

# SushiSwap Analysis

## Recent Updates

- [Yearn x Sushi 行ってきました](#)
- [Sushi Governance on a Rollup](#)

## Thesis

As DeFi growth took center stage in 2020, we saw the emergence of community-first DeFi protocols that were born out of specific user-centric token distribution strategies. While the yield-farming craze in summer has faded, these protocols still exist and, in some cases, successfully bootstrapped their network without any private capital.

In the last few weeks, we have now started to see a number of these protocols integrate more formally where one can offer some form of value to the other. In other words, just like we see in biology, these community-first protocols are now forming [mutualistic](#) arrangements which is beneficial for both protocols involved. Yearn's collaborative efforts with several DeFi protocols is an example of this mutualism (more on this below). This research will focus primarily on the decentralised exchange sector.

## Uniswap's Achilles Heel

Uniswap has taken the lion's share of total DEX volume over the last year but one weakness that has been exposed during this community-first narrative is Uniswap's centralised backing. The exchange managed to find product-market fit without having to launch a token or consider community governance. But with the power of the community now being heavily placed at the heart of the DeFi ethos, we are now seeing competitive DEX protocols successfully capitalize on this weakness - a notable example being SushiSwap.

## The Emergence of SushiSwap

SushiSwap is a Uniswap fork launched in **September 2020**. Like Uniswap, SushiSwap is an automated market maker (AMM) where liquidity providers add funds to liquidity pools as opposed to an order book exchange model. Exchange fees and LP rewards are the same for both DEXs (0.3% and 0.25% respectively). However, the key difference lies with SushiSwap enabling community governance from day one by rewarding supply-side network contributors with the SUSHI token until the end of 2023. SUSHI is used as a capital asset (grants holders the right to a claim on fees accumulated on the exchange through staking) as well as being a governance token (grants holders the right to vote on future protocol developments). Note Uniswap has since launched its own UNI token through a very short 3 month liquidity mining programme but does not grant holders rights to fees or [effective ownership](#) over the protocol currently.<sup>1</sup>

By establishing long-term supply side rewards and fostering open governance, **my hypothesis is that the market is potentially undervaluing SushiSwaps' ability to become *the* community owned DEX.**

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<sup>1</sup> See Uniswap's dislocated '[unofficial community call](#)' in early November where details of upcoming developments could not be disclosed to the public.

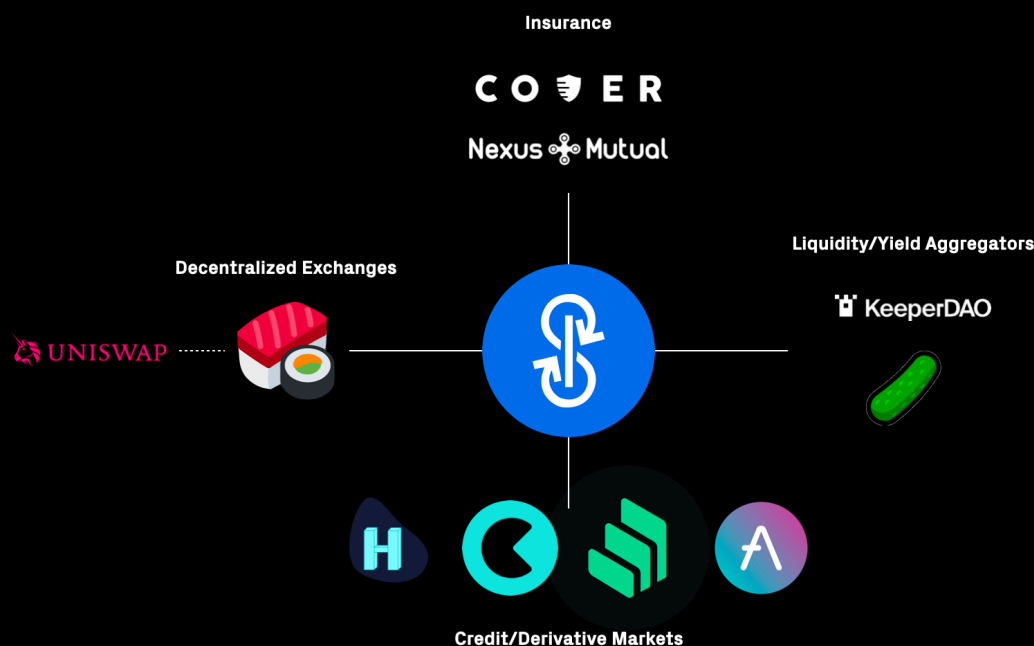


Figure 1: An illustrative overview of mutualism for community-first protocols where protocols on each end of an interaction benefit. SushiSwap is the AMM of choice for other community-first protocols.

