



RESEARCH REPORT

Permissioned DeFi: Paving The Way for Exponential Growth

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TABLE OF CONTENTS

03	Foreword	
04	Executive Summary	
06	Introduction	
07	Why DeFi-Based Lending Among Institutions is Needed & Which Protocols Fit The Need For Institutions	
10	Three Leading Permissioned Lending Protocols And Their Teams	
12	Different Approaches To Successful Money Market Protocols	
	Rates (APY)	18
19	Comparing Token Economics and Governance Process	
	Tokenomics	19
	Governance Process	25
28	Valuation Ratio (\$USD)	
31	Overview Of Risk Mitigation Process Per Risk	
	Smart Contract Risk	31
	Counterparty risk	34
	Custodial risk	34
	Organizational risk	35
	Liquidity risk	36
	Default risk	36
38	How Institutions Can Access These Opportunities	
40	Notable Mention Of Companies And Networks Regarding Regulations & Compliance	
	Maker Dao KYC/AML Research - Staying Ahead Of The Curve:	40
	Compound Treasury (rDeFi) - Established Institutional Offering:	42
	Fireblocks - Secure Custody With Compliant DeFi Access	43
	Coinchange - DeFi Opportunities With Regulatory Compliant Structure	44
45	Concluding Thoughts	

FOREWORD

Coinchange and its Research department is happy to share our Research report on Permissioned DeFi, which will be the first of a long series that the Coinchange research team will produce throughout this year. The approach taken has been both to educate Coinchange internal stakeholders as well as produce a description of data found while trying to provide actionable insights as a conclusion. Through these research reports we aim to shed light on sectors, protocols and varied aspects of the crypto space in order to allow a broad spectrum of new, and existing participants to easily understand trends and opportunities available.

As part of our continuous improvement process, feel free to share via email any research subject you would like to have covered. Also we would gladly appreciate your feedback being sent to the following mail address:

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EXECUTIVE SUMMARY

Each of the three lending protocols analyzed in this report has a unique value proposition - they all take a different approach to both onboarding new institutional clients, and how loans are distributed.

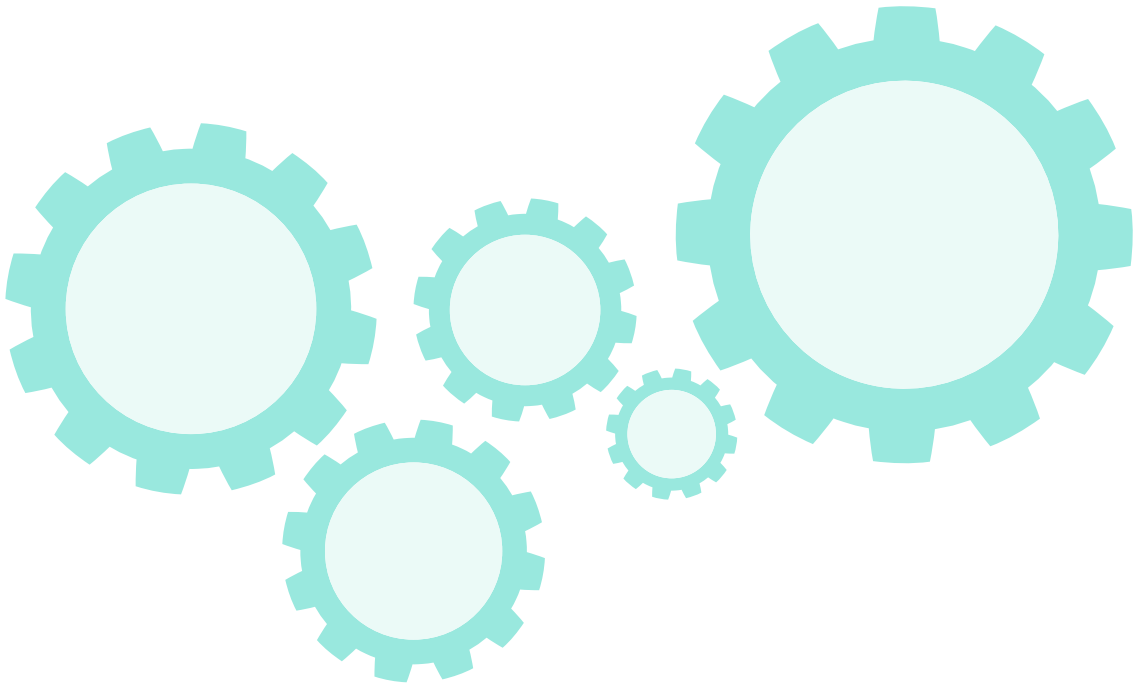
AAVE Arc delegates the onboarding process to trusted and reputable third parties like Fireblocks (soon Securitize and SEBA). This allows them to separate the (off-chain) permissioned aspect of rDeFi from their flawless, industry-leading AAVE decentralized lending protocol. Borrowers are shown current interest rates which are determined algorithmically based on supply/demand of a respective liquidity pool on their protocol.

Maple Finance similarly delegates the approval of loans to a trusted third party called a Pool Delegate selected by the protocol team themselves to assess the reputation and credit worthiness of a potential borrower. However, each loan and the terms of those respective loans are assessed on an individual basis by the selected Pool Delegate, following their own strategy.

Alkemi Network, meanwhile, onboard and whitelist institutional clients thanks to their dedicated team. Alkemi Network process takes less than 72 hours to complete and, like AAVE Arc, allows users to take out loans with algorithmically pre-determined interest rates from any of their liquidity pools. Both AAVE Arc and Maple Finance were able to attract a large number of borrowers; however, Alkemi Network which is still young and as such has not yet differentiated itself enough to find a good product market fit compared to large, existing players. Alkemi Network tries to differentiate itself with its permissioned pool being incentivized with token rewards and the borrowing/lending rates are higher than what competitors offer.

The [TVL of Alkemi Network has been on a steady downtrend from over 6,000 ETH \(\\$22M USD\) since](#) data was tracked on DeFiLlama in October 2021 to approximately 3800 ETH (\$12.5M USD) as of Feb 28th, 2022. Competitors AAVE and Maple Finance have not seen TVL decrease by anywhere near this much - [AAVE went from \\$12.73B USD to \\$11.94B USD](#) and [Maple finance increased their TVL from 180M USD to approximately 661M USD in that same time frame](#). On the other hand the last update of AAVE Arc TVL was \$42M USD as per Fireblocks team comment at the time of writing, which started onboarding institutions in January 2022.

On the other hand, the teams behind established DeFi protocols like Maker DAO, responsible for the decentralized stablecoin DAI, Compound Finance, cryptocurrency wallet Metamask and yield aggregator Coinchange Financial are also taking unique approaches to the process of developing solutions for the increasing number of institutional clients who are entering the market due to increased regulation, which in turn bring clarity for investors.



INTRODUCTION

The advent of Decentralized Finance has begun to provide an efficient alternative to the current tightly regulated and opaque financial system. However, there are a lot of justified concerns over security risks due to the open accessibility for anyone to use the various networks and the pseudonymity of identity in these transactions.

Impending regulation, coupled with institutional players who need to follow strict compliance processes, interested in deploying their large pools of capital into the ecosystem, have created the perfect storm for the creation of rDeFi (regulated DeFi), or permissioned DeFi, to deal with some of the current notable setbacks.

In this report, the Coinchange Intelligence team will analyze three different KYC/AML compliant rDeFi lending protocols (Alkemi Network, AAVE Arc, and Maple Finance), and the unique approaches each one is taking to set themselves apart in this rapidly evolving market.

In addition, we analyzed how certain established DeFi protocols like Maker DAO, are preparing themselves to become regulatory friendly, and the steps other protocols like Compound and Metamask (wallet), have already taken to meet regulation and compliance guidelines.

DEFI-BASED LENDING

Revolutionary innovation and growth leads to revolutionary investment returns and opportunities which is enticing to the ever increasing institutional capital trying to access these markets.

Banks and other traditional financial services firms currently have huge operating expenses when it comes to servicing clients. For example, the Bank of England recently published a report stating that financial institutions spend approximately [\\$20 billion dollars each year](#) in trade processing, which, via the use of blockchains, [can be reduced by up to 80%](#). These high infrastructure costs limit the innovation that takes place from traditional financial services firms.

DeFi is currently well positioned to disrupt our traditional financial infrastructure with innovative, new financing options because the ecosystem does not use any of the TradFi structures to build its alternative financing structures. Via smart contract enabled by blockchain technology, many processes are automated with lines of code in DeFi, and in turn eliminate many 3rd parties that are involved in TradFi structures which allow for higher efficiency leading to reduced cost. The infancy of DeFi and its lack of existing regulated infrastructure solutions provide a fertile ground to rethink the user experience in the capital markets lifecycle. This helps create new financial primitives, alternate financing structures and yield generating opportunities that were not possible in TradFi.

[Neil Chopra from Fireblocks](#) stated during his presentation regarding Permissioned Defi at The North American Bitcoin Conference on January 27, 2022 that the growth of TVL draws the eyes of the regulators and the attention of bad actors. In addition, DeFi migrating away from traditional counterparty risk when dealing with banks, to dealing with protocol and technology risk opens the floodgates for the above to be exploited by bad actors. For these reasons, there are barriers to entry for traditional players trying to get into DeFi.

There is also a need for security - institutions investing large amounts of capital want to ensure there is secure infrastructure and platforms to hold, transfer, and settle these assets. From a compliance and risk perspective, institutions, especially non-crypto-native firms, need guidance on managing the risk profile of the technology, protocols, and platforms that make up this sector.

