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A New Framework for Taxing Cryptocurrencies

31 March 2022

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Working paper | 2022-09

A NEW FRAMEWORK FOR TAXING CRYPTOCURRENCIES

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ABSTRACT

This Article explores the tax law challenges associated with the taxation of cryptocurrencies and offers proposals to address such challenges. Specifically, the Article addresses the proper tax treatment of different cryptocurrency transactions and activities. It examines various aspects associated with the taxation of cryptocurrency through its life cycle, starting from earning cryptocurrency, through its disposal or exchange. The Article also examines the tax treatment of two special crypto events, hard forks and airdrops.

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INTRODUCTION

In less than a decade, the term "cryptocurrency" has astonishingly evolved from a sophisticated term used by technologists or crypto-enthusiasts, to becoming a mainstream term as a result of its vast pervasiveness and popularity.[3] The emergence of cryptocurrency in the last decade has already affected the finance world. The technology underlying crypto has developed and will continue to develop drastically over the coming years, likely making itself adaptable to multiple aspects of economic activities.[4]

The U.S. is among the countries that host the highest concentration of cryptocurrency and Bitcoin trading volume in the world.[5] Moreover, the U.S. is home to numerous cryptocurrency and blockchain related corporations, and holds the record for the highest number of Bitcoin ATMs in the world. [6]

The rapid development of cryptocurrencies has drawn the attention of governments, financial regulators, and scholars.[7] Despite the attention, there is a lack of scholarly work examining crypto transactions from a tax perspective. This Article attempts to fill this gap.

This Article addresses the proper tax treatment of different cryptocurrency transactions and activities. Discussing the proper tax treatment of cryptocurrencies requires one to first understand its function and underlying technology. Part I of the Article provides a broad overview of cryptocurrency, its function, and a general description of the blockchain technology it relies on.

The emergence of cryptocurrency presents new and growing tax law challenges. Part II addresses two primary challenges associated with the taxation of cryptocurrencies, the administrative and regulatory challenges. Addressing these challenges aids in offering a proper tax policy regarding the taxation of cryptocurrencies. Administrative challenge for tax authorities occurs when tracking crypto transactions becomes far too difficult. This challenge stems from the two possible attributes of cryptocurrency: the volatility of cryptocurrencies' value and anonymity of cryptocurrency transactions. Addressing the administrative challenge requires using enhanced technologies to enforce tax law, in addition to enhancing the reporting requirements for crypto transactions. A regulatory challenge arises when the taxable basis of a transaction becomes uncertain. Part II explores how the current U.S. tax guidance, as provided by the IRS, does not address the administrative challenge, nor does it adopt the proper regulatory policy. The current IRS guidance treats cryptocurrency as property. This discourages the use of cryptocurrency for short-term transactions and daily consumption and may as a result hamper the development and rapid progress of innovations within the crypto industry.

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[3] Gary Marchant et al., *International Governance of Cryptoassets: Whether, Why, What and Who?*, 53 Int. Law. 417, PDF p. 2 (2020).

[4] Eswar S. Prasad, *The Future of Money, How the Digital Revolution Is Transforming Currencies and Finance?*, Cambridge, Massachusetts: The Belknap Press of Harvard University Press, p. 106 (2021).

[5] According to a recent study by Pew Research, the number of American adults who have traded, invested or used cryptocurrencies has grown to 16%, more than 40 million Americans. (See https://www.pewresearch.org/fact-tank/2021/11/11/16-of-americans-say-they-have-ever-invested-in-traded-or-used-cryptocurrency/)

[6] Andrew Haynes and Peter Yeoh, *Cryptocurrencies and Cryptoassets: Regulatory and Legal Issues,* p. 71 (2020).

[7] See Haynes, *supra* note 6, at p. 69.

After discussing the general tax law challenges associated with the taxation of cryptocurrencies, the Article goes through the life cycle of cryptocurrencies and offers a tax treatment for different crypto activities.

Part III discusses the taxation of earning cryptocurrencies, including earning cryptocurrency through purchasing them, receipt as a payment for goods or services, and as compensation for employment. The tax treatment of crypto when it is earned is critical to the determination of basis and character of income upon realization. Moreover, Part III addresses the tax treatment of earning crypto through two other primary means: mining and staking activities. More specifically, this part addresses the income characterization of the block rewards and staking rewards, which are crypto rewards resulting from using two different consensus mechanisms, Proof-of-Work and Proof-of-Stake, respectively. The authors propose, among other things, that staking rewards should be taxed only upon sale or exchange, not upon receipt. This proposed treatment will help to ease the massive administrative burden associated with taxing such rewards in the date when they are received and will support innovation and encourage the development of the Proof-of-Stake related technologies which are far more environment friendly than Proof-of-Work mechanism.

Part IV discusses the taxation of cryptocurrencies upon disposal or exchange. The authors argue that cryptocurrency should be taxed only when it meets the "real-world economy" – *i.e.* when it is exchanged for "real-world" value – when crypto is exchanged either for goods or services, fiat money (legal tender), or other non-crypto assets. This means that crypto-to-crypto exchanges should be treated in a tax-free manner. This approach will both ease the administrative burden and simplify the taxation of cryptocurrencies. Taxing cryptocurrency activity that is connected to real-world economy should be based on the principle of tax neutrality, which means that the taxation should follow the nature and use of the cryptocurrency in question. To achieve such neutrality, the authors propose a bifurcated tax treatment: when cryptocurrencies are held for a short period (under a year) and are used as a tool for payment to acquire goods or services, their function is similar to the function of money and regular fiat currencies. Therefore, the tax treatment of this category should be subjected to the rules for foreign exchange under the Internal Revenue Code (the "Code"). When cryptocurrencies are held for over a year, their function is similar to an investment. Thus, cryptocurrencies in this category should be treated as a property, and the current IRS guidance should apply. Further, Part IV addresses other possible classifications of cryptocurrencies which can be relevant in determining the tax treatment under some tax provisions, such as classification of crypto as a security or as a commodity.

Part V addresses the tax treatment of two special crypto events, hard forks and airdrops, which may potentially create new taxable events for cryptocurrency holders. These crypto events emerged as a result of the increased use of cryptocurrencies and the development of blockchain technology. The authors argue that hard forks should be treated as a software upgrade which does not constitute a taxable event in the hands of the taxpayers. Also, the authors argue that the tokens received as part of airdrops should not be taxed when they received, but only when they are exchanged or disposed of later.

PART I: GENERAL – THE WORLD OF CRYPTOCURRENCIES

Discussing the proper tax treatment of cryptocurrencies, requires one first to understand its function, the technology underlying it, its trading volume, and its current role and future potential effect on the larger economy. This part provides a general description of cryptocurrency's function and the technology it relies on.

A. General – What is Cryptocurrency?

Cryptocurrency[8] is a form of digital money designed to be used over the internet and transfer value online, all without the need of a middleman like a bank or a payment processor.[9] Cryptocurrencies are decentralized, *i.e.* they are not issued or controlled by any government or other central authority. Cryptocurrencies are managed by peer-to-peer networks of computers that run free, open-source software, known as the blockchain technology.[10] In general, a crucial element underlying cryptocurrencies is the mechanism of validating transactions in a decentralized manner, with no central or trusted authority involved, and with an immutable record of transactions.[11]

There are numerous types of cryptocurrencies which may be classified under distinct criteria. For example, cryptocurrencies may be classified based on whether they are connected to the real-world economy or not. Under this classification, cryptocurrencies are divided to two categories:

The first category of cryptocurrencies is those used only in the virtual world and are not connected to real-world economy. An example is exchanging virtual content used in certain digital platforms such as virtual games.

The second category of cryptocurrencies is the one which meets the real-world economy. These cryptocurrencies can be a substitute for real currency in, for example, purchasing goods or services. This Article will address the latter category, which includes the major cryptocurrencies such as Bitcoin and Ether. Bitcoin constitutes the first cryptocurrency which was launched in 2008 and remains the most recognized cryptocurrency. Today there are thousands of other cryptocurrencies that vary significantly in their characteristics and underlying functions.[12] Bitcoin, as will be discussed shortly, remains the largest, most dominant, and best-known cryptocurrency with the biggest market capitalization by far.[13]

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[8] The name cryptocurrency is a combination of cryptography and currency. Cryptography is the process of converting legible information into an almost uncrackable code, to track purchases and transfers. Cryptography is used to secure the transactions as it involves the encryption of a sender's message and the decryption of the message by the recipient (See Nafis Alam & Abdolhossein Zameni, *The Regulation of Fintech and Cryptocurrencies, in Fintech in Islamic Finance: Theory and Practice* (Umar A. Oseni & S. Nazim Ali eds.), p. 163 (2019).

[9] See https://www.coinbase.com/learn/crypto-basics/what-is-cryptocurrency, and https://academy.binance.com/en/start-here,

[10] https://www.coinbase.com/learn/crypto-basics/what-is-cryptocurrency

[11] Prasad, *supra* note 4, at p. 119.

[12] One estimate puts the number of cryptocurrencies at around 6700, with a total market capitalization of a 2.5 trillion USD as of Oct 25, 2021. Bitcoin, Ethereum, Binance Coin, Cardano, Solana, Ripple, Polkadot are amongst the leading names as of 2021. See https://www.financialexpress.com/economy/cryptocurrency-a-new-dimension-in-the-global-economy/2367447/

[13] During 2020 and through the first quarter of 2021, it accounted for roughly two-thirds of the market capitalization of all cryptocurrencies put together. See Prasad, *supra* note 4, at p. 109+149

B. Blockchain

Blockchain is the technology powering cryptocurrencies like Bitcoin and Ether. At its most basic, a blockchain is a list of transactions available to the public to view and verify.[14] A cryptocurrency blockchain is similar to bank's balance sheet or ledger. [15] The Bitcoin blockchain, for example, contains a record of each instance where Bitcoin was sent or received.

The list of transactions contained in the blockchain is fundamental for most cryptocurrencies, because it enables secure payments to be made between people who don't know each other without having to go through a third-party verifier. No company, government or any third party controls the blockchain, and anyone can participate in it.[16]

Blockchain's transparency is reflected in the fact that once a block of transactions is validated and added to the blockchain, the transaction can easily be confirmed by any participant in the network. After a transaction is validated through the consensus mechanism[17], it cannot be changed, erased or modified in the blockchain record.[18]

C. Bitcoin

In 2008, Satoshi Nakamoto, the mysterious creator of Bitcoin, published the seminal eight-page paper entitled "Bitcoin: A Peer-to-Peer Electronic Cash System." This paper offered a clear thesis: proposing that a "purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution."[19]

Bitcoin has succeeded in its intention to be a medium of exchange that facilitates the performance of financial transactions outside the domain of the government and traditional institutions, while relying only on the digital identities of transacting parties.[20] The Bitcoin blockchain, as envisioned in Nakamoto's paper, allows Bitcoin to accomplish two essential objectives underpinning its basic role: validation and immutability of transactions without relying on a trusted third party.

Two years after publishing Nakamoto's paper, the first commercial Bitcoin transaction took place when two pizzas were purchased for 10,000 Bitcoin, roughly [$571] million today.[21] In the following years, Bitcoin started to be used to purchase goods and services, traded on online exchanges for fiat currency, including the U.S. dollar.[22] Today, more than [$6] billion in Bitcoin transactions occur every day, and tens of millions of Americans own some form of

[14] https://www.coinbase.com/learn/crypto-basics/what-is-a-blockchain
[15] https://www.coinbase.com/learn/crypto-basics/what-is-cryptocurrency
[16] https://www.coinbase.com/learn/crypto-basics/what-is-a-blockchain
[17] Consensus mechanisms allow distributed systems (networks of computers) to work together and stay secure. As part of the emergence of cryptocurrency, new consensus mechanisms have been invented to allow crypto systems, such as Bitcoin or Ethereum, to agree on the state of the network.
[18] The Future of Money, page 128
[19] Satoshi Nakamoto, Bitcoin: *A Peer-to-Peer Electronic Cash System, BITCOlN* (Oct. 31, 2008), https://bitcoin.org/bitcoin.pdf.
[20] See Prasad, *supra* note 4, at 107.
[21] The first Bitcoin was created in 2009 after Nakamoto released the Bitcoin Network source code.
[22] Am. Jur. MONEY § 6. Virtual Currency

cryptocurrencies.[23] As will be elaborated on later in this Article, Bitcoin, over the last few years is more readily perceived not only as a medium of exchange, but also as a store of value, earning the key essential characteristics of conventional fiat money, especially fungibility.[24] But Bitcoin faces its own challenges.

These challenges include its inability to secure the anonymity of its users, its volatile price, its relatively high transaction costs and the limited functionality of the Bitcoin blockchain. The market response to these attributes of Bitcoin has been the emergence and proliferation of new cryptocurrencies that attempt to address the different problems associated with the ownership and usage of Bitcoin.[25]

D. Emergence of New Cryptocurrencies after Bitcoin

As noted, the new types of cryptocurrencies have been designed to fix specific problems associated with Bitcoin:

1. Developing better consensus mechanisms (e.g. Ether, the second most valuable cryptocurrency which runs on the Ethereum blockchain, is in the process of moving from the Proof of Work mechanism, a non-environmental friendly mechanism due to its relatively high energy consumption, to the Proof of Stake mechanism. These mechanisms are elaborated on later in Part III).[26]
2. Ensuring stable valuation (e.g. Stablecoins which can be backed by fiat currencies or by assets such as gold and commodities. For example, Meta's digital currency, Diem, was designed to be a Stablecoin, whose value relies on a basket of major fiat currencies).[27]
3. Providing more secure anonymity (e.g. Monero and ZCash, designed to not publicly display information associated with a particular transaction in their network).[28]
4. Expanding the functionality of the blockchain (e.g. Smart Contracts which are self-executing computer programs that perform pre-defined tasks based on a predetermined criteria).[29]

In addition to the different types of crypto listed above, the last few years have witnessed the emergence of "Non-fungible Tokens", or "NFTs", which are unique cryptographic tokens that exist on a blockchain and cannot be replicated. NFTs are often used to represent ownership of real-world items, like artwork and real-estate.[30]

[23] https://www.wsj.com/articles/new-approach-regulating-crypto-bitcoin-coinbase-armstrong-digital-asset-policy-proposal-11634226117
[24] People started to put their savings on Bitcoin and investors bet on its price. Moreover, there are derivatives which are linked to its price. (See Prasad, *supra* note 4, at p.108)
[25] See Prasad, *supra* note 4, at 109.
[26] See Prasad, *supra* note 4, at 152-153
[27] See Prasad, *supra* note 4, at 155.
[28] See Prasad, *supra* note 4, at 158
[29] See Prasad, *supra* note 4, at 160
[30] https://www.investopedia.com/non-fungible-tokens-nft-5115211

PART II: CRYPTOCURRENCIES – ADMINSTRATIVE AND REGULATORY CHALLENGES AND CURRENT U.S. TAX TREATMENT

As already discussed, this Article attempts to examine the tax law aspects of cryptocurrencies, specifically, a proper tax policy that one must take regarding crypto activities. The emergence of cryptocurrency presents new and growing tax law challenges. Of these, administrative and regulatory challenges constitute the two primary challenges. Thus, offering a proper tax policy requires addressing these two main challenges. This part discusses in detail the administrative and regulatory challenges associated with taxing cryptocurrencies. Also, this part explains how the current U.S. tax guidance regarding the taxation of cryptocurrencies, as provided by the IRS, does not address the said administrative challenges, nor it adopts the right regulatory policy.

A. Administrative Challenge

Administrative challenge for tax administrations occurs when tracking crypto transactions becomes hard. This challenge stems from the two possible attributes of cryptocurrency: the volatility of cryptocurrencies' value and anonymity of cryptocurrency transactions. Addressing the administrative challenge requires using enhanced technologies to enforce tax law, in addition to enhancing the reporting requirements for crypto transactions.

1. Volatility of Cryptocurrencies' Value

Cryptocurrencies can be and often are very volatile. The value of cryptocurrencies, such as Bitcoin[31] and Ether[32] fluctuates enormously, sometimes by the minute or the second. What's more, when compared to stocks or fiat currencies, cryptocurrencies do not hold an inherent value, nor are they backed by the government as legal tender.[33] This tends to make cryptocurrencies even more volatile and subject to speculation than stocks and other investments.[34]

Volatility poses another obstacle to tax authorities attempting to tax crypto transactions and determine the precise taxable income for a specific taxpayer. Taxpayers might find it difficult to make an accurate filing of a tax return due to the aforementioned high volatility.

However, volatility is not present in all cryptocurrencies. Stablecoin, for example, is a digital currency pegged to a relatively stable reserve asset, like the U.S. dollar or gold.[35]

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[31] On Christmas Day 2015, one Bitcoin was trading for $419. About two years later, on December 15, 2017, the value of a Bitcoin was $19,650. At Christmas day of that year the price fell to $15,075 (losing about a quarter of its value in just ten days). On December 15, 2018, a Bitcoin was trading at $3,183. By Christmas 2020, the price had increased to $24,400. All the above prices are approximate as they often vary significantly within the course of a day or even a few hours. See Prasad, *supra* note 4, at 131.

[32] A unit of Ether, was trading at $8 on January 1, 2017, and surged to $1,433 on January 12, 2018. Within three months, it fell to $385, then one month later it increased back to $812, and by the end of the year its value fell to $134. In late May 2021, a unit of Ether was worth about $2,500 (See Prasad, *supra* note 4, at 132).

[33] There are exceptions, for example with respect to fiat currencies, the volatility in value can be seen when a country faces high inflation that erodes the purchasing power of its currency.

