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REFRAMING BITCOIN AND TAX COMPLIANCE

ARVIND SABU*

This Article argues that, contrary to the common belief that Bitcoin enables tax evasion, the Internal Revenue Service (“IRS”) can increasingly police transactions in Bitcoin. First, commercial and technical intermediaries have emerged as part of Bitcoin’s ecosystem. This diverse set of intermediaries can facilitate tax enforcement, as the litigation over the IRS’s summons on Coinbase—the largest domestic digital asset exchange—and subsequent IRS efforts show. These intermediaries could report transactions to the IRS or even, one day, withhold and remit tax payments. Second, the publicly visible, trustworthy nature of Bitcoin’s blockchain—its unique role as a shared truth—allows tax authorities to observe transaction flows. This renders Bitcoin unusually regulable for tax purposes, as recent efforts by the IRS to rely on Bitcoin’s blockchain to police tax evasion demonstrate. The Article offers a proposal by which the IRS might make better use of Bitcoin’s blockchain: the IRS can tailor an existing program to reward technically savvy whistleblowers who scour Bitcoin’s blockchain and determine identities that correspond to public Bitcoin addresses at issue.

INTRODUCTION

Cryptocurrency seems to challenge the operation of the tax system.¹ At a White House Press Briefing on cryptocurrency in July of 2019, Treasury Secretary Steven Mnuchin said, “[c]ryptocurrencies, such as Bitcoin, have been

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1. See, e.g., Omri Marian, *Blockchain Havens and the Need for Their Internationally-Coordinated Regulation*, 20 N.C.J.L. & TECH. 529, 529 (2019); Omri Marian, *Are Cryptocurrencies Super Tax Havens?*, 112 MICH. L. REV. FIRST IMPRESSIONS 38, 38–39 (2013); Manoj Viswanathan, *Tax Compliance in a Decentralizing Economy*, 34 GA. ST. U.L. REV. 283, 283 (2018).

exploited to support billions of dollars of illicit activity like cybercrime, tax evasion, extortion, ransomware, illicit drugs, [and] human trafficking.”²

Bitcoin, the first and largest cryptocurrency by market capitalization,³ purports to enable pseudonymous transactions independent of third-party intermediaries.⁴ Normally, third-party intermediaries—such as banks, employers, and brokers—play a key role in federal income tax compliance; they serve important reporting and, sometimes, withholding functions with respect to their distribution of different forms of income to account holders or employees.⁵ The ability of Bitcoin to circumvent those intermediaries and its pseudonymity thus seem to threaten our system of tax compliance.⁶

Does the tax evasion described by Mnuchin signal the beginning of a more broad-ranging shift? A co-founder of the Cypherpunks, a group important to the development of cryptocurrency,⁷ wrote the *Crypto Anarchist Manifesto* in 1988.⁸ It reads in part:

A specter is haunting the modern world, the specter of crypto anarchy.

Computer technology is on the verge of providing the ability for individuals and groups to communicate and interact with each other in a totally anonymous manner. Two persons may exchange messages, conduct business, and negotiate electronic contracts without ever knowing the True Name, or legal identity, of the other. Interactions over networks will be untraceable, via extensive re-routing of encrypted packets and tamper-proof boxes which implement cryptographic protocols with nearly perfect assurance against any tampering. . . . These developments will alter completely the nature of

2. Press Release, White House Press Briefing by Treasury Sec’y Steven Mnuchin on Regulatory Issues Associated with Cryptocurrency (July 15, 2019), <https://home.treasury.gov/news/press-releases/sm731> [<https://perma.cc/Q5F9-BC8E>].

3. *Bitcoin*, COINMARKETCAP, <https://coinmarketcap.com/currencies/bitcoin/> [<https://perma.cc/6XTK-RKAF>] (last visited Aug. 1, 2019).

4. Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, BITCOIN.ORG 1 (2008), <https://Bitcoin.org/Bitcoin.pdf> [hereinafter *Bitcoin Whitepaper*] (“What is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party.”).

5. See, e.g., Leandra Lederman, *Statutory Speed Bumps: The Roles Third Parties Play in Tax Compliance*, 60 STAN. L. REV. 695, 697 (2007) (“The structural mechanisms the federal income tax uses . . . make use of third parties to the taxpayer/government relationship.”).

6. Viswanathan, *supra* note 1, at 326 (“Blockchain technologies have the potential to shift transactions away from centralized, established third-party reporters to distributed networks of payors, thereby undermining existing information protocols.”).

7. ARVIND NARAYANAN ET AL., BITCOIN AND CRYPTOCURRENCY TECHNOLOGIES: A COMPREHENSIVE INTRODUCTION xvi–xvii (2016) (“Cypherpunks was the predecessor to the mailing list where Satoshi Nakamoto would later announce Bitcoin to the world, and this is no coincidence.”).

8. Nathaniel Popper, *Timothy C. May, Early Advocate of Internet Privacy, Dies at 66*, N.Y. TIMES (Dec. 21, 2018), <https://www.nytimes.com/2018/12/21/obituaries/timothy-c-may-dead.html> [<https://perma.cc/QU43-5HXV>].

government regulation, the ability to tax and control economic interactions, the ability to keep information secret, and will even alter the nature of trust and reputation.⁹

More recently, a scholar of blockchain and professor of business framed tax evasion by way of cryptocurrencies as a form of “cryptosecession” from the existing system of states premised on territorial jurisdiction.¹⁰

Even if Bitcoin does not lead to a withering away of the state, its amenability to tax evasion may challenge political initiatives to remedy inequality.¹¹ Presidential candidate Elizabeth Warren has proposed a two percent wealth tax on households worth more than fifty million dollars, with an additional one percent surtax on households worth more than one billion dollars.¹² Warren proposes to use the tax revenue for a broad range of initiatives; these include the cancellation of a large amount of student loan debt, universal child care, and free public university.¹³ Two economists have determined that the wealth tax would raise \$2.75 trillion, even factoring in some amount of tax evasion.¹⁴ They assume, however, that no major asset class would be exempt from wealth

9. Timothy C. May, *The Crypto Anarchist Manifesto*, ACTIVISM.NET: CYPHERPUNKS (Nov. 22, 1992, 12:11 PM), <https://www.activism.net/cypherpunk/crypto-anarchy.html> [<https://perma.cc/J62B-VPEB>]. The manifesto goes on to offer more rousing libertarian rhetoric, technical details, and predictions, some of which are prescient; it emphasizes, once again, the ability of cryptologic technologies to fundamentally alter the nature of government’s “interference” in economic transactions. *Id.* (“Just as the technology of printing altered and reduced the power of medieval guilds and the social power structure, so too will cryptologic methods fundamentally alter the nature of corporations and of government interference in economic transactions.”).

10. Trent MacDonald, *Theory of Non-Territorial Internal Exit* 1, 8 (Feb. 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2661226 [<https://perma.cc/8GZE-5JV2>] (writing that “[c]ryptosecession is the process in which citizens secede from an incumbent state and reconstitute in new ‘virtual states’ that are akin to non-territorial public good clubs,” and that though “described as a form of tax evasion, . . . it is more accurately classified as a process of partial secession and *de facto* jurisdiction formation.”).

11. See generally LIAM MURPHY & THOMAS NAGEL, *THE MYTH OF OWNERSHIP: TAXES AND JUSTICE* (2002). Taxes can be an important instrument to control inequality in capitalist economies. *Id.* at 3 (“In a capitalist economy, taxes are not just a method of payment for government and public services: They are also the most important instrument by which the political system puts into practice a conception of economic or distributive justice.”).

12. John Cassidy, *Why Elizabeth Warren’s Wealth Tax Would Work*, THE NEW YORKER (Jan. 31, 2019), <https://www.newyorker.com/news/our-columnists/elizabeth-warrens-wealth-tax-is-an-old-idea-and-its-time-has-come> [<https://perma.cc/4H4S-VHD6>].

13. Jon Greenberg, *Elizabeth Warren: Does her Wealth Tax Pay for her Child Care and Higher Education Plans?*, POLITIFACT (Apr. 25, 2019, 9:00 AM), <https://www.politifact.com/truth-o-meter/article/2019/apr/25/elizabeth-warren-does-her-wealth-tax-pay-her-child/> [<https://perma.cc/ES2C-ZGGN>].

14. Letter from Emmanuel Saez and Gabriel Zucman, Professors of Economics, University of California at Berkeley, to Senator Elizabeth Warren (Jan. 18, 2019), <https://elizabethwarren.com/wp-content/uploads/2019/01/saez-zucman-wealthtax-warren-v5-web.pdf> [<https://perma.cc/4G3B-N5H9>].

taxation.¹⁵ The relatively new asset class of cryptocurrency might challenge this redistributive vision if it enables a significant amount of wealth to effectively defy taxation.

This Article is the first to argue that, contrary to common wisdom, Bitcoin is increasingly regulable¹⁶ by tax authorities. Though Bitcoin enables peer-to-peer transfers that do not rely on third-party intermediaries such as banks,¹⁷ excitement about disintermediation¹⁸—the elimination of intermediaries—should not obscure the emergence of a rich set of commercial and technical intermediaries in Bitcoin’s ecosystem. These include online wallets, digital asset exchanges, second-layer payment protocols which operate on top of the original Bitcoin protocol, and others. The IRS’s use of a distinctive technique for gathering tax information from third parties—a John Doe summons—on Coinbase, the largest domestic digital asset exchange and an online wallet, shows how new intermediaries can facilitate tax enforcement actions.

Suspensions about the way in which disintermediation and peer-to-peer networks might enable cyberanarchy are not entirely new, and the literature regarding the regulability of the internet provides a framework for Part II of the Article.¹⁹ The emergence of important intermediaries in Bitcoin facilitate regulability,²⁰ just as they did in the case of the early internet.²¹ Intermediaries are particularly important in tax, considering they are oftentimes the repositories

15. *Id.*

16. Regulability here refers to “the capacity of a government to regulate behavior within its proper reach.” LAWRENCE LESSIG, CODE: VERSION 2.0 23 (2d ed. 2006).

17. *Bitcoin Whitepaper*, *supra* note 4, at 1.

18. *See, e.g.*, DANIEL DRESCHER, BLOCKCHAIN BASICS: A NON-TECHNICAL INTRODUCTION IN 25 STEPS 24 (2017) (“Purely distributed peer-to-peer systems have a huge commercial potential as they can replace centralized systems and change whole industries due to disintermediation.”); *but see* PRIMAVERA DE FILIPPI & AARON WRIGHT, BLOCKCHAIN AND THE LAW: THE RULE OF CODE 8 (2018) (“Blockchains may reduce the need for intermediaries, but they are unlikely to eliminate them altogether.”).

19. *See generally* Jack L. Goldsmith, *Against Cyberanarchy*, 65 U. CHI. L. REV. 1199 (1998); JACK GOLDSMITH & TIM WU, WHO CONTROLS THE INTERNET? ILLUSIONS OF A BORDERLESS WORLD (2006); David R. Johnson & David Post, *Law and Borders—The Rise of Law in Cyberspace*, 48 STAN. L. REV. 1367 (1996); LESSIG, *supra* note 16; DEBORA L. SPAR, RULING THE WAVES: CYCLES OF DISCOVERY, CHAOS, AND WEALTH FROM THE COMPASS TO THE INTERNET 4 (2001) (“Even if they had path-breaking technology, and even if they flourished for some time in a period of blissful chaos, many entrepreneurs eventually found themselves caught by a system that bit back—by markets that reasserted their old ways or governments that outraced the technological frontier and claimed it for themselves.”).

20. *See* DE FILIPPI & WRIGHT, *supra* note 18, at 173–79; Andy Yee, *Internet Architecture and the Layers Principle: A Conceptual Framework for Regulating Bitcoin*, 3 INTERNET POL’Y REV. 1, 5–7 (2014).

21. *See* LESSIG, *supra* note 16, at 61; GOLDSMITH & WU, *supra* note 19, at 70–71.

of relevant transaction information, and can perform withholding and reporting functions.²²

Bitcoin differs from the internet in important ways, however, and represents a novel architecture of trust;²³ the publicly visible, trustworthy nature of Bitcoin's blockchain renders it unusually regulable for tax purposes. The IRS can observe transaction flows that occur on Bitcoin's blockchain. Put differently, the IRS can rely upon Bitcoin's blockchain just as Bitcoin's users do: as a trustworthy transactional ledger that is not susceptible to falsification, absent a technical attack that verges on the impossible.²⁴ In this vein, the Article points to the IRS's efforts to use Bitcoin's blockchain to police tax compliance and offers a proposal regarding the way tax authorities might make better use of Bitcoin's blockchain.

Part I explains the history and operation of Bitcoin and summarizes existing tax scholarship on it. That scholarship by and large characterizes Bitcoin as a threat to the existing tax system.²⁵

Part II argues that the emergence of different sorts of intermediaries that operate with the Bitcoin network can increasingly facilitate tax compliance. Specifically, though Bitcoin is often understood in terms of disintermediation, new intermediaries such as digital asset exchanges, online wallets, operators of second-layer payment protocols, and other actors who cater to institutions interested in Bitcoin have emerged or are emerging. These new commercial and technical intermediaries can increasingly facilitate tax enforcement, as the IRS's John Doe summons on Coinbase, the largest domestic digital asset exchange, will show. There are indications that these intermediaries may eventually engage in more comprehensive information reporting, and they could even, one day, withhold and remit tax payments to the IRS.

Part III contends that the publicly visible, trustworthy nature of Bitcoin's ledger renders it uniquely regulable for tax purposes. That Part outlines the IRS's efforts to use Bitcoin's blockchain to police tax compliance and offers a proposal regarding the ways tax authorities might better take advantage of Bitcoin's blockchain. Specifically, the IRS can gamify its whistleblower program to incent

22. See, e.g., Lederman, *supra* note 5, at 697.

23. KEVIN WERBACH, *THE BLOCKCHAIN AND THE NEW ARCHITECTURE OF TRUST* 17 (2018).

24. *Bitcoin Whitepaper*, *supra* note 4, at 5, 8; NARAYANAN ET AL., *supra* note 7, at 48–50.

