Valuation of Curve Finance: The Most Overlooked Protocol

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Apr 29, 2021

Curve Finance is possibly the most important and overlooked protocol in DeFi. It just surpassed $1 billion in daily volume with $7 billion in deposits including factory pools. Many users of major lending platforms or decentralized exchange aggregators indirectly use Curve without realizing it.

In this report, we will first look at what Curve Finance is and explain its native token's economics. If you're already familiar with the platform, please jump into the quantitative analysis on its valuations compared to other exchanges and review the protocol's strengths and risks.

Introduction to Curve Finance

Curve's founder Michale Egorov published the "StableSwap" whitepaper in November 2019 and eventually renamed the protocol to launch Curve Finance on February 10, 2020. Curve is an automated market maker (AMM) protocol optimized for trading between assets expected to be price stable with one another like stablecoins. Initially adoption was slow, with DeFi a relatively new concept and Curve having only attracted $2 million of deposits and $1 million of volume in the first few days after launch.

The launch of Curve's native token CRV on August 14, 2020 marked a significant turning point in adoption. With the new incentivize liquidity providers, deposits immediately grew +180% to $1.2 billion. Curve has since grown deposits to nearly $7 billion today.

M E S S A R I

Total Deposits on Curve Finance Approaching $7 billion

Total Deposits on Curve Finance including factory pools (US$ billions)
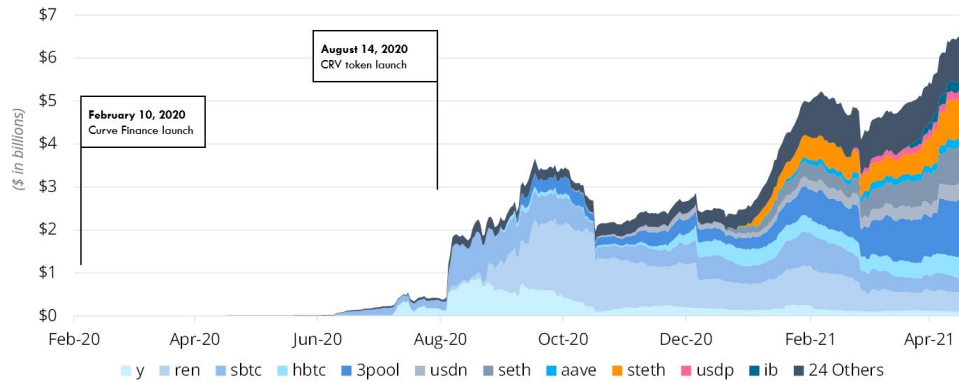
Data as of: April 28, 2021
Source: Curve Finance, Messari

While several AMMs enable token swaps, Curve is one the pioneering AMM protocols enabling low slippage trades between price-stable assets such as stablecoins. This allows for low slippage trades between many assets expected to be stable with one another including pegged tokens, vault tokens, lending deposits, and more. For example (below) the four pools involve tokens pegged to the same asset: the USD (3pool), BTC (ren and sbtc) and ETH (steth):

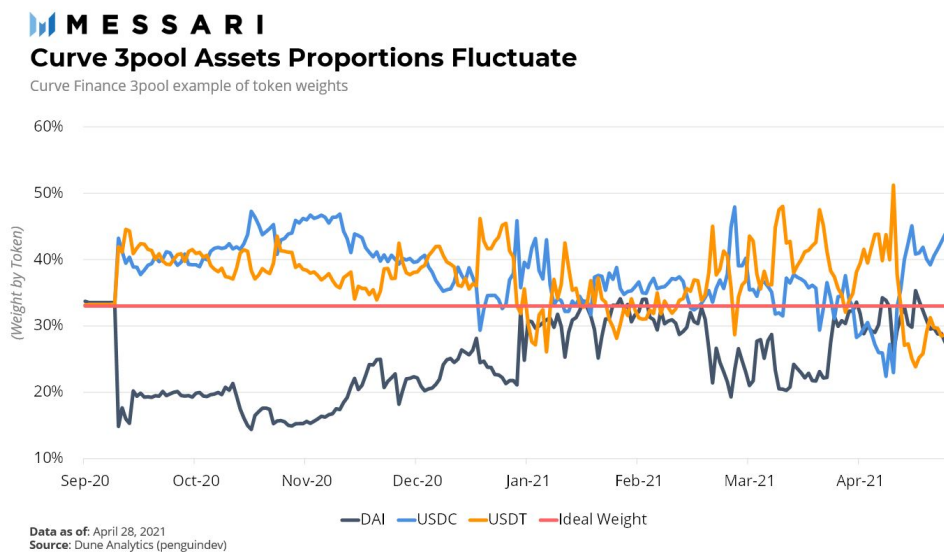| Pool	Base APY	Rewards APY	Volume ▾
ren BTC renBTC+wBTC	1.09%	+1.84%→4.61% CRV	$69.4m
sbtc BTC renBTC+wBTC+sBTC	1.77%	+1.61%→4.03% CRV	$54m
3pool USD DAI+USDC+USDT	0.8%	+14.49%→36.24% CRV	$42.8m
steth ETH eth+steth	4.6%	+4.10%→10.25% CRV +9.15% LDO	$34.8m

Source: Curve

Since the tokens should trade similarly at par-value, when users deposit a token, it gets distributed between the resulting weights of the pool. For example, if a user deposits USDT into the 3pool, she will also have exposure to USDC and USDT in the ratio quoted by the protocol:

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This also helps stablecoins maintain their correct peg, by making it easy for traders to arbitrage when the price deviates from its peg. Taking the example above, the pool is relatively low on USDC and high on USDT, because the optimum balance is equal in proportions (33.3% in the case of three tokens in a pool). Due to demand, a liquidity provider (LP) offering USDC deposits will be quoted a slightly higher price (say $1.001) than an LP depositing USDT (say $0.999). The same concept applies to the reverse when a LP withdraws liquidity or when a user swaps between stablecoins in the same pool. This balancing mechanism helps to maintain the peg and simultaneously changes the weight of the equivalent assets within in the same pool:

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Curve 3pool Assets Proportions Fluctuate
Curve Finance 3pool example of token weights

Data as of: April 28, 2021
Source: Dune Analytics (penguindev)

Curve is able to facilitate this mechanism by employing a unique AMM combination of both constant sum and constant product functions. The result looks like the blue line (below). Curve employs a constant sum function around the balance point to minimize trading slippage. As the price of the underlying assets deviates from the center point, the blue line shifts from a constant sum to a constant product function in order to ensure liquidity is available as prices tend to zero or infinity.
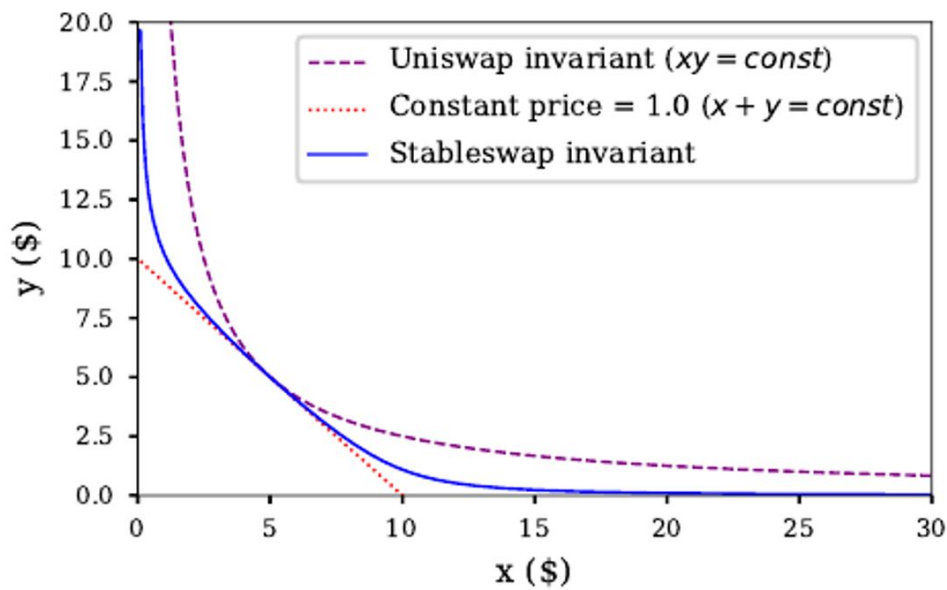
Exchanging one stablecoin for another is problematic on constant product function AMMs (such as Uniswap v2 or SushiSwap) as the price slippage could be meaningful. Therefore, Curve is the most popular venue to swap between stablecoins.

At time of writing, Curve has 35 different liquidity pools, each offering different returns to liquidity providers. In this way, Curve also allows token hodlers to gain yield on their underlying holdings with minimal risk of impermanent loss. When LPs deposit their tokens, in return for providing liquidity, they can receive fees as Curve charges traders 0.04% for each swap. Some liquidity pools are further incentivized, meaning that on top of collecting 50% of the fees generated, LPs can also collect additional token rewards (not necessarily in CRV). In the first example above, the "steth" pool offers LDO tokens (the equivalent of +9.15% annual yield) as an additional incentive in the hopes of seeing the size of that pool grow faster.

Curve also accepts relevant tokens from other protocols or automatically wraps users' deposits if they choose to add to one of the pools with lending. For example, a user can deposit DAI, and Curve will automatically wrap it, while adding a prefix to indicate the interacting protocol. Common examples of prefixes include y, c, a, or s for Yearn Finance, Compound Finance, Aave and Synthetix respectively. For example it would be renamed to yDAI for Yearn Finance or cDAI for Compound. Holding cDAI means the user has the right to withdraw DAI from Compound plus collect interest from lending their deposit. Similarly, tokens can also be consecutively wrapped in two platforms with the prefix yc or cy (e.g. cyDAI, ycDAI).

Yearn Finance has several "y pool"s -- which simply means all pools using yTOKENs like the pools named Y and BUSD in the below example of wrapped deposits:

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Pool		Base APY	Rewards APY	Volume ▼
BUSD USD yDAI+yUSDC+yUSDT+yBUSD		20.49%	+7.58%→18.94% CRV	$4.2m
Y USD yDAI+yUSDC+yUSDT+yTUSD		16.35%	+5.01%→12.52% CRV	$3.2m
ironbank USD cyDAI+cyUSDC+cyUSDT		4.97%	+27.84%→69.59% CRV	$5.9m
Compound USD cDAI+cUSDC		7.8%	+12.13%→30.31% CRV	$249.3k
saave USD aDAI+asUSD		9.16%	+18.25%→45.63% CRV	$0

Source: Curve

CRV Token Uses

On the day the CRV token was launched in August 2020, the platform's deposits nearly tripled. This is because LPs are incentivized to provide liquidity by CRV. Higher deposits benefits Curve Finance as a venue for high liquidity and efficient trading. While CRV is used to incentivize liquidity and grow the community, its main uses are voting, staking, and boosting rewards. To enjoy these use cases, tokenhoders are required to lock CRV for veCRV, which stands for vote-escrowed CRV.

Votes and rewards are weighed by both the quantity of tokens and the duration for which the tokens are time-locked. The longer the locked up period, the greater the voting power or the larger the rewards. Users can lock CRV for a minimum of a week, up to four years. The longer users lock CRV for, the bigger the "boost" (up to 2.5x), which means that the user receives more veCRV. This makes sense as the long term stakeholders are aligned with the protocol's success. As of time of writing, 49.5% of all circulating CRV is vote-locked for an average of 3.7 years. This long duration is surprising in the crypto markets but due to staking from the team and vaults like Year. It's positive for Curve as long term stakeholders are aligned with the protocol's success.

veCRV is used to govern Curve Finance, which is controlled by a Decentralized Autonomous Organization (DAO). veCRV holders can submit a new proposal (if they hold at least 2,500 veCRV) and vote for proposals (no minimum required). Voting can be useful, for instance, in incentivizing LPs to deposit to certain pools with outsized rewards or even perhaps changing the tokenomics of CRV, such as fee burn of tokens to reduce inflation. For example, soon after launch, someone purchased a large amount of CRV on the market, locked the tokens on the DAO and voted for a 308% APY reward for the Compound pool. In a less extreme example, Yearn can propose to increase the yCRV gauge weight, which means that a greater proportion of daily rewards goes to their relevant pools.