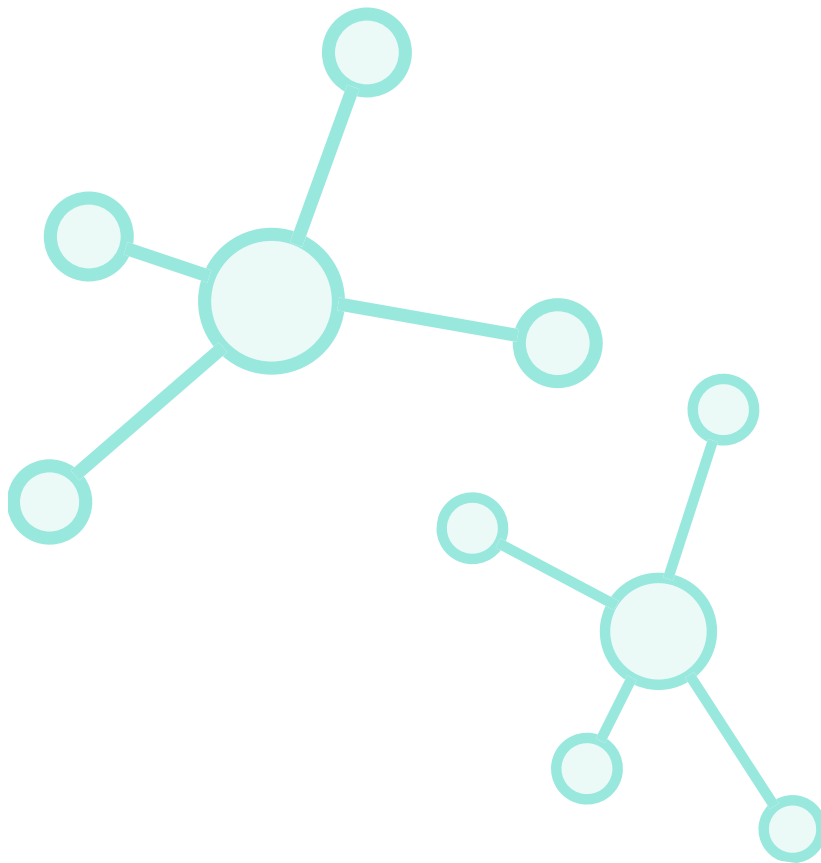
Seeing a flip of retail and professional investors in the DeFi ecosystem and where the investment capital is coming from - retail to institutional side which is a product of maturation of the ecosystem leading to creation of enterprise grade infrastructure and the ability to effectively and securely manage these digital assets within a secure ecosystem.

Alameda Research, one of the leading market makers in the crypto ecosystem, uses large amounts of stablecoins for their trading activities and finds that they can get cheaper and faster financing by using credit from decentralized lending protocols as opposed to banks. Sam Trabucco, the co-chief of Alameda stated, [“The flexibility that comes from a decentralised, on-chain lending platform like this one \[Maple Finance\] helps Alameda adapt to \[a fast growing\] landscape.”](#)

The firm is currently borrowing approximately \$100M of loans in total from the permissioned DeFi lending protocol Maple Finance, and [wants to scale to \\$1B of active loans within this calendar year.](#)

Maple Finance is not the only protocol absorbing all the institutional capital flooding in. Established crypto lending protocol AAVE has recently launched their regulated offering called AAVE Arc together with Fireblocks as the whitelister and have already onboarded thirty firms, including crypto market maker and ecosystem partner GSR. [Rich Rosenblum, co-founder and president of GSR stated](#) that “As a result of Fireblocks making institutional access to DeFi pools possible, companies like ours are able to create new products for our customers.”

Indeed, Fireblocks is one of the foundational players within the Permissioned DeFi ecosystem having been the first company to help create a fully permissioned pool with Aave. Fireblocks is the first fully approved whitelister for Aave Arc meaning they are conducting KYC (Know-Your-Customer) and KYB (Know-Your-Business) checks on borrowers, lenders and liquidators in the pool. Fireblocks created the frameworks for KYC checks, onboarding processes and established the secure rails for easy on and off ramps from the pool. Fireblock also runs the process for new institution onboarding and is ensuring there are enough borrowers, lenders and liquidators to facilitate an open, liquid and efficient market.



3 LENDING PROTOCOLS

Established DeFi lending protocol, AAVE has released their new product AAVE Arc to provide institutional investors who face stringent regulatory requirements with access to the world of DeFi in a limited capacity. AAVE Arc will offer private pools of funds where only participants who pass know-your-customer procedures by approved whitelisters can enter, on the lending / borrowing sides, and as a liquidator ([see slide 11 of deck provided by Fireblocks](#)).

Fireblocks team shared that, at the time of writing there are 57 Companies that have been approved/whitelisted by them to use the platform. Another 27 companies are expected to get approved/whitelisted in the coming months.

AAVE was founded on May 1, 2017 by Stani Kulechov in London, England as ETHLend. The Protocol's whitepaper was released on [June 15, 2017](#) and the subsequent LEND token sale happened on November 25, 2017. LEND began trading on exchanges on January 31, 2018 before rebranding & changing the token name, and related tokenomics, to AAVE in October 2020. Notable investors included Three Arrows Capital, Framework Ventures, and [Blockchain Capital](#). The TVL of assets in v2 across chains sum to over \$20 Billion USD at the time of writing. Aave Arc TVL is \$42.7m shared by Fireblocks but might be outdated already.

Taking note of who the investors and backers are is critical as venture capital firms do extensive due diligence before deploying funds and want to grow their public reputation by being both right and early to the most successful investments in the space.

“I think the larger vision of the Aave Arc market is to create a more comfortable risk appetite for institutions to participate in decentralized finance before, for example, having the risk appetite to participate towards the permissionless decentralized finance, which is the bigger vision offering,” said Kulechov.

Maple Finance is a permissioned DeFi lending protocol offering undercollateralized USDC stablecoin-based loans. [Maple finance increased their TVL from 2M USD from their launch in May 2021 to approximately 661M USD](#) as of 28th Feb 2022.

Sid Powell and Joe Flanagan are co-founders of Maple Finance. They’ve both worked in traditional finance where they participated in \$3b+ of corporate bond issuance, established and ran a \$200m+ bond funding program, and managed finances at a commercial lending FinTech company. The protocol was able to [raise \\$1.4M from reputable Crypto VC funds Polychain Capital and Framework Ventures](#). In addition, AAVE founder, Stani Kulechov, was also one of the seed investors for the protocol.

Alkemi Network, similar to AAVE, is a decentralized and overcollateralized lending protocol built on Ethereum, catering specifically to institutions and those that are required to follow regulatory and compliance guidelines to onboard them to the world of DeFi. “Earn” was launched in closed beta with a primary, permissioned pool of digital assets, ‘Verified’, accessible only to KYC / AML approved participants. A separate, secondary permissionless liquidity pool, called ‘Open’, is also available for non-KYC / AML approved users.

Currently there are roughly 150 retail and institutional clients using the permissioned pool. Lending and borrowing rates are higher in the permissioned pool as established during the call with a representative from the Alkemi Network team. Those increased rates are largely driven by token reward incentives from Alkemi Network in order to incentivise usage of the ‘Verified’ product. There is approximately \$10M TVL in the permissioned pool and \$2.76M TVL in the public pool at the time of writing.

MONEY MARKET PROTOCOLS

Lending and borrowing in the cryptocurrency space is accessible through either DeFi protocols such as Aave or Compound or by Centralized companies (CeFi) like BlockFi or Celsius. CeFi operates in a very similar way to how traditional banks operate and why these firms are often called crypto banks - BlockFi takes custody over deposited digital assets and lends them out to either institutional players such as market makers or institutional traders in order to payout the lending interest to users. It also allows loans to be taken out with varying duration and Loan to Value which impact the borrowing interest.

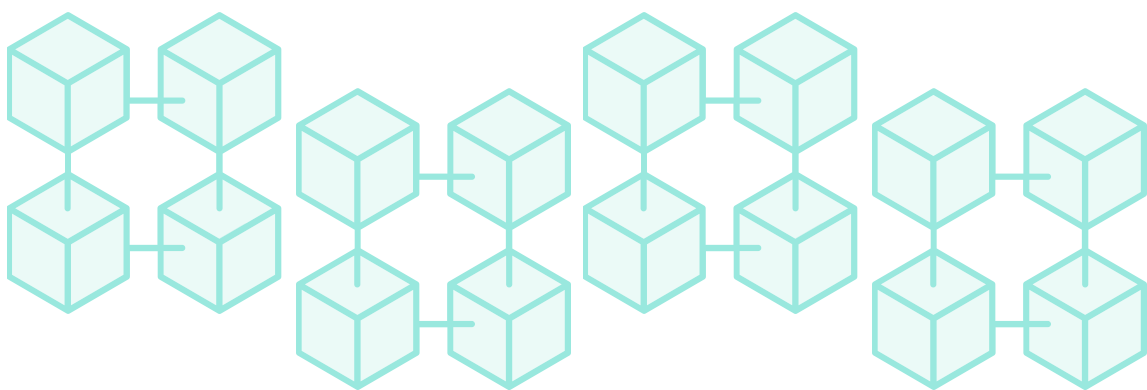
These centralized platforms, although reliable, have the same problems as centralized cryptocurrency exchanges in the sense that user deposits can be lost by hacks or other forms of negligence, mainly: cyber breach, internal theft, technological error, technological product failure, counterparty failure. CeFi goes against one of the key tenets of cryptocurrency advocates - self custodying your assets. DeFi protocols allow users to borrow or lend their funds in a completely decentralized, peer-to-peer way while maintaining full custody of their digital assets.

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Somewhere in between lie the hybrid platform which is centralized and interacts with DeFi, we call them CeDeFi companies/platforms. Coinchange is one of them and is able to get the best of both worlds for the end user. Providing best in class custody of crypto assets through its usage of Fireblocks' custodian services, and also allowing for users to participate in DeFi through its Earn product which makes direct use of strategies leveraging dApps.

DeFi lending protocols are based on smart contracts that operate on open blockchains like Ethereum and are the reason why DeFi is accessible to everyone, unlike traditional bank loans, without needing users to provide personal details or trusting someone else to hold a user's assets. DeFi applications also have the benefit to be 100% transparent and predictable which make them dependable when it comes to accountability of information. They can be monitored and action can be taken depending on transparent changes happening.

Aave Arc and Alkemi Network are two main lending protocols available in rDeFi. Both of the protocols work by creating money markets for particular tokens such as ETH, stable coins like DAI and USDC, or other tokens like LINK or wrapped BTC. Users, who want to become lenders, supply their tokens to a particular money market and start receiving interest on their tokens according to the algorithmically calculated current lending APY. The different interest rates for both borrowers and lenders are determined algorithmically based on the ratio between supplied and borrowed tokens in a particular smart contract. In addition, governance tokens are distributed and boost the lend and borrow APY as incentives to increase both volume and liquidity to in turn make the protocol able to bootstrap rapidly.



