Liquidity Provision Strategies on DEXs Challenge

For Ocean Protocol and Desights AI

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1. Introduction

This report examines the effects of market events and liquidity provision strategies on the performance of decentralised exchanges (DEXs) and decentralised finance (DeFi), in general. We collected and cleaned historical data from DeFiLlama and explored how automated market makers (AMMs) such as Curve and Uniswap historically captured the trading activity and liquidity pools have impacted trading volume, total value locked (TVL), TVL volatility, and other key performance metrics. Additionally, we investigated liquidity provision and liquidity mining programs and overall user adoption.

2. Data Cleaning and Preprocessing Deep Dive

We collected and cleaned data from DeFiLlama, a DeFi data aggregator. First we collected the historical chain TVL data that excluded liquid staking and double counted TVL. The data starts from 2020-08-02 and ends 2023-03-19, containing 960 rows.

	Timestamp	Date	Ethereum	Tron
0	1596326400	2020-08-02	3.616942e+09	20683397.46
1	1596412800	2020-08-03	3.541694e+09	19593265.83

2 rows × 180 columns

	Timestamp	Date	Ethereum	Tron	BSC	Arbitrum	Polygon	Optimism	Avalanche
958	1679097600	2023-03-18	3.294757e+10	5.358049e+09	5.827601e+09	2.200654e+09	1.212022e+09	1.130699e+09	9.784225e+08
959	1679184000	2023-03-19	3.340110e+10	5.396631e+09	5.769650e+09	1.882226e+09	1.223990e+09	1.140338e+09	1.003060e+09

2 rows × 180 columns

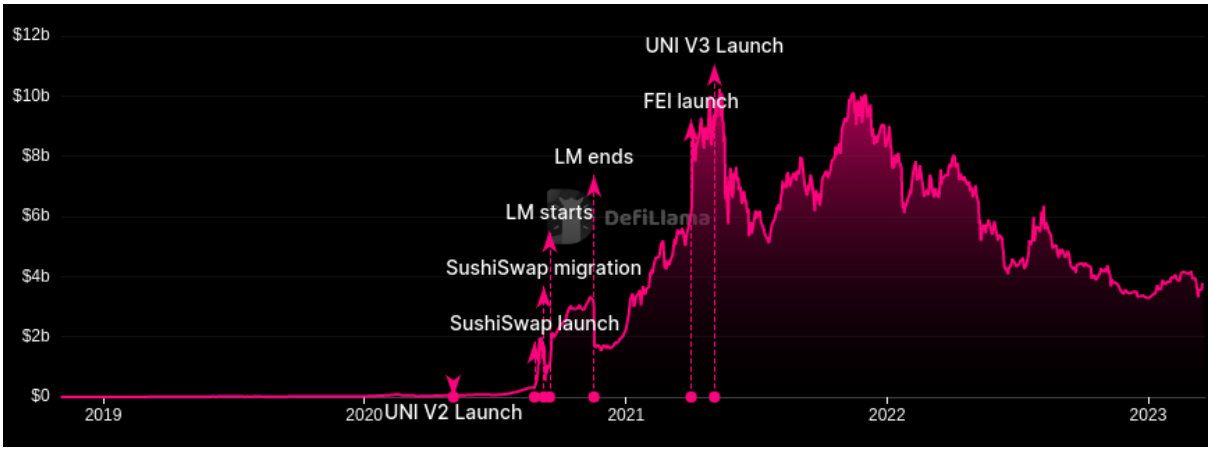
Next, we downloaded historical Uniswap and Curve TVL data which breaks down by token and chain. This data includes the hallmark events, protocol description, fund raises and TVL data:

```
dict_keys(['id', 'name', 'url', 'description', 'logo', 'gecko_id', 'cmcId', 'chains', 'twit
ter', 'governanceID', 'currentChainTvls', 'chainTvls', 'tokens', 'tokensInUsd', 'tvl', 'isP
arentProtocol', 'metrics', 'raises', 'otherProtocols', 'hallmarks'])
```

