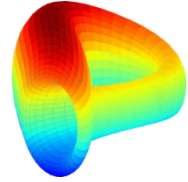




Enigma Research Coverage. February 7, 2022

# CRV Wars: Over before it Started



- TYPE: DEX
- CHAINS: ETH (L1, ARBITRUM, GNOSIS, OPTIMISM, POLYGON), AVAX, FTM, ONE
- CIRCULATING SUPPLY: 450 MILLION
- TOTAL SUPPLY: 1.68 BILLION
- MAX SUPPLY: 3.03 BILLION
- TVL: \$19.35 BILLION
- MARKET CAP: \$1.39 BILLION
- CONTRACT ADDRESS:  
0xD533a949740bb3306d119CC777fa900bA034cd52  
(ETHEREUM)

## Update

With the dust mostly settled from the so-called, “CRV Wars,” an update to our Curve coverage is long overdue. Curve remains systemically critical to most on-chain digital asset markets. The exchange maintains the deepest liquidity among several AMM DEXs. Most importantly, Curve is the digital currency hub, with more stablecoin volume than any other DeFi platform. It is no exaggeration to say that Curve’s markets, and liquidity providers, help to maintain stable asset price pegs. In 2021, Curve added crypto asset swaps beyond stablecoins on and off Ethereum, which tipped the exchange’s growth into hyperdrive.

Through decentralized governance, Curve participants control the protocol to determine new CRV issued to eligible exchange pools. So, LPs are incentivized to participate for maximum rewards. Governance participants earn a share of all trading fees, so CRV holders can contribute alongside mega LPs. Enter Convex, the Ethereum application that aggregated and automated CRV and veCRV staking and voting. By aligning all Curve ecosystem incentives, Convex beat Yearn, the reigning Curve liquidity aggregator, for a controlling stake in Curve’s governance within six months of launch.

The Convex protocol optimized LP and governance rewards. Moreover, Convex automation stabilized CRV issuance and diverted CRV supply from exchanges to productive use. By increasing CRV demand and optimizing staking, Convex boosted CRV price last fall. If Convex sustains its model, CRV value should increase over the long run, as well.



# CRV Wars

## *CRV Control*

Two aspects separate Curve governance from comparable protocols: commitment and rewards. Any Curve participant must lock CRV tokens into the protocol for veCRV, or vote escrowed CRV. Each veCRV represents one protocol governance vote. The veCRV:CRV ratio decreases from 1:1 as the CRV lock time decreases. So, to maintain a 1:1 CRV to vote ratio, each CRV must be continuously re-locked for four years. All veCRV holders receive half of Curve DEX fees as reward for locking their CRV into governance, also in proportion to CRV locking time. Similarly, liquidity providers that lock their LP tokens and vote-lock CRV receive boosted CRV rewards in proportion to their veCRV.

Each week, veCRV holders vote to decide which approved liquidity pools receive CRV subsidies. The CRV APR per pool is called the Gauge Weight. The community votes to update Gauge Weights to attract and retain liquidity on the exchange. The largest LPs can boost their trading fee revenue with additional CRV rewards. Additionally, more liquidity in a pool maintains low slippage that attracts DEX aggregators and large-scale traders to drive pool volume and trading fees.

Yearn Finance was first to aggregate CRV staking at a protocol level. As an asset management service, Yearn deploys DeFi strategies at scale to maximize rewards across DEXs, lending protocols, and several other projects. One of its most popular strategies, the Backscratcher pool, earned boosted rewards by optimizing liquidity provision on Curve based on the best Gauge weight. Before Convex launched, Yearn was the largest veCRV holder and one of the largest liquidity providers on Curve. In November 2021, Yearn began to delegate veCRV to Convex to further compound their Curve strategies.

