SPECIAL REPORT
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The Taxation of Decentralized Finance

by Jason Schwartz

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In this report, Schwartz examines the U.S. tax considerations most relevant to U.S. taxpayers, and tax-exempts, foreigners, and U.S. investment managers when engaging in decentralized finance, or DeFi, transactions.

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I. Introduction

We are experiencing a sea change in the way people transact. You might not have noticed, but others have. Front-end users are beginning to make payments, vote, receive royalties, register land ownership, control sensitive information, and conduct countless other activities securely, anonymously, and without an intermediary.[1] On the back end, decentralized networks of personal computers, sometimes acting as a single profit-making enterprise without a physical presence or legal identity, conduct a dizzying array of financial transactions that enable participants to earn income from activities traditionally relegated to the banking sector — again, securely, anonymously, and without an intermediary.

Blockchain technology is at the heart of this revolution. A blockchain is a ledger on which transactions are recorded, and it is called a blockchain because it is composed of blocks of data that are cryptographically chained together. Instead of being maintained at a financial institution, the ledger is maintained simultaneously by a multitude of validators, called nodes. Popular public blockchains include Bitcoin, Ethereum, and Solana, although there are many others.[2]

Blockchains are a solution to the middleman problem: Users transact on an open ledger maintained not by a bribable, hackable, suable middleman, but by an anonymous swarm that profits by preserving the ledger's integrity. A well-maintained blockchain is virtually insusceptible to undue manipulation. On a headier level, blockchain technology represents the first successful application of triple-entry bookkeeping,[3] whereby anyone can check their books against a continuously updated record of the location of all on-chain assets.

As of November 1, 2021, the total value of crypto tokens, the store of value on blockchains, exceeded $2.5 trillion[4] — more than the aggregate market capitalization of the world's 10 largest banks.[5] The Ethereum blockchain, whose native

[1] *See generally* Cheefoo, "Blockchain Applications: 62 Killer Ideas for You," Connectbit (updated July 28, 2021).

[2] Private blockchains are maintained and used only by authorized persons, such as entities within a multinational organization, and are not discussed here.

[3] Kapil Rana, "Triple Entry Accounting System: A Revolution With Blockchain," Medium, Mar. 27, 2020.

[4] Statista, "Overall Cryptocurrency Market Capitalization Per Week From July 2010 to November 2021" (last visited Dec. 27, 2021).

[5] ADV Ratings, "World's Top Banks by Market Capitalization" (last visited Dec. 27, 2021).

ether (ETH) token is second only to Bitcoin's eponymous BTC in market capitalization, settled $536.48 billion in transactions in the third quarter of 2021, a 398 percent increase from the third quarter of 2020.[6] Meanwhile, the burgeoning decentralized financial industry (DeFi) has grown from about $1 billion in mid-2018 to about $236 billion as of October 2021.[7]

DeFi lives primarily on the Ethereum blockchain, which is a smart contract platform. A smart contract is like a vending machine in that it auto-executes specific functions on the occurrence of specific events. Smart contracts allow for "trustless" execution, meaning that a third party does not need to intermediate them. DeFi uses smart contracts to facilitate financial transactions that traditionally would have required third-party intermediation.

DeFi has injected the crypto ecosystem with a cocktail of complex ideas adapted from traditional finance and capital from institutional and high-net-worth investors in search of yields unavailable in more mature markets. Yet there is very little guidance on how even basic on-chain transactions are taxed, and what guidance exists often seems inconsonant with economic reality. That leaves taxpayers to flounder in a world where, in many cases, no clear analogies exist under current law.

This report describes the U.S. tax considerations most relevant to U.S. taxpayers, U.S. tax-exempts, foreigners, and U.S. investment managers when engaging in DeFi transactions.

II. Tax Considerations

The IRS's crypto-related guidance to date consists of:

- Notice 2014-21, 2014-16 IRB 938, which follows a question-and-answer format;
- A frequently asked questions website, which the IRS updates periodically;[8]
- Rev. Rul. 2019-24, 2019-44 IRB 1004, which addresses hard forks and airdrops;
- ILM 202114020, which applies Rev. Rul. 2019-24 to Bitcoin's 2018 hard fork into Bitcoin and Bitcoin Cash (BCH); and
- ILM 202124008, which concludes that BTC, BCH, and Litecoin (LCH) were not like-kind assets before 2018, when the Tax Cuts and Jobs Act limited like-kind treatment to real estate.[9]

Each item of guidance addresses only virtual currencies, which the IRS defines to include BTC and any other "digital representation of value that functions as a medium of exchange, a unit of account, and/or a store of value." I use the term in like manner.

As will quickly become apparent, the IRS's guidance on virtual currencies leaves a lot of questions open, and not all crypto tokens are virtual currencies. In fact, there are few, if any, clear rules on the taxation of on-chain transactions. This section attempts to apply current IRS guidance to DeFi transactions and offers commentary on how other tax principles might also, or alternatively, apply. Readers are forewarned that none of this is settled law.

A. U.S. Taxpayers

1. Dispositions.

a. Overview.

A disposition of virtual currency results in gain or loss equal to the difference between the amount realized and the token's basis.[10] Dispositions include conversions to cash, exchanges of one token for another (which market participants call swaps), and payments for goods or services.

Assume a taxpayer buys a token for $1 and then, when it has appreciated to $100, swaps 5 percent of it for $5 worth of another token. The taxpayer should recognize $4.95 gain on the swap, which is their $5 amount realized on the disposition less 5 percent of their $1 aggregate cost basis.

[6] Martin Young, "Ethereum Network on Pace to Settle $8 Trillion in 2021," CryptoPotato, July 15, 2021.

[7] Microsmallcap, "DeFi Total Value Locked Hits All-Time High of $236 Billion" (Nov. 1, 2021).

[8] IRS, "Frequently Asked Questions on Virtual Currency Transactions" (last reviewed or updated Jan. 18, 2022).

[9] *See* TCJA section 13303 and IRC section 1031.

[10] Section 1001 and IRS FAQs at A16.

b. No de minimis exception.

Under section 988(e), individuals are not required to recognize exchange gain in personal foreign currency transactions unless the gain exceeds $200. But virtual currencies are not foreign currency.[11] As a result, no such de minimis exception exists for them. It seems inequitable and possibly unadministrable to require individuals to recognize capital gain or loss when they use virtual currency to buy a cup of coffee, but congressional action likely would be needed to change that result. It is hard to imagine taxpayers regularly using virtual currency as money without a de minimis exception similar to the one in section 988(e).

c. Basis tracking.

Regulations under section 1012 allow taxpayers to specify which lots of stocks or bonds they are deemed to sell in a written notation made at the time of sale or under an acknowledged standing order given to a broker.[12] The IRS's virtual currency FAQs allow taxpayers to adopt the same identification rules for virtual currency.[13] In the absence of specific identification, taxpayers are deemed to adopt a first-in, first-out method.[14]

Taxpayers should consider separating their virtual currency tax lots into different crypto wallets to establish specific identification of each lot, unless they elect to mark their virtual currency to market.[15] It may be more difficult to specifically identify tax lots when virtual currency is held through a custodial institution that maintains a wallet behind the scenes, because crypto custodians don't normally accept standing instructions.

d. Application to gas.

Every transaction recorded on Ethereum requires a gas outlay, payable in ETH, which is algorithmically determined based on the complexity of the transaction and overall network demand. You can think of gas as an incentive to ensure that Ethereum's nodes record the transaction, although, technically, most of the gas is destroyed (or burned) and Ethereum separately mints inflationary rewards for compliant nodes.[16]

The payment of gas is a taxable disposition of ETH for U.S. tax purposes. That revelation surprises some market participants who hold highly appreciated ETH.

When taxpayers expend gas to acquire a new token, including in a swap or when claiming staking rewards,[17] they can add the U.S. dollar value of their gas expenditure to their basis in the token, which reduces their gain (or increases their loss) on a subsequent disposition of that token.[18] However, not all gas outlays accompany the receipt of new property, and it is unclear whether taxpayers can deduct or capitalize other gas outlays.

e. Application to wrapped tokens.

Ethereum succeeds as a smart contract platform because any token that complies with its technical standards — ERC-20 for fungible tokens and ERC-721 for nonfungible — can be transferred on it. However, because the birth of ETH predated the development of the ERC-20 standard, ETH itself is not ERC-20 compliant, which can make it harder for smart contracts to interact with it. BTC also is not ERC-20 compliant. However, holders can deposit their ETH and BTC into smart contracts that issue ERC-20-compliant tokens backed one to one by the deposited tokens. The smart contracts will redeem the ERC-20-compliant tokens, called wrapped tokens, at any time for the underlying tokens.

Merely wrapping or unwrapping a token, or swapping one for its wrapped or unwrapped counterpart, probably is not a taxable event. Wrapped tokens do not appear to be materially different in kind or extent from their unwrapped counterparts and can always be reconverted on a

[11] Notice 2014-21 at A2.

[12] Reg. section 1.1012-1(c)(2).

[13] IRS FAQs at A39-A40; *see also Perlin v. Commissioner*, 86 T.C. 388, 430 (1986) (taxpayers may make adequate identification of other fungible property, despite the regulations' exclusive application to stocks and bonds).

[14] Reg. section 1.1012-1(c)(1)(i) and IRS FAQs at A40.

[15] *See* Section II.A.3.

[16] *See* Section II.A.2.b.ii.

[17] *See* Section II.A.2.

[18] *See Woodward v. Commissioner*, 397 U.S. 572, 576 (1970) ("legal, brokerage, accounting, and similar costs incurred in the acquisition or disposition of . . . property are capital expenditures" that "are as much part of the cost of that asset as is the price paid for it"); and IRS Publication 551, "Basis of Assets," at 2 (Dec. 2018) ("The basis of stocks or bonds you buy is generally the purchase price plus any costs of purchase, such as commissions and recording or transfer fees.").

one-to-one basis.[19] That said, a taxpayer who wraps a token incurs counterparty or smart contract risk that does not exist for their unwrapped tokens.

f. Application to bridged tokens.

Developers are actively creating a complex network of "rollups" and "sidechains" that sit on top of or parallel to Ethereum to increase its overall transaction throughput and reduce gas fees. Very generally, those layer 2 protocols execute transactions off-chain, then submit them in compressed form to Ethereum. Users who bridge tokens to a layer 2 protocol receive tokens that correspond to their bridged tokens on a one-to-one basis. Users can bridge their tokens back to Ethereum at will, subject to a waiting period designed to reduce fraud.

Like wrapping or unwrapping a token, bridging a token to a layer 2 protocol or back to Ethereum arguably is not a taxable event.

g. Application to stablecoins.

It is unclear whether the IRS's virtual currency guidance to date was written with stablecoins in mind. Stablecoins, which track the value of a fiat currency or other fungible hard assets like gold, silver, or oil, did not gain popularity until after Notice 2014-21 was published. But the notice explicitly applies to digital assets that have "an equivalent value in real currency," so, by its terms, Notice 2014-21 applies to stablecoins.

There are at least three types of stablecoins.[20] The first are fiat- and asset-backed stablecoins, which centralized sponsors mint when they receive deposits of the reference assets and burn when they fulfill redemption requests.[21] Those stablecoins maintain their pegs by being redeemable for the reference assets on a one-to-one basis. The second are crypto-backed stablecoins, which market participants can mint by depositing approved crypto tokens into a smart contract on an overcollateralized basis.[22] Crypto-backed stablecoins rely on external price feeds and several automated feedback mechanisms to maintain their pegs. The third are algorithmic stablecoins, which are not backed by any collateral and instead (1) automatically adjust their market supplies to maintain their pegs and/or (2) use a seigniorage mechanism whereby arbitrageurs can always exchange $1 of another token issued by the same protocol for one stablecoin, and vice versa.[23] Some stablecoins combine crypto-backed and algorithmic elements.[24]

Currently, the vast majority of stablecoins are intended to track the U.S. dollar. If a dollar-referent stablecoin retains its peg, taxpayers should not have any gain or loss on a disposition of the stablecoin. However, foreign-currency-referent stablecoins exist. The application of Notice 2014-21 to those stablecoins creates arbitrage opportunities in light of section 988(c), which treats gain or loss from the disposition of foreign currency as ordinary instead of capital. Because stablecoins are not foreign currency under the notice, taxpayers can elect into capital gain or loss by investing in foreign-currency-referent stablecoins like Liquid's XSGD, which is backed by Singapore dollars,[25] instead of in the underlying currency. A similar arbitrage opportunity exists for taxpayers to avoid the higher long-term capital gains tax on collectibles by investing in gold- or silver-backed stablecoins instead of in gold or silver.[26]

The growth of central bank digital currencies (CBDCs) will make the arbitrage opportunity even more acute by letting taxpayers elect between two on-chain assets. CBDCs are issued

[19] *See* reg. section 1.1001-1(a) (no taxable event on a property exchange unless the new property differs materially either in kind or in extent).

[20] *See* Noopur Trivedi and Jitesh Golani, "Tax Policy for Stablecoins and DAOs: A Peek Into the Future," *Tax Notes Federal*, July 19, 2021, p. 419.

[21] *See* Tether, "Tether: Fiat Currencies on the Bitcoin Blockchain" (undated white paper).

[22] *See* MakerDAO, "The Maker Protocol: MakerDAO's Multi-Collateral Dai (MCD) System" (undated white paper). MakerDAO's crypto-backed stablecoin is further discussed in Section II.A.1.j.i.

[23] *See* Daniel Krupka, "Ampleforth (AMPL) Review: The Adaptive Stable Crypto," Coin Bureau, July 24, 2020. Evan Kereiakes et al., "Terra Money: Stability and Adoption" (Apr. 2019). Ampleforth is further discussed in Section II.A.6.b.

[24] *See* Frax Finance, "Frax: Fractional-Algorithmic Stablecoin Protocol" (last modified Nov. 2021).

