BanklessDAO

Taxation

Squaring the Circle: Smart Contracts and DAOs as Tax Entities

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You’re not a U.S. tax lawyer unless you know your shapes: a rectangle is a 'C' corporation; a triangle is a partnership; and an oval is a disregarded entity for tax purposes. Shapes are important because virtually any arrangement in which parties divide profits creates an entity for tax purposes, even absent a non-tax legal identity, and the entity’s tax classification could have meaningful consequences.

The tax law’s hair trigger for deeming entities to exist isn’t a big problem in the meatspace because parties with a regular course of cooperating off chain for profit typically need a legal entity for non-tax reasons, like liability protection or setting up a bank account. Once they choose a legal entity, the tax law’s default classification rules usually work well, and provide some electivity for when they don’t.

But things get more complicated on Ethereum because, while traditional tax principles treat many pooled smart contracts and decentralized autonomous organizations as entities, it’s hard to determine what kind of entities they are, who their equity holders are, and how they are supposed to pay taxes, file tax returns and information reports, and withhold on payments to others.

This article examines the problems with treating smart contracts and DAOs as tax entities, and discusses some legal structuring options for DAOs.

I. Pooled Smart Contracts

Curve's '3pool' is a smart contract that algorithmically quotes exchange prices for the stablecoins DAI, USDC, and USDT. Anyone can add liquidity to the 3pool in exchange for 3CRV tokens that represent a share of the pool. The pool's composition changes as traders swap stablecoins with the pool for a small fee. Normal tax principles seem to treat the 3pool as a business entity among the 3CRV holders, who own shares in an automated market-making business. But what kind of entity is the 3pool, and what are the attendant tax consequences to it and the 3CRV holders?

A. Application of Default Classification Rules

The tax law contains default classification rules for unincorporated joint ventures (JVs) like the 3pool. Unfortunately, the rules are difficult to apply to most on-chain arrangements.

1. Is the 3pool created or organized in the United States?

Tax regulations provide that a JV is domestic if it is created or organized in or under the laws of the United States or any state, even if it's also created or organized in a foreign jurisdiction. Presumably, if you could point to a single programmer (or group of programmers) who deployed the 3pool from the United States, it would have been created there. Alternatively, if all 3CRV holders were in the United States, the 3pool would probably be domestic because U.S. law would govern their relationships. Finally, if the 3pool operated under a traditional contract that specified which jurisdiction's laws applied in the event of a dispute, you could reason that it was organized in that jurisdiction. But there's no way to determine with certainty where the 3pool was deployed from or where 3CRV holders are located because the 3pool is governed by Curve, a DAO whose members are globally distributed and largely anonymous, and 3CRV holders' identities are similarly obscured by their public keys. And because the 3pool is an immutable smart contract, it has no choice-of-law provision.

2. Are all 3CRV holders' liability limited by statute?

Let's assume that the 3pool is a foreign entity for tax purposes because it is not created or organized in the United States or any state. By default, a foreign entity is a corporation for tax purposes if all members have limited liability, which tax regulations say is 'based solely on the statute or law pursuant to which the entity is organized.' A foreign entity is a partnership for tax purposes if any member has unlimited liability.

As a threshold matter, because we don't know where the 3pool is organized, we don't know whose statutes or laws to look at. However, there don't currently appear to be any statutes or laws in any jurisdiction that limit token holders' personal liability for actions taken by a smart contract, which suggests that the 3pool is a partnership, not a corporation. That said, it's doubtful the IRS contemplated anonymous equity holders when it drafted the default classification regulations. Anonymity is a powerful practical limitation on personal liability.

3. Is 3CRV readily tradable and is less than 90% of the 3pool's income passive?

Under the publicly traded partnership partnership (PTP) rules of the tax code, a JV that otherwise would be treated as a partnership is instead treated as a corporation if (1) its interests are readily tradable and (2) less than 90% of its gross income in any year is passive. You can trade 3CRV on Uniswap, so it's probably readily tradable. In addition, the 3pool's income consists of fees and dealer income, which aren't passive. So, even if the 3pool were initially classified as a partnership for tax purposes, it would probably be reclassified as a corporation under the PTP rules.

