often require international coordination given the global nature of cryptocurrency and the Internet.<sup>275</sup> Given limited resources and relative impact, law enforcement generally prioritizes investigating marketplace owners and administrators over vendors and customers.<sup>276</sup> However, as evidenced by the \$1.7 billion dollars handled last year, dark markets continue to be a thriving enterprise despite collective efforts to intervene.<sup>277</sup>

Cryptocurrency is used to support criminal activity and terrorism in a number of different ways. A party may use cryptocurrency to purchase items that are not alone prohibited but are used for unlawful purposes, such as weapons or raw materials to manufacture explosives.<sup>278</sup> Alternatively, cryptocurrencies can be used as a fundraising medium for criminal enterprises.<sup>279</sup> For example, in 2019, an international team arrested Jong Woo Son, a South Korean national who ran a child pornography site on the dark web.<sup>280</sup> The operation led to the eventual arrest of 337 people and the forfeiture of twenty-four cryptocurrency

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271. World Market offers “almost all of black market items that you can’t find on a normal website.” However, they explicitly forbid the sale of sex, child pornography, murder services, and weapons. *Frequently Asked Questions*, WORLD MKT., <https://darknetone.com/market/world-market> (last visited Mar. 27, 2022). The goods and services offered on dark markets varies according to the site used. Other marketplaces may deal in weapons trade, assassinations, organ trafficking, terrorist activities, and pornography of all sorts. See BEDI ET AL., *supra* note 263, at 157–58 (describing illegitimate activities on the Dark Web).

272. See Nick Routley, *A Data-Driven Look at Dark Web Marketplaces*, VISUAL CAPITALIST (Sept. 29, 2018), <https://www.visualcapitalist.com/data-driven-look-dark-web-marketplaces> (explaining that despite an average lifespan of only eight months, dozens of markets are accessible at any given time); *List of Darknet Markets in 2022*, DNSTATS, <https://dnstats.net/list-of-darknet-markets> (last visited Mar. 27, 2022).

273. See, e.g., Matthew J. Schwartz, *Bye-Bye Bitcoins: Empire Darknet Market ‘Exit Scams,’* BANK INFO SEC. (Sept. 2, 2020), <https://www.bankinfosecurity.com/blogs/bye-bye-bitcoins-empire-darknet-market-exit-scams-p-2934> (describing how dark market administrators can pull the rug and pilfer users’ cryptocurrency).

274. See, e.g., Alex Scroxton, *World’s Largest Dark Web Market Disrupted in Major Police Operation*, COMPUT. WKLY. (Jan. 13, 2021, 12:21 PM), <https://www.computerweekly.com/news/252494743/Worlds-largest-dark-web-market-disrupted-in-major-police-operation> (detailing the takedown of DarkMarket, the world’s largest dark marketplace).

275. See *id.* (stating that the take down of DarkMarket in January 2021 was a coordinated operation between Australia, Germany, Moldova, the United Kingdom, the United States, and Europol).

276. To illustrate, a nine-month coordinated effort between the Department of Justice (DOJ) and Europol resulted in the seizure of \$6.5 million dollars and the arrest of 179 drug traffickers around the world. In contrast, in 2019, the DOJ shut down a single marketplace that had accumulated more than \$15 million dollars in proceeds from illegal payments. DEP’T OF JUST., REPORT OF THE ATTORNEY GENERAL’S CYBER DIGITAL TASK FORCE: CRYPTOCURRENCY, ENFORCEMENT FRAMEWORK, 17–18 (2020), <https://www.justice.gov/archives/ag/page/file/1326061/download>.

277. CHAINALYSIS, THE 2021 CRYPTO CRIME REPORT 6 (Feb. 16, 2021), <https://go.chainalysis.com/rs/503-FAP-074/images/Chainalysis-Crypto-Crime-2021.pdf>.

278. DEP’T OF JUST., *supra* note 276, at 6.

279. *Id.* at 7.

