# QFinance: An Ethereum Protocol for Building and Joining Decentralized Investment Pools

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**Abstract.** Decentralized Finance (DeFi) protocols are quickly copying and innovating on top of established traditional market investment solutions, implemented permissionlessly and with varying degrees of decentralization. Most traditional market retail investors rely on industry/market ETFs to gain widespread exposure across different verticals. This maximizes small investor risk-reward and allows investors to ride along well performing sectors without picking individual winners. This becomes even more important in a brand new and ever-changing marketplace like cryptocurrencies and DeFi. The QFinance protocol is a solution to build, manage, and join ETF-like investment pools on Ethereum. They are fully decentralized, interacting with decentralized exchanges (DEXes) to facilitate asset swaps. The QFI governance token is distributed to QFinance protocol users and will allow voting on various governance mechanisms related to the protocol in the future.

## 1. Introduction

Exchange-traded funds, known as ETFs, are extraordinarily popular among traditional market retail investors. Developed throughout the 1980s, the idea has exploded since then to become the number one way that retail investors invest their money in the United States. And for good reason. The charts of SPX500 and Nasdaq (QQQ) ETFs show a virtually consistent growth pattern that would provide returns of many multiples over an average investment lifetime. Many companies grew and died in that time, but the structure of the ETF made it so that the investors are exposed to the rising tide of the entire vertical – in this case the SP500 or Nasdaq. Their investments performed remarkably well.

This *passive investing* practice has not yet made it to the cryptocurrency space (beyond buying and *hodling*). While many people have campaigned – and in some jurisdictions, successfully – for Bitcoin or Ethereum ETFs in the more traditional sense, most cryptocurrency investors do not invest in ETF-styled funds on native blockchains such as Ethereum. That is, most cryptocurrency investors buy and hold individual coins, whether from a centralized or decentralized exchange. While this will undoubtedly remain true for the foreseeable future, the lack of a clear and simple

method to buy and track a pool of related assets at once is a missing link in the ecosystem that can provide an option to non/semi-technically capable investors to earn exposure to Ethereum-based assets, many in the fast-growing DeFi space.

## 2.  Background

In 2016, ShapeShift, a cryptocurrency exchange released a new product called Prism. Prism operated rather simply – the user selects a collection of assets, determine their allocation within the portfolio, and deposits any amount of ETH currency. Prism would then create an investment portfolio of assets which the user could track against the initial ETH deposit. While the product was popular and had thousands of ETH deposited through it, the underlying infrastructure relied on its centralized exchange mechanism. This proved to be an Achilles' heel target which regulators eventually used to force ShapeShift to shut down Prism.

Since 2019, decentralized exchanges have taken an ever-growing amount of trade volume away from traditional centralized exchanges. A new base layer of technology and liquidity is rising to provide a permissionless and truly free marketplace to take hold. DEXes now perform the majority of cryptocurrency spot trading volume, and the average cryptocurrency investor is sufficiently knowledgeable in their use.

The establishment of this base infrastructure allows us to replace the role of ShapeShift's centralized exchange mechanism, which was the reason of its undoing. Uniswap, and other such decentralized exchanges can provide the liquidity and facilitate the swaps for us, which no government regulator or entity can stop without first stopping the entire Ethereum network.

## 3.  Swaps

To build an investment pool functionality, we must first have a mechanism to facilitate swapping one asset for multiple assets, and vice versa. This functionality is called the *multiswap router*. The Multiswap router's role is to receive a list of tokens and a list of integers representing the percentage share of the portfolio that should be added to this token.

This functionality is abstracted out of the investment pools to be a general Ethereum smart contract. The reasons for this are multiple:

|      |                                                                                                       |
| ---- | ----------------------------------------------------------------------------------------------------- |
| i.   | Efficient swaps as the contract is not required to maintain the required tokens in state.             |
| ii.  | Cheaper pool creation transactions since this code is removed and abstracted.                         |
| iii. | Separation of concerns allows for updates, bug fixes, and enhancements without updating the entire core protocol. |
| iv.  | Can be used as a separate application outside of the QFinance investment pools.                       |

In addition to providing the backbone of the pool functionality, the multiswap router will be available to Ethereum users without requiring them to go through an investment pool. This means that anyone who wants to swap one token for multiple outputs, or multiple tokens for one output token, can do so without requiring them to hold funds in an investment pool on QFinance.

In addition to providing the backbone of the QFinance investment pools, swapping multiple tokens in one transaction will save users from additional gas costs. It is both easier and cheaper to use QFinance Multiswap to facilitate multiple swaps.

The multiswap router takes a small 0.5% fee from swaps, which is still less than the cost savings one would receive from swapping for two or more assets. These fees will be used to buy the QFI token from Uniswap and provide liquidity. All fees earned by the router will cycle back to the QFinance ecosystem.