4. Are at least 50% of the 3pool's assets or 75% of its income passive?

U.S. taxpayers are subject to onerous penalties if they hold stock in a foreign corporation characterized as a passive foreign investment company (PFIC), unless they elect to be subject to pass-through tax on their share of the PFIC's net income and gain. (Alternatively, they can elect to pay tax on the PFIC's stock on a mark-to-market basis, but only if the stock is traded on a national securities exchange like the NYSE.) A foreign corporation is a PFIC if at least 50% of its assets or 75% of its income is passive. Passive is defined differently here than under the PTP rules. Tokens generally are passive assets, unless the corporation is a dealer in those tokens. There is a good argument that if the 3pool is a foreign corporation, it's a dealer because it stands ready to take either side of a trade (e.g., DAI for USDC or vice versa). If so, it shouldn't be a PFIC.

B. Tax Consequence

Almost all entities either (1) owe U.S. entity-level tax or (2) require their owners to pay U.S. tax on a pass-through basis. The only exception is a foreign corporation that is not in a U.S. trade or business (a USTB) and is not a PFIC or a controlled foreign corporation (CFC) with 10% U.S. shareholders.

	Domestic corporation	Foreign corporation	Partnership
Entity-level tax?	Yes	If in a USTB	If in a USTB and there are foreign partners
Pass-through tax for US taxpayers?	No	If a PFIC or a CFC with 10% US shareholders	Yes
Pass-through tax for foreigners?	No	No	If in a USTB

The 3pool might fall within the exception, but only if we make several convenient assumptions. Other pooled smart contracts would have to be analyzed case-by-case. Pooled smart contracts that don't fall within the exception are subject to tax payment and/or filing requirements that smart contracts don't — and can't — comply with.

1. Entity-level tax

We determined that the 3pool was likely to be a corporation under the PTP rules. If the 3pool is a domestic corporation, it's subject to US corporate income tax, currently imposed at a 21% rate, on its net income. The 3pool isn't paying corporate taxes or filing tax returns.

If the 3pool is a foreign corporation and is in a USTB, it's subject to the 21% U.S. corporate income tax plus a 30% branch profits tax, for a net 44.7% federal tax rate. Normally, a foreign dealer like the 3pool is in a USTB if it or its agents negotiate or execute transactions from within the United States. Deploying an algorithmic trading program from within the United States might give rise to a USTB. As mentioned above, it doesn't seem possible to determine whether the 3pool was deployed from within the United States.

2. Pass-through tax

Assuming the 3pool is a corporation, foreigners shouldn't be subject to pass-through tax. Assuming the 3pool isn't a PFIC, U.S. people shouldn't be subject to pass-through tax unless the CFC rules apply. A foreign corporation is a CFC if it is more than 50% owned by 10% US shareholders. In that case, each 10% U.S. shareholder is subject to pass-through tax. But because CRV3 holders are anonymous, it would be impossible to determine whether the 3pool is a CFC. In any event, the 3pool doesn't provide pass-through reporting to holders.

C. Exponential Complexity

DeFi allows market participants to conduct an ever-growing array of historically intermediated financial transactions. As a result, even if taxpayers received adequate guidance on how to treat the 3pool, they would probably have trouble applying that guidance broadly.

1. Unique positions

For example, what if CRV3 holders could determine the price ranges to which they provide liquidity, so that each position is potentially unique? That's how Uniswap v3 works, where liquidity providers' positions are represented by ERC-721 tokens. It's unclear whether general tax principles would treat each position as equity in its own entity or as a class of equity in one big entity.

Under a multi-entity approach, unique positions (those held by only a single person) likely would be treated as disregarded entities, meaning that the holder would be treated as directly engaging in the smart contract's market-making activities. Non-unique positions would be aggregated into a single entity. But liquidity providers are unlikely to know how many other people hold similar positions. Besides, without sophisticated chain analysis, it would be exceedingly difficult for most taxpayers to determine the exact transactions a smart contract was engaging in.