280. *United States v. Twenty-Four Cryptocurrency Accounts*, 473 F. Supp. 3d 1, 2 (D.D.C. 2020) (order granting the plaintiff’s motion for default judgment).

accounts that received subscription fees for content.<sup>281</sup> Numerous terrorist organizations—including al-Qassam Brigades, al-Qaeda, and ISIS—have used cryptocurrency donations to fund their platforms.<sup>282</sup> On the domestic front, alt-right groups involved in the Capitol riot in January 2021 received more than \$500,000 in Bitcoin in advance of the attack.<sup>283</sup> The funding terrorist activities with cryptocurrency continues to be a chief concern for the United States and will likely influence future regulatory action.<sup>284</sup>

Cryptocurrency is also used to conceal financial conduct or evade regulatory requirements.<sup>285</sup> Cryptocurrency exchanges and other financial services in the crypto economy have attempted to broaden their customer base by flouting AML/KYC, licensing, and registration requirements.<sup>286</sup> The SEC and CFTC have brought numerous enforcement actions on these grounds, and offenders have been assessed penalties in excess of \$100 million dollars.<sup>287</sup> While a statutory and regulatory framework already exists to enforce these actions, the heads of the departments have stated that they do not have the necessary resources with regard to budgets and staffing to adequately address the problem.<sup>288</sup>

Scams are yet another way that cryptocurrency may be misused for criminal purposes.<sup>289</sup> Since 2017, scammers have received more than \$10 billion dollars in cryptocurrency, the majority of which resulted from investment scams and Ponzi schemes.<sup>290</sup> Jurisdiction over scam-related criminal activity is fragmented, as the supervisory authority may vary with the subtype of scam.<sup>291</sup>

Given the rising demand for bitcoin, criminal activity continues to be a chief concern for regulators.<sup>292</sup> While illicit activity only represented 0.34% of cryptocurrency transactions in 2019, this still represented a transaction volume of more than \$10 billion dollars.<sup>293</sup> The United States ranks among the top five recipient countries benefiting from the proceeds of these transactions.<sup>294</sup> Additionally, current trends toward distributed finance and decentralization in dark markets could spur additional criminal activity in the future.<sup>295</sup> In sum, the criminality problem posed by cryptocurrency will not likely abate in the near

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281. Press Release, U.S. Dep't of Just., Office of Pub. Affs., South Korean National and Hundreds of Others Charged Worldwide in the Takedown of the Largest Darknet Child Pornography Website, Which Was Funded by Bitcoin (Oct. 16, 2019), <https://www.justice.gov/opa/pr/south-korean-national-and-hundreds-others-charged-worldwide-takedown-largest-darknet-child>.

282. DEP'T OF JUST., *supra* note 276, at 11.

283. CHAINALYSIS, *supra* note 277, at 99.

284. DEP'T OF JUST., *supra* note 276, at 51.

285. *Id.* at 13.

286. *Id.*

287. *See id.* at 14 (noting that the DOJ and FinCen assessed BTC-e a penalty of \$110 million dollars for AML violations).

288. *See Virtual Currencies*, *supra* note 161.

289. DEP'T OF JUST., *supra* note 276, at 30.

290. CHAINALYSIS, *supra* note 277, at 71.

291. Depending on the type of scam, the SEC, FinCEN, CFTC, or the DOJ could have jurisdiction. Dewey, *supra* note 120, at 1.

292. CHAINALYSIS, *supra* note 277, at 4.

293. *Id.* at 6.

294. *Id.* at 51.

295. *Id.* at 109.

future.<sup>296</sup> Given constraints on resources, regulatory agencies should develop a coordinated framework for dealing with crypto-related crime.