Supplied tokens are sent to a smart contract address known as a pool and become available for other users to borrow. The smart contract, in exchange for the supplied tokens, issues other tokens that represent the supplied tokens plus interest. These tokens are called liquidity provider tokens, more specifically aTokens in Aave, and they can be redeemed for the underlying tokens from the smart contract + interest accrued over the period. The borrowers will need to overcollateralize their loan position in order to be able to access the token being lent out available in the pool. The borrower will receive tokens as proof of the borrowing position which will account for the interest owed over the period.

Unlike traditional bank lending, most DeFi loans issued at the moment are overcollateralized. This means that a borrower has to supply collateral worth more than the actual value of the loan he wants to take out. The collateral is held by the smart contract and is at risk of liquidation in the event that the borrower is not able to repay the debt or does not manage its margin call. This offers several advantages compared to traditional undercollateralized lending such as not having to sell your underlying tokens and avoiding the creation of a taxable event. It also prevents the lending protocol from becoming insolvent in the event of black swan event leading to massive loan liquidation.

Users are limited to how much they can borrow based on how much liquidity is available on the market in the respective smart contract and what is the collateral health factor of their supplied digital assets. Stablecoins like DAI and ETH, for example, have a collateral factor of 75% and 80% respectively on AAVE. This means that up to 75% of the notional USD value of the supplied collateral in DAI can be used to borrow other tokens.

One notable feature of DeFi lending is that there is no limit to how long a user can have a loan open as long as the borrowed amount is lower than the collateral used to take out the loan multiplied by its respective collateral health factor. On AAVE for example, the health factor is calculated as the collateral value multiplied by the liquidation threshold divided by the notional loan amount in ETH. When the value of the collateral falls below the required collateral health factor, the user has their collateral liquidated by a liquidator to absorb the loan to repay the borrowed amount.

Let's consider the following example - a borrower deposits 10 ETH as collateral to borrow 5 ETH worth of DAI. Due to market volatility, their health factor, unfortunately, falls below 1, and that specific loan is eligible for liquidation as coded in the smart contract. A liquidator repays up to 50% of the borrowed amount, DAI worth 2.5 ETH, and as a result, the liquidator claims the collateral from the liquidated user, which is ETH, with a liquidation 5% bonus. In other words, he claims the 2.5 ETH + 0.125 bonus ETH for repaying 2.5 ETH worth of DAI.

This liquidation mechanism can have profound effects during periods of heavy market volatility, when the USD value of digital assets provided as collateral can go down significantly. [For example, ETH experienced a -40% price swing on May 19th, 2021, which resulted in \\$170M USD worth of liquidations \(against \\$13B in total collateral\) in a single day, the largest in AAVE's history.](#)

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**Users are given
complete sovereignty**
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With regards to the liquidation scenario explained above, the event could have been mitigated by depositing more collateral BEFORE the user's health factor dropped below 1. This is a key feature of DeFi lending, where users are responsible to actively monitor and manage their positions themselves, unlike traditional finance. Users are given complete sovereignty and freedom to determine what level of risk is appropriate for their appetite on an uncensorable lending platform.

In addition to the collateral factor described above, borrowers on both Alkemi Network and Maple Finance must also pay a Loan origination fee of 0.1% and 1% annualized respectively when opening a new position. There are no fees to deposit or withdraw funds from either of the protocols analyzed in this report. Maple Finance also has Ongoing Fees on open positions for borrowers - the borrowers just pay the interest rate on the loan, and then that interest rate is split between the liquidity providers (80%), Pool Cover (10%) - which is the first loss subordinated capital reserve, and the Pool Delegate (10%) - in exchange for their management and administration of the pool.

As previously mentioned, there are a lot of justified concerns over security risks due to the open accessibility for anyone to use the various networks and the pseudonymity of identity in these transactions. As a result, the permissioned nature of the protocols analyzed in this report gives access only to institutions who meet the whitelisting guidelines as discussed later in the Accessibility section of this report.

As the whitelisting process introduces a lot more trust to the decentralized lending space as we know who the borrowers are, Maple Finance decided to use this fact to their advantage and offer undercollateralized loans with more rigid terms and loans issued in USDC, and soon both BTC and ETH as well.

Pool delegates on Maple Finance act as intermediates between lenders and borrowers. They seek to attract investment capital to their pool which will be provided as funding to a network of premium borrowers through their self-determined strategy and underwriting process. They negotiate the terms of each loan individually and perform due diligence for borrowers by reviewing reputation, proficiency, and performance to evaluate the specific terms of those respective loans.

Loans are funded from the managed pool once the interest rate and collateral ratio are negotiated by all parties. On top of the interest on the loan, pool delegates are also paid establishment fees by the borrowers for the due diligence check and on-going fees as a running fraction of the interest yield.

This undercollateralized model is a net benefit for everyone as institutional borrowers gain access to efficient financing by leveraging their reputation and do not have to worry about potential liquidation or margin calls.



Borrowers who wish to take out a loan on Maple Finance are required to create a profile, summarize their desired loan terms, and submit a “request for quote” (RFQ) to the Pool Delegate of their choosing for review. If there is mutual interest for the borrowers’ proposed loan terms by the Pool delegate, they will proceed to conduct further due diligence to ensure the borrower is capable of repaying the credit. The loan smart contract is launched by the borrower once the terms are settled by both parties which allows the delegate to formally fund the loan and transfer the stablecoins to the borrowers’ Web3 wallet. Borrowers contribute towards the loan over their term and make interest payments agreed upon when the loan was established. The collateral, if provided by the borrower, is posted in a smart contract vault that is held as protection for lenders until the loan is repaid, while the establishment fee is drawn down separately and sent to the delegate and Maple DAO. Once the final repayment occurs upon maturity, the collateral is claimed from the staking contract by the delegates and returned to the borrower.

[According to Maple Finance’s Gitbook](#), “If a borrower misses their repayment, they have a five day grace period to make the payment before their collateral can be liquidated by the Pool Delegate and repaid to the Lending Pools that funded the loan. In case of a collateral shortfall after the liquidation, the amount can be claimed from the Staking Pool on Balancer, which contains MPL and USDC deposited by Maple Token Holders. Staked Balancer Pool Tokens will be redeemed on Balancer for stablecoin and distributed to the Lending Pool. All Borrowers enter a Master Loan Agreement during onboarding which enables legal enforcement.”

Lenders seeking attractive opportunities for yield can sign up to deposit capital into lending pools that are managed by Pool Delegates for institutional borrowers. The lenders’ interest is paid out in like-kind along with a reward in the form of Maple Finance’s native token, \$MPL.

Longer term LPs are also able to generate a sustainable yield on their capital in the realm of 10-12% APY (net of fees) currently, with liquidity mining rewards layered on top in MPL tokens.

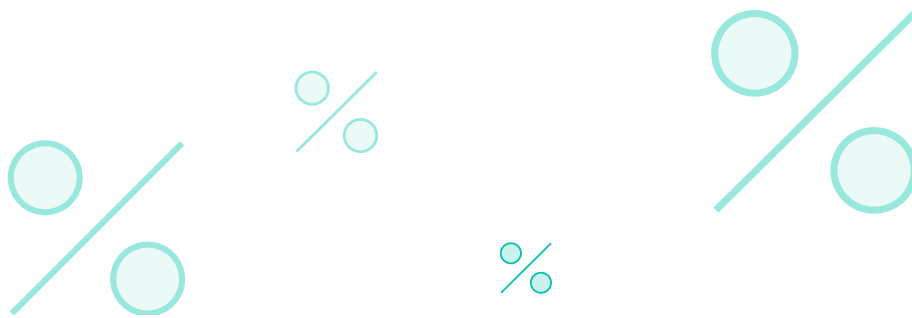
Rates (APY)

(Data as of February 16, 2022)

PROTOCOL	POOL	TERMS	USDC	WBTC	ETH
Alkemi Network	Public Pool Lending	1 block (~15 seconds)	4.56%	4.05%	4.17%
	Public Pool Borrowing		3.57%	3.05%	2.83%
	KYC Pool Lending		7.10%	6.56%	8.84%
	KYC Pool Borrowing		0.99%	-6.34%	-4.21%
AAVE (displayed rates are from v2 of their protocol)	Lending		2.41%	0.00%	0.01%
	Stable Borrowing		10.69%	3.29%	0.23%
	Variable Borrowing		0.01%	3.46%	0.37%
Maple Finance	Lending	90 day lockup	17.4-22.3%	N/A	3.7-10.3%*
	Borrowing	90 or 180 day terms	Determined on a loan-by-loan basis. All credit was issued between 7.4%-22%.	N/A	Determined on a loan-by-loan basis. All credit was issued between 3.5%-6%.*

*Updated on March 25, 2022

The lending interest rates on Maple Finance are shown on an annualized basis where loans are issued in 30-180 day intervals. The interest rates for lenders on the above protocols tend to be higher than traditional finance because the borrowers don't have access to traditional finance capital and can pay higher rates because they have more profitable uses of the capital.



TOKEN ECONOMICS AND GOVERNANCE

The most common use case of a DeFi token is being issued as a monetary reward to bootstrap liquidity to the protocol via incentives. And as a byproduct of the token being traded on the market, tokens provide a monetary value to the network. By adding one of many utility functions to the token, holders of said coin directly profit from the protocol's growth. In order to create the best tokenomics, the team creates a base economic model for the protocol and holders can use their staked coins to vote on changes to how the network operates through governance votes. As a result, we can divide the token model into two different sections - tokenomics (i.e the economics behind a coin), and governance (how the coin can be used to vote for changes on how the protocol operates).

TOKENOMICS

DeFi governance tokens are typically awarded to protocol users as a reward for using the protocol, and cannot be initially purchased, although they may trade on exchanges after distribution. This is done to ensure that the protocol is fairly bootstrapped, and the correct incentive structures are laid out to maximize usage of the decentralized protocols. DeFi platforms have relied on token rewards and incentives to attract liquidity, and thus users, to their networks. Most of the time tokens will be accruing rewards from protocol usage which incentivize holding the protocol's token.