[34] See Marchant, *supra* note 3, at PDF page 5.

[35] https://www.coinbase.com/learn/crypto-basics/what-is-a-stablecoin

2. Anonymity of Cryptocurrencies Transactions

The confidentiality of the transacting party is one of the main features of cryptocurrency transactions. Cryptography makes it possible that transactions in crypto are pseudonymous in the sense that each individual in a specific network have pairs of digital keys, one public and one private. Each digital coin is identified by these two attributes – a public key and the corresponding private key.[36] These public and private keys constitute the vital elements of anonymous digital payment systems.[37] Once someone encrypts a message using a specific individual's public key, the only individual who can decode that message is the one who has the private key corresponding to that specific public key.[38] Thus, for a given transaction, only the digital identities of the two transacting parties are publicly available on the blockchain.[39] Because of the public ledger features, anyone can check the public keys of both the sender and the recipient to check the chain of ownership, but not their private keys.[40]

The inability to track the identity of the transacting parties makes it difficult for the IRS to track these transactions and identify the relevant taxpayers in addition to the concern that taxpayers may be underreporting taxable income from transactions in cryptocurrencies. In his paper "Are Cryptocurrencies Super Tax Havens?" Omri Marian has argued that cryptocurrencies could replace tax havens for tax evaders who traditionally executed their tax evasion through the use of offshore bank accounts, and thus, might opt out of traditional tax havens in favor of cryptocurrencies.[41] He also argued that the combination of anonymity with decentralization (the lack of intermediaries) may make crypto more attractive than tax havens than rely only on secrecy (and which have been the target of numerous enforcement efforts from FATCA onward).

However, while the concern for tax evasion due to anonymity does exist, especially with the emergence of new cryptocurrencies which attempt to guarantee anonymity for their users[42], this concern is not special for the cryptocurrencies. Tangible fiat currencies have always been anonymous and the inability to trace the identities of individuals in illicit activities using cash has been always a challenge for tax authorities.[43]

Given its special features, the anonymous concern associated with taxing cryptocurrency can be mitigated by using enhanced technologies to enforce tax law and by enhancing the reporting requirements to the IRS with respect to crypto transactions.

3. Possible Solutions to Addressing the Administrative Challenge

[36] See Prasad, *supra* note 4, at 111.
[37] See Prasad, *supra* note 4, at 111.
[38] See Prasad, *supra* note 4, at 111.
[39] See Prasad, *supra* note 4, at 137.
[40] See Prasad, *supra* note 4, at 111.
[41] Omri Marian, *ARE CRYPTOCURRENCIES SUPER TAX HAVENS?,* Michigan Law Review First Impressions (2013).
[42] For example, Monero and Zcash.
[43] Alex Ankier, *Debugging IRS Notice 2014-21: Creating a Viable Cryptocurrency Taxation Plan, Brooklyn Law Review,* p. 892 (2020). Tangible fiat currency still facilitates the majority of illegal transactions.

3.1 Using Enhanced Technologies to Enforce Tax Law

With the development of the technology related to cryptocurrency, the main administrative challenge from this perspective for the IRS and other tax administrations is in finding the proper technology to enforce tax law.[44]

Using the proper technology is necessary to reduce the administrative difficulties associated with taxing crypto due to the public ledger feature of crypto which could mitigate the anonymity concern. Transactions using cryptocurrencies, such as Bitcoin, are recorded electronically. Online transactions can be more easily tracked because of the public ledger features. The distribute ledger technology ("DLT"), which is the technology underpinning Bitcoin, allows transactions to be publicly displayed and shared across the entire DLT.

Moreover, over the years it has become more obvious that securing the pseudonymity of the cryptocurrency users is not always possible, especially with respect to the major cryptocurrencies such as Bitcoin and Ether. This is especially true when the crypto world meets the real world. In this case, it would be easier to link physical and digital identities, because users have to reveal their identities and physical locations to receive goods or services. Thus, crypto addresses cannot remain fully anonymous.[45] According to some observers, for instance, Bitcoin in its current conception is not an anonymous form of transacting, because most transactions can be linked to a public ID (i.e., the public key), which can be tracked to individuals by their registrations on a transaction or exchange site.[46] As a result, the history of a given Bitcoin can already be tracked with relative ease.[47]

Advanced and sophisticated technologies should be able to help the IRS to deal with the anonymity concerns associated particularly with newer cryptocurrencies, such as Monero and Zcash. Both of these cryptocurrencies were designed to be truly anonymous by preventing the publication of any details related to a specific transaction in their networks.[48]

3.2 Enhancing Reporting Requirements for Crypto Transactions

[44] This could be done also by contacting third-party companies to assist the IRS in the technology aspect. For example, in order to determine the tax obligations of customers who purchase and sell Bitcoins, the IRS has contracted with Chainalsis Inc., a Swiss company with offices in New York, to assist in identifying owners of digital wallets (See Rosario Girasa, *Regulation of Cryptocurrencies and Blockchain Technologies: National and International Perspectives*, p. 190 (2018)).

[45] See Prasad, *supra* note 4, at 138.

[46] In November of 2016, the Department of Justice (DOJ) requested a "John Doe" summons to be issued to Coinbase, Inc., a San Francisco company which is one of the largest cryptocurrency exchange companies in the world. The DOJ demanded a list of all U.S. persons who conducted transactions in a "convertible virtual currency" between January 1, 2013 and December 31, 2015. Specifically, the DOJ wanted a list of all individuals that bought and sold Bitcoin during that two-year time period. This issue went to court and the result of the decision on *U.S. v Coinbase* enabled the IRS and other government enforcement officials to crack the blockchain shield that had protected users of cryptocurrency. This will presumably impede the ability of Coinbase to maintain the privacy of its customers (See Girasa, *supra* note 44, at p.190)

[47] Sami Ahmed, J.D., Yale Law School, *Cryptocurrency & Robots: How To Tax and Pay Tax on Them*, p. 41 (2017).

[48] Research have raised questions about the non-traceability of transactions even in the cases of Monero and Zcash (See Prasad, *supra* note 4, at 158)

In order to handle the challenges related to tracking the illicit crypto transfers or tax evasion due to the relatively high level of anonymity and volatility, the IRS should enhance the reporting requirements in the crypto world by issuing regulations that set detailed reporting requirements on the transacting parties along with the relevant intermediaries, such as crypto exchanges.[49]

The challenge that these proposed reporting regulations will face is that on the one hand they should make sure that the cryptocurrency is not used as a vehicle for criminal activity. On the other hand, the regulations should not stifle the progress in crypto innovation by making pursuing transactions in crypto burdensome for crypto users, thus preventing cryptocurrencies from achieving their positive potential. This balance between reporting and not harming the industry, shall take into account the unique features of cryptocurrencies and the peer-to-peer network.[50]

Recently, as part of the infrastructure bill[51], Congress modified section 6050i of the Code to include "digital assets" in addition to cash. Section 6050i imposes reporting requirements on "any person" who is engaged in "trade or business" and receives over $10,000 in digital assets.[52] The recipient of the cryptocurrency must collect personal information of the sender, including address and social security number, and sign and submit a report to the government within 15 days of the transfer.[53] Failure to comply will result in mandatory fines and can be a felony resulting in prison time.

This modified rule is helpful and a step forward toward enhancing the reporting requirement in the crypto world, and thus combating the potential use of crypto in criminal activity and tax evasion. However, it suffers from some significant flaws and does not achieve the right balance mentioned above, as it may harm the crypto industry and discourage participation. Observers argue that this section, which was meant to apply in the case of "old-fashioned" in-person cash transactions, is difficult to apply in the crypto world as it makes compliance extremely burdensome, and in some cases, even impossible due to the special nature of cryptocurrencies.[54] In order to make the section more

[49] In addition, cryptocurrency exchanges, should be instructed by the IRS to take different measures to abate criminal activity in their network, by strictly complying with anti-money laundering (AML) record keeping and other enhanced reporting requirements.

[50] In order to deal with this challenge, in his paper "A Conceptual Framework for the Regulation of Cryptocurrencies", Omri Marian proposes a regulatory framework that imposes costs on characteristics of cryptocurrency useful for criminal behavior (in particular anonymity), but does not impose costs on characteristics that are at the core of cryptocurrencies' potential (in particular, the decentralization and value transfer processes). The regulatory framework that Marian proposes relies on "elective anonymity", such that it should require that cryptocurrency users who elect to avoid the regulatory cost provide information to the same extent as required when using other financial accounts. (See Omri Marian, *A Conceptual Framework for the Regulation of Cryptocurrencies*, The University of Chicago Law Review, pages 53, 59, 63 + 64 (2015)).

[51] Infrastructure Investment and Jobs Act, H.R. 3684 (2021)

[52] Section 6050i of the Code.

[53] Reporting the information shall be done by filling out Form 8300 and filing it with the IRS or the Financial Crimes Enforcement Network (FinCEN).

[54] See Abraham Sutherland, Research report, PoS Alliance (Sep 17,2021): https://www.proofofstakealliance.org/wp-content/uploads/2021/10/Research-Report-on-Tax-Code-6050I-and-Digital-Assets-printable.pdf

appropriate to the crypto world, the scope of "digital assets" should be narrowed down and the threshold for the criminal liability should be increased.

The new reporting requirement defines "digital assets" as "any digital representation of value which is recorded on a cryptographically secured distributed ledger or any similar technology as specified by the Secretary."[55] This definition is overly broad and does not take into account the distinctions between the various cryptocurrencies.

As will be elaborated later in this Article, some cryptocurrencies are similar in substance to money. This includes crypto held for a short period of time and used to purchase goods or services in the real-world economy. However, other category of cryptocurrencies behaves more like capital assets. This includes, crypto held for investment purposes and for a longer period of time, in addition to special kinds of digital assets such as NFTs. Imposing unduly large reporting requirements on the latter category of cryptocurrency is flawed. These reporting requirements do not address the concern that underlies the criminal nature of section 6050i, enacted almost four decades ago to discourage large in-person cash transfers.[56] Thus, "digital assets" under this section shall include only cryptocurrencies which are fundamentally similar to cash and which function as money.

As far as it concerned to the threshold for the criminal liability, this section should apply to large transactions where the potential for pursuing criminal activity is higher so that the liability corresponds with the criminal character of this section and the strict penalty resulting from its application. The volatility of cryptocurrencies adds to the administrative difficulty for the IRS and for taxpayers to comply with this reporting requirement. Therefore, exempting smaller transactions from such an obligation would be preferable as it would not harm the innovation and the participation in the crypto field. The proper threshold should be raised to higher amount, for instance [$80,000].

B. Regulatory Challenge

A regulatory challenge is posed when the taxable basis of a transaction becomes uncertain. This challenge, in general, emanates from the uncertainty that surrounds the general economic function and legal status of cryptocurrency transactions. In this uncertain legal environment, taxes on crypto activity should have a regulatory role. As a regulatory tool, tax law should guarantee that the taxation of crypto activity does not impede the development and innovation of the promising crypto industry. This is achieved by adhering to the principle of tax neutrality when taxing crypto activity, which means taxing cryptocurrency transactions in a way that follows their nature and use.

1. Lack of General Regulatory Guidance

[55] Section 6045(g)(3)(D) of the Code.

[56] which made it harder for governments to track cash used in criminal activity and to alternatively encourage the use of financial institutions for money transfers.

Despite the rapid emergence of cryptocurrencies in the U.S.[57], the regulatory framework of the crypto world is still unclear. The activities and products of the crypto industry do not easily fit into the existing regulatory categories and definitions. The Congress has not addressed the issue comprehensively yet.[58] Governmental agencies, such as FinCEN, the CFTC, and the SEC, have failed to provide clear guidance or regulate the crypto world in a comprehensive manner and each agency seems to be treating crypto in the way that will maximize its regulatory power over it.[59] The lack of a regulatory guidance by the relevant governmental agencies poses a challenge for tax law, especially in the cases when the regulatory definition of a specific term is aligned with the definition in tax law. For example, the classification of crypto as a security or commodity is relevant in determining the tax treatment of crypto under different tax provisions.

In addition, the uncertain regulatory environment makes it difficult to operate and use cryptocurrencies in the U.S., it hampers the crypto industry's development, and it tampers the innovation and growth in this field.[60] Arguably, the lack of clear guidance might also increase the potential use in criminal activity including money-laundering. In this uncertain regulatory environment, tax law could play a critical role in regulating the taxpayers' behavior in the cryptocurrency market.

2. Tax Law as a Regulatory Tool

2.1 What Is Tax Law Meant to Achieve?

A tax can have one of three goals: raising revenue for the government, redistributing income from the rich to the poor, and regulating behavior.[61] There is no such thing as a pure tax — any actual tax always has more than one purpose. All taxes that influence behavior fall within the definition of regulatory taxes, and all taxes that produce some revenue and effect some redistribution, therefore fall within the definitions of revenue-raising or redistributive taxes. But it still makes sense to try to classify tax provisions according to their primary goals, because that underlies our method of evaluating them.[62]

[57] According to a recent study by Pew Research, the number of American adults who have traded, invested or used cryptocurrencies has grown to 16%, more than 40 million Americans. (See https://www.pewresearch.org/fact-tank/2021/11/11/16-of-americans-say-they-have-ever-invested-in-traded-or-used-cryptocurrency/)

[58] The latest attempt for crypto legislation by Congress was the Crypto-Currency Act of 2020 which failed to pass into law. The bill's stated purpose is to "clarify which Federal agencies regulate digital assets, to require those agencies to notify the public of any Federal licenses, certifications, or registrations required to create or trade in such assets, and for other purposes." The bill proposes categorizing digital assets into three separate categories with distinct definitions: cryptocurrencies, cryptocommodities, and cryptosecurities. Then, FinCEN, the CFTC, and the SEC would have the sole power to regulate the category that falls under their respective jurisdiction. FinCEN would regulate cryptocurrencies. The CFTC would regulate crypto-commodities. The SEC would regulate crypto-securities. (See David C. McDonalds, *Coining New Tax Guidance: How the IRS is Falling Behind in Crypto*, 28 U. Mia. Int'l & Compar. L. Rev. 151, p. 160 (2020).

[59] For instance, where cryptocurrencies are deemed as security, then the SEC has wide powers to regulate or even prohibit the exchange of cryptocurrencies.

[60] See Alam & Zemni, *supra* note 8, at p. 167.

[61] See Avi-Yonah, "The Three Goals of Taxation," 60 Tax L. Rev. 1 (2007).

[62] See Avi-Yonah, "The Three Goals of Taxation," 60 Tax L. Rev. 1 (2007).

Taxes on crypto activity shall be classified as a regulatory taxes[63], as arguably one of the primary goals of the taxation of cryptocurrency is to regulate the taxpayers' behavior in the cryptocurrency market. How government treat cryptocurrencies for tax purposes could have a significant impact on its adoption and use. The question that underlies this discussion is whether the government is interested in using taxation as an instrument to encourage or discourage the use and holding of cryptocurrencies if this perceived to be harmful or otherwise undesirable. The tax law, as a regulatory tool, shall reflect the general policy towards cryptocurrencies and should be responsive to the larger economic impacts and concerns that cryptocurrencies raise.

2.2 The Regulatory Role of Tax in the Cryptocurrency World

Given the potential positive impacts of cryptocurrency industry, tax laws should not be an obstacle to its development. Cryptocurrencies can contribute to economic growth and play a vital role in job creation in the U.S. in the next decades. Since its outset, different kinds of businesses have flourished because of the nascent cryptocurrency technology and its related activities. Most importantly, the blockchain technology and cryptocurrencies have drastically reduced the cost of online transactions in an efficient way.[64] Moreover, cryptocurrencies have the potential to help marginalized communities and under-banked populations by enabling their access to finance which has been previously restricted in the more standard forms of banking.[65]

It is important that the tax law does not impede the cryptocurrencies' adoption and use. Taxing cryptocurrencies shall be based on the principle of tax neutrality, which means taxing cryptocurrency transactions in a way that follows the nature, the use of the cryptocurrency in question, and the purpose for which the cryptocurrency was acquired and disposed. If cryptocurrency's nature is akin to investment, it should be taxed as property under the applicable rules. If cryptocurrency's nature is akin to fiat currency, i.e. when cryptocurrency functions as money, it should be taxed as currency under the Code's applicable rules. And it is necessary to approximate tax neutrality with comparable conventional transactions or activities with fiat currencies. Achieving neutrality in the latter case requires changing current tax rules, since tax law in relation to currencies has been developed in the context of fiat currencies.[66]

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[63] As such, crypto taxes should be judged by how well they achieve regulatory goals compared with other forms of regulation.

[64] See Haynes, *supra* note 6, at p. 161.

[65] According to two recent surveys by Harris Poll, 23% of African-Americans and 17% of Hispanic Americans own cryptocurrency, compared to 11% of white Americans (Black, Latino, LGBTQ investors see crypto investments like bitcoin as 'a new path' to wealth and equity, Charisse Jones and Jessica Menton, USA TODAY (August 15, 2021). https://finance.yahoo.com/news/black-latino-lgbtq-investors-see-100412051.html). Also, while only 10% of the "fully banked" Americans own cryptocurrency, 37% of underbanked Americans own such currencies. (See Banking the Unbanked Requires Raising Trust and Awareness. For the Underbanked, Better Service Means Payments Innovation, Charlotte Principato, Morning Consult (August 17, 2021) https://morningconsult.com/2021/08/17/trust-awareness-paynents-unbanked-underbanked/) See also Haynes, *supra* note 6, at p. 69.