25. See, e.g., Eric Engle, *Is Bitcoin Rat Poison? Cryptocurrency, Crime, and Counterfeiting*, 16 J. HIGH TECH. L. 340, 348 (2016); Marian, *Blockchain Haves and the Need for Their Internationally Coordinated Regulation*, *supra* note 1, at 532; Marian, *Are Cryptocurrencies Super Tax Havens?*, *supra* note 1, at 38–39; Viswanathan, *supra* note 1, at 283; Sarah Gruber, Note, *Trust, Identity and Disclosure: Are Bitcoin Exchanges the Next Virtual Havens for Money Laundering and Tax Evasion*, 32 QUINNIPIAC L. REV. 135, 206 (2013); Edgar G. Sanchez, Note, *Cryptocurrencies: The 21st Century's Money Laundering and Tax Havens*, 28 U. FLA. J.L. & PUB. POL'Y 167, 168–69 (2017); Thomas Slattery, Note, *Taking a Bit Out of Crime: Bitcoin and Cross-Border Tax Evasion*, 39 BROOK. J. INT'L L. 829, 831 (2014).

technically savvy whistleblowers to scour the blockchain and determine identities that correspond to public Bitcoin addresses selected by the IRS. Techniques of gamification might draw a large, diverse population of potential whistleblowers into the effort, and the IRS's program could signal its commitment to improving tax compliance in this area to the public.

I. BITCOIN AND THE THREAT OF TAX NONCOMPLIANCE

A. *The Origins and Mechanics of Bitcoin*

In late 2008,²⁶ an individual or group relying on the pseudonym Satoshi Nakamoto²⁷ proposed a peer-to-peer form of electronic cash known as Bitcoin.²⁸ Nakamoto's proposal first circulated in a whitepaper on a cryptography mailing list.²⁹ In it, Nakamoto described the use of digital signatures and a peer-to-peer network that could contain an immutable public history of transactions, the latter of which would solve the double-spending problem that digital forms of money often faced before Bitcoin.³⁰ The double-spending problem arises because people can copy digital units of cash and spend them more than once absent special safeguards.³¹

Nakamoto defined an electronic coin in Bitcoin as a "chain of digital signatures."³² The coins are transmitted partly in reliance on a mathematical operation known as a hash function. A hash function is an efficiently computable, mathematical function which produces an output of a fixed size even though the input can be a string of any size.³³ A transferor can transmit Bitcoin by digitally signing a hash of the previous transaction and the public

26. NATHANIEL POPPER, DIGITAL GOLD: BITCOIN AND THE INSIDE STORY OF THE MISFITS AND MILLIONAIRES TRYING TO REINVENT MONEY 3–4 (2015).

27. *Id.* Though most describe "Satoshi Nakamoto" as a pseudonym, at least one journalist has argued that the name of the inventor of Bitcoin really is Satoshi Nakamoto. Leah McGrath Goodman, *The Face Behind Bitcoin*, NEWSWEEK (Mar. 6, 2014, 6:05 AM), <https://www.newsweek.com/2014/03/14/face-behind-Bitcoin-247957.html> [<https://perma.cc/E3AV-AU7A>] ("Far from leading to a Tokyo-based whiz kid using the name "Satoshi Nakamoto" as a cipher or pseudonym (a story repeated by everyone from Bitcoin's rabid fans to *The New Yorker*), the trail followed by Newsweek led to a 64-year-old Japanese-American man whose name really is Satoshi Nakamoto.").

28. *Bitcoin Whitepaper*, *supra* note 4, at 8.

29. POPPER, *supra* note 26, at 20.

30. *Bitcoin Whitepaper*, *supra* note 4, at 1.

31. NARAYANAN ET AL., *supra* note 7, at xiv ("I can [pass around banknotes] electronically with digital signatures, but that runs into the annoying 'double spending' problem—if you receive a piece of data representing a unit of virtual cash, you can make two (or more) copies of it and pass it on to different people.").

32. *Bitcoin Whitepaper*, *supra* note 4, at 2.

33. NARAYANAN ET AL., *supra* note 7, at 2. Cryptographically secure hash functions possess additional characteristics. *Id.* (noting that for a hash function to be cryptographically secure, it must have "three additional properties: (1) collision-resistance, (2) hiding, and (3) puzzle-friendliness").

key—basically, a payment address—of the next owner, which is added to the end of “the coin.”³⁴

At heart, Bitcoin serves as a payment mechanism that is native to the Internet.³⁵ It is both a unit of currency and a network,³⁶ and one is inseparable from the other. Because Nakamoto designed Bitcoin to be peer-to-peer and electronic, Bitcoin does not require parties transacting on the internet to go through a financial institution or other centralized intermediary.³⁷

Perhaps most importantly, Nakamoto proposed a method for a secure, public history of transactions.³⁸ This solved the double-spending problem in some electronic cash systems whereby a single digital token might be fraudulently spent more than once. Specifically, Nakamoto proposed a public ledger that would operate across a decentralized system of computers.³⁹ Nakamoto’s system incentivizes participating computers or nodes to expend computational power to satisfy a so-called proof-of-work and thereby secure the public transactional history.⁴⁰ Nodes that the Bitcoin community terms “miners” compete to solve computational problems or puzzles required to publish blocks, and then receive Bitcoin if they succeed.⁴¹ Because these computational puzzles are difficult, a valid block proves or demonstrates that a node has expended computational power.⁴² For that reason, false transactions cannot make it into the valid blockchain in the long run provided honest nodes control the majority of computational power in the network,⁴³ as I explain further below.

According to Nakamoto, the system operates based on the following steps.⁴⁴ First, new transactions are broadcast to all nodes.⁴⁵ Second, each node collects new transactions into a block.⁴⁶ Third, each node works on solving a computational puzzle to put the transactions in a block in a form that is

34. *Bitcoin Whitepaper*, *supra* note 4, at 2.

35. NARAYANAN ET AL., *supra* note 7, at ix.

36. Though by convention Bitcoin with a capital B refers to the network and bitcoin with a lowercase b refers to the unit of currency, this Article capitalizes Bitcoin throughout for purposes of consistency.

37. *Bitcoin Whitepaper*, *supra* note 4, at 1.

38. *Id.* at 2–4; Arvind Narayanan & Jeremy Clark, *Bitcoin’s Academic Pedigree*, 60 COMM. OF THE ACM 36, 36 (noting that the ledger, the starting point for understanding Bitcoin, “is a place to record all transactions that happen in the system, and it is open to and trusted by all system participants.”).

39. *Bitcoin Whitepaper*, *supra* note 4, at 2.

40. *Id.* at 3.

41. *Id.* at 4.

42. *Id.* at 3.

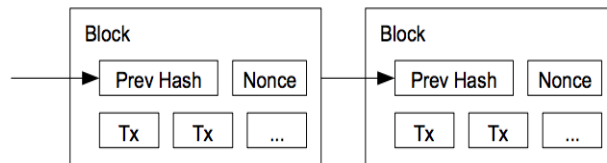
43. *Id.* (“If a majority of CPU power is controlled by honest nodes, the honest chain will grow the fastest and outpace any competing chains.”).

44. *Bitcoin Whitepaper*, *supra* note 4, at 3.

45. *Id.*

46. *Id.*

acceptable to all nodes.⁴⁷ Fourth, the node that first succeeds in solving the computational puzzle broadcasts the block to all nodes.⁴⁸ Fifth, nodes accept the block only if all transactions in it are valid and not already spent.⁴⁹ Finally, nodes express their acceptance of the block by working on creating the next block in the chain and use a hash of the accepted block as part of the next block.⁵⁰ Thus, Nakamoto offers the following view of the blockchain:



GRAPHIC OF BLOCKCHAIN FROM BITCOIN WHITEPAPER⁵¹

The “nonce” in the diagram above is a term of art from cryptography; for present purposes, one might think of it as the answer to the computational puzzle posed to the miners.⁵²

Importantly, nodes consider the longest chain to be the valid one and work towards extending it.⁵³ Though a dishonest node or attacker could conceivably publish a block that contains a false transaction, the system would eventually reject such a block as the majority of computational power is directed towards building a chain of blocks which contain all valid transactions and is therefore the longest chain that such a system would produce.⁵⁴ Put simply, Bitcoin operates on the idea that the blockchain consisting of the most blocks represents the most aggregated computational effort.⁵⁵ Thus, false transactions cannot make it onto the valid blockchain in a permanent way provided honest nodes control the majority of computational power in the network; the latter condition ensures that the longest blockchain is eventually the one which contains all valid transactions.

Those mining nodes which adequately satisfy the proof-of-work and broadcast a block receive Bitcoin, which enter into circulation at a

47. *Id.*

48. *Id.*

49. *Bitcoin Whitepaper*, *supra* note 4, at 3.

50. *Id.*

51. *Id.*

52. See NARAYANAN ET AL., *supra* note 7, at 7 (“In cryptography, the term *nonce* is used to refer to a value that can only be used once.”).

53. *Bitcoin Whitepaper*, *supra* note 4, at 3 (“Nodes always consider the longest chain to be the correct one and will keep working on extending it.”).

54. *Id.* at 3, 6–8.

55. See DRESCHER, *supra* note 18, at 168 (“The longest-chain-criterion is based on the idea that the blockchain-data-structure that comprises the most blocks represents the most aggregated computational effort.”).

predetermined pace.⁵⁶ After twenty-one million Bitcoin enter into circulation in total, Nakamoto proposed that the system operate entirely on transaction fees.⁵⁷ Bitcoin has been characterized as a brilliant arrangement of incentives and proof-of-work to secure a public ledger and thereby solve the double-spending problem.⁵⁸

But it, like most cryptocurrencies, faces certain hurdles regarding scalability. In particular, the transaction records known as blocks are limited in size and frequency by design in Bitcoin, so the network as currently constituted faces certain limitations as to the number of transactions per second it can process. Specifically, the size of blocks in Bitcoin is limited to one megabyte per ten minutes, which allows a current maximum of seven transactions per second.⁵⁹ For purposes of comparison, Visa states that its network can handle 24,000 transactions per second.⁶⁰ The limitation on transactions per second has resulted in delays in processing and confirming Bitcoin transactions, such that users pay fees to miners to prioritize confirmation of their transactions.⁶¹

B. Taxability of Bitcoin

In 2014, the IRS published its position on the basic tax treatment of transactions using cryptocurrency.⁶² In short, general tax principles that apply to

56. *Bitcoin Whitepaper*, *supra* note 4, at 4.

57. *Id.*; E-mail from, Satoshi Nakamoto, creator of Bitcoin, to The Cryptography Mailing List (Jan. 8, 2009, 14:27 EST) <http://www.metzdowd.com/pipermail/cryptography/2009-January/014994.html> [<https://perma.cc/P2T4-527G>]. In the whitepaper, Nakamoto also offered details about reclaiming disk space, simplified payment verification, the mechanism for combining and splitting value, privacy, and certain calculations to show the practical impossibility that an attacker could prevail in creating an alternate chain. *Bitcoin Whitepaper*, *supra* note 4, at 4–8.

58. Narayanan & Clark, *supra* note 38, at 42 (“Nakamoto’s genius, then, was not any of the individual components of bitcoin, but rather the intricate way in which they fit together to breathe life into the system.”).

59. DAVID GERARD, *ATTACK OF THE 50 FOOT BLOCKCHAIN: BITCOIN, BLOCKCHAIN, ETHEREUM AND SMART CONTRACTS* 69 (2017); *see also* Kyle Croman et al., *On Scaling Decentralized Blockchains: A Position Paper*, *FIN. CRYPTOGRAPHY AND DATA SEC.* 106, 108 (2016), <https://www.comp.nus.edu.sg/~prateeks/papers/Bitcoin-scaling.pdf> [<https://perma.cc/K5XQ-TTFH>] (“The maximum throughput is the maximum rate at which the blockchain can confirm transactions. Today, Bitcoin’s maximum throughput is 3.3–7 transactions/sec. This number is constrained by the maximum block size and the inter-block time.”).

60. *Visa Acceptance for Retailers*, VISA, <https://usa.visa.com/run-your-business/small-business-tools/retail.html> [<https://perma.cc/Q4YY-4HR9>] (last visited Feb. 12, 2019) (“VisaNet . . . is capable of handling more than 24,000 transactions per second.”).