Also, users who lock CRV will receive fees generated by the liquidity pools, in addition to deposit and withdrawal fees. Users who lock CRV in return for veCRV are entitled to fees generated by the protocol's liquidity pools. Of the 0.04% swap fees charged, half of it rewards LPs and the other half rewards veCRV holders. Deposit and withdrawal fees are more difficult to calculate as it's not a fixed amount.

CRV Token Supply

The CRV token was launched on August 14, 2020, with an initial supply of 1.3 billion CRV up to an eventual maximum of 3.03 billion tokens. The initial allocation of 1.3 billion CRV (or 43% of the total maximum issuance) was distributed as follows:

- 5% to pre-CRV launch liquidity providers (1 year vesting period)

- 30% to shareholders and team members (between 2 to 4 years vesting)

- 3% to employees (2 years vesting)

- 5% to the community reserve

The remaining 57% to reach the 3.03 billion maximum tokens will be issued to liquidity providers without a vesting schedule. The final distribution looks as follows:
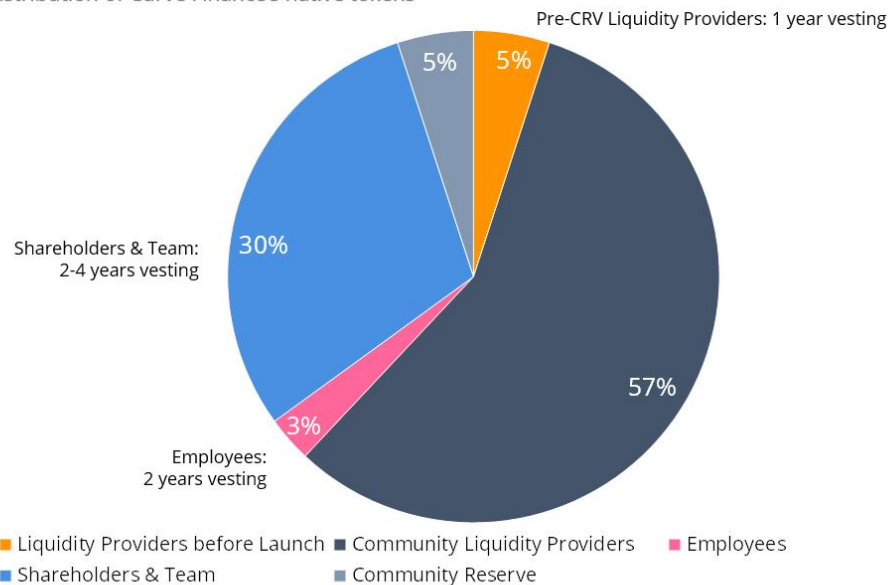
Source: Curve Finance, Messari

While 1.3 billion CRV tokens were issued at launch, the circulating supply was 0 due to the respective vesting schedules. About 2 million CRV tokens are issued each day, as a reward allocated across the 35 liquidity pools. The supply will be issued at a decreasing rate until the 3.03 billion maximum supply is reached, at approximately the year 2320, or 300 years. Below is the supply growth up to August 2026:

CRV Token: Circulating Supply Inflation is High but Decelerating

Curve Finance token supply inflation (billions of tokens)
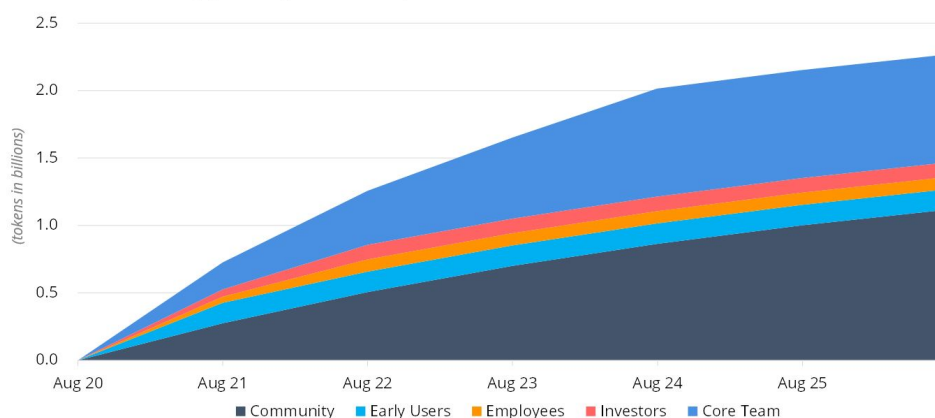
Source: Curve Finance, Messari

Valuation Methodology

We value CRV using Price to Sales (P/S) multiples, P/S-to-Growth and Dividend Yield comparables. In our valuation, we apply bull, base, and bear cases to get a range of valuations. We value CRV solely based on its core AMM product, assuming that all CRV holders want the fees generated by the platform. While this is an economically rational assumption, the reality is that not all CRV holders will take the step to stake their tokens for veCRV.

Listed Equities Comparables

Below we look at comparables to listed equities, such as the Hong Kong Exchanges and Clearing Limited or the Intercontinental Exchange. The value accrual to CRV is similar in that:

- **Fund Flows:** CRV distributes a portion of protocol fees to token holders, and Curve's smart contract ensures that fees are distributed programmatically. Therefore, even without legal recourse, CRV provides a similar outcome to traditional enterprises.

- **Governance**: Similar to traditional companies, daily operations, business development is decided by the team. However, CRV's governance token has control rights over the protocol, which is ensured through smart contracts.