We preprocessed the data to ensure that it was consistent and complete, removing any duplicates or missing values.
We also published data on ocean marketplace:
https://market.oceanprotocol.com/asset/did:op:f2ba78f376103ac1933489e04ab2600e524ffe01452d4697b52fcaf97f5431e0

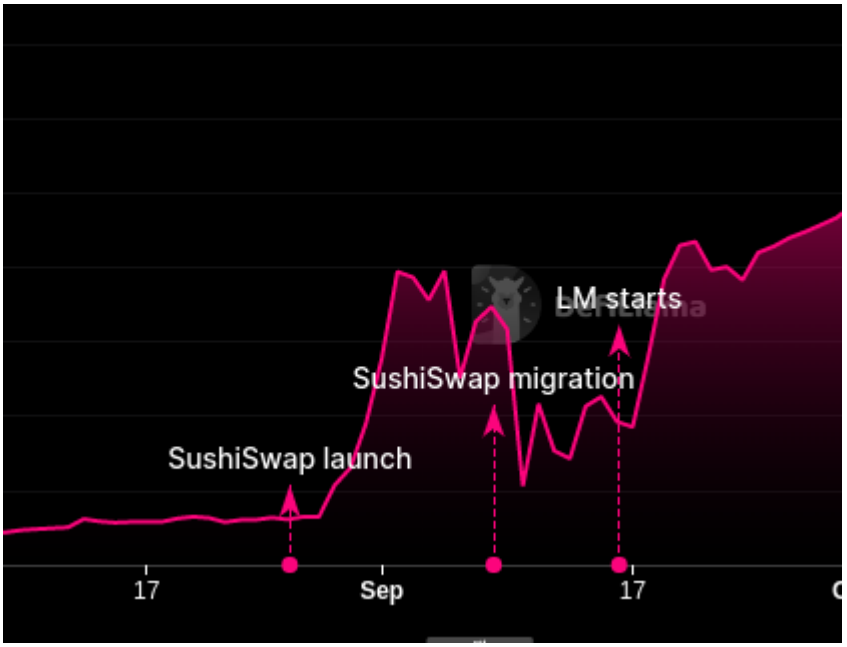
3. Data Exploration and Visualization

We explored the data to identify patterns, correlations, and anomalies that could help us answer our research questions. We visualised the data using charts, graphs, and tables to better understand the relationships between liquidity provision strategies, market events, and DEX performance.
First we display the TVL graph with events for Uniswap.



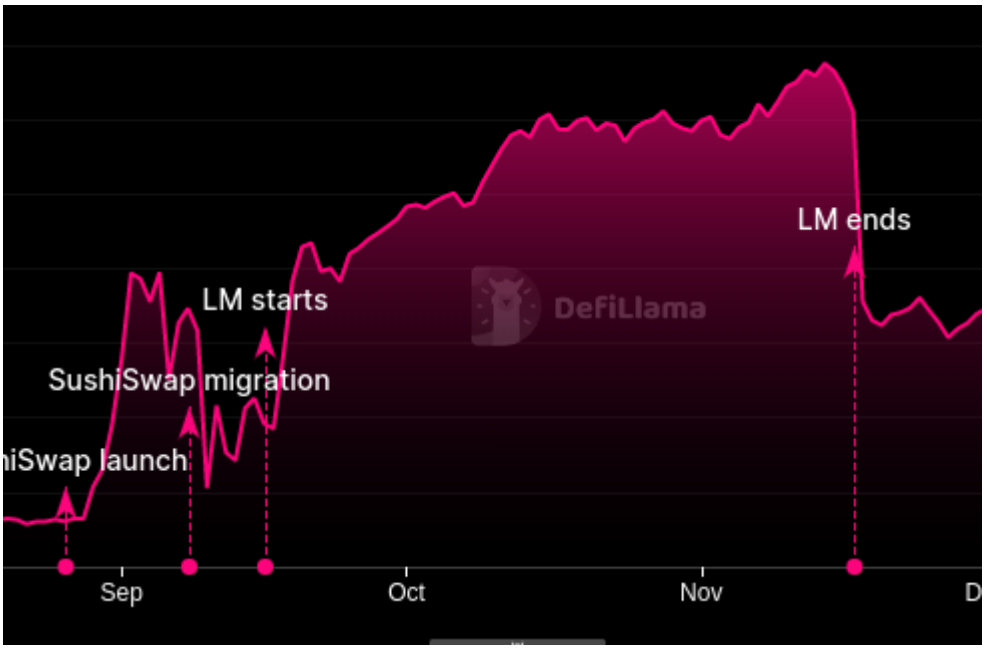
The uniswap V2 launch did not directly provide a significant impact on the TVL of the protocol.

