New Coins on the Block: How Should Cryptocurrency Hard Forks be Taxed?

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I.   INTRODUCTION

Cryptocurrencies are an important innovation in a changing financial landscape.[1] These digital currencies, which consist of cryptographically secured transactions on a publicly distributed ledger,[2] can be used, among other things, to buy and sell goods and services, send remittances, and store wealth.[3] Bitcoin, the first successful cryptocurrency and the most widely recognized,[4] has allowed its owners to store wealth outside the fiat money system,[5] earning it a reputation as "digital gold."[6] Against the backdrop of the COVID-19 global pandemic and unprecedented governmental economic stimulus, one unit of bitcoin[7] soared in value from approximately $8,500 in late February 2020 to over $60,000 one year later.[8] Major corporations and institutions have begun demonstrating serious interest, as exemplified by Tesla's $1.5 billion bitcoin purchase in February 2021.[9]

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1.   *See* José Rafael Peña Gholam, *Crypto Remittances Prove Their Worth in Latin America*, COINDESK (Dec. 9, 2020), https://www.coindesk.com/crypto-remittances-latin-america-geopolitical-tension; Moe Adham, Forbes Finance Council, *Is Bitcoin a Better Store of Value than Gold?*, FORBES (Dec. 10, 2019), https://www.forbes.com/sites/forbesfinancecouncil/2019/12/10/is-bitcoin-a-better-store-of-value-than-gold [https://perma.cc/HMG7-AE7P]; Shalini Nagarajan, *BlackRock has Joined the Bitcoin Business - The World's Largest Asset Manager has said Two of its Funds Can Now Invest in the Cryptocurrency*, MKTS. INSIDER (Jan. 21, 2021), https://markets.businessinsider.com/currencies/news/blackrock-adds-bitcoin-futures-investing-opportunity-two-funds-cryptocurrency-2021-1-1029989282 [https://perma.cc/S87D-HZ6Y].

2.   Rev. Rul. 2019-24, 2019-44 I.R.B. 1004 (2019). The Internal Revenue Service uses the term "virtual currency" rather than "digital currency."

3.   Peña Gholam, *supra* note 1; Adham, *supra* note 1.

4.   Eswar Prasad, *Five Myths About Cryptocurrency*, BROOKINGS (May 24, 2021), https://www.brookings.edu/opinions/five-myths-about-cryptocurrency [https://perma.cc/P72Y-5KPG].

5.   Fiat money is government-issued currency, such as the U.S. dollar.

6.   *See, e.g.*, Panos Mourdoukoutas, *Bitcoin Is the New Gold: Study,* FORBES (Jan. 15, 2020), https://www.forbes.com/sites/panosmourdoukoutas/2020/01/15/bitcoin-is-the-new-gold-study [https://perma.cc/4BUS-VEJY] (citing Konstantinos Gkillas & François Longin, *Is Bitcoin the New Digital Gold? Evidence from Extreme Price Movements in Financial Markets*, Jan. 18, 2019, https://ssrn.com/abstract=3245571).

7.   This Note uses "Bitcoin" in reference to the concept or the network, and "bitcoin" in reference to the cryptocurrency as a unit of account. *Some Bitcoin Words You Might Hear*, BITCOIN.ORG, https://bitcoin.org/en/vocabulary#bitcoin (last visited Aug. 31, 2021) [https://perma.cc/S4VV-JDUS].

8.   *Bitcoin*, COINMARKETCAP, https://coinmarketcap.com/currencies/bitcoin [https://perma.cc/PZ55-KGS5] (last visited Aug. 31, 2021).

9.   Caitlin Ostroff & Rebecca Elliott, *Tesla Buys $1.5 Billion in Bitcoin*, WALL ST. J. (Feb. 8, 2021), https://www.wsj.com/articles/tesla-buys-1-5-billion-in-bitcoin-11612791688. *See also* Nagarajan, *supra* note 1.

Though Bitcoin is now the dominant cryptocurrency,[10] its fate was not always clear.[11] On August 1, 2017, in an event called a "hard fork,"[12] Bitcoin split into two distinct networks after participants failed to resolve a disagreement over how Bitcoin should function.[13] The conflict related to the appropriate balance between transaction processing speed, the distribution of network control, and network security.[14] The newly forked cryptocurrency was named "Bitcoin Cash."[15]

In a hard fork, the parent or legacy cryptocurrency—here, Bitcoin—survives alongside the new cryptocurrency network.[16] The new network—here, Bitcoin Cash—inherits the attributes or protocols of the parent network except for the changes that inspired the hard fork.[17] When a hard fork occurs, owners of the parent cryptocurrency receive a claim to an equal number of units of the new cryptocurrency, like "free money" that comes "out of almost thin air."[18] For example, if Alice owned ten units of bitcoin before the fork, she would own ten bitcoin and ten Bitcoin Cash after the fork.

The Bitcoin-Bitcoin Cash hard fork was the seminal event in a contentious period from approximately 2015 to 2018 that has been termed "The Fork Wars" or "The Bitcoin Civil Wars."[19] To date, there have been forty-five hard forks of Bitcoin alone and twenty-two of other cryptocurrencies.[20] Hard forks have provided cryptocurrency owners across the world with billions of dollars' worth of newly issued cryptocurrency.[21]

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10.   *Today's Cryptocurrency Prices by Market Cap*, COINMARKETCAP, https://coinmarketcap.com (last visited Apr. 6, 2021) (showing Bitcoin's market capitalization is far greater than that of the next highest cryptocurrency) [https://perma.cc/5TN2-KY9T].

11.   Prasad, *supra* note 4.

12.   This Note uses the term "forks" and "hard forks" interchangeably. "Soft forks," which are backwards-compatible software upgrades that are typically non-controversial, are distinct and do not present the same taxation questions that hard forks do. Rev. Rul. 2019-24, 2019-44 I.R.B. 1004 (2019). ("A hard fork is unique to distributed ledger technology and occurs when a cryptocurrency on a distributed ledger undergoes a protocol change resulting in a permanent diversion from the legacy or existing distributed ledger."). *Id.*

13.   *Learn What Are Bitcoin Forks? [The Ultimate Step-by-Step Guide]*, BLOCKGEEKS (May 2019), https://blockgeeks.com/guides/bitcoin-forks-guide [https://perma.cc/3YHY-XVAR].

14.   *Id.*

15.   *Id.*

16.   *Id.*

17.   *Id.*

18.   Danhui Xu, *Free Money, But Not Tax-Free: A Proposal for the Tax Treatment of Cryptocurrency Hard Forks*, 87 FORDHAM L. REV. 2693 (2019); Alexander Stern, *Top Tax Law Professors' Surprising Thoughts on Cryptocurrencies*, ATTORNEY IO (Apr. 13, 2018), https://www.attorneyio.com/tax-law-professors-cryptocurrencies/ [https://perma.cc/DF77-2ABY].

19.   *See* Alex Hern, *Bitcoin's Forked: Chief Scientist Launches Alternative Proposal for the Currency*, GUARDIAN (Aug. 17, 2015), https://www.theguardian.com/technology/2015/aug/17/bitcoin-xt-alternative-cryptocurrency-chief-scientist ("Cryptocurrency bitcoin is facing civil war….") [https://perma.cc/KD8M-VBNN].

20.   *How Many Bitcoin Forks Are There?*, FORKDROP.IO, https://forkdrop.io/how-many-bitcoin-forks-are-there (last visited Aug. 31, 2021) [https://perma.cc/Y6YL-HJ8H].

21.   Stern, *supra* note 18.

The Bitcoin Cash market alone was valued at an estimated $30 billion soon after inception.[22]

The hard fork phenomenon raises an important question: how should the units of cryptocurrency received from a hard fork be taxed?[23] Other questions follow: How should value received from forks be characterized?[24] When does the taxable event occur?[25] How should the value of forked cryptocurrencies be determined?[26] Though these questions have generated lively debate among academics, tax lawyers, and taxpayers, Congress has failed to answer them directly.[27] Consequently, the Internal Revenue Service (IRS) has tried to fill the legislative void through administrative interpretation and guidance.[28]

In Revenue Ruling 2019-24, the IRS issued its first and most formal guidance on hard fork taxation to date, in which the agency declared that forked cryptocurrency would be taxed twice: first as gross income upon receipt, and subsequently as a capital asset upon disposition.[29] Despite public criticism of the agency's lack of clarity on the finer points of realization timing and valuation, and also of the agency's fundamental misunderstanding of hard forks,[30] no overt challenges have been leveled against the agency's key assumption: that hard forks provide gross income under the legal test established in *Commissioner v. Glenshaw Glass*.[31] Instead, observers have mostly accepted the deceptively appealing notion that hard forks provide a

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22.   *Id.*

23.   *See generally* Xu, *supra* note 18; Eric D. Chason, *A Tax on the Clones: The Strange Case of Bitcoin Cash*, VA. TAX REV., Nov. 8, 2019, at 1; Nick Webb, *A Fork in the Blockchain: Income Tax and the Bitcoin/Bitcoin Cash Hard Fork*, 19 N.C. J.L. & TECHNOLOGY 283 (2018); Letter from Karen L. Hawkins, Chair, Am. Bar Ass'n Section of Tax'n, to Hon. David Kautter, Acting Comm'r, Internal Revenue Serv. (Mar. 19, 2018) (online with the American Bar Association

https://www.americanbar.org/content/dam/aba/publishing/tax_lawyer/vol72/721/tax-report-
tax-treatment-of-hard-forks-ttl-fall18-p27-38.pdf) [hereinafter ABA Section of Taxation];
Letter from The American Institute of CPAs (AICPA) to Internal Revenue Serv. (May 30, 2018)   (online   with   AICPA
https://www.aicpa.org/content/dam/aicpa/advocacy/tax/downloadabledocuments/20180530-
aicpa-comment-letter-on-notice-2014-21-virtual-currency.pdf).