[66] This is because, until the development of cryptocurrencies, decentralized currencies which are not backed by government were non-existent. See Anne Fairpo, *Taxation of Cryptocurrencies, in Cryptocurrencies in Public and Private Law*, (David Fox and Sarah Green eds. 2019), at p. 257, parag. 10.09.

In some specific cases, however, it might be helpful for tax laws to play a role in encouraging or discouraging specific activities in the crypto industry when general policy considerations require that. As will be elaborated later in this Article, some crypto activities should be encouraged by preferable tax treatment. This should be the case, for example, regarding cryptocurrencies that use Proof of Stake mechanism as it is an environmentally friendly technology in comparison to the traditional Proof of Work mechanism, as will be discussed elaborately in Part III.

C. Current U.S. Tax Treatment of Cryptocurrencies

The IRS laid out its position regarding the taxation of "virtual currency" in 2014, which was published in the form FAQ (Frequently Asked Questions) (hereinafter: the "2014 Notice").[67] The 2014 Notice does not address the administrative challenge, nor it adopts the right regulatory policy. The tax treatment set under the 2014 Notice discourages the use of cryptocurrency for short-term transactions and daily consumption, as a result, potentially, hampering the development and progress of the innovations in the crypto industry.

1. The 2014 Notice[68]

The 2014 Notice provides guidance on the taxation of transactions involving "virtual currency." The 2014 Notice applies only to "convertible virtual currency," which is a virtual currency that has an equivalent in real currency, or that acts as a substitute for real currency, such as Bitcoin. For the purpose of this article "virtual currency" and/or "convertible virtual currency" have the same meaning as cryptocurrency which meets the real-world economy.

The 2014 Notice sets that for federal tax purposes, virtual currency is treated as property. Thus, general tax principles applicable to property transactions apply also to transactions using virtual currency. Virtual currency is not treated as currency that could generate foreign currency gain or loss for the U.S. federal tax purposes. A taxpayer receiving virtual currency for goods or services must include the fair market value of the virtual currency in computing gross income.[69] The 2014 Notice also refers to other related matters such as determining the FMV and the basis of virtual currencies, exchanging virtual currency for other property, mining cryptocurrencies, receiving virtual currencies as a remuneration for employment, information reporting, withholding etc.[70]

No reasoning is given for the IRS's approach regarding the nature of virtual currency, although one may be implied as the brief comment to the definition of virtual currency explains that it does not have legal tender status in any jurisdiction. Also, the IRS believed that cryptocurrencies were held more for investment than used as a currency. The IRS spokesman stated that the IRS had considered treating Bitcoin as foreign currency under Section 988 of

[67] IRS Virtual Currency Guidance, Notice 2014–21, 2014–16 I.R.B. 938 (Apr. 14, 2014)
[68] The 2014 Notice was partially developed in response to the U.S. Taxpayer Advocates 2013 Annual Report to Congress.
[69] RR 2014-21 at § 4, Q&A– 1 through 3.
[70] RR 2014-21 at § 4, Q&A– 4 through16.

the Code; however, the IRS was unable to fit Bitcoin within the statute and regulations. In addition, according to the spokesman, Bitcoin was used more as an investment vehicle than as currency, implying that the Notice might have come out differently if Bitcoin was predominately used as currency.[71]

Although the 2014 Notice requests "comments from the public regarding other types or aspects of virtual currency transactions that should be addressed in future guidance," no further guidance has been published since then, except for Revenue Ruling 2019-24 published in October 2019, which addresses the hard fork issue, discussed later in Part V. Thus, the 2014 Notice continues to be the point of reference for the U.S. tax treatment of cryptocurrencies.[72]

2. General Flaws of the 2014 Notice

The 2014 Notice does not address the administrative challenge associated with the taxation of cryptocurrencies. It also does not provide special reporting requirements to address the anonymity issue. The 2014 Notice does not address the special features of cryptocurrencies including its volatility and massive use and treating cryptocurrency as property in all cases would impose enormous bookkeeping difficulties on taxpayers.

From the regulatory perspective, the major consequence of the guidance under the 2014 Notice is that it would discourage the use of cryptocurrencies, especially their use for daily, short-term transactions.

Cryptocurrencies, such as Bitcoin, are emerging as a market force that has grown into billions of dollars in spending power. However, the IRS, by sticking to strict definitional requirements, has created excessive inconvenience for those using cryptocurrencies for day-to-day or short-term transactions.[73] The complication created by the 2014 Notice is reflected in the need for users of cryptocurrency to maintain massive records to calculate tax due on the gain from the sale or exchange of the cryptocurrency, even for insignificant small purchases. Keeping track of these daily small transactions using Bitcoin or other cryptocurrencies is unduly burdensome.[74] Not only would Bitcoin users potentially incur tax liability every time they purchased something with Bitcoins, but they would also have to pay attention to which Bitcoins they were spending to manage their tax liabilities.[75]

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[71] David D. Stewart, ABA Section of Taxation Meeting: IRS Preps Bitcoin Investigators as Treatment Questions Remain, 144 TAX NOTES 1538 (Sept. 29, 2014)

[72] See for example the IRS press release IR-2018-71 https://www.irs.gov/newsroom/irs-reminds-taxpayK5- to-report-virtual-currency-transactions

[73] ZACHARY B. JOHNSON, *I Got 988 Problems But Bitcoin Ain't One: The Current Problems Presented by the Internal Revenue Service's Guidance on Virtual Currency*, The University of Memphis Law Review, p. 673.

[74] David McNeely, *Blame the IRS: A Look at Cryptocurrency and the IRS's Lackluster Response to Its Rising Popularity*, 14 Charleston L. Rev. 513, p. 533 (2020).

[75] Crypto holders would need to check if the cryptocurrencies were held beyond a year and thus be subject to the lower capital gains tax rate or less than a year at the ordinary taxable rate. The determination is based on how the purchases and sales are calculated, which will be a burdensome obligation not easily accomplished. See Girasa, *supra* note 44, at 184. See also Adam Chodorow, Bitcoin and the Definition of Foreign Currency, 19 Fla. Tax Rev. 365, p. 377 (2016).

Presumably, this will result in the discouragement of the general use of cryptocurrencies. Furthermore, the 2014 Notice arguably favors investors in crypto over daily users who use it as a currency. In so doing, cryptocurrencies such as Bitcoin are harmed when used in the marketplace rather than for investment purposes.[76]

Importantly, there are numerous other issues regarding the tax consequences of cryptocurrencies that have not been addressed in the 2014 Notice. Some of these issues did not even exist or appear in 2014, when the Notice was first issued, as they emerged along with the fast development in the cryptocurrency industry, the evolvement of its underlying technology, and the vast variety of the crypto activity in the last few years. For example, the 2014 Notice does not refer to the taxation of different kinds of mining activities with different consensus mechanisms (e.g., as Proof of Work compared to Proof of Stake consensus), crypto-to-crypto exchanges and transactions, special crypto transactions (e.g., hard forks, airdropping, ICOs etc.), and special kinds of cryptocurrency such as Stablecoins and NFTs. This Article will go through these issues and proposes an alternative for treating cryptocurrencies in an efficient way, in order to neutralize the flaws that stem from the current treatment under the 2014 Notice.

[76] See Girasa, *supra* note 44, at 184+185.

PART III: TAXATION OF EARNING CRYPTOCURRENCY

Cryptocurrencies, such as Bitcoin, are earned by multiple means. These are: either through purchasing, receipt as a payment for goods or services, as compensation for employment, or earned through mining or staking activities as explained below. The tax treatment of crypto at the moment in which it is earned is critical to the determination of basis and character of income upon realization.

If a taxpayer acquires crypto for cash, the tax treatment is fairly straightforward – the basis in the crypto purchased is equal to the cash paid. However, if a taxpayer acquires crypto by mining, staking, or exchanging crypto for other crypto, determining the proper tax treatment and tax classification of the crypto received in such cases is not always a straightforward task. In addition, unlike acquiring crypto for cash, determining the fair market value of the crypto earned by other means can be a significant challenge.[77] This part goes through the different ways in which crypto can be earned and attempts to introduce a proper tax treatment for each.

A. Cryptocurrency as a Compensation for Employment

Cryptocurrencies paid as "wages" to employees are treated as income subject to tax at ordinary income rates in the hands of the employee when received.[78] As a result, according to the 2014 Notice, the fair market value of the cryptocurrency paid as wages is subject to federal income tax withholding and informational reporting as required by law and regulation.[79]

As the U.S. government does not accept tax payments in the form of cryptocurrency, a portion of the cryptocurrency must be liquidated into cash before being transferred by the employer to the employee. The employee takes a basis in the cryptocurrency received, equal to the amount of income recognized upon its receipt. The employer must also realize and recognize taxable gain in the date of transfer to the extent of any appreciation in the cryptocurrency used to pay the employee's compensation (which would be offset by the employer's applicable deduction).[80]

One of the challenges that employers face is valuation. Particularly difficult to value are cryptocurrencies that do not have readily ascertainable fair market value in the day of payment to the employee. In such cases, employers face challenges in determining a proper amount of tax to withhold. This is not a novel issue in the realm of tax. Employers who provide employees with certain benefits-in-kind often encounter a valuation problem when such benefits do not have a readily ascertainable fair market value. To alleviate this problem, tax laws often provide for de minimis fringe benefits exemptions.[81] While cryptocurrencies are not considered fringe benefits, it would be appropriate to provide a de minimis exemption for cryptocurrency when it is paid as a

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[77] Kathleen R. Semanski, Income, *from Whatever Exchange, Mine, or Fork Derived: The Basics of U.S. Cryptocurrency Taxation*, Banking & Fin. Servs. Pol'y Rep., p. 11 (2018).
[78] RR 2014-21 at § 4, Q&A– 11.
[79] RR 2014-21 at § 4, Q&A– 11. Moreover, cryptocurrency paid to an employee as compensation is generally treated as "wages" for employment tax purposes.
[80] See Semanski, *supra* note 77, at 13-14.
[81] Brummer - Christophe Waerzeggers & Irving Aw, *Difficulties in Achieving Neutrality and Other Challenges in Taxing Cryptoassets, in Cryptoassets: Legal, Regulatory, and Monetary Perspectives* (Chris Brummer ed. 2019), p. 237.

compensation. This would help alleviate the valuation problem associated with paying cryptocurrency as a method of compensation for employment.

In some cases, crypto firms may issue their native blockchain crypto as compensation to their own employees. In this regard, the question that arises is whether cryptocurrency issued by crypto companies to their employees is to be treated in a similar manner as employee stock-based compensation under the Code and regulations.[82] Employee stock-based compensation (such as stock options) are designed to incentivize employees and align their economic interest with those of the firm's. Cryptocurrency, on their nature, are not equity. Thus, generally, it is difficult to see how in this scenario, cryptocurrencies are treated as stock-based compensation for tax purposes. However, in some cases, cryptocurrencies may play the same role as stock-based compensation, such as in situations of issuing tokens backed by equity in an employer company.[83] In this case, it might be appropriate to consider the crypto as stock-based compensation for purposes of taxation.

B. Mining Cryptocurrency

1. Consensus Mechanism

A consensus mechanism refers to any number of methodologies used to achieve agreement, trust, and security across a decentralized computer network.[84] In the context of blockchains and cryptocurrencies, consensus mechanisms are essential to maintaining the integrity and the security of the network, as they are used to verify new transactions, record them into the digital public ledger (the blockchain) and create new coins or tokens.[85] Put simply, consensus mechanism is a system that allows all computers in the decentralized peer-to-peer crypto network to agree about which transactions are legitimate by accomplishing validation and immutability of the transactions in the public ledger, without relying on a trusted third party (e.g. central authority such as banks or credit card companies), thus protecting the integrity of the system and avoiding double-spending of crypto in the network.[86]

Proof-of-work and proof-of-stake are two of the most prevalent consensus mechanisms. Proof of work, first pioneered by Bitcoin and later used by many others, uses mining to achieve those goals. Proof of stake, which is generally used by newer cryptocurrencies such as Ethereum 2.0, Cardano, Tezos and others, uses proof-of-stake to achieve the same goals.[87]

2. Mining Crypto – Achieving Consensus Through Proof-of-Work (PoW)

2.1 PoW and Mining – General

Proof-of-work is the first crypto consensus mechanism. This mechanism is employed by Bitcoin and other cryptocurrencies, and it is used to accomplish the validation and immutability of the transactions in the crypto network. PoW and mining are closely related ideas. Mining is the process

[82] See Waerzeggers and Aw, supra note 81, at p. 238
[83] See Waerzeggers and Aw, supra note 81, at p. 238
[84] https://www.investopedia.com/terms/c/consensus-mechanism-cryptocurrency.asp
[85] Coin and tokens are different things. A coin (such as Bitcoin) is a cryptocurrency that can operate independently and has its own unique platform, while a token (such as Ether) is a cryptocurrency that depends on another cryptocurrency to operate.
[86] See Prasad, *supra* note 4, at p. 120.
[87] https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake

in which each block of transactions is validated and created by someone, more popularly referred as "miner." PoW is a public consensus under which the whole network has to accept the results of the mining activity, *i.e.* to accept that each block created or validated by a miner is a valid block of transactions. In this way, PoW achieves the validation and immutability objectives without relying on a third party.[88]

The reason it is called "proof of work," is because it requires miners to use their computational power to solve a randomly generated cryptographic problem that involves hashing.[89] This kind of complicated math problems can be solved only by using a huge amount of computing processing power, thus solving the problem demonstrates proof of "work" (or more precisely "computational work").[90] Miners under PoW blockchains race to be the first to solve the math problem. The "winner" gets to update the blockchain with the block of the latest validated transactions and is rewarded by the network with a predetermined amount of crypto ("Block Rewards").[91] PoW constitutes a robust way of keeping a secure decentralized blockchain by reducing fraud and enabling trust in the system.[92]

2.2 Mining – Current U.S. Tax Treatment

The IRS treats crypto derived from mining by any person as income in all circumstances. According to the 2014 Notice of the IRS, when a taxpayer successfully "mines" cryptocurrency, they must include the fair market value of the cryptocurrency in gross income as of the date of receipt of the cryptocurrency.[93] If the mining activity of cryptocurrency constitutes a trade or business and it is not undertaken by the taxpayer as an employee, the net earnings from self-employment (generally, gross income derived from carrying on a trade or business less allowable deductions) resulting from those activities constitutes self-employment income and is subject to the self-employment tax.[94] Generally, self-employment income, measured in U.S. dollars as of the date of receipt, includes all gross income derived by an individual from any trade or business carried on by the individual.[95]

2.3 Mining – Proper Tax Treatment

2.3.1 Block Rewards

2.3.1.1 Block Rewards Are Income

[88] See Prasad, *supra* note 4, at 120 and 121.

[89] Hashing refers to the process of generating a fixed-size output from an input of variable size. This is done through the use of mathematical formulas known as hash functions (implemented as hashing algorithms). See https://academy.binance.com/en/articles/what-is-hashing

[90] See Prasad, *supra* note 4, at 121.

[91] https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake

[92] PoW and mining are essential to the integrity and security of the blockchain due to maintaining a high degree of transactional transparency. See Prasad, *supra* note 4, at 121 :"the public ledger called the blockchain since, once the transactions coming onto the network and grouped into blocks of data and validated, the blocks are then chained together… The way blocks are chained together and the entire blockchain is maintained on multiple nodes makes it obvious when someone tries to tamper with old transaction records."

[93] RR 2014-21 at § 4, Q&A– 8.

[94] RR 2014-21 at § 4, Q&A– 9.

[95] RR 2014-21 at § 4, Q&A– 10.

The IRS position regarding the taxation of block rewards as set in the 2014 Notice is the proper treatment. Block rewards derived from mining should be included in income in the hands of the "miner" as of the date of the receipt.

Section 61 of the Code defines income broadly: "gross income means all income from whatever source derived." The Supreme Court tried to define income in the *Commissioner v. Glenshaw Glass* case as "instances of undeniable accessions to wealth, clearly realized, and over which the taxpayers have complete dominion."[96] This definition stands for the proposition that "income" should be broadly construed in the absence of a specific congressional directive to the contrary.[97] This definition is also generally recognized as the standard by which income is measured.

Once the miner receives the Block Rewards, which are the coins that have value, the miner increases their economical wealth by the value of the coins received. What this means, is that the miner meets the first requirement of the Glenshaw Glass definition of "undeniable accession to wealth." The second requirement of the Glenshaw Glass definition is a "clear realization" to the accession to wealth. This requirement requires an identifiable event. The identifiable event in the mining case, is the event of giving the Block Rewards to the miner and depositing them in a wallet as a compensation for the work the miner has done in validating the new block. Thus, the second requirement of the definition is also met. Furthermore, the miners also meet the last requirement of the Glenshaw Glass definition, which is "dominion and control." This requirement looks to whether the taxpayer has control over the accession to wealth. The miners clearly have control over the coins they receive, as once the miners get the Block Rewards in their digital wallet, the miners have the complete ownership over them, and can freely transfer them if they desire. Thus, according to the Glenshaw Glass, the Blocking Rewards constitute income in the hands of the miner in the date of the receipt of such rewards.