Curve Finance Trading Volume Growth Assumptions

In the near term, we project the volume based on monthly growth in the past several months. Curve's volume was volatile in 2020 given the protocol was new. It still continues to be volatile but, in the past few months, has averaged ~30% in month-on-month trading volume growth. We extend this and forecast growth at a decelerating rate. To be conservative, within a year, we quickly bring the forecasted monthly compounding growth rate from 30% to 2%.

Curve Finance: Forecasted Volume Growth Assumptions

Estimates on Monthly Curve Finance Volume Growth (US$ in billions)

Data as of: April 15, 2021
Source: Messari, Dune Analytics (hagaetc)
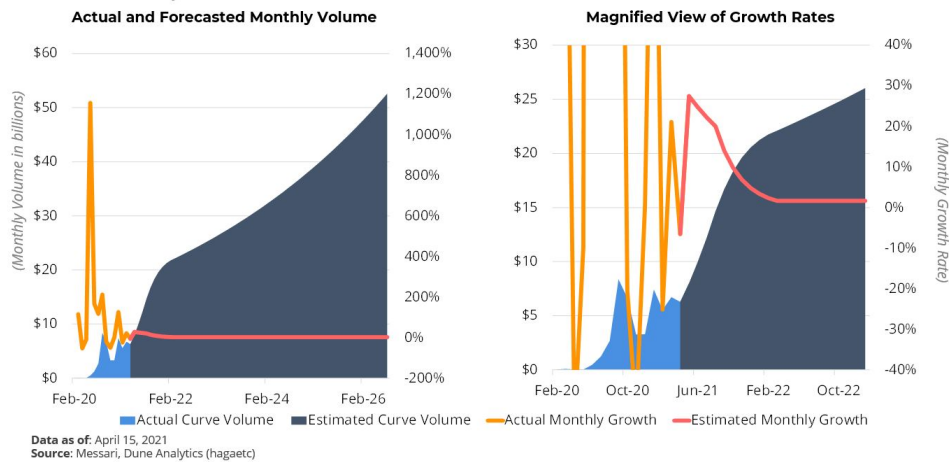
To further address the issue of uncertain growth, we sought to maintain relatively constant market share between Curve and its peers SushiSwap and Uniswap. Based on our Uniswap and SushiSwap models, we maintained Curve at approximately half the volume of Uniswap. Readers who want to reflect different growth rates can create a copy of the model for editing to reflect their views.

Volume Growth Assumptions: CRV Maintains Market Share

Estimates on Annual Decentralized Exchange Volume Growth (US$ in billions)

Source: Curve Finance, Messari
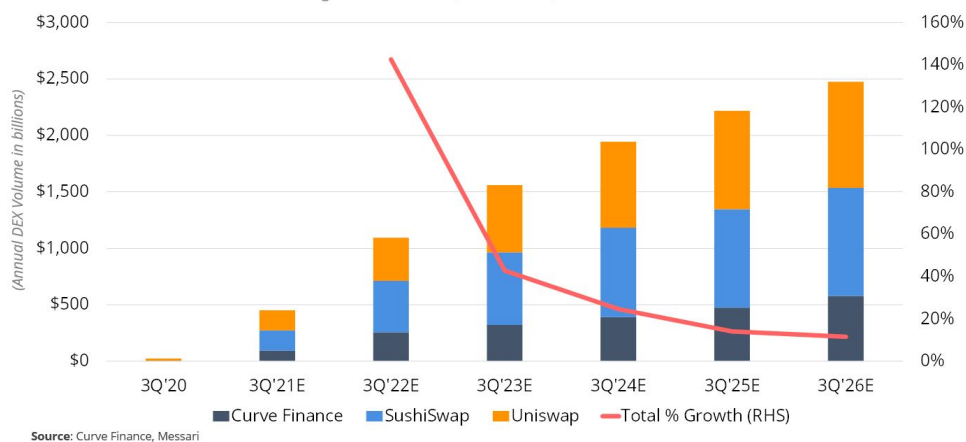
In reality, there is limited visibility on any DeFi platform's long term growth, so we only address the August-2021E valuation in this report.

Price to Sales (P/S) Multiple

We look at global traditional finance and crypto-native companies as a set of comparables for CRV. As shown below, we use different multiples for our bull, base and bear case scenarios.

- **Bull**: Highest multiple of the comparables set

- **Base**: Average of crypto-native exchanges Coinbase (COIN US, listed on NASDAQ) and BC Technology Group (863 HK, listed in Hong Kong), plus a crypto merchant bank Galaxy Digital Holdings (GLXY CN, listed in Toronto).

- **Bear**: Average of all companies in our comparables set, including traditional stock market exchanges, which facilitates a mature market with lower growth.

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Comparable Financial Institutions

Comparables for Price / Sales, P/S-to-Growth and Dividend Yields

(US$ in millions unless otherwise stated)

	Market Cap (USD)	Price / Sales	% Sales Growth Esti.	P/S to Growth	Dividend Yield
Curve (Circulating Supply)	**$1,470**	**39.6x**	**225%**	**18**	**2.5%**
Curve (Circulating Supply - Unlocked)	**1,076**	**28.7**	**225%**	**13**	**3.5%**
Traditional Exchanges					
Hong Kong Exchange (388 HK)	$80,752	34.0	24%	141.0	1.7%
Intercontinental Exchange (ICE US)	68,218	8.1	16%	50.6	1.1%
Japan Exchange (8697 JP)	13,152	10.8	2%		2.2%
Singapore Exchange (SGX SP)	8,552	10.8	16%	68.5	3.0%
Euronext (ENX FP)	7,241	6.7	30%	22.2	2.6%
Moscow Exchange (MOEX RM)	5,413	7.9	11%	74.8	5.3%
Brokerages					
Goldman Sachs (GS US)	123,921	2.0	22%	9.3	1.4%
UBS Group (UBS US)	58,735	1.4	12%	11.4	1.2%
Credit Suisse (CS US)	27,063	0.8	0%		1.0%
BNP Paribas (BNP FP)	78,697	1.5	-1%		2.1%
Morgan Stanley (MS US)	153,309	2.4	16%	14.7	1.7%
Macquarie Group (MQG AU)	45,567	3.4	-12%		2.1%
Crypto-Native Listed Comparables					
Galaxy Digital Holdings (GLXY CN)	3,195	24.1	130%	18.6	0.0%
BC Technology Group (863 HK)	827	20.5	32%	63.9	0.0%
Coinbase (COIN US)	60,158	43.2	139%	31.1	0.0%
All Companies (Median)		**7.9x**	**16%**	**31.1x**	**1.7%**
All Companies (Average)		**11.8x**	**29%**	**46.0x**	**1.7%**
All Exchanges (Max)		**43.2x**	**139%**	**141.0x**	**5.3%**
Crypto Companies (Average)		**29.3x**	**100%**	**37.9x**	**0.0%**
Crypto Companies (Max)		**43.2x**	**139%**	**63.9x**	**0.0%**