[25] *See* Liquid.com, "Liquid Lists First Singapore Dollar Stablecoin XSGD Issued by StraitsX" (Dec. 11, 2020).

[26] *See* section 1(h)(4)(A)(i).

by countries, are not covered by Notice 2014-21,[27] and are foreign currencies under section 988.

There arguably are four other reasonable treatments of stablecoins: (1) custodial arrangements, (2) debt, (3) equity, and (4) notional principal contracts (NPCs). The first three realistically apply only to fiat- and asset-backed stablecoins, so their adoption would result in different tax treatments between fiat- and asset-backed stablecoins on one hand, and crypto-backed and algorithmic stablecoins on the other. Sound tax policy ought to tax similar assets similarly. The fourth treatment results in the same tax consequences as under Notice 2014-21, except that holders of foreign-currency-referent stablecoins would recognize exchange gain or loss under section 988 instead of capital gain or loss on a disposition.

i. Custodial arrangement.

Under a custodial arrangement treatment, fiat- and asset-backed stablecoins would represent shared beneficial ownership of the underlying reserves. They might be analogized to American depositary receipts (ADRs), which are U.S. exchange-listed instruments issued by U.S. banks that represent shares of a foreign company.[28] ADRs are treated as beneficial ownership of the foreign company's shares for U.S. tax purposes.[29] Treating foreign fiat-backed stablecoins as custodial arrangements generally would cause them to produce ordinary income or loss on sale under section 988 instead of capital gain or loss. Treating gold- or silver-backed stablecoins as custodial arrangements generally would result in a 28 percent long-term capital gains rate for individuals instead of a 20 percent rate.

But fiat- and asset-backed stablecoins are distinguishable from ADRs. Their issuers are not subject to the scrutiny that accompanies listing an instrument on a U.S. stock exchange.[30] Investors don't always know the composition of reserves backing their stablecoins.[31] Profits earned on the reserves inure to the issuers instead of investors, whereas ADRs pass dividends through to investors.

Moreover, if fiat- or asset-backed stablecoins were mere custodial arrangements, their value should always equal the value of reserves backing them less the cost of redeeming them. Historically, that does not appear to have been the case. They sometimes trade higher than their reference assets.

ii. Debt.

Fiat-backed stablecoins might alternatively be treated as debt of the sponsor issued in exchange for a deposit of hard assets. Under that treatment, U.S. holders of foreign fiat-backed stablecoins would still recognize foreign currency gain or loss, taxed at ordinary rates, on a disposition of their stablecoins,[32] but holders of asset-backed stablecoins would not recognize collectibles gain or loss.

Whether an instrument is debt for U.S. tax purposes depends on the facts and circumstances on the instrument's issue date, and no one factor is determinative.[33] Some factors indicative of debt are (1) denomination of the instrument as a note, bond, or debenture; (2) intent of the parties to create a debtor-creditor relationship; (3) an interest rate; and (4) a reasonable expectation of repayment.[34]

Fiat-backed stablecoins are not precluded from debt treatment merely because they might decline in value relative to the U.S. dollar. The IRS has ruled that an instrument does not fail to be

[27] *See* Notice 2014-21 (virtual currency does "not have legal tender status in any jurisdiction"); and IRS FAQs at A1 (virtual currency does not include "a representation of the U.S. dollar or a foreign currency"). *But see* Joe Hernandez, "El Salvador Just Became the First Country to Accept Bitcoin As Legal Tender," NPR, Sept. 7, 2021.

[28] *See* SEC, "Investor Bulletin: American Depositary Receipts" (Aug. 2012).

[29] *See* Rev. Rul. 65-218, 1965-2 C.B. 566; and Rev. Rul. 72-271, 1972-1 C.B. 369; *cf.* LTR 200450003 (banks that custody customer assets in pools are not required to treat the pools as joint accounts when investors do not jointly own the pool).

[30] *See* Elizabeth Lopatto, "The Tether Controversy, Explained," *The Verge*, Aug. 16, 2021 (reporting a series of dubious dealings by Tether, which sponsors the world's largest fiat-backed stablecoin by market capitalization).

[31] *See* Tether, Terms of Service (last updated May 12, 2020) ("'Reserves' means traditional currency and cash equivalents and, from time to time, may include other assets and receivables from loans made by Tether to third parties, which may include affiliated entities.").

[32] Section 988(c)(1)(B)(i).

[33] *See John Kelley Co. v. Commissioner*, 326 U.S. 521 (1946); and Rev. Rul. 68-54, 1968-1 C.B. 69.

[34] *See* Notice 94-47, 1994-1 C.B. 357; Rev. Rul. 68-54; *Roth Steel Tube Co. v. Commissioner*, 800 F.2d 625, 630 (6th Cir. 1986); *Bauer v. Commissioner*, 748 F.2d 1365, 1368 (9th Cir. 1984); *Estate of Mixon v. United States*, 464 F.2d 394, 402 (5th Cir. 1972); and *Fin Hay Realty Co. v. United States*, 398 F.2d 694, 696 (3d Cir. 1968).

debt merely because its principal is denominated in a foreign currency, even if the U.S. dollar value of the principal amount is less at maturity than at issuance.[35] However, no similar ruling exists for non-fiat assets, so it is unclear whether a gold-, silver-, or oil-backed stablecoin could qualify as debt.

In any event, it would be difficult to comfortably conclude that fiat- or asset-backed stablecoins are debt. They are not debt in form, and they do not bear any stated or implied interest rate. An interest rate is a hallmark of debt because it is compensation for the use or forbearance of money.[36] By contrast, yield on non-debt instruments typically comes from capital appreciation or dividends. The absence of an interest rate on fiat- and asset-backed stablecoins and the unlikelihood that their sponsors could have obtained financing from third parties in the traditional financial markets at a 0 percent interest rate suggests that they are not debt.

Crypto-backed stablecoins don't create a debtor-creditor relationship. Market participants mint them by depositing their own crypto into a vault. If they were treated as debt, it is unclear who the creditor would be. Algorithmic stablecoins also do not create a debtor-creditor relationship.

iii. Equity.

Fiat- and asset-backed stablecoins might instead be viewed as equity interests in a deemed entity. A joint venture for profit is treated as an entity for U.S. tax purposes.[37] Collective investment in passive assets designed to track the value of a foreign currency could be viewed as a joint venture for profit.

Joint ventures for profit that are not organized in the United States are treated as foreign entities. By default, foreign entities are treated as corporations if all members have limited liability; otherwise, they are treated as partnerships.[38] It is unclear how one would determine liability limitation in this context.[39]

a. Equity in a corporation.

If fiat- or asset-backed stablecoins were treated as equity in a foreign corporation, U.S. investors would be subject to the onerous passive foreign investment company rules,[40] which generally would subject them to tax at ordinary income (instead of capital gain) rates on any gain from a sale of the stablecoins and to a penalty tax in the nature of an interest charge on the gain as if they had earned it ratably over their holding periods.[41]

The PFIC rules were enacted to prevent U.S. taxpayers from deferring tax recognition on passive assets by holding them in a corporation organized in a tax haven. U.S. taxpayers can avoid the penalties by electing to either (1) include in income their share of the entity's net income and gain each year, whether or not distributed;[42] or (2) mark the entity's stock to market, pay tax annually at ordinary rates on any appreciation, and claim ordinary losses on depreciation to the extent of previously included income.[43] If fiat- or asset-backed stablecoin holders could make the first election, their annual inclusions should be zero or near-zero. But making and maintaining the election would require annual information reporting from sponsors, which in practice they do not provide. The second election is available only for instruments traded on a qualified market, which includes only regulated securities

[35] Rev. Rul. 2008-1, 2008-2 C.B. 248.

[36] *See Deputy v. Du Pont*, 308 U.S. 488, 498 (1940) ("In the business world, 'interest on indebtedness' means compensation for the use or forbearance of money.").

[37] *See* reg. section 301.7701-1(a)(2).

[38] *See* section 7701(a)(5) (definition of foreign); reg. section 301.7701-2(a) (entities other than trusts generally are business entities); and reg. section 301.7701-3(b)(2)(i)(B) (foreign business entities are corporations if all members have limited liability).

[39] *See* reg. section 301.7701-3(b)(2)(ii) ("This determination is based solely on the statute or law pursuant to which the entity is organized, except that if the underlying statute or law allows the entity to specify in its organizational documents whether the members will have limited liability, the organizational documents may also be relevant.").

[40] *See* section 1297(a) (foreign corporations are treated as PFICs if at least 50 percent of their assets are passive); section 1297(b)(1) (passive income determined under section 954(c)); section 954(c)(1)(B)(3) (property that does not produce income is passive); and section 954(c)(1)(D) (foreign currency is passive).

[41] *See* section 1291.

[42] *See* section 1295.

[43] *See* section 1296.

exchanges.[44] Stablecoins are not traded on regulated securities exchanges.

A deemed election out of the partnership rules and into individualized reporting is unlikely to be available if fiat- or asset-backed stablecoins are treated as equity in a corporation. By its terms, that election applies only if, in the first instance, the deemed entity is a partnership and not a corporation.[45]

b. Equity in a partnership.

If fiat- or asset-backed stablecoins were instead treated as equity in a partnership, U.S. investors would be required to include in income annually their allocable shares of the partnership's income, gain, loss, and deduction. That would require annual reporting on Schedule K-1 by the sponsor. In practice, sponsors do not provide K-1s.

iv. Notional principal contract.

Stablecoins might be treated as perpetual futures, which do not provide for a settlement date and thus tend to trade at a price that approximates the referent's spot price. The theory for so treating them would be that the stablecoin holders are assuming derivative exposure to a referent. Treating stablecoins as perpetual futures likely would result in a conclusion that they are bullet swaps for U.S. tax purposes, a type of NPC under which the parties settle their obligations at maturity.[46] Gain or loss on a settlement payment of a foreign currency NPC is exchange gain or loss and taxed as ordinary income or loss.[47] Gain or loss on a settlement payment of other NPCs is capital gain or loss.[48]

h. Application to NFTs.

ETH, BTC, and other virtual currencies are fungible, meaning investors have no preference as between any two tokens of ETH or BTC. Examples of off-chain fungible assets are U.S. dollars and specified grades of gold, silver, oil, and other commodities.

By contrast, nonfungible tokens (NFTs) are, generally speaking, (1) unique in that each bears its own digital fingerprint, (2) indivisible in that they generally cannot be split into smaller denominations, and (3) provably scarce in that the blockchain on which they are transferred can authenticate how many there are and who owns them. Examples of off-chain analogs are original paintings and limited-series baseball card prints.

Although they might have value, most NFTs are not digital representations of value, so they are not virtual currencies and not covered by the IRS's virtual currency guidance. Arguably, a U.S. taxpayer's consequences on a disposition of an NFT will depend on whether the NFT represents a digital nonfinancial asset, a digital financial asset, title to physical property, or a membership interest, although the distinctions among those categories can be hazy.

i. Digital nonfinancial assets.

Many NFTs are representations of digital nonfinancial assets. Examples are digital art; unique digital gaming implements like swords, shields, and skins; and digital land parcels in metaverse building programs like Decentraland.[49]

Under section 1(h)(4), the individual long-term capital gains rate on sales of collectibles, which include art,[50] is 28 percent instead of 20 percent. NFTs that primarily function as digital representations of art should be subject to the collectibles rate, although the IRS has not confirmed that. It is unclear whether an NFT that functions both as art and as something else, such as a membership interest,[51] should be taxed as a collectible.

Dispositions of digital nonfinancial assets that are not collectibles or membership interests should give rise to capital gain or loss.

ii. Digital financial assets.

Normally, minting an NFT out of a unique package of information does not change the

[44] *See* section 1296(e)(1)(A)(ii) (providing regulatory authority to designate qualified markets); and reg. section 1.1296-2(c) (defining qualified exchange or other market).

[45] *See* reg. section 1.761-2(a)(1) ("Any syndicate, group, pool, or joint venture which is classifiable as an association, or any group operating under an agreement which creates an organization classifiable as an association, does not fall within these provisions.").

[46] *See* prop. reg. section 1.1234A-1(c)(2).

[47] Reg. section 1.988-2(e)(4).

[48] *See* section 1234A and prop. reg. section 1.1234A-1(a).

[49] *See* NFT Plazas, "Decentraland Land" (last visited Dec. 27, 2021).

[50] *See* section 1(h)(5)(A) (collectible defined under section 408(m)); and section 408(m).

[51] *See* Section II.A.1.j.ii.

information but only makes it transferrable on a blockchain. Sticking a painting in an envelope is not a taxable event. Thus, minting an NFT that represents a nonfinancial asset does not seem to give rise to a taxable event.[52] However, a different rule could apply when a taxpayer mints an NFT that represents a digital financial asset.

Uniswap is a popular automated market maker (AMM) whose second major upgrade (v3) lets market participants provide liquidity for token swaps within customized price ranges.[53] (AMMs are discussed more generally in Section II.A.2.a.ii.) Market participants who provide liquidity to a designated price range share only the trading fees collected within that range. Uniswap v3's smart contracts issue liquidity provider tokens (LP tokens) that represent the liquidity providers' right to take back their liquidity and any fees collected on their positions. Because the tokens relate to unique positions, they are NFTs. However, in the interest of taxing similar transactions similarly, the contribution of liquidity to Uniswap v3 in exchange for an ERC-721-compliant LP token should be treated in the same manner as the contribution of liquidity to another AMM in exchange for an ERC-20-compliant LP token, which appears to be taxable.[54] Although Uniswap v3's customizability requires its LP tokens to be represented by NFTs, they likely are virtual currency under Notice 2014-21 because they are digital representations of value. Moreover, because the composition of assets underlying them changes automatically as the market conducts swaps with those assets, the LP tokens seem to be sufficiently different from the contributed liquidity for recognition treatment to apply.[55]

iii. Title to physical property.

