

SmartMoney/Enigma Research Note

September 21, 2021



YEARN FINANCE (\$YFI)

- TYPE: AM
- CHAIN(S): ETH, FTM
- CIRCULATING SUPPLY: 35,414
- MAX SUPPLY: 36,666
- TVL: \$4.26B
- MARKET CAP: \$1.06B
- CONTRACT ADDRESS:
• 0xbc529c00c6401aef6d220be8c6ea1667f6ad93e

PRODUCT OVERVIEW/SUMMARY

Yearn Finance is a decentralized finance platform that manages user deposits to generate yield from other decentralized finance applications. For users, Yearn offers a passive digital asset investment manager. Yearn was launched on the Ethereum blockchain and is governed by YFI token holders.

Yearn's first product launched lending automation to optimize passive income generation. Users could deposit Ethereum-based tokens into Yearn pools that would automatically invest and re-balance the aggregated funds across several DeFi borrowing and lending applications to seek the best interest rates for the highest return on invested capital. Since then, Yearn cultivated an ecosystem of integrated DeFi applications that systematically optimize decentralized asset productivity. Beyond Yearn's yield farming aggregator, ecosystem applications provide protocol-to-protocol lending, decentralized operations and maintenance, and community collaboration.

WHY IT'S INTERESTING

Product

Yearn's flagship product, Yearn Vaults, otherwise known as yVaults, deploy dozens of strategies across many assets and DeFi protocols. yVaults re-invest user deposits to earn returns with a variety of yield generating DeFi applications. Numerous yVaults employ strategies across the entire Ethereum DeFi ecosystem. Some yVaults are large enough that they employ several strategies to maintain flexibility and preserve user principal.

Vault strategies seek to optimize yield on one or more digital assets. While some strategies earn governance token liquidity rewards, they use those rewards to purchase more underlying tokens deposited in the Vault. This way earned yield is easier for users to forecast. Also, this maintains a liquid market for the token being issued because yVaults circulate the newly issued tokens by selling them for the underlying assets.

Key partnerships provide Yearn vaults with advantages over other investors. Yearn's lending partner, C.R.E.A.M Finance, enables yVaults to borrow funds for leveraged yield strategies. Economies of scale at the Vault and protocol level mean yVaults earn higher ROE and ROI than individuals that deploy comparable yield strategies. SushiSwap enables users to withdraw their funds and yield in a select variety of DeFi assets. For a fee, Yearn's zap feature will exchange the investor's underlying assets at both deposit and withdraw. Zap expands the variety of asset deposits Yearn pools accept. This enables users to earn yield on a particular asset without eliminating exposure to the original long position.

Currently in v2, yVaults earn 2-and-20 fees. An annual 2% management fee is assessed to the entire vault daily. The 20% performance fee is assessed each time a vault harvests a strategy, which means it purchases more deposited assets with the yield assets earned. Vaults only harvest yield if it will be profitable for users after fees are assessed.

Users receive yVault tokens in proportion to their share of each vault in which they deposit digital assets. The yVault token is like a liquidity provider, or LP, token from a DEX: it is a derivative asset that represents a portion of deposited underlying assets in a shared pool. The yVault is priced in the amount of deposited tokens they can redeem. If the yVault token price increases from the time of deposit, it can redeem more underlying tokens than deposited. Ultimately, yVault investors earn yield denominated in the yVault's underlying tokens.

Example yVault Returns

Initial Deposit	100
Initial Vault Tokens	10,450
Initial yTokens	10,000
Strategy Target APY	24.9%
Management Fee	2.0%
Performance Fee	20.0% <i>*Fees increase yTokens, dilute investor shares</i>

Week	Investor Deposit	Investor yTokens	Vault Tokens	Vault yTokens	Price yToken
0	100.00	96	10,450.00	10,000	1.0450
1	100.42	96	10,500.00	10,006	1.0494
2	100.84	96	10,550.24	10,012	1.0538
3	101.26	96	10,600.72	10,018	1.0582
4	101.68	96	10,651.44	10,024	1.0626
5	102.11	96	10,702.40	10,030	1.0670
Investor APY:	21.92%				