61. GERARD, *supra* note 59, at 69.

62. I.R.S. Notice 2014-21, 2014-1 C.B. 938 (Mar. 2014), <https://www.irs.gov/pub/irs-drop/n-14-21.pdf> [<https://perma.cc/4AZ5-22BM>]. Multiple pieces summarize the brief IRS notice. *See generally* Jose Andre Roman, *Bitcoin: Assessing the Tax Implications Associated with the IRS’s Notice Deeming Virtual Currencies Property*, 34 *REV. BANKING & FIN. L.* 451 (2015); Sarah-Jane Morin, *Tax Aspects of Cryptocurrency*, 64 *THE PRACTICAL L.* 21, 22 (Feb. 2018); Deidre A. Liedel, *The Taxation of Bitcoin: How the IRS Views Cryptocurrencies*, 66 *DRAKE L. REV.* 107 (2018);

property transactions apply to transactions in which cryptocurrency is used.⁶³ For US federal tax purposes, cryptocurrency cannot generate foreign currency gain or loss.⁶⁴ Thus, unsurprisingly, the gain derived from investing in Bitcoin is subject to federal income tax.⁶⁵ The use of appreciated Bitcoin in transactions and proceeds from mining it will also result in taxable gain.⁶⁶

The IRS will issue additional guidelines on the taxation of cryptocurrency shortly.⁶⁷ These additional guidelines will likely address the tax treatment of cryptocurrency hard forks,⁶⁸ and acceptable methods for the calculation and assignment of cost basis.⁶⁹

C. Previous Characterizations of Bitcoin in Tax Scholarship

In light of the way the Bitcoin network is proposed to function in the *Bitcoin Whitepaper*, it is understandable that tax scholars have characterized Bitcoin as a serious threat to the existing tax system. In 2013, Omri Marian suggested governments had failed to identify the acuteness of the potential problem that cryptocurrencies could replace tax havens as the weapon-of-choice for purposes of tax evasion.⁷⁰ Marian writes,

Cryptocurrencies possess the traditional characteristics of tax havens: earnings are not subject to taxation and taxpayers' anonymity is maintained. Cryptocurrencies, however, also possess one added value: their operation is not

Nika Antonikova, Note, *Real Taxes on Virtual Currencies: What Does the I.R.S. Say*, 34 VA. TAX REV. 433 (2015) (summarizing and also criticizing the Notice). At least two pieces outlined some of the relevant considerations regarding the taxation of Bitcoin before the release of Notice 2014-21. Howard Wiener et al., *Chomping at the Bit: U.S. Federal Income Taxation of Bitcoin Transactions*, 11 J. TAX'N FIN. PRODS. 35, 36–37 (2013); Benjamin W. Akins et al., *A Whole New World: Income Tax Considerations of the Bitcoin Economy*, 12 PITT. TAX REV. 25, 38–39 (2014).

63. I.R.S. Notice 2014-21, *supra* note 62, at 2.

64. *Id.*

65. *Id.*

66. *Id.* at 2–3, 4.

67. Letter from Charles P. Rettig, Commissioner, Internal Revenue Service, Department of the Treasury, to Tom Emmer, Representative, United States House of Representatives (May 16, 2019), <https://coincenter.org/link/the-irs-has-told-congress-that-it-will-issue-new-cryptocurrency-tax-guidance-soon> [<https://perma.cc/E2JB-U6H2>].

68. See generally ABA Section of Taxation, *Comments on the Tax Treatment of Hard Forks* (2018), as reprinted in 72 THE TAX LAW. 27–38 (2018). At a high level, a hard fork constitutes a change in the rules by which a cryptocurrency operates, but is a change to which only some of the network's nodes subscribe. A hard fork has the potential to divide a cryptocurrency network in such a way that those who owned a particular cryptocurrency before the change in protocol are deemed to also possess an equivalent amount of an alternative cryptocurrency on a discrete blockchain after the fork. Nick Thieme, *Bitcoin Has Split Into Two Cryptocurrencies. What, Exactly, Does That Mean?*, SLATE (Aug. 4, 2017), http://www.slate.com/blogs/future_tense/2017/08/04/explaining_bitcoin_s_split_into_two_cryptocurrencies.html [<https://perma.cc/9HNN-SBBP>].

69. Letter from Charles P. Rettig, *supra* note 67.

70. Marian, *Are Cryptocurrencies Super Tax Havens?*, *supra* note 1, at 38.

dependent on the existence of financial institutions. Thus, cryptocurrencies could potentially defeat governments' recent successes in addressing offshore tax evasion. To the extent that cryptocurrencies continue to gain momentum, we could reasonably expect tax-evaders—who traditionally executed their tax-evasion techniques through the use of offshore bank accounts in tax-haven jurisdictions—to opt out of traditional tax havens in favor of cryptocurrencies.⁷¹

Marian was writing at a time before the IRS had published its official position on cryptocurrency.

In 2014, the IRS released its guidance stating general tax principles that apply to property transactions also apply to Bitcoin transactions. Three student notes criticize the Notice on the basis that this rule undercuts the transactional utility of Bitcoin as a currency.⁷²

In 2016, in the evocatively titled piece, *Is Bitcoin Rat Poison? Cryptocurrency, Crime, and Counterfeiting*, Eric Engle argued that U.S. regulators should ban cryptocurrencies because they enable crime, threaten national security, and are a scam.⁷³ Tax evasion was one of the crimes; Engle relied on Marian's piece to assert that Bitcoin serves as a tool for tax evasion.⁷⁴

In 2018, Manoj Viswanathan described the potential for blockchain technology to enable tax evasion.⁷⁵ Viswanathan outlines the importance of information from centralized intermediaries to tax compliance,⁷⁶ and characterizes blockchain as a technology with the potential to eliminate the need for centralized intermediaries.⁷⁷ Thus, he contends that transactions on decentralized platforms and movement away from centralized intermediaries would result in dramatically reduced tax reporting oversight.⁷⁸ Viswanathan, however, acknowledges that entry and exit points from the blockchain infrastructure can be regulated, offering the example of the point at which funds are transmitted from a bank.⁷⁹

71. *Id.* at 39.

72. Sam Hampton, Note, *Undermining Bitcoin*, 11 WASH. J.L. TECH. & ARTS 331, 331 (2016); Roland Weekley, Note, *The Problematic Tax Treatment of Cryptocurrencies*, 17 FLA. ST. U. BUS. REV. 109, 110 (2018); Scott A. Wiseman, Note, *Property or Currency? The Tax Dilemma Behind Bitcoin*, 2016 UTAH L. REV. 417, 419 (2016).

73. Engle, *supra* note 25, at 356 (2016) ("This article argues that the U.S. . . . should simply seek to ban cryptocurrencies because distributed encrypted currency enables a wide range of grave crimes, threatens U.S. national security, and because cryptocurrency is more or less a scam.").

74. *Id.* at 378–79, 379 n.248.

75. Viswanathan, *supra* note 1, at 325.

76. *Id.* at 332.

77. *Id.* at 320 ("For any network in which participants currently rely on a trusted third party (such as a bank) to confirm the legitimacy of transactions, blockchain technology has the potential to eliminate the need for the centralized intermediary providing the verification.").

78. *Id.* at 323.

79. *Id.* at 327–28.

Cryptocurrency and the Shifting IRS Enforcement Model, a 2018 piece, contains a practitioner's predictions regarding the IRS's future approach to cryptocurrency tax enforcement.⁸⁰ Shapiro offers ways that an enforcement model, similar to the voluntary disclosure program that the IRS put in place with respect to Americans with undeclared Swiss bank accounts, may work in important ways with respect to cryptocurrency.⁸¹

In a 2019 article, Marian argues that jurisdictions traditionally considered tax havens are becoming hubs for blockchain-based ventures.⁸² He contends that the decentralization and tamper-resistance of blockchain technologies render traditional anti-tax haven policies ineffective and calls for coordinated international regulation.⁸³

Three student notes contain the same characterization of Bitcoin as a tool for tax evasion and offer preliminary solutions to this problem.⁸⁴ One student piece criticizes Magistrate Judge Corley's decision to grant the IRS's petition to enforce a so-called John Doe summons on Coinbase, the largest domestic digital asset exchange,⁸⁵ which is a decision that Part II addresses at length.

II. HOW BITCOIN'S ECOSYSTEM CAN FACILITATE TAX COMPLIANCE

This Part argues that Bitcoin is increasingly regulable for tax purposes due to its emerging ecosystem. Bitcoin's peer-to-peer, decentralized, pseudonymous design, as outlined in the *Whitepaper*, might suggest it is a Wild West when it comes to tax compliance, considering compliance relies on a robust structure of information reporting and withholding by intermediaries.⁸⁶ Bitcoin, however, does not operate in a vacuum. This Part outlines the emergence and growth of a rich commercial and technical ecosystem that operates with Bitcoin. The case involving the IRS's John Doe summons on Coinbase shows how this ecosystem can facilitate tax compliance. Theory about the regulation of the internet helps structure this argument.

80. Dashiell C. Shapiro, *Cryptocurrency and the Shifting IRS Enforcement Model*, 1 STAN. J. BLOCKCHAIN L. & POL'Y 1, 1 (2018), <https://stanford-jblp.pubpub.org/pub/crypto-irs-enforcement> [<https://perma.cc/BXF3-HC7R>].

81. *Id.*

82. Marian, *Blockchain Havens and the Need for Their Internationally Coordinated Regulation*, *supra* note 1, at 529.

83. *Id.*

84. Gruber, *supra* note 25, at 169 (arguing that Bitcoin poses serious questions related to tax reporting); Sanchez, *supra* note 25, at 189 (describing Bitcoin as an anonymous ledger which leaves no paper trail by which the IRS Criminal Investigation Unit can investigate individuals committing money laundering and tax evasion); Slattery, *supra* note 25, at 831 (arguing that serious concerns about tax evasion with Bitcoin can be addressed by self-reporting requirements and a multilateral tax agreement).

85. Austin Elliott, Note, *Collection of Cryptocurrency Customer-Information: Tax Enforcement Mechanism or Invasion of Privacy?*, 16 DUKE L. & TECH. REV. 1, 1 (2017).

86. See Lederman, *supra* note 5, at 697; Viswanathan, *supra* note 1, at 333.

A. *The Regulation of the Internet as Theoretical Background*

Bitcoin invites comparisons to the early internet,⁸⁷ and legal scholarship on the regulability of the internet illuminates how tax authorities can increasingly police Bitcoin despite characterizations to the contrary. In 1999, Lawrence Lessig argued in the first edition of *Code* against the then common view that the internet was beyond the reach of real-space regulation.⁸⁸ That view famously found a voice in John Perry Barlow's "Declaration of Independence for Cyberspace":

Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather.⁸⁹

Legal scholars David Johnson and David Post expressed a related proposition in 1996:

The rise of an electronic medium that disregards geographical boundaries throws the law into disarray by creating entirely new phenomena that need to become the subject of clear legal rules but that cannot be governed, satisfactorily, by any current territorially based sovereign.⁹⁰

Lessig challenged this position with a prescient argument that the internet was not only regulable, but uniquely so.⁹¹

Part of Lessig's argument involved close attention to the way in which governmental regulation benefits from commercial efforts on the internet. As Lessig described of the internet, users oftentimes cede privacy and autonomy for the sake of convenience and utility. He writes,

Commerce has done its part—for commerce, and indirectly, for governments. Technologies that make commerce more efficient are also technologies that make regulation simpler. The one supports the other. There are a host of technologies now that make it easier to know who someone is on the Net, what they're doing, and where they're doing it. These technologies were built to make

87. See, e.g., Jon Russell, *Coinbase Plots to Become the New York Stock Exchange of Crypto Securities*, TECHCRUNCH (Sept. 7, 2018, 6:27 PM), <https://techcrunch.com/2018/09/07/coinbase-plots-to-become-the-new-york-stock-exchange-of-crypto-securities/> [https://perma.cc/S3BK-8NQA] (quoting Coinbase CEO Brian Armstrong saying, "Web 1.0 was about publishing information, web 2.0 was about interaction and web 3.0 is going to be about value transfer on the internet because now the web has this native currency and so applications can be built that instantly tap into this global economy on the internet . . .").

88. LESSIG, *supra* note 16, at ix.

89. Reprinted in *id.* at 3.

90. David R. Johnson & David Post, *Law and Borders—The Rise of Law in Cyberspace*, 48 STAN. L. REV. 1367, 1375 (1996).

91. LESSIG, *supra* note 16, at 23–24.

business work better. They make life on the Internet safer. But the by-product of these technologies is to make the Net more regulable.⁹²

Lessig clarified that more regulable does not mean, of course, perfectly regulable.⁹³

Jack Goldsmith and Tim Wu continued Lessig's line of argument in *Who Controls the Internet? Illusions of a Borderless World*, in which they documented the way in which the internet came to be a technology that facilitated the enforcement of laws rather than resisting territorial law.⁹⁴ The internet's ascendance did not eliminate intermediaries, as some believed it would, but just changed who served as intermediaries.⁹⁵ Wu and Goldsmith noted the practical difficulty of eliminating intermediaries altogether.⁹⁶

Certain scholars have come to similar insights regarding blockchain. In 2014, Andy Yee framed the Bitcoin ecosystem in terms of the layered model of internet architecture.⁹⁷ Yee argued that intermediaries in the information layer—the layer of actors who interface between the technical community and real economy—are appropriate targets of state regulation.⁹⁸ Primavera De Filippi and Aaron Wright extensively rely on Lessig in outlining intermediaries that may be subject to regulation in the context of blockchain.⁹⁹ These include new businesses and services built on top of blockchain, miners, internet service providers, and information intermediaries such as search engines and social networks.¹⁰⁰

B. *The IRS's John Doe Summons on Coinbase*

The IRS's John Doe summons on the largest domestic digital asset exchange¹⁰¹ and wallet provides an important illustration of the mechanics of how Bitcoin is increasingly regulable for tax purposes. Examples of different kinds of emerging commercial and technical intermediaries show how this process might unfold. These entities and networks collect customer information as a commercial necessity and, in some cases, as a legal requirement; they can

92. *Id.* at 61.

93. *Id.*

94. GOLDSMITH & WU, *supra* note 19, at 10 (“The Yahoo story encapsulates the Internet’s transformation from a technology that resists territorial law to one that facilitates its enforcement.”).

95. *Id.* at 70 (“The rise of networking did not eliminate intermediaries, but rather changed who they are.”).

96. *Id.*

97. Yee, *supra* note 20, at 1.

98. *Id.* at 4–5.

99. DE FILIPPI & WRIGHT, *supra* note 18, at 173.

100. *Id.* at 177–81.

101. Declaration of David Utzke in Support of Petition to Enforce Internal Revenue Service Summons at 5, *United States v. Coinbase, Inc.*, No. 3:17-cv-01431-JSC (N.D. Cal. 2017) (Dkt. No. 1-1) (“Additional research on Coinbase shows that in the 30-day period ending December 14, 2015, Coinbase was . . . the largest exchanger in the U.S. of bitcoin into U.S. dollars.”).

remit relevant tax information to the authorities. That information includes legal identity and transaction details.

