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David J. Shakow

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Taxing Bitcoin and Blockchains—What the IRS Told Us (and Didn't)
by David J. Shakow

The success of Bitcoin¹ has raised several new tax issues. Only recently has the IRS broken a five-year silence to provide some clarification of the tax treatment of Bitcoin related transactions.² The IRS pronouncements have tried to answer some, but by no means all, the issues surrounding the tax treatment of cryptocurrencies. But even on the issues that it has addressed, the IRS has not always been clear, nor has it always confronted explicitly the arguments surrounding those issues.

I. BLOCKCHAINS

The innovation that has allowed Bitcoin to succeed is its blockchain structure. Transactions in bitcoins are confirmed with no central authority to oversee them. In contrast for example to a transfer of stock, which requires an entity that maintains the corporation's stock book to record and confirm the transaction, a transfer of bitcoins is confirmed by a consensus process. Moreover, the blockchain itself, listing all outstanding units that the blockchain keeps track of, is publicly available. Anyone can look at the history of any particular unit on the blockchain. The identity of the actual owner of each unit is not revealed. The owner of a unit demonstrates its bona fides by its ability to transfer a unit on the blockchain. Although no government stands behind Bitcoin and other cryptocurrencies, they have value because people are confident that any units offered are not counterfeit.

A. PROOF OF WORK (POW)—THE BITCOIN MODEL

Bitcoin operates using a "Proof of Work" (PoW) consensus process. The software controlling Bitcoin combines a number of Bitcoin transactions into a "block" of transactions which are confirmed by so-called "miners." The miners work to solve a complicated mathematical problem whose solution can only be derived through trial and error. If others connected to the blockchain confirm that the proposed solution is correct, whoever solved the problem is rewarded with newly issued bitcoins, as well as transaction fees from those whose transactions were included in the block.³ As a practical matter, the popularity of bitcoins and their increasing value has encouraged great efforts to solve those problems, efforts that require the use of substantial amounts of computer power, and the concomitant enormous expenditure of electric power. It has been estimated that Bitcoin mining uses approximately 0.28% of total global electricity consumption, more than the electricity used by Switzerland.⁴ Miners often combine

¹ I have followed the convention that Bitcoin as a system is capitalized, but references to bitcoins are lowercase.

² Rev. Rul. 2019-24, 2019-44 IRB 1004, the first guidance since Notice 2014-21, 2014-16 I.R.B 938.

³ Those who wish to transfer bitcoins offer transaction fees to encourage miners to include their transactions in a new block. The higher the fee offered, the more quickly the transaction will be confirmed and included in a block. See "Bitcoin Transaction Fees" at <https://bitcoinfoes.info/>

⁴ Niall McCarthy, "Bitcoin Devours More Electricity than Switzerland, Forbes (7/8/19) <https://www.forbes.com/sites/niallmccarthy/2019/07/08/bitcoin-devours-more-electricity-than-switzerland-infographic/#13d0725221c0>. The mining process for Ethereum, another popular cryptocurrency structure, is much

their efforts and form “mining pools” to increase their chances of solving the problem.⁵ The entity running the mining pool; coordinates the computer capabilities of those who join the pool.

This PoW structure is not foolproof. Once one of the problems is solved, others in the Bitcoin network must confirm that the solution is correct. There are two potential issues that can arise. One is that two miners may solve the problem at roughly the same time, leading, at least temporarily, to a “hard fork”⁶ in the blockchain. A procedure is used to resolve that fork.⁷

More sinister is the possibility that enough miners may band together to approve counterfeit transactions. Although it might seem that this could only be done when half the miners join in this conspiracy, it has been shown that even a quarter of the miners can effect such a scheme.⁸

A practical drawback of the PoW blockchain structure is that, as implemented for Bitcoin, there are significant limitations on the number of transactions that can be approved in any period, and it takes a long time to approve those transactions.⁹ As a result of these and other difficulties, other approaches to approving transactions in a blockchain structure have been sought.

B. PROOF OF STAKE (POS)

A leading alternative to the PoW structure is a “proof of stake” (PoS) structure. In PoS, some of the holders of the cryptocurrency take on the obligation of validating transactions.¹⁰ To obtain

less energy intensive, requiring only one-tenth the energy of Bitcoin. Tim McMahon, “Can Cryptocurrencies ‘Cure’ Inflation,” available at <https://inflationdata.com/articles/2018/12/10/cryptocurrencies-inflation/> However, Ethereum plans to move to a PoS procedure (discussed below). Blockbase, “How the switch from PoW to PoS could affect Ethereum mining,” available at <https://blockbasemining.com/how-the-switch-from-pow-to-pos-could-affect-ethereum-mining/>

⁵ See, e.g., Stoll, Christian and KlaaBen, Lena and Gellersdörfer, Ulrich, “The Carbon Footprint of Bitcoin” (February 16, 2019), available at SSRN: <https://ssrn.com/abstract=3335781>

⁶ When Bitcoin, for example, has a hard fork for this reason, the blockchain is temporarily divided into two separate paths. For a more complete explanation, see Noelle Acheson, “Hard Fork vs Soft Fork” (March 6, 2018), <https://www.coindesk.com/information/hard-fork-vs-soft-fork/>. Hard forks are discussed more fully below in connection with Rev. Rul. 2019-24.

⁷ The procedure used by Bitcoin for resolving such temporary forks was described in the famously anonymous paper on which the Bitcoin structure is built, Satoshi Nakamoto, “Bitcoin: A peer-to-peer electronic cash system,” accessed at <https://bitcoin.org/bitcoin.pdf> (7/9/19). Ethereum, another popular blockchain structure, uses a variant of a system described in Yonatan Sompolinsky and Aviv Zohar. “Secure high-rate transaction processing in Bitcoin,” Financial Cryptography and Data Security - 19th International Conference, FC 2015, pages 507-527 (2015). Gavin Wood, “Ethereum: A secure decentralised generalised transaction ledger,” <http://gavwood.com/paper.pdf> (2015).

⁸ Ittay Eyal and Emin Gün Sirer. “Majority is not enough: Bitcoin mining is vulnerable,” in Financial Cryptography and Data Security - 18th International Conference, FC 2014, pages 436-454 (2014).

⁹ Eyal & Sirer, *id.*, discuss the technical issues involved in minimizing the amount of time it takes to confirm a transaction while maximizing the number of transactions that the system can process.

¹⁰ For an example, see the “White Paper” for COSMOS, a PoS structure, at <https://cosmos.network/resources/whitepaper>. Blockchain startups make their offerings known through white papers posted on the Internet. For a very thorough examination of some issues that arise in the context of a PoS structure, see Abraham Sutherland, “Cryptocurrency Economics and the Taxation of Block Rewards, Part 1,” Tax Notes, Nov. 4, 2019, p.749 (“Sutherland 1”), and Abraham Sutherland, “Cryptocurrency Economics and the Taxation of Block Rewards, Part 2,” Tax Notes, Nov. 11, 2019, p.953 (“Sutherland 2”).

the position of validator, a holder of the cryptocurrency puts up a bond (a “stake”) of an amount of the cryptocurrency to back up its position. The stake is frozen for a significant period. When a block of transactions, is proposed, one validator is appointed to review and approve (or disapprove) the proposed transactions. Other validators then vote to confirm (or not) that decision. Their votes are usually weighted based on the amount of the stake that they have put up. If the transactions are approved, those who participated in the approval process receive compensation that may come in part from those whose transactions were approved (“transaction fees”) and in part from the system creating new currency. Note that, unlike the PoW structure, which is totally anonymous, PoS requires the initial validators to be known to the system. Moreover, PoW miners need not hold the cryptocurrency they are attempting to mine; PoS validators do.