## 2. *Consumer Protection*

The U.S. government has repeatedly expressed concerns over ongoing consumer protection issues related to cryptocurrencies.<sup>297</sup> The relative novelty and design of cryptocurrencies present different risks to consumers than traditional payment or investment mechanism.<sup>298</sup> Broadly speaking, these can be categorized as financial risks, security risks, insurance risks, and fraud risks.<sup>299</sup>

The extreme price volatility of cryptocurrencies creates serious financial risk for both users and investors.<sup>300</sup> Until tokens become a better store of value and unit of account, the price will remain speculative and highly risky.<sup>301</sup> Excessive volatility also decreases a token's usefulness as a medium of exchange, which also hampers liquidity.<sup>302</sup> The risk of an illiquid crypto-market could be further exacerbated by an increasingly shallow market.<sup>303</sup> That is, because most cryptocurrency is held for investment purposes, and there is a highly inequitable distribution of coins, a single trade by a large investor could result in dramatic price movement, resulting in the crypto-equivalent of a bank run.<sup>304</sup>

All investments carry some degree of risk, which buyers ordinarily assume responsibility for.<sup>305</sup> Traditional investments, such as stocks, have disclosure statements which inform potential investors of information that may be pertinent to a decision to buy.<sup>306</sup> With cryptocurrencies, there is an added concern that consumers may not be familiar with how the asset works or derives its value.<sup>307</sup> With Bitcoin, there are no earnings, interest payments, or consensus valuation framework.<sup>308</sup> Rather, prices are fueled by a mix of dynamic enthusiasm, fear of missing out, and periods of panic.<sup>309</sup> More complex financial products such as futures and options are even more problematic. Such products carry extreme risk

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296. *Id.* at 112.

297. *See, e.g.*, CONSUMER FIN. PROT. BUREAU, RISKS POSED TO CONSUMERS BY VIRTUAL CURRENCIES, 1–6 (2014), [https://files.consumerfinance.gov/f/201408\\_cfpb\\_consumer-advisory\\_virtual-currencies.pdf](https://files.consumerfinance.gov/f/201408_cfpb_consumer-advisory_virtual-currencies.pdf) (discussing the regulatory gaps in consumer protection law vis-à-vis cryptocurrency).

298. *See id.* at 5 (comparing cryptocurrencies and traditional currencies).

299. *See id.* at 1 (discussing risks of hackers, fewer protections, cost, and scams).

300. HAYNES & YEOH, *supra* note 184, at 22.

301. *Id.*

302. *See* WILLIS TOWERS WATSON, CRYPTOCURRENCY: RISK MANAGEMENT 3 (2019) (“Illiquidity of cryptocurrency is worsened by regulatory and technical barriers to entry along with thinly traded markets.”).

303. *Id.*

304. *See supra* Part III.A.3.

305. *See generally* KEVIN DOWD, AN INTRODUCTION TO MARKET RISK MEASUREMENT (2002) (providing a detailed explanation of financial risk).

306. Rick Wayman, *What Is a Disclosure: Explained in Plain English*, INVESTOPEDIA (Aug. 30, 2021), <https://www.investopedia.com/articles/analyst/073002.asp>.

307. PERKINS, *supra* note 26, at 21.

308. Dean Curnutt, *Cryptocurrencies Steal Volatility Away from Stocks*, BLOOMBERG: QUINT (Jan. 12, 2018, 11:15 PM), <https://www.bloombergquint.com/view/cryptocurrencies-steal-volatility-away-from-stocks>.

309. *Id.*

and require sophisticated knowledge,<sup>310</sup> which is a poor fit for a group of retail investors who are younger and less experienced than average. As such, added consumer protection regarding disclosures and financial literacy could help mitigate any unnecessary additional risk due to incomplete information.<sup>311</sup>

While the blockchain itself is very secure, other services in the crypto economy, such as exchanges, are vulnerable to hackers, malware, and other operational failures.<sup>312</sup> Security risks are particularly concerning for cryptocurrencies because there is often no recourse for loss.<sup>313</sup> Traditional financial institutions and payment companies will help consumers recoup funds that are lost due to theft.<sup>314</sup> However, the lack of third-party intermediaries and the immutability of transactions mean that once cryptocurrency is gone, it's gone for good.<sup>315</sup> Security threats have caused serious problems for cryptocurrencies in the past.<sup>316</sup> For example, 2014, Mt. Gox, which at the time was the world's largest cryptocurrency exchange, went bankrupt following the theft of more than \$460 million dollars from its exchange.<sup>317</sup> Users can better protect their assets through offline wallets and other interventions,<sup>318</sup> but consumer protection could also be required by requiring exchanges to hold reserves or insurance to cover theft.<sup>319</sup>