Source: How to Understand yVault ROI. Documentation. Yearn.finance. Accessed 9/19/21. <https://docs.yearn.finance/resources/guides/how-to-understand-yvault-roi>

The lending aggregator, Earn, pools user assets to optimize interest revenue from borrowing and lending protocols. Users deposit any of DAI, USDC, USDT, TUSD, sUSD, and wBTC to Earn pools on Yearn. Earn pools then stake and unstake the funds across Aave, Compound, and dYdX based on the highest offered interest rate. For their deposits, users receive yTokens, or interest-bearing derivatives based on their underlying asset deposit. yTokens typically trade at a premium to their underlying stablecoins. Currently, over \$661MM TVL is available on Curve's yDAI+yUSD+yUSDT+yTUSD pool that fulfills \$8MM average daily volume.

Aggregated assets are more efficient than individual holdings. Yearn’s vaults distribute Ethereum gas and other transaction costs throughout the pool. Because Ethereum gas is priced according to transaction complexity, gas does not necessarily correlate to transaction value. For an investor, this means a yCRV vault on Yearn is more profitable than the associated liquidity pool on Curve itself: average Curve APYs over the last 30 days lag current Yearn yields on comparable vaults.

Average Daily APY per Curve Pool

Curve Liquidity Pool	<u>compound</u>	<u>y</u>	<u>busd</u>	<u>susdv2</u>	<u>pax</u>	<u>ren</u>	<u>sbtc</u>	<u>hbtc</u>	<u>3pool</u>
30 Days	3.0%	1.4%	1.6%	1.1%	0.2%	0.2%	0.2%	0.1%	0.5%
Yearn yVaults	Curve Compound	Curve yCRV	Curve busd	Curve busd	Curve sUSD	Curve renBTC	Curve sBTC	Curve hBTC	Curve 3Crypto
Current APY	7.6%	0.2%	2.1%	2.1%	9.3%	2.7%	8.8%	3.9%	19.9%

Curve: <https://curve.fi/dailystats>; Yearn: <https://yearn.finance/vaults/0x4B5BfD52124784745c1071dcB244C6688d2533d3>

Partnerships, Integrations, and Community

Few DeFi platforms drive industry collaboration like Yearn’s development community. The Yearn development community collaborated with three other protocols to create a synergistic, “coalition,” to drive industry-wide capital efficiency. Primarily, SushiSwap serves as Yearn’s official AMM provider for all DEX transactions. In 2021, protocol-to-protocol lender, C.R.E.A.M. Finance merged with Yearn. Their Iron Bank product provides all leverage to Yearn to keep interest within the ecosystem. Lastly, Keep3r Network provides automated development operations to function as Yearn’s, “back office.” Keep3r’s automation applications more precisely customize Yearn vaults where Ethereum smart contracts fall short, like harvesting yields in yVaults.

Yearn is currently one of Curve’s largest CRV holder and staker. Yearn aggregates CRV tokens and locks them into Curve’s governance contract indefinitely using the “Backscratcher” yVault. In exchange, Yearn receives veCRV, the subsequent Curve Protocol Fees, and CRV boosts for select Curve liquidity pools. Finally, the Backscratcher yVault distributes the CRV boosts to other yVaults that use provide liquidity on Curve as part of their yield strategies.

With a significant portion of CRV locked by the Yearn, Curve benefits from stable CRV value and reliable exchange liquidity. Yearn’s locked CRV increases as more Yearn gains depositors. Locked CRV limits liquid supply and stabilizes a high CRV price. Additionally, Yearn pools earn higher LP yield on Curve than any user could because of the aggregated CRV boosts. As long as Yearn can maintain this advantage, it will remain one of Curve’s largest LPs, and Curve’s status as one of the most liquid exchanges by TVL.

