Introduction

This report builds upon our recent [SparkLend cohort analysis](#), shifting the focus toward segmentation analysis.

To move beyond only the time-based behavior of users, segmentation of user behavior can shed additional light on how the protocol is being used. This is also informative for risk analysis as each position strategy introduces a different risk exposure. Additionally, it shows the impact of governance decisions on the position composition which can provide valuable context for optimizing sustainable growth strategy.

Methodology

The analysis is split into sections showing position strategy development over time (Chart 1 and Chart 2) which shows monthly data based on the last day of the month. This is followed by charts showing the last snapshot of the protocol (as of November 10th, 2023). To focus only on user behavior, the [D3M account](#) is filtered out.

Position strategies are split into:

- Long ETH LST (stETH/rETH in supply, stablecoins in borrow)

- Short ETH LST (stablecoins as supply, stETH/rETH in borrow)

- Long Type 1 (WETH/WBTC in supply, stablecoins in borrow)

- Short Type 1 (stablecoins in supply, WETH/WBTC in borrow)

- Long Type 2 (GNO or other future Type 2 assets in supply, stablecoins in borrow)

- Short Type 2 (stablecoins in supply, GNO or other future Type 2 assets in borrow)

- Recursive Stablecoin (stablecoins in supply, stablecoins in borrow)

- Recursive ETH LST (WETH in supply and stETH/rETH in borrow OR stETH/rETH in supply and WETH in borrow)

- Supply Only Type 1 (WETH/WBTC in supply, no borrow)

- Supply Only Type 2 (GNO or other future Type 2 assets in supply, no borrow)

- Supply Only ETH LST (stETH/rETH in supply, no borrow)

- Supply Only Stablecoin (Stablecoins in supply, no borrow)

- Other (None of the above)

Positions are determined to fall within a specific segment if supply and borrow percentages satisfy the specified majority threshold, namely contributing to more than 80% of total amount (eg. for Long ETH LST, stETH/rETH supply amount percentage and stablecoin borrow percentage needs to be above 80% threshold). Each of the strategies can be further decomposed into smaller segments while keeping them mutually exclusive.

Assets that don't fall within LST or stablecoin categories fall within Type 1 assets (WETH and WBTC) and Type 2 assets (GNO). The split between Type 1 and Type 2 assets is done based on on-chain liquidity and/or historical volatility.

Analysis

Chart 1: Supply per Position Strategy (Absolute)

Below, you'll find the supply split per position strategy, revealing a well-established growth pattern discussed in our previous analysis. It's evident that the majority of the supply is concentrated in the Long ETH LST category.

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Chart 2: Supply per Position Strategy (Relative)

The chart below gives a clearer picture of how different position strategies are distributed. Most positions, over 70%, are in the Long ETH LST category as of the end of October 2023. The other larger position strategies are 10% in Short Type 1 and 9% in Long Type 1.

Long ETH LST positions mainly use stETH as collateral, while Long Type 1 positions currently use only WETH as collateral. There might be changes in the future since there's a proposal to unfreeze WBTC.

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Chart 3: Wallet Count per Position Strategy

Now we turn to the latest snapshot data. The most common position strategies based on the number of wallets are Long Type 1, Long ETH LST, and Supply Only Type 1. These contribute to 85% of all wallet position strategies.

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Chart 4: Position Strategy per Supply Amount Bucket (Relative)

This chart shows the proportional distribution of position strategies across different supply amount buckets.

The buckets are assigned based on which value the wallet is smaller than with the exception of the bucket including wallets larger than $100M in total supply.

Supply Only Type 1 strategy becomes less common as wallet size grows above $50M (large users). Short Type 1 strategy is dominated by wallets larger than $1M and smaller than $50M. Long Type 1 strategy tends to be common among the smaller and the largest supply buckets, showing little pattern for distinction.

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Chart 5: Wallet Count per Supply Amount Bucket

The above chart needs to be brought into context based on how many wallets fall within specific supply amount buckets. Most wallets fall within the sizes larger than $10k and smaller than $500k. There are only 5 wallets that fall within the largest size buckets (larger than $50M) which makes the interpretability of these buckets more difficult to generalize.

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Chart 6: Large User Supply Concentration per Position Strategy

We observe a noticeable trend of supply being concentrated among a few major users. In the chart below, you can see the percentage of total supply held by the top 10 suppliers, specifically focusing on segments with at least $5 million in supply. In each of these segments, at least 80% of the supply is concentrated within the wallets of their top 10 suppliers. The text in the chart shows total supply of the supply bucket.

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Chart 7: Borrow Amount per Health Rate

Users with a borrow position contribute to the protocol's market risk so we next turn to the health rate distribution on the borrow side. Wallet health rate is capped at 3 for a more informative chart.

As expected, the lowest health rates come from Recursive ETH LST positions because of the relatively lower risk of depegging compared to the general market price drop. Long ETH LST positions show a more spread-out health rate distribution. Long Type 1 positions are concentrated at 170% due to a single large user.

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Chart 8: Debt-weighted Health Rate per Position Strategy

How much safety buffer (price change protection) against liquidations wallets has a major impact on market risk given the set liquidation ratios.

By compressing the previous chart we look at health rates per position strategy, weighted by their borrow amount.

Intuitively, recursive positions are more risk-on (5% price drop buffer) on one extreme with Long ETH LST being more risk-off (46% price drop buffer) on the other. Both Long Type 1 (ETH-long) and Short Type 1 (ETH-short) have similar safety buffers.

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Chart 9: Wallet Activity per Position Strategy

How actively wallets manage their positions also impacts how likely they are to pose risk to protocols during potential market shocks. The chart below shows a boxplot distribution of wallet events per month split by their position strategy. Each of these segments has at least $5M in total supply.

At first glance, there is a difference in the distribution of wallet activity with Recursive ETH LST and Short Type 1 positions showing the most activity. When diving deeper we see that these include 15 and 8 wallets, respectively, which skews the results.

For now, the number of wallets is too limited to argue for certain different patterns across selected segments. As protocol usage grows, this will become clearer. Meanwhile, the representative (median) number of actions per month across the segments is around 1.5.

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Chart 10: Wallet Activity per Health Rate

Chart below shows how active users are at managing their positions which naturally includes the number of events needed to set up the initial position. This has more impact on recursive positions with more needed steps (unless it's atomic). That's the case with the pattern of wallets with the lowest health rate having the largest number of events per month. Similar to the previous chart, the number of wallets per bucket is still relatively small to make strong conclusions and we will monitor these measures to detect more significant differences.

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Conclusion

This analysis extends our series on SparkLend user metrics. We're now categorizing users into clear and actionable groups based on their position strategies. While our main focus is on managing protocol risks, we recognize the importance of considering the overall protocol growth strategy. This involves making trade-offs that can be fine-tuned through governance

decisions. We're committed to developing effective methods to understand borrower behavior better, ensuring greater transparency in SparkLend's evolution.