Some NFTs represent transferrable title to physical property. U.S. taxpayers should treat a disposition of those NFTs in the same manner as a disposition of the underlying property.

iv. Membership interests.

Many NFTs represent membership in a club, which might style itself a decentralized autonomous organization (DAO). Royalty payments can be embedded directly into an NFT's transfer terms, and many DAOs program their membership interests to automatically divert a portion of each secondary market sale to their treasuries. Members can then vote on how the treasuries are deployed.

Tax advisers will need to consider whether NFTs that represent membership interests are equity in an entity for U.S. tax purposes.[56]

v. Special considerations.

a. Fragmentation

Some smart contracts let market participants fractionalize ownership, or shard, their NFTs into ERC-20-compliant tokens.[57]

The better argument seems to be that sharding an NFT is not itself a taxable event. Because the sharder's fungible tokens can be redeemed at any time for the NFT, the package of fungible tokens does not differ materially in kind or extent from the NFT. Moreover, if sharding were a taxable event, NFT holders could trigger losses at any time by sharding without actually disposing of their NFTs.

Under an alternative argument, because fractional interests in an NFT are not separately transferrable without a sharding transaction, the transaction sufficiently alters an NFT holder's legal rights to be an exchange of property for property differing materially in kind or extent.

If sharding is not taxable, the sharder should allocate the tax basis in the NFT proportionately among the shards and recognize gain or loss on a sale of each shard in an amount equal to the difference between the sale price and allocated basis.[58]

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[52] *See* reg. section 1.1001-1(a).

[53] *See* Uniswap, "Introducing Uniswap V3" (Mar. 23, 2021).

[54] *See* Section II.A.2.

[55] *See Cottage Savings Association v. Commissioner*, 499 U.S. 554, 565 (1991) (two properties are materially different under section 1001 if "their respective possessors enjoy legal entitlements that are different in kind or extent").

[56] *See* Section II.A.1.j.ii.

[57] *See* Jinia Shawgador, "What Are Fractionalized NFTs?" CryptoVantage (Oct. 29, 2021); and James Hendy, "Niftex Guide," Finder, Oct. 21, 2021.

[58] *See* reg. section 1.61-6(a) ("When a part of a larger property is sold, the cost or other basis of the entire property shall be equitably apportioned among the several parts, and the gain realized or loss sustained on the part of the entire property sold is the difference between the selling price and the cost or other basis allocated to such part.").

Concluding that sharding is not a taxable event presupposes that the smart contract is a nonentity arrangement that facilitates co-ownership. The IRS recognizes that mere co-ownership of property does not create a business entity.[59] However, market participants can form business entities solely to facilitate co-ownership. When they do, the legal form of entity matters. Trusts formed solely for co-ownership generally are classified as grantor trusts whose ownership is treated as proportionate ownership of the underlying assets,[60] whereas other legal entities that are not organized in the United States and whose members all have limited liability are, by default, classified as foreign corporations for U.S. tax purposes.[61] If the IRS successfully asserted that a sharding contract was a form of legal entity, the contract could be treated as a foreign corporation.[62] U.S. taxpayers recognize gain, but not loss, on a contribution of property to a foreign corporation in exchange for its stock.[63]

b. Diversification.

Some smart contracts let market participants deposit NFTs into pools in exchange for fungible tokens. Token holders can redeem their tokens for any NFT within the pool.[64]

When someone creates a pool, the fungible tokens they receive represent only the NFTs they deposited. Thus, until others enter the pool, the transaction is analogous to a sharding transaction.

However, the transaction's substance changes when another person contributes to the pool. At that point, each depositor's fungible tokens are substantively different from the specific NFTs they deposited. If the depositors had used an entity treated as a partnership for U.S. tax purposes to diversify their NFT exposure, they generally would not recognize gain or loss until the partnership's own taxable disposition of their deposited NFTs, at which point pre-contribution gain or loss inherent in their NFTs would be allocated back to them.[65] But it is not at all clear that NFT diversification pools are entities for U.S. tax purposes, and in any event, they do not provide Schedule K-1 reporting.

Thus, if the creation of an NFT diversification pool is not itself a taxable event, a second depositor's entry into the pool seems like it should be, although it is difficult to pinpoint a clearly analogous regulatory framework.

i. Application to decentralized crypto borrowings.

a. Virtual currencies.

The current DeFi ecosystem exhibits two common types of decentralized virtual currency borrowings. The first is peer-to-contract borrowing, further discussed in Section II.A.2.a.ii. The second occurs when market participants mint crypto-backed stablecoins by depositing approved crypto tokens into a smart contract on an overcollateralized basis, further discussed in Section II.A.1.j.i. Although unclear, posting virtual currencies as collateral for a crypto loan arguably is not a taxable event because it is not an exchange of property for property different materially in kind or extent within the meaning of reg. section 1.1001-1(a).

Decentralized virtual currency loans are not true loans for U.S. tax purposes because the putative borrower is not entitled to reacquire the specific tokens they deposit as collateral, but only tokens identical to the ones they deposit.[66] Thus, the borrower is treated as disposing of their deposited tokens. However, an exchange of property for other property not materially different in kind or extent is not a taxable event, and the exchange does not have to be immediate for nonrecognition treatment to apply.[67] For example, under section 1058, a taxpayer typically does not recognize gain or loss from lending securities, as long as the loan allows them to

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[59] *See* reg. section 301.7701-1(a)(2).

[60] *See* reg. section 301.7701-4(c)(1).

[61] *See* reg. section 301.7701-3(b)(2)(i)(B).

[62] *See* Section II.A.1.g.iii.

[63] *See* section 351 (tax-free contributions to corporations); and section 367(a) (requiring the recognition of gain, but not loss, on an otherwise tax-free contribution to a foreign corporation).

[64] *See* Ian Kane, "NFTX: The First NFT Index Fund Has Arrived," DappRadar, Jan. 7, 2021.

[65] *See* section 704(c).

[66] *See Provost v. United States*, 269 U.S. 443 (1926); *see generally* William W. Chip, "Are Repos Really Loans?" *Tax Notes*, May 13, 2002, p. 1057.

[67] *See* GCM 36948 (Dec. 10, 1976) ("Since the 'loan' and the replacement are reciprocal and mutually dependent transactions, they are a single event, namely, an exchange," but "there will be no realization of gain or loss under Code section 1001 because of Treas. Reg. section 1.1001-1(a).").

reacquire identical securities within a reasonable time after demand.[68] Although section 1058 does not apply to virtual currencies, it reflects a long-standing common law principle that nonrecognition treatment can apply to deferred exchanges.[69]

b. NFTs.

Some platforms allow market participants to offer up their NFTs as collateral for loans.[70] Prospective lenders can determine which NFTs they want to lend against and propose terms. If a borrower accepts a proposal, a smart contract takes custody of their NFT and releases it back to them only if they repay the loan. The smart contract automatically transfers the NFT to the lender on a default.

Borrowing against an NFT should be treated as a true borrowing for U.S. tax purposes because the exact same NFT pledged as collateral and locked in a smart contract during the term of the borrowing is returned to the borrower upon repayment of the loan. Accordingly, borrowing against an NFT should not be treated as a disposition of the NFT.

j. Application to governance tokens.

Many crypto tokens exhibit flavors of a joint venture because they confer voting rights to holders who collectively share profits.[71] That raises the question of whether those tokens are equity in an entity for U.S. tax purposes.[72] Notice 2014-21's conclusion that virtual currencies are property does not preclude them from being equity,[73] although there is no suggestion in any of the IRS guidance that virtual currencies might in fact be equity.

Not all collective actions for profit are treated as entities for U.S. tax purposes.[74] For example, creditors that buy tradable interests in a broadly syndicated loan may propose and vote on modifications to the loan, and, if the loan becomes distressed, delegate members to represent their mutual interests in a workout. The IRS has not asserted that creditors are joint venturers in an entity. One feature distinguishing creditors from joint venturers seems to be that creditors' relationships are tightly circumscribed by the credit agreement, whereas joint venturers have significant discretion as to the direction of their enterprise. Stated differently, creditors typically do not have a common treasury from which to deploy funds toward new projects, whereas joint venturers typically do.

One might reasonably extend that distinction to conclude that tokens whose primary purpose is to provide utility to a protocol are not equity because the voting rights they confer to their holders are more analogous to those given to creditors who operate within a designated framework. However, it could be very difficult to differentiate utility tokens from other governance tokens.

i. Utility versus governance.

Many tokens both govern and provide utility.

For example, holders of MakerDAO's MKR token both govern and provide utility to a protocol that maintains a crypto-backed stablecoin called Dai. Market participants can mint Dai by depositing ERC-20-compliant tokens into a smart contract called a vault. For as long as the Dai is outstanding, the vault accrues a stability fee denominated in MKR. If the vault's collateralization falls below a threshold, the protocol automatically auctions off enough of the collateral to acquire and burn the outstanding principal amount of Dai plus the vault's accrued stability fee. If the amount received in the collateral auction is less than the principal amount, the protocol automatically mints MKR to sell on the open market in exchange for Dai, which it burns.

[68] *See* prop. reg. section 1.1058-1(b)(3) (requiring securities loans to be terminable upon five days' notice, which was the standard settlement time when the proposed regulations were issued).

[69] *See* Michael Shulman, "Loans of Securities, Digital Assets, and Other Fungible Property," *Tax Notes Federal*, Oct. 25, 2021, p. 449.

[70] *See* Medium, NFTfi.com, May 15, 2020; dExplain, "What Is NFTfi? Marketplace for NFT Collateralized Loans," Nov. 27, 2020.

[71] *Cf. Bergford v. Commissioner*, 12 F.3d 166, 169 (9th Cir. 1993) (co-owners of computer equipment were in a joint venture because their economic benefits "were not derivative of their coownership of the computer equipment, but rather came from their joint relationship toward a common goal").

[72] *See* David Shakow, "The Tao of the DAO: Taxing an Entity That Lives on a Blockchain," *Tax Notes*, Aug. 13, 2018, p. 929.

[73] *See* Notice 2014-21 at A7 ("For example, stocks, bonds, and other investment property are generally capital assets.").

[74] *See* reg. section 301.7701-1(a)(2) ("A joint venture or other contractual arrangement *may* create a separate entity for federal tax purposes" (emphasis added).).

MKR provides utility to the MakerDAO protocol by absorbing losses (through inflation) if the collateral supporting Dai falls below a threshold. MKR holders profit if vault owners mint Dai and pay stability fees, because the fees are denominated in MKR and are burned when paid. They thus have an incentive to maintain Dai's use case as a U.S.-dollar-pegged stablecoin. To that end, MKR holders can vote to increase or reduce stability fees, making it more or less expensive to leave Dai outstanding,[75] or to initiate a global settlement during which depositors can reacquire collateral for Dai on a one-to-one (instead of overcollateralized) basis, pushing up the value of Dai.[76]

Similarly, holders of Aave's eponymous AAVE token both govern and provide utility to a peer-to-contract lending platform. They can deposit, or stake, their AAVE into a smart contract in exchange for stkAAVE, which entitles them to a share of stability fees paid by borrowers.[77] However, if there is insufficient collateral in a lending pool to satisfy lender redemption requests, AAVE and stkAAVE holders might vote to cause the protocol to sell a portion of staked AAVE on the market and use the proceeds to restore the collateral. Thus, stkAAVE is a bailout tool intended to ensure the continued efficient functioning of AAVE's lending platform even during periods of market volatility.

While MKR and AAVE both figure into the economics of their respective protocols' operation, each also indisputably represents an economic interest in a profit-making enterprise. Moreover, each of MakerDAO and Aave purports to be wholly decentralized, meaning that it conducts all governance on-chain. When a protocol's governance is truly decentralized, holders of the governance token can take the protocol in whatever direction they want by approving new products or changes to existing products, and can also vote on how fee collections are accumulated and deployed, subject in each case to any limitations coded into the governance protocol.

OlympusDAO further challenges the merits of trying to differentiate utility from governance tokens. Its OHM token is its governance token and also is intended to be a decentralized reserve currency.[78] To that end, the OlympusDAO protocol (1) maintains a treasury consisting of a basket of crypto tokens, (2) safeguards liquidity in OHM trading pairs by acquiring LP tokens from liquidity providers in exchange for discounted OHM,[79] and (3) makes a market in OHM by minting and issuing new OHM to stakers and acquiring OHM in the secondary market with profits from its treasury operations.[80] Holders of OHM can propose and vote on changes to the protocol's algorithmic central banking functions.

ii. Consequences of entity treatment.

DAOs that are business entities for U.S. tax purposes are, by default, treated as foreign corporations if all their members have limited liability, and otherwise are treated as partnerships. It is unclear how one would determine liability limitation in this context.[81]

DAOs that are foreign corporations and primarily hold ETH or another crypto token in their treasuries are likely to be treated as PFICs.[82] As a result, U.S. holders generally would be subject to tax at ordinary income rates on any gain from a sale of their tokens and on excess distributions (generally, distributions exceeding 125 percent of the average annual distribution),[83] and to a penalty tax in the nature of an interest charge on the gain and distributions as if the holders had earned them ratably over their holding period.[84] U.S. taxpayers who want to avoid the PFIC penalty tax might consider selling and reacquiring their DAO tokens each year, because a foreign corporation is not treated as a

[75] MakerDAO, "Busting MakerDAO Myths: Seven Misconceptions About Dai" (Nov. 11, 2020).

[76] *See* Reserve Research Team, "Reserve's Analysis of the MakerDAO Protocol," Medium, Aug. 13, 2018; and Cyrus Younessi, "An Elegant Relationship (DAI, ETH, MKR)," Medium, Jan. 31, 2019.

[77] Liquid staking is discussed further in Section II.A.2.

[78] *See* Olympus, Documentation (last modified Sept. 2021).

[79] LP tokens are discussed further in Section II.A.2.a.ii.a.

[80] Staking is discussed in Section II.A.2.