In the United States, most bank accounts are insured by the Federal Deposit Insurance Corporation, and some investments can be insured via the Securities Investor Protection Corporation.<sup>320</sup> Similar government insurance options are not available to cryptocurrencies, so if an exchange fails, the government will not cover consumer loss.<sup>321</sup> The insurance industry has been slow to insure cryptocurrency products, although there has been a slight increase in policies in recent years.<sup>322</sup> Given the recent trend of institutional investment, it is likely that insurance opportunities will continue to increase.<sup>323</sup>

Cryptocurrency consumers have also been the victims of fraud. Affected parties may be protected under Section 5(a) of the Federal Trade Commission (FTC) Act, which bars unfair and deceptive practices in commerce.<sup>324</sup> The FTC

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310. DEP'T OF JUST., *supra* note 276, at 45.

311. *Id.* at 1.

312. HAYNES & YEOH, *supra* note 184, at 21.

313. CFPB, *supra* note 297, at 4.

314. *Id.*

315. *Id.*

316. See *Blockchain and Bitcoin Cyber Security Risks*, MARYVILLE UNIV. <https://online.maryville.edu/blog/blockchain-and-bitcoin-cyber-security-risks> (last visited Mar. 27, 2022) (discussing security risks associated with cryptocurrency).

317. Robert McMillan, *The Inside Story of Mt. Gox, Bitcoin's \$460 Million Disaster*, WIRED (Mar. 3, 2014, 6:30 AM), <https://www.wired.com/2014/03/bitcoin-exchange>.

318. CFPB, *supra* note 297, at 4.

319. HAYNES & YEOH, *supra* note 184, at 21.

320. *Id.*

321. CFPB, *supra* note 297, at 4.

322. HAYNES & YEOH, *supra* note 184, at 21.

323. Lawrence Wintermeyer, *Institutional Money Is Pouring Into The Crypto Market and Its Only Going To Grow*, FORBES (Aug. 12, 2021, 4:10 PM), <https://www.forbes.com/sites/lawrencewintermeyer/2021/08/12/institutional-money-is-pouring-into-the-crypto-market-and-its-only-going-to-grow/?sh=13d03f5d1459>.

324. 15 U.S.C. § 45 (2006).

has brought enforcement actions in a number of cases.<sup>325</sup> For example, in November 2020, the FTC sent nearly \$500,000 in refunds to people who suffered losses in a deceptive Bitcoin chain referral scheme.<sup>326</sup> Similarly, the Dodd-Frank Act gives the Consumer Financial Protection Bureau power over “unfair, deceptive, or abusive acts and practices,” but they have not yet taken action under this authority.<sup>327</sup>

### 3. *Financial Stability*

Cryptocurrency also poses a risk to the economic stability of both the crypto economy and existing financial systems. Crypto economies are subject to the same financial forces as the fiat system.<sup>328</sup> However, because decentralization of cryptocurrencies allows such protocols to operate independent of a central authority, the ebb and flow of the market is left to the invisible hand.<sup>329</sup> This can further amplify instability.<sup>330</sup> In centralized financial systems, central banks can utilize monetary policy to make market corrections.<sup>331</sup> Monetary tools allow fiat systems to create liquidity in times of crisis, which can keep the economy going and prevent disastrous economic failures.<sup>332</sup> Crypto systems do not have the same safety valve, which can destroy confidence in a novel economic system.<sup>333</sup>

Importantly, while state authorities don’t have a means to control the crypto economy, they will likely be responsible for cleaning up the broken pieces in the event of a collapse.<sup>334</sup> Like fiat today, cryptocurrencies have no intrinsic value.<sup>335</sup> However, unlike fiat, they also lack a corresponding liability, meaning that central banks do not have a strong interest in baking their value.<sup>336</sup> In essence, the risk of financial loss for holding crypto is borne by the individual, but a risk of economic failure is still borne by existing finance systems that have no control or oversight over the cryptocurrencies posing the threat. As market capitalization of Bitcoin increases, the risk of failure is amplified.<sup>337</sup>

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325. *Enforcement*, FED. TRADE COMM’N, <https://www.ftc.gov/enforcement> (last accessed Mar. 27, 2022).