Data as of: April 28, 2021
Source: Bloomberg, Messari

Uniquely, we apply the P/S multiple to the fees that CRV holders receive, due to some nuances between DeFi protocols and traditional financial institutions. We think of many DeFi protocols as "marketplaces" and of total fees paid to all sellers in these marketplaces as a kind of gross merchandise value (GMV). Decentralized exchange protocols aren't selling liquidity they own themselves, they are just a mechanism for connecting liquidity providers and traders, without participating as either. While CRV charges traders 4bps for exchanging assets through Curve, CRV holders only receive 2bps of the total. This is similar to a 50% take-rate that CRV tokenholders receive from the GMV of the exchange marketplace.

Furthermore, in the future, if a protocol's treasury runs dry -- it's conceivable that the community may vote to direct a portion of the fees paid to CRV holders to their treasury to cover expenses. This is a similar scenario to the one laid out by YFI's "Buyback and Build" proposal, where YFI holders voted to redirect protocol fees to a treasury in order to properly compensate core contributors.

All the above considered, we believe that the fees to CRV holders are the real "revenues", which is 100% passed on to tokenholders. Below is the valuation over time for the various cases:

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CRV Valuations Based on Price / Sales Multiples

CRV Token August 2021E Price based on various valuation cases

(US$ in millions unless otherwise stated)

		Aug-21	Aug-22	Aug-23	Aug-24	Aug-25	Aug-26
Listed Equities Price / Sales	**Target P/S**						
Bull Case	**43.2x**	$3.3	$4.2	$3.7	$3.6	$3.9	$4.5
Base Case	**29.3x**	2.2	2.9	2.5	2.4	2.7	3.1
Bear Case	**11.8x**	0.9	1.2	1.0	1.0	1.1	1.2
Average		**$2.1**	**$2.8**	**$2.4**	**$2.3**	**$2.6**	**$2.9**

Source: Messari

P/S to Growth (PSG) Multiple

This ratio incorporates the growth of the protocols or companies involved. Since listed companies are more mature than DeFi platforms, we take the last annual growth rate of traditional stock market exchanges and crypto-native listed comparables as an indicator of forward growth rates. We have excluded companies with negative or low growth such as Japan Exchange, Credit Suisse, BNP Paribas and Macquarie Group. The average annual revenue growth rate of all traditional finance companies was +11% compared to +100% for listed crypto comparables.

Since Curve has only recently begun operations, we look at the forward year ending August 2022 where growth is projected to be 225% based on our model. Applying the forward P/S to Growth multiples, we arrive at the below valuations under this metric.

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CRV Valuations Based on Price / Sales to Growth Multiples

CRV Token August 2021E Price based on various valuation cases

(US$ in millions unless otherwise stated)

		Aug-21	Aug-22	Aug-23	Aug-24	Aug-25
CRV Price: Price to Sales / Growth	**Target PS/G**					
Bull Case	**141.0x**	$24.2	$3.6	$2.8	$2.7	$2.9
Base Case	**63.9x**	11.0	1.7	1.2	1.2	1.3
Bear Case	**31.1x**	5.4	0.8	0.6	0.6	0.6
Average		**$13.5**	**$2.0**	**$1.5**	**$1.5**	**$1.6**

Source: Messari

Indeed, this valuation method penalizes CRV's valuation in 2022 and beyond due to slower annual growth rates (27% based on our model) while circulating supply inflation continues to grow at 156%.

Dividend Yield

In the same set of comparables, we look at Dividend Yields. Median and maximum dividend yields within the comparables set are at 1.7% and 5.3% respectively. We use these percentages for our Bull and Base Case. For the Bear Case, we use 11.6%, which is the market pricing for the average borrowing rate demanded across three major DeFi platforms.

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Dividend Yield Demanded Based on Borrow APYs
Borrow Annual Percentage Yield (APY) and Annual Percentage Rate (APR) by platform

Platform	Borrow APY (%)	Variable Borrow APR
Cream Finance		
Average	10.2%	
Weighted Average of Borrow Liquidity	6.2%	
Compound Finance		
Average	6.4%	
Weighted Average of Borrow Liquidity	3.8%	
Aave v2		
Average	10.5%	11.9%
Weighted Average of Total Borrowed	18.7%	25.2%
Average	**11.6%**	
Maximum	**25.2%**	
Minimum	**3.8%**	

Data as of: April 15, 2021
Source: Cream Finance, Compound, Aave, Messari

Below are the valuations over time for the various cases:

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CRV Valuations Based on Dividend Yield
CRV Token August 2021E Price based on various valuation cases

(US$ in millions unless otherwise stated)

	Target Dvd Yield	Aug-21	Aug-22	Aug-23	Aug-24	Aug-25	Aug-26
Dividend Yield							
Bull Case	**1.7%**	$3.3	$4.1	$3.6	$3.5	$3.9	$4.5
Base Case	**5.3%**	1.0	1.3	1.2	1.1	1.2	1.4
Bear Case	**11.6%**	0.5	0.6	0.5	0.5	0.6	0.7
Average		**$1.6**	**$2.0**	**$1.8**	**$1.7**	**$1.9**	**$2.2**

Source: Messari

Valuation of Governance Control

We don't assign a valuation for governance control at this time. While any user with at least 2,500 veCRV can submit a governance proposal, which can be pushed to a vote if there's a quorum, it's not yet entirely clear how to quantify the value of governance in and of itself. Chris Burniske and Joel Monegro of Placeholder have made interesting arguments for the value of governance alone, in one case drawing an analogy to the increasing amount of money it takes to win seats in the US congress. However, governance alone remains a fickle thing to value for the long term. Therefore, we assign no standalone valuation figure to governance.

