

Concepts for Applying Fees and Taxes in an Unowned Decentralized Asset Exchange

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Scope

This is a brief whitepaper discussing two potential methods of how ownership over a Decentralized Autonomous Organization (DAO) can be divested to the public while redistributing service fees or taxes.

Audience	Those interested in decentralized finance and digital asset markets.
Lifetime	Superseded by release implementation documents.
Status	In preparation.
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Summary

This paper suggests possible concepts for an unowned asset exchange system while applying and distributing collected taxes or fees. The end result being that the fee or tax users pay approximates the agreed upon social value of the asset exchange, determined through decentralized consensus, and that ownership of the exchange has been divested to the public.

1 Overview

Decentralized finance systems are starting to appear or are under development on the Ethereum blockchain including Uniswap[ref], Kyber[ref] and Rogue[ref]. Uniswap rewards liquidity providers through a fixed rate tax per trade, while trust-based exchanges such as Kyber network enables liquidity providers to set a spread on trades but must pay a tax in the platform currency, KNC.

Fee and tax systems are useful and desired because they limit frivolous usage which could otherwise bloat the application and increase gas costs and prices. It has also been observed that the distribution of a platform currency to the public can create monetary incentives to drive network effects, but simultaneously limit access to the service by requiring currency ownership as a prerequisite.

If one's goal is to create an exchange which does not have a centralized owner, how can a fee or tax be set and redistribute those collections equitably within the limits imposed by the Ethereum system?

2 Time-based Harberger Tax

One could use a lease or Harbinger-like tax 'time token' allowing one to buy time on the DEX. This would stop users

from putting in long orders at frivolous prices. In this fashion the DEX could autonomously auction off the time tokens each period and redistribute the collected money to the previous period's token owners. Used and expired tokens could either be burned and re-minted or returned to the token pool supply. Token supply could be increased by some multiple each auction period based on the previous periods total time spent, and fee distribution could be proportionally assigned to token holders which utilized their time on the DEX rather than benefit equally those who bought time and didn't use it.

3 Price Voting Tax Disbursement

One could use a 'vote token' to set a fee price to list on the DEX through consensus where fees collected are later redistributed to holders of the vote token. This, more traditional fee, limits the number and duration of orders without creating a token based barrier to entry. In this fashion one could auction off vote tokens when the DEX first "opens", and the DEX could mint new vote tokens to those who utilize the DEX. Setting a flat fee rather than a percent tax, along with other rules about how and when disbursement happens, help to set minimum order values as well as reduce problems caused by small orders and dust.

4 Comparison & Issues

Changing tax or fee rates mean costs are not as easily known as with a centralized owner, but should approximate the truest social value of the exchange, without rents. Pressure to push rates higher or lower have to be analyzed and balanced, and absurd votes must be rejected. In either case, considerations must be made regarding the following: fee or tax oscillations, explosive takeover, mechanics for incentivizing engagement, ownership abandonment, dust, constrained versus unconstrained token supply, disbursement drawdown and sybil attacks.

4.1 Issues: Time-based Harberger Tax

By implementing a time-based Harberger tax, one would need the platform time token as a prerequisite for use of the service. This would potentially create a negative user experience with increased friction and restricts access to those who can pay the most unless supply of time tokens are constrained in a way to mitigate this. If token supply is capped this would also not create any monetary network effects other than for those who participate in the first auction of tokens. This is similar to the problem with auctioning domain names. Also worth noting, by shortening the time any order spends on the market one limits both the inherent network effect and potential added liquidity from more users.

4.2 Issues: Price Voting Tax Disbursement

If one were to implement a price voting tax disbursement, there would need to be considerations for the initial vote token issuance. If one were to auction tokens linearly by price committed one could raise a large amount from whales but inherently places votes in fewer hands. By issuing as a quadratic

vote auction, one would likely raise less but is more distributed and therefore has a better overall network effect. It is hard to see where the balance between these effects should be.

Asymmetric token ownership at launch is a concern. Let's assume the initial participants in the token auction are filling the role of the owner, or "provider" of the service as their incentive is to drive DEX adoption and charge a fee. A fee grace period would be needed to allow DEX users to accrue enough vote tokens to compete with the original auction providers.

5 Conclusion

Implementing an unowned and decentralized asset exchange with taxes or fees seems to be the next step towards purer DAOs, and divesting token ownership to create public goods after development may be an effective way to continue a cycle of public goods funding.

6 Final Words

We at Rogue have specific implementation details in mind, but we'd like to avoid prejudicing the broader discussion. Please let us know your thoughts on twitter @roguedex. We will be releasing a follow up whitepaper including implementations for such systems. If you like the work we do, we do it for free, so please consider donating to our Gitcoin grant. Even 1 Dai makes a huge difference during CLR rounds.

7 References

Uniswap, quadratic voting, "Why we went Rogue", "The Dark Side of 'Decentralized' Exchanges", network effects, decentralized, unowned, Ethereum