[81] *See* Section II.A.1.g.iii.

[82] *Id.*

[83] Section 1291(b).

[84] Section 1291(a).

PFIC during the first year of a taxpayer's holding period.[85] But that might not always be a practical solution, particularly when the DAO's ownership is represented by highly coveted art NFTs.[86] A sale and reacquisition also could be subject to recharacterization if the transaction lacks economic substance.[87]

DAOs that are partnerships would be required to deliver Schedules K-1 to U.S. holders each year. It is unclear how that delivery requirement would be enforced against a truly decentralized DAO.

DAOs that are business entities can also be subject to significant income and withholding tax liabilities. For example, all foreign entities are subject to a 30 percent withholding tax on U.S.-source income unless they provide appropriate tax forms. A truly decentralized DAO might not be able to provide tax forms, let alone gather information about its holders that might be needed to complete the forms. On the other hand, most or all income and gain that a DAO earns from on-chain transactions is likely to be foreign-source.[88] DAOs might also have income tax liabilities if they are treated as engaged in a U.S. trade or business, although merely owning and trading crypto is unlikely to cause a DAO to be so engaged.[89]

k. Application to custodial virtual currency loans.

Many custodial institutions, including Coinbase, Kraken, and Gemini, offer clients the opportunity to earn yield on their custodied crypto tokens. The custodial institutions apparently generate that yield by using the custodied tokens in other transactions and retaining a spread. That raises the question whether account holders are treated as disposing of their tokens when a custodial institution uses them.

As discussed in Section II.A.1.h.i, an exchange of property for other property not materially different in kind or extent is not a taxable event, and the exchange does not have to be immediate for nonrecognition treatment to apply. Thus, although unclear, crypto holders arguably are not treated as engaging in a taxable disposition of their crypto when custodial institutions use it to generate yield.[90]

2. Staking.

Several on-chain protocols allow market participants to earn a current economic yield by depositing, or staking, their crypto tokens into a smart contract. The yield either (1) accrues inside a new token that the smart contract issues to the depositor in what I call a liquid staking transaction, or (2) is credited periodically to a holder's wallet or online account in what I call an illiquid staking transaction.

Staking, whether liquid or illiquid, is a core DeFi activity. Although there is no guidance that directly addresses its taxation, the IRS's position appears to be as follows:

- liquid staking triggers taxable gain or loss at inception and termination, but stakers are not taxed currently on the yield that builds up inside their new tokens;[91] and
- illiquid staking does not trigger taxable gain or loss at inception or termination, but stakers are taxed currently at ordinary rates on the yield as it is credited to them.[92]

a. Liquid staking.

Liquid staking appears to trigger a taxable event because it is an exchange of one virtual currency for another that is materially different in kind.[93] In liquid staking, market participants deposit ERC-20-compliant tokens (the staked tokens) into a smart contract in exchange for new ERC-20-compliant tokens (the staking tokens).

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[85] Section 1291(b)(2)(B).

[86] *See, e.g.*, Nouns DAO website (last visited Dec. 27, 2021) (daily auctions of pixelated images of anthropomorphic beings called "nouns"; each noun holder has one vote in the Nouns DAO, which has no stated purpose); and Etherscan, "Nouns DAO Token Holdings" (last visited Dec. 27, 2021) (Nouns DAO's treasury is worth more than $65 million).

[87] *See* section 7701(o).

[88] *See* Section II.C.3.

[89] *See* Section II.C.2.

[90] *See* Shulman, *supra* note 69.

[91] *See* IRS FAQs at A16 (an exchange of one virtual currency for another is a taxable event that gives rise to capital gain or loss); and section 1001.

[92] *See* Notice 2014-21 (miners, who are analogous to illiquid stakers, include their mining rewards in income as they receive them); and *Jarrett v. United States*, No. 3:21-cv-00419 (M.D. Tenn. 2021) (the IRS is contesting a refund claim for taxes paid on illiquid staking). Mining is discussed in Section II.A.2.b.ii.

[93] Section 1001 and IRS FAQs at A16.

The smart contract pools all staked tokens and uses them to produce yield in an activity that subjects the pool to potential losses. Each staking token economically represents, and is redeemable for a proportionate share of the pool.

Liquid staking enables market participants to retain liquidity even while earning yield on their crypto assets. Market participants can pledge staking tokens as collateral for a loan, lend them out, exchange them for other crypto tokens, or use them in other DeFi transactions.

i. No current yield accrual.

A corollary to requiring gain or loss recognition on liquid staking seems to be that taxpayers are not required to accrue any yield that builds up inside their staking tokens. Instead, that yield ultimately increases a taxpayer's gain, or reduces their loss, on a subsequent disposition of the staking tokens, including through unstaking. That raises two concerns.

First, it allows business activities traditionally conducted by financial institutions to not only avoid corporate tax but also obtain capital gain or loss treatment. That might lead some tax advisers to question whether the IRS really intended its guidance on virtual currency to apply to liquid staking.

Second, it seems undesirable from a policy perspective to tax liquid staking and illiquid staking differently.

ii. Examples of liquid staking.

a. Automated market makers.

AMMs like Uniswap and SushiSwap are networks of smart contracts that facilitate token swaps.

On the back end, market participants known as liquidity providers deposit token pairs into smart contracts in exchange for ERC-20-compliant LP tokens. Each LP token represents, and is redeemable for, a proportionate share of the assets in the corresponding smart contract. On the front end, a web application executes token swaps for traders at algorithmically generated prices in exchange for a fee. Economically, liquidity providers act as a pooled counterparty to the traders and hope that the accretion of fees inside the smart contract offsets any losses that result from the contract's automated sales.[94]

Because LP tokens are virtual currency under Notice 2014-21, it appears that depositing tokens into an AMM in exchange for LP tokens triggers a taxable disposition of the deposited tokens. Under current IRS guidance, LP token holders apparently are not taxed currently on transaction fees received by the contract.

In traditional finance, market making typically is effected by financial institutions that are subject to corporate tax and broker reporting obligations. AMMs are smart contract protocols, not financial institutions, and do not pay corporate tax or comply with broker reporting obligations.

b. Peer-to-contract lending.

Peer-to-contract crypto lending platforms pool crypto tokens staked by lenders and advance them to borrowers on an overcollateralized basis. All loans are perpetual. To reacquire their collateral (or, more accurately, tokens identical to their collateral), borrowers need to return the amount borrowed plus an accrued stability fee, which is algorithmically determined and can change periodically depending on market conditions. If a borrower's overcollateralization ratio falls below a specified threshold, the platform auctions off their collateral at a discount and uses the proceeds to pay down their loan.

A look at two popular peer-to-contract crypto lending platforms illustrates the asymmetry in the current tax treatment of liquid and illiquid staking.

When lenders deposit tokens into a smart contract on Compound's peer-to-contract lending platform, they take back cTokens (for example, cETH for ETH). These cTokens represent shares of the contract's assets, which consist of lent and unlent tokens plus stability fees, and are redeemable for those assets, subject to a potential waiting period if the asset pool is illiquid. Because cTokens are virtual currency under Notice 2014-21, it appears that depositing tokens into Compound in exchange for cTokens triggers a

[94] *See* Cryptopedia, "Impermanent Loss in Decentralized Finance" (May 17, 2021); Cryptopedia, "What Are Liquidity Pools?" (Nov. 30, 2021); and Pintail, "Uniswap: A Good Deal for Liquidity Providers?" Medium, Jan. 11, 2019.

taxable disposition of the deposited tokens. Under current IRS guidance, cToken holders apparently are not taxed currently on stability fees that the contract receives.

By contrast, when lenders deposit tokens into a similar contract on Aave, they receive aTokens, which represent only a right to reacquire their deposited tokens. Aave credits any stability fees paid by borrowers directly to the lender's crypto wallet. Under current IRS guidance, it appears that a deposit of tokens for aTokens is not taxable because the two tokens are not materially different in kind or extent, and holders are taxed currently at ordinary income rates on their receipt of stability fees.[95] Thus, even though lenders on Aave engage in the same transaction as lenders on Compound, they appear to be taxed in a materially different manner.

c. Consensus mechanism participation.

As discussed in Section II.A.2.c, Rocket Pool provides taxpayers with exposure to consensus mechanism staking through ownership of a staking token.

b. Illiquid staking.

i. No gain or loss recognition.

A corollary to taxing illiquid stakers currently on their staking rewards appears to be that illiquid staking does not trigger immediate gain or loss recognition.

As discussed in Section II.A.1.i, an exchange of property for other property not materially different in kind or extent is not a taxable event, and the exchange does not have to be immediate for nonrecognition treatment to apply. Thus, although illiquid stakers are not guaranteed a return of the exact tokens they stake, their exchange of tokens at the inception of an illiquid staking transaction for identical tokens at termination arguably is not an exchange of property for materially different property. Moreover, surrendering a right to use property for a period normally does not trigger capital gain or loss.[96] Finally, the voluntary assumption of a new risk normally is not a taxable event,[97] so illiquid staking arguably should not trigger taxation even if it exposes stakers to a new risk.

That said, some illiquid staking arrangements impose significant lock-up periods.[98] Proposed regulations under section 1058 would allow nonrecognition treatment on a securities loan only if the lender can reacquire identical securities within five days' notice.[99] Virtual currencies are not securities, but it is conceivable that the IRS would apply a similar precondition to nonrecognition on illiquid staking.

If illiquid staking were a taxable event, it is unclear how illiquid stakers would recover their basis in the staked tokens. One potential approach (although difficult to administer) would be to require illiquid stakers to allocate their basis across their anticipated staking rewards and treat each reward as part basis recovery and part sale.[100]

ii. Examples of illiquid staking.

Broadly, there are two types of illiquid staking. One is part of Ethereum's consensus mechanism, which is how nodes achieve consensus around a single version of the blockchain. The other exists as part of the "tokenomics" of various Ethereum-based protocols. While it would be reasonable to assume that both types should be treated similarly, it is conceivable that the IRS could assert that different treatments apply.

[95] *See* Section II.A.2.b.

[96] *See Commissioner v. Gillette Motor Transport Inc.*, 364 U.S. 130, 134-136 (1960) ("the right to use is not a capital asset, but is simply an incident of the underlying physical property, the recompense for which is commonly regarded as rent"); *see also Estate of Carter v. Commissioner*, 298 F.2d 192 (8th Cir. 1962) (payments for interruption of use of a theater business were ordinary income); and *Turner v. Commissioner*, 47 T.C. 355 (1967) (payment for surrender of occupancy of leased property was ordinary income).

[97] *Cf.* section 1058(b)(3) (securities loans may not reduce the transferor's risk of loss but may increase it by exposing them to counterparty risk).

[98] *See, e.g.*, Frax Finance, "Time Locked Staking" (last modified Aug. 2021).

[99] *See* prop. reg. section 1.1058-1(b)(3).

[100] *Cf.* section 453 (installment sale treatment).

a. Consensus mechanism staking.

The Ethereum blockchain is expected to complete its transition to a proof-of-stake consensus mechanism this year.[101] Under proof of stake, the protocol adds each new block of data to its chain by algorithmically choosing a node to broadcast its block to the other nodes for verification.[102] A node's likelihood of being chosen by the protocol increases based on the amount of ETH it has staked in a designated smart contract. Nodes earn rewards, primarily in the form of inflationary ETH, when their blocks are verified, and they can have their stakes burned (called slashing) if they create invalid transactions or engage in other malicious behavior.

Proof of stake depends on the proposition that nodes with a lot of ETH to lose are less likely to take actions that would undermine the Ethereum blockchain's integrity or subject them to slashing risk. It is analogous to the proof-of-work consensus mechanism, from which Ethereum is transitioning. There, the first node to solve a computation-intensive puzzle gets to broadcast its block to the other nodes for verification. Nodes expend real-world resources by purchasing computing hardware and electricity for a chance to be first to solve the puzzle. People call that activity mining, and often call nodes miners, although many use the terms node, miner, and staker interchangeably.

As mentioned earlier, Notice 2014-21 provides that mining rewards are taxable as received, and the IRS has asserted that consensus mechanism staking rewards are, too.

b. Non-consensus mechanism staking.

Many protocols that operate on Ethereum incorporate illiquid staking into their tokenomics. In most arrangements, rewards accrue continuously and either are credited directly to users' wallets or are claimable on an online portal that gives users the option to either claim or restake their rewards daily.

Although it would be futile to try to catalog all non-consensus mechanism illiquid staking arrangements, they can broadly be split into pure incentive programs and safety mechanisms.

Pure incentive programs. These programs use staking rewards to encourage a particular type of behavior without imposing additional market risks on stakers. Liquidity mining programs are one common example.

Liquidity is fickle.[103] Funds can flow out of projects as quickly as they flow in. To encourage liquidity providers, several DeFi protocols offer rewards for those who stake their LP tokens.[104] Market participants often call the act of earning those rewards liquidity mining.

For example, market participants who provide liquidity to SushiSwap's AMM can stake their LP tokens in exchange for newly minted SUSHI, the protocol's governance token.[105] Instead of allowing all trading fees to accrue inside its LP tokens, the protocol uses a portion of the fees to buy SUSHI on the secondary market, thereby helping to stabilize its price.

Similarly, Synthetix periodically offers inflationary rewards payable in its SNX token to encourage market-making for its products. Synthetix lets market participants mint and trade synthetic representations of Tesla stock (sTSLA) and U.S. dollars (sUSD). But because its smart contracts rely on an external price feed to price sTSLA, users cannot trade sTSLA through Synthetix outside traditional market hours. To encourage the creation and maintenance of a secondary market for sTSLA outside traditional market hours, Synthetix occasionally offers inflationary rewards payable in SNX to market participants who (1) provide liquidity to the sTSLA-sUSD pool on Balancer, another AMM, then (2) stake their Balancer LP tokens on Synthetix.[106] SNX has value because market

[101] Taylor Locke, "Ethereum Just Hit an All-Time High of Above $4,400 After a Recent Upgrade. Here's What to Know," CNBC, Oct. 28, 2021.