These commercial and technical efforts on the Bitcoin “base layer” make it far more usable to consumers and merchants. Many customers and merchants relinquish some of the theoretical pseudonymity of operating at the base layer to take advantage of these technologies, just as users of the internet might cede privacy and autonomy for convenience and utility.

Coinbase offers a broad set of functions to customers. Coinbase, as of December 2015, offered an online wallet¹⁰² for Bitcoin storage and transactions, an exchange for trading cryptocurrency, an application programming interface for developers and merchants to build applications and accept Bitcoin payments, and a Visa-branded debit card that enables Coinbase users in the US to spend Bitcoin where Visa is accepted.¹⁰³ Bitcoin exchanges accept deposits in fiat currency or Bitcoin, enable users to make or receive Bitcoin payments, and, most importantly, allow users to exchange Bitcoin for fiat currency or vice versa.¹⁰⁴ These exchange transactions do not occur on Bitcoin’s blockchain; a user is merely matched with someone who is willing to be on “the other side” of the transaction.¹⁰⁵ The majority of those who buy or trade Bitcoin rely on digital asset exchanges and, by and large, cede a significant amount of privacy to do so.¹⁰⁶

1. Legal Background

The IRS has several important tools when it suspects tax evasion by a group. To accomplish its mandate to ascertain the correctness of tax returns and to determine a taxpayer’s tax liability, the Service has the authority to examine relevant records and summon taxpayers or third parties who may have such records.¹⁰⁷

102. As stated above, spending Bitcoin requires knowledge of a public key and a private key, the latter of which should remain secret. NARAYANAN ET AL., *supra* note 7, at 76. Key management might simply involve storing keys on one’s local device; this would typically involve wallet software that keeps track of coins, manages the details of keys, and offers a convenient user interface. *Id.* at 77. An online wallet is similar to a local wallet, but information is stored in the cloud; convenience is the advantage of an online wallet as it does not require the installation of any special software. *Id.* at 88 (“A big advantage [of an online wallet] is that it’s convenient.”).

103. United States’ Memorandum in Support of *Ex Parte* Petition for Leave to Serve John Doe Summons at 5–6, In re Tax Liabs. Of John Does, No. 3:16-cv-06658-JSC (N.D. Cal. Nov. 17, 2016) (Dkt. No. 2) (“As of December 2015, Coinbase has four main products: (1) an exchange for trading bitcoin and fiat currency . . . ; (2) a wallet for bitcoin storage and transactions; (3) an application programming interface (API) for developers and merchants to build applications and accept bitcoin payments; and (4) ‘Shift Card,’ the first U.S.-issued bitcoin debit card.”).

104. NARAYANAN ET AL., *supra* note 7, at 88–89.

105. *Id.*

106. See Part II.C.1 below.

107. 26 U.S.C. § 7602(a) (2012).

The Service may issue a so-called John Doe summons, which does not specifically identify the taxpayer under investigation, provided it meets certain requirements.¹⁰⁸ Specifically, the Service must establish that: (1) the summons relates to the investigation of a particular person or ascertainable group of people; (2) there is a reasonable basis for believing that the person or group may have failed to comply with any provision of the tax law; and (3) the information sought is not readily available from other sources.¹⁰⁹ Before such a summons can be served, it must be approved for service by a district court in an *ex parte* proceeding.¹¹⁰ The IRS famously employed a John Doe summons in 2008 when it sought the names of thousands of US taxpayers who held UBS accounts in Switzerland and who allegedly failed to meet tax obligations.¹¹¹

2. The Government's Case Against Coinbase

On November 17, 2016, the Department of Justice petitioned the United States District Court for the Northern District of California for an order authorizing the IRS to serve a John Doe summons on Coinbase for information related to users who entered into cryptocurrency transactions in 2013 through 2015.¹¹² In the memorandum supporting the petition, the government contended that the IRS was concerned U.S. taxpayers were underreporting taxable income from virtual currency transactions.¹¹³ The government pointed to purported anonymity and lack of third-party reporting in virtual currency transactions.¹¹⁴

To further the IRS's investigation into the identities of U.S. taxpayers who had failed to report virtual currency transactions, the government sought information regarding U.S. persons who conducted transactions in virtual currency between 2013 and 2015.¹¹⁵ The summons requested nine categories of documents including complete user profiles, know-your-customer due diligence, documents regarding third-party access, transaction logs, records of payments processed, correspondence between Coinbase and Coinbase users, account or invoice statements, records of payments, and exception records produced by Coinbase's anti-money-laundering system.¹¹⁶ On November 30, 2016, the court

108. 26 U.S.C. § 7609(f) (2012).

109. *Id.*

110. 26 U.S.C. § 7609(h)(2) (2012).

111. Beckett G. Cantley, *The UBS Case: The U.S. Attack on Swiss Banking Sovereignty*, 7 BYU INT'L L. & MGMT. REV. 1, 18 (2011).

112. United States' *Ex Parte* Petition for Leave to Serve "John Doe" Summons at 1–2, In re Tax Liabs. Of John Does, No. 3:16-cv-06658-JSC (N.D. Cal. Nov. 17, 2016) (Dkt. No. 1).

113. United States' Memorandum in Support of *Ex Parte* Petition for Leave to Serve John Doe Summons, *supra* note 103, at 2.

114. *Id.*

115. *Id.* at 9.

116. *Id.*

granted the Government's petition for leave to serve the John Doe summons on Coinbase.¹¹⁷

In late 2016, Coinbase posted a statement on its blog regarding the summons which read, in part:

Although Coinbase's general practice is to cooperate with properly targeted law enforcement inquiries, we are extremely concerned with the indiscriminate breadth of the government's request. Our customers' privacy rights are important to us and our legal team is in the process of examining the government's petition. In its current form, we will oppose the government's petition in court.¹¹⁸

Coinbase's legal counsel made similar comments around the same time.¹¹⁹

Coinbase refused to comply with the IRS's summons, and the government filed a petition to enforce the summons on March 16, 2017.¹²⁰ In support of the petition to enforce the summons, the government submitted a declaration from a senior revenue agent at the IRS who was assigned to virtual currency matters.¹²¹ He stated that only 800 to 900 persons electronically filed a required form regarding dispositions of capital assets with a property description "likely related to Bitcoin" in each of the years 2013 through 2015.¹²² The government contended that Coinbase claimed to have had 500,000 users during the summons period.¹²³

After the court heard argument on a motion to quash the summons and a motion to intervene, and eight months after the government served the initial summons, the Service narrowed its request.¹²⁴ Specifically, the IRS only sought information regarding accounts "with at least the equivalent of \$20,000 in any

117. Order Granting *Ex Parte* Petition for Leave to Serve "John Doe" Summons at 2, In re Tax Liabs. Of John Does, No. 3:16-cv-06658-JSC (N.D. Cal. Nov. 30, 2016) (Dkt. No. 7).

118. *Protecting Customer Privacy*, THE COINBASE BLOG (Nov. 18, 2016), <https://blog.coinbase.com/protecting-customer-privacy-ec7e0e1c4d53> [<https://perma.cc/E4SA-SLWP>].

119. Nathaniel Popper, *Bitcoin Users Who Evade Taxes Are Sought by the I.R.S.*, N.Y. TIMES (Nov. 18, 2016), <https://www.nytimes.com/2016/11/19/business/dealbook/irs-is-seeking-tax-evaders-who-use-bitcoin.html> [<https://perma.cc/SG5B-24R5>] ("We want to work with law enforcement—that's generally our policy," the company's head legal counsel, Juan Suarez, said Friday. "But we can't tolerate sweeping fishing expeditions. We are very concerned about the financial privacy rights of our customers.").

120. United States' Petition to Enforce Internal Revenue Service Summons at 1–2, United States v. Coinbase, Inc., No. 3:17-cv-01431-JSC (N.D. Cal. Mar. 16, 2017) (Dkt. No. 1).

121. Declaration of David Utzke in Support of Petition to Enforce Internal Revenue Service Summons at 2, United States v. Coinbase, Inc., No. 3:17-cv-01431-JSC (N.D. Cal. Mar. 17, 2017) (Dkt. No. 3).

122. *Id.* at 4, ¶ 13.

123. United States' Response to Coinbase Inc.'s Opposition to Petition to Enforce Internal Revenue Service Summons at 7, United States v. Coinbase, Inc., No. 3:17-cv-01431-JSC (N.D. Cal. Sept. 1, 2017) (Dkt. No. 65).

124. United States' Notice of Narrowed Summons Requests for Enforcement at 2, United States v. Coinbase, Inc., No. 3:17-cv-01431-JSC (N.D. Cal. July 6, 2017) (Dkt. No. 37).

one transaction type (buy, sell, send, or receive) in any one year during the 2013–15 period.”¹²⁵ The narrowed summons did not include users who only bought and held Bitcoin during the 2013–15 period and those for whom Coinbase had filed 1099-Ks—information returns regarding transactions settled through third-party payment networks which are required to be filed where the total amount of the transactions exceeds \$20,000 and the total number of transactions exceeds 200.¹²⁶ The Service sought account records, records of know-your-customer diligence, all records of account activity, correspondence between Coinbase and the user, periodic statements of account or invoices, and agreements or instructions granting third parties access, control, or transaction approval authority.¹²⁷

Coinbase refused to comply with the narrowed summons and opposed the government’s petition to enforce the John Doe summons.¹²⁸ In its order on the petition to enforce the John Doe summons, the court held that the government had met its minimal burden to show that the narrowed summons satisfied a legitimate investigative purpose, but reduced the scope of the records covered to those which it considered relevant to the threshold question of whether there was taxable gain in Bitcoin transactions. Thus, the court granted the petition to enforce the summons with respect to limited information regarding the taxpayers, records of account activity, and all periodic statements of account. Finally, the court concluded that Coinbase had failed to meet their heavy burden to show an abuse of process on the Service’s part.¹²⁹

The conclusion of the litigation regarding the Service’s John Doe summons on Coinbase is not surprising. The IRS demonstrated that relatively few taxpayers had properly accounted for Bitcoin transactions in 2013 to 2015, and so the IRS used a traditional, court-sanctioned method to gather more information regarding noncompliant taxpayers from the largest domestic digital currency exchange. Though Coinbase and others argued the summons was overbroad, the Service subsequently limited it to cases of material

125. *Id.* at 2, ¶ 2.

126. 26 U.S.C. § 6050W(e) (2012).

127. United States’ Notice of Narrowed Summons Requests for Enforcement, *supra* note 124, at 2.

128. Respondent Coinbase, Inc.’s Opposition to Petition to Enforce Internal Revenue Service Summons at 1, *United States v. Coinbase, Inc.*, No. 3:17-cv-01431-JSC (N.D. Cal. July 27, 2017) (Dkt. No. 46). Another party, with the court’s permission, anonymously opposed the petition to enforce. Intervenor John Doe 4’s Opposition to Petition to Enforce Internal Revenue Service Summons, *United States v. Coinbase, Inc.*, No. 3:17-cv-01431-JSC (N.D. Cal. July 27, 2017) (Dkt. No. 44). Three organizations, the Competitive Enterprise Institute, the Coin Center, and the Digital Currency and Ledger Defense Coalition, filed *amici* briefs in opposition to the Service’s petition to enforce the John Doe summons. *Motions to File Amicus Curiae Briefs, United States v. Coinbase, Inc.*, No. 3:17-cv-01431-JSC (N.D. Cal. Aug. 3, 2017) (Dkt. Nos. 50, 52, and 54).

129. Order re Petition to Enforce IRS Summons at 13–14, *United States v. Coinbase, Inc.*, No. 3:17-cv-01431-JSC (N.D. Cal. Nov. 28, 2017) (Dkt. No. 78).

noncompliance about which it had no information, and the court limited the precise records to be delivered based on relevance. In this way, Coinbase did not have to divulge information about all or most customers during 2013 to 2015 and could respectably maintain the position that it sought to ensure client privacy and, to a limited extent, succeeded in doing so. In short, the IRS got information regarding significant potential tax cheats, and Coinbase saved face, in part, regarding privacy; Coinbase was not legally compelled to be transparent to tax authorities.

Now, the IRS is using data from the summons to direct enforcement actions.¹³⁰ The Service has sent letters to taxpayers suspected of not properly reporting cryptocurrency transactions.¹³¹ The letter informs taxpayers they may be subject to civil or criminal enforcement actions if they do not accurately report their cryptocurrency transactions.¹³²

The Coinbase case demonstrates that commercial endeavors have resulted in an infrastructure around the Bitcoin network which can facilitate IRS enforcement actions. The race, unsuccessful thus far, to create a Bitcoin exchange-traded fund offers another view of the way in which commercial efforts around the Bitcoin network indirectly facilitate the growing regulability of Bitcoin by tax authorities.

C. *Emerging Intermediaries*

1. The Bitcoin Over-the-Counter Market and a Proposed Bitcoin ETF

The development of a Bitcoin exchange-traded fund (“ETF”) offers another example of commercial efforts that might result in a repository of relevant transaction information regarding markets in Bitcoin—information upon which tax authorities might rely. An ETF allows investors to enter and exit positions promptly throughout the trading day and to do so at little cost.¹³³ ETFs offer “seemingly endless combinations of asset classes, investment strategies, and long, short, and inverse exposures.”¹³⁴

130. Allyson Versprille, *IRS Targets Crypto Users Who May Have Misreported Transactions*, BLOOMBERG L. NEWS (July 17, 2019, 5:07 PM), <https://news.bloombergtax.com/daily-tax-report/irs-targets-crypto-users-who-may-have-misreported-transactions> [https://perma.cc/KQ8N-3JBY] (“IRS officials have recently said they’re using data from the summons to direct the agency’s enforcement actions.”).