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Holders of governance tokens for two specific protocols which were not analyzed in this report, curve.fi and yearn.finance, reward token holders with a fraction of the fees generated through protocol use proportional to the % of the supply of the token they hold in escrow. DeFi protocols which continue to generate new revenue must allocate those funds somewhere. There are currently two main ways for DeFi protocols to use their cash flow: in the form of a Token Burn or Fee Issuance. The former implies the protocol can use the cash flow to buy back and burn existing tokens which reduces the supply and the remaining tokens ultimately become more valuable. The latter turns the token into a capital asset by issuing passive income to token holders. Token holders are then eligible to claim a share of the protocol's revenue proportional to the supply they have staked in the protocol.

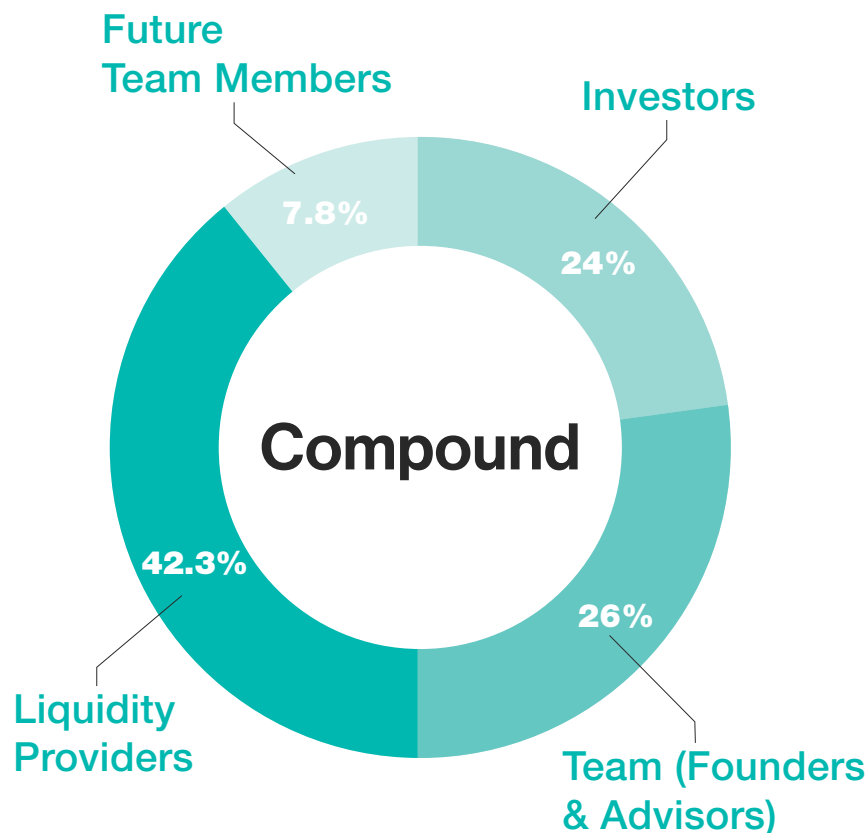
The protocol team, to incentivize usage, can set aside an allocation of governance tokens that will be used in order to bootstrap the protocol. The same mechanism can be applied compared to the example described above. Those tokens can be distributed to users after certain interactions or can be burned on a periodic basis in order to decrease the supply making the rest of the token worth more.

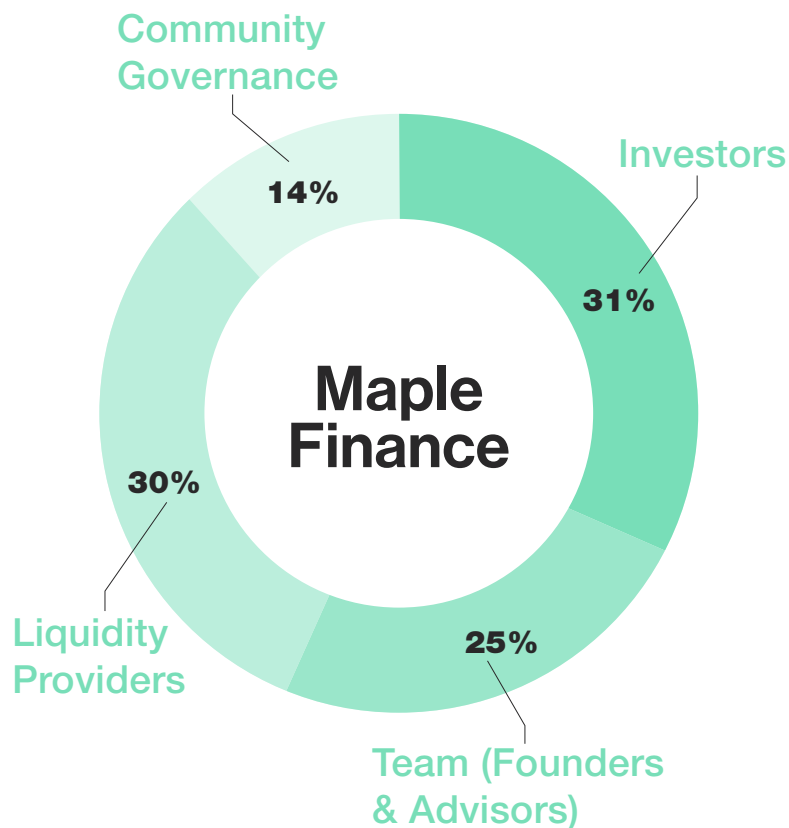
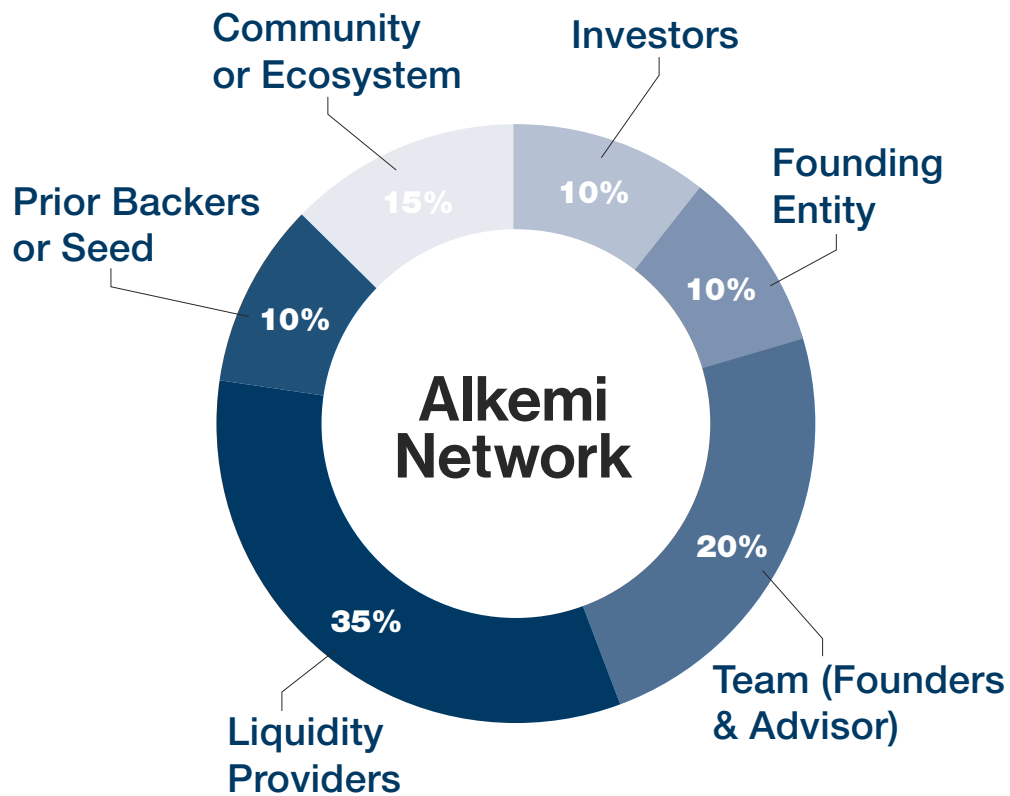
Essentially, the protocol needs to carefully decide which behavior to incentivize with its token emission and revenue collection mechanism. Indeed, it doesn't necessarily have to emit all tokens or earnings to token holders as it can also be issued or distributed to liquidity providers as a way to incentivize their capital in the protocol's ecosystem, similar to Alkemi Network and Maple Finance's tokenomic approach.

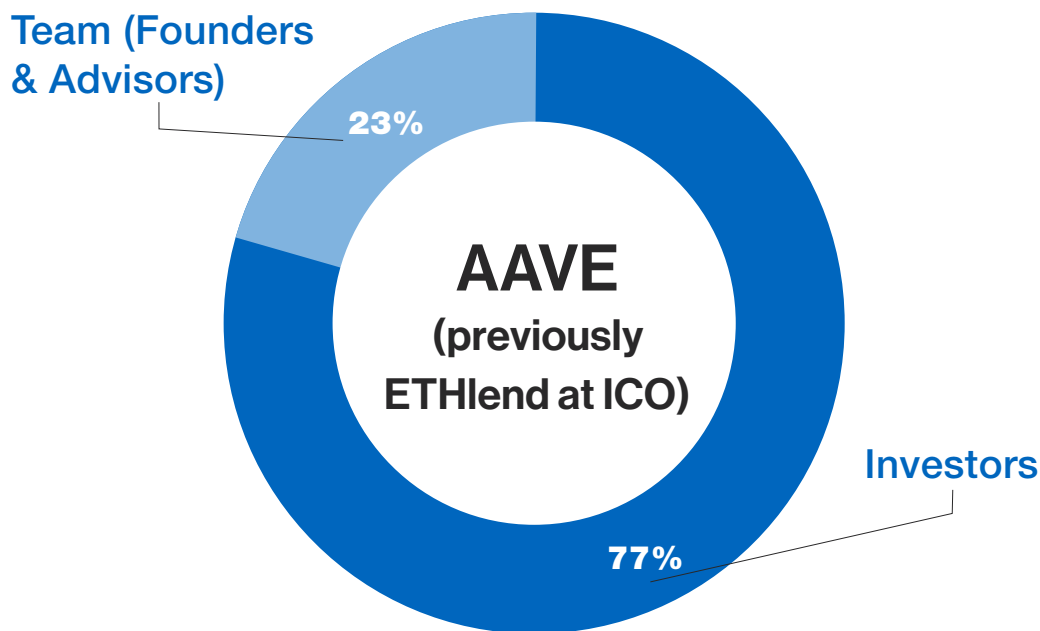
As compensation for opportunity costs, liquidity providers on the Alkemi network which help to promote adoption of the Alkemi Network by staking or depositing assets to liquidity pools in exchange for LP tokens, are rewarded with ALK token (i.e. "Liquidity Mining" on the Alkemi Network). These are calculated according to each user's relative contribution after various adjustment and correction parameters. By distributing ALK in this manner, it ensures that the governance token will be distributed primarily to key network contributors and allows them to have a say in protocol parameters.