SushiSwap may also evolve much quicker than its counterparts by fostering an environment for strong collaboration with other protocols that have a similar ethos. This is something we are already starting to see happen - the ‘mutualism’ between SushiSwap and other protocols like Yearn and others were made due to the numerous synergies between ecosystems. As we can see, each specific integration will bring key benefits to SushiSwap:

SushiSwap Integrations	Benefits for SushiSwap
Yearn and SushiSwap communities look to integrate their liquidity pools to increase the TVL	Makes SushiSwap a more liquid venue which makes rates competitive and reduces slippage
Merge development resources with Yearn products	Keeps SushiSwap relevant
Yearn will start farming SUSHI through a new xSushi vault	Yearn community will be incentivised to increase volume
SushiSwap will add YFI to its treasury and SushiSwap community will participate in governance	SushiSwap community will have a formal stake in Yearn
Yearn will add SUSHI to its treasury and Yearn community will participate in governance	Yearn community will be incentivised to grow SushiSwap as DEX
<b>Yearn will use SushiSwap as the main AMM of choice for its yield farming strategies</b>	Funnels liquidity, volume, trades through to SushiSwap and away from competitors
Keep3r will move its treasury to SushiSwap and integrate for its limit and stop-loss orders features	Keeps SushiSwap Relevant
Credit market CREAM Finance will provide liquidity to SushiSwap and make SUSHI collateral for lending	Boost overall liquidity for SushiSwap which makes rates competitive and reduces slippage. Increases utility of SUSHI

The net effect here is SushiSwap quickly becoming highly liquid, active, but agile DEX that will start taking meaningful market share from Uniswap and others. This is not to say Uniswap will ultimately fail. It is likely that Uniswap will continue to be a key venue for DeFi protocols and applications to tap into. However, solely focusing on Uniswap would be missing the larger picture here - that community-first protocols will be the ones to evolve faster by fostering stronger development discussions. Within the DEX space, SushiSwap will start becoming the AMM of choice for most of these community-first protocols by being the prominent community-first AMM protocol.

The following section is a quantitative analysis on SushiSwap that tests the above thesis.

### Quantitative Analysis

For DEXs, having high liquidity is incredibly important in order to offer competitive prices and reduce slippage. When SushiSwap launched, they incentivized Uniswap LPs to stake their LP tokens on SushiSwap and after a period, Uniswap LPs were able to migrate their tokens to SushiSwap. This proved to be effective at stealing Uniswap’s liquidity with TVL initially hitting \$1.5B in just a few days.

Uniswap introduced the UNI token in mid-September where Sushiswap LPs were now attracted to farm the new exciting UNI token with the net effect being a sharp decline of TVL to \$250m. With the UNI liquidity mining programme finishing in mid-November, we have now started to see liquidity come back to SushiSwap. Like with Uniswap, LPs are receiving the same trading fees (0.25%) but unlike Uniswap they are also receiving SUSHI block rewards (net higher financial incentive). This incentive dynamic is now being recognised by LPs with SushiSwap’s TVL on track to **overtake** Uniswap’s TVL in the coming weeks.

We can also see that a higher number of ETH and BTC locked in DeFi has started to make its way into SushiSwap - note this has occurred when the number of ETH and BTC has been declining over the same period.

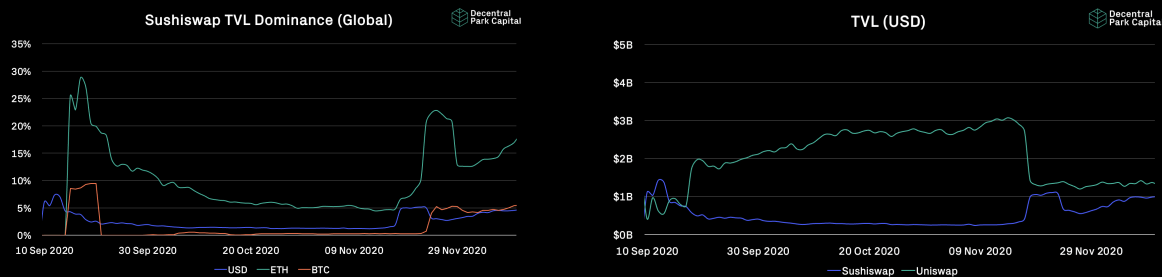


Figure 2: Sushiswap TVL dominance (left). SushiSwap and Uniswap TVL (right).