2. Bailment tokens

What about smart contracts that give liquidity providers bailment tokens (such as Aave's aTokens and Lido's stETH) representing their contribution, and stream fees to them currently instead of having the fees build up 'inside' the token? I've previously argued that those arrangements look more like pooled securities loans than entities, but I can't say whether the IRS would agree. If those smart contracts were instead treated as domestic corporations, the streamed fees would be dividends subject to 30% withholding tax when paid to foreigners. Smart contracts don't withhold. The streamed fees would also be taxable dividends to U.S. holders, who may be subject to PFIC penalties on the dividends if the smart contracts were treated as PFICs.

3. Composability

Finally, consider smart contracts like Yearn vaults, which algorithmically execute investment strategies using multiple other smart contracts. Traditional tax principles might require taxpayers to treat those contracts as parent corporations engaging in transactions with equity interests in multiple other corporations. U.S. token holders could be treated as owning multiple tiers of PFICs, resulting in onerous and likely non administrable compliance burdens. There could also be withholding tax obligations on payments between smart contracts.

D. Is This for Real?

The IRS's virtual currency FAQs provide that virtual currency is property for tax purposes. Tokens generally need to be used as a medium of exchange to qualify as virtual currency. Property includes equity, but the FAQs don't mention equity. Could we draw an inference that tokens are some kind of property *other than* equity if they are sufficiently liquid to be a medium of exchange?

Probably not. The virtual currency FAQs are based on a notice that the IRS issued in 2014, long before the IRS could plausibly have been expected to consider the tax implications of DeFi arrangements. (Uniswap, which kicked off a wave of DeFi innovation, launched in 2018.) The notice expressly acknowledges that 'there may be other questions regarding the tax consequences of virtual currency…that warrant consideration'.

You could still make a policy argument that pooled smart contracts shouldn't be treated as tax entities. First, either contract or state law determines how traditional entities' assets are distributed on liquidation. By contrast, pooled smart contracts can never be forced to liquidate, which makes them feel less like entities. The tax regulations arguably support this argument by assuming the existence of 'a joint venture *or other contractual arrangement'* for an entity to exist. Liquidity providers don't have a contractual arrangement. Second, saying that a pooled smart contract is an entity merely begs the question of what kind of entity it is, which suggests that a different, more administrable treatment should apply.

Finally, even if we determine what kind of entity a pooled smart contract is, decentralization and token holder anonymity will likely prevent anyone from being able to comply with the consequences of that determination. Decentralization and anonymity are non-tax-motivated features of Ethereum. It would be inappropriate as a policy matter to penalize people as tax evaders when the very nature of Ethereum is the cause of their noncompliance.

Although those may be good policy arguments, the IRS would probably be reluctant to disavow entity treatment absent congressional action. Under traditional tax principles, pooled smart contract tokens look more like equity than anything else, and it is the job of Congress — not the IRS — to define new categories of products. Moreover, disavowing entity treatment seems like it could allow many business activities traditionally conducted by financial institutions to avoid corporate tax, a potentially big problem for the fisc that the IRS is unlikely to feel comfortable addressing without lawmakers' say-so. Finally, it's worth considering that if pooled smart contract tokens weren't equity for tax purposes, they would likely default to co-ownership arrangements. Under co-ownership treatment, U.S. people would have to pay tax as if they had engaged in all of the smart contract's activities directly, something they are unlikely to be able to do without sophisticated chain analysis.

II. DAOs

DAOs use smart contracts to decentralize their governance and execution functions. At scale, they raise many of the same tax questions as pooled smart contracts.

A. Small Investment DAOs

Assume three friends, two U.S. and one foreign, decide to start an art NFT investment DAO. They spin up a Gnosis safe and program it to execute actions only upon a majority vote. Each contributes ETH or stablecoins to the safe in exchange for governance tokens. (Side note: U.S. people generally recognize taxable gain, but not loss, on contributions of property to entities in exchange for equity.)

1. Partnership treatment

The three friends clearly are in a partnership for tax purposes, and the governance tokens are its equity. U.S. tax law requires the friends to designate a partnership representative (typically one of them) to file tax returns on behalf of the DAO and deliver a Schedule K-1 to each of them annually reporting their share of the DAO's income. Each friend has to pay personal income tax on that income, whether or not distributed.