131. *Id.*

132. *Id.*

133. Henry T.C. Hu & John D. Morley, *A Regulatory Framework for Exchange-Traded Funds*, 91 S. CAL. L. REV. 839, 851 (2018) (“ETFs allow investors not only to enter and exit positions nearly instantaneously throughout the trading day, but, critically, to also do so at little cost—that is, at a trading price nearly equal to the NAV of the shares.”).

134. *Id.*

Multiple parties seek to deliver the first Bitcoin ETF. In 2016, one US equities exchange—the Bats BZX Exchange¹³⁵—sought to list an exchange-traded fund consisting of shares of the Winklevoss Bitcoin Trust.¹³⁶ The SEC rejected the Bats BZX Exchange’s application to list shares of the Winklevoss Bitcoin Trust because of, in short, the alleged potential for fraud and manipulation in Bitcoin markets on digital asset exchanges.¹³⁷ More precisely, the SEC determined that the exchange had not met its burden to show the proposal was consistent with the requirement under Exchange Act Section 6(b)(5) that the rules of a national securities exchange be designed “to prevent fraudulent and manipulative acts and practices” and “to protect investors and the public interest.”¹³⁸

Multiple exchanges have sought to list Bitcoin ETFs, including ones which short Bitcoin, but as of this writing, no exchange has yet secured the SEC’s approval. For example, in August of 2018, the SEC rejected proposals from NYSE Arca and Cboe to list Bitcoin exchange-traded funds proposed by ProShares,¹³⁹ Direxion,¹⁴⁰ and Granite Shares¹⁴¹ in a staff decision; two days later, the SEC stayed those rejections pending a review by the full commission.¹⁴²

A recent proposal for a Bitcoin ETF, however, offers a view of how commercial efforts might increasingly expose Bitcoin markets to regulatory oversight. One exchange—Cboe—has proposed to list SolidX Bitcoin Shares issued by the VanEck SolidX Bitcoin Trust. Though Cboe’s joint proposal with VanEck and SolidX was withdrawn from consideration in January of 2019 due to the government shutdown, the parties then resubmitted their joint proposal in

135. CBOE acquired Bats Global Markets in 2017. Robert Reed, *CBOE Reaches for New Heights with \$3.4 Billion Deal for Bats Global Markets*, CHI. TRIB. (Mar. 1, 2017, 2:56 PM), <https://www.chicagotribune.com/business/ct-cboe-bats-merger-robert-reed-0302-biz-20170301-column.html> [<https://perma.cc/8CBB-W5EY>].

136. Self-Regulatory Organizations, Securities and Exchange Commission Release No. 34-83723 at 1 (July 26, 2018), <https://www.sec.gov/rules/other/2018/34-83723.pdf> [<https://perma.cc/J9RQ-SGAC>] [hereinafter Winklevoss ETF Rejection].

137. *Id.* at 11–12.

138. *Id.* at 1–6.

139. Self-Regulatory Organizations, Securities and Exchange Commission Release No. 34-83904 at 1, 26 (Aug. 22, 2018), <https://www.sec.gov/rules/sro/nysearca/2018/34-83904.pdf> [<https://perma.cc/9USN-RC8Y>].

140. Self-Regulatory Organizations, Securities and Exchange Commission Release No. 34-83912 at 1, 24 (Aug. 22, 2018), <https://www.sec.gov/rules/sro/nysearca/2018/34-83912.pdf> [<https://perma.cc/UN3S-WVQ3>].

141. Self-Regulatory Organizations, Securities and Exchange Commission Release No. 34-83913 at 1, 33 (Aug. 22, 2018), <https://www.sec.gov/rules/sro/cboebzx/2018/34-83913.pdf> [<https://perma.cc/ELV4-5BX9>].

142. Tom Zanki, *SEC to Reconsider Staff’s Rejection of 9 Bitcoin ETFs*, LAW360 (August 24, 2018), <https://www.law360.com/Articles/1076630/sec-to-reconsider-staff-s-rejection-of-9-bitcoin-etfs> [<https://perma.cc/53Y7-LPV5>].

substantially similar form.¹⁴³ Cboe again withdrew its proposal in September of 2019, but continues to work with regulators and market participants to progress towards a Bitcoin ETF.¹⁴⁴

Cboe's joint proposal reflected, understandably, a Bitcoin ETF design responsive to the SEC's concerns set forth in the Winklevoss ETF Rejection.¹⁴⁵ Cboe's proposal eschewed, to the extent possible, reliance on digital asset exchanges, about whose manipulation the SEC was concerned.¹⁴⁶ Instead, the ETF would have principally relied on the over-the-counter market for Bitcoin.

The large over-the-counter market in Bitcoin represents twenty-five to fifty percent of the volume of Bitcoin traded in USD on USD-denominated Bitcoin exchanges.¹⁴⁷ The application for the VanEck SolidX Bitcoin ETF describes the over-the-counter market in Bitcoin as one conducted on a principal-to-principal basis without a formal structure or open-outcry meeting place.¹⁴⁸ Parties who engage in over-the-counter transactions will agree upon a price, often via phone or email, and then enter into transactions.¹⁴⁹ The trust that would purchase Bitcoin on behalf of the VanEck SolidX Bitcoin ETF intended to effect over-the-counter Bitcoin transactions with well-established institutions, who would be subject to the VanEck SolidX Bitcoin Trust's anti-money laundering and know-your-customer compliance procedures.¹⁵⁰ The parties behind the VanEck SolidX Bitcoin ETF contended that such principal-to-principal trading would better resist manipulation in comparison to digital asset exchanges, and the parties specified additional procedures that would minimize the possibility of manipulation of the price of Bitcoin.¹⁵¹

The parties seeking the approval of a Bitcoin ETF might be thought of as a different type of innovator in Bitcoin's ecosystem. Their innovation is not

143. Nikhilesh De, *CBOE Resubmits the VanEck/SolidX Bitcoin ETF Proposal for SEC Approval*, COINDESK (Jan. 31, 2019), <https://www.coindesk.com/CBOE-re-files-vaneck-solidx-bitcoin-etf-proposal> [<https://perma.cc/7UQV-5K68?type=image>].

144. Joanna Ossinger, *Bitcoin ETF Proposal to SEC Withdrew by Cboe, VanEck SolidX*, BLOOMBERG (Sept. 17, 2019), <https://www.bloomberg.com/news/articles/2019-09-18/cboe-withdraws-proposal-to-sec-on-vaneck-solidx-bitcoin-fund> [<https://perma.cc/CP4F-E6M7>].

145. See Self-Regulatory Organizations, Securities and Exchange Commission Release No. 34-83520 at 51 (June 26, 2018), <https://www.sec.gov/rules/sro/cboebzx/2018/34-83520.pdf> [<https://perma.cc/PNF6-SGJQ>]; Self-Regulatory Organizations, Securities and Exchange Commission Release No. 34-85119 at 5–6 (Feb. 13, 2019), <https://www.sec.gov/rules/sro/CBOEbzx/2019/34-85119.pdf> [<https://perma.cc/Q4BL-X93K>]; Zanki, *supra* note 142 (“The fund’s creators have sought to address SEC concerns about the danger such ETFs pose to retail investors, including setting an estimated \$200,000 share price in order to limit appeal to institutional investors.”).

146. Securities and Exchange Commission Release No. 34-85119, *supra* note 145, at 5.

147. *Id.* at 18.

148. *Id.*

149. *Id.*

150. *Id.*

151. Securities and Exchange Commission Release No. 34-85119, *supra* note 145, at 20..

technological in character, but constitutes a commercial advance that renders a technology more usable; to succeed, their innovation must respond to and effectively address iterations of regulatory rejections and hurdles. The competition to deliver a Bitcoin exchange-traded fund is based on the proposition that a broader set of institutional and retail investors are interested in exposure to Bitcoin, but opt not to hold Bitcoin directly or transact via digital asset exchanges because of investment rules, lack of technological savvy, risk, or other reasons. Notably, the VanEck SolidX Bitcoin ETF would have insured its holdings and followed best practices regarding storage of Bitcoin; thus, as VanEck has argued, investors may have been interested in the VanEck SolidX Bitcoin ETF as a secure, insured way to gain exposure to Bitcoin, some of the attractions of which include its role as diversification investment that acts as a hedge against systemic risk¹⁵² or its underlying blockchain technology.

Though this ETF proposal has been withdrawn as of the time of this writing, it illustrates a commercial trajectory which will shed light on Bitcoin transactions. This development would create, as did the proliferation of digital asset exchanges, a potential repository of relevant transaction information regarding markets in Bitcoin—information upon which tax authorities might rely. Those who invest in such a Bitcoin ETF would, of course, be subject to tax reporting in the same way as others who invest in ETFs. It is more noteworthy that the VanEck SolidX Bitcoin ETF would have ordered the over-the-counter market and made it more regulable; the VanEck SolidX Bitcoin ETF would have made it easier for government to know the identities of those in some significant part of the over-the-counter market who have transacted directly on the Bitcoin network and what they are doing or have done.

2. Bakkt

A project that aims to serve institutions with an infrastructure for digital assets offers another example of the emergence of intermediaries that may facilitate tax compliance. In August of 2018, Inter-Continental Exchange, a large operator of global exchanges including the New York Stock Exchange, announced plans to form a company—Bakkt—that would offer a regulated platform for institutions and consumers to buy, sell, store, and spend digital assets on a global network.¹⁵³

Bakkt plans to offer all aspects of a futures market, including physical delivery and warehousing of Bitcoin, market surveillance, reporting, and

152. Letter from Jan F. van Eck, President and CEO, Van Eck Associates Corporation, to Dalia Blass, Director, Division of Investment Management, United States Securities and Exchange Commission (July 20, 2018), <https://www.sec.gov/divisions/investment/van-eck-associates-innovation-cryptocurrency.pdf> [<https://perma.cc/D2A4-AH5W>].

153. Press Release, Intercontinental Exchange, Intercontinental Exchange Announces Bakkt, A Global Platform and Ecosystem for Digital Assets (Aug. 3, 2018), <https://ir.theice.com/press/press-releases/all-categories/2018/08-03-2018-133022149> [<https://perma.cc/2Y6T-QPKL>].

consistent standards for compliance with anti-money laundering and know-your-customer rules.¹⁵⁴ Bakkt also purports to offer new and higher security standards. Bakkt had been in development for fourteen months before public announcement of it in August of 2018.¹⁵⁵ The announcement indicated Bakkt would partner with Starbucks, Microsoft, BCG, and others on its payment platform; though Starbucks will not accept Bitcoin, the Bakkt platform will enable customers to convert digital assets to USD for use at Starbucks.¹⁵⁶

Bakkt attempts to address the requirements of regulated institutions in using digital assets.¹⁵⁷ Despite or perhaps because of Bitcoin's decentralization, Bakkt purports to bring a secure central infrastructure to Bitcoin with the sort of regulatory compliance necessary for the trust of large institutions.¹⁵⁸ In its spokesperson's words, Bakkt seeks to meet the connectivity and participation requirements of large financial institutions.¹⁵⁹ Bakkt aims to remedy what it considers the flawed state of the Bitcoin market and facilitate trusted price formation—a fundamental part of advancing digital currency markets in its view.¹⁶⁰

For Bakkt to function on the institutional scale that its founders envision, it must transact at a much faster pace than the seven transactions per second permitted by the base layer of the Bitcoin network.¹⁶¹ If Bakkt becomes the clearing house that it imagines, however, it can keep track of millions of transactions every day within the Bakkt ecosystem.¹⁶² It can keep a ledger of offsetting Bitcoin debits and credits, and only needs to broadcast to the wider Bitcoin network payments coming into or exiting Bakkt's warehouse.¹⁶³

Whether or not Bakkt meets with success, it is another example of the different kinds of intermediaries emerging in this space which can facilitate tax

154. *Id.*

155. Shawn Tully, *The NYSE's Owner Wants to Bring Bitcoin to Your 401(k). Are Crypto Credit Cards Next?*, FORTUNE (Aug. 3, 2018), <http://fortune.com/longform/nyse-owner-bitcoin-exchange-startup/>.

156. Olivia Capozzalo, *'No Coffee for Bitcoin,' Starbucks Clarifies as Media Misrepresent Its New Crypto Venture*, COINDESK (Aug. 5, 2018), <https://cointelegraph.com/news/no-coffee-for-bitcoin-starbucks-clarifies-as-media-misrepresent-its-new-crypto-venture> [<https://perma.cc/U3EL-QQR6>].

157. Kelly Loeffler, *What Bakkt Aims to Solve as a First Step*, BAKKT BLOG (Sept. 18, 2018), <https://medium.com/bakkt-blog/what-bakkt-aims-to-solve-as-a-first-step-afa7c56b10d7> [<https://perma.cc/JM3T-BH55>].

158. *Id.*

159. *Id.*

160. Kelly Loeffler, *An Evolving Market*, BAKKT BLOG (Aug. 20, 2018), <https://medium.com/bakkt-blog/https-medium-com-kellyloeffler-price-discovery-f9c77885383> [<https://perma.cc/38MJ-TVHM>].

161. Tully, *supra* note 155.

162. *Id.*

163. *Id.*

compliance. It, like Coinbase or a Bitcoin ETF, may become a repository of relevant transaction information that the IRS could pursue with a John Doe summons or through Bakkt's willingness to cooperate with regulatory authorities. Importantly, part of the way Bakkt contributes to the broader Bitcoin ecosystem involves, perhaps obviously, more than commercial, legal, or regulatory efforts. To the extent it operates a second-layer ledger, it can enable much greater transaction speeds than permitted by the base layer of the Bitcoin network; in this way, Bakkt makes a technical contribution that very approximately resembles the concept behind the lightning network.