Creating a fully diluted market cap to TVL ratio can determine the network value relative to the liquidity value locked in a protocol - a ratio less than 1 means a protocol has a higher TVL relative to its network value and is a more bullish signal. The ratio for Sushiswap has always kept under 1 since its launch. The end of the UNI rewards has led to a greater divergence between the two ratios - the Sushiswap ratio declining at the same time as the Uniswap ratio increasing. This indicates that Sushiswap now has a much higher TVL relative to network value compared to Uniswap.



Figure 3: SushiSwap and Uniswap fully diluted market cap/TVL ratio.

Growth in TVL for Sushiswap is also important if we consider how it trends with the price of SUSHI. As we can see in the graph below, TVL (USD) and SUSHI price have been moderately to strongly positively correlated (0.7+) particularly on the longer-term indicators since the DEX launched. Note that if we look at the shorter-term indicator (7d), periods of negative correlation are becoming weaker over time. Therefore, we should expect an increase in SUSHI price as TVL in Sushiswap increases either through new liquidity provision and or/ the wider bull market conditions.

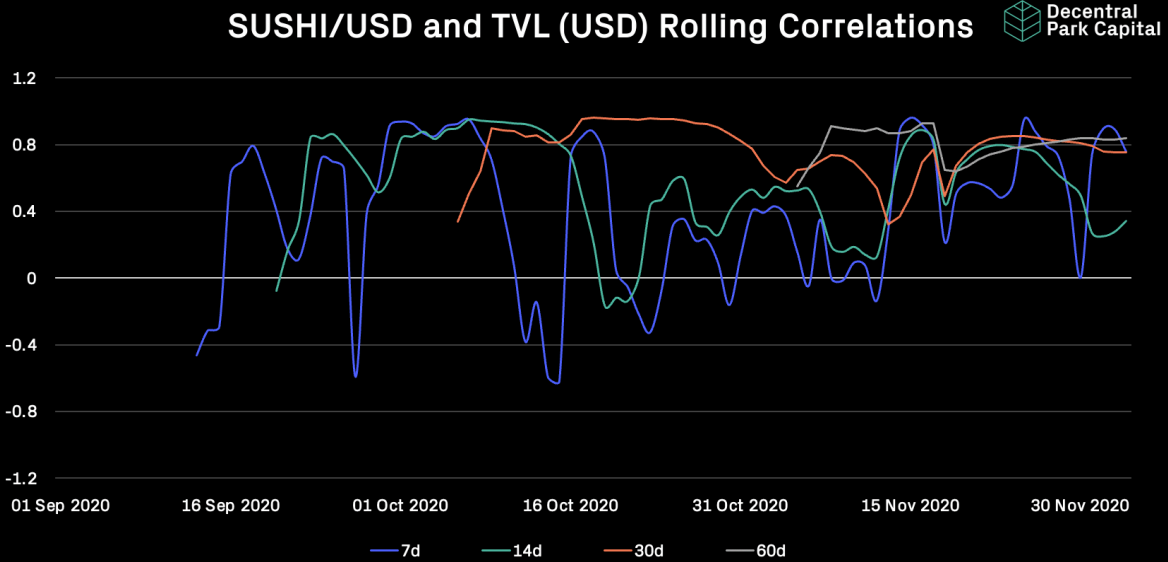


Figure 4: SUSHI Price and TVL (USD) 7d, 14d, 30d, and 60d rolling correlations.

SushiSwap’s volume since network launch in USD terms shows a ‘U’ shape curve like its TVL with volume now averaging ~\$100m/day. Comparing exchange volume to Uniswap, we can see SushiSwap has been taking a larger ‘market share’ against its main competitor since mid-October. SushiSwap’s ‘market share’ has now reached 20%.