There are currently 13.5M AAVE tokens in circulation of 16M total, 3.85M circulating MPL tokens of 10M total, and approximately 52M ALK tokens circulating of 200M total.

Original distribution of AAVE coins (known as ETHLend at time of distribution) was 23% for Founders & Project and 77% for investors [according to Messari](#). For MPL, 51% of supply went towards seed investors (26%) and team + advisors (25%), 14% towards the treasury to support future protocol initiatives, 5% towards the public sale, and 30% towards liquidity mining incentives. The team owns 25% of the token supply and are okay with not having a large supply implying they believe in the longevity of the protocol and are okay with owning less tokens because they will eventually trade at a higher price. Alkemi Network, has a very similar token distribution (50% allocated to core team & advisor + investors + prior backers + founding entity, 35% liquidity mining rewards, 15% Ecosystem fund) than Maple Finance. The ~25% supply going towards the team for all three protocols is in line with the industry average as other established, but unregulated, lending protocols like Abracadabra, have [30% of the token's supply allocated towards the team](#). Venus, a similar decentralized lending protocol built on Binance's Smart Chain, [did not set aside any tokens for investors or team members in a bid to fully decentralize the project](#).







The exact current distribution of AAVE token holders is unknown but the Etherscan page for the network shows that the largest token holders are the staking contract, various DeFi pools, and bridges to other networks on which AAVE is built like Avalanche and Matic. 30% of the LEND tokens from the initial distribution after the ICO in 2017 were held by the team to fund development on the protocol. When LEND rebased to AAVE, the 1.3 billion outstanding LEND tokens were rebased 100 LEND : 1 AAVE. In addition, there was an additional 3 million coins introduced for the team during the migration. Although there was not any ETHLend set aside initially as incentives for liquidity providers, certain pools on AAVE are currently incentivized with governance tokens to increase the interest rate for lenders and draw in more liquidity.

The majority of the remaining large addresses are labeled as exchanges or other organizations, like Set Protocol, which created a weighted index of the top tokens in the Ethereum-based DeFi sector. As AAVE is an already established market leader in the world of DeFi and the protocol has been around for several years longer than Alkemi Network and Maple Finance, we can hope that over time the distribution of the latter two's token holdings will begin to look like AAVE - not controlled by a few large private holders, and thus returning to the community-owned spirit of decentralization.

All three tokens have a quite large amount of the supply locked in treasury addresses which are controlled by the team in order to fund operating expenses and inevitable developmental changes to the code as necessary including bug fixes or integrating new coins or protocols.

MPL token holders can provide default insurance to a Liquidity Pool - thus earning a share of the Ongoing Fees - by staking their MPL tokens. MPL holders will stake a combination of MPL and stablecoins into a Balancer Pool, and then stake that Balancer Pool Token (BPT) on a specific Liquidity Pool. Maple Finance is rolling out [single-sided pool cover](#) with the new smart contract upgrade in the coming months. This way users can provide pool cover in MPL and not take impermanent loss risk from the balancer pool. In order to align incentives, Pool Delegates are required to stake on any pools they manage. Staking does carry some risk - in the event of a collateral shortfall, the protocol will liquidate staked tokens in order to cover the difference between the value of the collateral and the Loan balance.

Each Liquidity Pool on Maple Finance has customizable Ongoing Fee parameters set by the Pool Delegate themselves. These include, 1) what percentage of the interest yield is charged as the Ongoing Fee, and 2) how much of this Ongoing Fee goes to the Pool Delegate and how much goes to MPL holders staking that specific Liquidity Pool.

Alkemi Network will also soon integrate staking rewards for ALK tokens holders. As described in the protocol's documentation, "In addition to bestowing voting rights, ALK tokens will also carry the future utility of unlocking staking rewards within the Alkemi Network. ALK token holders will be able to stake their utility tokens in the Alkemi Network Vault as collateral to provide an additional security/insurance layer to Alkemi Network protocols and access certain preferential terms, including improved collateralization rates for borrowing."

On AAVE, staking consists of a user depositing their AAVE tokens within the protocol's [Safety Module](#). Staking acts as a risk mitigation tool in case of a shortfall event and users are rewarded for this with Safety Incentives in the form of 550 AAVE tokens/day distributed proportionately to current stakers. In the case of a shortfall event, the Safety Module uses up to 30% of the staked AAVE to cover the deficit.

AAVE Arc will not introduce a new token or change the current tokenomics of the AAVE protocol. [However, there is active discussion on the governance forum to introduce a token reward incentive model for AAVE Arc lending and borrowing pool](#) which was voted Yes. If AAVE Arc decides to introduce a fee share model for the Governance Token stakers, similar to Curve and Yearn Finance, it could introduce unseen risks to the current regulatory compliance of AAVE Arc.

GOVERNANCE PROCESS

Governance tokens allow users to vote on key decisions of the protocol as the tokens represent voting power within a project. This means they are a crucial part for a project to remain decentralized. For example, Maple Finance allows users with more than 25 MPL tokens in their account balance to register as a “Mape” on their Discord Server. Changes to the protocol, once discussed on their governance forum as a proposal, are voted on in their Discord Server. A minimum of 20% of the total registered mapes are required to vote and if the majority votes in favor of the changes, then it is approved and integrated into a future build of the network.

AAVE and Alkemi Network, similar to Maple Finance, allow token holders to vote on changes to the protocol to determine future features and/or parameters of the networks (the right to vote is restricted solely to voting on features of the networks themselves; it does not entitle holders to vote on the operation and management of the company, its affiliates, or their assets or the disposition of such assets to token holders, or select the board of directors of these entities, or determine the development direction of these entities, does not constitute any equity interest in any of these entities or any collective investment scheme; the arrangement is not intended to be any form of joint venture or partnership). Each token entitles the holder to one vote on all Alkemi Improvement Proposals (AIPs) or AAVE Improvement Proposals on the snapshot platform.

For example, the Alkemi Network allows ALK holders to propose and vote on: Setting interest rate models and base fee structures (e.g. origination fees) Administering asset markets (e.g. add, remove, lock, unlock) Updating protocol contracts and risk parameters (e.g. utilization limits, collateral ratios)

Governance token holders are incentivized to make honest decisions as they own a “stake in the future direction of the protocol”. Therefore, they will vote on governance proposals rationally and try to bring the most value to the protocol as the value of the governance token will rise if the quality of their decisions are optimal. However, it is important to remember that the tokens themselves do not represent equity.

Protocols with a governance token are referred to as “Decentralized Autonomous Organizations” or DAOs for short. AAVE is an example of a governance token as the holders can vote on key protocol changes on Snapshot such as approving new whitelisters for ARC.

Governance token holders are a primary target for future regulation as they control the future direction of the protocol. [This is a risk that DAOs might face in the future as mentioned in the PwC DeFi report on regulation.](#)

As a result, we can see that DeFi tokens play a major role in the business model of the protocol through the tokenomics discussed above by bootstrapping capital to the network through incentives and allows the network to stay decentralized and community-owned through the governance mechanism for token holders to vote on changes to how the protocol operates.

As of February 16th, there have been [six governance proposals passed so far for the AAVE V2](#) protocol, [seven governance proposals that have passed for Maple Finance](#), and [four out of five](#) proposals have passed for Alkemi Network.

For Maple Finance, changes to the protocol are made through MIP's or Maple Improvement Proposals in the public section of their discord server. In order to vote in Governance changes, you must become a Mape (verified holder of 25+ MPL tokens) via signing up on the collab.land site in addition to joining the #join-mapes channel on Discord. Voting is open for one week from the start of the event, given 20% of registered Mapes vote for the protocol change. If the 20% Mape quota is not reached, then voting is extended for another week at a time until the 20% quota is reached. If the MIP passes, the proposal is implemented by Maple Finance multisig holders and voting details & follow up steps published to Discourse by the Maple Finance team for record-keeping purposes.

Alkemi Network follows very similar steps to AAVE when it comes to establishing and integrating new protocol changes via snapshot vote. It is the first decentralized liquidity network to facilitate both KYC / AML permissioned (Verified) and permissionless (Open) liquidity pools governed by one utility token.

AAVE Arc's first whitelister, Fireblocks, was approved via the [governance process](#) where a vote was made to implement the change after it was proposed and discussed on the governance forum. This is a fascinating insight into how the community has used the governance voting mechanism to introduce regulatory friendly changes and avoid future compliance issues with FATF guidelines.

As discussed on page 12 of the [PwC report](#), "The use of governance tokens within DeFi protocols raises another interesting question: should governance token holders bear some responsibility for that platform's application of AML guidance? Arguably, the governance token holders are driving the direction for the protocol. So if they are knowingly allocating their platform to circumvent globally accepted AML requirements, such as those of the FATF, are they not cracking down on money laundering?"

Due to the permissionless nature of these lending protocols, there is a need for an umbrella regulatory framework more than ever before. This legislation would need to take into account legal enforceability and conflict resolution, consumer or end user protection, data privacy considerations, and AML / CFT / KYC issues. Certain protocols like Maker Dao, Compound, and Metamask are actively taking steps to comply with upcoming regulation based on the FATF guidelines, and/or are already compliant. Maker DAO, as discussed later in this report, has started a research team, specifically to look at how their protocol can become regulatory compliant without affecting their signature product, the DAI stablecoin.

VALUATION RATIO (\$USD)

In this section, the Coinchange research team attempts to standardize valuation related metrics that have to do with both capital locked and protocol usage because it helps compare protocols that have different market shares against each other. First we will explain the various metrics we have used, and then walk through the significance behind the figures.

Total value locked, or TVL for short, refers to the total user deposited assets into a protocol that are considered to be in the network's custody through smart contracts. In the case of lending related protocols specifically, TVL refers to the amount of assets deposited into protocol related smart contracts by both borrowers and lenders.