However, the launch of SushiSwap positively correlates with a jump in TVL and SushiSwap migration correlates with a sharp decline in TVL. Besides, the Uniswap LM program positively influenced TVL.

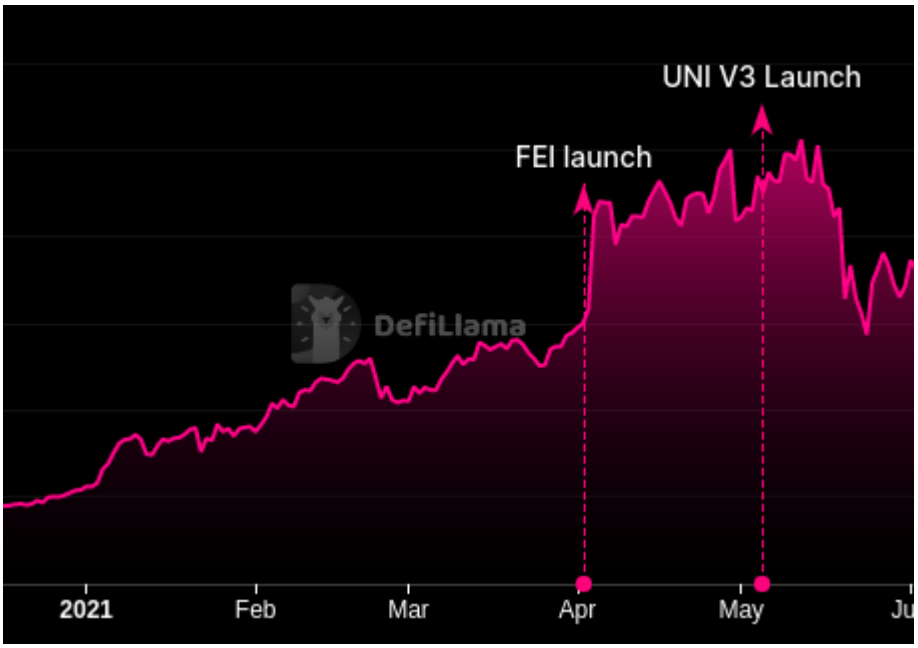


According to Forbes (2020) “Uniswap, the most widely utilized decentralized exchange on the Ethereum blockchain, released a governance token called UNI on Sep. 16. The protocol gave away 400 UNI to every ETH address that used the exchange prior to Sep. 1.”