2. Withholding on foreigners

If the DAO is in a USTB, it has to withhold on net income allocable to the foreigner (again, whether or not distributed) at a 37% rate (or 21% if the foreigner is a corporation) and send the withheld amount to the IRS. The foreigner has to file U.S. tax returns and pay taxes on their share of income, and the withholding tax is credited against their ultimate tax liability.

Trading from within the United States is a USTB unless the things being traded are stocks, debt, or commodities. Art NFTs aren't any of those. So, the only ways for the DAO to avoid having to withhold on the foreigner are to (1) limit its activities to investing instead of trading or (2) avoid acting from within the United States. Both the distinction between investing and trading and the determination of whether an entity is acting from within the United States are highly fact-specific. In general, unless the DAO limits substantially all of its activities to long-term holding, it is likely to be in a USTB. And because two of the three decision makers are U.S. people, the IRS is likely to conclude that the DAO is acting from within the United States.

3. Publicly traded partnership risk

Because the majority of token holders are U.S. people, the DAO is probably treated as organized under the laws of the United States. (See section I.A.1. above.) As such, if its tokens are readily tradable, the DAO is likely to be recharacterized as a domestic corporation under the PTP rules because NFT gains aren't passive under those rules. So, to avoid corporate tax, the DAO will need to make sure its governance tokens aren't readily tradable.

4. TL;DR

The net result of all of the above is that the DAO will need to KYC its token holders and probably lock up their tokens to ensure that they are not readily tradable and that it always has contact information for each holder to send them K-1s. Each U.S. token holder will be taxed currently on their share of the DAO's income and, if the DAO is in a USTB, it will have to withhold on the foreign token holder, who also will need to pay U.S. tax currently on their share of income. Since tax law is more compatible with centralization, it may make sense for the three friends to wrap their DAO in a domestic LLC. That way, they can contractually appoint a partnership representative, prohibit off-chain transfers of token ownership, and enjoy the non-tax benefits of a legal wrapper, like protection from personal liability.

B. Big Investment DAOs

It’s easy for three friends to KYC themselves. But what if our hypothetical investment DAO wanted to admit many anonymous token holders instead of three friends?

I talked earlier about why it might be appropriate as a policy matter to distinguish pooled smart contracts from tax entities. An investment DAO with a broad distribution of anonymous members might try to make analogous arguments. First, like pooled smart contracts, DAOs can’t be liquidated under contract or state law. Governance tokens exist in perpetuity, although they can be sent to a burn address (an address for which no one has the private key). Wide distribution and anonymity prevent any single jurisdiction from being able to compel a distribution of assets. The tax regulations seem to assume the existence of a contractual arrangement for an entity to exist, and the relationship of DAO token holders is governed through smart contracts instead of a legal contract. Second, concluding that a DAO is an entity usually leads to a lot of often unanswerable questions. Third, compliance is likely to be impossible in any event without sacrifices that most DAO communities won’t accept.

Again, Congress — not the IRS — is the appropriate body to have to weigh the persuasiveness of those arguments. In the meantime, current tax law leaves token holders in the unfortunate position of having to decide between sacrificing the decentralization and anonymity permitted by blockchain tech, on one hand, and potentially failing to comply with U.S. tax law on the other.

1. Domestic corporate treatment

A broadly held investment DAO that wants to comply with U.S. tax law might structure itself as a domestic corporation by forming a domestic LLC or a state-law unincorporated nonprofit association and filing a corporate election with the IRS. Domestic corporate DAOs need to file tax returns and pay corporate income taxes each year. However, as long as they don’t pay dividends, they can allow their tokens to be freely tradable among U.S. and foreign people and don’t need to KYC their token holders. Of course, other legal regimes like the U.S. securities laws might prevent people from spinning up domestic investment DAOs without locking up their tokens and KYC-ing holders, but that’s a topic for a different article.

2. Foreign corporate treatment

A foreign corporation is unlikely to be a good tax option for investment DAOs with U.S. token holders. First, if the DAO is in a USTB, it will be subject to U.S. tax at a 44.7% rate. Second, if it is a PFIC (or a CFC with 10% US shareholders), U.S. people generally will be subject to penalties unless they pay tax on a pass-through basis, meaning that the DAO would have to give them annual reports. Art NFT investment DAOs are likely to be PFICs.