2.3.1.2 Income Characterization of the Block Rewards

Once it is determined that Block Rewards are "income," the next question that arises is what the characterization of such income under the Code is. Section 61 includes a non-inclusive list of specific items included in gross income. Other items of income are included in other sections in the Code (e.g., Sections 70-90). Arguably, Block Rewards may fall within one of two income categories: business income (section 61(a)(2)) or prize income (section 74). The classification depends on whether the level of crypto mining activities reflect carrying on a trade or business activities by the taxpayer, as opposed to mere speculation or hobby. If the income is derived from business activity, then it is considered business income. If it is derived from pursuing a hobby, then it is considered as prize income. For federal income tax purposes, both are considered to be included in the gross income, which means that they are essentially treated the same way for tax purposes.[98]

[96] Commissioner v. Glenshaw Glass, 348 U.S. 426, 429-430 (1955). In this case, the court found that punitive damages were included in gross income.
[97] Deborah H. Schenk and Michael Graetz, Federal Income Taxation: Principles and Policies (8th edition), p. 85.
[98] However, prize money might be distinguished for purposes of employment taxes, or when "modified adjusted gross income" is applicable, e.g. income caps on "modified adjusted gross income" that limit other benefits such as earned

It is worth noting that as the Bitcoin blockchain has developed and grown, the computational power required to maintain it has increased.[99] As a result, it is unlikely to still find "hobbyists" or amateur miners now, especially since the cryptographic problems that need to be solved has a significant level of difficulty, which rises over time by the algorithm.[100] Nowadays, almost all mining is done by specialized businesses or groups of people who band their resources together,[101] which means that miners are likely to carry this activity as part of their trade or business, and not as a hobby.[102] Thus, it is safe to assume that in most cases Blocking Rewards are to be considered as business income under Section 61(a)(2).

2.3.2 Expenses of Mining

When determining what is income, it is also necessary to determine which deductions are allowed in measuring taxable income. One of the clarifications needed by the IRS is regarding the treatment of the mining expenses and whether such expenses are deductible. These expenses include the cost of the computing power and equipment used in mining. Assuming that Block Rewards are considered "business income," which is likely the case, we should check if the mining expenses are deductible under the Code sections that provide for a deduction for expenses or losses incurred by a business. The main provision is Section 162, which allows a deduction for "all the ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business." It is clear that mining expenses, which are incurred while carrying on mining as a "trade or business," are current "ordinary and necessary" expenses incurred for business reasons (the mining process). Thus, they shall be deductible and not treated as capital losses that are capitalized and then amortized over the useful life of the cryptocurrency. It is also important to mention that Bitcoin itself, despite being categorized as property by the IRS, does not have a "useful life" for purposes of depreciation or amortization.[103] Thus, capitalizing the mining expenses to Bitcoin for example, would make it difficult to determine the amortization amounts later on.

2.3.3 International Tax Aspects – Allocating the Block Rewards Between Jurisdictions

The question of whether mining activity constitutes a business or not may have international tax ramifications. These ramifications are in regard to the allocation of taxing rights on the Block Rewards among jurisdictions when there is a cross border mining activity.

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income credit, deductibility of student loan interest, limitation of contribution to IRA etc. (See the American Bar Association Section of Taxation, Comment Letter on Notice 2014-21 [March 24, 2015])

[99] See https://www.coinbase.com/learn/crypto-basics/what-is-mining. In October 2019, it required 12 trillion times more computing power to mine one bitcoin than it did when the first blocks were mined in January 2009.

[100] Mining a new block requires solving a proof-of-work problem that incorporates the hash of the previous block, which in turn is sequentially chained to all previous blocks in on the blockchains (See Prasad, *supra* note 4, at 129.)

[101] https://www.coinbase.com/learn/crypto-basics/what-is-mining

[102] Much of the mining of Bitcoin is now carried out by specialized devices called ASICs, or application-specific integrated circuits, which are tailor-built machines containing computer chips designed with a single specific purpose (See Prasad, *supra* note 4, at 139+140).

[103] See JOHNSON, *supra* note 73, at 655. This is important because when a miner later disposes of or exchange the Bitcoin, his gains or losses could be different depending on whether the mining costs were expensed or capitalized (and increased the amortization expenses).

If a tax treaty between two jurisdictions exists, then generally the source state has the taxing right over business profits incurred in that jurisdiction. Under most of the current treaty frameworks, the determination if an activity in a specific jurisdiction, e.g., the mining activity, constitutes business in that jurisdiction, is determined based on the domestic law of the jurisdiction applying the treaty.[104] Also, the source state has taxing rights over business profits to the extent that it is attributable to a permanent establishment (PE) that the miner has in the source state. These profits are determined, in general, by reference to the location of the assets used, and activities undertaken to generate such business profit. Thus, it is safe to assume that the location of the mining equipment, which generate the income (the Block Rewards), shall be the source to which the mining income shall be allocated. One of the interesting questions that arises is how to allocate the taxing rights between jurisdictions when the mining equipment is located in multiple locations. The allocation of the Block Rewards in this case shall rely on objective measures, since reliance on a case-by-case factual approach is unsatisfactory and would result in confusion. For example, a proper parameter to allocate the income between jurisdictions might be based on the aggregate hashing power that contributed to the Block Reward used in mining activity in each jurisdiction.[105]

C. Staking Crypto

1. Staking Crypto – Achieving Consensus Through Proof-of-Stake (PoS)

Proof-of-stake is a consensus mechanism, used by newer cryptocurrencies, such as Ethereum,[106] Cardano, Tezos and others.[107] Similar to PoW, PoS is mechanism used for processing transactions and creating new blocks in a blockchain, thus accomplishing the validation and immutability of the transactions in the crypto network.[108] PoS' particular goal is to maximize speed and efficiency, while simultaneously lowering fees in the crypto network.[109]

"Staking", under the PoS consensus, serves a similar function to "mining" under the PoW consensus. Staking is the process by which a network participant contributes, or "stakes", their own crypto in exchange for a chance to validate a new transaction, update the blockchain with last batch of transactions, and earn a reward.[110] Once a participant in the network "stakes" his coins and places them in the specific digital wallet, the wallet freezes them and they cannot be used in transactions while they are being used to stake the network. In a PoS network the validators (who are also referred to as "forgers") are chosen among the stakers randomly, with

[104] See Waerzeggers and Aw, supra note 81, at 231
[105] See Waerzeggers and Aw, supra note 81, at 232
[106] Ether is the second most valuable cryptocurrency after Bitcoin. The Ether runs on the Ethereum blockchain, which is in the process to move from PoW to PoS (probably this will happen during 2022). According to a recent research from December 2021, if Ether moves to PoS today, "PoS based chains would account for 44% of Layer 1 market capitalization. If we ignored Bitcoin from that calculation, PoS chains would balloon to a 91% share." See https://messari.io/article/what-s-at-stake-in-staking-as-a-service
[107] PoS' popularity has increased rapidly in the last years: the market capitalization of the top 30 PoS tokens is approached $600 billion at the end of Q3 2021 (See: https://staking.staked.us/state-of-staking)
[108] https://www.investopedia.com/terms/p/proof-stake-pos.asp
[109] For example, once Ether transforms to PoS, the number of Ether transactions that can be processed through the blockchain is expected to increase to thousands per second.
[110] https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake

the probability of being chosen depending on the amount staked. Any participant who contributes to the PoS system typically earns a reward ("Staking Reward"). The more the participant stakes coins, the more he earns in Staking Rewards.[111] The network selects a winner based on the amount of crypto each staker has in the pool and the length of time held in the pool. All participating users receive a reward in the native crypto of the specific blockchain, which is generally distributed in the network in proportion to each validator's stake.[112]

In some cases, "staking" activity requires a high level of technical knowledge. Stakers can lose some of their stake via a process called "slashing" if their node goes offline or if they validate a "bad" block of transactions. Therefore, some users participate in staking by joining a staking pool run by another party and earn the staking rewards thereafter.[113] This process is often referred to as "delegating".[114]

2. Staking– Current U.S. Tax Treatment

The IRS hasn't stated officially yet its position regarding the tax treatment of Staking Rewards. The 2014 Notice does not make reference to the taxation of Staking Rewards or whether Staking Rewards should be treated differently from Block Rewards. In the lack of specific guidance, it is safe to assume that the IRS may treat Staking Rewards as taxable income, due to the similar function of both "stakers" and "miners" in validating and securing the networks by "staking" and "mining" activities, respectively.

However, recently, as part of an ongoing litigation on the case involving the matter of the taxation of Staking Rewards on *Jarrett v. United States*,[115] the government offered to refund plaintiff Joshua Jarrett for the taxes he paid with respect to tokens he earned through staking in 2019.[116] This might suggest that the IRS does not see Staking Rewards as an income for federal income tax purposes. However, the IRS has not published a ruling or any definitive guidance yet addressing this matter, thus nothing can prevent the IRS from taxing Staking Rewards on other cases or even challenging Jarret again on the future in the same issue. Given that, Jarrett refused the government's offer to pay him the refund, opening the possibility of a favorable court ruling for Jarrett holding that Staking Rewards do not constitute taxable income.[117]

[111] See Prasad, supra note 4, at p. 152 and 153.
[112] https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake
[113] In recent years, many of the largest U.S.-based crypto-exchanges, including Coinbase, Gemini, and Kraken, have started offering staking services to their retail customers.
[114] https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake
[115] Jarrett v. United States, No. 3:21-cv-00419 (M.D. Tenn.)
[116] Jarret filed for a refund in August 2020. The IRS didn't approve the refund claim; therefore he pursued the matter in federal court.
[117] See the announcement of the Proof of Stake Alliance (POSA) (February 3, 2020): https://www.prnewswire.com/news-releases/irs-waves-white-flag-in-lawsuit-over-taxability-of-cryptocurrency-staking-rewards-301474899.html

The bottom line is that the IRS position regarding the taxation of Staking Rewards remains unclear.

3. Staking – Proper Tax Treatment

3.1 Staking Rewards are Income Under Current Law

3.1.1 Glenshaw Glass Test

It seems clear that Staking Rewards should give rise to income for federal income tax purposes, when received. As mentioned earlier, Section 61 of the Code defines gross income broadly to mean "all income from whatever source derived…". Staking Rewards also meet the widely accepted definition of income under the Glenshaw Glass Test[118]: Staking Rewards are tokens which have value. Thus, they are considered to be an "accession to wealth," as stakers have economic gain after receiving them, increasing their total wealth in the value of tokens received. The realization requirement under the Glenshaw Glass Test is clearly met for Staking Rewards, since such rewards are deposited into a network address (digital wallet) once the process has been completed. Similar to the deposit of Block Rewards, the deposit of Staking Rewards is an identifiable event that can be used as a reference point for valuing the Staking Rewards and determining the taxable amount for the staker.[119] The third element of the Glenshaw Glass Test (the "dominion and control" requirement) is also met for Staking Rewards: after the Staking Rewards are deposited to the stakers' accounts, they are freely transferable shortly after the deposit and the stakers have total "dominion and control" over the Staking Rewards.[120]

3.1.2 Staking Rewards are Earned, Not Created by Stakers

In his article, "Cryptocurrency Economics and the Taxation of Block Rewards", Abraham Sutherland suggests that "reward tokens" (or Staking Rewards for the purpose of this Article) should not be included in gross income. He supports his conclusion by attempting to describe the real economic meaning and function underlying the protocols and the rewards received (or "created", per Sutherland) by the stakers as part of the staking process.

"These reward tokens are valuable, but even though we can assume they have an exact dollar value when they are created, their value is not as straightforward as it may appear." Sutherland mentions, "this is because the function of reward tokens is to redistribute the share of ownership (or stake) in a cryptocurrency network away from those who don't participate in the maintenance of the network to those who do. The new tokens dilute the stake of all token holders while on net increasing the stake only of those who participate. By necessity, this dilution effect partially offsets any gains

[118] Brian Hamano, *Staking Out New Territory: Taxation of Proof-of-Stake Protocols,* p. 397 (2019).
[119] See Hamano, *supra* note 118, at p. 399
[120] See Hamano, *supra* note 118, at p. 399

from participating in network maintenance. Including these rewards in gross income when they are received fails to account for this dilution effect and complicates the proper taxation of these tokens."[121]

Sutherland's conclusion and description of the dilution effect in the network following the distribution of the Staking Rewards is not convincing. Sutherland himself, as appears in the quote above, states that Staking Rewards have value. Also, stakers receive the Staking Rewards as an additional reward to the stakes they already own. Thus, it is clear that the rewards constitute an accession to wealth under the Glenshaw Glass definition. The fact that the value of such tokens is sometimes unclear or "not as straightforward as it may appear" may impose an administrative burden to measure an "accession to wealth," but it does not erase its existence. The stakers in a PoS network are not diluted, rather they are be compensated with new tokens, that in turn increase their ownership percentage in the network and their total wealth as a result (unless their value is zero). That is exactly what incentivizes participants in the network to stake their tokens. The fact that staking might dilute the crypto ownership percentage or effect the economic wealth of the other participants in the network does not rebut the conclusion that Staking Rewards constitute an accession to wealth in the hands of the stakers. This accession to wealth, represented by the valuable reward tokens, is clearly realized upon the receipt of the new rewards and by depositing them in the stakers network address. Thus, Staking Rewards should be included in gross income under current tax rules.

Sutherland goes further and argues that the reward tokens shall not be included in gross income as they may be perceived as *created* by the validators as part of maintaining the cryptocurrency network, rather than *received* as reward or compensation for such activity:

"There is a meaningful if rarely invoked distinction between property that is received as compensation and property that is created. Received property typically is income when it is received. Created property, on the other hand, typically is not income when it is created. It results in income or a taxable gain only when it is first sold or exchanged. Reward tokens are best understood as property created by those who maintain a cryptocurrency network. In this sense, the tokens are similar to common goods such as crops, minerals, livestock, art, and even manufactured goods… New cryptocurrency tokens are indeed created in the course of maintaining the cryptocurrency network."[122]

The depiction of Staking Rewards as new tokens created by the staker is not accurate. Stakers contribute their own crypto in exchange for a chance to getting to validate new transaction and earn a reward for this. Technology-wise, stakers *earn* income in the form of tokens after they "stake" or contribute a particular crypto to the PoS

[121] Abraham Sutherland, "*Cryptocurrency Economics and the Taxation of Block Rewards*", p. 750 (2019).
[122] See Sutherland, *supra* note 121, at p. 752.

network.[123] Thus, from that perspective, Staking Rewards are earned and are a different concept than creating property. Taxing Staking Rewards is not equivalent to taxing the creation of an artwork or the harvest of crops. The latter examples are not taxed upon "creation" or "harvesting" according to the tax rules,[124] probably because it is not possible to determine when to value and how to evaluate them in a specific point.

In addition, the fact that stakers are compensated with new token rewards for the maintenance of the network displays how there is an economic incentive for participants in the network to "stake" their crypto. The Staking Rewards are compensated only to those who help maintain a cryptocurrency network. These tokens are rewarded to the staker for the contribution to maintain the system, thus such reward or compensation shall give rise to income based on the meaning of income under the tax rules.

3.2 Income Characterization of the Staking Rewards

After determining that Staking Rewards are "income" under current law, the next question that arises is what the characterization of such income is. Arguably, Staking Rewards should be classified as interest income, (section 61(a)(4)) and in some cases, they might also be considered as business income (section 61(a)(2)) if the staker is engaged in the trade or business of "staking", based on the applicable tests.

3.2.1 Staking Rewards are analogous to Interest Income

Unlike mining, Staking activity, in its substance, is very similar to a passive investment. Any participant who contributes to the PoS system typically earns a Staking Reward, unlike PoW where miners need to employ large sums of computational power in order to increase their chances of validating a new block. In PoS, once the software is setup, the validation is carried out by self-executing software. The staker needs only to maintain a computer with internet access; download, install, and operate the software for the PoS protocol; and ensure that the computer is online and connected to the internet at all times of the staking process.[125] These limited activities of the stakers are in general insufficient to constitute a trade or business.[126] The staking process is in effect, similar to passive investment activity, thus Staking Rewards should generally be treated as passive income.

Staking is analogous to interest-earning deposit as it is akin to lending or depositing the tokens in the network for the purpose of maintaining the network. The reward that the stakers receive for depositing or lending out the tokens to the network is analogous to the interest charge for the mentioned deposit. In general, in an interest-earning deposit,

[123] On an answer to the question "how does staking work?", coinbase website says: "Staking lets you earn income with your crypto by contributing to the Proof of Stake (PoS) network of a particular asset." See https://www.coinbase.com/staking. Binace "Simply put, staking is the act of locking cryptocurrencies to receive rewards." https://academy.binance.com/en/articles/what-is-staking

[124] "Income from farm products and crop-share rentals to be included in the return of income for the year in which sold or exchanged for money or a money equivalent." Treas. Decision 2153, 17 Treas. Dec. Int. Rev. 1, 101 (1915).

[125] See Hamano, *supra* note 118, at 400.

[126] See Hamano, *supra* note 118, at 400.

the interest amount is calculated based on the amount of the deposit and the length of time of the deposit. It works the same way in the staking process. The more tokens the participant stakes, and the more time passed, the more he earns in Staking Rewards. All stakers receive a reward in the native crypto of the specific blockchain, which is generally distributed in the network in proportion to each staker's stake. Thus, Staking Rewards, fundamentally, are similar to interest income on a deposit and should be characterized as such for tax purposes.

One might suggest that the Staking Rewards should be classified as taxable distributions or stock dividends.[127]

However, it's hard to see the analogy to taxable distributions, as there is no corporation that issues or distributes such Staking Rewards to the relevant participants in staking. Also, since tokens are not capital, it's difficult to conceptualize them similarly to stock dividends. Other elements of the distributions do not appear here, including earnings and profits of the company (dividends are paid out of the company's earnings and profits). Thus, for the aforementioned reasons, classifying Staking Rewards as dividends is not the appropriate treatment for tax purposes.