CRV Valuation

Finally, we value CRV based on the probability-weighted outcomes of each method. Readers can adjust the model to their own estimates on which metrics are most important. For August

2021E, our model shows a valuation of CRV at $6.2 per token compared to the price of $3.0 at time of writing. There could be a 108% upside towards full valuation.

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Weighted Average CRV Valuation is $6.2

Probability-Weighted Valuation for August 2021E

	Valuation Metric	Description	Fiscal Year Aug-21	Probability Weight
Price to Sales	**Target P/S**			
Bull Case	43.2x	All Exchanges (Max)	$3.3	20%
Base Case	29.3x	Crypto Companies (Average)	2.2	10%
Bear Case	11.8x	All Companies (Average)	0.9	3%
Price / Sales to Growth	**Target PS/G**			
Bull Case	141.0x	All Exchanges (Max)	24.2	11%
Base Case	63.9x	Crypto Companies (Max)	11.0	11%
Bear Case	31.1x	All Companies (Median)	5.4	11%
Dividend Yield	**Target Dvd Yield**			
Bull Case	1.7%	All Companies (Median)	3.3	20%
Base Case	5.3%	All Exchanges (Max)	1.0	10%
Bear Case	11.6%	DeFi Borrow APYs (Average)	0.5	3%
CRV Valuation			**$6.20**	
Discount to Last Price of $2.99			-52%	
Upside Potential to Full Valuation Aug-2021E			108%	

Source: Messari

Valuation Sensitivity

We lay out the various implied pricing of CRV depending on an array of P/S, P/S-to-Growth and Dividend Yield multiples. We highlighted the multiples used in our valuations below.

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CRV Valuations Sensitivity Analysis

Implied price based on various Price to Sales, P/S-to-Growth and Dividend Yields

Target P/S Multiple	Implied Aug-2021E Valuations	Target P/S to Growth Multiple	Implied Aug-2021E Valuations	Target Dividend Yield	Implied Aug-2021E Valuations
50.0x	$7.7	**141.0x**	**48.5**	1.0%	$5.6
45.0x	6.9	120.0x	41.3	**1.7%**	**3.3**
43.2x	**6.6**	100.0x	34.4	3.0%	1.0
40.0x	6.1	80.0x	27.5	4.0%	0.9
35.0x	5.4	60.0x	20.6	**5.3%**	**0.8**
29.3x	**4.5**	**63.9x**	**22.0**	6.0%	0.9
25.0x	3.8	40.0x	13.8	7.0%	0.8
20.0x	3.1	**31.1x**	**10.7**	8.0%	0.7
15.0x	2.3	20.0x	6.9	9.0%	0.6
11.8x	**1.8**	15.0x	5.2	10.0%	0.6
5.0x	0.8	10.0x	3.4	**11.6%**	**0.5**

CRV's Valuation Comparables to DeFi Peers

Apart from valuations based on listed equities, we compare CRV to its DeFi AMM peers. By this measure, Curve is trading higher compared to peers such as SushiSwap or Uniswap (assuming the fee switch has been turned on). In the below table, we look at valuation metrics

comparing Q1'21 annualized volume, total fees to the protocol, Price to Sales and Dividend Yield. We don't look at Price / Sales to Growth as we have built the model to assume approximately unchanged market share and growth across the three platforms.

Curve demands lower fees (4bps) than its peers (30bps), which results in requiring much higher volumes to compensate for this difference in revenues. As a result, it's dividend yield and P/S ratios are priced above peers:

CRV Valuations Above Peers (SUSHI, UNI)

Comparables against SUSHI and UNI with respect to Dividend Yield and Price / Sales

(US$ in millions unless otherwise stated)

|	Price	Average YTD 2021 Weekly Volume	% Fees Total	Annualized Total Fees	% Fees to Token	Annualized Fees to Token	Circulating Supply (Unlocked) Supply (mm)	Dividend Yield	Price / Sales	Circulating Supply (Total) Supply (mm)	Dividend Yield	Price / Sales
CRV	$2.99	$1,530	0.04%	$32	0.02%	$16	353	1.51%	33.1x	482	1.10%	45.3x
SUSHI	14.37	2,654	0.30%	414	0.05%	69	202	2.38%	7.0	202	2.38%	7.0
UNI	43.11	7,132	0.30%	1,113	0.05%	185	313	1.38%	12.1	313	1.38%	12.1
Average (UNI, SUSHI)			0.30%		0.05%			1.88%	9.6x		1.88%	9.6x

Data as of: April 29, 2021
Source: Curve, Messari, Dune Analytics (hagaetc)

The chart below shows that CRV is trading at the highest P/S ratio but within the range of UNI and SUSHI for dividend yields:

Curve is Priced Highest to Comparables (UNI, SUSHI)