If a validator who was supposed to participate in the approval process fails to do so, it may be penalized by having part of its stake confiscated. If a validator incorrectly approves a block, it suffers a more serious penalty, usually forfeiting all or a significant portion of the stake it has put up.¹¹ The approval process occurs very quickly, and validators receive a steady stream of income as transactions are proposed and approved. Because participating in the approval process requires specialized software and constant and secure connection to the Internet, a validator unwilling to commit to those requirements may delegate another validator to perform the validating process for it (a “delegator”). This is similar to the mining pools created under PoW. The delegator’s stake is added to that of the active validator, giving that validator more power within the system.

Because of the popularity of Bitcoin, less attention has been given to the special provisions governing PoS. The PoS structure has significant advantages over the better-known PoW structure. Its implementation does not require the enormous consumption of energy that a PoW structure like Bitcoin wastes. It also does not require the substantial investments in hardware and software that has accompanied use of the PoW structure. And, as a practical matter, implementations of PoS structures allow for quicker confirmation of transactions than is generally achieved in PoW systems.¹² Moreover, because validators own the token¹³ whose blockchain they help maintain, there is a disincentive to approving counterfeit transactions, since the counterfeit tokens may well reduce the value of tokens already held.

¹¹ When a validator properly approves a block, a portion of the payment made by those whose transactions were approved may be allocated to the system itself, as a form of “tax,” to maintain the viability of the system. For example, the COSMOS White Paper, *supra* note 10, says: “Of the collected transaction fees, ReserveTax (DEFAULT 2%) will go toward the reserve pool to increase the reserve pool and increase the security and value of the Cosmos network. These funds can also be distributed in accordance with the decisions made by the governance system.”

¹² See, e.g., Kenny Kline, “How the Migration to Proof of Stake Consensus Is Opening Up New Blockchains Potential,” available at <https://www.inc.com/kenny-kline/how-migration-to-proof-of-stake-consensus-is-opening-up-new-blockchains-potential.html>

¹³ Not all blockchain structures involve cryptocurrencies. In some cases the blockchain keeps track of tokens that give the bearer specified rights against the issuer. The text’s reference to tokens encompasses those structures also. See generally David J. Shakow, “The Tax Treatment of Tokens: What Does It Betoken,” 156 Tax Notes 1387 (9/11/17).

For example suppose owners of 5,000 of the 10,000 outstanding units of a cryptocurrency, worth \$1.5 million, conspire to issue another 5,000 to themselves. They now own 2/3 of the cryptocurrency's units. However, their action may well not double the value of what they own. If the total value of the cryptocurrency remains at \$3 million, their fraud will have increased their interest by only \$500,000, since they now own 2/3 of a cryptocurrency worth \$3 million. As discussed later,¹⁴ the actual values may not compute this neatly, since a cryptocurrency is not like shares of a company's stock, and it has elements of both a currency and an investment. Nevertheless, it is reasonable to assume that the increase in the number of units outstanding will cause the value of each unit to decrease.

II. WHAT THE IRS HAS TOLD US

A. THE 2014 NOTICE

The IRS has issued two pronouncements relating to cryptocurrencies. The first, Notice 2014-21,¹⁵ which dealt with a cryptocurrency like Bitcoin, answered a few tax questions relating to the PoW structure. It concluded that

1. A cryptocurrency like Bitcoin was property rather than a currency under section 988.
2. Miners had income when they were rewarded with bitcoins as a result of solving a mathematical problem.
3. A miner could be engaged in a trade or business.

The Notice's first conclusion was generally expected. When Congress passed the sections of the Code which provide rules for dealing with foreign currency,¹⁶ the only currencies in existence were issued by governments. The IRS was thus effectively powerless to include Bitcoin as a currency, no matter how much it was like a currency in practice. However, the other two conclusions are deserving of further consideration. Moreover, the PoS structure raises issues that the PoW structure does not and highlights other issues that the IRS Notice may not have fully appreciated.

1. REWARDS AS INCOME

One aspect of the IRS's 2014 notice that seemed particularly straightforward was its conclusion that Bitcoin "miners" had income when they received their rewards. But how you reach that conclusion depends on how you view those rewards.

When baseball's home run wars of the 1990s were in full swing, taxpayers, and tax professors, struggled with the question of how to tax those who had been fortunate to catch one of the record setting balls. A number of those who considered the issue concluded that no income should be recognized unless, and until, the ball is sold. Among the arguments for nonrecognition before

¹⁴ See *infra* text at nn. 21-34,

¹⁵ 2014-16 I.R.B 938.

¹⁶ I.R.C. §§ 985-989.

disposition was a comparison to many situations in which taxpayers create, or identify and take possession of, valuable assets. Think of a glassblower creating vases. Think of a fisherman with a boatload of fish. Think of a farmer growing wheat. Think of a prospector laying claim to a property with a valuable mineral deposit. In all these cases, it is accepted practice for the creator or the discoverer to defer income recognition until the property created or discovered is sold.¹⁷

In a comprehensive rebuttal to some of those arguments, Professor Joseph Dodge suggested that there is an important distinction between these cases and that of the lucky person who snagged the baseball.¹⁸ In those other cases, the taxpayers invested a significant amount of time or capital that resulted in their acquiring the valuable asset. In contrast, despite some creative arguments that could be made to the contrary, the person capturing the ball has lucked upon something of value that is not part of an ongoing activity of the taxpayer.

Now consider the PoW miner or the PoS system validator (both sometimes referred to hereafter as validators). That person is involved in an ongoing activity, one that requires a significant amount of capital investment (although smaller for PoS than for PoW). To the extent the reward comes from transaction fees, it seems clearly to be a form of compensation for the validation process, so those fees should be characterized as income. However, for the rewards that are received from the system through the creation of new cryptocurrency tokens, is our validator in any different position than the fisher, the farmer, etc.? It is through their activities (that help maintain the blockchain) that new items are created. Should the validators be taxed before they have disposed of these tokens?

When comparing tokens that the validator receives from the system to the glassblower's vase and the other examples mentioned above, we can say that these payments are not like found property (including such things as the fish and the ore), because the tokens did not exist until they were created by the blockchain and were transferred to the successful validator. It would seem closer to the wheat grown by the farmer or the glassblower's vase. Arguably, the additional value of the new tokens is created by the taxpayer, and the tax law shouldn't impose a tax until the newly-created property is sold.