24.   *See, e.g.*, ABA Section of Taxation, *supra* note 23, at 2.

25.   *Id.*

26.   *Id.*

27.   Representative Tom Emmer first introduced the unenacted "Safe Harbor for Taxpayers with Forked Assets Act" in 2018, which provides that the receipt of forked cryptocurrency shall not constitute a taxable event and affords safe harbor to taxpayers who have already received forked cryptocurrency. H.R. 6973, 115th Cong. (2018).

28.   Eric Chason, *Cryptocurrency Hard Forks and Revenue Ruling 2019-24*, 39 VA. TAX REV. 279, 285-86 (2019). *See generally* Rev. Rul. 2019-24, 2019-44 I.R.B. 1004 (2019); I.R.S. Tech. Adv. Mem. 202114020 (Apr. 9, 2021); I.R.S. Notice 2014-21, 2014-16 I.R.B. 938.

29.   *See* Rev. Rul. 2019-24, 2019-44 I.R.B. 1004 (2019). Cryptocurrency held as business inventory, however, is not taxed as a capital asset. Presumably, few recipients of forked currency have used it for this purpose.

30.   *Id.* The IRS conflated the concepts of hard forks and airdrops, which are entirely distinct. In an airdrop, cryptocurrency users are awarded a certain number of additional coins, which makes airdrops superficially like hard forks. However, no network split occurs in an airdrop. Airdrops are often used as a marketing tactic to reward new users.

31.   Comm'r v. Glenshaw Glass Co., 348 U.S. 426, 431 (1955).

windfall, or "free money."[32] A few others have indeed questioned the premise.[33] However, they have not evaluated it rigorously, in part for a lack of sufficient data.[34]

With the dust of The Fork Wars having settled and a larger body of data now available,[35] this Note challenges the IRS' decision to classify the receipt of hard fork cryptocurrency as gross income. Cryptocurrency received from a hard fork is not free money,[36] but a mere byproduct of network reorganization. Much like a corporate spin–off,[37] where a company is divided into smaller parts and shareholders receive shares in the new corporation, a hard fork divides the network into smaller parts and users receive new cryptocurrency. However, like a corporate spin–off, the hard fork does not necessarily create new value. This conceptual understanding of hard forks, plus price volatility around the fork, acquisition timing problems, and the high likelihood of forked cryptocurrency becoming worthless, suggest that hard fork cryptocurrency should not be taxed as gross income upon receipt, but strictly as a capital asset upon disposition through sale or exchange.

Japan has employed this general approach since 2017.[38] Law professor Eric Chason, a leading thinker on hard fork taxation, has also recommended that forked cryptocurrency be taxed upon disposition.[39] However, he justifies this approach strictly for the sake of administrative ease; he nonetheless views hard forks as "windfalls" for recipients.[40] Whereas Japan taxes cryptocurrency gains at its "miscellaneous income" rate of fifty-five percent,[41] and Chason recommends the IRS tax gains at ordinary income rates, [42] this Note recommends that the IRS tax such gains at the preferred capital gains rates. This recommendation coheres with the understanding that forked cryptocurrency is the fruit of a prior investment rather than an "economic windfall."[43] The American Bar Association has also discussed this approach.[44]

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32.   Xu, *supra* note 18.

33.   Webb, *supra* note 23, at 299 ("[P]erhaps the hard fork produced no value at all. . . . Unfortunately, [this claim is] not empirically verifiable."); ABA Section of Taxation, *supra* note 23, at 10-11 ("[T]he forked coin . . . is more in the nature of a change in the form of ownership than a realization event.").

34.   *See* Webb, *supra* note 23, at 299.

35.   *See generally* COIN METRICS, coinmetrics.io (last visited Apr. 6, 2021) [https://perma.cc/56G5-J9SG]. Coin Metrics was founded in 2017 to make cryptocurrency data more "transparent and accessible."

36.   Xu, *supra* note 18.

37.   Others have largely rejected the corporate spin–off analogy. *E.g.* Chason, *supra* note 23, at 33-34. This Note argues they are incorrect to have done so. *Infra* Part IV.

38.   Jon Southurst, *Japan: We'll Tax All Digital Asset Gains, Including Consumer Purchases and Forks*, BITSONLINE (Dec. 11, 2017), https://bitsonline.com/japan-tax-digital-asset-gains [https://perma.cc/JD8P-GKRJ].

39.   Chason, *supra* note 23, at 35-37. Chason calls this the "open transaction" approach.

40.   *Id.*

41.   *Japan and Tax on Cryptocurrency – Part 1*, TYTON CAP. ADVISORS, https://www.tytoncapital.com/investment-advice-japan/japan-and-tax-on-cryptocurrency-bitcoin/ (last visited Apr. 6, 2021) [https://perma.cc/ZW9L-JSKC].

42.   Chason, *supra* note 23, at 35-37.

43.   *Id.* at 37.

44.   ABA Section of Taxation, *supra* note 23, at 10-13.

This Note focuses on the hard fork between Bitcoin and Bitcoin Cash for three reasons. First, it is the most prominent example of a hard fork.[45] Second, because Bitcoin Cash remains a viable cryptocurrency, it provides more meaningful data than forks that quickly became obsolete—as most have.[46] Finally, the prices of Bitcoin and Bitcoin Cash have diverged widely,[47] which provides an opportunity to consider how owners might strategize paying their taxes.

Part II of this Note provides a historical and technical background of cryptocurrency, Bitcoin, and the Bitcoin-Bitcoin Cash hard fork. Part III argues that forked cryptocurrency fails as gross income under *Glenshaw Glass* because it does not produce an "undeniable accession to wealth." It is argued that cryptocurrency prices are poor measures of a hard fork's value and that hash rate—a measure of network computing power—is superior. Then, hash rate analysis shows that the Bitcoin–Bitcoin Cash hard fork did not necessarily create new value. Part IV argues that the analogy between hard forks and corporate spin-offs has been prematurely dismissed and is actually helpful in considering how to tax hard forks. Finally, Part V considers fairness, administrability, and compliance in recommending that the IRS tax hard fork cryptocurrency as a capital asset, strictly upon disposition, and with a cost basis of zero.

II.   BACKGROUND

A. *What is Cryptocurrency?*

Parties to financial transactions, and their agents, invariably record those transactions on one or more ledgers.[48] If Alice sends Bob ten dollars from her bank, their banks will each record the transaction within Alice and Bob's respective accounts. Alice's bank assures Bob that Alice indeed has ten dollars to spend from her account. Financial and law enforcement institutions also build trust in the integrity of the financial system by fighting fraud and illicit activity.[49] However, despite these efforts, fraudulent transactions occur to some extent.[50]

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45.   *See* Jamie Redman, *Over 40 Bitcoin Forks Are Down More Than 98% Since 2017's Forking Fiesta*, BITCOIN.COM (Sept. 20, 2020), https://news.bitcoin.com/over-40-bitcoin-forks-are-down-more-than-98-since-2017s-forking-fiesta/ [https://perma.cc/PXR7-ENY2].

46.   *See id.*

47.   *Today's Cryptocurrency Prices by Market Cap*, *supra* note 10.

48.   *See* YAN PRITZKER, INVENTING BITCOIN 13-14 (2019).

49.   *See* LexisNexis Risk Solutions, *U.S. Financial Services Companies See Average Cost of Fraud Rise 9.3% from 2017 to 2018, LexisNexis Risk Solutions Survey Finds*, CISION: PR NEWSWIRE (Sept. 26, 2018), https://www.prnewswire.com/news-releases/us-financial-services-companies-see-average-cost-of-fraud-rise-9-3-from-2017-to-2018--lexisnexis-risk-solutions-survey-finds-300718988.html [https://perma.cc/YK9V-DLB9]; *see generally* PAUL ANNING ET AL., THE LAW OF BITCOIN 155-60 (Stuart Hoegner ed. 2015); DANIEL STABILE ET AL., DIGITAL ASSETS AND BLOCKCHAIN TECHNOLOGY: US LAW AND REGULATION 28-29, 41-44 (2020).

50.   *See* LexisNexis Risk Solutions, *supra* note 49.

In contrast, cryptocurrency transactions are validated through the collective efforts of network participants, eliminating the need for the trust-building validation efforts of financial institutions and governments.[51] Cryptocurrency accomplishes this feat with blockchain technology.[52] The blockchain is a shared, or distributed, digital ledger that includes all validated transactions.[53] This comprehensive public record prevents users from counterfeiting cryptocurrency, thus solving what is called "the double-spend problem": when a user attempts to spend the same unit of cryptocurrency twice (or more).[54] For example, if Alice sends Bob ten units of cryptocurrency, the network deems the transaction valid only after reviewing the ledger (the blockchain) to confirm that Alice indeed possesses ten units of cryptocurrency, and that she has not already spent those units.[55]

Network participants called "miners" are responsible for building the blockchain by digitally writing new transactions onto the ledger.[56] Miners connect their computers to the network and take note of any new, unvalidated transactions.[57] For each new batch of unvalidated transactions, miners compete in a virtual lottery to win the right to write these transactions onto the ledger.[58] Miners generate digital lottery tickets, called "hashes," without limit.[59] The winning miner is awarded the right to present their batch of unvalidated transactions to the other network participants—called "nodes"—who confirm the validity of the transactions.[60] If the winning miner presents transactions that are invalid—for example, transactions that would cause a double-spend, or conflict with prior transactions—the network will reject the miner's efforts.[61] If, on the other hand, the network deems the batch of transactions valid, the batch is written as a new "block" onto the chain (the ledger), and the successful miner receives a financial reward.[62] This process of writing the most recent transactions occurs about every ten minutes.[63]

The blockchain protocol is designed to prevent the most critical governance challenge: the prospect of bad actors seeking to counterfeit

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51. *See* SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM 1-2, https://bitcoin.org/bitcoin.pdf [https://perma.cc/5YR2-HQ3V]; ANNING ET AL., *supra* note 49, at 14-20.