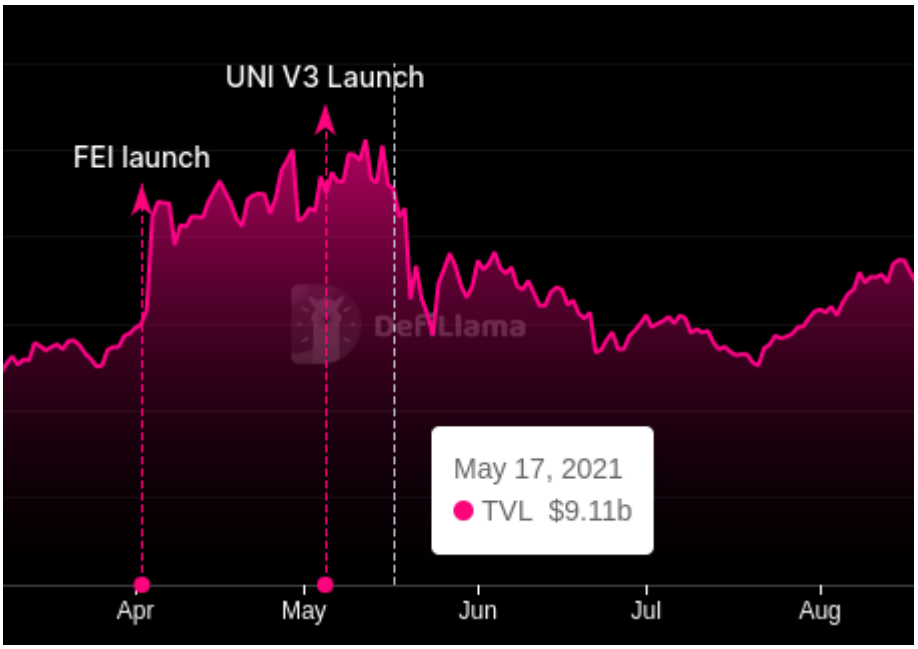
Nevertheless, the end of the LM program has brought down the TVL.



We also notice that the subsequent declines in TVL are lower than the initial jumps, being net positive for the protocol in the end. In fact, the protocol continued to expand and rapidly grow with notable events of FEI and UNI V3 launches.



This trajectory stumbled with the Convex Launch from Curve.