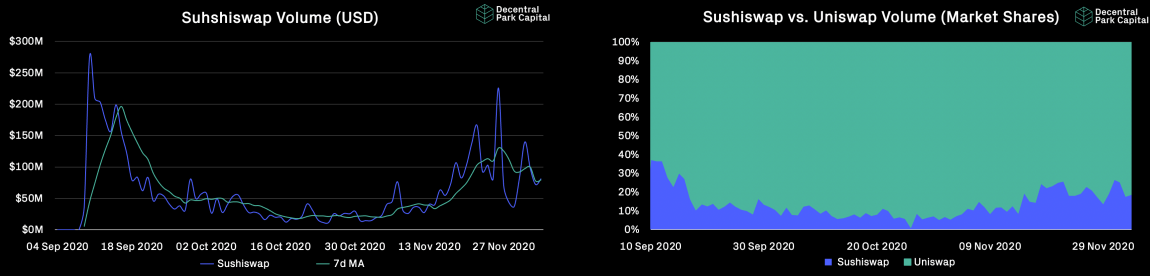


Figure 5: SushiSwap daily volume vs Uniswap (USD).

Comparing SushiSwap’s volume to global DEX volume on Ethereum paints a similar picture with SushiSwap’s ‘market share’ now rising to 14%.

### Sushiswap vs. Uniswap Volume (Market Shares)

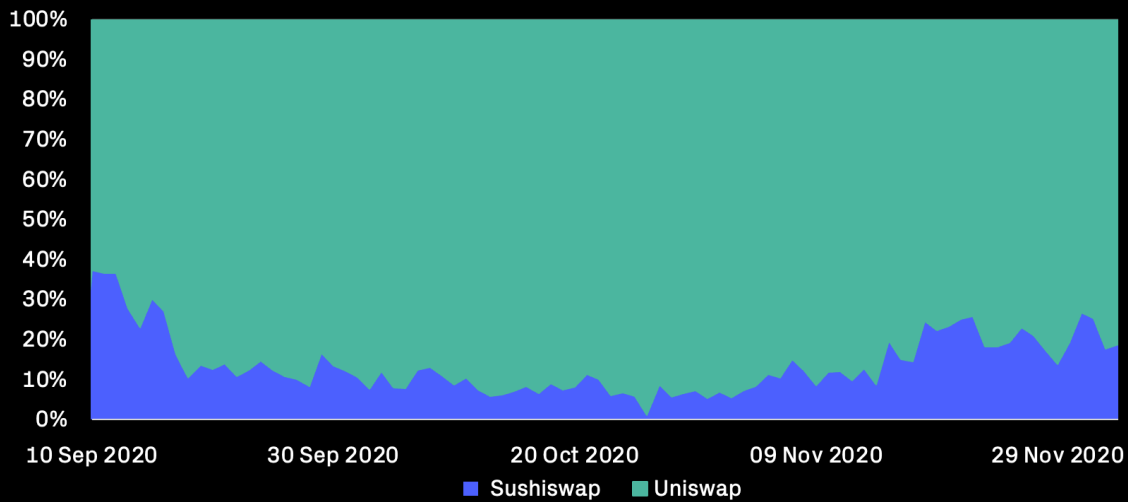


Figure 6: SushiSwap global DEX volume dominance (USD).

Like TVL, we can also determine whether changes in exchange volume is also positively correlated with the price of SUSHI so that if volume was to increase, we would expect a corresponding increase in the value of SUSHI. Both variables show a moderate-strong positive correlation to each other on the 30d and 60d rolling correlations with the shorter-term indicator (7d) now keeping above 0 since the UNI mining was ended. Therefore, we would reasonably expect an increase in the price of SUSHI as SushiSwap’s exchange volume increases.

### SUSHI/USD and Exchange Volume (USD) Rolling Correlations



Figure 7: SUSHI Price and Exchange Volume (\$) 7d, 14d, 30d, and 60d rolling correlations.

Uniswap still dominates over SushiSwap if we look at the number of traders as well as trade count. Uniswap has averaged 25k traders and 130k trades per day in the last month while SushiSwap has only seen an average of 770 traders and 7k trades over the same period. However, the ratio between SushiSwap and Uniswap for these two metrics is increasing since the start of November as the gap between the protocols closes.



Figure 8: SushiSwap vs Uniswap for daily number of traders and trade count (above). SushiSwap to Uniswap ratio (below).