Governance

Platform participants use the YFI token to propose and vote on Yearn improvements and decisions. Proposals, deliberation, and voting occur off-chain on Year’s Snapshot page. Though the platform is not fully decentralized, Snapshot provides a detailed record of the blockchain’s state, and YFI staked, at the time of voting to closely simulate on-chain voting.

A proposal must pass two stages of discussion and voting to pass. Once proposed, three discussion days must include at least 25% votes in favor of the measure. Then, a participant must submit the proposal to

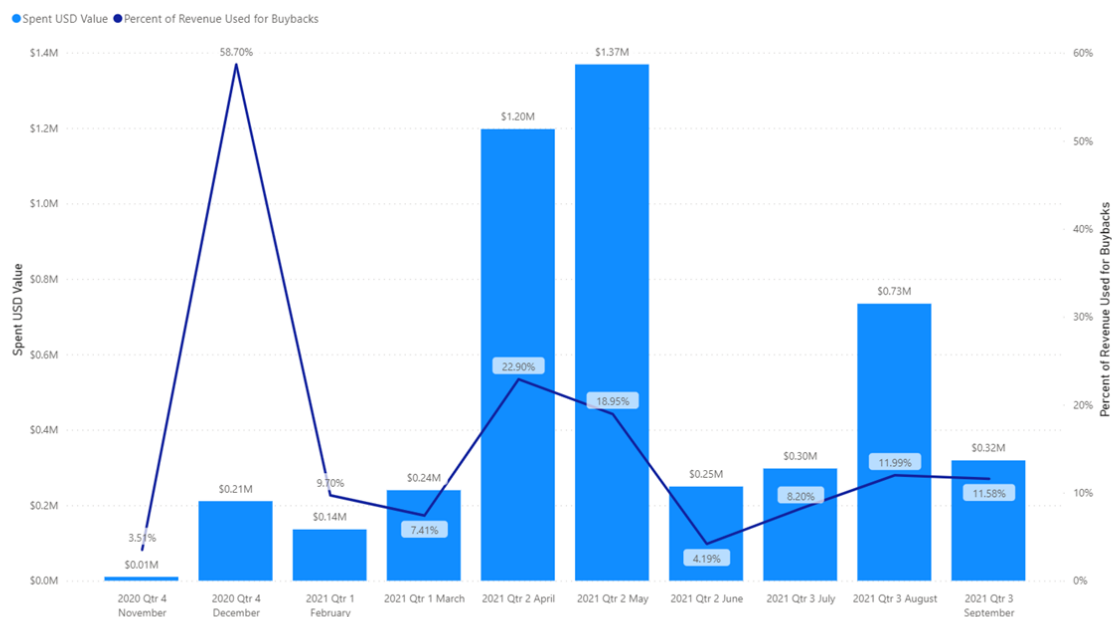
Snapshot, with at least one YFI token in their possession. On Snapshot, a proposal must receive 50% of all votes over five days to be eligible for implementation by the multisig panel.

After a vote is passed, Yearn improvements are implemented on-chain by the panel of multisig signers. The nine-person panel is elected by YFI holders on Snapshot to implement all approved proposals. They each share individual access to a wallet that requires at least Six of the nine signers to approve any implementation before the updated can take effect. The Yearn operations or protocol core team update the protocol code once approved.

TOKENOMICS

Monetary Policy

The Yearn token, YFI, is used to govern the platform and partner with other DeFi protocols. After the entire 36,666 YFI supply was minted, protocol participants voted to initiate a YFI buyback program to control YFI supply. Buybacks replaced protocol revenue as dividends to YFI holders. Controlled YFI supply is intended to increase YFI value for holders, among which the Yearn Treasury is the largest. In the future, YFI supply can be used by the community to incentivize participation or compensate YFI developers.