[102] Anonymous, "The History and Evolution of Proof-of-Stake," Cointelegraph, Oct. 15, 2017.

[103] *See, e.g.*, The Defiant, "SushiSwap: What Happened, What It Means for Defi and What's Next," Decrypt, Sept. 8, 2020 (describing SushiSwap's "vampire attack" on Uniswap, which sought to suck liquidity from Uniswap's pools to its own); and jakub, "What Is a Vampire Attack? SushiSwap Saga Explained," Finematics, Dec. 9, 2020.

[104] *See generally* Binance Academy, "What Is Yield Farming in Decentralized Finance (DeFi)?" (updated Oct. 20, 2021).

[105] *See* SushiSwap, "Yield Farming" (updated Oct. 2021); Yield Guide Games, "How to Yield Farm on SushiSwap," Medium (last visited Dec. 27, 2021); and Sushi, "Sushi Cookbook: A Complete Tutorial on SUSHI DeFi Opportunities" (updated Oct. 2021).

[106] Synthetix System Documentation (last visited Dec. 27, 2021).

participants need it to mint new synthetic products and can earn trading fees by staking it.

SUSHI and SNX staking rewards accrue constantly on a market participant's online staking portal, and market participants can claim accrued rewards or unstake their LP tokens anytime.

Safety mechanisms. Some illiquid staking arrangements require stakers to assume a new risk to earn rewards. For example, SNX holders who stake their SNX on Synthetix collectively act as a pooled counterparty to all synthetic positions minted through the protocol and earn inflationary SNX tokens for doing so.[107] Similarly, holders who stake InsurAce's INSUR token collectively act as a pooled counterparty to all insurance purchased on the protocol (which covers hacking and other on-chain risks) and earn inflationary INSUR for doing so.[108]

iii. Overtaxation.

Taxing an illiquid staker's inflationary rewards on receipt results in overtaxation by ignoring the dilutive effect new tokens have on the value of outstanding tokens.

Assume you and I each hold half of a protocol's 200 outstanding tokens at the beginning of the year, and you receive another 100 inflationary tokens over the course of the year for staking while my ownership of tokens remains constant. Assume further that the aggregate market capitalization of the tokens remains static at $200 throughout the year, so that each token's value is $1 at the beginning of the year (that is, 200 tokens outstanding at a $200 market capitalization) and $0.67 at the end of the year (that is, 300 tokens outstanding at a $200 market capitalization). By the end of the year, the aggregate value of your tokens will have increased from $100 to $133.33 because you now own two-thirds of tokens whose market capitalization is $200. But because the average value of inflationary tokens you received over the course of the year is $0.83, you will be taxed on $83 instead of $33.33. By contrast, if you had engaged in liquid staking and exited your position at the end of the year, you would have been taxed only on the $33.33 increase in the value of your tokens, at capital gains rates.

The amount of that overtaxation increases when staking participation rates are high. If all of a protocol's tokens are staked, inflationary rewards are closely analogous to stock dividends in that they don't shift any value from one person to another.[109]

The IRS in *Jarrett* is contesting a refund claim for taxes paid on inflationary illiquid staking rewards.[110] The taxpayer runs his own staking node and asserts that the creation of property, such as inflationary tokens, through personal efforts is not a realization event. Farmers realize income when they sell their crops, not when they harvest them. Miners (literal ones) realize income when they sell their ore, not when they extract it.[111] None of that changes when price quotes for the property are readily available. It remains to be seen whether the taxpayer will prevail. Even if he does, it is unclear whether the same argument should apply to non-consensus-layer tokens, or to taxpayers who join custodial staking pools instead of running their own nodes. Moreover, Ethereum's practice of burning fees while minting inflationary tokens as staking rewards could raise questions about how to distinguish between inflationary and noninflationary token rewards.[112]

iv. Reporting and collection.

Taxing an illiquid staking reward on receipt could result in an unadministrable reporting and collection burden.

Illiquid staking rewards typically accrue continuously and either are credited directly to users' wallets or are claimable on an online portal that gives users the option to either claim or

[107] *See* Gavin Low, "The Value and Risk of Synthetix," Medium, Dec. 9, 2019; and Kain Warwick, "What Is Synthetix and How Does It Work?" Cryptopedia, Dec. 10, 2020.

[108] *See* InsurAce.io blog, "Introducing InsurAce — A New DeFi Insurance Protocol" (Nov. 24, 2020).

[109] *See* section 61(a) (listing types of income included in gross income); *Eisner v. Macomber*, 252 U.S. 189, 207 (1920) (stock dividends are not taxed because income must involve a "coming in"); and *Commissioner v. Glenshaw Glass*, 348 U.S. 426 (1955) (income requires "undeniable accessions to wealth, clearly realized, and over which the taxpayers have complete dominion").

[110] *Jarret*, No. 3:21-cv-00419.

[111] *See* Rev. Rul. 77-176, 1977-1 C.B. 77.

[112] *See* Michael McSweeney, "Ethereum's 'London' Hard Fork: What It Is and Why It Matters," The Block, Aug. 4, 2021 (Ethereum burns the "base fees" paid by market participants, and pays nodes with inflationary ETH and any "tips" that market participants pay in excess of the base fee to speed up their transactions).

restake their rewards. If yield from illiquid staking is subject to current taxation, taxpayers likely are subject to tax even on unclaimed or restaked rewards because the online portal is a surrogate for their wallets. An argument that a taxpayer lacks dominion and control over unclaimed rewards is unlikely to be persuasive if the taxpayer voluntarily set up the portal and staked their tokens to begin with.[113]

Many illiquid stakers can expect thousands or even millions of credits to their accounts each year.[114] The IRS FAQs allow taxpayers to use blockchain explorers to calculate the U.S. dollar values of those credits,[115] but it is not entirely clear whether taxpayers should determine the U.S. dollar value of each token reward individually or use a daily averaging method.[116] In any event, smart contracts do not provide tax reports, and many taxpayers will unlikely be able to reconstruct their illiquid staking earnings.

c. Alternative characterizations.

The apparent treatment of liquid and illiquid staking under current IRS practice produces a significant difference in the taxation of two very similar transactions. Rocket Pool offers a stark example.

Rocket Pool is a protocol designed to socialize the costs, risks, and rewards of operating an Ethereum staking node. Node operators and nonoperators contribute their ETH into a smart contract. The smart contract autonomously allocates the ETH among operators to ensure that each has at least the minimum stake required by Ethereum's consensus mechanism and tokenizes participants' shares of the pool in the form of rETH, an ERC-20-compliant token.[117]

The availability of Rocket Pool and protocols like it allow market participants to choose between two economically identical transactions that are taxed differently: (1) illiquidly staking ETH directly as part of Ethereum's consensus mechanism, and (2) liquidly staking ETH in exchange for rETH. Rocket Pool's website points out that liquid staking is "better for tax reporting."[118]

There are other possible ways the IRS might characterize liquid and illiquid staking transactions. Each would likely require a change in the IRS's guidance.

i. Agency.

A smart contract could be treated as the stakers' agent and its activities imputed to them. Depositing property with an agent is not itself a taxable event. Instead, under agency treatment, taxpayers likely would recognize income or gain on a current basis as the smart contract generates yield, even if the overall value of their investment declines.

However, imputing a smart contract's activities to stakers would create two practical issues.

First, it might not always be clear what transactions should be imputed to stakers. Taxpayers would need guidance on when to aggregate related transactions and how to determine if their yield represents capital gains, service fees, interest, insurance premiums, or something else. Given the seemingly exponential innovation occurring in DeFi, the IRS likely would have to update that guidance regularly.

Second, taxpayers might not have the forensic wherewithal to accurately report the underlying transactions. Even though all transaction information on a public blockchain is available for all to see, figuring out one's proportionate share of what is going on behind the scenes of a smart-contract-based protocol could require a high level of sophistication.

[113] *See* ILM 202114020 (taxpayer's "ability to sell, exchange, or transfer" BCH evidenced her dominion and control over it).

[114] Ethereum forges 2 million to 2.5 million blocks per year. *See* YCharts, "Ethereum Blocks Per Day" (last visited Dec. 27, 2021).

[115] *See* IRS FAQs at A27 ("The IRS will accept as evidence of fair market value the value as determined by a cryptocurrency or blockchain explorer that analyzes worldwide indices of a cryptocurrency and calculates the value of the cryptocurrency at an exact date and time. If you do not use an explorer value, you must establish that the value you used is an accurate representation of the cryptocurrency's fair market value.").

[116] *Compare* Notice 2014-21 ("when a taxpayer successfully 'mines' virtual currency, the fair market value of the virtual currency *as of the date of receipt* is includible in gross income" (emphasis added)), *with* IRS FAQs at A27 ("If you receive cryptocurrency in a peer-to-peer transaction or some other transaction not facilitated by a cryptocurrency exchange, the fair market value of the cryptocurrency is determined as of the date *and time* the transaction is recorded on the distributed ledger, or would have been recorded on the ledger if it had been an on-chain transaction.").

[117] *See* Rocket Pool (last visited Dec. 27, 2021).

[118] *Id*.

ii. Open transaction.

Staking could be viewed as an open transaction. Under that treatment, staking would not trigger a taxable event at inception.

In *Logan*,[119] the Supreme Court held that a taxpayer's sale of mining rights for periodic payments based on the amount of coal the purchaser successfully mined was not a taxable event because the taxpayer could not yet determine her net profit or loss. Similarly, premiums paid to the writer of an option are not taxed on receipt, but when the option terminates or is otherwise disposed of.[120]

The IRS asserts that the application of the open transaction doctrine is limited to "rare and extraordinary cases" in which neither the property rights transferred nor the contingent consideration received has ascertainable value.[121] Staking might satisfy those criteria: Market participants assume risk by locking up their tokens in smart contracts, and they hope that any resulting losses are offset by a contingent yield. The contingent yield varies based on factors unknown at inception, including the aggregate amount staked and the aggregate amount of user participation in the protocol.

Open transaction treatment would terminate when a taxpayer exits their staked position. However, in the case of illiquid staking, it is unclear whether restaking unclaimed rewards would be treated as an exit and reentry, or as part of the overall transaction. Treating restaking as an exit and reentry would give rise to the same overtaxation, reporting, and collection concerns as exist now.

It also is unclear whether a taxpayer's economic profit or loss on exit should be capital or ordinary, although open transaction treatment usually presumes the sale of some contractual right that produces capital gain or loss.[122]

iii. Notional principal contract.

Staking could be treated as the execution of an NPC and a pledge of the staked tokens as collateral to safeguard the staker's potential obligations under the contract. Very generally, an NPC is a financial instrument whose parties make periodic payments to each other based on the performance of a notional investment (such as an investment in a market-making or lending business) that is not within their control or unique to their circumstances.[123]

Stakers would not have gain on a deemed entry into an NPC. Their current yield would be bifurcated into (1) an interest component attributable to the token pledge and (2) ordinary income attributable to periodic payments under the NPC.[124] Both liquid and illiquid stakers likely would have to accrue the yield currently as ordinary income.[125] Any periodic payments they are deemed to make under the NPC (for both market depreciation and loss events) likely would be miscellaneous itemized deductions, which are nondeductible for individuals until 2026 and subject to substantial limitations thereafter.[126] Gain or loss on a disposition of the NPC should be capital gain or loss.[127]

However, staking does not appear to satisfy the literal definition of an NPC because stakers' yields are based on transactions that are unique to their circumstances.[128] Moreover, if NPC treatment were adopted, taxpayers would need guidance on how to bifurcate and accrue their yields and losses. Finally, NPC treatment creates potential asymmetries between the tax

[119] *Burnett v. Logan*, 283 U.S. 404 (1931).

[120] Rev. Rul. 58-234, 1958-1 C.B. 279, clarified by Rev. Rul. 68-151, 1968-1 C.B. 363.

[121] Rev. Rul. 58-402, 1958-2 C.B. 15.

[122] *See Commissioner v. Carter*, 170 F.2d 911 (2d Cir. 1948) (contingent proceeds from oil brokerage contract rights produced capital gains); *Westover v. Smith*, 173 F.2d 90 (9th Cir. 1949); *Burnett v. Commissioner*, T.C. Memo. 1956-210; *Dorsey v. Commissioner*, 49 T.C. 606 (1968); and *Schapiro v. Commissioner*, T.C. Memo. 1968-44.

[123] *See* reg. section 1.446-3(c)(1).

[124] *See* preamble to final section 1411 regulations (T.D. 8734), 62 F.R. 53387 (Oct. 14, 1997) ("income from NPCs is not gain from the disposition of property, nor is it the equivalent of gain"); TAM 9730007 (treating periodic NPC payments as ordinary income and expense); and LTR 9824026 (same).

[125] *See* section 1272 (requiring daily accruals of original issue discount); and reg. section 1.446-3(f)(2)(i) ("Generally, a nonperiodic payment must be recognized over the term of a notional principal contract in a manner that reflects the economic substance of the contract.").

[126] Prop. reg. section 1.212-1 (characterizing NPC payments as "expenses deductible under Section 212"); and section 67(g) (limitations on miscellaneous itemized deductions).

[127] *See* section 1234A and prop. reg. section 1.1234A-1(a).

[128] *But see* reg. section 1.446-3(c)(4)(ii) ("a notional principal amount may be based on . . . the outstanding balance of a pool of mortgages").

consequences to the staker and any deemed counterparties.

iv. Capital contribution.

Staking might be treated as a capital contribution to a deemed entity. In that event, taxpayers generally would be treated similarly to taxpayers whose DAO membership interests are treated as equity: They would be either subject to the PFIC rules (unless the deemed entity is a dealer under section 954(c)(2)(C), as could be the case for an AMM, or qualifies for another PFIC exception), or treated as partners in a partnership and unable to report their allocable shares of income and gain.[129] Illiquid stakers who are subject to the PFIC rules likely would have to treat their token rewards as foreign-source dividends or excess distributions.