Analysing average trade size for an exchange means we can get a better sense of a DEX's user base. Uniswap's average trade size has kept relatively flat at ~\$2.5k while SushiSwap's average trade size has been consistently higher, averaging \$10k in the last 30 days. To me, this suggests that SushiSwap is used more by high-value transactors and may also indicate a growing amount of trust placed in the protocol by traders.

### Sushiswap vs. Uniswap Average Trade Size (USD)

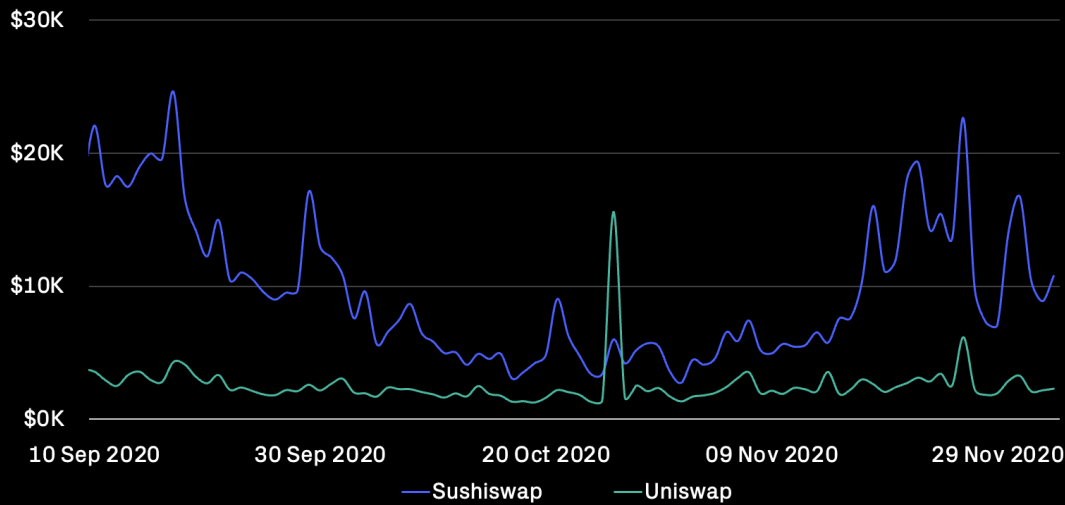


Figure 9: SushiSwap vs Uniswap daily average trade size (USD).

As Sushiswap is not backed by centralised entities directly (i.e., VC capital), protocol development relies on funding through other means. To ensure the protocol can evolve over time, 10% of the block reward goes to dev fund which is controlled by 9-member multisig of the Ethereum ecosystem (with 6/9 signatures needed to approve transactions). Since launching, the treasury balance has now reached a value of ~\$30m. With a continuous stream of dev funding via block rewards, there is a healthy amount of capital that can be deployed to evolve the protocol (although this is dependent on market price of SUSHI). This balance will also be boosted by further SushiSwap integrations.

### Sushiswap Treasury Balance (USD)

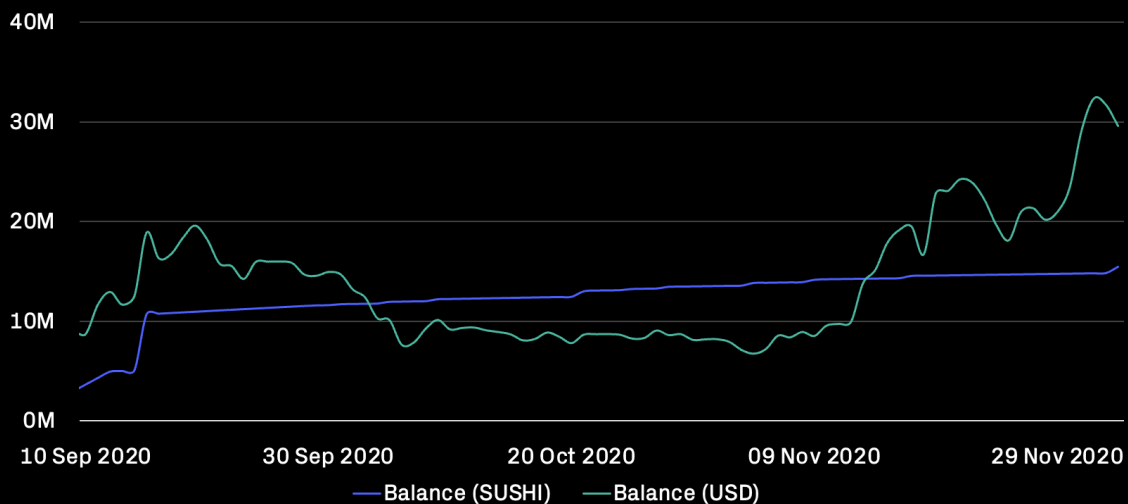
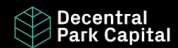


Figure 10: SushiSwap treasury balance in USD and SUSHI).