3.3 Proposal – Taxation of Staking Rewards Only Upon Sale or Exchange

The conclusion of the analysis in Section 3.2 above is that under current U.S. tax laws, Staking Rewards are considered as income for federal income tax purposes and probably are to be classified as "interest income". However, we propose that Congress through enacting legislation, or Treasury and IRS through issuing definitive guidance, should set that Staking Rewards are to be taxed only upon sale or exchange, rather than taxing them in the date they are received (as is the current treatment). This is the proper treatment from a tax policy perspective for two reasons: (1) to ease the massive administrative burden associated with taxing Staking Rewards in the date when they are received and (2) to support innovation and encourage the development of the PoS-related technologies which are far more environment friendly than PoW.

3.3.1 Reducing Administrative Burden

Taxing Staking Rewards in the hands of the stakers when they are received imposes an astronomical administrative burden as taxpayers are required to track, evaluate, and report to the IRS each time they receive a token reward. On the flipside, this poses an undue burden for IRS when auditing such transactions.

In PoS protocols, stakers may be earning Staking Rewards very frequently and in a very short time segments (it could be smaller pieces of Staking Rewards that are earned every few minutes and even every seconds in some protocols). From this perspective, Staking Rewards are different from Block Rewards which are earned by miners in a less frequent pace between each time they get the rewards. Due to the frequent pace, taxing Staking Rewards every time the staker receives these rewards is an impractical approach. On one hand, it imposes an enormous administrative difficulty for taxpayers when they come to report such income to the IRS given that they received often multiple batches of token rewards in different times (even if in small amounts each

[127] Section 61(a)(7) of the Code.

time). On the other hand, it proves a burden for the IRS if it wants to audit such process. The current treatment of Staking Rewards requires the taxpayers, who can potentially earn numerous batches of Staking Rewards every day, to evaluate the rewards each time they are received, and to report such income and pay the tax due to the IRS. This is a burdensome reporting requirement especially considering the volatility of the value of such tokens which can change in value in a very short time periods. It gets more complicated when the staking is done through a delegator, as it remains unclear whether the Staking Rewards shall be taxed when they are released from the protocol to the delegator, or alternatively when they are transferred from the delegator to the staker. This is important as the differences between the values of the Staking Rewards can be significant between these two events. Thus, the tax treatment that makes the most sense is to tax the Staking Rewards only when they meet real world economy, i.e. when they are sold, exchanged for goods or services, for other non-crypto asset or for fiat currency. This would make the taxation of Staking Rewards administratively more feasible and would also result in enhancing the compliance of the taxpayers.

3.3.2 Encouraging Environment-Friendly Technology

A more friendly tax treatment for staking, would presumably encourage participants who are interested in earning crypto, to participate in PoS networks, rather than participating in other blockchains relying on the PoW consensus, which are harmful to the environment.

The process of mining through PoW, such as mining for Bitcoin, has major environmental ramifications. Miners now require huge arrays of computers that employs massive computational power and consume large amounts of electricity all in the effort to try to be the first to solve the complex numerical cryptographic problems that yield rewards in the form of crypto.[128] This massive amount of energy consumption results from running the clusters of computers and cooling them off during the mining process. Researchers at the University of Cambridge estimated that, in 2016, the Bitcoin network accounted for 0.4 percent of electricity consumption in the world.[129] Other estimates tell that in 2018 Bitcoin mining accounted for about 1 percent of the energy consumption in the world. [130] Thus, observers tend to see that Bitcoin mining and the PoW protocol in general constitutes an environmental calamity.[131]

PoS blockchains, on the other hand, do not require participants to spend electricity on duplicative processes (competing to solve the cryptographic math problems) and staking allows networks to operate with substantially lower energy consumption.[132]

[128] See Prasad, *supra* note 4, at p. 138. Bitcoin mining was initially conducted on regular computers, with the processing power of the devices' central processing units (CPUs) determining the success rate of the miners that used them. Much of the mining of Bitcoin is now carried out by devices called ASICs, a specialized device for cryptocurrency mining. ASICs are tailored-built machines containing computer chips. It takes a lot of power to run the computers, that calculate the cryptographic problems. In addition, many of the electricity apply to cooling the ASICs, not only running them. This has led to concentrations of mining pool in locations that have cheap electricity or cold temperatures, such as Canada, China and Iceland (See Prasad, *supra* note 4, at p.139 +140).

[129] https://www.nytimes.com/interactive/2021/09/03/climate/bitcoin-carbon-footprint-electricity.html

[130] See Prasad, *supra* note 4, at p. 140

[131] See Prasad, *supra* note 4, at p. 142.

[132] https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake

Thus, energy consumption is one major difference between the PoS and PoW consensus mechanisms. Taxing Staking Rewards when sold or exchanged would mitigate the administrative burden associated with reporting and taxing staking, making participating in such network more tempting, thus incentivizing users to participate in PoS blockchain rather than to mine through environmentally calamitous PoW networks. This is an extremely important step given the enormous climate change challenges that the globe seeks to remedy. Moreover, Increasing the range of staking by participants in the network would help maintain the network, thus supporting the innovation and the development of the PoS technology which facilitates speeds and enhances efficiency in the crypto world.

PART IV – TAXATION OF DISPOSAL OR EXCHANGE OF CRYPTOCURRENCY

As already discussed, the 2014 Notice treats cryptocurrencies as property for federal income tax purposes. Thus, the general tax principles applicable to property transactions will equally apply to cryptocurrency-based transactions. This means, among other things, that taxpayers would realize gain or loss upon the disposal of cryptocurrencies, for example, in the sale or exchange of crypto for goods or services. This also means that an exchange of a coin of cryptocurrency for another coin of cryptocurrency will be treated as a taxable exchange.

The treatment of crypto-to-crypto exchange as a taxable event is unduly burdensome and unreasonable. Any attempt to tax what happens within the digital wallets is unrealistic. The fact that each time a taxpayer exchanges crypto for another kind of crypto triggers a reportable taxable event, will presumably deter crypto users from engaging in such crypto swaps. This in turn will harm the innovation and the development of the whole crypto industry.

Therefore, it will be argued that crypto should be taxed only when it meets the "real-world economy" – *i.e.* when it is exchanged for "real-world" value – when crypto is exchanged either for goods or services, fiat money (legal tender), or other non-crypto assets. This approach will ease the administrative burden and simplify the taxation of cryptocurrencies.

A. Crypto-to-Crypto Transactions

Because the current IRS guidance treats crypto as property, the exchange of cryptocurrency for another cryptocurrency would be treated similar to the exchange of cryptocurrency for property. Thus the amount of gain or loss realized on the sale will be the difference between the taxpayer's basis in the cryptocurrency exchanged and the fair market value of the cryptocurrency received as of the date of the exchange.[133] It is suggested that the crypto-to-crypto exchange should not be considered as a taxable event. This means that no gain or loss should be recognized in a case of crypto-to-crypto exchange/swap. Rather, the taxation of crypto should be deferred until it meets real-world economy.[134] As will be explained below, the proposal of a tax-free treatment at the time of crypto-to-crypto transactions requires statutory and regulatory change.

The proposal to treat crypto-to-crypto exchanges in a tax-free manner is due to the following reasons: (1) the general difficulty to determine if there is an "accession to wealth" in the crypto-to-crypto swaps; (2) to ease the massive administrative burden and mitigate the valuation problem associated with the mission to tax crypto-to-crypto exchanges which occur relatively in a high frequency. In addition, taxing crypto-to-crypto exchanges would arguably harm the development of the industry. These reasons are developed further in the following sections.

1. Difficulty to Determine if there is an "Accession to Wealth" in a Crypto-to-Crypto Exchange

[133] Section 1001. Treasury Regulation section 1.1001-1(a) provides that gain or loss is realized when property is exchanged for cash or property differing materially either in kind or in extent.

[134] But, taxpayers would still have to track their crypto-to-crypto transactions to accurately establish their tax basis in cases when crypto meets real-world economy on a later stage.

As mentioned earlier, per the Glenshaw Glass test, the taxpayer has income only in "instances of undeniable accessions to wealth…" In general, in crypto-to-crypto exchanges, it is hard to set that there is an "undeniable accession to wealth" to any of the transacting parties which can justify imposing tax at the time of the exchange. This is because both the value of the exchanged asset and the received asset would generally be highly uncertain and volatile that could even change in a matter of a day or hours. This is different from receiving crypto as part of mining or staking, where it is clear that the taxpayer receives an asset with value which results in a clear increase in her economic wealth, regardless of the value of such asset. Due to the fluctuating value of cryptocurrencies, in a crypto-to-crypto exchange there could be an accession to wealth at some moment, shortly followed by a decrease in wealth and vice versa. Therefore, crypto-to-crypto exchanges that happen in the digital world do not really reflect the true change in the economic wealth of the parties at the moment of the exchange for the uncertainty in the timing and valuation of crypto received and exchanged. Therefore, it is more appropriate to recognize the inherent gain or loss in the crypto received when such crypto meets real-world economy, only then the taxpayer can calculate the amount above or below the basis of the relevant crypto.

This approach is also consistent with the IRS position on a similar matter – taxing wagering gains or losses. On IRS Memorandum from December 2008 on "Reporting of Wagering Gains and Losses",[135] the IRS addresses the issue of how a casual gambler determines wagering gains and losses from slot machine play. The IRS explains that:

> "The better view is that a casual gambler, such as the taxpayer who plays the slot machines, recognizes a wagering gain or loss at the time she redeems her tokens. We think that the fluctuating wins and losses left in play are not accessions to wealth until the taxpayer redeems her tokens and can definitively calculate the amount above or below basis (the wager) realized."

Conceptually, wagering tokens are very similar to crypto tokens in the sense that both live in "unreal" world. What happens in this "unreal world" should not be taxed as it is onerous to determine if there is an "accession to wealth" in such unreal world. Therefore, similar tax treatment should apply to transactions that happen in the unreal digital world, such as crypto-to-crypto exchanges.

It should be noted that this proposal does not apply to exchanges of Stablecoins since the concern of the difficulty in determining the "accession to wealth" does not exist in this case. Also, while the proposal of treating crypto-to-crypto exchanges in a tax-free manner might be the proper tax treatment at this moment, future changes in the crypto world might require the reconsideration of this proposal. For example, with the increase in the adoption and use of the crypto by the general public, it would be harder to justify why crypto-to-crypto exchanges should be distinguished from other property-to-property exchanges.

2. Mitigating the Administrative Burden

[135] Release Number: AM2008-011

The tax-free treatment of crypto-to-crypto transactions would address the administrative challenge associated with taxing cryptocurrency due to the difficulty associated with tracking this kind of transactions.

Crypto-to-crypto transactions occur between digital wallets, entirely within the digital world, with no connection or interaction with the real-world economy. This makes these transactions hard to track by the IRS, especially considering the nature of these exchanges which happen in very large frequencies and sometimes even in very short time segments within a single wallet.

Moreover, the volatility feature of cryptocurrencies along with the valuation challenge impose a significant compliance hurdle for taxpayers who are required to report gain or loss for each crypto-to-crypto exchange. The fact that crypto networks are peer-to-peer based networks, makes it difficult, in many cases, to determine the selling price of each crypto in a crypto-to-crypto swap. Determining the fair market value of both the crypto exchanged and received is not clear even in cases where such cryptocurrencies are listed in crypto exchanges. The question that arises in this case is whether taxpayers should use the market value of one crypto exchange or average the several exchanges that may be used and which timeframe to use.[136]

In addition, generally, in asset-to-asset exchanges there is always a problem of cash flow/liquidity of taxpayers when it comes to taxation. This liquidity problem is bigger in the case of crypto-crypto exchanges due to the uncertainty regarding the value of the crypto exchange in the specific date of the exchanges. In cases of extreme volatility in the value of crypto, taxpayers will need to sell the newly exchanged crypto for fiat currencies in order to be able to pay their possible significant tax liabilities.[137]

The exchange of Stablecoins does not raise similar concerns; therefore, the suggested treatment should not apply to exchanges of this kind of cryptocurrencies.[138]

3. Tax Free Treatment Requires a Statutory and Regulatory Change

The proposal of a tax-free treatment at the time of a crypto-to-crypto transaction requires statutory and regulatory change. Section 1031 of the Code, which addresses "like-kind exchanges", should be amended to include all kinds of cryptocurrencies. By including crypto-to-crypto exchanges in the definition of "like-kind exchanges", the taxation of such transactions will be deferred until the cryptos involved meet real-world economy.

3.1 Section 1031 – Like-Kind Exchanges

Under Section 1031 of the Code, no gain or loss shall be recognized when certain property held for productive use in trade or business or for investment, is exchanged for property "of a

[136] See Girasa, *supra* note 44, at 186
[137] See Waerzeggers and Aw, supra note 81, at 229
[138] The Biden administration is considering ways to impose bank-like regulation on the cryptocurrency companies that issue stablecoins https://www.wsj.com/articles/biden-administration-seeks-to-regulate-stablecoin-issuers-as-banks-11633103156?mod=article_inline

like kind."[139] The tax basis in the exchanged property carries over to the received property. The recognition of the inherent gain or loss in the exchanged property at the day of the transfer is deferred until a later disposition or exchange of the new received property for fiat currency or other non-like-kind property.

The world "like kind" is not defined in Section 1031. Before the Tax Cuts and Jobs Act ("TCJA"), "like-kind exchanges" were limited, under the Treasury regulations, to the exchanges of depreciable personal property. The 2014 Notice, which classified cryptocurrency as property, did not provide guidance regarding the application of Section 1031 to cryptocurrencies. As of 2018, the TCJA went into effect. Under the new Post-TCJA Section 1031, "like-kind exchanges" include only real property, which means that they do not include cryptocurrencies.

3.2 Crypto-to-Crypto Exchanges Prior to 2018 – Pre-TCJA Section 1031

One of the interesting questions that arise is whether crypto-to-crypto exchanges made before 2018 were tax free exchanges under the old Pre-TCJA Section 1031 which as mentioned also applies to exchanges of intangible property.

According to the Treasury Regulations issued under Section 1031, effective prior to 2018 (the "1031 Regulations"),[140] an exchange of intangible personal properties qualifies under Section 1031 only if the exchanged properties are of a like kind. The regulation clarifies that "whether intangible personal property is of a like kind to other intangible personal property generally depends on the nature or character of the rights involved (e.g., a patent or copyright) and also the nature or character of the underlying property to which the intangible personal property relates."[141]

Thus, there is essentially a two-prong test. The first test is for the rights involved and the second for the underlying property to which the rights relate (the "Two-Prong Test"). It is reasonable to argue that exchanging one Bitcoin for another Bitcoin would satisfy the Two-Prong Test and this will be considered as a like-kind exchange under Section 1031 as in effect prior to 2018. Technology-wise, Bitcoins are virtually identical digital coins, subject to the same function and crypto network. And they also include the same rights to the same underlying type of property.[142] However, it is very uncertain whether exchanging non-similar kinds of cryptos, such as the exchange of Bitcoin for an Ether, will satisfy the Two-Prog Test. Both currencies might represent rights that are of a like kind, per the first prong of the Two-Prong Test, but they may not have rights to the same underlying property, per the second prong of the Two-Prong Test, due the differences between the two currencies which rely in two different consensus mechanisms (PoW vs. PoS).[143] Therefore, it is likely that the exchange

[139] Section 1031. This is a mandatory provision (not elective). Many items excluded from this section, like stock, bonds, or section 1221(a)(1) property.
[140] Reg 1.1031(a)-2(c) (1)
[141] Sarah-Jane Morin, Tax Aspects of Cryptocurrency, Prac. Tax Law., p. 61 (2018).
[142] See Morin, *supra* note 141, at 62
[143] See Morin, *supra* note 141, at 62

of Bitcoin for Ether may not be considered a "like-kind" exchange under the 1031 Regulations.

Thus, presumably, many other crypto-to-crypto exchanges would not qualify as a "like kind" for purposes of Section 1031 as in effect prior to 2018. This may include cryptos which are very similar in nature but have differences in specific functions.

3.3 Amending Section 1031 and the 1031 Regulations

In order for crypto-to-crypto exchanges be entitled to the tax-free treatment at the time of the exchange as the authors propose, Section 1031 should be amended to explicitly set that crypto-to-crypto exchanges are "like-kind exchanges" for the purposes of the section. The other option would be to go back and retrieve the old Section 1031 (before the TCJA) followed by a regulatory change in order to make Section 1031 applicable to crypto swaps. In the latter case, the 1031 Regulations should be modified to clearly set out that crypto-to-crypto exchanges are "like-kind exchanges", therefore they shall not be examined under the Two-Prong Test.

B. Real-World Crypto Transactions

1. Proposal of a Bifurcated Tax Treatment

Cryptocurrency can meet real-world economy once it is disposed or exchanged for goods or services, fiat currency or another non-crypto asset.

As explained earlier on this paper in Part I, taxing cryptocurrency activity that is connected to real-world economy should be based on the principle of tax neutrality. This means that the taxation should follow the nature and use of the cryptocurrency in question, in addition to the purpose for which the cryptocurrency was acquired and disposed. Achieving tax neutrality between crypto transactions and traditional transactions (e.g., transactions with fiat currencies or transactions with non-crypto assets) will ensure that the taxation of crypto activity does not impede the use of cryptocurrencies and harm the development of the crypto industry.

In order to guarantee tax neutrality, the tax treatment of crypto shall be determined based on the following elements: (1) the holding time of the cryptocurrency; (2) the underlying economic function such currency serves in the particular transaction – whether the cryptocurrency is held for investment, or it is held for use as currency.