3. Mark-to-market election.

Under section 475(f), traders in commodities can elect to mark them to market each year and treat any resulting gain or loss as ordinary income or loss. Taxpayers might prefer mark-to-market treatment because it is easier to administer than basis tracking and can generate ordinary instead of capital losses.

a. Traders.

The distinction between a trader (who can make a mark-to-market election) and an investor (who can't) is that a trader's activities are "frequent, continuous, and regular," whereas an investor's activities are "more isolated and passive."[130] High-frequency trading funds often take the position that they are traders, but day traders often fail to establish that they are traders.[131]

b. Commodities.

As discussed in Section II.C.2.b.i, many virtual currencies may be commodities. Derivatives on virtual currencies that are commodities also should be commodities.[132]

Section 475(e)(4) requires any commodity subject to a mark-to-market election to be actively traded within the meaning of section 1092(d)(1), which means that there is an established securities market for the commodities.[133] An established securities market includes "a system of general circulation that provides a reasonable basis to determine fair market value by disseminating actual prices of recent transactions."[134] Centralized and decentralized exchanges, such as AMMs, list up-to-date price quotes for a multitude of virtual currencies. Those virtual currencies should be treated as actively traded.

c. Interaction with section 1256.

Many funds that invest in virtual currencies also invest in futures contracts linked to BTC, ETH, or other commodities. Under section 1256, futures contracts, foreign currency contracts, nonequity options, and other section 1256 contracts are required to be marked to market each year. Any resulting gain or loss is treated as 60 percent long-term and 40 percent short-term capital gain or loss.

A mark-to-market election under section 475(f) generally overrides section 1256 treatment for contracts on commodities.[135] Thus, U.S. individuals who are taxed at preferential rates on long-term capital gains might prefer not to make mark-to-market elections for their virtual currencies if they have significant exposure to commodity futures.

4. Wash sales and constructive sales.

Legislative proposals would modify the wash sale and constructive sale rules to apply to virtual currencies.[136] No such proposal has been enacted.

[129] *See* Section II.A.1.j.ii.

[130] *Clearmeadow Investments LLC v. United States*, 87 Fed. Cl. 509, 526 (2009).

[131] *See Mayer v. Commissioner*, T.C. Memo. 1994-209 (taxpayer was an investor, not a trader, even though he conducted more than 1,000 transactions in each of three years and held most of his securities for less than one year, because his focus was on long-term appreciation, most securities were held for more than six months, and 83.8 percent of his total securities income consisted of dividends, interest, and long-term capital gains); and *Estate of Yaeger*, 889 F.2d 29, 33-34 (2d Cir. 1989) (taxpayer was an investor, not a trader, even though he conducted more than 2,000 transactions over a two-year period and pursued his activities vigorously and extensively, because most of his sales were of securities held for more than one year, none of his sales were of securities held less than three months, and most of his profits derived from holding undervalued securities until the market improved).

[132] *See* section 475(e)(2)(C).

[133] Reg. section 1.1092(d)-1(a).

[134] Reg. section 1.1092(d)-1(b)(2)(i).

[135] *See* section 475(e)(2) (defining commodities that may be subject to the election).

[136] *See* Build Back Better Act, H.R. 5376, 117th Congress (2021-2022).

The wash sale rules of section 1091 disallow any loss from a disposition of stock or securities if the taxpayer acquires substantially identical stock or securities within 30 days of the disposition. Although section 1091 does not define securities, courts have held that the term should be given its ordinary meaning.[137] Crypto tokens are unlikely to be securities unless they represent debt or equity of an entity. However, the IRS could invoke the economic substance doctrine to reach a result similar to that under section 1091 if a taxpayer disposes of, and very shortly thereafter reacquires, a token. When it applies, the economic substance doctrine typically disregards a transaction entered into without a substantial nontax business purpose if it does not meaningfully change the taxpayer's economic position.[138]

The constructive sale rules of section 1259 require taxpayers to recognize gain on entering into offsetting positions on appreciated stock, debt, or partnership interests. Most crypto tokens are not stock, debt, or partnership interests.

5. Foreign account reporting.

a. Form 8938.

U.S. individuals are required to report their "specified foreign financial assets" annually on Form 8938.[139] The reporting requirement likely will apply to U.S. individuals who hold more than $50,000 worth of crypto tokens at a foreign custodial institution on the last day of the tax year, or more than $75,000 worth at any other time.[140]

U.S. individuals who do not custody their crypto wallets might also have to file Form 8938. A crypto wallet is a piece of software that generates a public key analogous to locational coordinates and a private key analogous to a passcode. The on-chain world identifies the wallet by reference to its public key, which is representable by a QR code, but only those who know the wallet's private key can use and transfer the wallet's contents.

Wallet providers are not custodial institutions, because all they do is provide a user interface for seeing transactions that have been credited to a specific public key. However, the Form 8938 filing obligation is not limited to financial instruments held with a foreign custodial institution; it also applies to financial instruments with "an issuer or counterparty which is other than a United States person."[141] Virtual currencies are financial instruments and arguably are "issued" by a software protocol, which is not a U.S. person.

b. FBAR.

A taxpayer who has a financial interest in, or signature or other authority over, a reportable account must file a Financial Crimes Enforcement Network Form 114, commonly called a foreign bank account report, if the aggregate value of those accounts exceeds $10,000 at any time during the calendar year.[142] Treasury's unofficial view is that virtual currency accounts are not reportable on an FBAR because they are not described in 31 C.F.R. section 1010.350(c).[143] That view probably does not extend to accounts holding crypto tokens that are treated as equity for U.S. tax purposes.

c. Equity reporting.

U.S. taxpayers could have additional reporting requirements if their crypto is treated as equity in an entity for U.S. tax purposes.

6. Airdrops.

Airdrops are token giveaways. Developers often conduct airdrops to increase a new project's visibility. Artists often airdrop new works into the wallets of current holders of their NFTs to reinforce a sense of community. Airdropped tokens usually — but not always — have only nominal value.

a. Virtual currency.

Under Rev. Rul. 2019-24, recipients of virtual currency airdrops recognize ordinary income

[137] *See Horne v. Commissioner*, 5 T.C. 250, 253 (1945); *Corn Products Refining Co. v. Commissioner*, 16 T.C. 395, 400 (1951); and *Trenton Cotton Oil Co. v. Commissioner*, 147 F.2d 33 (6th Cir. 1945).

[138] *See* section 7701(o).

[139] *See* section 6038D.

[140] *See* section 6038D(b)(1) (specified foreign financial assets include financial accounts maintained by a foreign financial institution); section 1471(d)(2)(B) (financial account includes a custodial account); and reg. section 1.1471-5(b)(3)(ii) (custodial account includes an arrangement for holding a financial instrument, contract, or investment).

[141] Section 6038D(b)(2)(B).

[142] *See* 31 C.F.R. section 1010.350(a).

[143] Kirk Phillips, "Virtual Currency Not FBAR Reportable (At Least for Now)," *J. Acct.*, June 19, 2019.

equal to the FMV of the airdropped token if and when they have dominion and control over it.

Treating airdrops of fungible tokens as accessions to wealth is consistent with the authorities on found treasure and free samples.[144] However, that treatment is likely to result in significant factual questions around when a taxpayer actually has dominion and control over the airdropped token and what the value of the airdropped token is at that time.

Treating airdrops like found money also could create market distortions. Developers typically make airdropped tokens available to market participants when the tokens are worthless. Recipients are selected based on their current or past investments, their status as influencers, or some other characteristics intended to increase market buzz around the airdrop. Recipients typically have a window of time to claim the tokens. Often, the value of airdropped tokens increases rapidly at the inception of the airdrop, only to plummet after recipients offload the tokens into the market. Requiring taxpayers to include in income the FMV of airdropped tokens at the time they claim them thus puts a premium on claiming tokens early (before the pump) or significantly later (after the dump) and could result in taxpayers reporting significantly different accessions to wealth depending on when they claimed their airdrops.

One alternative would be for the IRS to treat airdrops as at-the-money physically settled call options. Under that treatment, taxpayers would not be subject to tax on claiming the airdropped tokens and would receive them with a zero basis. Call option treatment would be consistent with Rev. Rul. 63-225, 1963-2 C.B. 339. There, the IRS ruled that a taxpayer's receipt of rights to purchase stock and debentures of a corporation based on the taxpayer's ownership of stock in an unrelated corporation was not a taxable event. The taxpayer's basis in those rights was zero.

b. Self-rebasing tokens.

Notwithstanding the IRS's position on airdrops, algorithmic stablecoin rebasing events probably are not taxable if the rebasing does not shift wealth among holders. Some algorithmic stablecoins rebase by expanding or contracting their aggregate market supply, proportionally crediting or subtracting tokens to or from holders' wallets. Expansions are intended to reduce the stablecoin's value relative to its peg, and contractions are intended to increase it.[145] When a taxpayer acquires that kind of rebasing stablecoin, they are buying an asset whose very nature contemplates supply expansions and contractions. Those rebasings arguably are not new property.[146] Moreover, an issuance of the rebasing tokens is designed to reduce the value of each outstanding token. It seems highly inappropriate to tax a wealth-reduction transaction.[147]

If rebasing is not taxable, taxpayers should prorate their cost bases across rebasing tokens and recognize gain or loss only on disposition of the tokens.[148]

c. NFTs.

As mentioned earlier, most NFTs are not virtual currency because they are not digital representations of value. The IRS might still treat airdrops of NFTs similarly to airdrops of fungible tokens under an analogy to found treasure. However, when digital artists airdrop new work to holders of their NFTs, the airdrops arguably are more analogous to an airline's issuance of discount tickets to frequent flyers, which is not taxable; instead, the taxpayer receives the reward with a zero basis.[149]

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[144] *See* reg. section 1.61-14(a) (treasure trove is gross income for the tax year in which it is reduced to undisputed possession); and *Cesarini v. United States*, 296 F. Supp. 3 (N.D. Ohio 1969) (cash found in old piano treated as income in year of discovery).

[145] *See* Krupka, *supra* note 23.

[146] *Cf.* reg. section 1.1001-3(c)(1)(ii) ("an alteration of a legal right or obligation that occurs by operation of the terms of a debt instrument is not a modification").

[147] *See Macomber*, 252 U.S. at 207 (stock dividends not taxed); and *Glenshaw Glass*, 348 U.S. 426 (income requires "undeniable accessions to wealth, clearly realized").

[148] *Cf. Miles v. Safe Deposit & Trust Co. of Baltimore*, 259 U.S. 247 (1922) (basis allocated between stock and distributed subscription rights based on cost basis in stock); *Gladden v. Commissioner*, 262 F.3d 851 (9th Cir. 2001) (apportioning aggregate cost basis among land and related water rights based on relative FMVs); and reg. section 1.61-6(a), Example 2 (same).

[149] Rev. Rul. 79-431, 1979-2 C.B. 108; *see also* GCM 37971 (June 1, 1979) (a taxpayer's receipt of a transferrable right to sell a designated amount of milk at a premium price was not taxable, despite the existence of an established FMV).

7. Forks.

Rev. Rul. 2019-24 addresses the tax treatment of forks. The ruling is confusing because it refers to the receipt of a new token in connection with a hard fork as an airdrop. Hard forks change a blockchain's protocol in a manner that causes two chains to emerge, one generated by the nodes who want to make the change, and another generated by the nodes who don't. The blockchains share a history but diverge going forward. By contrast, airdrops are giveaways of new tokens that don't share any transaction history with the recipient's legacy tokens.

The IRS tried to clarify the revenue ruling in ILM 202114020 and FAQs, although it continues to conflate airdrops and hard forks. Here are the apparent takeaways of the IRS's guidance:

- Soft forks, which are mere software upgrades, are not taxable events because they do not result in "a diversion of the ledger."[150]
- When a blockchain undergoes a hard fork, taxpayers recognize ordinary income equal to the FMV of the forked currency if and when they have dominion and control over it.[151] Thus, when BTC forked into BTC and BCH, a holder of a noncustodial crypto wallet credited with BCH tokens had taxable income equal to the FMV at that time because the holder was able to sell, exchange, or transfer the tokens. By contrast, a holder of a custodied crypto wallet had taxable income equal to the FMV of BCH only when the custodian began to allow the holder to sell, exchange, or transfer it.

The IRS's conclusion that soft forks are nontaxable is appropriate because a soft fork does not result in the creation of a new asset.

Although reasonable minds can differ, the IRS's conclusion that hard forks are taxable seems misplaced.

First, when all nodes go along with a hard fork, the legacy token becomes defunct because no one is recording transactions in it anymore, and all its value should inure to the token traded on the upgraded blockchain. Noncontentious hard forks thus are substantively identical to soft forks, and the IRS should confirm that the two are treated consistently.[152]

Contentious hard forks also arguably should not be taxable. Because public blockchains use open-source code, contentious hard forks occur frequently and are part of the package that crypto investors buy. They are more analogous to a change by operation of the terms of the investment or the birth of new livestock, which generally are not taxable events,[153] than to the discovery of treasure trove, which is.[154]

Moreover, a contentious hard fork doesn't represent the creation of a new asset, only the creation of a new ledger. At the moment of the fork, the two resulting ledgers are indistinguishable, and each ledger's value going forward depends on facts and circumstances that often are still developing at the time of the fork, such as the perceived viability of each protocol, the number of nodes that adopt the new protocol and the speed with which they do so, the extent to which third-party exchanges and crypto wallet providers build online infrastructure to accommodate the forked token, and the rate of public adoption. Rapidly changing information often produces significant volatility in the

[150] IRS FAQs at A30.

[151] Rev. Rul. 2019-24, Situation 2.