## 4. Pools

The investment pools (sometimes referred to as *QPools*) are quite simple in nature. They maintain the current breakdown of assets the pool holds in state and send this information to the router when funds are deposited. In return, they produce an ERC20 token (*QPDTs*) and send it to the depositor, which represent the ownership stake of the pool for the token holder.

QPDTs function similarly to Uniswap liquidity provider (LP) tokens. They are redeemable for the pool's holdings at a rate of $x = (X / T) * V$ where X is the account balance, T is the total supply of QPDTs for that pool, and V is the ETH value of the pool's holdings.

The purpose of QPDTs is more than just simple recordkeeping. These assets can be used and monetized in numerous ways. Some of these features are not yet in production. All features are:

    I.    Representing pool ownership.
   II.    Facilitating pool governance.
  III.    Staking and earning QFI.
  IV.    Collateralizing for a DAI loan.
   V.    Being eligible for future QFI airdrops.

These features are changing and growing as the protocol and community grows. Pool governance is used to vote on rebalancing mechanisms and practices, so that the pools are consistently managed and governed by those who are invested in them. The QFinance protocol distributes tokens to the community through staking solutions. QPDTs can be staked, as can QFI and QFI-ETH LP tokens from Uniswap. This way, QFI is distributed fairly to its community, not through a presale or other speculative means.

Anyone can join and leave a pool at any time. No members' nefarious actions, whether intentional or unintentional, should jeopardize any others' funds for any reason. In this way, the money is pooled together, but at no point do any QFinance users lose control of their funds. All pool code is open source and available for anyone's inspection. There is no mechanism for anyone other than the depositing user to retrieve funds from the pool unless that person holds QPDTs accordingly. This does create some unexpected outcomes such as tracking on-chain investment performance, for example.

## 5. QFI Token

As noted throughout this whitepaper, the QFI Token is the governance token for the QFinance protocol. The token was launched approximately one month after the launch of the QFinance protocol. It was a fair launch with no presale or initial offering sale. The token was airdropped to users who signed up, in addition to early users of QFinance pools. The public airdrop required users to make two separate Ethereum transactions, one to sign up and one to claim, in order to maintain some "skin-in-the-game" for the airdrop recipients. While many sold upon receiving the airdrop, many held their tokens as well.

The QFI token details are as follows:

- 1,000,000 capped supply coin, all are minted.
- 150,000 coins airdropped in initial airdrop.
- 50,000 coins airdropped in second airdrop (May 2021).
- 500,000 coins are to be rewarded via staking over 5 years. Approximately 200,000 to be distributed in 2021 and slowly falling to 0 over 5 years.
- 100,000 team tokens. 50,000 given on launch, 50,000 after 1 year. The launch tokens have been used to provide liquidity on Uniswap V2.
- 50,000 supporter tokens. 25,000 give on launch, 20,000 after 1 year.
- 150,000 more coins to be airdropped for users of the QFinance protocol.

Of 1,000,000 total supply, the current circulating supply is approximately 500,000 as of August 2021.

## 6. Staking Pools

The purpose of the QFI token is to provide governance and rewards for the members of the community. The staking pool reward mechanism is designed to distribute QFI back to the users who know the protocol best. This way, users gain an ownership stake of the protocol they are making use of.

The staking pools in QFinance are:

- QFI staking
- QFI-ETH Uniswap LP V2 token staking
- QPDT staking

## 7. The Path Forward

The long-term goal of QFinance is to create a protocol that can provide a similar value to the cryptocurrency and decentralized finance industry that ETFs provide to retail investors on traditional stock markets. Curated assets, organized into verticals, spread across major players or up-and-comers, less risk and more confidence in long-term growth.

In addition, the team behind QFinance intends to create a feedback loop which provides users of QFinance with QFI to be able to make decisions. It is an ETF-solution that is for the people, and by the people. Depositors get all the benefits of traditional market ETFs while also incorporating the greatest parts of decentralized finance – decentralization, permissionless, extendable, and integratable.

The main integrations that we are working towards or have accomplished are: front-end integrations to provide different avenues and interfaces for swaps and pool deposits/withdrawals, on-chain integrations for lending and yield generation, and cross-chain solutions to add non-Ethereum assets to our offerings.

## 8. The Team

The team at QFinance has chosen not to publicly link their identities to the project at this time. However, all the work and code is transparent and profiles on GitHub can be viewed. While the QFinance team is not public at this time, anonymity is not a long-term goal or focus of ours.

The team consists of three developers. Two of them focus mostly on Solidity, with one focused mostly on the front-end interface. On operations there are three people: one actuary and market expert, and two marketing and partnerships people.