52. *See* PRIMAVERA DE FILIPPI & AARON WRIGHT, BLOCKCHAIN AND THE LAW 20-26 (2018). *See generally* Nakamoto, *supra* note 51.

53. *See* DE FILIPPI & WRIGHT, *supra* note 52. *See generally* Nakamoto, *supra* note 51.

54. *See generally* Nakamoto, *supra* note 51; Colin Harper, *The Bitcoin Double-Spend That Never Happened*, COINDESK (Jan. 21, 2021), https://www.coindesk.com/tech/2021/01/21/the-bitcoin-double-spend-that-never-happened/ [https://perma.cc/5VW3-CKCF].

55. Nakamoto, *supra* note 51 ("The only way to confirm the absence of a transaction is to be aware of all transactions.").

56. PRITZKER, *supra* note 48, at 33-34.

57. *Id.*

58. *Id.*

59. *Id.*

60. *Id.*

61. PRITZKER, *supra* note 48, at 33-34.

62. *Id.* at 34-37.

63. *Id.* at 33.

transactions.[64] Bad actors can only counterfeit transactions by dominating the network, allowing them to monopolize both the lottery system and the transaction validation process.[65] Network domination requires a single actor to acquire a majority of the total computing power of the network.[66] Mining computers are costly to acquire and run, as they consume large amounts of electricity.[67] Considering that the present amount of electricity necessary to mine the Bitcoin network approximates the electricity use of a medium-sized country, overtaking the network would be prohibitively expensive.[68]

In sum, the strength—and value—of a cryptocurrency network depends largely on its ability to securely validate transactions and prevent bad actors from gaining control.[69]

B. The Bitcoin-Bitcoin Cash Fork

The dominant contemporary narrative describes Bitcoin as "digital gold"—a financial asset for storing wealth.[70] However, this has not always been the case.[71] Bitcoin has been hailed variously as an electronic cash system akin to Venmo, censorship-resistant digital currency, private and anonymous darknet currency, reserve currency for the broader cryptocurrency industry, and a programmable shared database.[72] In 2017, a disagreement brewed over whether Bitcoin should be a platform for consumer transactions or an asset for storing wealth.[73] This disagreement manifested in a debate about block size.[74]

Bitcoin was designed to process transactions securely, but slowly.[75] Each block on the chain, one megabyte in size, accommodates about four transactions per second.[76] In comparison, major credit card processors like Visa process up to 24,000 transactions per second.[77] As Bitcoin use increased over time, transactions began to bog down the system, resulting in a backlog

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64.   *Id.* at 37.
65.   *Id.* at 61-63.
66.   *Id.*
67.   *Id. See* Ian Allison, *Long in China's Shadow, the US Is Becoming a Bitcoin Mining Power Again*, COINDESK (Nov. 25, 2020), https://www.coindesk.com/us-becoming-bitcoin-mining-power-again [https://perma.cc/BPY6-XF35]; Cao Li & Giulia Marchi, *In China's Hinterlands, Workers Mine Bitcoin for a Digital Fortune*, N.Y. TIMES (Sept. 13, 2017), https://www.nytimes.com/2017/09/13/business/bitcoin-mine-china.html [https://perma.cc/L7YG-CCHE].
68.   PRITZKER, *supra* note 48, at 61-63.
69.   *Id.* at 49-57.
70.   Nic Carter, *Visions of Bitcoin: How Major Bitcoin Narratives Changed Over Time*, MEDIUM: NIC CARTER (July 29, 2018), https://medium.com/@nic__carter/visions-of-bitcoin-4b7b7cbcd24c.
71.   *Id.*
72.   *Id.*
73.   *Id.*
74.   *Id.*
75.   *See id.*; *Learn What Are Bitcoin Forks? [The Ultimate Step-by-Step Guide]*, *supra* note 13.
76.   *Learn What Are Bitcoin Forks? [The Ultimate Step-by-Step Guide]*, *supra* note 13.
77.   *Visa Acceptance for Retailers*, VISA, https://usa.visa.com/run-your-business/small-business-tools/retail.html (last visited Aug. 31, 2021) [https://perma.cc/F6LA-7R3S].

of unvalidated transactions.[78] Bitcoin users seeking faster transactional processing began offering miners higher transaction fees for prioritizing the processing of certain transactions.[79]

Advocates of Bitcoin as a tool for consumer transactions, frustrated with long processing times and increasing transaction fees, proposed that the network adopt a larger block size to accommodate more transactions.[80] However, some thought this modification would threaten network security and the vision of decentralized governance in which so many Bitcoin proponents believed.[81] With a larger block size, these critics contended, competition for processing would decrease.[82] Accordingly, transaction fees—which are essentially tips to miners for processing—would likely decrease.[83] This might compel miners to abandon Bitcoin and dedicate their computing power to other, more lucrative cryptocurrencies, at the expense of Bitcoin's network strength.[84] Moreover, the additional computing power required to process larger blocks would favor larger, centralized mining operations over smaller ones.[85]

The disagreement proved irreconcilable, and those advocating for larger block size parted ways with Bitcoin.[86] On August 1, 2017, they forked the Bitcoin network and created Bitcoin Cash.[87]

Because Bitcoin Cash duplicated the Bitcoin blockchain, owners of Bitcoin units at the time of the fork received claim to an equal number of Bitcoin Cash units.[88] Those directly participating in the Bitcoin network enjoyed nearly immediate access to the forked cryptocurrency; claiming their new cryptocurrency coins ("uptake") only required downloading the Bitcoin Cash software.[89] In contrast, those holding Bitcoin on cryptocurrency exchanges—third-party marketplaces—were subject to the exchanges' actions.[90]

At the time of the fork, it was not clear what would ultimately happen.[91] Observers thought Bitcoin Cash might variously fail, render Bitcoin obsolete

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78.   *Learn What Are Bitcoin Forks? [The Ultimate Step-by-Step Guide]*, *supra* note 13.
79.   *Id.*
80.   *Id.*
81.   *Id.*
82.   *Id.*
83.   *Id.*
84.   *Learn What Are Bitcoin Forks? [The Ultimate Step-by-Step Guide]*, *supra* note 13.
85.   *Id.*
86.   *Id.*
87.   *Id.*
88.   ABA Section of Taxation, *supra* note 23, at 2.
89.   *Id.* at 4-6.
90.   *Id.* at 6.
91.   *See generally* Nic Carter, *The Hard Forks that Didn't Dilute Bitcoin*, CoinDesk (Oct. 1, 2020), https://www.coindesk.com/bitcoin-trounces-bch-bsv-fork-wannabes [https://perma.cc/6YQY-VMJX].

by co-opting mining power,[92] or diminish the value of both cryptocurrencies by raising the prospect of ceaseless fragmentation.[93]

Today, Bitcoin and Bitcoin Cash remain active and relevant.[94] Bitcoin is the clear market leader, but Bitcoin Cash retains a meaningful market share.[95] There have been forty-five Bitcoin hard forks to date and twenty-two forks of other cryptocurrencies.[96] Of the Bitcoin forks, only four currently trade for more than $1 per unit: Bitcoin, Bitcoin Cash, Bitcoin SV, and Bitcoin Gold.[97] Though other cryptocurrencies like Dogecoin and Ethereum have attracted many users, the "hopeless fragmentation of Bitcoin's user base into dozens of marginally different tribes" that some had feared has not occurred.[98]

III.   HARD FORK CRYPTOCURRENCY IS NOT GROSS INCOME UNDER *GLENSHAW GLASS*

The IRS issued its first guidance on cryptocurrency taxation in 2014,[99] stating that the agency would tax cryptocurrency as property according to "generally applicable principles."[100] Cryptocurrency received as payment for goods and services would be taxed as gross income at ordinary income rates,[101] and that held as an investment would be taxed upon disposition at capital gains rates.[102] The 2014 Notice did not discuss hard forks.[103] Five years later, in Revenue Ruling 2019-24, the IRS established that new cryptocurrency received from a hard fork would be taxed upon receipt as gross income.[104] The agency contended that hard forks presented recipients

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92.   Nic Carter, *Power Laws and Network Effects: Why BitcoinCash Is Not a Free Lunch*, MEDIUM: CRYPTOFUNDAMENTAL (July 28, 2017), https://cryptofundamental.com/power-laws-and-network-effects-why-bitcoincash-is-not-a-free-lunch-5adb579972aa [https://perma.cc/5757-J8ER] ("[W]hile [Bitcoin] owners would received [*sic*] a cash "dividend" [from the fork]. . . the money gained from this dividend is outweighed by the network value destroyed."); Carter, *supra* note 91.

93.   Carter, *supra* note 91.

94.   *Today's Cryptocurrency Prices by Market Cap*, *supra* note 10.

95.   *Id.*

96.   *How Many Bitcoin Forks Are There?*, *supra* note 20.

97.   *Today's Cryptocurrency Prices by Market Cap*, *supra* note 10. Given that Bitcoin is valued at approximately $50,000 per unit at the time of publication, any Bitcoin fork trading at less than $1 per unit is essentially worthless. Because Bitcoin hard forks replicated the Bitcoin blockchain, the total supply of forked cryptocurrency units is nearly equal and, therefore, differences in unit price purely represent differences in value. Any differences in total supply at a given time are attributable to the speed of mining, which can vary between forks.