3. The Lightning Network

The lightning network highlights the ways in which resort to networks or intermediaries that operate with Bitcoin's protocol is, in some sense, a technical necessity as more users attempt to transact in Bitcoin. Bitcoin's base layer does not permit a high number of transactions per second as a technical matter.¹⁶⁴ For that reason, Joseph Poon and Thaddeus Dryja proposed the lightning network in 2016.¹⁶⁵

The lightning network constitutes a second layer payment protocol that operates on top of the Bitcoin network.¹⁶⁶ It would enable higher transaction throughput, and consists of a network of peer-to-peer, bidirectional payment channels in which transfers are made off of the underlying blockchain in Bitcoin.¹⁶⁷ Poon and Dryja describe the network as follows:

Micropayment channels create a relationship between two parties to perpetually update balances, deferring what is broadcast to the blockchain in a single transaction netting out the total balance between those two parties. This permits the financial relationships between two parties to be trustlessly deferred to a later date, without risk of counterparty default. Micropayment channels use real bitcoin transactions, only electing to defer the broadcast to the blockchain in such a way that both parties can guarantee their current balance on the blockchain; this is not a trusted overlay network—payments in micropayment channels are real bitcoin communicated and exchanged off-chain.¹⁶⁸

Multiple parties are currently pursuing this idea, and this development would enable a significantly higher number of transactions per second than the base layer of the Bitcoin network currently allows.¹⁶⁹

164. See GERARD, *supra* note 59, at 69; Croman et al., *supra* note 59, at 108.

165. Joseph Poon & Thaddeus Dryja, *The Bitcoin Lightning Network: Scalable Off-Chain Instant Payments*, LIGHTNING NETWORK 1 (Jan. 14, 2016), <https://lightning.network/lightning-network-paper.pdf> [<https://perma.cc/U4GK-DNSK>]

166. *Id.* at 4.

167. *Id.* at 7.

168. *Id.* at 4.

169. See, e.g., Shirza Jagati, *Bitcoin Lightning Network Beta is Now Live*, CRYPTOSLATE (Mar. 16, 2018), <https://cryptoslate.com/bitcoin-lightning-network-beta-now-live/> [<https://perma.cc/>]

D. *Effect of Intermediaries on Tax Compliance*

It is understandable that early scholars might speculate upon the possibilities of tax evasion when examining the pseudonymous, decentralized Bitcoin network. That technical architecture certainly matters, and Lessig reminds us that four modalities of regulation, among other potential modalities, operate together: law, norms, markets, and architecture.¹⁷⁰ By architecture, Lessig means structures of social life, whether made or found, which enable or constrain behavior.¹⁷¹ In the present context, architecture refers to the structures, whether virtual or physical, which shape and guide how an individual interacts with Bitcoin. When it came about, Bitcoin served as a novel architecture which enabled a kind of behavior not previously possible; users could pseudonymously transmit value on a peer-to-peer basis. Thus, tax scholars were correct to suspect that Bitcoin might enable tax evasion.¹⁷²

The cases above, however, demonstrate that different kinds of intermediaries and gatekeepers can fill the role of facilitating tax compliance and thereby make this space more regulable by tax authorities. The commercial demands of markets have resulted in the generation of online wallets, digital asset exchanges, and other intermediaries between the Bitcoin protocol and end users; a Bitcoin ETF, a digital asset clearinghouse, and the lightning network are emerging to meet other market demands. Many users, it seems, cede the pseudonymity of operating at the base layer for the convenience of an online wallet or exchange. They might do the same for the transactional speed of the lightning network or for the insurance and risk mitigation which other commercial efforts offer. The John Doe summons on Coinbase shows how the law may effectively operate through these structures to compel tax compliance.

Furthermore, enforcement and norms influence one another in tax compliance.¹⁷³ Though some have argued that enforcement might “crowd out” taxpayers’ intrinsic motivations to comply with the tax code,¹⁷⁴ or be otherwise counterproductive, Leandra Lederman argues that enforcement and a compliance norm need not be inconsistent.¹⁷⁵ Specifically, she argues that

cc/D9JK-PFBY] (“Similar to how the Internet is built in layers, Lightning creates an entirely new layer, offering instant, high-volume payments that are denominated in the blockchain’s native currency.”).

170. Lawrence Lessig, *The New Chicago School*, 27 J. LEG. STUD. 661, 664, 667 (1998).

171. *Id.* at 663.

172. Viswanathan, *supra* note 1, at 325; Marian, *Are Cryptocurrencies Tax Havens?*, *supra* note 1, at 38.

173. Leandra Lederman, *The Interplay Between Norms and Enforcement in Tax Compliance*, 64 OHIO ST. L.J. 1453, 1453–54 (2003).

174. Leandra Lederman, *Does Enforcement Reduce Voluntary Tax Compliance?*, 2018 BYU L. REV. 623, 630–46 (2018).

175. Lederman, *supra* note 173, at 1453.

enforcement can buttress norms-based appeals for compliance.¹⁷⁶ She outlines the ways in which there may be a group norm of noncompliance despite a general societal norm of tax compliance in the US.¹⁷⁷ The IRS, she contends, could use enforcement to build a critical mass of compliant taxpayers and thereby influence the taxpaying norms of non-compliant groups.¹⁷⁸

In addition, the development of these intermediaries is significant not only because they allow points of enforcement, but because they could enable comprehensive information reporting, or even withholding someday. The government could use the information for information-return matching, “a highly effective form of audit not captured in audit statistics,”¹⁷⁹ or more traditional enforcement actions.¹⁸⁰ More importantly, information reporting and withholding facilitate voluntary tax compliance, as they constrain the opportunity to evade tax.¹⁸¹ Information reporting alerts the taxpayer that the government is watching.¹⁸² Thus, it is extremely significant that Coinbase is working with the IRS to develop a form of information reporting for cryptocurrency transactions.¹⁸³ In this vein, certain foreign tax authorities are simply requesting transaction information from exchanges.¹⁸⁴

The development of intermediaries in Bitcoin’s ecosystem holds the potential to enable IRS enforcement actions and perhaps, eventually, comprehensive information reporting and withholding. The latter two affect voluntary tax compliance, and enforcement actions can affect norms of compliance. These trajectories of increasing compliance can supplement efforts around Bitcoin’s distinctive and principal characteristic—its blockchain.

176. *Id.*

177. *Id.*

178. *Id.* at 1453–54. Shapiro argues that the IRS should consider the cryptocurrency community as a strategic actor in its enforcement model. Shapiro, *supra* note 80, at 9.

179. Lederman, *supra* note 174, at 647 (“[P]ractically speaking, information-return matching is a highly effective form of audit not captured in audit statistics.”).

180. Leandra Lederman, *Reducing Information Gaps to Reduce the Tax Gap: When is Information Reporting Warranted?*, 78 *FORDHAM L. REV.* 1733, 1738 (2010).

181. Leandra Lederman, *Tax Compliance and the Reformed IRS*, 51 *U. KAN. L. REV.* 971, 974 (2003) (“[S]imple comparison of relatively high rates of voluntary compliance rates with relatively low audit rates and penalties is flawed because it does not account for the role of information reporting and withholding in constraining the opportunity to evade tax.”).

182. Lederman, *supra* note 180, at 1738–39 (“What likely makes information reporting so successful in spurring compliance in the first instance is that . . . the taxpayer is aware that the government is watching.”).

183. Bloomberg Interview with Coinbase CEO and Co-Founder Brian Armstrong at Players Technology Summit, San Francisco, CA (Aug. 14, 2018), <https://www.youtube.com/watch?v=xABO3BKUxG8> [<https://perma.cc/B5P3-SSLQ>].

184. Matt Thompson, *HMRC Asks Cryptocurrency Exchanges for UK Customer Info*, *LAW360* (Aug. 7, 2019), <https://www.law360.com/financial-services-uk/articles/1186075/hmrc-asks-cryptocurrency-exchanges-for-uk-customer-info> [<https://perma.cc/PT4J-GPE9>].

III. BITCOIN'S BLOCKCHAIN AS A TOOL OF TAX COMPLIANCE

Though a significant portion of users increasingly interact or will interact with Bitcoin by way of some of the commercial and/or technical efforts described above, users can, of course, sidestep those intermediaries and transact directly on the Bitcoin network. With respect to those transactions, however, Bitcoin is uniquely regulable for tax purposes: the publicly visible, trustworthy nature of Bitcoin's blockchain allows tax authorities to observe transaction flows, and thus offers authorities a unique window into tax compliance. Bitcoin's publicly visible blockchain is a transactional ledger which functions as a shared truth¹⁸⁵ and cannot be falsified. Unlike cash transactions, which are routinely falsified in tax records,¹⁸⁶ Bitcoin's blockchain consists of the agreed-upon history of transactions rather than a subsequent record of them which is amenable to falsification.

This Part first offers background on blockchain's role as a shared truth. The first section also outlines existing efforts by the IRS to examine Bitcoin's blockchain for tax evasion.¹⁸⁷ The second section offers another proposal by which tax authorities might use blockchain's publicly visible, trustworthy transactional ledger to increase tax compliance: the IRS might offer a reward for technically savvy whistleblowers to scour the blockchain and determine identities that correspond to public Bitcoin addresses at issue.

A. *Blockchain as a Shared Truth*

Blockchain's significance is best understood in the context of a wider deterioration of social trust.¹⁸⁸ Indexes such as the Edelman Trust Barometer which document societal trust have, for the most part, shown a decline of trust for some time, with a recent acceleration in the erosion of trust.¹⁸⁹ Blockchain offers a unique model of trust well-suited to social conditions in which levels of trust are deteriorating;¹⁹⁰ in the context of blockchains, nothing is presumed trustworthy except the product of the network itself.¹⁹¹ Such a trustworthy

185. WERBACH, *supra* note 23, at 28–30.

186. Jay A. Soled, *To Close the Tax Gap, Eliminate Cash*, TAXNOTES, Apr. 23, 2007, at 379 (“Because cash transactions fall below the IRS detection apparatus, they are the single largest contributor to overall tax noncompliance.”).

187. See, e.g., Joseph Cox, *IRS Now Has a Tool to Unmask Bitcoin Tax Cheats*, THE DAILY BEAST (Aug. 22, 2017), <https://www.thedailybeast.com/irs-now-has-a-tool-to-unmask-bitcoin-tax-cheats> [<https://perma.cc/AG9N-G3GA>].

188. WERBACH, *supra* note 23, at 30–31. See also DON TAPSCOTT & ALEX TAPSCOTT, *BLOCKCHAIN REVOLUTION: HOW THE TECHNOLOGY BEHIND BITCOIN IS CHANGING MONEY, BUSINESS, AND THE WORLD* 10–11 (2016).

189. WERBACH, *supra* note 23, at 18.

190. *Id.* at 28–30.

191. *Id.* at 29 (“On a blockchain network, nothing is assumed to be trustworthy . . . except the output of the network itself.”).

transactional record could serve as a useful tool for individuals distrustful of counterparties, traditional intermediaries, or central banks, but also could serve as a helpful tool for governments distrustful of at least some taxpayers.

1. Falsification of Cash Transactions and the Tax Gap

The tax gap—the difference between taxes actually paid and taxes owed—remains a severe problem in the United States.¹⁹² The most recent estimates by the IRS—from 2008 to 2010, which might be yet another indication of how backlogged the agency is—show an average tax gap of \$458 billion annually.¹⁹³

The use of physical currency plays a large part in enabling tax evasion or underreporting.¹⁹⁴ Three scholars who conducted qualitative interviews with cash business owners outline the ways in which they underreport receipts and evade taxes.¹⁹⁵ Academics have even advocated for the elimination of or limitation on the use of cash to reduce tax evasion.¹⁹⁶

In this vein, Alm and Soled describe how electronic payment systems will reduce the ability of taxpayers to hide income:

The use of electronic means of payment will almost certainly reduce the extent of the underground economy because individuals who once routinely hid their transactions via cash will now be stripped of this luxury. Every electronic payment leaves an indelible mark; these “marks” enable IRS auditors to accurately access income flows. To minimize their taxable income (e.g., the underreporting gap), taxpayers may continue to overstate their deductions and expenses (for which auditors can demand substantiation), but their income can no longer be readily hidden or camouflaged.¹⁹⁷

Alm and Soled, however, identify the rise of Bitcoin and other forms of virtual currency as examples of how advances in technology may increase the possibility of tax evasion.¹⁹⁸

192. James Alm & Jay A. Soled, *W(h)ither the Tax Gap?*, 92 WASH. L. REV. 521, 522–23 (2017).

193. *Id.* at 523; Internal Revenue Service, *Tax Gap Estimates for Tax Years 2008–2010*, IRS.GOV (Apr. 2016), <https://www.irs.gov/pub/newsroom/tax%20gap%20estimates%20for%202008%20through%202010.pdf> [<https://perma.cc/3H7A-S28F>].

194. See Alm & Soled, *supra* note 192, at 530; Soled, *supra* note 186, at 379; Susan C. Morse et al., *Cash Businesses and Tax Evasion*, 20 STAN. L. & POL’Y REV. 37, 39–40 (2009).

195. Morse et al., *supra* note 193, at 65–67 (“Cash business owners rely on parallel cash economies to underreport receipts and thereby evade income, employment and sales taxes.”).

196. See, e.g., Alm & Soled, *supra* note 192, at 532; Jeffrey H. Kahn & Gregg Polsky, *The End of Cash, the Income Tax, and the Next 100 Years*, 41 FLA. ST. U.L. REV. 159, 161–65 (2013); Lawrence Summers, *Killing This “Bin Laden” Is a Bloodless Victory*, WASH. POST (May 9, 2016), https://www.washingtonpost.com/opinions/killing-this-bin-laden-is-a-no-brainer/2016/05/08/38843682-1515-11e6-aa55-670cabef46e0_story.html [<https://perma.cc/R3EC-GDE9>].