But the analogy is flawed. The whole man-made structure through which new tokens are created and kept track of is itself a distinct system. The reward that the validator receives comes from this system, not from nature (like the wheat) and not as the direct product of the validator's activities (like the vase). Creation of the tokens is not the direct goal of the validator's efforts. The receipt of tokens by a validator is a taxable event because the validator is acting to maintain the blockchain and the reward is being given as compensation for that activity. True, the reward is, in some sense, a result of the activity of the validator. But it is not a creation in the same sense

¹⁷ *E.g.*, Lawrence A. Zelenak and Martin J. McMahon, Jr., Professors Look At Taxing Baseballs and Other Found Property, 84 Tax Notes 1299, 1307 (August 30, 1999).

¹⁸ Joseph Dodge, "Accessions to Wealth, Realization of Gross Income, and Dominion and Control: Applying the 'Claim of Right Doctrine' to Found Objects, Including Record-Setting Baseballs," 4 *Fla. Tax Rev.* 725 (2000).

that a work of art is the creation of the artist. An artist works to create the work of art, which is the direct and immediate result of the artist's efforts. The validator works to add transactions to the blockchain and maintain its integrity. It is the system that then creates the reward, which is given to the validator. As such, it is appropriate to conclude that it is taxable compensation to the validator. The validator's task is not to create the reward but to validate the block. Because the validator has accomplished its task, the validator is given a reward. That is why a White Paper for a PoS-based blockchain, says validators receive "fees for processing a transaction", while in a White Paper of another PoS blockchain, those who mine and sign blocks are given a "reward".¹⁹ The validators have income immediately, not when they dispose of their tokens, just like farm workers who tend to and harvest wheat have income immediately even if they are paid with wheat, and the assistants who help a glassblower create works of art have income immediately even if they are compensated with one of the works they helped create.

Perhaps even more directly analogous is the printer with a contract to print money for the government. If the print shop is paid for its efforts with that money, is there any question that the owner has income? Thus, although the analysis showing that validators have income on receipt of their rewards may be more complicated than what is reflected in Notice 2014-21, the Notice's conclusion that validators have income is correct.

Abraham Sutherland, in his very thorough review of the taxation of block rewards, with particular attention to the special aspects of the PoS structure, notes an unfairness peculiar to taxing block rewards under PoS. Because the validators in PoS must necessarily be owners of the token whose transactions are being validated, the rewards received, to the extent they dilute the holdings of current holders of the token, will also dilute the holdings of the validator. As Sutherland demonstrates, when a large percentage of current holders are also validators, a not uncommon situation, the actual increase in the value of a validator's holdings may be substantially less than the value of the block rewards received.²⁰ Although Sutherland recognizes that this reality does not necessarily mean that block rewards are not taxable, he suggests that, when coupled with the arguments above about assets newly created by the taxpayer, it would allow a taxpayer to take a position on a tax return that the block rewards are not taxable.²¹

I addressed earlier why I think the arguments about created property did not apply to block rewards. I don't think the result is changed by the argument that validators are being overtaxed because a full taxation of block rewards may result in substantially more income being recognized than the increase in the value of the validator's position in the token involved. First, note that the result of this current overtaxation is not permanent, to the extent that the validator

¹⁹ COSMOS White Paper, *supra* note 10; TEZOS White Paper, accessed at https://tezos.com/static/white_paper-2dc8c02267a8fb86bd67a108199441bf.pdf.

²⁰ Sutherland 1, *supra* note 10, at 764-769. Monte Jackel raises the same possibility even in the case of a PoW structure. Monte Jackel, Individual Raises Issues With Cryptic Cryptocurrency Guidance, 2019 TNTF 200-19 (October 15, 2019).

²¹ Sutherland 2, *supra* note 10, at 972.

will have basis in its interest in the token that could ultimately be used to reduce the gain (or increase the loss) on the ultimate disposition of the tokens.

The argument for nontaxation begins with the fact that, classically, the issuance of new currency results in inflation, which takes value from current holders of the currency.²² But normally, existing holders cannot recognize their losses without a recognition event. Is there any basis for allowing the recipients to take account of the loss in value by being untaxed in the context of block rewards?

Consider a system in which a finite number of units of a token have already been issued. If the compensation for validating a transaction consists of additional tokens issued by the system, the issuance of additional units of the token has an inflationary effect on the system as a whole. Indeed, in the Cosmos system, some of the rewards granted to validators are referred to as “inflationary atoms.”²³ Because the compensation is a function of the amount of holdings each validator has committed to the system, if all holders of a token participated as validators and staked all their units of the token, and if compensation came solely from newly issued units, the validators would not gain any additional value from the validation process. If some of the compensation came from those whose transactions had been validated, this conclusion would be modified to the extent of a transfer of value from those who engage in transactions. Unlike a normal economic system, validating is the main activity within the system. Does that justify not taxing the validators?

The difficulty with this argument is twofold. First, cryptocurrencies have a dual personality—they are part currency but part investment.²⁴ The price movements of some cryptocurrencies are much more reflective of their role as an investment than the reduction in value that comes from the system’s regular issuance of more tokens.²⁵ Moreover, since cryptocurrencies operate both as media of exchange and, to a significant extent, as investments, we can’t calculate the inflation resulting from cryptocurrency units being issued because not all the new units that are issued are used in commerce—significant amounts of the stock of the cryptocurrency are held back by investors.²⁶

Second, the tax law does not necessarily take account of an inevitable loss of value absent a recognition event. When a corporation offers shareholders the choice of a cash dividend or a stock dividend, the recipients of either form of dividend will have income for the full amount received even though those who did not receive stock will have their interests in the corporation

²² See, e.g., Carl Wennerlind, “David Hume’s Monetary Theory Revisited,” 113 *J. of Polit. Ec.* 223, 227 (2005), referring to “the standard quantity theory in which an increase in the quantity of money leads to a proportional increase in all prices.”

²³ COSMOS White Paper, *supra* note 20.

²⁴ Athanasios Andrikopoulos, Robert, S. Hudson, Saeed Akbar, Darius Saftoiu, “Cryptocurrencies meet inflation theory,” available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3243459 .

²⁵ *Id.*

²⁶ Linda Schilling and Harald Uhlig, “Some Simple Bitcoin Economics,” available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3155310

reduced. If a corporation allows shareholders to choose between stock dividends and cash, those that receive stock will have income even if every shareholder opts for stock.²⁷ But the actual effects when not all shareholders choose stock may be surprisingly different from what one might expect.

Suppose Corporation X is worth \$100. Two shareholders, A and B, each own four shares, worth \$12.50 each, so each shareholder has a stockholding worth \$50. A gets a \$12.50 dividend, B gets a share of stock, clearly taxable under § 305—seemingly worth \$12.50. When the dust clears, A has \$12.50 and owns 4/9 of a corporation worth \$87.50, or \$38.89; B has \$12.50 of income and owns 5/9 of a corporation worth \$87.50, or \$48.61. While the share of stock B got was arguably worth something less than \$12.50, the bottom line is that B is taxed although B's position has decreased in value. Do you wonder where the \$1.39 loss in value (\$50-\$48.61) comes from? When the dust clears, each share is worth \$9.72, \$2.78 less than the prior \$12.50 value. But A got \$12.50, \$2.78 more than A deserved. So B suffers half of that—\$1.39. Indeed, whenever a corporation pays a dividend, we can assume that the value of the corporation has decreased as a result of the distribution, yet shareholders include the full amount of the dividend in income with no offset for any decrease in the value of their holdings.