## *Convex Finance & Curve*

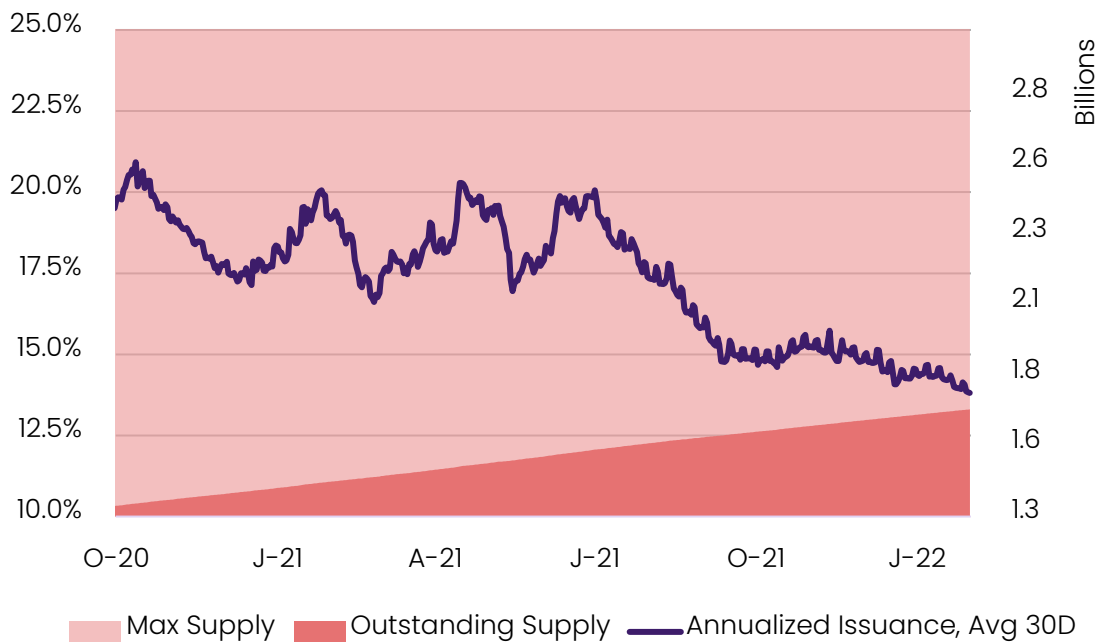
The Convex application maximized CRV governance rewards for the entire Curve ecosystem. The protocol automated each aspect of CRV staking to streamline governance. Additionally, Convex introduced another layer of incentives and liquidity for CRV stakers. While Convex routed most individual stakers from Curve, the application stabilized CRV issuance by



maximizing CRV locking. Ultimately, Curve and Convex confirmed the mutually beneficial economics when they formalized their partnership in 2021.

Convex provides two services to CRV participants: Curve LP staking and CRV vote-locking. First, Convex automated LP token staking. Curve LPs deposit their Curve LP tokens into Convex and receive both CRV and the Convex token, CVX. On Curve alone, LPs receive variable CRV rewards based on the boosted pools. If an LP is committed to a certain asset pair, but the CRV boost is voted to decrease in one week, their new CRV rewards declined. Instead, Convex aggregates all CRV rewards from all the Curve LP token deposits. Then, LPs that deposited into Convex receive CRV rewards in proportion to all CRV issuance across all pools.