326. Press Release, Fed. Trade Comm’n, *FTC Sends Refunds to Victims of Deceptive Money-Making Schemes Involving Cryptocurrencies* (Nov. 4, 2020), <https://www.ftc.gov/enforcement/cases-proceedings/refunds/bitcoin-funding-team-refunds>.

327. 15 U.S.C. § 5511 (2017); PERKINS, *supra* note 26, at 20.

328. Jon Danielsson, *Cryptocurrencies: Financial Stability and Fairness*, VOX: EU (Nov. 9, 2018), <https://voxeu.org/article/cryptocurrencies-financial-stability-and-fairness>.

329. Ephrat Livni & Eric Lipton, *Crypto Banking and Decentralized Finance, Explained*, N.Y. TIMES (Nov. 1, 2021), <https://www.nytimes.com/2021/09/05/us/politics/cryptocurrency-explainer.html>.

330. See Danielsson, *supra* note 328. (explaining “[a] cryptocurrency-based monetary system (‘cryptosystem’) is subject to the same forces of financial instability as the current fiat system, while further adding new forms of instability.”).

331. Koshy Mathai, *Monetary Policy: Stabilizing Prices and Output*, IMF (Feb. 24, 2020), <https://www.imf.org/external/pubs/ft/fandd/basics/monpol.htm>.

332. Danielsson, *supra* note 328.

333. *Id.*

334. Andrew Sheng & Xiao Geng, *Opinion: Does Bitcoin Threaten Economic Stability?*, MARKETWATCH (Aug. 31, 2017, 4:51 PM36), <https://www.marketwatch.com/story/does-bitcoin-threaten-economic-stability-2017-08-31>.

335. *Id.*

336. *Id.*

337. *Id.*

Furthermore, consumers have already used cryptocurrencies to circumvent existing capital controls.<sup>338</sup> The experiences of countries like China, Cyprus, Greece, and Venezuela highlight the difficulties of maintaining domestic financial stability under these conditions.<sup>339</sup> Bursting the crypto bubble could have disastrous consequences.<sup>340</sup> The illiquidity of the crypto system could halt real economic activities, and it will be existing financial systems who are responsible for cleaning up the mess.<sup>341</sup>

Integration, or lack thereof, with fiat currencies and financial systems also presents a risk to economic stability.<sup>342</sup> As the world becomes increasingly digitized, cryptocurrencies and other blockchain technology will likely come to play a more substantial role in systems.<sup>343</sup> However, a shift to a crypto economy is not a simple on/off switch. Rather, Bitcoin and other altcoins will need to integrate with traditional mediums.<sup>344</sup> Researchers at the International Research and Training Center for Information Technologies and Systems of the National Academy of Sciences of Ukraine found that Bitcoin will not likely be able to compete with traditional electronic payment systems operating in Surface Web markets.<sup>345</sup> Moreover, consumers seeking to purchase ordinary goods online are not so concerned with the anonymity and other advantages of Bitcoin,<sup>346</sup> and fiat currencies and other non-cryptocurrency payment mechanisms offer protection from fraud and loss that are not paralleled by cryptocurrencies.<sup>347</sup> For ordinary buyers, the consumer protection offered by conventional modes of payment outweighs the privacy and reduced transaction costs offered by virtual currencies.<sup>348</sup>

There is evidence of cryptocurrency's horizontal integration with existing economic systems.<sup>349</sup> Horizontal integration refers to the methodical trust of cryptocurrency by individuals and business based on their willingness to use cryptocurrency in ongoing exchanges.<sup>350</sup> This is perhaps best evidenced by Bitcoin's dominance in systems of micro payments, which are exchanges that are so small in size that the transaction cost of the payment exceeds the value of

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338. *Id.*

339. *Id.* In these countries, market participants have purchased cryptocurrencies and used them to conduct foreign exchange transactions that would be otherwise prohibited under domestic capital controls laws. Dong He, et al., *Virtual Currencies and Beyond: Initial Considerations* 16/03 IMF STAFF DISCUSSION NOTE 31 (Jan. 2016).