In the current environment, where common cryptos (e.g., Bitcoin or Ether) are widely used to acquire goods or services and have even been adopted as an official currency by a foreign country (El Salvador)[144], crypto should be classified by the IRS as a foreign currency, rather than as a property, unless it is held for over one year (measured from the date a particular

[144] Bitcoin is now legal tender in El Salvador. Joe Hernandez, El Salvador Just Became the First Country To Accept Bitcoin As Legal Tender, NPR (Sept. 7, 2021), https://www.npr.org/2021/09/07/1034838909/bitcoin-el-salvador-legal-tender-official-currency-cryptocurrency.

crypto is acquired, which can be ascertained from the public ledger).[145] If the crypto is held for over a year, it should be deemed to be an investment, *i.e.*, property.

It is suggested that these set of rules are administrable because on the one hand they build on the existing law, and on the other hand one may ascertain the holding period and the basis of each unit of crypto from the public ledger.

As can be noticed, the proposed hybrid/bifurcated tax regime is based on a bright-line test that divides cryptocurrencies into two distinct categories.

The first category includes short-term crypto transactions. When cryptocurrencies are held for a short period (under a year) and are used as a tool for payment to acquire goods or services, their function is similar to the function of money and regular fiat currencies. Therefore, the tax treatment of this category should be subjected to the Code's rules for foreign exchange. Firstly, a de-minims rule should apply – no gain should be recognized if the transaction is in the amount of $200 or less. Secondly, basic accounting rules applicable to foreign currency should apply to cryptocurrency in this category.[146]

The second category encompasses long-term crypto transactions. When cryptocurrencies are held for over a year, their function is similar to an investment (*i.e.* holding asset for investment purposes in anticipation of the asset's appreciation over time). Therefore, cryptocurrencies in this category should be treated as a property[147], and the current rules of the 2014 Notice should apply. In that case, the sale or exchange of the crypto for goods or services would give rise to long-term capital gain or loss depending on the basis of the crypto used in the sale or exchange.

2. Short-Term Crypto Transactions – Cryptocurrency as Money

2.1 Tax Treatment of the Short-Term Crypto Transactions as Property Impedes Crypto Adoption and Development

As mentioned earlier, the 2014 Notice regards cryptocurrencies as property. The result has been that transactions in which cryptocurrencies are used to buy goods or services are treated as giving rise to gains or losses. The treatment of cryptocurrencies as property impedes the

[145] In 2016 Switzerland specifically took the position that cryptocurrencies are a currency for VAT purposes and not as property, thus exempting transactions using cryptocurrencies from VAT.

[146] In 2017, Representatives Jared Polis, D-Colorado, and David Schweikert, R-Arizona (who were co-chairs of the Congressional Blockchain Caucus), introduced a similar bill, the Cryptocurrency Tax Fairness Act. The bill would exclude the first $600 (adjusted for inflation) of gain from a single cryptocurrency transaction (or a series of related transactions) from gross income for U.S. federal income tax purposes. The intention of the bill, according to the sponsors, is to permit purchases by digital payments for small purchases, all without concern about the tax implications. The bill was not included as part of the TCJA. See H.R. 3708, To amend the Internal Revenue Code of 1986 to exclude from gross income de minimis gains from certain sales or exchanges of virtual currency, and for other purposes (September 7, 2017), Congress.gov, https://www.congress. gov/115/bills/hr3708/BILLS-115hr3708ih.pdf (last accessed May 5, 2018).

[147] The concept of property is a settled principle in both civil and common law countries. There are certain traditional parameters which determine the categorization of a tangible/intangible object as a "legal property" subject to private ownership (See Marchant, *supra* note 3, at PDF page 3).

adoption of cryptocurrencies as mediums of exchange. This outcome appears unreasonable especially because cryptocurrencies have become much more ubiquitous and have been adopted by at least one sovereign nation as its official currency. Consequently, it seems necessary for the IRS to re-evaluate its guidance.

The tax consequences of treating crypto as property in cases where it can be used to acquire good or service are generally negative for taxpayers, and thus limit the general adoption of crypto as a medium of exchange. If crypto is property, then any time it is used to acquire a good or service, gain must be recognized if the amount realized, i.e., the value of the property or service received (which is presumably equal to the value of the crypto surrendered) exceeds basis, and loss must be recognized if basis exceeds the amount realized.[148]

This treatment of crypto as property can lead to serious complications when used to acquire goods or services. First, the value of crypto can fluctuate rapidly and so it is hard to establish at any given moment, so that it may be necessary to establish the value of the good or service instead, which can be difficult too. Second, it is burdensome to establish tax basis for the crypto because cryptos are fungible and the determination of basis have to be made among the blocks. Given that cryptocurrency may be traded in very high frequencies, it is onerous to track such basis for small transactions.[149] Also, the taxpayer has an incentive to use the highest basis crypto first among the blocks to minimize gain or maximize loss. Third, for the same reason, the taxpayer can choose the crypto with the longest holding period to create long term capital gain and the shortest holding period to create short term capital loss. Fourth, when the taxpayer acquires crypto in an initial coin offering ("ICO"), the tax basis is unclear.

Thus, the taxation of cryptocurrencies as property is very burdensome on the daily users of cryptocurrency. If someone buys a burger at a fast-food restaurant or a coffee from a coffee shop for crypto, he will be required to calculate and declare gain or loss in each of these transactions. Not only crypto users would potentially incur tax liability every time they purchase something with crypto, but they would also have to pay attention to which crypto they were spending to manage their tax liabilities.[150] This task is complicated by the fact that these cryptocurrencies can fluctuate in price significantly within a single day.[151] Therefore, given this tax treatment, it is safe to assume that absent clear incentives to use crypto, the attractiveness of using cryptocurrencies for daily transactions would reduce and most taxpayers would likely use real currency to avoid these complications.[152]

2.2 Short-Term Crypto Functions as Money/Real Currency

Cryptocurrencies used in short-term transactions operates in a similar manner of fiat currency (legal tender) or as a substitute for money.[153] If crypto behaves like money and it is used like

[148] This gain or loss will be short or long-term depending on the taxpayer's holding period in the crypto.
[149] See Morin, *supra* note 141, at 58
[150] Adam Chodorow, *Bitcoin and the Definition of Foreign Currency*, 19 Fla. Tax Rev. 365, p. 377 (2016).
[151] See Ahmed, *supra* note 47, at 24
[152] See Chodorow, *supra* note 150, at 378
[153] Am. Jur. MONEY § 6. Virtual Currency

real currency, then it should be treated in the same manner as money for tax purposes, if the objective is to achieve neutrality.

2.2.1 The Three Functions of Money

Money serves three basic functions: as a unit of account, a medium of exchange, and a store of value.[154] A unit of account is used to denominate the prices of goods and services, creating a concrete way to express value. A medium of exchange can be used in financial transactions, including to buy goods and services. A store of value is a way to maintain the purchasing power of one's earnings or wealth over time.[155] Short-term cryptocurrency has generally all the three mentioned functions.

Cryptocurrency is a digital representation of value that is widely used now to denominate the prices of goods or services, thus functioning as a "*unit of account*."[156] Cryptocurrency can be used to make payments and be subjectively accepted by the parties to a transaction as an alternative to legal tender and objectively treated as a "*medium of exchange*." Bitcoin, the most dominant cryptocurrency, was intended from its outset to be used as a medium of exchange for financial transactions outside the ambit of traditional institutions and government control. Today, Bitcoin and other major cryptocurrencies are accepted as a payment method by a large number of different businesses and entities in the U.S. and worldwide, including small businesses, major stores, fast foods restaurants, telecommunication companies, coffee shops, airlines companies etc.[157] Even several law firms and universities started to accept Bitcoin or Ether as a payment.[158] In addition to Bitcoin, Ether and other traditional cryptocurrencies, many of the other preeminent newer cryptocurrencies function as a "medium of exchange." This category obviously includes Stablecoins, which are cryptocurrencies backed by fiat currencies or by assets such as gold or other commodities which make them very similar to fiat currencies.[159] For instance, Facebook's cryptocurrency's Diem (previously called Libra) – fully backed by a reserve constituted by major hard currencies such as the U.S. dollar and the euro – is meant to function mainly as medium of exchange.[160]

Cryptocurrencies can also function as a "*store of value.*" For example, it is widely accepted that Bitcoin can effectively serve as a store of value, especially in an inflationary

[154] European Central Bank, "Virtual Currency Schemes," at 13-14 (Oct. 2012).
[155] See Prasad, *supra* note 4, at 24.
[156] Since Bitcoin, for example, exists purely in digital form, it can in principle be sliced, subject to technical constraints, to small fragments that could facilitate transactions for very small amounts. Each Bitcoin is equal to one hundred million Satoshis, making the Satoshi the smallest unit of Bitcoin currently recorded on the blockchain. See Prasad, *supra* note 4, at 127.
[157] Who Accepts Bitcoin as a Payment? See https://99bitcoins.com/bitcoin/who-accepts/ (last updated 1/9/2022). Who Accepts Ethereum in 2022? See https://cryptonews.com/guides/who-accepts-ethereum.htm
[158] The University of Nicosia in Cyprus accepts Bitcoin as a payment method for the tuition fees in respect of its courses, including an MSc in Digital currency. It has also begun to publish diplomas on the Bitcoin blockchain (https://www.unic.ac.cy accessed 22 July 2018)
[159] For example, the value of the USD Coin (USDC) is meant to stay as close as possible to $1. USDC is backed by actual dollars stored at financial institutions.
[160] See Prasad, *supra* note 4, at 10.

macroeconomic environment.[161] Bitcoin, which is referred to as "digital gold," came to be seen as a store of value as people put their saving in it, investors bet on its price. In addition, there are even financial products and derivatives that are linked to its price.[162] The absolute cap on the amount of Bitcoin that can be created (someday there will be twenty-one million Bitcoins after which no more can be created[163]) is generally perceived as an attractive feature that ensures Bitcoin's reliability as a store of value that is invulnerable to debasement through an increase in supply, in contrast to fiat money, which can be created without limit by central banks.[164] Thus, despite its volatility, Bitcoin can be an inflation-proof store of value unlike regular money that can be expanded indefinitely, which has led to hyperinflation in the several countries. Certain traditional currencies are subject to volatility as well and have poor store of value as unit of account, but still tax law recognizes them as currency subject to foreign currency under the law.[165]

In addition to Bitcoin, other kinds of cryptocurrencies function as "store of value", including Stablecoins. For instance, tokens that are issued by well-known nonfinancial corporations, such as Diem (Facebook's cryptocurrency) and Amazon Coins[166], could be seen as stores of value as well, given the scale and apparent stability of these corporations and the financial power they command.[167] Other kinds of Stablecoins, are used to earn interest (typically higher than what a bank would offer for depositing fiat currency) on a Stablecoins investment.[168]

2.2.2 The Nature of Cryptocurrencies under the Case Law

U.S. courts have begun to address the characterization of crypto as either money or a type of property outside the tax context, and have generally treated it as money. For example, in *United States v. Faiella*, the court determined that Bitcoin is money for purposes of anti-money-laundering law because it is used as a medium of exchange and is in wide circulation.[169] In *Shavers*, the court held that "Bitcoin has a measure of value, can be used as a form of payment, and is used as a method of exchange. As such, the Bitcoin investments in this case can satisfy the 'investment of money' prong set out by the Supreme Court in *Howey*."[170] In *United States v. Ulbricht*, the court held that a "money laundering statute is broad enough to encompass use of Bitcoins in financial transactions."[171] In the dissenting

[161] Arvind Sabu, REALIZATION'S VEXATIONS: TAXING CRYPTOCURRENCY HARD FORKS, JURIMETRICS VOL. 61 ISSUE NO. 3, p. 16 (2021).
[162] See Prasad, *supra* note 4, at 108.
[163] The limit of twenty-one million bitcoins is hardcoded into the algorithm.
[164] See Prasad, *supra* note 4, at 108 + 126.
[165] See Waerzeggers and Aw, supra note 81, at 222+223.
[166] Amazon Coins can already be used to buy games and apps on Amazon's platform, and it is reasonable to assume that such tokens could eventually be used for trading a broader range of goods on the Amazon platform. See Prasad, *supra* note 4, at 126.
[167] See Prasad, *supra* note 4, at 10
[168] https://www.coinbase.com/learn/crypto-basics/what-is-a-stablecoin
[169] 39 F. Supp. 3d 544, 545 (S.D.N.Y. 2014).
[170] *SEC v. Trendon T. Shavers & Bitcoin Sav. & Tr.*, No. 4:13-CV-416, 2014 U.S. Dist. LEXIS 194382, at *17 (E.D. Tex. Aug. 26, 2014).
[171] 31 F. Supp. 3d 540, 570 (S.D.N.Y. 2014). See also *United States v Murgio*, 15-cr-769 (AJN) (S.D.N.Y., Jan. 12, 2017): Bitcoin "function as pecuniary resources and are used as a medium of exchange and a means of payment." But

opinion of Judge Breyer in *Wisc. Cent. Ltd. v. United States*[172] (2018) (suggesting that, in the context of the Railroad Retirement Tax Act of 1937, "money" might one day include crypto currency)

> *"Moreover, what we view as money has changed over time… [P]erhaps one day employees will be paid in Bitcoin or some other type of cryptocurrency, see F. Martin, Money: The Unauthorized Biography—From Coinage to Cryptocurrencies 275-278 (1st Vintage Books ed. 2015). Nothing in the statute suggests the meaning of this provision should be trapped in a monetary time warp, forever limited to those forms of money commonly used in the 1930's."*

From a comparative perspective, the Court of Justice of the European Union (ECJ) in the *Hedqvist case*[173] addressed the tax treatment of cryptocurrencies for VAT purposes. The court took the view that the exchange of traditional currencies for units of Bitcoin and other "non-traditional currencies" is a financial transaction and thus VAT exempt under Article 135(1)(e) of the EU VAT Directive, despite the explicit reference in that provision to "currency, bank notes and coins used as legal tender". The court ruling applies to "non-traditional currencies, that is to say, currencies other than those that are legal tender in one or more countries, in so far as those currencies have been accepted by the parties to a transaction as an alternative to legal tender and have no purpose other than to be a means of payment."

3. Treating Short-Term Crypto as Foreign Currency

3.1 Achieving Neutrality by Taxing Short-Term Cryptocurrencies as Foreign Currency

In the previous sections, we showed that the sweeping current tax treatment of crypto as property, including for the short-term crypto transactions, would impede the adoption of crypto as a medium of exchange and would eventually harm the development of the crypto industry. We also showed that cryptocurrency used for daily transactions functions fundamentally as a real currency. Given this, if the purpose is to achieve tax neutrality, the tax system should tax the short-term cryptocurrencies in a similar manner that it taxes real currency. That means, short-term cryptocurrencies should be treated either as "functional currency" or as "nonfunctional/foreign currency" under the Code. Since "functional currency" has a definitive meaning under the Code which is "the dollar,"[174] the only option left for cryptocurrency is to be treated as a "nonfunctional currency" or "foreign currency" which is governed under Section 988 of the Code.[175]

Despite containing detailed rules on how to treat nonfunctional/foreign currency for tax purposes, neither Section 988 nor its extensive regulations define the term "nonfunctional

see *Florida v Espinoza*, F14-2923 (Fla 11th Cir, 22 July 2016), which held that Bitcoin "they are not a commonly used means of exchange" and thus not money.

[172] *Wisc. Cent. Ltd. v. United States*, 138 S. Ct. 2067, 2076

[173] The judgement of the Court of Justice of the European Union (CJEU) in Skatterverket v. David Hedqvist Case C-264/14 ("Hedqvist"). The European Union has jurisdiction over VAT rules throughout the EU so that decisions of the ECJ as to the application of VAT will generally have force in all Union countries.

[174] Section 985(b)(1)(A) states that the general rule that the functional currency will be "the dollar".

[175] Section 988 of the Code.

currency." This term is also not defined anywhere else in the Code or in the case law.[176] This is not surprising, given that, until recently, it was commonly understood that a foreign currency was something created by a country and accepted as legal tender.[177] The 2014 Notice states that Bitcoin is not accepted as legal tender in any jurisdiction, implying that a foreign currency may be a currency if it is accepted as legal tender by a foreign country. However, there is nothing to imply that the meaning of foreign currencies under the Code is money that is government-created and accepted as a legal tender. Moreover, now that El-Salvador accepts Bitcoin as a legal tender, with the anticipation that other countries would follow, this would even let cryptocurrency fit within the technical traditional understanding of foreign currency being as a legal tender issued by a foreign country.[178]

Prior to the 1986 Tax Reform Act[179], the IRS treated currency as property. However, Congress changed the treatment of foreign currencies because of the problems related to defining currency within existing property frameworks.[180] Section 988 of the Code sets out the tax treatment of foreign currencies. This Section, along with the IRS regulations, has provided two important sets of rules that make the tax treatment of "foreign currency" preferential to the treatment as normal property. These rules are a de-minims exception and the basis rules.

3.2 Tax Consequences of Treatment of Cryptocurrencies as a "Foreign Currency"

The treatment of short-term cryptocurrency as "foreign currency" would make it subject to the foreign currency exchange rules under the Code. As noted, these rules most importantly include:

(i) The De-Minims Exception: the short-term cryptocurrency transactions would be eligible for the $200 personal use exemption; and
(ii) Basis Rules: the foreign currency basis accounting rules will apply to cryptocurrency.