[152] *Cf.* reg section 1.1001-1(a); *see also* IRS FAQs at A30 ("A soft fork occurs when a distributed ledger undergoes a protocol change that does not result in a diversion of the ledger and thus does not result in the creation of a new cryptocurrency."). Arguably, noncontentious hard forks do not result in a diversion of the ledger but do result in a new cryptocurrency.

[153] *See* reg. section 1.1001-3(c)(1)(ii) ("an alteration of a legal right or obligation that occurs by operation of the terms of a debt instrument is not a modification"); Rev. Rul. 86-24, 1986-1 C.B. 80 (taxpayer's basis in birthed calf equals premium paid for pregnant cow); *Metz v. United States*, No. 1446 (E.D. Ky. 1962) (when parties attributed no value to unborn foal, no basis was allocated to foal); IRS Publication 225, "Farmer's Tax Guide," at 61 ("Generally, your adjusted basis in raised farm products, such as grain or market livestock, is zero."); *see also* Rev. Rul. 63-225 (the receipt of rights to purchase stock and debentures of one corporation based on a taxpayer's ownership of stock in a second corporation was not a taxable event; stock and debentures received had a basis of zero); Rev. Rul. 79-431 (discount coupons received in connection with purchases of airline tickets do not give rise to taxable income and have a basis of zero); and GCM 37971 (receipt of the right to sell a designated amount of milk at a premium price and the receipt of a gas ration coupon was not taxable).

[154] Reg. section 1.61-14(a).

reported values of the forked token — and sometimes the legacy token — around the time of the fork. Thus, if the IRS continues to treat hard forks as accessions to wealth, different taxpayers are likely to report dramatically different amounts of gross income without more guidance on when and how to value the receipt of a forked token.

Finally, an increase in a forked token's value around the time of a fork might correspond to a decrease in the value of the legacy token as market participants adopt one or the other. However, that loss in value might also be temporary. If hard forks are accessions to wealth, then, as a policy matter, taxpayers should also be able to take a deduction for any corresponding reduction in the value of their legacy tokens.

A far more administrable approach, and one more consistent with the reality of open-source code, would be to treat a hard fork as a nontaxable event. Whichever token has the lower value on a specified date (for example, the date that the first new block on the forked chain is minted) should have a zero basis. Thus, in the case of the BTC-BCH hard fork, holders of BTC who received an equivalent amount of BCH would have assumed a zero basis in the BCH.

B. Entity-Level Tax Considerations

Hedge fund master funds usually are organized as partnerships for U.S. tax purposes. Although partnerships normally are not subject to entity-level tax, publicly traded partnerships are treated as corporations for U.S. tax purposes if less than 90 percent of their gross income is passive income.[155] Corporations are subject to entity-level tax if they are organized in the United States or are engaged in a U.S. trade or business.

Many hedge funds limit the number of permitted partners or the transferability of their interests to ensure that they are not PTPs.[156] Funds that do not want to limit their investors' liquidity instead try to ensure that at least 90 percent of their income is passive income.

Passive income includes gain from trading in (1) stocks and securities, or (2) commodities if commodities trading is a principal activity of the partnership.[157] There is no definition of principal activity.

As discussed in Section II.C.2.b.i, many virtual currencies may be commodities. A hedge fund whose activities are limited to trading virtual currencies that are commodities is likely to have only passive income. However, current income from illiquid staking does not appear to be passive income under section 7704(d), so it would be prudent for hedge funds relying on the passive income exception to limit their illiquid staking activities.

C. Inbound Tax Considerations

1. General.

Broadly, there are two U.S. tax regimes that apply to foreigners. First, foreigners are taxed like U.S. residents on income and gain that is effectively connected with a U.S. trade or business (USTB).[158] Second, foreigners are subject to a 30 percent withholding tax on U.S.-source income that is not effectively connected with a USTB.[159]

Most virtual currency investments are likely to give rise only to foreign-source income that is not effectively connected with a USTB.

2. U.S. trade or business.

a. Overview.

Foreigners who perform all their crypto investment activities outside the United States will not be engaged in a USTB. However, foreigners may have a USTB if a U.S. manager conducts a USTB on their behalf. Moreover, many hedge funds are organized as partnerships for U.S. tax purposes and admit foreign investors through feeder funds that are treated as foreign corporations for U.S. tax purposes. If a U.S. manager conducted a USTB on behalf of a partnership hedge fund, its foreign feeder fund would be subject to U.S. corporate tax on any income that is effectively connected with that USTB.[160]

[155] Section 7704.

[156] *See* section 7704(b) (defining PTP).

[157] Section 7704(d).

[158] Section 882.

[159] Sections 1441 and 1442.

[160] *See* sections 875 and 1446.

Although there is a significant body of case law on what constitutes a trade or business under section 162 (which is relevant to U.S. taxpayers in determining whether they are traders or investors), that section might not be precedential for section 864.[161] For example, the section 162 authorities appear not to impute an agent's activities to its principal,[162] whereas the section 864 authorities do.[163] Thus, U.S. managers who actively trade virtual currencies on behalf of foreigners likely will want to rely on the commodities trading safe harbor under section 864(b)(2)(B)(ii) to avoid a USTB, even if their trading activity is not sufficiently frequent, continuous, and regular to be a trade or business under section 162.[164]

b. Commodities trading safe harbor.

Under the commodities trading safe harbor, a foreigner who is not a dealer is not engaged in a USTB as a result of trading, or otherwise effecting transactions in, qualifying commodities in qualifying transactions.[165] Similar safe harbors exist for stock, securities, and derivatives.[166]

BTC and ETH are probably qualifying commodities, and there are arguments that other virtual currencies are also qualifying commodities. Swaps of virtual currencies that are commodities are probably qualifying transactions.

i. Qualifying commodities.

Qualifying commodities are those "of a kind customarily dealt in on an organized commodity exchange."[167] The regulations do not define commodities or organized commodity exchange.

Rev. Rul. 73-158, 1973-1 C.B. 337, provides that the term "commodity" should be understood in its ordinary financial sense, and includes all U.S.-exchange-listed futures and their underliers. The IRS later scaled back the breadth of the second conclusion by excluding securities futures from the definition, even though they trade on a U.S. commodities exchange.[168] Securities futures did not exist when the revenue ruling was published.

The IRS typically defers to the interpretations of other government agencies when determining a term's ordinary financial meaning.[169] The Commodities Exchange Act, which authorizes the Commodity Futures Trading Commission to regulate the trading of futures and options on commodities, defines commodities to include all goods and articles, except onions.[170] Consistent with that broad definition, the CFTC asserts that virtual currencies are commodities,[171] and the U.S. District Court for the Eastern District of New York has agreed.[172]

a. BTC and ETH.

BTC and ETH are probably commodities under section 864 because futures in BTC and ETH are listed on U.S. exchanges registered with the CFTC, including the Chicago Mercantile

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[161] *See* FSA 199947006 (suggesting that different tests might be appropriate).

[162] *See Mayer v. United States*, 32 Fed. Cl. 149, 156 (1994) (a taxpayer who grants discretion to an independent money manager can never be treated as engaged in the business of trading securities by reason of the money manager's activities because "the taxpayer must himself perform the activity characterizing the 'trade or business'").

[163] *InverWorld Inc. v. Commissioner*, T.C. Memo. 1996-301; and FSA 199947006.

[164] *See Clearmeadow Investments*, 87 Fed. Cl. at 526.

[165] *See* reg. section 1.864-2(c)(2)(i)(C) ("effecting transactions" includes "buying, selling (whether or not by entering into short sales), or trading . . . and any other activity closely related thereto (such as obtaining credit for the purpose of effectuating such buying, selling, or trading")).

[166] *See* section 864(b)(2)(A)(ii) (securities); prop. reg. section 1.864(b)-1(a) (derivatives); and the preamble to REG-106031-9, 63 F.R. 32164 (June 12, 1998) (until the proposed regulations are finalized, taxpayers engaged in derivative transactions may take "any reasonable position" under the trading safe harbors, including by relying on the proposed regulations).

[167] Section 864(b)(2)(B)(iii).

[168] *See* GCM 38369 (May 9, 1980) (Treasury bill futures are securities, not commodities).

[169] *See, e.g.*, Rev. Rul. 73-158 (products are commodities if futures on them are traded on an exchange regulated by the Commodity Exchange Authority, the predecessor to the Commodity Futures Trading Commission); and LTR 8540033 ("the fact that trading in cash settlement futures contracts is regulated by the CFTC rather than the Securities and Exchange Commission is evidence that a cash settlement contract should be considered a commodity in the ordinary financial sense"); *see also Farr v. Commissioner*, 33 B.T.A. 557 (1935) (defining short sale by reference to New York Stock Exchange practices).

[170] Commodities Exchange Act section 2(a)(1), 7 U.S.C. section 2.

[171] *See CFTC v. Coinflip Inc.*, CFTC Dkt. No. 15-29 (Sept. 17, 2015) ("Bitcoin and other virtual currencies are encompassed in the definition and properly defined as commodities."); CFTC, "Testimony of CFTC Chairman Timothy Massad Before the U.S. Senate Committee on Agriculture, Nutrition & Forestry" (Dec. 10, 2014) ("Derivative contracts based on a virtual currency represent one area within our responsibility."); and CFTC, "CFTC Backgrounder on Oversight of and Approach to Virtual Currency Futures Markets" (Jan. 4, 2018).

[172] *CFTC v. McDonnell*, 287 F. Supp. 3d 213, 228 (E.D.N.Y. 2018) (Virtual currencies "fall well-within the common definition of 'commodity' as well as the [Commodity Exchange Act's] definition of 'commodities.'").

Exchange.[173] They are unlikely to be securities because they are not debt or equity.

b. Non-consensus-layer tokens.

There are good arguments that many other virtual currencies are commodities "of a kind customarily dealt in" on a U.S. exchange, even if they are not referenced by futures contracts traded on a U.S. exchange. The IRS has interpreted "of a kind" liberally.[174] All virtual currencies are digital representations of value and thus arguably are of a kind with BTC and ETH. Some virtual currencies might also be of a kind with foreign fiat currency, which is a commodity. Moreover, the IRS has implicitly recognized that virtual currencies are fungible by allowing taxpayers to specifically identify tax lots.[175] Fungibility is a hallmark of commodities.

On the other hand, each of BTC and ETH figures into a blockchain's consensus layer. The IRS might assert that they are not of a kind with non-consensus-layer tokens such as stablecoins, LP tokens, MKR, AAVE, stkAAVE, OHM, cTokens, SUSHI, SNX, sTSLA, and sUSD. In that case, foreigners could be engaged in a USTB if a manager regularly trades those virtual currencies for them from within the United States, unless the virtual currencies are debt (which is unlikely), equity (which, as discussed, seems possible for some virtual currencies), or derivatives (which might be the case for sTSLA and sUSD). Debt, equity, and derivatives qualify for their own trading safe harbors.

ii. Exception for goods in commerce.

Commodities do not include "goods or merchandise in the ordinary channels of commerce."[176] It is not clear what that exclusion means in light of the conclusion in Rev. Rul. 73-158 that a sale of raw sugar by a sugar producer is a commodity transaction and that commodities include not only futures but their underliers. In any event, it seems highly unlikely that swapping a virtual currency places it in the ordinary channels of commerce.

iii. Qualifying transactions.

Qualifying transactions are those "of a kind customarily consummated" on an organized exchange, which the IRS has interpreted to mean "sufficiently analogous" to futures or other contracts customarily consummated on an organized exchange.[177] In Rev. Rul. 73-158, a sugar producer's sales of raw sugar were sufficiently analogous. The IRS also has concluded that forward contracts,[178] option contracts,[179] and spot contracts[180] are sufficiently analogous.

Spot contracts typically require next-day delivery and don't include an embedded interest component like futures. They thus are highly comparable to a swap of one virtual currency for another. Although the letter rulings that address spot contracts provide, without explanation, that the contracts are expected to settle in cash, it is unclear why physical settlement would change the letter rulings' conclusion. Physical settlement occurs on organized futures exchanges and was the norm before 1981, when the commodities trading safe harbor was enacted.[181] It also seems reasonable to assume that the raw sugar producer in Rev. Rul. 73-158 intended to make physical delivery on its sugar sales.

c. Avoiding dealer status.

The trading safe harbors are unavailable to a dealer. A dealer in stocks and securities under section 864 is someone "regularly engaged as a merchant in purchasing stocks or securities and selling them to customers with a view to the gains and profits that may be derived therefrom."[182] The term "dealer in commodities" likely has a correlative meaning.

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[173] *See generally* James R. Brown and Franziska Hertel, "Virtual Currencies and the Commodity Trading Safe Harbor," *Tax Notes*, June 18, 2018, p. 1731.

[174] *See, e.g.*, LTR 8813012 (Type 1 crude oil was a commodity even though futures in only Type 2 traded on a U.S. exchange); LTR 8850041 (foreign currencies were commodities, whether or not listed on a U.S. exchange); ILM 201132021 (for section 475, under which the definition of commodities appears to be the same as for section 864 except that commodities must also be actively traded, natural gas is a commodity, electricity "most likely" is a commodity, water is "probably" a commodity, and Fuel Source A "may be" a commodity).

[175] *See* Section II.A.1.c.

[176] *See* reg. section 1.864-2(d)(3).

[177] *See* LTR 8527041.

[178] LTR 8326013; LTR 8527041; LTR 8850041; and LTR 8813012.

[179] LTR 8850041.

[180] LTR 8850041 and LTR 8527041.

[181] *See* Allen B. Paul, "The Role of Cash Settlement in Futures Contract Specification," American Enterprise Institute for Public Policy Research, ch. 5 (1985).

[182] Reg. section 1.864-2(c)(2)(iv)(a).

On its face, the definition of dealer under section 864 is narrow in that it applies only to merchants who regularly purchase stocks, securities, or commodities and sell them to customers to earn a spread. Under that reading, swapping a token through an AMM can never make someone a dealer because anonymous peer-to-contract transactions never create a merchant-customer relationship.