98.   Carter, *supra* note 91.

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

100.   *Id.*

101.   *Id.*

102.   *Id.* Very few people reported gains from the sale of Bitcoin to the IRS in the ensuing years—in 2015, only 802 people did so. Joshua Althauser, *Only 802 People Paid Taxes on Bitcoin Profits, IRS Says*, COINTELEGRAPH (Sept. 12, 2017), https://cointelegraph.com/news/only-802-people-paid-taxes-on-bitcoin-profits-irs-says [https://perma.cc/UL4L-JRLW].

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

104.   Rev. Rul. 2019-24, 2019-44 I.R.B. 1004 (2019).

an "undeniable accession[] to wealth,"[105] citing the seminal Supreme Court case *Commissioner v. Glenshaw Glass*.[106]

In *Glenshaw Glass*, the Supreme Court established a three-element test for gross income subject to federal income tax.[107] First, the income must present an "undeniable accession to wealth."[108] Neither the source nor the form of the income matter.[109] For example, gross income includes non-cash exchange of services,[110] the unexpected finding of cash in an old piano,[111] punitive legal damages,[112] and game show winnings.[113] Second, income must be "clearly realized."[114] Mere appreciation of capital assets without disposition is considered unrealized and therefore is not gross income.[115] Finally, the taxpayer must exercise "complete dominion" over the income through actual or constructive receipt.[116] In practice, this means control without "substantial limitations."[117]

This Note focuses exclusively on the first element of the *Glenshaw Glass* test: whether the receipt of forked cryptocurrency presents an "undeniable accession to wealth."[118] Though some parties have questioned this premise, they have lacked sufficient market data to empirically analyze the question.[119] Now—more than four years since the Bitcoin-Bitcoin Cash fork—a larger body of data is available.[120]

The critical question is whether, and how, hard forks affect the value of the parent cryptocurrency.[121] At the time of the Bitcoin-Bitcoin Cash fork, observers could only speculate.[122] Some thought that, in the short term, the promise of a Bitcoin Cash delivery to Bitcoin owners would drive up Bitcoin's price.[123] This seemed to play out, with Bitcoin's price increasing

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105. *Id.*

106. *Id.* Indeed, the "Law and Analysis" section of the Revenue Ruling is little more than a summary of the holding of *Glenshaw Glass*. Comm'r v. Glenshaw Glass Co., 348 U.S. 426 (1955).

107. *Glenshaw Glass*, 348 U.S. at 431.

108. *Id.*

109. I.R.C. § 61(a); Treas. Reg. § 1.61-1(a) (1957).

110. Treas. Reg. § 1.61-1(a) (1957) ("Income may be realized, therefore, in the form of services. . . .").

111. Cesarini v. United States, 296 F. Supp. 3 (N.D. Ohio 1969), *aff'd*, 428 F.2d 812 (6th Cir. 1970).

112. *Glenshaw Glass*, 348 U.S. at 431.

113. I.R.C. § 74(a).

114. *Glenshaw Glass*, 348 U.S. at 431.

115. Eisner v. Macomber, 252 U.S. 189 (1920). *See* I.R.C. §§ 1001(a)-(b).

116. *Glenshaw Glass*, 348 U.S. at 431. *See* Treas. Reg. § 1.451-1 to 1.451-2.

117. Treas. Reg. § 1.451-2.

118. *Id.*

119. ABA Section of Taxation, *supra* note 23, at 10-11; Webb, *supra* note 23, at 299; Xu, *supra* note 18, at 2700; Chason, *supra* note 23, at 3.

120. COIN METRICS, *supra* note 35 and accompanying text.

121. *See generally* Carter, *supra* note 92; Carter, *supra* note 91; ABA Section of Taxation, *supra* note 23.

122. *See* Carter, *supra* note 91.

123. Patrick Thompson, *How Bitcoin Forks Influence Bitcoin Price Rise and Fall*, COINTELEGRAPH (Oct. 28, 2017), https://cointelegraph.com/news/how-bitcoin-forks-influence-bitcoin-price-rise-and-fall [https://perma.cc/23W2-9FYY].

from a low of $1,843 on July 16, 2017 to $2,749 immediately before the fork occurred on August 1.[124] Others feared that Bitcoin Cash would harm Bitcoin by winning the allegiance of users and investors—or as one commentator put it, by causing the "hopeless fragmentation of Bitcoin's user base into dozens of marginally different tribes."[125] Those who believed Bitcoin's value derived from its scarcity—the supply is capped at twenty-one million units—feared that repeated forking would render such scarcity meaningless.[126] In contrast, others speculated that the resilience and persistence of both cryptocurrencies after the fork would inspire market confidence.[127] After the fork, prices seemed to support this latter view: Bitcoin's price remained at its pre-fork levels around $2,700,[128] and Bitcoin Cash traded in the range of $200 and $400 within a few days.[129]

Months later, however, the fork's effect on Bitcoin was unclear. Prices failed to provide a clear indication,[130] and any effort to precisely determine the fork's effect would have been a rather futile exercise in alternate history. A Twitter poll by CoinTelegraph three months after the fork showed 44% of the 1,137 respondents thought the fork's effect on price was "very important," 33% "somewhat important," and 23% "not important."[131]

This Note contends that prices, particularly in the short-term, are not very helpful in assessing the value of a hard fork. Instead, the amount of computing power ("hash rate") dedicated to the respective cryptocurrency networks provides a better indication of whether a hard fork creates or destroys value. Hash rate data indicates that the Bitcoin-Bitcoin Cash fork did not necessarily create new value for those who received forked cryptocurrency. Thus, the fork did not provide an "undeniable accession to wealth." Rather, all that can be said is that the hard fork merely reorganized the network. Accordingly, cryptocurrency received from a hard fork fails the test for gross income under *Glenshaw Glass*.[132]

A. *Short-Term Prices Are a Poor Measure of Network Value*

In a mature, efficient market, one might expect that comparing prices before and after a fork would reveal whether the event generated net value.[133]

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124. *Bitcoin*, *supra* note 8. Select July 16, 2017 using calendar function. Daily low can be observed at 9:09 AM EDT. The Bitcoin Cash hard fork occurred at 9:16 AM EDT on August 1, 2017, I.R.S. Tech. Adv. Mem. 202114020, *supra* note 28, at 2, and the price of Bitcoin at 9:15 AM was $2,749.

125. Carter, *supra* note 91.

126. *Id.*

127. Webb, *supra* note 23, at 299.

128. *Bitcoin*, *supra* note 8.

129. *Bitcoin Cash*, COINMARKETCAP, https://coinmarketcap.com/currencies/bitcoin-cash (last visited Aug. 31, 2021) [https://perma.cc/9F3X-KJ6J].

130. Prices can be viewed at *Bitcoin*, *supra* note 8, and *Bitcoin Cash*, *supra* note 129.

131. Cointelegraph (@Cointelegraph), TWITTER (Oct. 28, 2017, 9:09 AM), https://twitter.com/Cointelegraph/status/924261909095944192 [https://perma.cc/8R4R-WTFZ].

132. *Id.*

133. *See generally* Carter, *supra* note 92 (an analysis of anticipated Bitcoin–Bitcoin Cash hard fork using prices to express its potential effects).

If the price of the parent cryptocurrency decreased soon after the fork, one could infer the forked cryptocurrency siphoned value from the parent cryptocurrency network. Or, if the price of the parent cryptocurrency did not change, then the fork presumably had little or no effect. On the other hand, if the price of the parent cryptocurrency increased, one might conclude that the split "unlocked"[134] value by resolving value-detracting tension within the parent network, or by "demonstrating the resiliency of the blockchains and their communities."[135]

However, price volatility surrounding the Bitcoin-Bitcoin Cash fork hinders this sort of assessment.[136] Bitcoin's price dropped from approximately $2,900 to $2,700 in the hours preceding the fork, then stabilized near $2,700 in the hours after.[137] Does the approximately $200 price decline mean that Bitcoin Cash drew value from Bitcoin? Or does the change merely represent random market fluctuation? Moreover, how does one make sense of the Bitcoin Cash price, which ranged from approximately $200 to $800 in the day after the fork?[138]

Forked cryptocurrency markets take time to mature, which complicates the type of simple before-and-after analysis discussed above.[139] This maturation period exists partially because many participants are slow to access the market.[140] Though owners of the pre-fork parent cryptocurrency—who represent the bulk of potential sellers in the new market—are entitled to an equal number forked coins, not all of them promptly claim their coins ("uptake")—if ever.[141] For those participating directly in the cryptocurrency network, uptake requires downloading new software, while those holding currency on exchanges can only access their new cryptocurrency once the exchange uptakes the forked coins.[142] Of the nearly fifteen million Bitcoin Cash coins in supply at the time of the fork, only six million had been claimed in the hundred days after the fork.[143] After two hundred days, just eight million coins had been claimed.[144] Similarly, buyers seeking to purchase the new cryptocurrency through an exchange may only do so once the exchange

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134. Carter, *supra* note 92.

135. Webb, *supra* note 23, at 299.

136. *An Analysis of Fork Legitimacy*, COIN METRICS 3-4 (Aug. 15, 2019), https://coinmetrics.io/an-analysis-of-fork-legitimacy [https://perma.cc/Y8SZ-AMR4]; Webb, *supra* note 23, at 301 ("These concerns demonstrate the inherent weakness of a tax code that has to link the accession of wealth to a particular moment in time. . . . [T]he volatility of [Bitcoin Cash] threatens the certainty of the calculation.").