Yearn Stats: YFI Buybacks. <https://www.yfistats.com/financials/YFIBuybacks.html>

Over the last year, two measures demonstrate YFI’s value to the protocol. First, in February 2021, YFI holders voted to grow the 30,000 YFI supply by 6,666. Of the newly minted tokens, 2,222 were paid to Yearn developers with various vesting schedules. Second, in the same month, Yearn used YFI tokens as collateral to open collateralized debt positions, or CDP, on the Maker and Unit.xyz protocols. Yearn’s new yield-farming committee leveraged the debt to begin proprietary yield farming to earn additional revenue to the protocol’s

treasury. On both occasions, the Yearn community used YFI to increase the protocol's value and bolster its future earning potential.

Value Accrual

Yearn maximizes asset productivity to drive revenue, often with leverage. Since its 2020 debut, Yearn generated most revenue from V2 Vaults. The year-over-year exponential growth demonstrates the value created by iterations of community and protocol development.

Summary Income Statement						
Year Quarter	2020			2021		
	Q3	Q4	Total	Q1	Q2	Total
Protocol Income						
Vaults V1	3,150,325	1,746,823	4,897,148	3,802,911	3,632,716	7,435,627
Vaults V2	-	530	530	1,673,232	14,783,517	16,456,749
Vault Other	-	-	-	6,798	-	6,798
Total	3,150,325	1,747,353	4,897,678	5,482,941	18,416,233	23,899,174
Growth		-45%		214%	236%	388%

Yearn Stats: <https://www.yfistats.com/financials/IncomeStatement.html>

Yearn Finance Valuation Multiples				
Market Cap	714,590,581	658,368,119	1,127,167,596	1,205,682,363
Price / Sales	226.8x	376.8x	205.6x	65.5x
TVL	1,217,151,796	540,140,111	1,775,017,813	4,000,390,567
MC / TVL	0.6x	1.2x	0.6x	0.3x

TVL: DeFiLlama; Price, Volume: CryptoCompare; MC, Supply: CoinGecko

In Yearn's most recent financial statements, TVL reports both short term yVault assets and long term YFI holdings in the Yearn Treasury. As Yearn develops its treasury investment strategies, it will be necessary to monitor both P/S and TVL/MC valuation multiples. As of Q2-2021, both show that revenue and total assets far outpaced Market Capitalization growth. This disparity shows that Yearn's protocol generates far more value than its token.

COMPETITIVE LANDSCAPE AND RECOMMENDATION

No other DeFi protocol competes with Yearn Finance in the Asset Management category. Yearn's community and ecosystem of applications create scale that approaches some Decentralized Exchanges. Together, size and ecosystem create economies of scale that provide Yearn's yield generating strategies significant edge over competing AM platforms and individual investors.

Top DeFi Protocols by TVL, USD Billions

<u>Name</u>	<u>Chains</u>	<u>TVL</u>	<u>TVL/MC</u>
Curve	Multi	\$13.23	0.1x
Aave	Ethereum	\$12.67	0.3x
InstaDapp	Ethereum	\$12.01	0.0x
Compound	Ethereum	\$10.48	0.2x
WBTC	Multi	\$8.83	1.0x
MakerDAO	Ethereum	\$8.53	0.3x
Convex Finance	Ethereum	\$7.36	0.3x
Lido	Multi	\$5.74	0.1x
PancakeSwap	Multi	\$4.86	8.8x
SushiSwap	Multi	\$4.67	0.4x
YearnFinance	Ethereum	\$4.58	0.2x

Dashboard, DeFi Llama: <https://defillama.com/home>

While critical for governance participation, the YFI token is outclassed by Yearn's yVaults as investment vehicles. Yearn provides investors dozens of unique strategies to put their DeFi assets to work. Stablecoin-based yVaults are particularly advantageous for Yearn. Without a minimum investment period, Yearn offers the most attractive use for stablecoins besides remittances. Yearn occupies a central role in the stablecoin value chain on Ethereum. As one of Curve's largest liquidity providers, it keeps stablecoin exchange spreads low and stabilizes their pegs. This simultaneously drives stablecoin lending yields as long as Yearn vaults leverage deposits to drive returns. The Yearn ecosystem provides investors with positive, sustainable and valuable feedback loops.

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