197. Alm & Soled, *supra* note 192, at 532.

198. *Id.* at 563 (“Advances in technology may actually increase the possibility for tax evasion.”).

2. Bitcoin's Blockchain as a Tool

In contrast to the way in which cash transactions enable underreporting, Bitcoin's publicly visible blockchain offers a powerful tool of trustworthy record keeping. First, anyone, including the government, may examine the transaction history of Bitcoin. Though some perceive Bitcoin as an anonymous payment network, the blockchain permanently and publicly stores all transactions.¹⁹⁹ This amounts to an extraordinary level of transparency.²⁰⁰

Second, that ledger cannot be falsified. Cash transactions may have a subsequent record susceptible to falsification, if a record exists at all. Electronic transactions that rely on credit or debit cards fare better, though even in those cases falsification is possible if one is relying on a business's records. The OECD documented the possibility of electronic suppression of credit and debit sales in a 2013 report.²⁰¹

Bitcoin's blockchain, on the other hand, does not merely consist of a record of transactions; the blockchain consists of actual transactions.²⁰² At the beginning of his book *How to Do Things With Words*, J.L. Austin draws a distinction between descriptive and performative language.²⁰³ Performative language effects actions in the world, the paradigmatic example of which is the "I do" at a wedding; it serves to seal the union. Descriptive language, on the other hand, contains statements that might be true or false.²⁰⁴ The IRS can rely on the blockchain because it is the performative script by which value has been transferred. If a recipient has, in fact, received Bitcoin, the transaction must be in the blockchain; he or she must rely on the blockchain as much as the IRS can rely on it.

199. *Protect Your Privacy*, BITCOIN.ORG, <https://bitcoin.org/en/protect-your-privacy> [<https://perma.cc/633T-L2GK>] (last visited Aug. 7, 2019) ("All Bitcoin transactions are public, traceable, and permanently stored in the Bitcoin network.").

200. *Id.* ("Bitcoin works with an unprecedented level of transparency that most people are not used to dealing with.").

201. *Electronic Sales Suppression: A Threat to Tax Revenues*, OECD 13 (2013), <https://www.oecd.org/ctp/crime/electronic-sales-suppression-a-threat-to-tax-revenues.htm> [<https://perma.cc/VXD8-GMR7>] ("However, recently evidence of the suppression of credit and debit sales has also been found.").

202. Luke Fortney, *Blockchain Explained*, INVESTOPEDIA (June 25, 2019), <https://www.investopedia.com/terms/b/blockchain.asp> [<https://perma.cc/2M2C-EK6Z>]. Also, eventual tax reporting in Bitcoin should involve relatively minimal marginal costs. Parties must render certain script governing their transaction intelligible to the Service but need not create a record out of whole cloth.

203. J.L. AUSTIN, *HOW TO DO THINGS WITH WORDS* 6–7 (1975).

204. *Id.* at 6.

3. Unraveling Pseudonymity

The IRS will not be able to take advantage of the trustworthy, publicly visible nature of Bitcoin's blockchain if it cannot crack the system's pseudonymous public keys. Recent efforts suggest the IRS has begun to find success.

Some exchanges or services might make public keys visible for transfers, payments, or donations. For example, Bitcoin Core, the developers who maintain the reference implementation of Bitcoin's software, maintain a single, visible public key for donations as of the time of this writing.²⁰⁵ In a leaked IRS presentation on how the agency's criminal investigators might find tax evasion in Bitcoin, James Daniels of IRS Cyber Crimes notes that even in the case where the target of the investigation does not use a third-party exchange, he or she may have a publicly available Bitcoin address, such as one posted on social media.²⁰⁶

A virtually infinite number of Bitcoin addresses can be generated, however. For example, the Wikileaks donation page contains a refresh button next to the donation address, which replaces the address with a freshly generated address.²⁰⁷ Similarly, if a user refreshes the page or visits it later after closing it, he or she will encounter a new address.²⁰⁸

But even Wikileaks's donations can potentially be linked.²⁰⁹ If Wikileaks paid one Bitcoin for the creation of a new website, it has to create a single transaction likely having inputs at multiple addresses.²¹⁰ If we imagine donations of 0.1 Bitcoin each, then Wikileaks must create a transaction with inputs at ten different address, and thus has revealed that these ten addresses are controlled by a single entity.²¹¹

A set of computer scientists attempting to understand the Bitcoin economy used the "idiom of use" above and others to cluster Bitcoin addresses.²¹² They write,

[U]sing a small number of transactions labeled through our own empirical interactions with various services, we identify major institutions and the

205. *Bitcoin Core*, BITCOIN.ORG, <https://bitcoin.org/en/bitcoin-core/> [<https://perma.cc/5K8Q-NM6R>] (last visited Aug. 5, 2019).

206. Presentation of James Daniels, Internal Revenue Service- Criminal Investigation, Cyber Crimes 97 (undated) (released July 12, 2019), <https://www.coindesk.com/irs-confirms-it-trained-staff-on-finding-crypto-wallets> [<https://perma.cc/94KV-HKJ5?type=image>] (“[T]he Subject’s Bitcoin Addresses may be publicly available and tied to the Subject, such as through posts by the Subject on his Facebook page or Twitter account.”).

207. NARAYANAN ET AL., *supra* note 7, at 143.

208. *Id.*

209. *Id.* at 144.

210. *Id.* at 145.

211. *Id.*

212. NARAYANAN ET AL., *supra* note 7, at 146; Sarah Meiklejohn et al., *A Fistful of Bitcoins: Characterizing Payments Among Men With No Names*, in PROCEEDINGS OF THE 13TH ACM INTERNET MEASUREMENT CONFERENCE 127, 138 (2013), <https://cseweb.ucsd.edu/~smeiklejohn/files/imc13.pdf> [<https://perma.cc/6RZW-4ZHL>].

interactions between them. Even our relatively small experiment demonstrates that this approach can shed considerable light on the structure of the Bitcoin economy, how it is used, and those organizations who are party to it.²¹³

Actual pseudonymity achieved by users falls short of the potential pseudonymity available in the Bitcoin protocol, and significant effort would be required to achieve that potential.²¹⁴

The government has made inroads in this vein. At a panel on cryptocurrencies at the Milken Institute's 2018 Global Conference, Brent McIntosh, General Counsel at the Department of the Treasury, smilingly noted that cryptocurrency presents both risks and opportunities from a compliance perspective;²¹⁵ presumably the publicly visible blockchain constitutes the principal opportunity from a compliance perspective.

More concretely, in 2017 the Service engaged the company Chainalysis to locate potential tax evasion or tax fraud.²¹⁶ Chainalysis offers a tool to analyze and track Bitcoin transactions based on the blockchain.²¹⁷ Its software can follow Bitcoin as it moves from and/or among wallets and exchanges.²¹⁸

The IRS presentation on how the agency's criminal investigators might find tax evasion in Bitcoin shows how the IRS relies on Bitcoin's blockchain. It advises criminal investigators to use a web tool that provides information about Bitcoin blocks, addresses, and transactions after determination of a Bitcoin address. The presentation describes how investigators can determine transaction value and transaction times.²¹⁹ The presentation goes on to note different companies whose software can accurately trace the history of Bitcoin payments and wallets, such as Chainalysis and others.²²⁰

213. Meiklejohn et al., *supra* note 212, at 138.

214. *Id.* at 138–39; *see also* Yee, *supra* note 20, at 4 (“Using data mining approaches, value flows through the system can be reconstructed and thus regulative policies enforced.”).

215. Bill Barhydt et al., Speakers at the Global Conference 2018, *Cryptocurrencies: Irrational Exuberance or Brave New World?*, MILKEN INST., (May 2, 2018), <http://archive.milkeninstitute.org/videos/view/cryptocurrencies-irrational-exuberance-or-brave-new-world?BackURL=%2Fvideos%2F>.

216. Cox, *supra* note 187.

217. CHAINALYSIS, <https://www.chainalysis.com/> [<https://perma.cc/NNJ8-2ZS8>] (last visited Aug. 5, 2019). Similarly, CipherTrace, a start-up founded in 2015, positions itself as a blockchain forensics team and has developed cryptocurrency tracing capabilities. CIPHERTRACE, <https://ciphertrace.com/about-us/> [<https://perma.cc/25VN-SDUR>] (last visited Aug. 5, 2019).

218. Cox, *supra* note 187 (“The software can follow bitcoin as it moves from one wallet to another, and eventually to an exchange where the bitcoin user will likely cash out into dollars or another currency.”).

219. Presentation by James Daniels, *supra* note 206, at 98–101 (“Once a Bitcoin Address is identified, it can be looked up on a Bitcoin Block Chain Explorer to find information such as value, transaction times, transaction locations, which may help in corroborating information, identifying additional addresses, or assist [sic] in locating the Subject.”).

220. *Id.* at 103.

B. *Adaptation of IRS Whistleblower Program*

The IRS has had a whistleblower program for many decades, and Bitcoin's publicly visible blockchain presents a unique arena to crowdsource tax compliance efforts. The community of developers around blockchain often conduct "bug bounties" to encourage a large and diverse population of programmers to identify security vulnerabilities.²²¹ Bitcoin's blockchain presents a somewhat similar opportunity for the IRS to encourage a large population to help identify tax noncompliance.

1. Background on Bug Bounties

Bug bounty programs offer money, recognition, and other rewards to hackers who identify security vulnerabilities in software.²²² Bug bounties are particularly well-suited to blockchains, and specifically certain autonomous contracts which run on blockchains, in light of heightened security vulnerability, unique economic properties, and other considerations.²²³ Bug bounties are compatible with blockchains partly because of the economic value of cryptocurrencies and smart contracts, which facilitates principled bounty-setting, and the transparency of bounties in the context of smart contracts.²²⁴

There are at least two benefits of bug bounty programs. First, a large and diverse population of hackers examines the software at issue for security vulnerabilities.²²⁵ Second, these public programs can signal an organization's commitment to continual security improvement to third parties.²²⁶

To achieve and maintain a critical mass of hackers who participate in bug bounties, many bug bounty platforms rely on techniques of gamification.²²⁷

221. See, e.g., ETHEREUM BOUNTY PROGRAM, <https://bounty.ethereum.org/> [<https://perma.cc/2ZXM-UHW4>] (last visited Aug. 5, 2019); BUG BOUNTY, KRAKEN <https://www.kraken.com/en-us/features/security/bug-bounty> [<https://perma.cc/S4E3-DA5D>] (last visited Aug. 5, 2019).

222. Aron Laszka et al., *Banishing Misaligned Incentives for Validating Reports in Bug-Bounty Platforms*, in COMPUTER SECURITY—ESORICS 2016: 21ST EUROPEAN SYMPOSIUM ON RESEARCH IN COMPUTER SECURITY, HERAKLION, GREECE, SEPTEMBER 26–30, 2016, PROCEEDINGS, PART II 161, 161–78 (2016), <http://aronlaszka.com/papers/laszka2016banish.pdf> [<https://perma.cc/F6HC-W43T>] ("White hat hackers are encouraged to submit reports for potential vulnerabilities, which after validation by the organization will be rewarded, for example, with monetary bounties.").

223. Lorenz Breidenbach et al., *Enter the Hydra: Towards Principled Bug Bounties and Exploit-Resistant Smart Contracts*, in PROCEEDINGS OF THE 27TH USENIX SECURITY SYMPOSIUM 1335, 1336 (Aug. 15–17, 2018), <https://www.usenix.org/system/files/conference/usenixsecurity18/sec18-breidenbach.pdf> [<https://perma.cc/CAD9-3KJ4>].

224. *Id.*

225. Laszka et al., *supra* note 222, at 161.

226. *Id.*

227. Jukka Ruohonen & Luca Allodi, *A Bug Bounty Perspective on the Disclosure of Web Vulnerabilities* 4 (May 24, 2018), <https://arxiv.org/pdf/1805.09850.pdf> [<https://perma.cc/EZS9->

Gamification involves, perhaps obviously, introducing elements of play and gaming into non-game situations;²²⁸ it “blurs the line between work and leisure.”²²⁹

2. The IRS’s Whistleblower Program

The federal government has a long history of paying informants for blowing the whistle on tax evasion.²³⁰ Senator Harry Reid (D-Nev.) spoke against then current formulation of the IRS Whistleblower Program in 1998 and called it the “Award for Rats Program” and the “Snitch Program.”²³¹ Reid backed away from his proposal to eliminate the program, however, and the Senate instead required the Service to study the program.²³² The Service studied the program, and a later 2006 report by the Treasury Inspector General for Tax Administration found that the whistleblower program was more effective on a dollars per hour basis than the Service’s primary method for selecting returns for audit.²³³ This led Congress to expand the IRS Whistleblower Program in 2006.²³⁴

Under the expanded program, the IRS must award payments to whistleblowers under certain conditions,²³⁵ and retains discretion to make awards outside of those conditions.²³⁶ If the IRS proceeds with an administrative or judicial action based on a whistleblower’s information, the whistleblower will receive at least 15% and not more than 30% of the proceeds collected.²³⁷ This depends upon the extent to which the whistleblower “substantially contributed” to the action.²³⁸ If the action applies to an individual, however, the individual’s gross income must exceed \$200,000 and the tax proceeds in dispute must exceed two million dollars.²³⁹ Even if these conditions are not met, however, the IRS

MQS6] (“For achieving and maintaining the critical mass, many bug bounty platforms rely on so-called gamification techniques.”).

228. Miriam A. Cherry, *The Gamification of Work*, 40 HOFSTRA L. REV. 851, 852 (2012) (“In the language of cyberspace, introducing elements of play and gaming into non-game situations is known as the process of ‘gamification.’”).