One of the drawbacks of Uniswap’s liquidity mining programme was the short duration of 3 months. This naturally led to a sharp decline of liquidity once the UNI programme ended as LPs

chased short-term yields on their assets. SushiSwap implements a longer liquidity mining programme that will last until the end of 2023 with a favourable decline in block rewards until May 2021. With such a prolonged rewards programme, there is reduced risk that liquidity will be pulled from endogenous factors (note exogenous factors like new liquidity mining programmes still pose a risk).

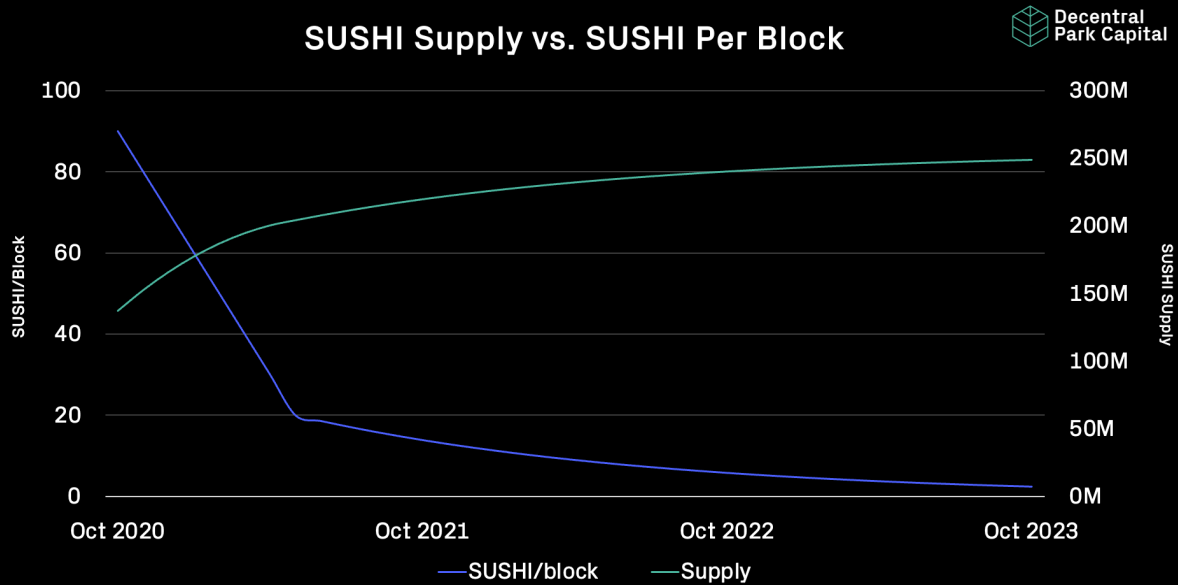


Figure 11: SUSHI supply and rewards per block.

Using the APT valuation equation (TVL to total supply ratio) in both USD and ETH shows that SushiSwap has been trading below its fair market value since the network launched. As of December 6th, despite SUSHI performing well since November, SUSHI market value is still trading at a 45% discount to its fair value in USD terms and -45% discount in ETH terms. Note the increasing bullish divergence in the last 3 days as seen by increasingly lower values in the U/O index. Put differently, SUSHI would appreciate 83% in USD terms if it was to meet its current fair value.