C. Protocol DAOs

The 3pool is governed by the holders of veCRV ('ve' stands for vote-escrowed), who are largely anonymous. Market participants get back one non-transferable veCRV token for every CRV token they agree to lock up in the Curve protocol for four years. Shorter lockups get them fewer veCRV tokens. The veCRV tokens confer three benefits: the Curve protocol streams them a portion of the fees paid to all Curve pools; they receive 'boosted' yield from Curve gauges, which stream CRV tokens to LP token stakers; and they get to vote on protocol operations and improvement proposals.

From one perspective, the Curve DAO looks like a traditional entity: veCRV holders share profits from a common enterprise and govern the workings of that enterprise. On the other hand, holders of veCRV, and of protocol governance tokens more generally, are often also users of the protocol (e.g., liquidity providers). If policymakers could be convinced that the 3pool and other pooled smart contracts shouldn't be treated as entities, maybe they could also be convinced that the DAOs governing those smart contracts also shouldn't be treated as entities. But for now, let's try to apply the law in what appears to be its current state.

1. Entity-level tax

Assuming that broadly held protocol DAOs with liquid governance tokens are entities for tax purposes, they are likely to be corporations under the PTP rules, since much of their income consists of non-passive fees. Lock-ups like those imposed by Curve are unlikely to prevent the governance tokens from being treated as regularly traded under those rules; veCRV can be readily acquired, and Convex has rendered them effectively liquid by pooling them into a smart contract and issuing transferrable cvxCRV to represent indirect ownership.

Thus, to avoid corporate tax, most protocol DAOs need to take the position that, if they are corporations, they are organized outside of the United States and are not engaged in a USTB.

2. Pass-through tax

If a protocol DAO is a corporation, foreigners can hold its governance tokens without worrying about being subject to U.S. income tax, but U.S. people have to worry about pass-through tax under the PFIC and CFC rules. Protocol DAOs treated as foreign corporations are likely to be PFICs, because most of their treasury assets (other than their own governance tokens, which are disregarded) are ETH, stablecoins, and other non-income-bearing tokens, and they aren't dealers in those tokens. As a result, U.S. people are likely to be subject to PFIC penalties unless they elect to be taxed on a pass-through basis. However, protocol DAOs typically don't deliver PFIC annual information statements that would permit the election.

Arguably, if holders need to stake their tokens (e.g., for veCRV) to vote and share profits, then unstaked tokens might be warrants instead of equity for tax purposes. In that case, the onerous PFIC rules wouldn't apply to them until they are staked. Staking would be treated as a nontaxable exercise of the warrants for physical delivery, and unstaking would be a taxable event that triggers PFIC penalties if the staked tokens have appreciated in value. U.S. people also would be taxed currently on any profits streamed to them, and could be subject to PFIC penalties on those amounts as well. Very generally, PFIC penalties are calculated by treating gain and big distributions as if they had been recognized ratably over the taxpayer's holding period. The taxpayer owes tax at the highest applicable marginal rate for gain allocated to each previous year in their holding period, plus an interest charge as if for a late tax payment.

3. Off-chain bridges

Protocol DAOs usually aren't wrapped in legal entities like investment DAOs, but might use legal entities to conduct off-chain activities on their behalf. Curve DAO uses a Swiss GmbH, but many DAO communities have found Cayman Islands foundations to be more flexible. Cayman foundations aren't legally required to have members, and their bylaws can bind directors to carry out DAO resolutions.

Cayman foundations are helpful for signing legal contracts and conducting other off-chain activities on a DAO's behalf. For example:

- The DAO might need to sign contracts with CEXes or other off-chain service providers, who might want to face a capitalized entity that can accept service of process in the event of a dispute.

- The DAO might need to form an entity to engage in token offerings. Many DAOs do token offerings through a BVI company wholly owned by a Cayman foundation. The British Virgin Islands have not yet adopted securities registration requirements for token offerings.
- If a developer contributes code to the DAO, the DAO might want the developer to contractually grant the DAO an unlimited, royalty-free license to use the code. A license granted to a legal entity is more likely to be enforceable than one granted to an amorphous swarm of token holders.
- The DAO might also want to own intellectual property like trademarks. Although Cayman law makes direct IP ownership difficult, Cayman foundations can hold IP through wholly owned subsidiaries.