340. Gian M. Volpicelli, *If the Bitcoin Bubble Bursts, This is What Will Happen Next*, WIRED (Dec. 21, 2017, 8:00 AM), <https://www.wired.co.uk/article/what-happens-when-the-bitcoin-bubble-pops>.

341. *Id.*

342. MARKUS K. BRUNNERMEIER, ET AL., *THE DIGITALIZATION OF MONEY* 17 (2019), [https://www.bis.org/events/confresearchnetwork1909/brunnermeier\\_2.pdf](https://www.bis.org/events/confresearchnetwork1909/brunnermeier_2.pdf).

343. Mariana Makarova, *The Influence of Bitcoin Ecosystem on Digital Economy*, 2 *ECON., ECOLOGY, SOCIUM* 35, 37 (2018) (Ukr.).

344. See DELOITTE, *supra* note 91 (discussing integration of cryptocurrency into existing business plans).

345. Makarova, *supra* note 343, at 38.

346. *Id.*

347. *Id.* (citing Reuben Grinberg, *Bitcoin: An Innovating Alternative Digital Currency*, 4 *HASTINGS SCI. & TECH. L.J.* 159 (2012)).

348. *Id.* at 39.

349. Moritz Hütten & Matthias Thiemann., *Moneys at the Margins: From Political Experiment to Cashless Societies*, in *BITCOIN AND BEYOND: CRYPTOCURRENCIES, BLOCKCHAINS, AND GLOBAL GOVERNANCE* 27, 39 (Malcolm Campbell-Verduyn Ed., 2018).

350. *Id.*

the payment itself.<sup>351</sup> The same effect is seen in virtual gaming worlds, where the built-in anti-counterfeit protocols mitigate the time, technical, and legal barriers which complicate their operation.<sup>352</sup> Additionally, bitcoins are increasingly accepted in online commercial marketplaces like eBay and in staples of the “sharing economy” including Airbnb and Uber.<sup>353</sup> Beyond this, some multinational firms, most notably Facebook, have begun developing their own cryptocurrencies and integrating blockchain technology in their operations.<sup>354</sup> While the growing integration is promising, it should be noted that in many cases, it is not Bitcoin or another altcoin that is being integrated in financial operations but the underlying blockchain technology itself.<sup>355</sup> This embrace of technology but rejection of its application undercuts the institutional confidence that complete incorporation could engender.<sup>356</sup>

Furthermore, Bitcoin has not yet been vertically integrated with existing financial systems.<sup>357</sup> Vertical integration refers to incorporation in a political structure capable of enforcing or altering the conditions under which money may be transacted.<sup>358</sup> In the United States, regulation of Bitcoin is fragmented and ambiguous.<sup>359</sup> Where state authorities do recognize Bitcoin as a currency, they caution users against volatility and other cryptocurrency risks.<sup>360</sup> Financial systems have also declined to integrate Bitcoin entities because the system is underregulated.<sup>361</sup> For example, Cameron and Tyler Winklevoss’s Bitcoin exchange trading fund proposal was rejected by the Securities and Exchange Commission on the ground that the Bitcoin market was insufficiently regulated.<sup>362</sup>

The relationship between cryptocurrency and economic stability is a two-way street. On one hand, cryptocurrencies have the potential to erode the stability of existing economic system by shifting payment modes to non-governmental systems that do not permit corrective intervention.<sup>363</sup> If a critical

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351. Makarova, *supra* note 343, at 39.

352. *Id.*

353. Malcolm Campbell-Verduyn, *What Are Blockchains and How Are They Relevant to Governance in the Global Political Economy?*, BITCOIN AND BEYOND: CRYPTOCURRENCIES, BLOCKCHAINS, AND GLOBAL GOVERNANCE 2 (Malcolm Campbell-Verduyn Ed., 2018).