3.2.1 The De-Minims Rule

In general, Section 988 sets out that those who use foreign currency to acquire goods or services have to report currency gains and losses if the currency has changed value between the time it was acquired and when it was spent. However, Section 988(e) has provided a

[176] AMP Inc. v. U.S., 185 F.3d 1333 (Fed. Cir. 1999) is a case that discusses foreign currency for tax purposes in the context of foreign tax credits. The case discusses whether the cruzeiro or the Brazilian Readjustable National Treasury Bond (Obrigação Reajustável do Tesouro Nacional), which was an official index used to address inflation, should be considered Brazil's functional currency. The court found that the cruzeiro was the functional currency but did not address the broader question of whether a non-state created currency can be considered as a foreign currency.
[177] See Chodorow, *supra* note 150, at 379
[178] Adam Chodorow in his 2016 paper claimed that even if a specific even if a specific foreign country adopts Bitcoin as its formal currency, Bitcoin should not be treated as a foreign currency for U.S. tax purposes given the special features of the virtual currencies (e.g. instability) and to avoid ceding too much power to other countries (See Chodorow, *supra* note 150, at 383). However, we don't see why they shall be a difference between this and regular foreign currency from that perspective.
[179] 1986 Tax Reform Act.
[180] See JOHNSON, *supra* note 73, at 665.

personal-use exemption for currency gains, so long as the gain is under $200.[181] Any reportable gains, that is over $200, will be treated as ordinary and taxed at ordinary rates.[182]

By treating short-term cryptocurrencies as a foreign currency, it will enjoy the de minims exception. The de minims exception will make the taxation of cryptocurrency more administrable and would also support/promote the crypto industry.

From the administrative perspective, a de minimis exception would reduce the burdensome task of reporting gain or loss on small purchases with crypto that is characterized of being volatile. Applying the de minimis exception to short-term crypto transactions is thus compatible with the rationale for the personal-use exemption as enacted in 1997. The legislative history of Section 988(e) stated the reasons for the change as follows.

> "…If an individual must treat foreign currency in this instance as property giving rise to U.S.-dollar income or loss every time the individual, in effect, barters the foreign currency for goods or services, the U.S. individual living in or visiting a foreign country will have a significant administrative burden that may bear little or no relation to whether U.S.-dollar measured income has increased or decreased. The Committee believes that individuals should be given relief from the requirement to keep track of exchange gains on a transaction-by-transaction basis in de minimis cases."

Moreover, the de minims treatment in this case will mitigate the significant administrative burden for the IRS as well. This treatment will allow the IRS to place its focus on larger transactions,[183] and would presumably increase the number of crypto users who report earnings from the use of cryptocurrency. This would be in line with the IRS's objective to increase tax reporting by cryptocurrency investors.[184]

From the crypto industry perspective, the reduction in the massive administrative burden on individuals will presumably make crypto more attractive and increase its usage and acceptance. The de-minimis exception will facilitate the adoption of crypto as a medium for exchange and it will supplement the effectiveness of the cryptocurrency in general. It would support the crypto industry and foster its positive economic effects.[185]

3.2.2 Applying Foreign Currency Basis Rules

3.2.2.1 The problems with applying stand-alone basis to short-term crypto transactions

In the 2014 Notice, the IRS clarified that the general tax principles applicable to property transactions will apply to cryptocurrency-based transactions.[186] The 2014 Notice also explained that the normal basis rules will apply to cryptocurrencies,[187] indicating that each cryptocurrency will have its own stand-alone basis.[188] As mentioned earlier, basis

[181] Section 988(e) of the Code.
[182] Reg. § 1.988–3(a).
[183] See McNeely, *supra* note 74, at 535.
[184] See McNeely, *supra* note 74, at 536 + 537.
[185] See Ankier, *supra* note 43, at 904.
[186] RR 2014-21 at § 4, Q&A– 1.
[187] RR 2014-21 at § 4, Q&A– 4+6.
[188] See Chodorow, *supra* note 150, at 394+395.

determination issues and their associated reporting requirement impose a massive burden on taxpayers and seems excessive for those who would use cryptocurrency to make a significant number of purchases. A party that accepts numerous cryptocurrencies in any given day will have to track the value of the cryptocurrency received.[189] The taxpayer would need to maintain strict records of each transaction involving cryptocurrency in order to ensure compliance with the IRS basis rules. This could be an onerous task, if not impossible in some cases.[190] The volatility of cryptocurrencies compounds the problem for businesses willing to accept crypto as payment. In addition, partial unit sales increase the problem of determining basis. When an individual acquires units of cryptocurrency at different times for different values per unit, they will need to desegregate such transactions in order to determine the relevant basis for the specific transaction.[191]

Another problem with the stand-alone basis is that because of fungibility of short-term cryptocurrencies similar to a fiat currency, it would allow crypto users to "cherry-pick" their basis, thus potentially allowing them to manipulate the tax treatment. Taxpayers can manipulate the basis rules by choosing the basis that would result in maximum losses and minimum gains. Taxpayers can also time their dispositions of crypto to generate artificial gains to utilize losses or artificial losses to offset gains.[192] Taxpayers, when selling cryptocurrency, can also manipulate basis rules to change the holding period since the Code allows a taxpayer to choose any share as the one being sold (not just the first or the last). This would allow a taxpayer to report the basis from sale on the cryptos that have been in his wallet the longest or the shortest, creating long-term capital gains which enjoy the lowest and more favorable tax rates, or short-term ordinary losses.[193]

Applying the foreign currency basis rules to short-term cryptocurrencies would solve the above-mentioned concerns.

3.2.2.2 Foreign Currency Basis Rules

If a taxpayer maintains a single bank account in a foreign currency, the adjusted basis of a specific expenditure from the account is very hard to determine since there is no way to actually track the amounts deposited. Therefore, the IRS has established special basis accounting rules for foreign currency commingled in a single account.[194] The regulations allow the taxpayer to determine the adjusted basis "under any reasonable method that is consistently applied from year to year."[195] The regulations permit taxpayers to elect any method for designating which funds are withdrawn and used, so long as it is reasonable and consistently applied from year to year.[196] Methods include First in First Out (FIFO), Last in First Out (LIFO), and pro rata, under which the basis of all the batches is pooled together and

[189] See Ankier, *supra* note 43, at 898
[190] See Ankier, *supra* note 43, at 898
[191] See Ankier, *supra* note 43, at 899
[192] See JOHNSON, *supra* note 73, at 658.
[193] See JOHNSON, *supra* note 73, at 657.
[194] See Chodorow, *supra* note 150, at 371.
[195] Reg. § 1.988–2(a)(2)(iii)(B).
[196] Reg. § 1.988–2(a)(2)(iii)(B).

then allocated to each unit of currency based on relative fair market value, such that each unit of currency has the same, average basis.[197] However, a method that ensures that the highest basis currency is used first, that is, one that ensures the lowest possible currency gains, will not be considered reasonable.[198]

Crypto currencies held for short-term use function as money, and they are fungible the same way money is. There is no reason to allow taxpayers to cherry-pick, manipulate the basis and minimize gains. Therefore, a short-term crypto should be subjected to foreign currency basis rules. Doing so would eliminate unnecessary complexity for crypto users and ensure that they were not able to manipulate the basis rules to minimize their tax burdens.[199]

4. The Bifurcated Treatment and the Necessity for a Bright-Line Rule

As mentioned above, the standard we propose is that short-term crypto transactions, which should be treated as a foreign currency, should be defined as cryptocurrency held for a short period of time (one year or less) and used to acquire goods or services while if the cryptocurrency held for over a year, it should be treated as property. Differentiating between these two groups based on this bright-line rule will mitigate the administrative burden associated with a case-by-case approach, *i.e.* trying to find the correct classification of crypto in each transaction.

The case-by-case approach, while theoretically can lead to a more accurate result in each examined case, it will require examining the subjective purpose of the crypto user in holding the crypto in order to determine if the crypto should be treated as money or property. However, variations in the underlying economic activity that can be performed by a specific token,[200] makes it hard, in general, to ascertain the subjective purpose of the crypto holder in using the crypto in a specific case. The case-by-case approach might require the IRS to use formulas and tracking, which it does not have at the moment, in order to determine if a specific wallet or account is held for investment purposes or for daily use. This task is extremely difficult from an administrative perspective, which makes enforcing such a proposed rule to be logistically impossible, unless new technologies develop in the future to address this concern.[201]

On the other hand, the bright-line rule enables taxpayers to comply with them and tax authorities to enforce them effectively. Therefore, regardless of the theoretically correct result in each specific case, in order to avoid administrative hassles, a standard must be developed to make the taxation of crypto more administrable. Because cryptocurrencies are becoming

[197] Reg. § 1.988–2(a)(2).
[198] Reg. § 1.988–2(a)(2).
[199] See Chodorow, *supra* note 150, at 371.
[200] See Waerzeggers and Aw, supra note 81, at 221.
[201] See Ahmed, *supra* note 47, at 44.

so common, it is important not to tax them in ways that make compliance very difficult for both individuals and for the government to track.

It is important to note that while the proposed bifurcated regime is the appropriate treatment at the moment, changes in the crypto world might require the reconsideration of such tax treatment. For example, a very wide acceptance and usage of cryptocurrency by the general public along with government designation might require even considering treating it as functional currency and not as a foreign currency in the future.

5. Non-Fungible Tokens ("NFTs")

NFTs are a special kind of crypto in which each token is unique, as opposed to "fungible" currency like Bitcoin and dollar bills, which are all worth exactly the same amount. Because every NFT is unique, they can be used to authenticate ownership of digital assets like artworks, recordings, and virtual real estate, pets etc.[202] Similar to other cryptocurrencies, NFTs have also soared in popularity in the last few years.[203]

NFTs are akin to capital asset. Therefore, NFTs should be treated as property for tax purposes and not be subject to the bifurcated tax treatment described above as they lack the function of money. The holders of an NFT that represents a specific asset are effectively co-owners of the asset, and therefore the tax treatment of any payments arising from ownership of the NFT should be the same as that of the income arising from the underlying digital asset.[204]

C. Additional Tax Aspects

While the 2014 Notice explains that cryptocurrency shall be classified as property, it does not address whether cryptocurrency should be treated as a capital asset, security or commodity. The regulatory agencies other than the IRS are split. The SEC treats crypto as an investment and sometimes as a security,[205] while the CFTC treats it as a commodity (property).[206] Each agency seems to be treating crypto in the way that will maximize its regulatory power over it.[207] This could result in unclarity in the tax law since the classification of crypto as a security or commodity is relevant in determining the tax treatment of crypto under some tax provisions.

1. Crypto with Security-Like Features

In late 2017, the SEC noted that certain types of cryptocurrencies, particularly those used in ICOs to raise business capital, have "key hallmarks of a security and a securities offering [and]

[202] https://www.coinbase.com/learn/crypto-basics/what-are-nfts
[203] NFTs grow to an estimated $338 million in 2020. https://www.forbes.com/sites/abrambrown/2021/02/26/what-is-an-nft-and-should-you-buy-one/?sh=54726bb424b2.
[204] See Waerzeggers and Aw, supra note 81, 227.
[205] SEC. "Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO." Release No. 81207. July 25, 2017.
[206] "CFTC Asserts Jurisdiction Over Bitcoin Derivatives." SIDLEY.Oct. 15, 2015. http://www.sidley.com/news/10-15-2015-derivatives-update.
[207] For instance, where cryptocurrencies are deemed as security, then the SEC has wide powers to regulate or even prohibit the exchange of cryptocurrencies.

involve the offer and sale of securities."[208] The SEC also stated that whether or not a particular token used in an ICO is a security depends on the facts and circumstances of each case.[209] Thus, there is no clear guidance regarding when cryptocurrencies are considered by SEC as securities and when they are not. The classification as security is even more unclear when it comes to the traditional cryptocurrencies such as Bitcoins.[210]

1.1 Wash Sale Rules

A "wash sale" is a purchase of a stock or security less than thirty days after a prior sale at a loss. A taxpayer's purpose in executing a wash sale is to sell a stock at the end of a tax year to generate a loss for tax purposes and then repurchase the stock after the beginning of the new year to regain an investment position. In this case, section 1091(a) of the Code disallows such losses ("Wash Sales Rules").[211]

The question is if the Wash Sales Rules that apply to stocks and securities, apply also to crypto? The IRS classification of crypto as property might suggest that the rules do not apply to cryptocurrencies.[212] However, this remains unclear.

The classification of crypto as property means that a crypto holder could sell cryptos to generate artificial losses through churning.[213] On the other hand, if crypto is considered as a security, and the taxpayer receives a crypto and exchanges it in less than 30 days after receiving it, the Wash Sales Rules would disallow claiming any losses, if applicable. The lack of clarity regarding if crypto is classified as security or not for tax purposes following the above-mentioned 2017 SEC position, creates a disincentive for businesses to receive crypto as a payment or to transact in crypto.[214]

Cryptocurrencies that have currency-like features, should not be treated as security for tax purposes. This include cryptocurrencies which are used for short-term transactions, which as mentioned above are cryptos that are held for less than a year and used to purchase goods or services.

1.2 Mark-to-Market Election

[208] Statement on Cryptocurrencies and Initial Coin Offerings, US Securities and Exchange Commission https://www.sec.gov/news/public-statement/statement-clayton-2017-12-11.
[209] SEC (2017). "SEC issues investigative report concluding DAO tokens, a digital asset, were securities: U.S. securities laws may apply to offers, sales and trading of interests in virtual organizations". SEC Press Release 2017 131. 25/07/2017, www sec gov/news-press-release/ 2017-131.
[210] In 2018, William Hinman, director of Corporation Finance at the SEC, stated: "When I look at Bitcoin today, I do not see a central third party whose efforts are the key determining factor in the enterprise. The network on which Bitcoin functions is operational and appears to have been decentralized for some time, perhaps from inception." William Hinman, Digital Asset Transactions: When Howey Met Gary (Plastic), Remarks at the Yahoo Finance All Markets Summit: Crypto, June 14, 2018 (available at https://www.sec.gov/news/speech/speech-hinman-061418).
[211] 26 U.S.C. § 1091(a)
[212] See Fairpo, *supra* note 66, at p. 263, parag. 10.35
[213] See JOHNSON, *supra* note 73, at 658 + 659.
[214] See JOHNSON, *supra* note 73, at 659.

Another issue associated with classifying crypto as security is the "mark-to-market" election. Dealers in securities may make a mark-to-market election under Section 475 of the Code with respect to their securities. This election essentially allows the dealers and traders to use the inventory method of accounting for securities and can provide significant tax benefits to those who make this election. The question is whether crypto holders could make this election if the crypto is treated as security.[215]

Cryptocurrency shall not be considered as a security for the purposes of mark-to-market accounting under Section 475 and the IRS regulations thereunder. The proposal of mark-to-market taxation of digital wallets is problematic for administrative reasons and practically is unrealistic. This is mainly due to the volatility issue and that crypto could fluctuate significantly in value. It will result that in one year the IRS might collect revenue but the next year it might need to give a huge amount of refunds if crypto drops down in value. This could also result in cash-flow issues for taxpayers due to the fluctuations in tax liability stemming from the fluctuations in value of the underlying crypto.[216]

2. Straddle Loophole

Since currently cryptocurrencies are treated as property, taxpayers can utilize straddles to generate artificial losses to reduce their taxable income. A straddle is a unique derivative instrument that allows an investor to hold simultaneous positions both above and below the market price of a commodity.[217] By using straddles, a taxpayer can lower their tax liability by selling a losing position to offset any taxable gain. Typically, an investor utilizes a straddle when a commodity has highly volatile prices because it allows them to hedge their position in the asset and guarantee that their investment would not be affected despite the price volatility.[218] The volatility of cryptocurrencies market make them an appealing commodity for investors to straddle on.[219]

For example, typically, a relatively low call position designed to generate a small gain would be considered "in-the-money." Under Section 1092 of the Code, this would be considered a Qualified Cover Call and all of the loss would be disallowed at the end of the year. However, since Section 1092 does not apply to cryptocurrency (because the straddle would not meet the statutory requirement), at the end of the tax year, the taxpayer would simply exercise the option with the larger loss and offset his taxable income by a wide margin.[220] Thus, the current treatment of cryptocurrency as property permits the taxpayers to take advantage of the taxable losses generated by straddles.

[215] See Morin, *supra* note 141, at 63.
[216] See Waerzeggers and Aw, supra note 81, at 229
[217] See JOHNSON, *supra* note 73, at 660.
[218] See Ankier, *supra* note 43, at 900.
[219] See Ankier, *supra* note 43, at 900.
[220] See JOHNSON, *supra* note 73, at 661 + 662

PART V: SPECIAL CRYPTO EVENTS – HARD FORKS AND AIRDROPS

In recent years, as a consequence of the increased popularity of cryptocurrencies, along with the development of blockchain technology, new events and activities have emerged in the crypto world. These emerging new events may potentially create new taxable events for cryptocurrency holders. This part of the Article will address the tax treatment of two of such crypto events: hard forks and airdroppings.