And while economically the creation of new tokens may diminish the value of everyone's holdings in an inflationary manner, it is not “coming from” anyone in a sense the tax law normally acknowledges, any more than the excess creation of currency by a government, which has inflationary effect, is recognized by the tax law as a loss to anyone.

In any event, this type of overtaxation is far from a unique situation under the Code. A person who buys stock on the day before the ex-dividend date recognizes income immediately on the full amount of the dividend received even though the purchase price of the stock included a portion in respect of the amount of the dividend distributed to the purchaser.²⁸ An individual who receives an extraordinary dividend from a corporation pays a tax on the full amount of the distribution even though the corporation making the distribution will now be a smaller entity, and thus the shareholder's remaining stock interest will have decreased in value. The consequence of this is that the shareholder will have an inflated basis that will result in a smaller gain (or greater loss) when the stock is disposed of.²⁹

Sutherland suggests that the corporate analogy is not perfect because a distribution is income only to the extent the corporation has earnings and profits.³⁰ But earnings and profits do not

²⁷ I.R.C. § 305(b)(1).

²⁸ Note that while distribution of a cash dividend might be expected to reduce the value of the stock by the amount of the dividend, that is not the case. E.g., Khamis Al Yahyaee, “Ex-Dividend Day Behavior in the Absence of Taxes and Price Discreteness,” 8 *International Review of Finance* (Nos. 3-4) 103-123 (September/December 2008).

²⁹ Section 1059 prevents corporations, which get favorable treatment for dividends (IRC § 243) but not for capital gains (compare § 1(h) (special rate on capital gains for individuals) and § 11 (no such special rate for corporations)), from using this device as a tax shelter.

³⁰ Sutherland 2, *supra* note 10, at 956.

operate to characterize a distribution precisely for each shareholder. As the case of the purchase on the day before the ex-dividend date demonstrates, the distribution is a dividend if there is sufficient earnings and profits even if none of those earnings occurred while the owner of the stock held that stock. Rather, the record of a corporation's earnings and profits only works to limit the amount of a corporation's distributions that are taxed as dividends. The Code's lack of concern with getting a precise result at the shareholder level can also be seen when a shareholder sells appreciated stock of a corporation that has never distributed a dividend. The shareholder will have capital gain income on all of its gain even though a significant portion of it may represent the earnings that the corporation generated while the shareholder held the stock.³¹ In the same way, if we could conclude that the blockchain itself is a taxpayer,³² it would presumably take a full deduction for the value of the block reward it distributed,³³ even if the recipient will have a decrease in the value of its holdings of tokens as a result of the distribution.

Moreover, when the blockchain making a distribution is a cryptocurrency, the argument that a distribution reduces the value of all the outstanding units of the cryptocurrency may be of only theoretical interest. Unlike a corporation distributing additional stock, there are no underlying assets represented by the cryptocurrency. As suggested before,³⁴ a cryptocurrency continually making distributions of new units of the cryptocurrency is not necessarily losing value as a result of those distributions, because holders may retain the new units as investments.

2. THE TRADE OR BUSINESS ISSUE

A. IS A VALIDATOR ENGAGED IN A TRADE OR BUSINESS

Notice 2014-21 indicates that a miner (or validator) can be engaged in a trade or business, but it does not determine whether a miner (or validator) is engaged in a trade or business. In this regard, we must distinguish between those validators who are actively engaged in confirming transactions and those who delegate to active validators their computer power (in PoW) or token ownership (in PoS).

There is little doubt that miners in the PoW environment are engaged in a trade or business. As noted before, substantial amounts of electricity, along with the hardware using it, is devoted to the PoW effort. Moreover, investment may be made in specialized hardware to make the process as efficient as possible.³⁵ Although much of the day-to-day activity is conducted automatically by the computers and the programs they are running, the amount of activity conducted justifies

³¹Because dividends are generally taxed at capital gain rates under current law, the result for individuals (but not corporations) will be similar regardless of whether the gain is characterized as a dividend or a capital gain, although the character will be important to any taxpayer with unused capital losses.

³² See the discussion of entities like The DAO, *infra* Section III.A.

³³ If a blockchain entity can be a taxpayer but it is not a corporation (to which section 1032 applies), the deduction will be matched by the income generated when a zero-basis token is distributed as a payment.

³⁴ Text *supra* note 26.

³⁵ See, e.g., Adam Hayes, "How Does Bitcoin Mining Work?" available at <https://www.investopedia.com/tech/how-does-bitcoin-mining-work/>

the conclusion that a trade or business exists. Accordingly, expenses related to the process should be deductible, and the income should be ordinary income.

The PoS process may involve less activity. Once the software is set up to react timely to requests for validation, the validator's main responsibility is to ensure that its computers remain on line continuously. However, the regular activity conducted by the software can properly be ascribed to the validator—after all, an automated factory is still a factory. Accordingly, a trade or business should be found here also.

B. IS A DELEGATOR ENGAGED IN A TRADE OR BUSINESS?

It would seem from the above that delegators may not be engaged in a trade or business. In the PoW context, they merely provide computer power to the miners. In the PoS context, they allow the validators to get credit for the delegator's stake. This lack of activity could significantly limit their ability to take deductions in connection with their activities.³⁶ But if validating is a trade or business, are those (the delegators) who delegate to the validators either computer power (in a PoW context) or their token ownership (in PoS) in partnership with the active validator? If they are, and the partnership is engaged in a trade or business, then they will get the benefit of trade or business deductions.

Section 761(a) defines a partnership for tax purposes:

For purposes of this subtitle, the term “partnership” includes a syndicate, group, pool, joint venture, or other unincorporated organization through or by means of which any business, financial operation, or venture is carried on, and which is not, within the meaning of this title, a corporation or a trust or estate.

A venture need not be organized formally as a partnership to be treated as a partnership for tax purposes. The issues that have been taken into account in deciding whether a venture is a partnership include whether those involved have made a capital contribution to the enterprise and whether they share in its gains and its losses. If the parties fulfill those criteria, they should be treated as partners in a partnership.³⁷

Under both PoW and PoS, delegators and validators satisfy those three criteria. In PoW, all parties provide capital in the form of the machines used to try to find the solution to the PoW problem. If a correct solution is achieved, the reward is shared among all participants.

³⁶ In *Higgins v. Commissioner*, 312 U.S. 212 (1941), the taxpayer was held not to be engaged in a “trade or business” if he merely made and monitored investments, even though he hired full-time persons to help him. Losing trade or business classification would be a particular problem for those in a PoW environment, where electrical expenses could be significant. The deductions for someone not engaged in a trade or business would be limited by I.R.C. §§ 67 and 68. Moreover, delegators might find that some or all of their deductions were of no value if they would otherwise have taken a standard deduction.