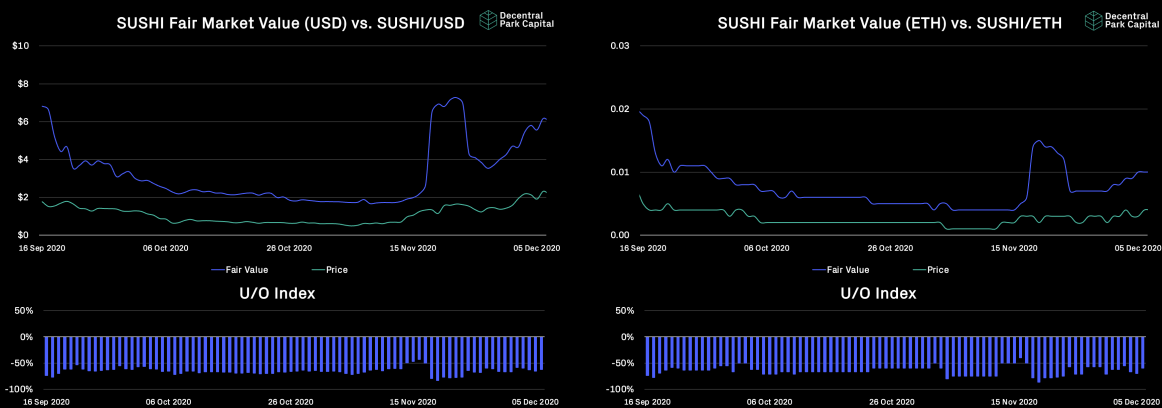


Figure 12: SUSHI fair value (APT) vs. price for USD and ETH.



At current rates, SushiSwap TVL will have a December monthly growth rate of 130%. Below is a table that projects 3 month returns based on December growth rate from the month of November vs. varying monthly growth declines in January and February. If we assume that the December growth rate of 130% holds true and we even see a 90% decline in monthly growth in January and February, SUSHI would provide a return just over ~3x based on a SUSHI price of \$2.1.

		January/February Monthly Growth Rate Decline								
		10%	20%	30%	40%	50%	60%	70%	80%	90%
December TVL Growth From November	80%	1.87x	1.64x	1.43x	1.26x	1.11x	0.98x	0.88x	0.79x	0.72x
	90%	2.18x	1.89x	1.64x	1.42x	1.24x	1.08x	0.96x	0.85x	0.77x
	100%	2.52x	2.17x	1.86x	1.60x	1.38x	1.19x	1.04x	0.91x	0.82x
	110%	2.90x	2.47x	2.10x	1.80x	1.52x	1.31x	1.13x	0.98x	0.86x
	120%	3.31x	2.80x	2.36x	1.99x	1.68x	1.42x	1.22x	1.05x	0.92x
	130%	3.76x	3.15x	2.64x	2.21x	1.85x	1.55x	1.31x	1.12x	0.97x
	140%	4.25x	3.54x	2.94x	2.44x	2.02x	1.68x	1.41x	1.19x	1.02x
	150%	4.78x	3.96x	3.26x	2.69x	2.21x	1.83x	1.51x	1.26x	1.07x
	160%	5.35x	4.40x	3.61x	2.95x	2.41x	1.97x	1.62x	1.34x	1.12x

*Data as of December 6th 2020.*

Figure 13: SUSHI return multiples based on December TVL monthly growth rate from November (left) and monthly growth rate decline in January and February (top). Assumes SUSHI price of \$2.1.

SushiSwap is starting to emerge as the first real community owned DEX on Ethereum. SushiSwap also looks to be very undervalued relative to its fundamentals. It is likely that we will start seeing SushiSwap take more volume and TVL market share from Uniswap in the next 3 months which will likely lead to SUSHI price appreciation. Sushiswap is also an attractive investment proposition as a market-neutral strategy - this is because volatility funnels value directly to the SUSHI token holders. It is also reasonable to expect SushiSwap to implement some layer 2 scaling (along with Uniswap), so SUSHI stands to benefit from news announcements.

	Uniswap	Sushiswap
<b>Fully Diluted Market Cap</b>	\$3.6B	\$534M
<b>TVL (USD)</b>	\$1.3B	\$993M
<b>30d Average Volume (USD)</b>	\$334m	\$77m
<b># Of Traders (30d Average)</b>	25.2k	770
<b>Trade Count (30d Average)</b>	130k	7.2k
<b>Average Trade Size (USD)</b>	\$2.6k	\$10.4k
<b>Market Cap to TVL Ratio</b>	2.65	0.54
<b>Fair Value (APT; USD)</b>	\$1.34	\$3.87
<b>U/O Index (USD)</b>	170%	-45%

*\*Data as of December 6th.*

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