A. Hard Forks and Airdroppings – General

1. What is a Hard Fork?

A hard fork is a change to a network's protocol that effectively results in two branches, one that follows the previous protocol, and one that follows the new version.[221] Typically, this occur when nodes in the network add new rules in a way that conflicts with the rules of old nodes.[222] Adding a new rule to the code, essentially creates a split or a "fork" in the blockchain: one path follows the new, upgraded blockchain, and the other path continues along its same path. Forking events may be initiated by developers or members of a crypto community who are dissatisfied with the functionalities offered by existing blockchain implementation.[223]

A hard fork can happen to any blockchain, and it requires all nodes or users to upgrade to the latest version of the protocol software. Thus, holders of tokens in the original blockchain are granted tokens in the new fork as well.[224] Generally, after the forking event, the value of the original token falls after a hard fork, while the new token acquires value.[225]

The most famous hard fork is the hard fork of Bitcoin in 2017, which created Bitcoin Cash. This hard fork was initiated by participants in the crypto network who believed that Bitcoin's protocol should be changed to allow blocks of greater size. They increase in the blocks size will result in an increase in the transactional capacity of the network.[226] Since there was no consensus on this approach, the portion of the network that supported this approach adopted a software change that raised the block size limit,[227] and thus, Bitcoin Cash was created.[228]

Prior to the hard fork of Bitcoin, the cryptocurrencies Ethereum and Ethereum Classic forked, however, for different reasons than the hard fork of Bitcoin.[229] As cryptocurrencies grow to become more popular and pervasive, it is presumed there will be additional disagreements and

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[221] https://www.investopedia.com/terms/h/hard-fork.asp
[222] https://academy.binance.com/en/articles/hard-forks-and-soft-forks
[223] https://www.investopedia.com/terms/h/hard-fork.asp
[224] https://www.investopedia.com/terms/h/hard-fork.asp
[225] See Waerzeggers and Aw, supra note 81, at 236.
[226] See Sabu, *supra* note 161, at p. 8+9. Bitcoin blockchain can process a limited number of transactions per second. Specifically, Bitcoin's software permits the creation of blocks under one megabyte in size every ten minutes. That amounts to a maximum of seven transactions per second.
[227] The block size limit was raised to eight megabytes.
[228] See Sabu, *supra* note 161, at p. 9
[229] The Ethereum blockchain created a hard fork to reverse the hack on the Decentralized Autonomous Organization (DAO). The hard fork helped DAO token holders get their Ether funds returned.

divergences within different networks. A result of this is an increased likelihood of additional hard forks in the future.[230]

2. What is a Cryptocurrency Airdrop?

Airdropping is a marketing tool generally employed by new cryptocurrency enterprises that involves delivering (or "airdropping") coins or tokens to wallets of current cryptocurrency holders, generally for free.[231] The aim of this is to promote awareness and raise visibility of a new cryptocurrency, thus potentially increasing the level of ownership in the new cryptocurrency.[232] Airdrops can take place before or in conjunction with an ICO and are becoming increasingly popular amongst token issuers as a marketing method. One of the differences between an "airdrop" and "hard fork" is that in an "airdrop," token issuers can specify the amounts of tokens that particular users receive. In a hard fork, generally all holders of tokens in the original blockchain are granted tokens in the new fork, as well on a one-to-one basis.[233]

B. Current U.S. Tax Treatment

With respect to hard forks and airdropping, a question that arises is whether the receipt of the new tokens should be treated as a taxable event, and if so, how must the value of the new tokens be ascertained. In October 2019, the IRS issued Revenue Ruling 2019-24, which attempts to provide answers to these questions (the "2019 Notice").[234]

1. The 2019 Notice

The 2019 Notice clarifies the treatment of both hard forks and airdropping. Further, the 2019 Notice clarifies how current tax principles apply to these special crypto transactions.

The 2019 Notice describes two situations: the first situation occurs when there is a hard fork that results in the creation of a new cryptocurrency that is not "airdropped" or transferred to the wallet of the taxpayer following the hard fork. The second situation occurs when there is a hard fork that results in the creation of a new cryptocurrency where the new crypto is transferred through "airdropping" to the wallet of the taxpayer.

For the first situation, the 2019 Notice guides that since the taxpayer did not receive a new cryptocurrency from the hard fork, the taxpayer does not have an accession to wealth and does not have gross income under Section 61.[235]

For the second situation, the 2019 Notice guides that under Section 61, the taxpayer has gross income, ordinary in character, as result of the "airdrop" of the new cryptocurrency following the hard fork. This is because the taxpayer receives new cryptocurrency following the airdrop, which

[230] See Sabu, *supra* note 161, at p. 3.
[231] In some cases, users have to complete simple promotional activities before they can claim, such as following the project's social media account and sharing their posts.
[232] https://www.investopedia.com/terms/a/airdrop-cryptocurrency.asp
[233] Eric D. Chason, "*Cryptocurrency Hard Forks and Revenue Ruling 2019-24*", Virginia Tax Review p. 282 (Winter 2019).
[234] Rev. Rul. 2019-24, 2019-44 I.R.B. 1004
[235] For the definition of income under the 2019 Notice, the IRS relies on the Glenshaw Glass case (1955).

constitutes an "accession to wealth," and the taxpayer has "dominion and control" over the new cryptocurrency at the time of the airdrop, as the taxpayer has the ability to dispose of the new cryptocurrency. The amount included in the gross income is equal to the fair market value of the new airdropped cryptocurrency when the airdrop is recorded on the distributed ledger. The basis of the taxpayer in the new cryptocurrency is equal to the amount of the income recognized.[236]

2. The Drawbacks of the 2019 Notice

The 2019 Notice incorrectly mixes between hard forks and airdropping, which are two separate and distinct events. Generally, in a hard fork, all holders of a token in the original blockchain are granted a token in the new fork as well. For example, Bitcoin owners received new units of Bitcoin Cash on a one-to-one basis following the 2017 hard fork. The receipt of the new tokens as part of the hard fork is not done through "airdropping." Once the hard fork happens, all past transactions of the original cryptocurrency are replicated and the new tokens are created. The network participants creating the hard fork take no additional steps to transfer the new tokens to the other participants in the network.[237] The description in the 2019 Notice that the hard fork created additional transactions that are recorded on a distributed ledger is simply not accurate. By cloning the original blockchain, the hard fork itself creates the new cryptocurrencies which are recorded in the blockchain at the time of the hard fork, without any affirmative steps taken by the crypto holders.[238] Therefore, the description of the hard fork event by the IRS is mistaken and the distinction between the two situations described in the 2019 Notice is not accurate.

Since all crypto holders in the network receive new tokens as part of the hard fork, the 2019 Notice results in the immediate taxation of such new tokens in the hands of the crypto holders. This result is problematic for two reasons: (1) it is not the proper tax treatment of hard forks, as hard forks are akin to software upgrade of the blockchain that should not trigger a taxable event, as explained below; (2) this result assumes that the hard fork happens at an exact time and that the new tokens have readily ascertainable value at that specific time. Both assumptions are wrong. First, it is immensely difficult to assert the precise time of the hard fork (for example, it's hard to point at which specific point of time Bitcoin hard fork have occurred[239]). Second, it is generally impossible to ascertain the value of the new tokens when they are created or issued, as they are distinct from the original tokens. As such, any decrease or increase in the value of the original tokens does not necessarily indicate the value of the new tokens, as it may be a result of network effects due to the forking event, or a result of a variety of other factors.[240]

[236] Rev. Rul. 2019-24, 2019-44 I.R.B. 1004, page 5
[237] See Chason, *supra* note 233, at p. 282.
[238] See Chason, *supra* note 233, at p. 282.
[239] See Chason, *supra* note 233, at p. 284, "It may have been 13:20 GMT on August 1, 2017, when Bitcoin and Bitcoin Cash stopped having a common transaction history. Or it may have been almost five hours later, when miners first validated new blocks on the Bitcoin Cash blockchain."
[240] See Waerzeggers and Aw, supra note 81, at 236

C. Proper Tax Treatment

1. Hard Fork

1.1 Analogy to Stock Dividends

It can be argued that a hard fork is analogous to a pro rata stock dividend (also known as "stock split") and shall be treated as such for tax purposes. In this case, the determination of whether a hard fork should be taxed as gross income, is analyzed under the framework of *Eisner v. Macomber*,[241] a predecessor to the *Glenshaw Glass* case, or under Sections 305 and 306 of the Code which followed the *Macomber* case and govern stock distributions.[242] Despite the possible similarities between the hard forks and the pro-rata stock distributions, hard forks should not be treated as such for tax purposes.

First, it is difficult for a hard fork to be analyzed under the *Macomber* case, due to some fundamental differences between hard fork and stock split. In *Eisner v. Macomber*, the Supreme Court confronted the question of whether the Sixteenth Amendment[243] empowered Congress to include stock dividends in the tax base.[244] The Court answered "no," because "income" in the Sixteenth Amendment meant "the gain derived from capital, from labor, or from both combined."[245] The Court held stock dividends did not change the corporation value or the shareholder's entitlement to the corporation's assets or profits, which meant there was no increase in the wealth of the shareholder, thus, stock dividends were not "income" for the purposes of the Sixteenth Amendment. This analysis does not lead to the same result in a case of a hard fork. *Macomber* applies to a situation of proportionate distribution of new shares, in which each shareholder receives additional shares identical to the shares he had, and the aggregate shares value remains exactly the same both immediately after and before the distribution. This is not necessarily the case in a hard fork. The Bitcoin hard fork, for example, resulted in the creation of a new cryptocurrency (Bitcoin Cash), which is different than Bitcoin as it has its own unique characteristics, its own blockchain, and holds an independent value from Bitcoin.[246] In hard forks, unlike in a pure stock split, the creation of a new separate cryptocurrency with independent value may result in net gain or loss to the crypto holder at the time of the hard fork. Thus, hard forks are not necessarily a zero-sum game.[247]

Additionally, as all holders of Bitcoin received Bitcoin Cash in a one-to-one basis following the hard fork, not all Bitcoin holders were positioned similarly to shareholders after a pro rata stock split. This is because not all exchange platforms supported the new currency following the hard fork,[248] meaning some crypto holders did not have access to the new

[241] 252 U.S. 189 (1920).
[242] Sections 305 and 306 of the Code
[243] U.S. CONST. amend. XVI ("The Congress shall have power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several States, and without regard to any census or enumeration.").
[244] Macomber, 252 U.S. at 199.
[245] Id. at 207 (quoting Stratton's Independence, Ltd. v. Howbert, 231 U.S. 399, 415 (1913))
[246] See Semanski, *supra* note 77, at p.12
[247] See Waerzeggers and Aw, supra note 81, at 236.
[248] For example, while Bitcoin hard fork occurred on August 1, 2017, Coinbase recognized Bitcoin cash only as of December 19, 2017. See https://help.coinbase.com/en/coinbase/getting-started/crypto-education/bitcoin-cash-faq

currency, while others did.[249] Therefore, the conclusion under the *Macomber* case does not realistically apply to hard fork. Moreover, cryptocurrencies are not stocks, therefore they cannot be analyzed under Sections 305 and 306 of the Code containing statutory rules legislated to specifically address stock distributions to shareholders.

1.2 Treatment as Windfalls

Arguably, new tokens received following a hard fork are to be considered windfall income, since the crypto holders did not need to do anything to receive them.[250] Windfalls and other kinds of free compensations are generally included in gross income, even if the recipient did not want to receive them at the forefront.[251] However, going one step back, the question remains if the new tokens are considered to be income at all under the *Glenshaw Glass* test, *i.e.* are they considered to be "undeniable accessions to wealth, clearly realized, and over which the taxpayer has complete dominion."[252]

First, it's not clear whether there is an "undeniable accession to wealth" at the time of the hard fork. Despite the receipt of the new tokens, which obviously have value by themselves, the value of the old tokens could decrease at the time of the hard fork due to network effects resulting from the hard fork. In this case, in aggregate, there might be a decrease in the taxpayer's wealth due to the hard fork. Moreover, the new forked tokens, in general, do not have a readily ascertainable value because they are perceived merely as new experiments for which chances for failure or success are uncertain at the time of the hard fork.[253] The inability to ascertain the value of the new tokens at the time of the hard fork, along with the change of value of the original tokens, make it impossible to determine if there is an accession to the aggregate wealth of the crypto holders as a result of the hard fork.

Second, it is hard also to determine if the realization requirement is met. The uncertainty surrounding the timing of the hard fork, along with the inability of taxpayers to determine the value of the new tokens upon the hard fork, complicates the matter and prevents, as a practical matter, the treatment of the hard fork itself as a realization event in which the holders of the new tokens have "realized" income.[254]

Third, there is a question if the "dominion and control" requirement is met in the case of a hard fork, because the taxpayer does not always have access to the new cryptocurrency. For multiple reasons, some recipients of Bitcoin Cash, for example, did not have, or could not get, the digital key necessary to access the Bitcoin Cash they are eligible for.[255] Therefore, it

[249] See Semanski, *supra* note 77, at p.12
[250] Eric D. Chason, A Tax on the Clones: The Strange Case of Bitcoin Cash, 39 VA. TAX REV. 1 (2019).
[251] See Haverly v. U.S., 513 F.2d 224 (7th Cir. 1975) (holding that free textbooks sent unsolicited by a publisher to a high school principal were taxable income).
[252] Commissioner v. Glenshaw Glass, 348 U.S. 426, 431 (1955).
[253] See Sabu, *supra* note 161, at p.18. For example, there was no readily ascertainable value for Bitcoin Cash until sometime after the hard fork, and even then, trading prices varies significantly among the different exchange platforms.
[254] See Sabu, *supra* note 161, at p.18.
[255] See Semanski, *supra* note 77, at 11. For example, Coinbase at the beginning did not agree to support Bitcoin Cash.

is uncertain whether each recipient has a complete "dominion and control" over the newly forked tokens.

To conclude, the receipt of the new tokens as part of the hard fork does not meet the three requirements under the Glenshaw Glass test. As a result, the hard fork should not result in income in the hands of the crypto holders.

1.3 Treatment as a Software Upgrade

The more accurate way to treat the hard fork is as a software upgrade which does not constitute a taxable event in the hands of the taxpayers.

Similar to other software, blockchains need to be updated for a variety of reasons. Some reasons are, to enhance functionality of the technology, to address security risks, and to resolve a disagreement within the community about the cryptocurrency's direction.[256] Thus, hard fork is fundamentally a software upgrade of the blockchain's operating system, similar to other software upgrades (e.g. updating the phone with the latest version). Those on the old chain will generally realize that their version of the blockchain is outdated or irrelevant, and upgrade to the latest version.[257] For example, an owner of the original Bitcoin would have to download new software to use Bitcoin Cash, similar to an owner of Microsoft Word who must download the updated software to enhance the functionality of the software.[258]

The software upgrade through a hard fork, in a technical manner, merely mean that some users adopt new software that is inconsistent with past software. These upgrades do not result in realization of income at the time of the fork.[259] In order to achieve the purpose of the hard fork, it is not necessary to create new tokens. If all users in the community adopt the new standard and abandon the old standard, then there would be no need to create new tokens.[260] However, given the lack of community consensus, the software upgrade cannot be done without the issuance of new tokens which are created as a result of the updated software. Therefore, the new tokens are seen as part of the software upgrade which should not be considered as a taxable event by itself. The new tokens should be taxed only upon subsequent disposition or exchange. The new tokens should have a basis of zero, and the holding period should start as of the moment the new tokens are deposited into the user's wallet.

The proposed tax-free treatment at the time of the hard fork can arguably support the innovation and the development of different software associated with the crypto industry. For example, the Bitcoin hard fork significantly enhanced the functionality of the blockchain, by raising its blocks' size limit from one megabyte to eight megabytes. This allowed Bitcoin to increase the threshold quantity of transactions that can be performed through the network, and further, it enhanced the role of Bitcoin as a medium of exchange.

[256] https://www.coinbase.com/learn/crypto-basics/what-is-a-fork
[257] https://www.investopedia.com/terms/h/hard-fork.asp
[258] See Sabu, *supra* note 161, at p. 23.
[259] See Sabu, *supra* note 161, at p. 19.
[260] See Chason, *supra* note 233, at 283.

2. Airdropping

Unlike hard forks, it seems clear that tokens received as part of an airdrop give rise to income under the Glenshaw Glass test, as the recipients arguably have an accession to wealth that is clearly realized and over which they have complete dominion. Here, recipients of airdropped tokens receive tokens which have value, thus there is an "accession to wealth" whose realized event occurs when the new tokens are deposited in the digital wallets of the users. After the airdropped tokens are deposited to the participants accounts, they are freely transferable, thus the users have "dominion and control" over such tokens.

Despite being seemingly straightforward, the application of the Glenshaw Glass test is complicated by the distributed ledger characteristics of blockchain technology.[261] Airdropping could lead to a situation where any third party has the ability to create a tax obligation for any participant in the network by distributing units of a cryptocurrency to the addresses of the participants, as long as the third party has access to a taxpayer's public key.[262] This would create a taxable event each time there is an airdrop. This would impose massive compliance challenges on taxpayers, especially considering the fact that in most of the cases it is very difficult to value the airdropped tokens' as they are generally issued by new crypto businesses preceding an ICO.

Therefore, from a tax policy perspective, similar to the proposed treatment of crypto-to-crypto transactions, it is preferable to not tax the receipt of the tokens, but rather only tax when the tokens are exchanged or disposed of later.

[261] Peter Van Valkenburgh, IRS Cryptocurrency Guidance Answers Some Questions While Raising Messy New Ones, COINCENTER (Oct. 9, 2019), https://coincenter.org/ entry/irs-cryptocurrency-guidance-answers-some-questions-while-raising-messynew-ones.

[262] Peter Van Valkenburgh, IRS Cryptocurrency Guidance Answers Some Questions While Raising Messy New Ones, COINCENTER (Oct. 9, 2019), https://coincenter.org/ entry/irs-cryptocurrency-guidance-answers-some-questions-while-raising-messynew-ones.

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