³⁷ See William S. McKee, William F. Nelson & Robert L. Whitmire, *Federal Taxation of Partners and Partnerships* ¶ 3.02.

Otherwise, the expenses of the operation are shared since each participant pays the costs of the electricity used by its machines in the PoW process and any capital and maintenance costs of the hardware used. In PoS, the initial capital contribution to the partnership is the portion of the stake that each participant made available for that group. Again, the rewards are shared among members of the group. If a validator is penalized (for failing to respond timely or for improperly validating a block), the penalty is usually applied to all those associated with that validator, a sharing of losses.³⁸

Characterizing these relationships as partnerships would create significant practical problems. A partnership is required to file a tax return and furnish a Form K-1 to each of its partners. This creates a serious practical problem for a validator that wishes to comply. Although the forms can be provided to each partner through the same mechanism that is used to allocate rewards, the entity filling out the partnership's tax return won't necessarily know the name and address of each partner. This could result in the need for each active validator to require the identifying information of any delegator that wishes to join its group. Moreover, because the Form K-1 that each partner gets includes information about the partnership itself, it may result in the delegators obtaining further information about the identity of the active validators.

This flow of identifying information back and forth is inconsistent with the general anonymity that the blockchain structure provides. On the other hand, the problems raised because of the anonymity of the blockchain structure have troubled regulators because of the potential for using blockchain assets to hide criminal activities. The proposed solutions revolve upon imposing obligations on exchanges on which cryptocurrencies can be exchanged for fiat currencies (currencies issued by governments).³⁹

Investors in cryptocurrencies usually want to convert their cryptocurrency holdings to fiat currencies, which are more easily used. To do so, they need to sell their holdings on a currency exchange. The exchanges don't operate with the anonymity of a blockchain, since the fiat money is transferred to an identified person. Information about those who have sold cryptocurrencies on such exchanges identifies persons who have held cryptocurrencies and alerts the IRS to persons who may have recognized gains on such transactions but neglected to report those gains. The IRS, having recognized the value of getting information from exchanges, has obtained records from a large, United States based exchange.⁴⁰ This approach, aimed at entities through which assets are held and transferred, is similar to the approach taken by the United States in its Foreign Account Tax Compliance Act rules⁴¹ to identify holders of foreign assets.

³⁸ In both PoW and PoS, the active validator has additional expenses, but receives a part of the reward that is disproportionate to its computer power (in PoW) or stake (in PoS) devoted to the enterprise.

³⁹ See, e.g., Financial Action Task Force, "Virtual Assets and Virtual Asset Service Providers," available at <https://www.fatf-gafi.org/publications/fatfrecommendations/documents/guidance-rba-virtual-assets.html>.

⁴⁰ *United States v. Coinbase Inc.*, No. 3:17-cv-01431 (N.D. Cal. 2017)

⁴¹ "Foreign Account Tax Compliance Act of 2009 is the name of the House and Senate bills in which the provisions first appeared. See H.R. 3933 and S. 1934 (October 27, 2009)." Joint Committee on Taxation, General Explanation of Certain Tax Legislation Enacted in the 115th Congress (JCS-2-19), October 2019, at 95 n.331

Because the obligation to report information to the IRS can't easily be imposed on the holders, they are imposed on the entities that interact with the holders. Unfortunately, this approach won't work directly to the extent private parties (the validators) are attempting to identify other private parties (the delegators) in the context of a blockchain, which is structured to maintain anonymity.

The unsubtle solution, to insist that partners reveal themselves to each other, is inconsistent with the nature of blockchains. But if parties are going to comply with the tax law, that may be unavoidable.

B. THE 2019 REVENUE RULING

The IRS's recent revenue ruling,⁴² Revenue Ruling 2019-24, deals with the effect of a hard fork on taxpayers holding a cryptocurrency. A hard fork occurs when the protocols governing the operation of a blockchain are changed.

To understand what that means, appreciate that the blockchain structure allows someone offered a bitcoin, for example, to look back at the history of that bitcoin. That history can be traced on the blockchain, which is a public record of all bitcoin transactions, and it assures the transferee that the bitcoin isn't counterfeit.

When the rules governing the operation of a blockchain change, it is often possible that some persons will continue using the old set of rules while others use the new set, so that two separate forms of the cryptocurrency can be spent thereafter.⁴³ Using the metaphor of a physical fork in the blockchain, it becomes possible for someone who held a unit of cryptocurrency before the hard fork to sell under both protocols. That is because a potential buyer will be able to trace the unit back on the blockchain from whichever branch of the blockchain it is making the purchase.

Suppose a particular bitcoin, for example, was created on February 1 and it was sold on April 1. The blockchain has a hard fork on June 1, with sales on one branch called bitcoinA and sales on the other branch called bitcoinB. Someone buying bitcoinA on July 1 will trace the coin back to the April 1 sale and the February 1 creation. Someone buying bitcoinB on July 1 will also trace the coin back to the April 1 sale and the February 1 creation.⁴⁴

The IRS in Rev. Rul. 2019-24 ruled that, as long as the hard fork results in the blockchain creating a new separate coin for those who held the currency before the hard fork (an "airdrop" of the new coin), the hard fork will result in the creation of additional income. For this purpose, the IRS uses the term "airdrop" in a broad sense to include all situations in which the holder of

⁴² The IRS also issued FAQs. "Frequently asked questions on Virtual Currency Transactions," available at <https://www.irs.gov/individuals/international-taxpayers/frequently-asked-questions-on-virtual-currency-transactions> ("IRS FAQs").

⁴³ When the change in the protocol does not result in any new form of the cryptocurrency, that is termed a "soft fork" and has no tax effect at all. IRS FAQs, *supra* note 42, at A29.

⁴⁴ Note that the purchaser of bitcoinA will not see bitcoinB, and the purchaser of bitcoinB will not see bitcoinA.

the cryptocurrency at the time of the hard fork ends up with access to an additional item thereafter.⁴⁵

Moreover, hard forks resulting in new cryptocurrency for the recipients do appear to add value to the recipient. In one of the most famous hard forks, the one created in the Ethereum block chain to deal with the structural failure of The DAO,⁴⁶ the market did not reduce the value of the path that was expected to continue the regular use of ether (the Ethereum chain's currency) by the value of the cryptocurrency on the path that those in charge of the Ethereum blockchain hoped would be abandoned. Despite these hopes, currency on the old path had a significant value, although much smaller than the new version.

The mechanics of this hard fork are a bit daunting for those unfamiliar with it. The purpose of creating the fork was to leave certain ether that had, in some sense, been stolen, on one tine of the fork that would not thereafter be used. However, that path, which some had hoped would have no value at all, has continued to be viable, and ether on that path are referred to as "Ethereum Classic." Anyone owning ether at the time of the fork ended up with an equal number of what was hoped would be regular ether and Ethereum Classic. Ether at the time the hard fork took place was selling at \$12.21 and rose to \$12.45 by Midnight that night. Ethereum Classic started at \$0.75 and rose as high as \$2.85 within two days.⁴⁷ In any event, the hard fork in no way appeared to diminish the value of the main fork of the Ethereum blockchain. Note, though, that since Ethereum Classic, which was expected to be of little value, is formally the continuation of the original Ethereum blockchain, the much more valuable new Ethereum would apparently be considered the airdrop under Rev. Rul. 2019-24.