### CRV Supply and Issuance

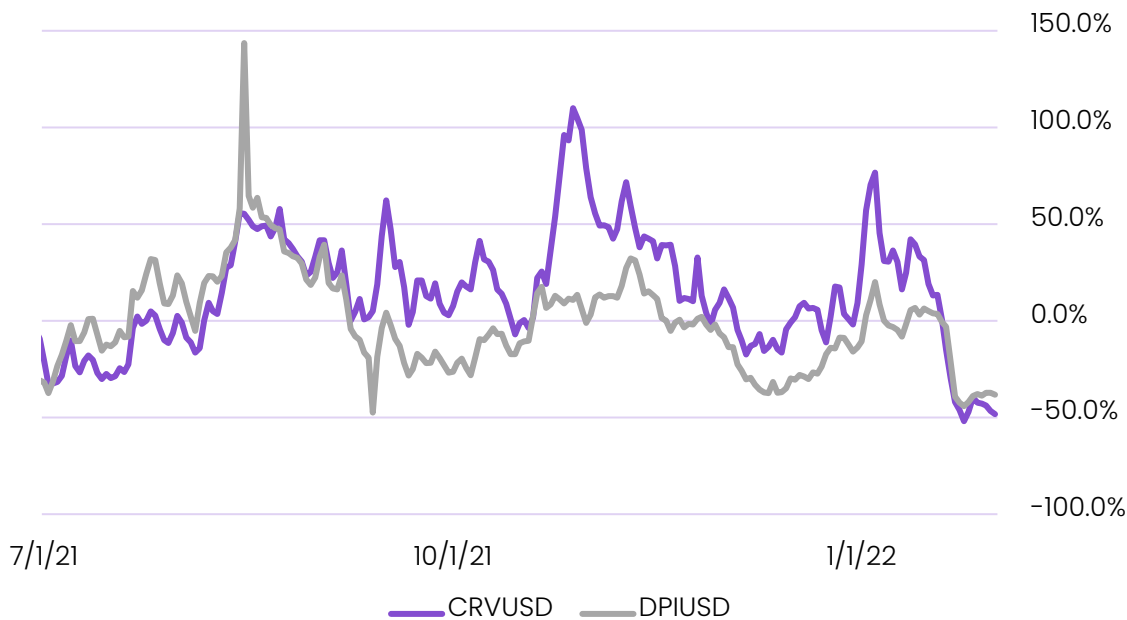


Since Convex launched Curve LP staking in Summer 2021, CRV issuance stabilized and even declined. Convex automated LP staking to maximize Curve rewards. This minimized the friction from transferring individual LP tokens, and aggregated LP token flows across the Curve platform. This made CRV issuance stable through early 2022, and is likely to increase the time to fully diluted Curve supply.



The Convex CRV staking service also transformed CRV Tokenomics. Staked CRV in Curve must be re-locked continuously to maintain veCRV, voting power, and platform fee returns. Convex automated CRV locking. Each CRV deposited in Convex is not redeemable, so Convex can automatically re-lock CRV each week. For their deposit, CRV stakers receive cvxCRV, like veCRV, except at an optimized ratio to their original CRV position. Then, stakers can lock cvxCRV into Convex to earn additional CVX rewards and 10% of all Curve trading fees. The Convex team also attempts to route any protocol airdrops targeted to veCRV holders to the cvxCRV stakers to closely match cvxCRV and veCRV Tokenomics.

Average CRV Returns, Trailing 30D



The Convex services immediately attracted CRV holders and renewed CRV demand. While DeFi prices declined or stagnated in 2021, CRV price diverged as Convex grew. Relative to the DeFi Pulse Index that tracks DeFi's most used applications - including Curve - CRV outperformed until this year's early market correction. Today, Convex locks over 10% of CRV supply, nearly 30% of all Vote-Locked CRV. As long as Convex continues to boost, optimize, and maximize CRV staking rewards, CRV demand will outpace comparable DeFi assets.



# CRV Valuation

## *Base Case*

From our initiation report, Curve's transaction fees drive CRV valuation for a Price-to-Sales comparative multiple. Since then, new Curve iterations across several ETH L2 and new L1 networks launched. By Feb. 2, 2022, annualized Curve DEX volume reached \$240B, from \$89B in Sep. 2021. These new networks include both stablecoin and crypto pools, however, total volume and liquidity remains fragmented by the challenged state of cross-chain services.

The updated model values CRV on a universal basis. Though networks remain siloed, Curve LPs and CRV holders can stake CRV to earn trading fees on each of the Curve applications. Though the model aggregates CRV supply, we adjust consensus Circulating Supply to Unlocked Supply. This is the existing CRV supply not locked in the Curve Vote-Lock application. Vote-Locked CRV is locked for an average of 3.6 years, so we assume this is not circulating. The remaining Unlocked CRV includes tokens that could be vesting with early investors or participants. Additionally, we calculate annualized Curve revenue as fees charged at 0.05% of all DEX volume. Curve's reported \$657M daily volume across all networks was annualized as of Jan. 31, 2022. This resulted in a fully diluted 88x P/S multiple.

After astronomical growth over the past year, all scenarios assume reversion in the long term. As fewer new L1 smart contract networks launch in the future, industry growth and multi-asset pools will drive Curve's long-term growth. Curve expansion will lead DeFi across all existing networks. All scenarios hold the model's currently estimated 88x FD P/S to show how CRVUSD price changes with DEX volume. Additionally, the Locked CRV Yield shows the new CRV issued at the average forecasted price, YoY.

At half of last year's DEX volume and CRV locking growth rates, Locked CRV reaches the maximum in 2023 and 2024. As DEX growth reaches a steady state, more CRV unlocks, but does not return to 2022 values. Locking CRV limits supply, which confirms CRV price growth. Additionally, CRV holders will rush to stake to earn new CRV as the price climbs. During positive growth environments, these two demand sources compound. Otherwise, if DEX volume stagnates, CRV locking continues to earn maximum CRV issuance. If CRV price falls, CRV locking grows to earn maximum trading fees. If both fall, CRV locking is a source of sustainable yield in what is likely a negative growth environment across all risk assets.