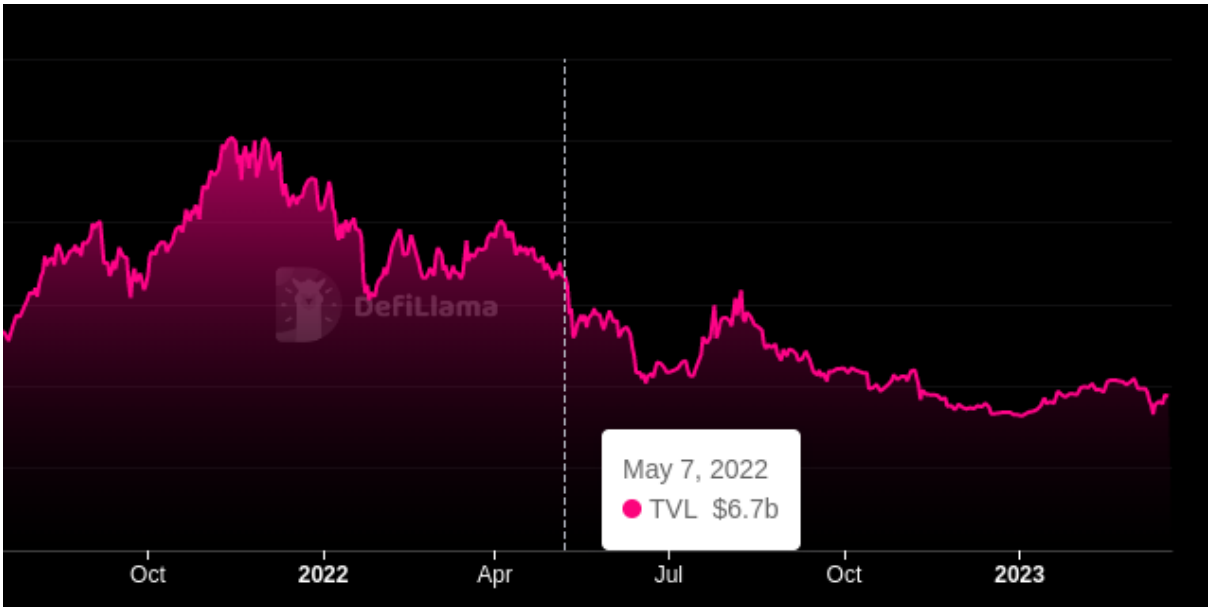


The Curve Wars of 2021 saw a fierce battle between Uniswap and Curve for liquidity provision. Uniswap's launch of its v3 protocol in February 2021 saw a significant increase in TVL and trading volume, while Curve responded with its own Convex Launch in April 2021. The launch of Convex allowed Curve to capture a large portion of the market share, resulting in a decrease in Uniswap's TVL and trading volume. Both protocols have since been locked in a battle for liquidity provision, with each offering incentives to attract users. This competition has been beneficial to the DeFi ecosystem as it has resulted in increased liquidity, lower fees, and more efficient markets.

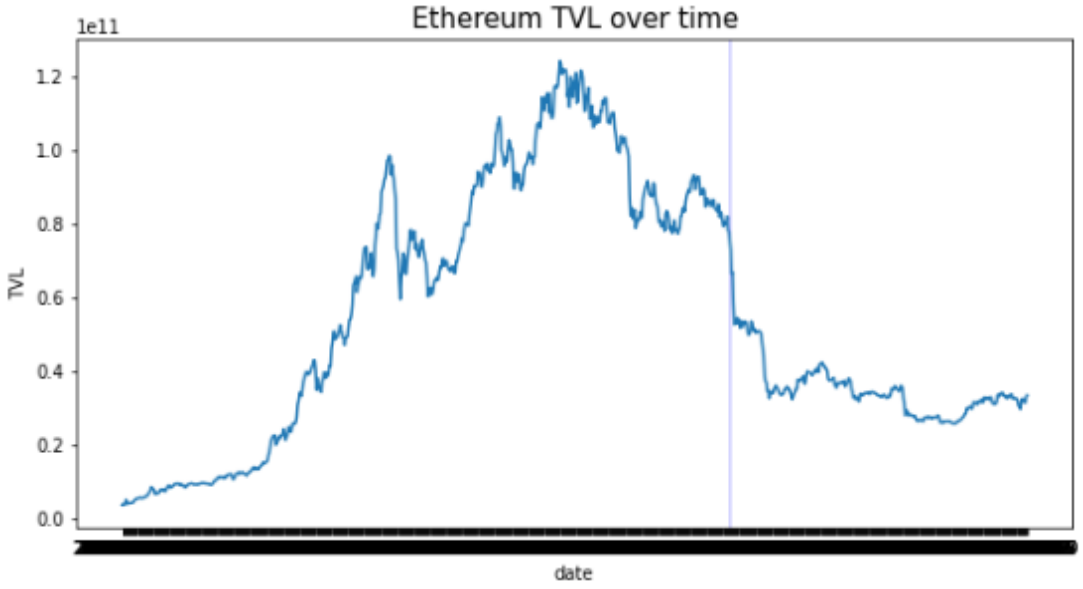
Now we move towards Curve data since it started to overtake Uniswap by TVL.

We highlight the rapid growth in TVL since Convex once again and notice systemic negative shocks that influenced not only the protocol but the whole financial system such as UST depeg and FTX collapse.

What is interesting is that the largest shock for Curve was UST depeg wiped $10bn in TVL or about half the TVL. For Uniswap the TVL wiped was only $1bn or about 20% in TVL.



Furthermore we display the ethereum TVL over time and outline that UST depeg was the largest negative shock for the DeFi.



4. Conclusion

In conclusion, we have seen that automated market makers (AMMs) such as Uniswap and Curve have had a significant impact on the performance of DEXs and DeFi in general. We have seen that liquidity provision strategies such as liquidity mining programs and other incentives have helped to increase liquidity, lower fees, and create more efficient markets. Furthermore, we have observed that market events such as the UST depeg have had a large impact on DEX performance. Overall, our findings suggest that liquidity provision strategies and market events should be taken into account when designing and implementing DEXs.