137. *Bitcoin*, *supra* note 8 (select 7/31/2017–8/2/2017 timeframe). The Bitcoin Cash hard fork occurred at 9:16 AM EDT on August 1, 2017. I.R.S. Tech. Adv. Mem. 202114020, *supra* note 125.

138. *Bitcoin Cash*, *supra* note 129 (select 7/31/2017–8/2/2017 timeframe).

139. *An Analysis of Fork Legitimacy*, *supra* note 136, at 3-4, 7-9 ("Since price discovery for forked assets can take a long period of time, a fork's price performance should be examined with caution.").

140. *Id.* at 7-9.

141. *Id.*

142. ABA Section of Taxation, *supra* note 23, at 5-6.

143. *An Analysis of Fork Legitimacy*, *supra* note 136, at 9 (refer to chart).

144. *Id.*

has performed uptake.[145] For instance, Coinbase, a major cryptocurrency exchange, initially indicated it would not support the Bitcoin Cash fork, but later changed its stance.[146]

In addition to price volatility, short-term market manipulation makes price an untrustworthy measure of whether forks generate real value.[147] Observers have noted that some players capitalize on forks with "pump-and-dump" moves.[148] In anticipation of the fork, these players strategically purchase large volumes of parent cryptocurrency to maximize the units of new cryptocurrency they receive from the fork.[149] This drives up the price of the parent cryptocurrency ("pump").[150] After the fork occurs, they immediately sell the forked cryptocurrency, and then sell the parent cryptocurrency at the inflated price that they helped create ("dump").[151]

Because the value of a cryptocurrency is largely a function of the strength of the network, some savvy actors also try to manipulate network data metrics to "give the impression of elevated activity, particularly in the moments immediately after the fork event."[152] Such manipulation would lead unsuspecting buyers to perceive a network as more robust than it truly is. Metrics related to active addresses, transaction count, and transaction value are particularly susceptible to manipulation.[153] Accordingly, artificially generated network activity can presumably distort prices to some degree.[154]

In sum, the volatile period of price discovery around a forking event makes it difficult to discern the existence of a causal relationship between the hard fork and the value of the parent cryptocurrency. Additionally, the possibility of market manipulation calls into question whether price accurately reflects value in the first place. Therefore, short-term prices are a poor measure of a hard fork's effect on the value of the parent cryptocurrency.

A more long-term view of prices might prove more meaningful. Time allows for prices to stabilize, buyers and sellers to access the market, and a body of information to develop that diminishes opportunities for manipulation.[155] For instance, cryptocurrency analytics firm CoinMetrics has used the 50-day mark as an analytical standpoint for evaluating the value and legitimacy of the forked cryptocurrency alone, while cautioning that residual volatility may nonetheless persist.[156] Surely, some general conclusions can be

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145. ABA Section of Taxation, *supra* note 23, at 5-6.

146. *Id.*

147. *An Analysis of Fork Legitimacy*, *supra* note 136, at 3-4.

148. PRITZKER, *supra* note 48, at 84; Thompson, *supra* note 123; Mohit Mamoria, *The Ultimate Plain-English Guide to Bitcoin Forks*, THE NEXT WEB (Nov. 17, 2017), https://thenextweb.com/contributors/2017/11/17/ultimate-plain-english-guide-bitcoin-forks/ [https://perma.cc/H4KK-A9AC].

149. Thompson, *supra* note 123.

150. *Id.*

151. *Id.*

152. *An Analysis of Fork Legitimacy*, *supra* note 136, at 1.

153. *Id.* at 7.

154. *Cf. id.* at 4 (citing "[p]rice anomalies, order book quote stuffing, [and] price manipulation" as "incidents of disorderly [cryptocurrency] markets.").

155. *See id.*

156. *Id.* ("Significant movements can occur after the 50th day post-fork.").

made from taking a more long-term view of prices. For example, it is now clear that the market has favored Bitcoin over Bitcoin Cash.[157] However, using prices to precisely measure the effect of the fork is futile, for there are simply too many uncontrollable—if not altogether unknown—variables.[158]

B. Hash Rate Is a Better Measure of Network Value Than Prices

A blockchain is a self-regulating network in which transactions are validated only through the efforts of decentralized participants.[159] Absent the ability to effectively validate transactions, users would not be able to trust the integrity of those transactions, and the blockchain would be about as useful as a bank that fails to keep accurate financial records.[160] Accordingly, any useful measure of a blockchain's value must account for the strength of the network.[161]

The most suitable metric for this purpose is "hash rate": the measure of computing power dedicated to validating a blockchain through mining.[162] By allocating computing power to a blockchain network, miners contribute to the strength of that network.[163] To illustrate, at the time of writing, the Bitcoin network attracts approximately 153.8 million terahashes per second (TH/s) (i.e. calculations per second), while Bitcoin Cash attracts approximately 1.7 million TH/s.[164] This indicates the Bitcoin network is considerably stronger than the Bitcoin Cash network, as Bitcoin has a larger army of computers working for it.[165] In addition to directly expressing the amount of effort spent securing a blockchain, the hash rate metric is relatively resistant to manipulation.[166]

For these reasons, this analysis uses hash rate to assess the effect of the Bitcoin-Bitcoin Cash fork on Bitcoin's value. Though hash rate cannot quantify the price effect of a hard fork, it can elucidate the nature of the relationship between the two resulting blockchains.[167] This Note proposes

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157. *Today's Cryptocurrency Prices by Market Cap*, *supra* note 10.

158. ABA Section of Taxation, *supra* note 23, at 11.

159. DE FILIPPI & WRIGHT, *supra* note 53; NAKAMOTO, *supra* note 51.

160. *Cf. id.*

161. *A Comparative Analysis of Bitcoin Forks*, COIN METRICS 21-22 (July 29, 2019), https://coinmetrics.io/a-comparative-analysis-of-bitcoin-forks ("Network security is arguably the most important consideration for any blockchain.") [https://perma.cc/LR7Q-8BZG].

162. *See id.*

163. *See id.* (analyzing the quantity of computing power dedicated to various blockchains to assess their network strength.).

164. *Network Charts*, COIN METRICS, https://network-charts.coinmetrics.io/# (select "Network Charts" at top of page; set Assets to "BTC" and "BCH"; set Metrics to "Mean Hash Rate"; select "No Moving Average") (last visited Sept. 19, 2021).

165. *A Comparative Analysis of Bitcoin Forks*, *supra* note 161, at 21-27.

166. *An Analysis of Fork Legitimacy*, *supra* note 136, at 10.

167. *See* Carter, *supra* note 92 ("Ultimately, if [Bitcoin Cash], or any other fork, obtains a significant share of hash power and users, network effect theory tells us that value has been destroyed."); *see generally* Zack Seward, *Hash Power Favors Craig Wright Camp in Looming Bitcoin Cash Fork*, COINDESK (Nov. 12, 2018), https://www.coindesk.com/markets/2018/11/12/hash-power-favors-craig-wright-camp-in-looming-bitcoin-cash-fork/ [https://perma.cc/NT53-LFB8].

three types of relationships: (1) competitive/adversarial, (2) mutualistic, and (3) uncorrelated. The competitive/adversarial relationship is one in which the blockchains compete for scarce network resources, namely computing power, in a zero-sum or even destructive manner.[168] The mutualistic relationship is one in which the blockchains together prove greater than the sum of their parts.[169] Though the forked blockchains might immediately compete for limited network resources, they differentiate in a manner that ultimately attracts more cumulative computing power than the pre-fork blockchain.[170] Finally, in an uncorrelated relationship, the blockchains operate in distinct environments and do not substantially compete for network resources.

C. *Hash Rate Analysis Shows the Bitcoin–Bitcoin Cash Hard Fork Did Not Produce an Undeniable Accession to Wealth*

The relationship between Bitcoin and Bitcoin Cash after their hard fork can be broadly divided into two periods: (1) the immediate aftermath of the fork, spanning August – December 2017, and (2) the period of stabilization beginning in December 2017.

1. A Messy Divorce: August 2017 – December 2017

The hash rate of a parent cryptocurrency is "inevitably affected" when it undergoes a hard fork.[171] Miners must choose whether to continue mining on the original chain, or leave for the other chain, taking their hashing power with them.[172] Like a contentious divorce, where each party lays claim to formerly shared assets, Bitcoin and Bitcoin Cash exhibited a competitive/adversarial relationship from the fork on August 1, 2017, until December of that year, as illustrated in Figure 1 below.[173] Each large increase in Bitcoin Cash hash rate corresponded with a comparable decrease in Bitcoin hash rate, illustrating the zero-sum choice miners had to make.[174]

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168. *See* Carter, *supra* note 92 ("The sum of the parts is worth less than the whole.").

169. *Id.* ("In this scenario, value is 'unlocked' from the divorce, and this outweighs the damage done by lost users."); Webb, *supra* note 23, at 299.

170. *See* Carter, *supra* note 92.

171. *A Comparative Analysis of Bitcoin Forks*, *supra* note 161, at 21.