354. *See, e.g.*, LIBRA ASS’N, WHITE PAPER 2.0 (Diem Association 2020), <https://www.diem.com/en-us/white-paper/#cover-letter> (outlining the model for the Libra cryptocurrency that Facebook is planning to launch in 2021).

355. *See, e.g.*, Campbell-Verduyn, *supra* note 353, at 3 (providing different examples of how state entities have integrated blockchain-based technologies).

356. *Id.*

357. Richard Harris, *How Cryptocurrencies Can Change Business*, APP DEV. MAG. (Feb. 7, 2018), <https://appdeveloperomagazine.com/how-cryptocurrencies-can-change-business>.

358. Hütten & Thiemann, *supra* note 349, at 27 (citing Michel Aglietta, *Whence and Wither Money?*, in THE FUTURE OF MONEY (Org. for Econ. Coop. & Dev. Ed., 2002)).

359. *See* discussion *supra* Part II.B.

360. Hütten & Thiemann, *supra* note 349, at 39.

361. *Id.* at 41.

362. *Id.* at 39 (citing Jeff John Roberts, *Bitcoin May Go Boom: A Guide to This Week’s Big SEC Decision (Update)*, FORTUNE (Mar. 9, 2017, 9:50 AM), <https://fortune.com/2017/03/09/bitcoin-sec-etf/> and Laura Shin, *SEC Rejects Winklevoss Bitcoin ETF, Sending Price Tumbling*, FORBES (Mar. 10, 2017, 4:20 PM), <https://www.forbes.com/sites/laurashin/2017/03/10/sec-rejects-winklevoss-bitcoin-etf-sending-price-tumbling>).

363. *Id.* at 30.

mass of a population rejects fiat money in favor of cryptocurrency, the function of existing economic systems is jeopardized and the ability of states to handle a financial crisis would be compromised.<sup>364</sup> On the other hand, cryptocurrencies themselves facilitate a monetary network wherein the governance and operation of the currency ensures institutional and social stability.<sup>365</sup> Thus, until cryptocurrencies are integrated with existing financial markets such that use does not erode the stability of existing economic systems and until cryptocurrencies themselves can offer bona fide promises of economic stability, there is a systemic risk to the widespread use of Bitcoin.<sup>366</sup>

#### IV. RECOMMENDATION

The risks posed by cryptocurrencies are substantial, and tokens are rightfully the object of federal regulation. Further, at the time of this writing, in early 2021, Bitcoin is booming. The growing demand for cryptocurrency in an industry already approaching escape velocity<sup>367</sup> highlights the urgent need for regulation. Thus, regulators must find a way to balance the benefits offered by Bitcoin—including growth in the tech industry, rapid innovation, increased competition and activity in the marketplace, and the numerous advantages offered by DLT—with the very real threats, and they must do so quickly.

A number of existing laws can be interpreted to apply to entities in the crypto economy. In particular, the SEC and CFTC have clear authority under their mandates to regulate cryptocurrency markets as they relate to ICOs and derivatives.<sup>368</sup> Additionally, the IRS has a clear policy as to how they address cryptocurrency holdings.<sup>369</sup> FinCEN and the FTC have also exercised authority through enforcement actions against illicit cryptocurrency dealings.<sup>370</sup>

One of the biggest obstacles to regulation has been the lack of coordination between government agencies. Even among financial regulators, there is great confusion over who has jurisdiction over what entities and what actions. Furthermore, the scaffolded approach to regulation, especially in areas where authority overlaps, can lead to redundant action and inefficient use of scarce departmental resources. Ultimately, this lack of coordination has led to divergent policies, and which undermines the confidence of fintech investors.

An incomplete understanding of the operations of the crypto ecosystem also presents an obstacle to effective regulation. Under current regulations, many

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364. James McWhinney, *Why Governments are Wary of Bitcoin*, INVESTOPEDIA (Sept. 21, 2021), <https://www.investopedia.com/articles/forex/042015/why-governments-are-afraid-bitcoin.asp>.

365. Hütten & Thiemann., *supra* note 349, at 27 (citing NIGEL DODD, *THE SOCIOLOGY OF MONEY: ECONOMICS, REASON AND CONTEMPORARY SOCIETY* (1994)).