Circulating market capitalization is the term used to describe the number of coins currently in circulation for a given protocol multiplied by the current price per token. On the other hand, fully-diluted market cap, commonly referred to FDM or FDV, refers to what a protocol's market capitalization would be if all the tokens in its total supply were currently issued (total number of tokens that will ever be in circulation multiplied by the current price per token). The FDV metric is very important as different tokens have a different total supply with different emission curves and FDM helps standardize the difference.

AAVE, for example, has a current circulating supply of 13,676,116 tokens as of April 5, 2022. The total possible supply for the coin is 16 million. As a result, we can see that approximately 85% of the total supply has been minted and are currently in circulation. Abracadabra, however, has a current circulating supply of ~92.36B with a total supply of ~196B (approximately 47% of the total supply of SPELL tokens (market ticker for Abracadabra) are currently circulating on the open market). As a result, the FDM for Abracadabra would be substantially different than its circulating market capitalization, whereas AAVE's two numbers would be in the same ballpark.

DATA AS OF MAR 1, 2022	ALKEMI NETWORK	AAVE	ANCHOR	COM- POUND	MAPLE FINANCE	ABRACA- DABRA	VENUS	INDUSTRY AVERAGE
TVL (via DefiLlama)	12.4M	11.94B	11.46B	7.26B	664M	2.95B	1.66B	5.135B
FDM (via CoinGecko)	16.78M	2.29B	3.64B	1.25B	214M	984M	281M	719.92M
FDM / TVL (CoinGecko)	1.35	0.18	0.32	0.17	0.32	0.33	0.17	0.406 0.248
Circulating MarketCap (CoinGecko)	4.36M	1.954B	939M	824M	93M	391M	112M	722.614M
Circulating MarketCap / TVL (CoinGecko)	0.35	0.16	0.08	0.11	0.14	0.13	0.07	0.148 0.115
Ratio CMC / FDM	0.25	0.85	0.25	0.6592	0.43	0.397	0.398	0.46
Circulation date	Sept 2021	Dec 2017	Mar 2021	May 2020	May 2021	May 2021	Sept 2020	

Abracadabra and Venus are not (currently) considered to be regulated/compliant protocols.

Alkemi Network did not have a circulating marketcap listed on any of the sites used to gather the data and was calculated manually as a result. The industry average values for FDM/TVL include two values, the first excluding Alkemi Network as the value was significantly higher than the rest. Similarly, the industry average values for Circulating MarketCap / TVL includes two values as the second one excludes Alkemi Network. ALK circulating supply calculated to be approx 52 million in the tokenomics data section for Alkemi Network.

The FDM/TVL ratio shows us the ratio of the market cap of the coin against how much value is locked up in smart contracts. A ratio of fully diluted market capitalization over total value locked for an asset of more than 1.0 refers to its market cap being greater than its total value locked. Alkemi Network significantly brings up the average of the group (0.406) and is the only protocol that is above average. In other words, the token seems significantly overvalued when taking into account the remaining supply left to be distributed compared to the rest of the lending protocols analyzed in this report. The ratio without Alkemi Network is 0.248. Anchor, Maple Finance, and Abracadabra appear to be slightly overvalued.

Looking at the circulating market cap / TVL ratio, on the other hand, demonstrates that the price of Alkemi Network seems overvalued relative to its peers for the amount of lender deposit & borrower debt currently inside the platform's smart contract. AAVE, Maple Finance, and Abracadabra tokens seem to be slightly overvalued. Lastly, Anchor's and Venus' tokens appear to be undervalued.

Alkemi Network token overvaluation when looking at FDM / TVL ratio might be explained by the fact that investors are not putting much emphasis, yet, on token left to be distributed out of total supply. This might be indicative of the general infancy of Alkemi network platform as its token launch happened in September 2021.

On the other hand, as AAVE has most of its circulating supply in the market (~85%), we see the Circulating MarketCap / TVL ratio converging to the FDM / TVL ratio. A possible future project for the Coinchange research team will be to show the convergence between Circulating Marketcap / TVL and FDM/TVL for various DeFi protocols over time as a greater fraction of the total circulating supply is distributed onto the market.

RISK MITIGATION PROCESS PER RISK

Just like any capital allocation, the attractive high yields in DeFi come with a variety of risks that need to be considered and mitigated against. These risks are different from traditional investments due to the unique nature of how DeFi operates.

Coinchange analyzed the following main types of risk for the three lending protocols we're analyzing in this report - Smart Contract risk, Counterparty & Custodial risk, Organizational risk, and Market / Liquidity risks.

Due to the permissioned nature of these protocols, there is less uncertainty for the institutions interacting with these protocols when it comes to legal risk. This is unrelated to the regulatory risk mentioned above in the governance token section which focuses on the holders of those tokens themselves, not the institutions using the network. The permissioned pools are designed to protect institutions and players from "tainted" capital, bad actors, etc.

SMART CONTRACT RISK

is defined as the risk that the protocol's codebase has a bug or exploit that a malicious actor could use to improperly withdraw value from the system. All three permissioned lending protocols analyzed in this report have been audited to the highest standard in the cryptocurrency industry by leading smart contract audit firms including PeckShield, Debdaub, Quantstamp, and SigmaPrime. AAVE undergoes audits on a regular basis and Maple Finance has had their code audited by two separate firms.

Alkemi Network has had one audit completed [by QuantStamp on August 31, 2021](#) which found a total of 33 issues in the code of which all 6 high risk issues and 8 medium risk issues were solved. One of the resolved high-risk issues ([QSP-3](#)) was that “The Chainlink oracle contract can return token price in USD terms but the core contract assumes price in ETH terms”. This issue could have severe consequences for the smart contract as the quoted prices would be in dollar terms instead of ETH terms leading to potential error in the smart contract.

AAVE has undergone a total of 23 audits, a [combined 17 for protocol versions V1 and V2](#), and [six for V3](#). The Coinchange Research team was unable to find any audits for the protocol while they were still called ETHlend. For example, a [2017 tweet from AAVE’s official Twitter account](#) referencing a security audit has a non-functional URL. The extensive number of smart contract audits from several industry leading firms, and the frequency of said audits, demonstrates that AAVE is committed to avoiding any potential black swan events due to preventable smart contract risk.

One of AAVE V2’s most recent [security audits by SigmaPrime in January of 2021](#) found a high risk bug ([AAV-01](#)) - there was an ineffective check for the `validateBorrow` function that verified if the user had sufficient capital to initiate a loan. As a result, the following checks for stable borrowing could not be validated - stable borrowing is enabled, the user has less collateral in the currency than the borrowed amount OR the borrowed amount is less than 25% of the collateral. As a result, users could get away with borrowing money from the protocol without paying any interest or with less collateral than required.

Maple Finance had audits completed by four of the top audit firms ([Peckshield](#), [Code Arena](#), [Debaub](#), and [Trail of Bits](#)). In addition, the protocol is [ranked in the top 10](#) of DeFi security / safety rankings according to PQ Reviews. The PeckShield, Code Arena, and Debaub audits were completed before the protocol’s V1 release. The team had a [second audit completed with Code Arena](#) on January 5, 2022.

The Maple Finance [PeckShield audit report](#) from May 2nd, 2021 found a high risk bug (3.15) - Bypass of lockupPeriod in Pool::withdraw(). By design, the Maple Finance protocol will generate and collect fees that are attributed to liquidity providers (LPs). Also, due to the fact that the interest earned by the Maple Finance protocol is accrued in discrete large payments of interest rather than steady streams of income, it is important to prevent any possibility for malicious LPs to exploit the interest distribution mechanism in Pools.)

The Code Arena audit report from May 3rd, 2021 found no severe or critical vulnerabilities with the protocol, 3 medium vulnerabilities, and 12 low level vulnerabilities. The firm also made a total of 33 non-critical recommendations. The second Code Arena audit report from January 5, 2022 found one high risk vulnerability, two medium risk vulnerabilities, and five low risk vulnerabilities. The high risk issue had to do with any user being able to call the makePayment smart contract function and was resolved by the Maple Finance Team shortly thereafter.

Teams have successfully resolved all issues brought up by auditors so it shows that they are trying to actively improve the codebase and making sure that their smart contracts are secure to minimize risk in this regard.



COUNTERPARTY RISK

is defined as the risk that a party in the transaction jeopardizes client funds by failing to perform their contractual obligations. For the three lending protocols analyzed in this document, this is the risk of being unable to pay the client's (lending) principal and accrued interest. In addition, all the protocols use Chainlink as a pricing oracle solution to gauge real time asset values of the cryptocurrencies listed on the network. This is another area of counterparty risk as Chainlink could potentially misprice any of the assets available to trade on either platform.

We also find Counterparty risk in the use of APIs to call various data from any of the networks. Alkemi Network, for example, uses APIs written using SmartBear's Swagger API platform. This is another area where counterparty risk is critical as well written APIs are easy to work with, can minimize misuse, and make it possible for developers to make full-fledged applications against the data that is exposed with the API.

The highest counterparty risk, of the three options discussed above, is with Maple Finance, which gives undercollateralized loans. Both AAVE Arc and Alkemi Network provide overcollateralized loans which helps defend against borrower defaults.

CUSTODIAL RISK

accompanies the act of holding a client's assets. These risks include vault hacks, key loss or theft, and intentional misappropriation of funds. These risks are mitigated by consistent security reviews, strict internal controls, key back-ups, multi-party computation signatures, and a SOC 2 Type II technology platform (Fireblocks) which has securely transferred over \$2T of digital assets to date. AAVE Arc currently uses Fireblocks as a white-listing solution and custodian for onboarded institutions for their network to minimize custodian risk. This is why we feel the combined counterparty and custodial risk is negligible for AAVE because using Fireblocks (and soon SEBA + Securitize) as 3rd parties to whitelist users because it centralizes KYC away from AAVE which is a permissionless protocol that anyone can use. Maple Finance is using Pool Delegates to help assess creditworthiness of the borrower before issuing the loans. [Each Pool Delegate has a unique risk profile and lending guidelines.](#)

Pool delegates help mitigate the risk that lender are exposed when their crypto is lent out to whitelisted institutions.

ORGANIZATIONAL RISK

Is the reputability of the founders / key team members their track record and ability to execute the vision of the company and their investors.

AAVE's protocol was founded in London, England by Stani Kulechov during 2017 under the name ETHLend. The lending protocol attracted several big name investors during the ICO round including Three Arrows Capital, Framework Ventures, and Blockchain Capital. So far the history and success of AAVE shows that its team and community are handling the project development in the best possible manner.