This highlights a significant problem with taxing the value of the new currency. Not infrequently, a hard fork is created to improve the characteristics of the item tracked on the blockchain. It is expected that items on the new fork will be viewed as the continuation of the original cryptocurrency and that those items will retain the bulk of the value of the item tracked

⁴⁵ Telephone call with Suzanne Sinno, author of Rev. Rul. 2019-24. The term "airdrop" refers to the transfer of new cryptocurrency to someone. The follow-up FAQs refer to an airdrop "or some other kind of transfer." IRS FAQs, *supra* note 43, at A21. Although, as carefully described in the ruling, a hard fork does not necessarily involve any "transfer," because the new item of cryptocurrency simply appears on a newly-created fork in the blockchain, the IRS apparently intends such a situation to result in income. There is no income only if there is no second blockchain after the hard fork, or if the holder of pre-fork cryptocurrency has no way of accessing any new cryptocurrency that was created as a result of the hard fork. An article addressing the revenue ruling notes the IRS's nonstandard use of the term "airdrop". David Chamberlain, Rodney Mock & Kathryn Kisska-Schulze, "Disappearing Forks and Magical Airdrops," Tax Notes 791 (11/4/19). As the article rightly points out, characterizing the result of a hard fork as an airdrop ignores the subtlety needed to accurately confront the tax consequences of a normal hard fork. An airdrop, as normally understood, transfers new items to a person, and thus can easily be treated as income like found property or treasure trove. But the effect of a hard fork is to transform a unit of cryptocurrency into two units with a shared history. Regardless of whether the industry would refer to this as an airdrop, it is clear that the IRS intends to treat it as taxable.

⁴⁶ For a fuller description see David J. Shakow, "The Tao of The DAO: Taxing an Entity that Lives on a Blockchain," 160 Tax Notes 929 (8/13/18); see also *infra*, text beginning at note 53.

⁴⁷ Charles Bovaird, "Classic and the DAO: What Drove Ether Prices in 2016," available at <https://www.coindesk.com/classic-dao-drove-ether-prices-2016> .

on the blockchain. It is expected that items on the new fork will be viewed as the continuation of the original cryptocurrency and that those items will retain the bulk of the value of the cryptocurrency. However, the value of the items on the new fork will be the airdrop in the IRS's analysis. The old cryptocurrency will be left with a large potential loss and, when sold, will probably result in a capital loss.

This issue, like others in this area, begs for a legislative solution. Recipients of a new flavor of cryptocurrency might at least be allowed to be taxed on the value of items on the less valuable fork. Alternatively, if some hard forks might be identified as similar to untaxed stock dividends, holders could be permitted to allocate their basis between the two resulting cryptocurrencies, as is allowed in the stock situation.⁴⁸ These rules would not apply to a true "airdrop," where the recipient is simply granted new items of cryptocurrency.

A hard fork is even less of a return of capital than a cash dividend, which is treated as income. In the most extreme case, a purchaser of stock the day before a corporation's stock goes ex-dividend could certainly be seen as having received a return of capital, but the tax law treats the dividend as income.⁴⁹

Monte A. Jackel suggests a possible problem regarding Rev. Rul. 2019-24.⁵⁰ Perhaps the airdrop was the result of a quid pro quo, or a gift arising from "detached and disinterested generosity" under *Commissioner v. Duberstein*.⁵¹

Factually, however, that is not the case. As indicated, the airdrop described in the ruling results from a change in blockchain protocols. Such a change is normally made for reasons related to the efficient operation of the blockchain and affects everyone holding the items on the blockchain. The airdrop is simply a consequence of the change. In many cases, airdrops are also used as marketing devices to increase awareness of a new cryptocurrency.⁵² As such, they would fail the *Duberstein* test of detached and disinterested generosity.

III. WHAT THE IRS HAS NOT YET DECIDED

A. BEYOND THE CRYPTOCURRENCY BLOCKCHAIN

1. THE DAO MODEL

Because a blockchain can continue to operate without human intervention, it is possible for an enterprise to be conducted using a blockchain without any of the traditional trappings of an organization. Such an enterprise was attempted by The DAO, a decentralized autonomous organization. As envisioned, persons who wanted to participate in this organization could

⁴⁸ I.R.C. § 307.

⁴⁹ As noted before, *supra* note 28, although distribution of a cash dividend might be expected to reduce the value of the stock by the amount of the dividend, that is not the case.

⁵⁰ Monte Jackel, *supra* note 20.

⁵¹ *Commissioner v. Duberstein*, 363 U.S. 278 (1960).

⁵² See Investopedia, Airdrop (cryptocurrency), [https://en.wikipedia.org/wiki/Airdrop_\(cryptocurrency\)](https://en.wikipedia.org/wiki/Airdrop_(cryptocurrency))

transfer value, in the form of cryptocurrencies, to the entity. Such a transfer to an entity that exists solely as a computer program is possible because cryptocurrencies are not stored in a conventional manner. They simply exist as bits in an electronic wallet. In its purest form,⁵³ The DAO was expected to receive proposals for enterprises to be funded by it. A description of each proposal would be distributed electronically to those who invested in The DAO, who would then vote, electronically, on whether they thought The DAO should invest in the proposed structure. If the vote was favorable, The DAO could transfer some of its cryptocurrency to the electronic wallet of the entity that had made the proposal. Those persons who had invested in The DAO but were not convinced of the value of the proposal could opt out of that investment and withdraw their funds.

The actual The DAO did not get off the ground because a programming error allowed one person to withdraw a substantial amount of funds from The DAO. However just as the Bitcoin structure has operated without the need of human intervention, an entity like The DAO could function with its operations effected solely on the Internet.

2. THE SEC'S RESPONSE

The SEC has evidenced concern regarding structures like The DAO that operate autonomously on the Internet. The SEC used an analysis of the structure of The DAO itself to express its conclusion that many investment opportunities offered through the Internet are subject to SEC regulation. Specifically it concluded that the tokens reflecting an investment in The DAO were securities for purposes of the United States securities laws.

The SEC took the position that, like any other item offered to the public, the offering is a security if it fits within the *Howey*⁵⁴ test. Under that test, “an ‘investment contract’ exists when there is the investment of money in a common enterprise with a reasonable expectation of profits to be derived from the efforts of others.”⁵⁵ Applying that test, many tokens offered on the Internet could be classified as securities. The promoters of the tokens, those who developed the software for the blockchain and promoted its sale through the Internet, would be liable for any violations of the securities laws.

The SEC staff recognizes that, in some cases, the future sales of tokens might no longer be considered the sales of securities. Once the blockchain is established and no more tokens are being issued, future profits may no longer be derived from the “efforts of others.”⁵⁶ The original promoters may have derived their profits either from having kept for themselves a substantial

⁵³ The actual DAO did not function quite this purely. See text below at note 61.

⁵⁴ *SEC v. W.J. Howey Co.*, 328 U.S. 293 (1946).