SUSHI and UNI compared to Curve's metrics on a circulating supply basis

CRV Provides the Lowest Dividend Yields · CRV Trades at the Highest Price / Sales Ratio
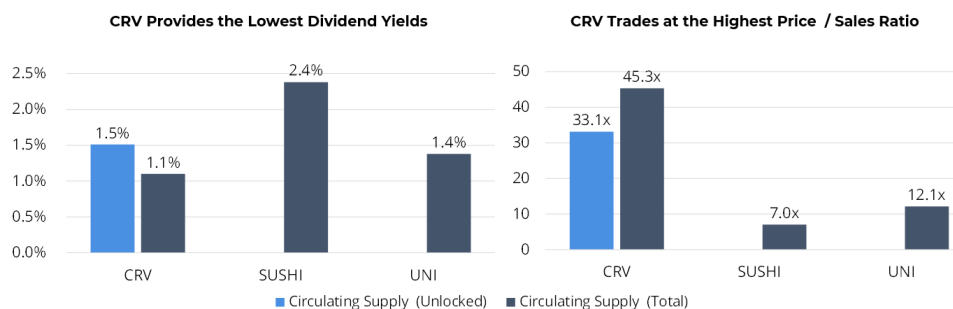
Data as of: April 29, 2021
**Source**: Curve, Messari, Dune Analytics (hagaetc)

Due to its exclusive focus on stablecoins, Curve has lower volumes compared to SushiSwap and Uniswap. Given the higher volumes sustained by SushiSwap or Uniswap, we may infer that users are not price sensitive between 0.05% fees to 0.30% fees. This could mean that if Curve votes to increase fees in the future, it may have a net positive effect on total revenues.

CRV's Valuation Premium

At current levels, though CRV has upside potential, it is trading above DeFi AMM peers on a P/S basis. What might justify the protocol to be trading above SushiSwap and Uniswap?

- **Growth Projections**: Expectations of high growth in stablecoin trading demand, especially on a protocol offering lower slippage with depth-specific liquidity. In the past 12 months, stablecoins transacted $1.5 trillion in volume and achieved $1 trillion in Q1'21 alone.

- **Loyal Community**: Curve has one of the longest lockup periods in DeFi with an average lock up period of 3.7 years. Therefore, Curve tokeholders and LPs have a vested interest in seeing Curve succeed for the long term as their motivations are aligned. The 3.7 year average lock up period is also a testament to the type of community Curve has -- investors that have holding power and perhaps larger balance sheets. Indeed that looks to be the case when the daily volume by the average user is orders of magnitude higher than other protocols:
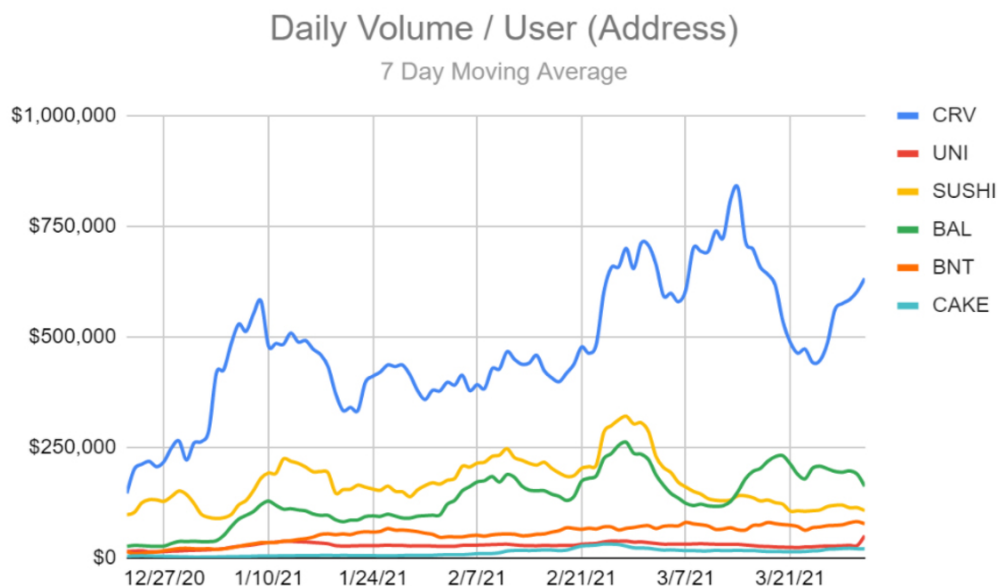
Source: Deribit

- **Network Effects**: Curve plays a key role in the DeFi ecosystem with major protocols such as Aave, Synthetic, Yearn Finance, and Compound building on it. Integrations with so many projects allows Curve to maximize rewards and give the protocol an edge in maintaining market share.

- **Air Drops**: CRV tokenholders are often eligible for airdrops, boosting the value of holding CRV. Curve's StableSwap on Binance Smart Chain airdropped STAX to veCRV holders In October 2020. StableXSwap sought to bring stablecoin governance participants to their network. Also, Ellipsis, an authorized fork of Curve's StableSwap gave 25% of the EPS supply to veCRV holders.

- **Regulations**: CRV arguably has *less* regulatory risk compared to its DeFi peers as the contract was deployed by an anonymous third-party account. It's possible the team deployed it through an anonymous account to mitigate any regulatory risk on the founders in the future. It's also possible that a third party deployed it to benefit from early rewards as a set number of CRV tokens get awarded in each block. Naturally, if there's only one user, they will get all the CRV tokens for the block. That resulted in roughly 20,000 CRV tokens being awarded to early stakers before Curve's official announcement.

- **Community Fund**: CRV's initial distribution allowed for a warchest of ~148 million CRV or $505 million to be used for community-led incentives.

- **Transparent Data:** Compared to other protocols, Curve Finance has perhaps the most data readily available on its website. This transparency and availability reduces uncertainty and instills confidence in the protocols by investors, users and LPs alike.