172. *Id.*

173. *Network Charts*, *supra* note 164 (select "Network Charts" at top of page; set Assets to "BTC" and "BCH"; set Metrics to "Mean Hash Rate"; select "No Moving Average"; select appropriate time frame) (last visited Apr. 6, 2021) [https://perma.cc/95HT-UTR4].
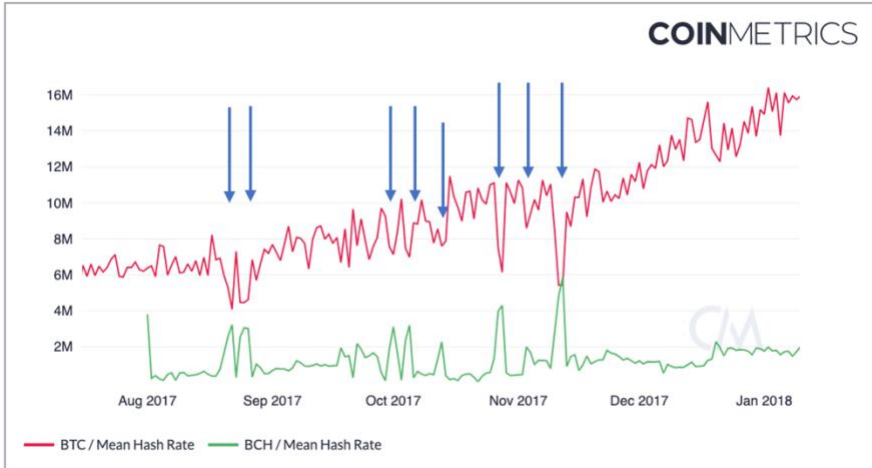
174. *Id.*

Figure 1: Mean Hash Rates of Bitcoin, Bitcoin Cash, August 2017 – January 2018[175]

The negative correlation between Bitcoin and Bitcoin Cash hash rates, illustrated in Figure 2 below, provides further evidence of their competitive relationship during the period.[176] Mean hash rates for Bitcoin and Bitcoin Cash were negatively correlated from the fork until December 2017.[177] This shows that Bitcoin and Bitcoin Cash competed for hashing power during the period.
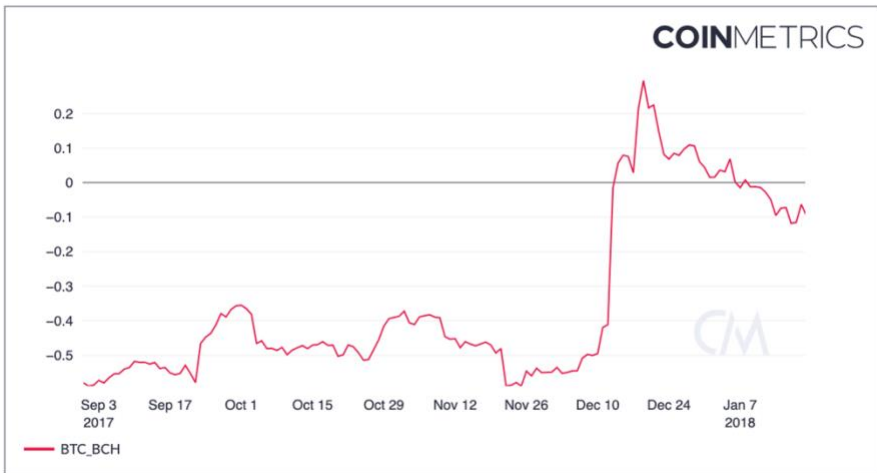

Figure 2: Correlation Between Mean Hash Rates of Bitcoin and Bitcoin Cash,
30-Day Moving Average, August 2017 – January 2018[178]

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175. *Id.*
176. *Network Charts*, *supra* note 164 (select "Correlation" at top of page; set Assets to "BTC" and "BCH"; set Metrics to "Mean Hash Rate"; select "Pearson" correlation; select 30-day moving average and select appropriate time frame) (last visited Apr. 6, 2021).
177. *Id.*
178. *Id.*

2. Parting Ways: December 2017 – Present

After approximately four months of tumultuous competition for hashing power, Bitcoin and Bitcoin Cash appear to have settled into a mutualistic–uncorrelated relationship.[179] As Figure 3 shows, hash rates for the cryptocurrencies did not demonstrate any discernible relationship after December 2017.[180] Bitcoin's hash power steadily increased from a hash rate of approximately 10–150 million TH/s by January 2021, while that of Bitcoin Cash remained in the range of 1–5 million TH/s.[181]
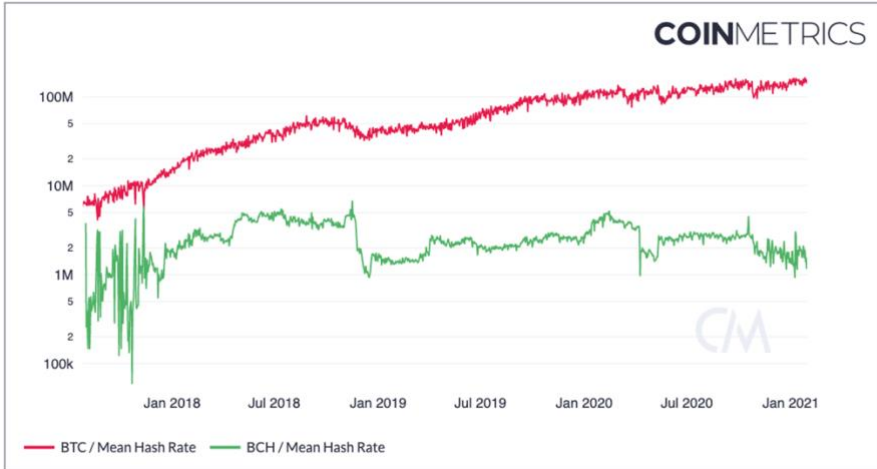

Figure 3: Mean Hash Rates of Bitcoin, Bitcoin Cash, August 2017 – January 2021[182]

Figure 4 shows the correlation between the hash rates of the two cryptocurrencies from the fork until January 2021.[183] There has been no consistent relationship between the two since December 2017.[184] Sometimes the relationship is positive, and other times it is negative; sometimes it is strong, and other times it is weak.[185]

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179. *Network Charts*, note 165 (select "Network Charts" at top of page; set Assets to "BTC" and "BCH"; set Metrics to "Mean Hash Rate"; select "No Moving Average" logarithmic scale; and select appropriate time frame) (last visited Apr. 6, 2021). *Cf.* Carter, *supra* note 91.

180. *Network Charts*, *supra* note 164.

181. *Id.*

182. *Id.*

183. *Network Charts*, *supra* note 164 (select "Correlation" at top of page; set Assets to "BTC" and "BCH"; set Metrics to "Mean Hash Rate"; select "Pearson" correlation; select 30-day moving average and select appropriate time frame) (last visited Apr. 6, 2021).
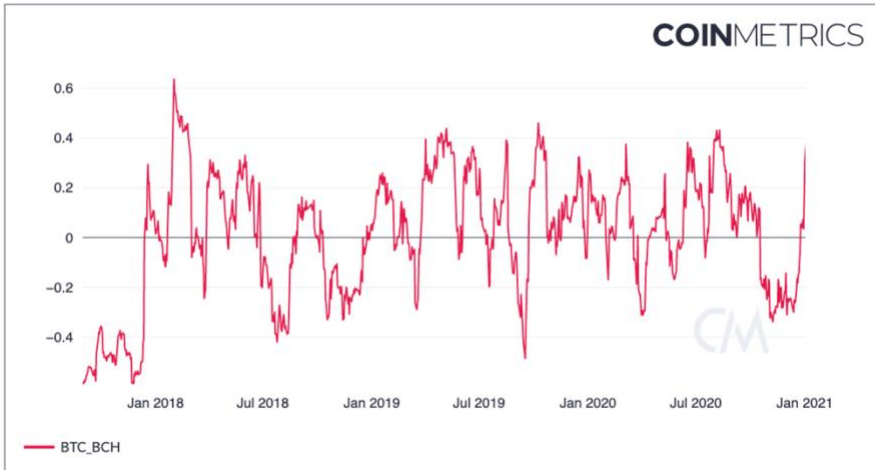
184. *Id.*

185. *Id.*

Figure 4: Correlation Between Mean Hash Rates of Bitcoin and Bitcoin Cash
30-Day Moving Average, August 2017 – January 2021[186]

Bitcoin and Bitcoin Cash no longer appear to directly compete for hashing power, at least not in the direct manner that they did immediately after the fork.[187] In fact, their hash rates have often risen together.[188] Thus, it appears that the two cryptocurrencies have indeed realized the different visions of their respective advocates: Bitcoin has become primarily a store of wealth while Bitcoin Cash has become a medium of exchange for smaller transactions and non-monetary data storage.[189]

In sum, though short-term prices might suggest the Bitcoin-Bitcoin Cash fork generated net value, deeper analysis reveals prices to be a poor indicator of value. Hash rate, which is a more useful metric, suggests the cryptocurrencies competed at first but soon became uncorrelated.

It is difficult to know where Bitcoin would be today without the Bitcoin Cash fork. If the fork demonstrated Bitcoin's resilience and clarified its best-use-case as a store of wealth, Bitcoin might otherwise be valued lower today. On the other hand, if some of today's Bitcoin Cash network would otherwise be dedicated to Bitcoin, Bitcoin might be valued higher. This question will probably never be answered, as it presents a classic case of alternate history.

Nonetheless, this analysis demonstrates that the Bitcoin-Bitcoin Cash fork did not produce an "undeniable accession to wealth."[190] At most, it can be said that the fork only possibly produced net value. This falls far short of the standard set forth in *Glenshaw Glass*,[191] which more appropriately describes obvious windfalls like unsuspectingly finding cash in a secondhand piano[192] or winning a prize on a gameshow.[193] Consequently, cryptocurrency

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186. *Id.*
187. *Compare* Figure 4 *with* Figure 2.
188. As evidenced by positive correlation values in Figure 4.
189. *A Comparative Analysis of Bitcoin Forks*, *supra* note 161, at 13, 17, 26-27.
190. Comm'r v. Glenshaw Glass Co., 348 U.S. 426, 431 (1955).
191. *Id.*
192. Cesarini v. United States, 296 F. Supp. 3, 16 (N.D. Ohio 1969), *aff'd*, 428 F.2d 812 (6th Cir. 1970).
193. *See* Treas. Reg. § 1.61-1(a) (1957).

received from the Bitcoin-Bitcoin Cash fork should not be deemed gross income.