366. *Id.* at 43.

367. Tony Spilotro, *Crypto Analyst Expects “Escape Velocity” When Bitcoin Breaks \$60K. Here’s Why*, NEWSBTC (Feb. 2, 2021), <https://www.newsbtc.com/analysis/btc/crypto-escape-velocity-bitcoin-60k>.

368. *SEC, CFTC Coordination May be the Way Forward for Crypto Regulation*, PYMNTS (Jan. 21, 2022), <https://www.pymnts.com/news/regulation/2022/sec-cftc-coordination-may-be-the-way-forward-for-crypto-regulation>.

369. *Virtual Currencies*, IRS (Apr. 30, 2021), <https://www.irs.gov/businesses/small-businesses-self-employed/virtual-currencies>.

370. Scott D. Hughes, *Cryptocurrency Regulations and Enforcement in the U.S.*, 45 W. ST. L. REV. 1, 2 (2017).

agencies are siloed and only concern themselves with the facets of cryptocurrency that fall under their purview. For example, the Fed is largely concerned with the interactions between cryptocurrencies and the banking system,<sup>371</sup> and the CFTC is primarily focused on fraud and market manipulation in alternative finance.<sup>372</sup> However, this siloed approach can potentially lead to overbroad or underinclusive regulation. To avoid ineffective, regulatory action, the U.S. federal government should prioritize building an integrated regulatory and enforcement system over targeting individual problems.

It is clear that what the United States needs is a coordinated approach to regulating cryptocurrency. An intragovernmental working group or task force would be an ideal place to start. Simply bringing representatives together from a variety of affected agencies and governmental bodies to share current business and challenges could be an enormously important first steps. By encouraging agencies to share their experiences with one another, regulators can develop a more refined and intimate understanding of the crypto ecosystem as a whole. This could, in turn, promote systems-based regulatory approaches, reduce waste and redundant efforts, and pave the way for the eventual development of a more comprehensive framework.

At some point, the United States will have to seriously consider a unified framework for approaching cryptocurrency regulation, ideally under the jurisdiction of a politically independent agency. However, massive regulatory overhaul requires time and resources, and given the current state of the world—specifically the global pandemic and a seemingly fragile economy—such efforts are simply not practical at this point in time. However, simply increasing communication and coordination among agencies has the potential to be far reaching.

## V. CONCLUSION

In sum, the advent of cryptocurrencies has truly shifted the paradigm for global finance. While the markets are still small relative to other financial assets, the rapid growth and adoption over the last ten years has made it clear that cryptocurrencies are here to stay.

Like other novel assets, cryptocurrencies are not without risk. Indeed, the rapid accession and unfamiliar technology is reminiscent of the challenges brought by the dot com boom in the late nineties. In its current form and function, the patchwork regulatory framework of the United States is accomplishing the bare minimum. Crime is still a looming threat, consumers are not adequately protected, and the potential effects of cryptocurrency on the financial stability of the United States are poorly understood. The industry hasn't bottomed out, and the American dollar hasn't collapsed, but this is hardly grounds for praise.

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371. Carl A. Fornaris et al., *Federal Reserve System Takes First Step Toward Creating Its Own Digital Currency*, NAT. L. REV. (Feb. 8, 2022), <https://www.natlawreview.com/article/federal-reserve-system-takes-first-step-toward-creating-its-own-digital-currency>.

372. Wolfie Zhao, *US Department of Justice, CFTC Probe Crypto Market Manipulation: Report*, COINDESK (Sept. 13, 2021, 2:58 AM), <https://www.coindesk.com/markets/2018/05/24/us-department-of-justice-cftc-probe-crypto-market-manipulation-report>.

The U.S. government has but a short period of time to develop and implement meaningful regulation. Resources are understandably constrained, but Congress and regulatory agencies ought to establish a working group or task force to address the threats of cryptocurrency in a coordinated way, paving the way for an independent, crypto-commission someday in the near future.

APPENDIX

Calculating the Gini Coefficient