Key Risks to CRV's Price

Quantitatively, CRV is priced above peers, perhaps putting pressure on its ability to meaningful outperform. Below are is an assessment on other risks to CRV's current valuations

Relatively High Inflation: On Curve Finance, the daily new issuance is rewarding LPs. However, Curve's inflation schedule is aggressive relative to growth projections. For example, by 3Q'2022, SushiSwap's and Uniswap's annual inflation rates are 27% and 76% respectively, while Curve's is 156%. As a result, this dilutes Curve's per-unit metrics. More market buying is also required to offset the new daily issuance **Competition from Uniswap v3**: Launching in May 2021, it's possible that v3 will be able to offer tighter spreads with less risk and more capital efficiency. Users will be able to provide liquidity on Uniswap to the whole spectrum of prices or a given price range. Therefore we can expect Uniswap V3 to enable tight spreads for stablecoins **Further Forks**: Future forks may dilute Curve's market share in the stablecoin AMM space on Ethereum but may grow Curve's overall value. A fork of Curve is available on other blockchains, such as Ellipsis on Binance Smart Chain or Equilibrium which is building a cross-chain implementation of Curve on Polkadot. Ellipsis is an authorized fork while Equilibrium is developing the technology, while the Curve Finance team is supervising the development and will be running the application on Equilibrium's future Polkadot parachain. **Security**: As with all DeFi protocols, Curve is exposed to smart contract risk in their own protocol and all the protocols within their network. While Curve's smart contracts were audited by Trail of Bits, security audits don't eliminate risks completely. In December 2020, Curve discovered issues with IDLE token, which caused the pool to be safe in the long term. In March 2021, one of the deprecated pools was affected by a bug and the platform advised users to withdraw funds. **User Experience**: Even one of the most experienced developers in DeFi, Andre Conje, initially struggled to figure out how Curve works. There is an education process involved in learning how to use the protocol, which may put off users who are unfamiliar with DeFi. Examples of the challenges in user experience includes:

a. Liquidity pools are different from how a typical centralized exchange operates. As a result, new users may not be accustomed to trading by first choosing the relevant liquidity pool with more than two tokens.

b. Several tokens have prefixes and suffixes such as 3CRV, veCRV, CRV. It's not immediately clear to new users what this is or how they can utilize these pools. Furthermore, we even see further composability with tokens that look like TUSD3CRV-f, FRAX3CRV-f and waUSD3CRV-f.

c. CRV holders not only need to stake their tokens but also need to choose a specific locktime, which could affect how much boosted rewards they receive. While a lockup period of four years aligns tokenholders with the success of Curve, it can also be a daunting duration to receive the maximum boost.

d. Locking is not reversible so users won't be able to unlock tokens earlier.

e. The user interface, which is arguably more difficult to build than a modern website, looks like Windows 3.1.

f. There is a delay of at least eight days from the day users lock their tokens to being able to claim rewards. On an ongoing basis, fees are only available within 24 hours after Thursday midnight UTC.

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Weekly Fees	
Week Start	Fees
Thu Apr 22 2021 (in progress)	$4,285.24
Thu Apr 15 2021	$841,107.22
Thu Apr 08 2021	$1,071,386.23
Thu Apr 01 2021	$647,588.12
Thu Mar 25 2021	$557,207.26
Thu Mar 18 2021	$494,099.89
Thu Mar 11 2021	$613,907.82
Thu Mar 04 2021	$1,042,547.52

Source: Curve

- **Concentrated Voting**: Voting seems to be controlled by two parties, the team and Yearn Finance. Soon after the launch on August 23, 2020, the team was holding ~80% of the DAO's governance power. Since 30% is required to reach a quorum (the minimum participation rate required for a vote to pass), the team had outsized power, even in determining which proposals could be blocked from voting. According to Curve, this setup was a reaction to a wallet (representing the YFI community) taking 50% control, which the founder wanted to dilute before the governance system went live on August 28th. Also, only 6.7% of circulating supply was votelocked at that time.

  In November 2020, Yearn launched a vault that permanently locks CRV for four-year cycles and doesn't have withdrawal functionality. In return, depositors receive perpetual

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claims on Curve Dao administrative fees across all Yearn products. This could further increase the control Yearn has, which further concentrates voting power. As a result, other than receiving fees, the value of holding CRV for voting purposes diminishes as two parties have outsized power. While this is antithesis to the culture of decentralized finance, the offset is that strong team representation can also be a positive, especially if there are heavy incentives aligned with token holders.
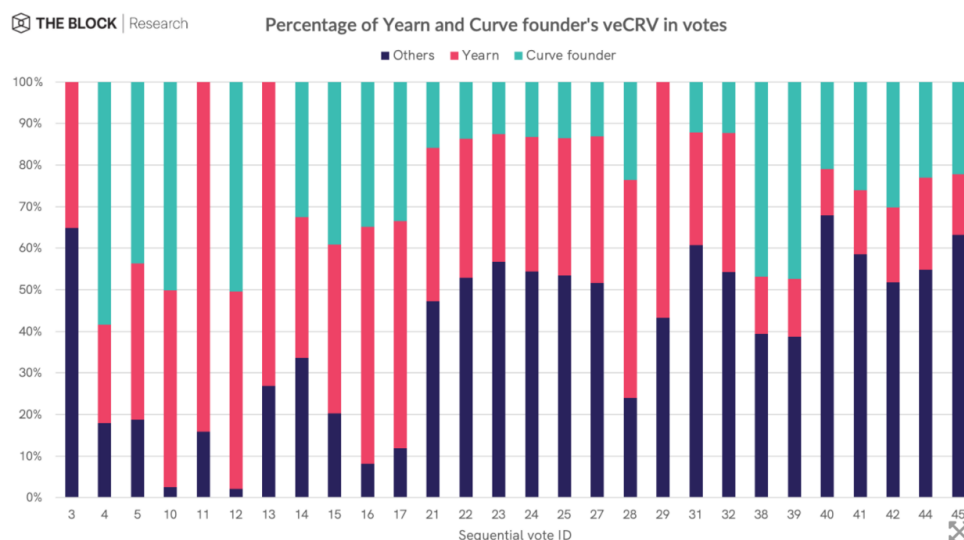
Source: The Block

Conclusion

Curve is a fundamental building block in the DeFi ecosystem. While it doesn't receive much recognition, it powers many of the largest platforms with liquidity on the back-end. We see upward potential for CRV's valuation due to increased attention to the importance of stablecoins. However, CRV could struggle to meaningfully outperform its DeFi peers due to increased competition that could erode Curve Finance's dominance in the space. Based on valuations, we see a 108% upside potential in CRV, though limited ability to outperform its peers meaningfully.

Please edit the model to your own assumptions here.

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