Sid Powell and Joe Flanagan are co-founders of Maple Finance. They've both worked in traditional finance where they participated in \$3b+ of corporate bond issuance, established and ran a \$200m+ bond funding program, and managed finances at a commercial lending FinTech company. The protocol [Raised \\$1.4M from reputable Crypto VC funds Polychain Capital and Framework Ventures](#). AAVE founder, Stani Kulechov, was also an investor in the protocol.

There is potential conflict of interest, already flagged in [Discord by 0xCLR](#) in the pool delegate strategy as investors could become large borrowers - of the current Borrowers only Alameda, FBG, Framework, & Orthogonal Trading were investors in the Maple Protocol seed round.

Alkemi Network, due to the network being a much newer protocol with founders who are not yet well established in the cryptocurrency space, did not attract as high profile investors but was still able to raise over \$5M USD from several newer crypto focused VC funds including Alpha Moon Capital, BlockPact Capital, LedgerPrime, and Outlier Ventures.

LIQUIDITY RISK

is defined as the risk that a market's supply is completely borrowed out, and suppliers, who usually are able to supply and withdraw funds at will, are not able to withdraw all of their funds on demand. This risk is mitigated by the algorithmic interest rate models on Alkemi Network and AAVE, which quickly increase rates during periods of high utilization to encourage new suppliers of liquidity to enter the market. The borrowing structure of Maple Finance ensures that lenders are the only ones who face true liquidity risk as borrowers can default and face no penalty aside from "reputational risk" and lose future lending opportunities from the protocol.

DEFAULT RISK

is defined as the risk that the protocol fails to liquidate inappropriately collateralized borrowers, such that they become under-collateralized, i.e. what they owe is worth more than what they have provided as collateral. Maple Finance mainly only has Default risk for lenders because borrowers can default without real financial penalty (only "reputational damage") and liquidity risk when it comes to utilization rate. Alkemi Network and AAVE deal with the situation by providing users different metrics to monitor their positions in real-time and set alerts for healthy market utilization ratios, with over-collateralization of all loans to reduce credit risk by ensuring 125% collateralization ratio for all loans taken on the protocol.

In addition, AAVE defines four additional sources of market risk for V2 of their protocol - extreme downward price movements, asset illiquidity, cascading liquidations, and slashing of the safety

module, all which have been thoroughly discussed and analyzed with significant simulation-based stress tests to show resilience in the protocol's risk framework.

As previously discussed, the key feature that sets Maple Finance's lending apart from the other two protocols is the fact that the debt is under-collateralized and unsecured. As a result, the loans provided by each of Maple Finance's liquidity pools are issued and approved on a case-by-case basis by Pool Delegates, hired specifically by the protocol team, to help minimize risk of default and liquidation.

[Pool Delegates will assess loan requests and agree interest and collateralization ratios with Borrowers. Prior to withdrawing funds, Borrowers will be required to deposit the agreed collateral to their Loan Vault. This collateral will be released after final repayments are made.](#)

From the official Maple Finance documentation, “[Unlike traditional smart contract lending platforms, if borrowers on Maple Finance miss their repayment, they have a five day grace period to make the payment.](#) And they are legally liable as they signed a Master Loan Agreement when onboarding to Maple Finance. [Borrowers must arrange payment with the Pool Delegate during this time, or to inform them of the reason for any temporary cashflow issue.](#) If the Borrower does not make the payment within the grace period, their collateral can be liquidated by the Pool Delegate via an AMM liquidation and repaid to the Lending Pools that funded the loan. Institutions who default will incur serious reputational damage which would impair their ability to continue operating in the sector as a record of the default will exist on-chain.”

[Pool Delegates manage Lending Pools on Maple Finance. The platform provides a decentralized infrastructure enabling Pool Delegates to attract global capital and provide funding to a network of premium Borrowers, increasing their potential AUM while earning performance fees.](#) When establishing a Lending Pool, Pool Delegates will be asked to provide Lenders with information on their investment strategy. Pool Delegates can be explicit in defining an investment strategy based on region, target Borrower industry, credit quality, and more.

Pool Delegates are credible experts who launch and manage Lending Pools. They each develop their own investment strategy and underwriting process for determining creditworthy borrowers. They share in Establishment Fees and Ongoing Fees earned on Maple Finance. Pool Delegates earn income as the balance in their Pool grows and as the Borrowers they have funded repay their loans.

Ongoing Fees are paid for the ongoing management of each Lending Pool. They are set by the Pool Delegate when creating the Lending Pool and are paid out of a percentage of the interest yield received. The Ongoing Fee is shared between the Pool Delegate and MPL Stakers.

Pool delegates currently include cryptocurrency funds [Orthogonal Trading](#) and [Maven 11](#), and Blocktower Capital. [Alameda is not a Pool Delegate but have been assessed by Othogonal Capital.](#)

We’ve analyzed what factors can be taken into account when building frameworks to carry out risk assessment on regulated DeFi lending protocols. The vast majority of market participants won’t be accurately pricing risk which provides an opportunity for proactive investors.

ACCESS TO THESE OPPORTUNITIES

Institutional users of these protocols will need to take several steps to access the liquidity markets analyzed thus far. In addition to simply interfacing with the protocol like retail users, institutions need to complete a rigorous KYC process while being onboarded to the service. All of these protocols have taken unique approaches to give institutions the white glove, personalized service to make the transition to DeFi as easy and intuitive as possible.

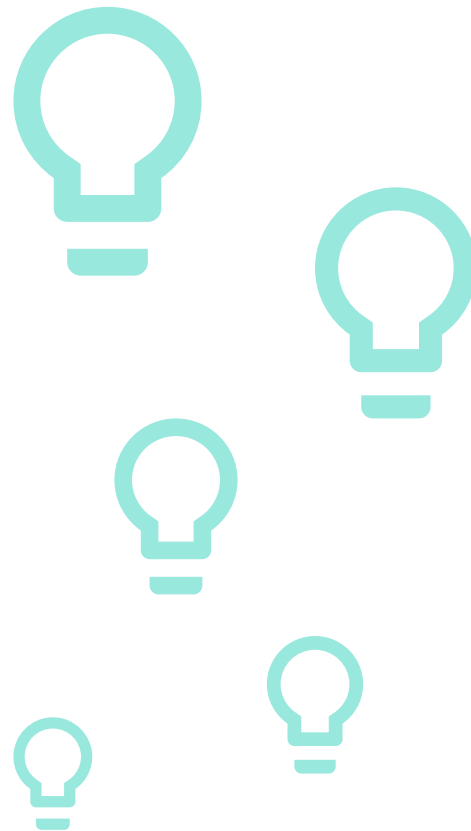
AAVE Arc is currently exclusively partnered with Fireblocks for the whitelisting / KYC process - the latter requires name, email, and phone number for the employee who will fill out the form (POC) to apply for Aave Arc through Fireblocks. The provided phone number is for 2FA only and stored securely and confidentially. The point of contact (POC), will receive an email with a link to the secure portal to answer questions like: anticipated volume in USD and number of transactions annualized, regulatory oversight. The POC uploads documentation including EIN/TIN letters, formation documents, operating agreements, organization and ownership structure of the firm, certificate of good standing, registration and beneficial ownership information with official government issued ID. Once the file is complete, then the application moves to compliance review. The turnaround time is 3-5 business days, though it may take less. Once your firm is fully reviewed, has passed screening against sanctions lists, and is positively risk rated, your Fireblocks account manager will work with you on next steps to bring your access to Aave Arc online.

Alkemi Earn's verified pools require you to complete a KYC process. The protocol team themselves handle the entire onboarding and whitelisting process in-house and the KYC check is completed by kyc-chain.com, the entire process taking approximately 72 hours to complete. A representative from the Alkemi Network protocol directly confirmed themselves that each institutional application is manually confirmed / denied by the team.

Maple Finance requires both borrowers and lenders to complete a borrower form that needs to be filled in with information about the client firm when signing up to use the service. KYC requirements seem to be very stringent as only familiar names within the cryptocurrency space are openly associated with the service. For example, [a recently published article by The Block](#) covering Maple Finance stated, “Only certain accredited non-US institutions are allowed to lend funds within this pool. This will initially be CoinShares, Abra and Ascendex. These participants have to go through KYC and AML procedures prior to entering the pool.”

In addition, from a recent article on the Maple Finance blog covering Orthogonal Trading as the first approved pool delegate, the firm [Orthogonal] was asked about what they were looking for from potential borrowers. To which the firm replied, “In this initial pool we feel it is critical that all goes smoothly. As such we are generally conservative in our borrowers, looking for household names that we either know personally or who have a top tier reputation in the crypto space. We want borrowers who are always at least partially liquid such that they are able to meet repayment obligations, communicative, and leverage a sensible amount.”

Once the KYC process is completed and institutions are onboarded onto the respective platforms, firms need to connect a Metamask wallet or any web wallet including WalletConnect, Coinbase Wallet, Portis, and FortMatic to access the web 3.0 version of the protocol. Fireblocks, as analyzed in a later section in this report, has taken steps to allow a fully regulatory compliant access to DeFi via three different methods while ensuring that institutions are protected and asset secured.



COMPANIES REGULATIONS

MAKER DAO KYC/AML RESEARCH - STAYING AHEAD OF THE CURVE:

The topics of regulation and compliance have never been more important when it comes to DeFi. Maker DAO, the organization behind the industry

leading algorithmic stablecoin DAI, is currently using grants to begin researching risks and solutions for KYC/AML regulatory management.

The team is focusing on the [Financial Action Task Force's \(FATF\) updated guidance for Virtual Assets \(VA\) and Virtual Asset Service Providers \(VASP\) published in October 2021](#). Although the guidance published by FATF is not law, more than 200 countries adhere to FATF's guidance to develop their own regulatory frameworks with regards to KYC/AML because it is seen as the standard for international regulation.

Different jurisdictions are taking different initiatives to regulate the DeFi market and monitoring the development of each of these jurisdictions individually will help DeFi protocols assess and mitigate regulatory risk. In addition, different countries will establish and implement their own regulation in different stages or at different times with different approaches.

It is critical for those who work in DeFi to promote public policy and advocate for regulators to educate themselves and understand the various protocols so there is no bitterness from either side about unfair laws stemming from a misunderstanding of how the industry and protocols work.