⁵⁵ William Hinman, “Framework for “Investment Contract” Analysis of Digital Assets,” available at <https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets>. Mr. Hinman is Director, Division of Corporation Finance, at the SEC.

⁵⁶ See William Hinman, Director, SEC Division of Corporation Finance, “Digital Asset Transactions: When Howey Met Gary (Plastic)”, available at <https://www.sec.gov/news/speech/speech-hinman-061418>

number of tokens or because their enterprise retained the proceeds from sale of the tokens. The tokens that were sold were not intended as investments but can be used to obtain property or services offered by that enterprise. As long as what is offered on the blockchain is not a security, the SEC has no reason to regulate the operation of the blockchain.

3. WHO IS RESPONSIBLE FOR THE BLOCKCHAIN?

One significant and difficult issue inherent in structures like that of Bitcoin or The DAO is identifying who is responsible for its actions. Some situations are straightforward. Entities that issue tokens are clearly identified when the token is to be used to obtain something from that entity. A company that issues stock on a blockchain is obviously identified to anyone buying the stock. When someone unleashes a harmful program on the Internet, authorities can sometimes, but not always, identify the perpetrator.⁵⁷ If a failure occurs in the operation of a freestanding blockchain, there has been some discussion as to whether those who have been involved with maintaining the blockchain might be held responsible for any damage caused by the operation of the blockchain.⁵⁸

But what if the blockchain is causing no harm, but it is incurring legal obligations anyway? This issue was lurking when the SEC considered the case of The DAO, but the responsible parties were fairly easy to identify there. Although the issue is not confronted directly in the SEC release, a careful reading of its analysis suggests that the staff was sensitive to this problem. As indicated above, the actual The DAO was not the pure creation described above. The SEC release, which holds the entity that developed this DAO structure, Slock.it, to have been potentially responsible for not registering it, emphasizes those details that made the actual structure of The DAO different from a pure DAO structure, and Slock.it's involvement was quite substantial.⁵⁹ Slock.it's co-founders promoted The DAO and regularly communicated information about The DAO to the public. Proposals submitted to The DAO were first reviewed by "curators", all of whom were chosen by Slock.it. The curators controlled which proposals were submitted to The DAO. Slock.it indicated that it would submit the first proposal for funding to The DAO. The SEC concluded that investors reasonably expected Slock.it to provide significant managerial efforts after The DAO was launched, and its expertise was critical in monitoring the operation of The DAO.

Suppose Slock.it and its founders had not been so intimately involved in The DAO's creation and marketing. Could the SEC still justify holding Slock.it responsible for not registering The DAO tokens?

⁵⁷ See articles cited in List of computer criminals. Accessed at https://en.wikipedia.org/wiki/List_of_computer_criminals#cite_note-Wired-10

⁵⁸ See Peter Østbye, "Who Is Liable If a Cryptocurrency Protocol Fails?" available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3354868 ; Peter Østbye, "Who Is Causally Responsible for a Cryptocurrency?" available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3339537.

⁵⁹ Securities and Exchange Commission, Release No. 81207 (July 25, 2017), available at <https://www.sec.gov/news/press-release/2017-131>

Consider Bitcoin. That blockchain is able to create value (as any blockchain like Bitcoin does when it rewards validators). Yet this blockchain entity, that can create value, has no owners. Why is this important? Because in creating value, the blockchain may incur legal obligations, but its anonymous structure does not provide an obvious way for those obligations to be enforced.

That was not considered at all by the IRS and that is only hinted at in the SEC release. Consider the conclusion in the IRS notice that miners have income when they are rewarded with bitcoins. Normally, someone making a payment that constitutes income to the recipient is required to furnish the recipient with an appropriate form.⁶⁰ Upon whom does this obligation fall in this situation? On the securities side, if The DAO tokens are securities, who is subject to penalties when those securities are not registered?

The possibility that no person or entity could justifiably be held responsible for that failure to register an entity like The DAO is a troubling one. An idealized DAO would have assets and owners. It could make money and it could lose money. It could distribute money to its owners and it might be allowed to collect money from its owners. One could purchase an ownership interest, but neither you nor anyone else would necessarily be able to find out who the other owners were.⁶¹ And no one could compel the entity to release any of its assets unless provision for doing so had been made in the original structuring of the entity. More thought must be given to reconcile this reality with the tax law.

4. THE BITCOIN BLOCKCHAIN AS AN ENTITY

The IRS's responsibility vis-à-vis the operation of the blockchain is different than the SEC's. First, the IRS may have to deal with the blockchain if it could be considered engaged in a trade or business. Consider Bitcoin, the original blockchain. Currently, it keeps track of all issued bitcoins and issues new bitcoins to successful miners. It would not seem to be engaged in a trade or business, or, in any event, it would not seem to be generating any profits. But, in fact, it is generating substantial amounts of income. If we can view it as an entity, each time it issues a bitcoin it has income equal to the difference between the value of the bitcoin and its basis, which is presumably zero.⁶² Of course, these bitcoins are then transferred to the successful miners, which, if the Bitcoin blockchain is engaged in a trade or business, could well result in a deduction. Assuming this is a reasonable way of viewing the Bitcoin blockchain's activities, it would hardly seem to matter how those activities are treated for income tax purposes. The tax

⁶⁰ I.R.C. § 6041(a). The section applies to "persons engaged in a trade or business." But see discussion below as to whether Bitcoin could even be said to be an entity for tax purposes.

⁶¹ The blockchain structure can be used to issue stock. Overstock.com has done that. Its S-3 registration statement can be found at <https://www.sec.gov/Archives/edgar/data/1130713/000104746915003890/a2224281zs-3.htm>. Unlike the blockchains described in the text, such a blockchain allows someone, in this case the issuing corporation, to have knowledge of who owns the assets on the blockchain.

⁶² A corporation issuing stock has no income. I.R.C. § 1032. The Bitcoin blockchain has no comparable protection.

situation would be a lot more serious if the Bitcoin blockchain were not engaged in a trade or business, since the deduction might not be available.⁶³

What would matter, in any event, is that, if the Bitcoin blockchain is engaged in a trade or business, it is obligated to furnish forms 1099 to all its successful miners. Of course, it has never done so, and we cannot expect it to do so in the future. And if the IRS went looking for someone to penalize for this failure, it could get nothing from the Bitcoin blockchain, and, as things stand now, it could not successfully identify the person or persons who first created that blockchain, even if that person could be viewed as having any continuing responsibility for its operation, which is unlikely. It has been suggested that those who are involved in maintaining the block chain might have some responsibility for it,⁶⁴ but this seems like a stretch where no damage is involved.

But let us consider the sorts of blockchains that the SEC has focused on. For those, we can presumably identify a promoter who would be responsible for whatever obligations arise under the tax law. However, the jurisdiction of the IRS depends on different factors than the jurisdiction of the SEC. The SEC asserts jurisdiction whenever an investment is offered *in* the United States. But the tax law requires that the *entity* have some sufficient connection *to* the United States. Assuming the promoters are not located in the United States and are not United States citizens or residents, would the presence of nodes of a blockchain cause the blockchain to be subject to United States tax? This would apply both to any profits generated by the blockchain, and to any filing requirements, such as forms 1099, that the blockchain would be expected to comply with.