Cayman foundations need to have at least one independent Cayman director, one supervisor (often the Cayman director's firm), and one Cayman-licensed secretary (often the same firm). The supervisor's role is to remove directors who breach their fiduciary duties to the foundation. The DAO can, and usually does, retain the right to remove and appoint directors and supervisors. DAOs often appoint one or more community members, or entities that the members control, as additional directors.

Bylaws usually specify that a Cayman foundation will sign contracts and engage in treasury management activities, like paying grants to developers and awarding bug bounties to white-hat hackers, at the DAO's direction. Sometimes the bylaws vest the directors with discretion to make decisions consistent with the foundation's stated purposes upon the advice of the DAO; more often, they explicitly require the directors to comply with any DAO instructions that don't violate Cayman law.

a. Tax treatment

Although Cayman foundations don't have legal shareholders, tax law treats all for-profit entities as having equity holders. DAOs are likely to be treated as the equity holders of any Cayman foundations for which they can remove or appoint directors, since the ability to remove and appoint directors is a core equity-like power.

Side note: charities and some other entities described in section 501(c) of the tax code don't necessarily have shareholders, and my law firm has helped organize charitable entities as DAO bridges on a pro bono basis. But that's a topic for a different article; the activities of protocol DAOs fall outside of section 501(c).

b. Entity-level tax

If a Cayman foundation were in a USTB, it would be subject to U.S. tax at a 44.7% rate. Other jurisdictions also could assert taxing jurisdiction over the foundation. Tax nexus is necessarily fact-specific, but there are some measures a Cayman foundation might take to mitigate the risk.

First, the foundation might set director voting rights so that one or more Cayman directors are always needed to reach a majority and directors from any single non-Cayman jurisdiction can't collude to block a vote. An example of a voting structure that satisfies those requirements would be one Cayman director with a three-sevenths vote, one U.S. and one U.K. director each with a two-sevenths vote, and a five-sevenths vote minimum to take any action.

Second, the Cayman foundation might avoid opening bank accounts in any non-Cayman jurisdiction except through a corporate subsidiary formed in that jurisdiction.

Third, the Cayman foundation might avoid hiring any employees, and instead take non-director actions only through independent contractors paid at arm's length. Many foundations enter into a services agreement with one or more companies owned by the core developers in their own jurisdictions.

Finally, the DAO might take practical measures to protect its on-chain treasury from being vulnerable to seizure, like preserving the anonymity of its multisigs or ensuring that they are geographically dispersed.

c. Pass-through tax

Under the PFIC rules, wholly owned subsidiaries are looked through to determine passive income. So, a Cayman foundation's treasury assets are likely to be counted toward a DAO's passive assets in determining whether the DAO is a PFIC.

d. TL;DR

Cayman foundations can help a protocol DAO do off-chain things, but they don't help it define its own tax classification. Most protocol DAOs implicitly take the position that, if they are entities for tax purposes, they are foreign corporations that are not in a USTB. If they are PFICs — as they are likely to be under this approach — U.S. holders are subject to onerous penalties on any gain from disposing of their governance tokens and possibly on profit distributions, too. They can't avoid the penalties unless the DAO sends them PFIC information returns, which DAOs don't do.

III. We Need New Laws

The tax rules of old aren't readily adaptable to a decentralized world. Counseling taxpayers to apply current law to blockchain-native arrangements is likely to result in broad noncompliance, either because it's impossible to figure out how to apply the law or because applying it yields non-administrable results. The crypto community should encourage policymakers to think creatively about how to tax on-chain activities. Maybe pooled smart contracts and widely distributed DAOs should be exempt from entity-level tax, and U.S. taxpayers should be incentivized to mark-to-market their crypto holdings each year. Maybe mark-to-market gains should be taxed at a higher marginal rate than current law requires, to offset any lost corporate tax revenues.

Pending sensible guidance, careful taxpayers will want to think about how on-chain arrangements are treated, and might consider trying to affirmatively structure into workable approaches, even if that means sacrificing some degree of decentralization.

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