IV.   HARD FORKS ARE ACTUALLY LIKE CORPORATE SPIN-OFFS

Having argued that taxing hard fork cryptocurrency as gross income upon receipt is inappropriate, this Note now discusses what might prove better. Much of the discussion of how to tax hard forks has been in search of a proper analogy in existing tax law.[194] Analogies have been drawn between hard forks and treasure troves, prizes and awards, free samples of merchandise, pregnant livestock, stock splits, stock dividends, and corporate spin-offs.[195] This Note argues that the analogy to corporate spin-offs, which others have rejected, [196] is suitable, and helpful in thinking about how to tax hard forks.

Corporate spin-offs are when a company sells off or distributes shares of a distinct part of its business, resulting in two distinct corporate entities.[197] Corporations pursue spin-offs when management believes the two components of the business will be better off independent.[198] This could be for operational, managerial, or financial reasons.[199] A familiar example is the spin-off of PayPal from eBay, where eBay's Chief Executive Officer John Donahoe said that the split would provide the two companies "sharper focus and greater flexibility."[200]

Spin-offs reorganize the structure of a corporation under Internal Revenue Code Section 355.[201] Typically, a spin-off involves a parent ("controlling" or "distributing") and subsidiary or division ("controlled") becoming functionally and legally independent.[202] Spin-offs do not create anything materially new except for a change in corporate form. To the contrary, a corporate parent typically relinquishes assets.

Hard forks, in contrast, duplicate the blockchain ledger of the parent cryptocurrency and award owners with new cryptocurrency.[203] Many argue

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194. *E.g.*, Chason, *supra* note 23, at 29-35.

195. *Id.*

196. *E.g.*, *id.* at 33-34.

197. *Spin-Off,* BLACK'S LAW DICTIONARY (11th ed. 2019).

198. Cathy Birkeland et al., *Spin-offs Unraveled,* HARVARD L. SCH. F. ON CORP. GOVERNANCE (Oct. 31, 2019), https://corpgov.law.harvard.edu/2019/10/31/spin-offs-unraveled [https://perma.cc/26LU-DP39].

199. *Id.*

200. Tricia Duryee, *Everything You Need to Know about eBay and PayPal's Split - and How it Impacts Amazon*, GEEKWIRE (July 1, 2015), https://www.geekwire.com/2015/everything-you-need-to-know-about-ebay-and-paypals-split-and-how-it-impacts-amazon [https://perma.cc/5GDJ-YZW2].

201. I.R.C. § 355 (West).

202. *Id.*; BLACK'S LAW DICTIONARY, *supra* note 197.

203. *See generally* Xu, *supra* note 18, at 2710.

the corporate spin-off analogy is inappropriate because forks do not subtract anything from the parent blockchain.[204] Instead, they duplicate it.[205]

However, this argument is incorrect because the blockchain is the wrong subject of focus. The blockchain is simply a software protocol and ledger, and in the case of Bitcoin, the software is free and open-source, meaning that it can be duplicated by anyone without cost.[206] However, the value of a blockchain is not the software protocol so much as the network.[207] This analysis has shown that the Bitcoin Cash fork immediately siphoned a portion of network assets from Bitcoin in the form of hash power.[208] So, at least in the short-term, the fork resembled the division of corporate assets in a corporate spin-off.

Moreover, although Bitcoin is not a corporation, it possesses some similar features. Bitcoin units, which are fungible and limited in supply, resemble corporate shares.[209] Moreover, Bitcoin units are liquid: they can easily be bought and sold on exchanges accessible to retail users.[210] Lastly, like the distribution of shares in a corporate spin-off, the Bitcoin-Bitcoin Cash fork proportionately allocated new cryptocurrency to existing owners.[211]

Hard fork governance also resembles the corporate spin-off in some respects, while remaining different in others. In a corporate spin-off, parent shareholders typically do not vote, and approval by a board of directors is sufficient.[212] Similarly, mere owners of bitcoin do not necessarily make the decision to hard fork; rather, those who actually participate in the network—miners and validators—make that decision.[213] On one hand, a network's miners and validators resemble a board of directors—a small group of knowledgeable actors with decision-making authority.[214] On the other hand, unlike directors, miners are not elected. Additionally, whereas corporate spin-offs require sufficient agreement by a board of directors, hard forks result from disagreement among miners.[215] Hard forks are more like a defection.

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204. *See, e.g.*, *id.*

205. *Id.*

206. DE FILIPPI & WRIGHT, *supra* note 53, at 21; *see* STABILE, ET AL., *supra* note 49, at 3 (Bitcoin was "useless (and valueless) unless others were willing to participate in the system by accepting and spending the virtual currency.").

207. *See supra* Part II.A.

208. *Supra* Part III.C.

209. DE FILIPPI & WRIGHT, *supra* note 53, at 26; *see* Kevin Dennis, *Airdrops and Hard Forks: Tax Theory on Crypto-Currency Distributions* (Dec. 13, 2017), https://www.linkedin.com/pulse/airdrops-hard-forks-tax-theory-crpto-currency-kevin-dennis ("[W]ith a market cap of $74 Billion and the ability to trade instantaneously on the various exchanges that exist in the market, a bitcoin certainly shows more similarities to shares of a company than it does to your father's stamp collection.") [https://perma.cc/TT9R-YSWD].

210. *E.g.,* COINBASE, coinbase.com (last visited Apr. 6, 2021).

211. BLOCKGEEKS, *supra* note 13.

212. DANIEL ANGEL, ET AL., SPINNING OUT AND SPLITTING OFF – NAVIGATING COMPLEX CHALLENGES IN CORPORATE SEPARATIONS, GIBSON DUNN 6, 11, 17 (Oct. 30, 2018), https://www.gibsondunn.com/wp-content/uploads/2018/10/WebcastSlides-Spinning-Out-and-Splitting-Off-Oct-30-2018.pdf [https://perma.cc/PLD5-NAJ9].

213. PRITZKER, *supra* note 48, at 81-85.

214. *Cf.* Dennis, *supra* note 209 (arguing top Bitcoin developers assume similar role to corporate board of directors).

215. PRITZKER, *supra* note 48, at 81-85.

The general approach to spin-off taxation may be appropriate for hard forks. Because spin-offs are a form of corporate reorganization, spin-off distributions are not taxed as gross income upon receipt.[216] Instead, they are taxed as capital assets only upon disposition, with an adjusted cost basis proportional to the market value of the two companies' shares immediately after the spin-off.[217] This approach should largely be applied to cryptocurrency hard forks.

V.   THE IRS SHOULD TAX FORKED CRYPTOCURRENCY AS A CAPITAL ASSET UPON DISPOSITION

A.   *The IRS Should Tax Cryptocurrency Only Upon Disposition*

This Note has argued the receipt of forked cryptocurrency does not present an undeniable accession to wealth. Accession to wealth is entirely speculative, and thus forked cryptocurrency should not be taxed as gross income upon receipt. Furthermore, taxation upon receipt poses problems relating to fairness, administrability, and compliance.

1.   Fairness

Taxing forked cryptocurrency upon receipt would likely produce an unfair tax burden for two reasons. First, forked cryptocurrency prices tend to be volatile after a fork.[218] For instance, Bitcoin Cash traded between approximately $200 and $800 in the day following the fork.[219] This makes the timing of assessment challenging and seemingly arbitrary. Compare this to the relative ease of assessing the fair market value of other taxable non-cash property, such as a car or diamond ring.[220]

Second, most forked cryptocurrencies have quickly become worthless.[221] While some recipients of forked cryptocurrencies have been able to sell forked coins before the cryptocurrencies lost value,[222] many others have not been able to. It would be unfair to tax this latter group on the value of the forked cryptocurrency at receipt. In contrast, cars and diamond rings hold their value better over time. And, even if cars or diamond rings were to rapidly lose market value, they would at least retain instrumental or aesthetic value. For these reasons, taxing cars and diamond rings upon receipt makes sense. It would be unfair, however, to do the same for forked cryptocurrency, which is likely to become worthless and has no other value.

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216. Gregory Kidder, *Basics of U.S. Tax-Free Spin-Offs Under Section 355*, 5 INT'L TAX'N 50, 50-51 (2011).

217. *Id.*

218. *Supra* Part III.A.

219. *Bitcoin Cash*, *supra* note 129 (select 7/31/2017 – 8/2/2017 timeframe).

220. *See Hornung v. Comm'r*, 47 T.C. 428, 431 (1967).

221. Redman, *supra* note 45; *see* COINMARKETCAP, *supra* note 10.

222. Thompson, *supra* note 123.

2. Administrability

Taxation upon receipt would be administratively problematic because it is unclear at what point a taxpayer assumes dominion and control over forked cryptocurrency.[223] The American Bar Association (ABA) and American Institute of Certified Public Accountants (AICPA) have offered the "deemed zero-value theory," where the fork would constitute a realization event and forked cryptocurrency would be assessed at a value of zero dollars.[224] This approach would assess the value of the forked cryptocurrency at the moment the fork is created, when it could be argued that it has no value—at least for the few milliseconds before trading activity begins.[225] However, it would be difficult to assert that dominion and control exists at the moment of the fork, as gaining actual control over the coins requires uptake.[226]

Uptake—where the owner actually gains access to the coins—is another possible point to define dominion or control.[227] However, this point differs between users.[228] Those directly participating in the network perform uptake themselves by downloading the new cryptocurrency software and claiming their new coins.[229] Some may do this immediately, while others might take some time.[230] Some may never uptake at all.[231] In contrast, those who instead hold their cryptocurrency on online exchanges are subject to the actions of the exchanges.[232] In some cases, exchanges take weeks or even months to uptake and grant control over the new coins—if ever.[233] Assessing the value of forked coins upon uptake would thus produce disparate outcomes, and it might even distort markets through perverse timing incentives. Such an approach would also require taxpayers to keep detailed records of uptake time and the fair market value of the coin at that moment. With each owner reporting a unique uptake time, this system would be administratively burdensome both to taxpayers and the IRS.