The focus of their research will be on the [following key areas](#) - impact and applicability of AML / KYC regulations, compliance risk analysis, testing and evaluation of AML / KYC service providers, and defining the scope of the protocol's regulatory and compliance core unit.

In addition, there are several [challenges and opportunities for MakerDAO in the process of becoming both fully regulatory friendly and compliant with all existing FATF guidelines](#). Regulators do not have a clear idea of what MakerDAO is and how it operates. In addition, regulations are designed to target intermediaries, which is a challenge for decentralized projects like MakerDAO.

There is luckily an opportunity for the protocol to be exempt from regulatory guidelines when sufficient decentralization occurs. In addition, there is opportunity for MakerDAO to become the standard / trend-setter for future DeFi protocol compliance since they are taking proactive steps to stay ahead of the curve. Lastly, the steps MakerDAO takes must balance the protocol's permissionless and freely accessible nature (DAI) while mitigating or avoiding potential sanctions.

Retro, part of the Maker Sustainable Ecosystem Scaling Core Unit Team, from the Maker governance forum, stated in his [thread](#), "Leveraging her years of experience in senior compliance roles for global banking institutions in London, Frankfurt, and Zurich, Patrizia is utilizing the MakerDAO SES Grants program to begin researching risks and solutions for KYC/AML regulatory management."

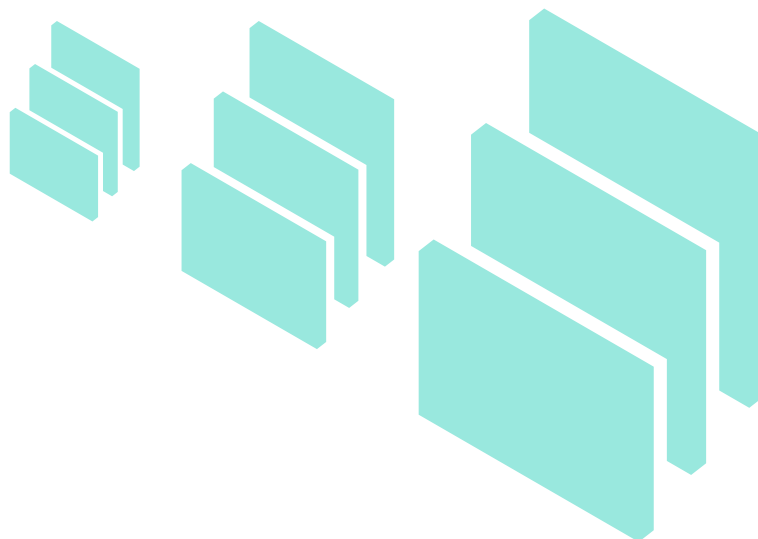
LayerZero, part of the Maker Sustainable Ecosystem Scaling Core Unit Team, [replied](#) to the above thread, "[Decentralization is our main regulatory risk mitigation strategy](#). Entities like the FATF or SEC have explicitly recognized that projects with "sufficient decentralization" can be excluded from regulatory scrutiny. Although we don't always know what exactly regulators understand under "sufficient decentralization" we do know that MakerDAO is extremely committed to decentralization, and therefore built a considerable competitive advantage, as well as regulatory resilience. But this is not enough. There are still centralization points to address, and each one of them is a regulatory access point. This important aspect will also be analyzed in the research grant. As always, we invite the community to give constructive feedback on how Maker should address legal and regulatory risks."

COMPOUND TREASURY (RDEFI) - ESTABLISHED INSTITUTIONAL OFFERING:

Compound Finance, has been one of the leading DeFi protocols since the inception of its money markets for Ethereum assets in [September 2018](#). The network has established itself as a pillar of the DeFi ecosystem with over \$11B USD of value [currently](#) deposited and over \$4B USD of value [currently](#) taken out as loans on the protocol.

Several key factors, including the fact that the network has performed without hiccup since inception, and the constant maintenance of deep liquidity, have drawn interest from non-crypto native businesses and financial institutions. As a result, the Compound Foundation, the organization behind the protocol, [has developed a fully regulatory compliant version of their protocol for these firms](#) after months of customer and regulatory compliance research, offering a fixed 4% yield on their USD deposits. Compound Treasury is only available to accredited institutions (\$5m+ of net assets) with a minimum deposit of \$100k USD.

From a document provided by the Compound Treasury team themselves, the KYC process is described as requiring formal account application with the Compound Treasury organization, Certificates of Formation / Articles of Incorporation, Tax ID Number Letter, Certificate of Good Standing, Proof of Address, AML / CTF and OFAC Compliance, Authorized Users Government ID, W-9 forms, and Accredited Investor Verification.



FIREBLOCKS - SECURE CUSTODY WITH COMPLIANT DEFI ACCESS

Fireblocks is one of the leading digital asset custodians in the world with currently more than \$2 trillion dollars in digital assets securely transferred.

Fireblocks uses MPC (Multi-Party Computation), SGX hardware defense, and multi-user authentication workflows to secure assets in custody and during transfer.

Fireblocks not only enable access to AAVE Arc Online, but can also enable access to the broader DeFi ecosystem. To access DeFi today, most firms settle for retail-grade solutions with browser-based wallets or hardware-based signing processes that can't meet institutional security needs and scale. Fireblocks DeFi offers a secure gateway for teams who pass KYC/AML, to capitalize on DeFi trading, lending and staking while minimizing security risks.

Fireblocks DeFi allows teams, distributed or centralized, to securely access and move funds on and off of DeFi applications and is protected through an enterprise grade multi-layer security approach. Fireblocks' up to \$30 million insurance against hardware and software faults enable institutions to use the platform with confidence and peace of mind. The key is the

Fireblocks Policy Engine, which allows teams to create customizable, localized transaction-based policies and multi-user authentication workflows that allows teams to approve transactions quickly, from anywhere, at any time so that they can move at the speed of the market.

Fireblocks DeFi also allows for three types of integrations into hundreds of DeFi applications and protocols without compromising security, operational, or regulatory requirements through the Fireblocks DeFi API, natively with WalletConnect or through the Fireblocks Browser Extension.

DeFi offers major opportunities for institutional investors, and Fireblocks empowers financial institutions to participate fully in this exciting, fast-growing space with the security, efficiency, and flexibility they need to be competitive in the market.

COINCHANGE - DEFI OPPORTUNITIES WITH REGULATORY COMPLIANT STRUCTURE

Coinchange Financial is a consumer Fintech company that specialize in providing yield to its clients via DeFi strategies. Coinchnage always had regulation and compliance in mind and had already implemented KYC, KYB, KYT & AML process with when its product went live for the first time in June 2021. The company is headquartered in Toronto, Canada and acquired the FinTrac and FinCen license as soon as it got incorporated. Coinchange next goal is to receive its Money Transmitter License in 33 US states and soon be fully regulated under EU law with the Markets in Crypto-Assets Regulation. Coinchange enable investors to get exposure to DeFi yield while remaining compliant, with their asset being secured while in trade account by a combination of Coincover and Fireblocks custodian service. Investors can now benefit from fully automated DeFi strategies leveraging different protocols for daily compounding yield by an AI algo setup for yield maximization while protecting the principal invested.



CONCLUDING THOUGHTS

Through rapid experimentation, cryptocurrency markets have found a good product-market fit by leveraging technology to create revolutionary new decentralized credit markets. By replacing banks as the counterparty with protocols and smart contracts, we have also seen the market become much more liquid. The DeFi lending ecosystem has bloomed into a \$200B+ market which benefits all parties involved, from those providing liquidity with higher APY than if they had kept their money in a traditional savings account, to institutions who get access to cheaper and faster loans.

As regulation is finally catching up on Decentralized Finance, we can see that the three lending protocols we analyzed in this report are all taking unique approaches to ensure the institutions using the networks are meeting current KYC / AML guidelines established by the FATF. Some like AAVE Arc rely on third parties, mainly Fireblocks, for onboarding processes making sure KYC/KYB & AML guidelines are instructed by dedicated companies. On the other end, Alkemi Network or Maple Finance decided to implement those guidelines in a hybrid format

by partially doing it in-house and via third party for faster onboarding time. Since permissioned DeFi platform started launching one after the other at the beginning of 2021, the TVL has gone from \$0 to way over the billion dollar mark in just a year. To give a comparison, it took the same amount of time for the DeFi sector in general to reach this amount of TVL. This goes a long way to show that the platforms we've analyzed have been great facilitators for institution onboarding, allowing the DeFi sector to receive fresh capital.

From an end user perspective, AAVE Arc would be best catered towards institutions that consider liquidity and legal risk paramount. AAVE is the longest standing and most established lending protocol in DeFi and has over \$10B USD TVL, and around \$40M USD TVL in Arc, making it one of the safest options that we've analyzed. All this, coupled with their dedicated whitelister, Fireblocks, ensures that the AAVE protocol can't be subject to unfair regulation, and therefore limits the risk to institutions using it. Looking in the future, Fireblocks was able to share feedback from approved companies which "shared that they would be willing to allocate between \$500k (on the low end) to \$100M (on the high end), depending on market rates." Based on this feedback, Fireblocks team estimates that the average allocation to Arc per company would be somewhere in the \$5M range, contingent that borrow/lend APR are attractive. This would mean that potential TVL for AAVE Arc would be somewhere in the vicinity of \$450M with around 87 companies.

On the other hand, Maple Finance or Alkemi Network would be the best choices for institution that still have KYC/AML and other regulatory requirements, but are attracted to the higher yield / APY that these networks enable in exchange for the risk that comes with the relative infancy of protocol (Alkemi Network) or intrinsic counterparty risk baked in the product (Maple Finance). For instance, lending through Maple Finance might be a great opportunity for an institution that still wants to keep their exposure to Real World assets found in traditional finance, but with higher APY, simpler processes, and management. Maple Finance's future is looking bright as [per their roadmap](#) with plans to grow their loan volume to the billion mark and the total loan originated to \$5 billion by year end.

Alkemi Network might cater to institutions that have a higher risk appetite and want to benefit with the outsized upside potential that comes with being one of the earliest large users of the platform. Alkemi's team also has plan for 2022 to grow their user base and solve the 3C problem of institutions: capital, control, connectivity; that will unlock the trillions of dollars sitting on the side lines.