229. *Id.*

230. Michelle M. Kwon, *Whistling Dixie about the IRS Whistleblower Program Thanks to the IRC Confidentiality Restrictions*, 29 VA. TAX REV. 447, 448–49 (2010) (“The Internal Revenue Service . . . has been authorized for over 140 years to pay awards to individuals who blow the whistle on those who do not pay the taxes they owe.”).

231. *Id.* at 449.

232. *Id.*

233. *Id.*

234. *Id.*

235. 26 U.S.C. § 7623(b)(1) (2019).

236. 26 U.S.C. § 7623(a) (2019).

237. 26 U.S.C. § 7623(b)(1) (2019).

238. *Id.*

239. 26 U.S.C. § 7623(b)(5) (2019).

retains the discretion to make a proportionally smaller award to a whistleblower.²⁴⁰

A prominent recent case of whistleblowing on tax evasion involved the IRS's award in 2012 of \$104 million to former UBS banker Bradley Birkenfeld.²⁴¹ Though Birkenfeld received what is thought to be the largest-ever whistleblower payout, he also served a forty-month sentence for one count of conspiracy to defraud the US.²⁴² Birkenfeld had provided prosecutors with details regarding UBS's efforts to promote tax evasion.²⁴³

3. A Tailored Whistleblowing Program for Bitcoin

Under this proposal, the IRS would periodically publicize lists of Bitcoin payment addresses for which it seeks identities. Players can then compete using technical tools to explore Bitcoin's blockchain²⁴⁴ and/or rely on insider knowledge to determine the identities that correspond to these addresses; players might include the very companies that have developed tools to track Bitcoin based on its blockchain.

a. Mechanics of a Tailored Whistleblower Program

The law and regulations under the IRS Whistleblowing Program provide the Service a framework to disclose information to whistleblowers and relevant transaction thresholds for targeting its efforts. Though tax returns and return information are generally confidential, the statute contains a list of exceptions.²⁴⁵ One exception exists for disclosures pursuant to contracts for equipment or services for purposes of tax administration.²⁴⁶ The Treasury Department issued Regulations in 2011 which made it clear that the legislative exception also allows the disclosure of return information to a whistleblower in connection with a written contract between the IRS and the whistleblower for services relating to the detection of tax violations.²⁴⁷ There are, of course, safeguards for protecting the information and penalties for unauthorized disclosure.²⁴⁸ If the IRS finds the

240. 26 U.S.C. § 7623(a) (2019).

241. Laura Saunders & Robin Sidel, *Whistleblower Gets \$104 Million*, WALL ST. J. (Sept. 11, 2012), <https://www.wsj.com/articles/SB10000872396390444017504577645412614237708> [<https://perma.cc/B5JU-K23L>] (“A former UBS AG banker who helped the U.S. government unleash an international crackdown on tax evasion was awarded \$104 million in what is believed to be the largest-ever whistleblower payout to an individual.”).

242. *Id.*

243. *Id.*

244. *See e.g., supra* note 217.

245. *See* 26 U.S.C. § 6103 (2019).

246. 26 U.S.C. § 6103(n) (2019).

247. Treas. Reg. § 301.6103(n)-2(a)(1) (2018).

248. Treas. Reg. § 301.6103(n)-2(c), (d) (2018).

whistleblower can perform his or her services reasonably by disclosure of only part of the return information, then only that part will be disclosed.²⁴⁹

Part of the attraction of a tailored whistleblower program in this context is that Bitcoin's blockchain offers a great deal of information, which allows the IRS to disclose minimal return information. The IRS can merely separate Bitcoin transactions into two groups: potentially relevant transactions and irrelevant ones, which would include transactions for which tax has been paid, non-taxable foreign transactions, or transactions too small to merit attention. The Bitcoin payment addresses released by the IRS and for which the IRS seeks information could come with contractual terms that meet the regulatory requirements governing disclosures to whistleblowers.²⁵⁰

Furthermore, the two-million-dollar threshold set forth by Congress,²⁵¹ which results in automatic whistleblower payouts,²⁵² provides the Service a starting point for its focus. It can target addresses which engaged in transactions larger than a value of two million dollars on a one-off basis or over the course of a taxable year.

In sum, the IRS can use issue lists of Bitcoin payment addresses for which it seeks identities; players compete to use their tools of choice and/or insider knowledge to determine the identities that correspond to these addresses. Furthermore, the IRS can provide metric-based rankings and constantly updated dashboards for whistleblowers; these techniques of gamification have been effective in the context of bug bounties.²⁵³ Though payouts of whistleblowing might be thought of as reward enough, those rewards are uncertain and come only if, and after, the IRS completes its collection actions. In the meantime, players might compete for points which correspond to transaction size.

b. Benefits of a Tailored Whistleblower Program

There are multiple benefits to a tailored whistleblower program, including its potential to draw a large, diverse pool of potential whistleblowers into the effort, and the IRS's ability to signal its commitment to compliance. A 2006 Treasury Inspector General for Tax Administration report found that the whistleblower program was more effective on a dollars per hour basis than the Service's primary method for selecting returns for audit, and gamification may further enhance effectiveness on a dollars per hour basis in comparison with the Service's primary method for selecting returns for audit.

249. Treas. Reg. § 301.6103(n)-2(b)(2) (2018).

250. See generally Treas. Reg. § 301.6103(n)-2(a)(1) (2018).

251. 26 U.S.C. § 7623(b) (2019).

252. The individual's gross income must also exceed \$200,000; that could easily be the case if the individual sold Bitcoin worth two million dollars or more. 26 U.S.C. § 7623(b)(5)(A) (2019).

253. Ruohonen & Allodi, *supra* note 227, at 4 ("These techniques include metric-based rankings and constantly updated dashboards, badges for most productive hackers, and other commonly used social reputation elements.").

Also, a large pool of potential whistleblowers may not only represent an increasing number of eyeballs on tax evasion in Bitcoin; they might experiment with and generate technical tools which make this process more efficient. Just as a particular framework of competition and incentives has resulted in the technical specialization of miners in Bitcoin,²⁵⁴ perhaps a tailored whistleblower program will result in similar specialization. That could take the form of further research into “idioms of use” in Bitcoin, such as that of Meikeljohn et al., corresponding technical tools like those offered by Chainalysis and CipherTrace, or altogether new technologies.

Second, the IRS can signal its commitment to policing tax compliance. Tax scholars have documented a “chump” effect, according to which nobody wants to pay taxes if others are not.²⁵⁵ To the extent blockchain can enhance transparency around tax compliance, it can thus help buck what might otherwise be a broader cycle of dwindling tax compliance.²⁵⁶

c. Drawbacks of a Tailored Whistleblower Program

There are, however, drawbacks to creating a tailored whistleblower program. First, there would, of course, be some cost to the Service in creating such a program. Furthermore, the IRS may not be technically sophisticated enough to assemble the proposed dashboard. Considering the comparative effectiveness of whistleblowing on a dollars per hour basis,²⁵⁷ and the possibility of contracting the project out, these are not insuperable concerns.

A more serious objection centers around whether such techniques of gamification trivialize what should be a weighty act: turning someone in for tax evasion, which could result in serious penalties, including time in prison. Many people, Senator Harry Reid included,²⁵⁸ might opt not to participate in such a program for ethical or social reasons. The IRS, however, could initiate this

254. NARAYANAN ET AL., *supra* note 7, at 116 (noting that mining today is dominated by application-specific integrated circuits, which “were designed, built, and optimized for the sole purpose of mining bitcoins.”).

255. Dan M. Kahan, *What Do Alternative Sanctions Mean?*, 63 U. CHI. L. REV. 591, 604 (1996) (“Even a strong propensity to obey the law . . . can be undercut by a person’s ‘desire not to be suckered.’”); BRUNO S. FREY & STEPHEN MEIER, PRO-SOCIAL BEHAVIOR IN A NATURAL SETTING, 54 J. OF ECON. BEHAVIOR & ORG. 65, 74 (2004) (“An individual dislikes being a so-called ‘sucker’, i.e. being the only one who contributes to a public good while the others free-ride.”).

256. *See generally* LAWRENCE ZELENAK, LEARNING TO LOVE FORM 1040: TWO CHEERS FOR THE RETURN-BASED MASS INCOME TAX 53–54 (2013).

257. TREASURY INSPECTOR GEN. FOR TAX ADMIN., THE INFORMANTS’ REWARDS PROGRAM NEEDS MORE CENTRALIZED MANAGEMENT OVERSIGHT 4 (2006), <https://www.tax-whistleblower.com/resources/200630092fr.pdf> [<https://perma.cc/3WMK-83MH>] (“The IRS report also found that examinations initiated based on informant information had a higher dollar yield per hour and a lower no-change rate, when compared to returns selected using the IRS’ primary method of selecting returns, the Discriminant Index Function (DIF).”).

258. Kwon, *supra* note 230, at 449.

program with a supplemental voluntary disclosure program—otherwise known as a tax amnesty—which could allow people to come forward and pay back taxes without the risk of criminal prosecution.²⁵⁹

Voluntary disclosure programs are particularly effective when coupled with increased enforcement efforts.²⁶⁰ For example, in 2008, the government sought the names of US clients who opened UBS accounts in Switzerland with a John Doe summons.²⁶¹ Eventually the US and Switzerland agreed to treat the request as one made under the US-Swiss tax treaty, and the government received the names of 4,450 US account-holders.²⁶² Around this time, the IRS announced the 2009 voluntary disclosure program for offshore tax evasion.²⁶³ The government did not disclose the names it earlier received from UBS, and thus, unsurprisingly, many people, without knowing whether their names had already been disclosed per the agreement under the US-Swiss tax treaty, came forward to take advantage of the voluntary disclosure program.²⁶⁴ Here, similarly, the IRS could pursue increased enforcement actions, including novel proposals for ferreting out tax noncompliance in Bitcoin, with a limited tax amnesty.

Bitcoin's blockchain might serve as an important tool for the IRS. If blockchain is a unique model of trust well-suited to social conditions in which levels of trust are deteriorating,²⁶⁵ it may also have a part to play in restoring the trust of ordinary people in the fairness of their tax systems.²⁶⁶ Though it might

259. Shapiro has proposed a voluntary disclosure program to supplement its John Doe summonses in this area. Shapiro, *supra* note 80, at 11–13.

260. Leandra Lederman, *The Use of Voluntary Disclosure Initiatives in the Battle Against Offshore Tax Evasion*, 57 VILL. L. REV. 499, 519 (2012) (“[A]n amnesty offered in conjunction with a transition to increased enforcement of the laws subject to the amnesty may be particularly effective at raising revenue.”).

261. *Id.* at 508–09.

262. *Id.* at 509.

263. *Id.* at 510.

264. The 2009 and 2011 voluntary tax amnesties concerning Americans with accounts at Swiss banks were particularly successful. Jeffrey A. Neiman, *Opting Out: The Solution for the Non-Willful OVDI Taxpayer*, TAXNOTES (Sept. 12, 2011), <https://www.taxnotes.com/tax-notes-federal/compliance/optiming-out-solution-non-willful-ovdi-taxpayer/2011/09/12/qnwg> [<https://perma.cc/H8KL-923X>]. Neiman writes in glowing terms:

Tens of thousands of Americans participated in the programs. The IRS collected billions of dollars in unpaid taxes, interest, and penalties. Undeclared assets have been reported to the IRS and will be taxed for years to come. The landscape in tax enforcement has forever changed, and the Justice Department and IRS have broken the back of bank secrecy and obtained a treasure-trove of information that will provide fodder for criminal and civil investigations for the next 10 years.

Id.

265. WERBACH, *supra* note 23, at 28–31.

266. See generally OECD/G20 BASE EROSION AND PROFIT SHIFTING PROJECT: EXPLANATORY STATEMENT 4 (2015), <http://www.oecd.org/ctp/beps-explanatory-statement-2015.pdf> [<https://perma.cc/Q6LH-SGWV>] (describing “urgent need to restore the trust of ordinary people in the fairness of their tax systems . . .”).

strike some as unrealistic to imagine the IRS using Bitcoin's blockchain in this manner, the IRS's savvy use of technical tools developed for Bitcoin's blockchain²⁶⁷ suggests otherwise. The targeted proposal above lends further credence to the idea of a potentially rich relationship between techniques of governance and blockchain.²⁶⁸

CONCLUSION

This Article argues that Bitcoin is increasingly regulable by tax authorities, contrary to preliminary characterizations by tax scholars and others. First, important commercial and technical intermediaries are emerging. These include digital asset exchanges, online wallets, companies seeking to profit from Bitcoin ETFs, outfits attempting to create centralized infrastructures that cater to regulated institutions, and operators of lightning networks. The case of the John Doe summons on Coinbase demonstrates that these intermediaries can, at least in some instances, facilitate enforcement actions by the IRS. Eventually, these intermediaries could engage in comprehensive information reporting for tax purposes and/or withhold and remit tax payments to the IRS.

Second, the unique architecture of Bitcoin as a publicly visible transactional ledger that, for practical purposes, cannot be falsified makes it unusually regulable by tax authorities. The IRS can observe transaction flows, and it has accordingly used technical tools to track Bitcoin transactions. Furthermore, the IRS could spur companies and individuals to exert efforts in this vein with a tailored whistleblower program; it could periodically release lists of public Bitcoin addresses at issue with a dashboard that tracks whistleblowers' contributions to uncovering the identities connected to these addresses. These contributions may eventually materialize into monetary rewards under the IRS's existing whistleblower program.

267. See Presentation by James Daniels, *supra* note 205, at 97.

268. See generally WERBACH, *supra* note 23; DE FILIPPI & WRIGHT, *supra* note 18; Nathan Heller, *Estonia, The Digital Republic*, THE NEW YORKER (Dec. 11, 2017), <https://www.newyorker.com/magazine/2017/12/18/estonia-the-digital-republic> [https://perma.cc/JSU3-54ZX].