3. Compliance

Deferring taxation of forked cryptocurrency until disposition—which this Note recommends—presents a risk of under-reporting and evasion. However, cryptocurrency (not received from a fork) is generally already taxed in this manner.[234] Moreover, the potential harm of under-reporting and evasion with forked cryptocurrencies is rather small, given their relatively low

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223. *E.g.*, ABA Section of Taxation, *supra* note 23, at 8-9.

224. *Id.* at 11-12; AICPA, *supra* note 23, at 6.

225. AICPA, *supra* note 23, at 6. *But see* Xu, *supra* note 18, at 2712 (arguing the existence of futures markets for the forked coin defeats the deemed zero-value approach).

226. Xu, *supra* note 18, at 2711.

227. ABA Section of Taxation, *supra* note 23, at 8-9.

228. *Id.*

229. *An Analysis of Fork Legitimacy*, *supra* note 136, at 7-10.

230. *Id.*

231. *Id.*

232. *Id.*

233. *Id.* at 1-7.

234. I.R.S. Notice 2014-21, *supra* note 28. See text accompanying note 29.

market value.[235] Accordingly, the IRS might better allocate enforcement resources to cryptocurrency generally than specifically to forked cryptocurrencies.

Furthermore, taxation upon receipt is not necessary to prevent evasion, as evidenced by other assets that are not taxed until disposition,[236] such as stocks and real property.[237] The compliance challenge stems less from the deferral of taxation than from the nature of the property and how taxpayers acquire it. Real property is easily traceable due to its physical and often immovable characteristics, and stocks are purchased through centralized, regulated exchanges. Cryptocurrency, on the other hand, exists only digitally, and can be more easily purchased outside the gaze of regulators.[238]

With clear tax reporting guidelines, however, a policy that taxes forked cryptocurrency upon disposition can achieve sufficient levels of compliance. IRS guidance currently requires taxpayers to report cryptocurrency income and capital gains using standard tax forms.[239] The agency also added the following question to the first page of the Individual Income Tax Return in 2020: "At any time during [the tax year], did you receive, sell, send, exchange, or otherwise acquire any financial interest in any virtual currency?"[240] The form requires the taxpayer to simply answer "Yes" or "No."[241]

The addition of this question is a step in the right direction. The IRS can improve upon such efforts by requiring cryptocurrency owners to report the possession of cryptocurrency, regardless of whether it has been transacted with during the tax year. Such a report would require owners to disclose basic details of cryptocurrency in their possession, such as the type of cryptocurrency owned, date acquired, purchase price, number of units, and estimated current fair market value. Because hard forks are public knowledge, the IRS can determine whether a taxpayer has likely received forked cryptocurrency if that taxpayer has reported past possession of the parent cryptocurrency.

The IRS can also facilitate compliance by setting clear guidelines for cryptocurrency exchanges, some of whom have displayed a willingness to help users comply with tax rules. For example, exchanges like Coinbase and BlockFi have partnered with cryptocurrency tax reporting services like

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235. *See* Redman, *supra* note 45; *Today's Cryptocurrency Prices by Market Cap*, *supra* note 10.

236. *Cf.* INTERNAL REVENUE SERV., PUBL'N 544, SALES AND OTHER DISPOSITIONS OF ASSETS 2 (2019), https://www.irs.gov/pub/irs-pdf/p544.pdf (providing for taxation of certain assets upon disposition) [https://perma.cc/NDF7-7M9E].

237. *Id.* at 20.

238. STABILE, ET AL., *supra* note 49, at 298-342.

239. INTERNAL REVENUE SERV., FORM 1040, FEDERAL INCOME TAX RETURN (2020), https://www.irs.gov/pub/irs-pdf/f1040.pdf [https://perma.cc/V567-X2CT]; *see also* INTERNAL REVENUE SERV., FORM 8949, SALES AND OTHER DISPOSITION OF CAPITAL ASSETS (2020), https://www.irs.gov/pub/irs-pdf/f8949.pdf [https://perma.cc/XM9L-23UY]; INTERNAL REVENUE SERV., FORM 1099-B, PROCEEDS FROM BROKER AND BARTER EXCHANGE TRANSACTIONS (2021), https://www.irs.gov/pub/irs-pdf/f1099b.pdf [https://perma.cc/S4Y6-DR6F].

240. INTERNAL REVENUE SERV., *supra* note 239.

241. *Id.*

Cointracker to make it easier for users to report taxable cryptocurrency events.[242] Coinbase has even partnered with TurboTax to create an integrated cryptocurrency tax reporting solution.[243] The IRS should require cryptocurrency exchanges to provide accountholders with completed year-end 1099-B, 1099-MISC, and 8949 forms, as some exchanges already do.[244]

B. *The IRS Should Tax Forked Cryptocurrency as a Capital Asset with a Zero Cost Basis*

The IRS recognizes cryptocurrency as property and as an investment vehicle.[245] This is consistent with how the agency treats nearly everything owned for personal purposes or invested as a capital asset.[246] Though cryptocurrencies are neither stocks nor securities, people use them as speculative investments.[247]

As this Note has argued, hard forks do not produce an undeniable accession to wealth. Instead, they likely represent a mere reorganization of network assets, and, moreover, the new cryptocurrency often becomes worthless. For these reasons, the initial purchase of the parent cryptocurrency should be viewed as an investment in both the parent cryptocurrency and the potential for future hard forks, just like an investment in a corporation is an investment in the possibility of a future corporate spin-off—regardless of whether the investor sees it that way.[248] Accordingly, hard fork cryptocurrency should be taxed as capital assets at capital gains rates.

Given the difficulties surrounding price volatility and timing of dominion and control, trying to allocate some of the cost basis of the parent cryptocurrency to the forked cryptocurrency would be challenging. As such, this Note argues the cost basis of forked coins should be zero, resulting in the entire value of the forked coin being taxed upon disposition. This is the method that Japan has employed since 2017,[249] and is substantially similar to one proposed by the ABA in 2018.[250] However, this Note recommends hard forks be deemed non-realization events altogether, whereas the ABA proposal

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242. *Using TurboTax or CoinTracker to Report on Cryptocurrency*, Coinbase, https://help.coinbase.com/en/coinbase/taxes-repo (last visited Apr. 6, 2021) [https://perma.cc/86TT-VEX5]; *Filing Taxes on BlockFi*, CoinTracker, https://www.cointracker.io/exchanges/blockfi (last visited Apr. 6, 2021) [https://perma.cc/NH2T-JYNT].

243. *Using TurboTax or CoinTracker to Report on Cryptocurrency*, *supra* note 242.

244. *What to Expect for Tax Season*, BlockFi, https://blockfi.com/what-to-expect-for-tax-season (last visited Apr. 6, 2021) [https://perma.cc/PET4-N4Z8].

245. I.R.S. Notice 2014-21, *supra* note 28 (Section 2).

246. *Id.*

247. *See, e.g.*, *Skybridge Bitcoin Fund L.P.*, Skybridge Capital (Jan. 2021), https://www.skybridgebitcoin.com [https://perma.cc/28CG-7L63].

248. ABA Section of Taxation, *supra* note 23, at 10 ("Given that a forked coin resulting from a Hard Fork shares transactional and ownership history with the original coin, one could also argue that the original coin has always included the future potential to create a forked coin [… and] is more in the nature of a change in the form of ownership than a realization event.").

249. Southurst, *supra* note 38.

250. ABA Section of Taxation, *supra* note 23, at 10-13.

treats forks as realization events under the deemed zero-value theory.[251] In practice, the two approaches would be indistinguishable to taxpayers.

VI.   CONCLUSION

The IRS' approach to taxing forked cryptocurrency is based on a flawed assumption. In taxing such cryptocurrency as gross income upon receipt, the agency embraces the premise that hard forks deliver "free money" to recipients. However, hard forks do not necessarily create a windfall "out of thin air," but rather reorganize network assets—namely, the computing power that secures the cryptocurrency network by validating transactions. While it is theoretically possible that certain hard forks could create overall net value, the mere prospect of this outcome fails to provide an "undeniable accession to wealth" to recipients. Accordingly, hard forks as a category fail to satisfy the legal test for gross income under *Commissioner v. Glenshaw Glass*.

Because hard forks reorganize existing network assets, they resemble corporate spin-offs more than others have acknowledged. This analogy has been prematurely dismissed by drawing comparisons between the corporate form and blockchain software, rather than the corporate form and network assets. This Note argues the IRS should tax hard fork cryptocurrency largely like shares resulting from corporate spin-offs: strictly upon disposition and at capital gains rates.

Moreover, taxing hard fork cryptocurrency upon receipt raises fairness and administrability problems. First, defining the moment of realization is difficult because it is not clear at what point taxpayers exercise dominion and control. Additionally, price volatility around the forking event makes any determination of cost basis difficult and somewhat arbitrary.

For these reasons, the IRS should tax hard fork cryptocurrency strictly upon disposition, at capital gains rates, and with a cost basis of zero. This general approach has been instituted by Japan and articulated by the ABA. This Note provides empirical evidence that the approach is legally and practically optimal.

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251. *Id.*