USD, Token values in millions, except per token price

Scenario	Base	31-Jan-2022	31-Jan-2023	31-Jan-2024	31-Jan-2025	31-Jan-2026	31-Jan-2027	31-Jan-2028	31-Jan-2029	31-Jan-2030
<b>CRVUSD Price</b>		<b>\$3.18</b>	<b>\$7.47</b>	<b>\$12.50</b>	<b>\$16.71</b>	<b>\$19.52</b>	<b>\$21.17</b>	<b>\$22.06</b>	<b>\$22.52</b>	<b>\$22.97</b>
CRV Market Cap, Fully-Diluted		\$10,512	\$24,672	\$41,291	\$55,196	\$64,491	\$69,920	\$72,864	\$74,397	\$75,885
Market Cap, Unlocked		\$4,043	\$5,723	\$1,361	\$2,070	\$5,925	\$12,826	\$14,448	\$14,237	\$14,257
Market Cap, Locked		\$1,307	\$8,567	\$5,134	\$6,862	\$8,018	\$8,693	\$9,059	\$9,250	\$9,435
<b>Supply &amp; Issuance</b>										
Max Supply		3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303	3,303
Outstanding Supply		1,681	1,913	2,177	2,478	2,820	3,209	3,303	3,303	3,303
Growth		13.8%	13.8%	13.8%	13.8%	13.8%	13.8%	2.9%	0.0%	0.0%
Unlocked Supply		1,270	766	109	124	303	606	655	632	621
Pct of Total		75.6%	40.0%	5.0%	5.0%	10.8%	18.9%	19.8%	19.1%	18.8%
Locked, Curve		411	1,147	2,068	2,354	2,516	2,603	2,648	2,671	2,682
Growth	50.0%	358.6%	179.3%	89.6%	13.8%	6.9%	3.5%	1.7%	0.9%	0.4%
Pct of Total		24.4%	60.0%	95.0%	95.0%	89.2%	81.1%	80.2%	80.9%	81.2%
Locked, Convex		181	507	961	1,093	1,169	1,209	1,230	1,241	1,246
Growth		7499.2%	179.3%	89.6%	13.8%	6.9%	3.5%	1.7%	0.9%	0.4%
Pct of Total		10.8%	26.5%	44.1%	44.1%	41.5%	37.7%	37.2%	37.6%	37.7%
<b>Revenue</b>										
Curve DEX Volume		\$239,948	\$563,181	\$942,511	\$1,259,925	\$1,472,081	\$1,596,021	\$1,663,208	\$1,698,216	\$1,732,181
Growth	50.0%	269.4%	134.7%	67.4%	33.7%	16.8%	8.4%	4.2%	2.1%	2.0%
Total Trading Fees		\$120	\$282	\$471	\$630	\$736	\$798	\$832	\$849	\$866
Pct Volume		0.050%	0.050%	0.050%	0.050%	0.050%	0.050%	0.050%	0.050%	0.050%
Total Fees: LPs		\$60	\$141	\$236	\$315	\$368	\$399	\$416	\$425	\$433
Pct Volume		0.025%	0.025%	0.025%	0.025%	0.025%	0.025%	0.025%	0.025%	0.025%
Total Fees: Locked CRV (veCRV)		\$60	\$141	\$236	\$315	\$368	\$399	\$416	\$425	\$433
Pct Volume		0.025%	0.025%	0.025%	0.025%	0.025%	0.025%	0.025%	0.025%	0.025%
Locked CRV Rewards		\$773	\$1,236	\$2,637	\$4,390	\$6,197	\$7,921	\$2,031	\$0	\$0
Locked CRV Rewards, Convex		\$83	\$327	\$1,164	\$1,937	\$2,569	\$2,985	\$756	\$0	\$0
<b>Valuation</b>										
Price / Sales, Fully-Diluted		88x	88x	88x	88x	88x	88x	88x	88x	88x
P/S, Unlocked		34x	34x	34x	34x	34x	34x	34x	34x	34x
P/S, Locked		22x	22x	22x	22x	22x	22x	22x	22x	22x
CRVUSD Return		378.7%	134.7%	67.4%	33.7%	16.8%	8.4%	4.2%	2.1%	2.0%
Locked CRV Yield		63.7%	16.1%	56.0%	68.6%	81.9%	95.7%	27.0%	4.6%	4.6%

## Conclusion

Together, Curve and Convex will continue to propel CRV price upward. While Curve technical competitive advantages remain intact, Convex protects its network advantages. As long as Convex can optimize CRV staking, the share of locked CRV supply will grow. Convex makes Curve one of the most sustainably profitable DEXs for LPs. Before Convex, CRV Tokenomics attracted LPs to make the deepest DEX across DeFi. Because liquidity attracts more liquidity, users, protocols, and LPs will continue to grow Curve's volume.





*Authored by Enigma, Distributed in cooperation with the Makor Group*

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