In ILM 201501013, the IRS concluded that a person can be a dealer under section 864 if they act as a middleman or market maker, even in the absence of a special relationship with vendors or vendees.[183] That leaves open the possibility that some activities on an AMM could cause a foreigner to be a dealer. However, merely trading with high frequency does not cause someone to be a dealer.[184]

d. NFTs and governance tokens.

NFTs generally are unlikely to be commodities because they are not fungible. However, Uniswap v3's LP tokens might be commodities, even though they are technically NFTs, if other LP tokens are commodities.[185]

NFTs and fungible tokens that represent membership interests in an entity are probably stock or securities.[186] Under section 864(b)(2)(A)(ii), a foreigner who is not a dealer is not engaged in a USTB as a result of trading, or otherwise effecting transactions in, stock or securities.

Foreigners who invest in a partnership that is engaged in a USTB are themselves engaged in a USTB.[187] It is unclear how a foreigner would determine whether a token represents a partnership interest for U.S. tax purposes,[188] or whether that partnership is engaged in a USTB.[189]

Some NFTs might represent ownership in real estate.[190] Foreigners are subject to U.S. tax on gain from a sale of U.S. real property.[191]

The IRS has taken the position that notwithstanding section 864(b)(2)(A)(ii), regularly lending money through a U.S. agent is a USTB.[192] Accordingly, U.S. investment managers might be limited in their ability to make loans backed by NFTs on behalf of foreign clients.[193]

e. Staking as a U.S. trade or business.

i. Operating a node.

Most investment managers probably are not interested in operating their own staking nodes. That's for the best if they manage crypto on behalf of foreigners, because running a node could cause foreigners to have a USTB.

The determination of whether a foreigner is engaged in a USTB depends heavily on facts and circumstances, but the performance of personal services and other high-touch activities within the United States typically creates a USTB.[194] Operating a node entails running specialized software continuously over a stable high-speed internet connection. Nodes arguably perform the personal service of maintaining and updating the blockchain. The blockchain's payment of gas fees or tips to nodes supports the characterization of staking as a service.

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[183] *See* ILM 201501013 ("The reference to 'purchasing stocks or securities and selling them to customers' does not establish a conjunctive test pursuant to which a dealer must both (x) purchase stocks or securities from a specified class of persons identifiable as 'customers' and (y) sell those stocks or securities to a class of persons also identifiable as 'customers.' Rather, the regulation articulates a standard pursuant to which a dealer is a person that acts as a middleman or market-maker with respect to stocks or securities. Further, the regulations do not require that the middleman establish any particular prescribed or pre-existing relationship with a given purchaser in order for that purchaser to qualify as a 'customer' for purposes of the dealer definition. Rather, a middleman's vendees are customers per se whenever the middleman is seeking to earn a profit by reselling to such vendees.").

[184] *See* reg. section 1.864-2(d)(1) ("The volume of commodity transactions effected during the taxable year shall not be taken into account in determining under this subparagraph whether the taxpayer is engaged in trade or business in the United States.").

[185] *See* Section II.A.1.h.ii.

[186] *See* reg. section 1.864-2(c)(2)(i)(C) ("securities" means any note, bond, debenture, or other evidence of indebtedness, or any evidence of an interest in or right to subscribe to or purchase any of the foregoing).

[187] *See* sections 875 and 1446.

[188] *See* Section II.A.1.g.iii.

[189] *See* Section II.A.1.j.i.

[190] *See* Section II.A.1.h.iii.

[191] *See* section 897.

[192] *See* AM 2009-010 and ILM 201501013; *see also* Jason Schwartz and Alissa Kalinowski, "Rationalizing Lending Authorities," *Tax Notes Federal*, July 5, 2021, p. 65.

[193] *See* Section II.A.1.i.ii.

[194] *See* section 864(b) (a USTB "includes the performance of personal services within the United States"); and *Herbert v. Commissioner*, 30 T.C. 26 (1958) ("Where the activities of the nonresident alien are beyond the scope of mere ownership of real property, or the receipt of income from real property and are considerable, continuous, and regular," the alien is engaged in a USTB) (internal quotations omitted).

ii. Liquid staking.

If liquid staking is treated as a mere token swap, and the token disposed of is a commodity, liquid staking should not give rise to a USTB.[195]

iii. Illiquid staking and custodial virtual currency loans.

There are strong arguments that illiquid staking also does not give rise to a USTB.

First, illiquid staking might fall within the commodities trading safe harbor. Activities permitted under the safe harbor include not just buying, selling, and trading, but also "any other activity closely related thereto (such as obtaining credit for the purpose of effectuating such buying, selling, or trading)."[196] Arguably, illiquid staking is closely related to buying and selling because it is the primary means by which investors offset the dilutive effects of inflation on their crypto holdings.[197]

Second, even if illiquid staking were not statutorily protected, foreign-source income derived outside the active conduct of a banking or similar business generally is not treated as effectively connected with a USTB.[198] As discussed in Section II.C.3.b, there are good arguments that illiquid staking income is foreign-source.

A similar analysis arguably should apply when a custodial institution borrows account holders' virtual currency.[199] Lending virtual currency to a custodial institution in exchange for current yield is highly analogous to illiquid staking.

3. U.S. withholding tax.

a. Overview.

The United States imposes a 30 percent withholding tax on U.S.-source fixed, determinable, annual, or periodical income paid to foreigners, unless the income is effectively connected with a USTB, or a statutory or treaty-based exemption applies.[200]

Capital gain should not be subject to withholding tax because it is not FDAP income. Thus, swapping and liquid staking arguably do not give rise to withholding tax.

Illiquid staking appears to give rise to FDAP income.[201] As discussed below, that income is probably foreign-source and thus not subject to withholding tax.

b. Illiquid staking and custodial virtual currency loans.

When no statutory rule exists for determining the source of income, courts source it by reference to the statutory sourcing rule for the most analogous type of income.[202] Five likely analogies for illiquid staking and custodial virtual currency loans are (1) installment sales,[203] (2) open transactions, (3) NPCs, (4) dividends, and (5) qualified fails charges.[204] A sixth analogy might be interest income, although that analogy is more tenuous if stakes incur economic risks.[205]

Installment sale and open transaction treatment usually result in capital gain or loss,[206] which is not subject to withholding because it is not FDAP income.

NPC income is sourced to the residence of the payee[207] and thus should be foreign-source income when received by a foreigner.

Dividends are sourced to the residence of the payer.[208] If illiquid staking income were analogized to dividends, the deemed payer likely

[195] *See* Section II.C.2.b.

[196] Reg. section 1.864-2(c)(2)(i)(C).

[197] *Cf.* LTR 9041011 (effecting transactions in stocks and securities includes making securities loans).

[198] *See* reg. section 1.864-5(a) ("Except as provided in paragraphs (b) and (c) of this section, no income, gain, or loss of a nonresident alien individual or a foreign corporation for the taxable year from sources without the United States shall be treated as effectively connected for the taxable year with the conduct of a trade or business in the United States by that person.").

[199] *See* Section II.A.1.k.

[200] *See* sections 1441 and 1442.

[201] *See* Section II.A.2.b.

[202] *See Bank of America v. United States*, 680 F.2d 142, 147 (Ct. Cl. 1982) ("When an item of income is not classified within the confines of the statutory scheme nor by regulation, courts have sourced the item by comparison and analogy with classes of income specified with the statutes."); *see also Howkins v. Commissioner*, 49 T.C. 689, 695 (1968) (in the absence of sourcing rules for alimony, the court analogized alimony to interest).

[203] *See* Section II.A.2.b.i.

[204] *See* Section II.A.2.c.

[205] *See, e.g.*, FSA 199940007 ("The presence of a sum certain payable at maturity is a *sine qua non* of debt treatment under the Code.").

[206] *See* Section II.A.2.c.ii.

[207] Reg. section 1.863-7(b)(1).

[208] *See* sections 861(a)(2) and 862(a)(2).

would be foreign because it is not organized in the United States.[209]

Qualified fails charges generally are sourced to the residence of the payee.[210] By its terms, the sourcing rule applies only to loans of specific debt or passthrough instruments, but it arguably provides a helpful analogy. Qualified fails charges compensate a securities lender for the borrower's failure to redeliver the borrowed securities.

Interest income generally is sourced to the residence of the payer[211] but is U.S.-source if it is attributable to a U.S. branch. It is unclear how one would determine whether interest income paid by a decentralized pool is attributable to a U.S. branch.

D. Considerations for Tax-Exempts

U.S. tax-exempt organizations, such as private foundations and corporate pension funds, generally are not taxed on income earned from their tax-exempt activities but are taxed at regular corporate rates on their unrelated business taxable income.[212] An exception might apply for state pension funds and other government instrumentalities.[213]

UBTI means gross income derived from a trade or business regularly carried on that is not substantially related to the tax-exempt's charitable purpose.[214] Section 512(b) provides exceptions for interest, dividends, capital gains, and other types of investment income.

Tax-exempt partners are imputed a share of any UBTI earned by a partnership.[215] Thus, many UBTI-sensitive tax-exempts invest in hedge funds through foreign feeder funds, which block the imputation of UBTI.

However, not all hedge funds have foreign feeder funds. Investment managers have to consider the consequences of generating UBTI if they manage accounts for tax-exempts or manage hedge funds with unblocked tax-exempts.

[209] *See* Section II.A.1.g.iii.

[210] *See* reg. section 1.863-10(a).

[211] *See* sections 861(a)(1) and 862(a)(1).

[212] Section 511.

[213] *See* section 115.

[214] Section 512.

[215] Section 512(c).

1. Token swaps.

Capital gain is not UBTI.[216] Thus, swapping and liquid staking probably do not give rise to UBTI.

2. Airdrops.

Income from airdrops is not one of the types of investment income excluded from UBTI under section 512(b). Accordingly, if the IRS is correct that airdrops are taxable on receipt, tax-exempts engaged in a trading business risk incurring UBTI upon claiming airdrops.

The investment guidelines for many tax-exempt organizations prohibit UBTI. To avoid foot-faulting into UBTI as a result of an airdrop, tax-exempts (and investment managers acting on their behalf) would be prudent to avoid manifesting dominion and control over airdropped tokens. Airdrops are not income unless a taxpayer has dominion and control.[217]

If a tax-exempt inadvertently exercises dominion and control over an airdropped token, it might still take the position that the airdrop was not derived from a trade or business regularly carried on by it, because it did not regularly carry on the business of collecting airdrops and did not actively seek out the airdrop.[218]

3. Hard forks.

The IRS treats the receipt of new virtual currency in connection with a hard fork as taxable income.[219] Accordingly, as with airdrops, investment managers with UBTI-sensitive clients would be prudent to avoid manifesting dominion and control over forked tokens.

4. Illiquid staking.

Income from illiquid staking is not one of the types of investment income excluded from UBTI under section 512(b). Thus, if a tax-exempt is engaged in business as a crypto trader (either directly or through a fund treated as a partnership for U.S. tax purposes) and receives income from illiquid staking, it risks having UBTI.

[216] Section 512(b)(5).

[217] *See* Rev. Rul. 2019-24.

[218] *See* reg. section 1.513-1(c)(2)(ii) (to be regularly carried on, the activities must be conducted with "the competitive and promotional efforts typical of commercial endeavors").

[219] *See* Section II.A.7.

5. NFTs and governance tokens.

Under section 512(c), tax-exempt partners are imputed a share of any UBTI earned by a partnership. It is unclear how a tax-exempt would determine whether a token represents a partnership interest for U.S. tax purposes,[220] or whether that partnership generates UBTI.[221]

III. Conclusion

Decentralization poses risks to the fisc by eliminating financial intermediaries. Traditionally, those intermediaries have paid entity-level tax and played a crucial role in reporting information to their counterparties and the IRS.

But decentralization also offers a tremendous opportunity for Congress and the IRS. While public keys allow market participants to remain anonymous to each other, crypto tracking programs like those offered by CoinTracker and TokenTax offer visibility into every transaction consummated by any market participant, as long as you have their public keys.[222] Because practically all market participants enter the crypto ecosystem through a custodial institution, the IRS can obtain their public keys through broker reporting requirements.

The Infrastructure Investment and Jobs Act (P.L. 117-58), signed into law November 15, 2021, expands broker reporting obligations on Form 1099 to centralized crypto exchanges and other businesses "responsible for regularly providing any service effectuating transfers of digital assets on behalf of another person."[223] Beginning in 2024, it also requires anyone who receives more than $10,000 worth of digital assets in the course of their trade or business to report information about themselves and the payer on Form 8300.[224]

Thus, public adoption of blockchain technology could dramatically facilitate tax enforcement.

Congress and the IRS should seize this opportunity to rethink our current tax system. One possibility might be to allow all virtual currency and other crypto tokens to be marked to market each year. Congress also might have to raise individual marginal tax rates or introduce other revenue raisers if the proliferation of decentralized protocols reduces corporate tax collections.

The current lack of administrable tax guidance endangers the technological primacy of the United States. An uncertain regulatory landscape could encourage developers to relocate to other jurisdictions. The decentralized world doesn't care where they live.

In the meantime, I hope this report provides helpful guidance to market participants trying to understand how DeFi transactions are taxed and stimulates discussion among the tax professionals who will inevitably help shape future DeFi tax proposals. ■

[220] *See* Section II.A.1.g.iii.

[221] *See* Section II.A.1.j.i.

[222] *See* CoinTracker, "Track Your Crypto Portfolio and Taxes" (last visited Dec. 27, 2021); and TokenTax, "Calculate Your Crypto Taxes and File Your Return" (last visited Dec. 27, 2021).

[223] *See* section 80603(a)(3) of P.L. 117-58 (amending the definition of broker under section 6045).

[224] *See* section 80603 of P.L. 117-58 (amending section 6050I to apply to digital assets).