The situation becomes even more complicated when, as the SEC recognizes, a blockchain is established and its original promoters have no further ongoing connection to the operation of the blockchain. At that point, there is a good argument that the promoters cannot be held accountable for the operation of the blockchain. At that point, the issues mentioned above become even more complicated. If any tax related obligation arises for this blockchain, who can be held responsible to comply with it? If the role of a blockchain, like Bitcoin, is just to keep track of a cryptocurrency, it has no owner, it has no assets, and yet it can continue to create and transfer items of value. This is an entity that the law has not had to deal with in the past.

But is it possible to conclude that a blockchain like Bitcoin is an entity for tax purposes? The Code defines a “person” to “mean and include an individual, a trust, estate, partnership, association, company or corporation.”⁶⁵ The regulations define a business entity as “any entity recognized for federal tax purposes . . . that is not properly classified as a trust under § 301.7701-

⁶³ See note 37, *supra*. Strictly, it would be required to file a tax return even if it had no taxable income. Treas. Regs. § 1.6012-2(a) requires every corporation to file a tax return. Under 301.7701-2, a blockchain, if it is an entity, would either be a corporation or a disregarded entity. If the latter, its owner would include any of its income or deductions in its tax return. But, of course, it has no owners.

⁶⁴ See articles cited in note 60.

⁶⁵ I.R.C. § 7701(a)(1).

4 or otherwise subject to special treatment under the Internal Revenue Code.”⁶⁶ The regulations define an entity as “any person other than an individual.”⁶⁷ It would seem that the Bitcoin blockchain could be an entity, but it is not clear what consequence that would have under our current structures. Since it has no owner, it is probably more reasonable to conclude that it is not an entity for tax purposes. That leaves open the question whether anyone is responsible to report the recipients of block reward income to the IRS?

B. THERE IS NO “WHERE” THERE

Just as peculiar as the issue of whether a token system like Bitcoin can be an entity is the issue of where it is located. The security of a blockchain structure derives from the fact that the blockchain is reproduced on all the computers that use the blockchain. Even assuming it was possible to locate where the blockchain was initially posted, once it is launched, it is located on a large number of computers. And the system—or any other entity—has no idea where the many computers holding a copy of the blockchain are located.

When the SEC asserted its jurisdiction over blockchain offerings marketed over the Internet,⁶⁸ it focused on the various marketing activities engaged in by the developer of the blockchain offering under consideration. But the SEC was only concerned to show that it had jurisdiction over the original issuance. It appears that, in some cases, it would lose any power over the entity’s activities over time, once no one was any longer issuing new units.⁶⁹ Tax authorities must have continuing jurisdiction over an entity in order to effectively assert their jurisdiction. It is difficult to assert jurisdiction as a practical matter because a blockchain entity, if recognized as an entity, is difficult to connect to. The fact that the entity is difficult to connect to a particular location makes it difficult for any tax authority to assert that it has jurisdiction.

If this all seems too theoretical to be of any practical importance, remember that the blockchain supporting Bitcoin has been in existence for over 10 years. True, it has no owners, and, in some sense, it has no assets. Nevertheless, it can issue assets, as it does when it rewards a miner who has solved the most recent arithmetic problem it has posed. And, as stated earlier, an entity transferring an item of income to another, if it is under the jurisdiction of United States tax authorities, is required to issue an information statement to that effect to the recipient, and to file the form with the IRS. Although the 2014 IRS notice concluded that rewards issued to miners are income to those miners, it has never indicated that the Bitcoin blockchain is not in compliance for failure to issue the appropriate forms, or stated that the blockchain need not issue those forms because it is either not within US jurisdiction or not an entity.

⁶⁶ Treas. Regs. § 301.7701-2(a).

⁶⁷ Treas. Regs. § 1.1471-1(a)(39). [CHECK scope of reg.]

⁶⁸ Securities and Exchange Commission, Release No. 81207 (July 25, 2017), *supra* note 61.

⁶⁹ See “Digital Asset Transactions: When Howey Met Gary (Plastic)”, *supra* note 58.

The prospect of repeating the success of Bitcoin might seem unlikely. Why should anyone transfer anything of value to an anonymous address with no assurance that the purported transaction has more reality than a Nigerian prince?

The answer comes from a clearer understanding of how the blockchain structure operates. As indicated before, all nodes operating on a blockchain are running the same software. All those running the software have the option of examining the substance of that software to make sure that it does not contain any problematic features.⁷⁰ The possibility that persons will rely on such software is reflected in the success of Bitcoin, even though the author of the Bitcoin structure is unknown.

Not that a structure like The DAO has a crucial feature that was not present in the case of Bitcoin: persons joining The DAO were expected to transfer something of value in order to become partners in the enterprise. Entities that have raised money through blockchain investments on the Internet have posted “white papers” that detail their plans and identify those persons involved in the transaction. The more the investment opportunity relies on its developers to attract investors, the more likely it is that the SEC could conclude that those developers are the ones potentially liable for any securities law violation. That is what is reflected in the SEC’s decision that tokens issued by The DAO were securities. And, certainly, the authorities have had no difficulty prosecuting persons who release damaging software through the Internet.⁷¹ But, it seems reasonable to imagine that developers could play a significantly small enough role in the launch of such a transaction to avoid liability, given that the enterprise’s conduct is ultimately a result of the consensus of participants achieved through the blockchain structure. And, in the extreme case the developers may be successful in hiding their identities. After all, over 10 years after the launch of Bitcoin, there is still no agreement about who authored that structure.

This issue is not new. The difficulty of identifying the location of economic activity has been a growing focus of tax administration in recent years. It was a significant focus of the OECD’s base erosion and profit-shifting project.⁷²

The IRS has begun to focus on this issue in the context of cloud computing. Identifying where to locate, for tax purposes, activities engaged in through the cloud is not an easy issue. The IRS is recent regulations dealing with cloud computing take a step in this area by holding that the location of sales of downloaded materials should be where the purchaser downloads the item.⁷³ If that cannot be determined, the global business address of the entity downloading the item is to be used.

⁷⁰ Indeed, in the case of The DAO, the existence of a potential flaw in the software had been recognized. Unfortunately, a correction to the software, which would have required the consensus of those connected to the blockchain, was not developed and published before the flaw was exploited.

⁷¹ See note 59.

⁷² See generally International Collaboration to End Tax Avoidance, at <https://www.oecd.org/tax/beps/>

⁷³ Prop. Regs. § 1.861-19.

Even this modest step is subject to significant problems. The location where a download is effected will not necessarily be where the entity that downloaded it is using it. If the tax law focuses only on the original download, it is likely that location will be chosen for tax purposes. Moreover, to the extent a business downloads the master copy which it distributes to its employees, apparently only the initial download would be taken into account.

IV. CONCLUSION

An examination of the mechanics of blockchain assets suggests many more tax issues than the IRS has addressed. Some of these may be amenable to treatment under current law. Others will require further analysis and legislation to reconcile the tax system with the blockchain structure.