Introduction

This is the first report of a planned series of analyses aimed at better understanding user behavior of SparkLend on Ethereum. We begin by diving deep into how different users behave over time through the lens of cohort analysis. Among other insights, cohort analysis allows us to determine whether changes in aggregate metrics come from new users or those who have been using the protocol for a while. These insights can be combined with segmentation to provide a comprehensive view of individual user behaviors as a snapshot and over time. This provides valuable context for making better-informed decisions to optimize the trade-off between growth and risk.

In the charts below, we organize wallets by their 'cohort month,' which groups those who first interacted with the protocol in the same month. 'Cohort tenure' is defined as the number of months since a wallet's cohort month (1 represents the first month, 2 the second, and so forth).

Analysis

Chart 1: Supply Amount per Cohort

The chart below shows the aggregate supply amount split by different monthly cohorts.

At the end of September, the most supply came from the August cohort $290M), followed by the new inflow ($92.5M) and the May cohort ($218M) which is dominated by SparkLend D3M wallet.

The aggregate supply amount grew rapidly in August, primarily driven by increased supply caps, future airdrop opportunity, and the arbitrage trade from borrowing DAI and supplying into MakerDAO's DSR. This surge in supply is predominantly attributed to new cohorts.

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Chart 2: Supply Amount Percentage per Cohort

Visualizing proportional contribution across different cohorts shows us even clearer how protocol spreads its total supply across different cohorts as it grows its user base.

May's cohort which grew substantially in its supply over time (shown in the above chart) has decreased its contribution to around 30%. Most importantly, cohorts show healthy patterns of retention over time.

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Chart 3: Borrow Amount per Cohort

Strong growth of August's cohort is even more clear on borrow amounts compared to supply amounts. Meanwhile, more than ⅔ of the $184M came from 3 larger users, the largest being 7 siblings with $50M which is also the largest Maker's vault owner. There was also a healthy $40M borrow growth coming from the most recent, September cohort.

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Chart 4: Borrow Amount Percentage per Cohort

As also shown in Chart 3, most often borrow growth originates from newer wallets rather than older ones. August's cohort still contributes to 64% of total borrow while the contribution of June's cohort decreased gradually from more than half of total to less than 5% as of the end of September.

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Chart 5: Supply Growth Percentage per Cohort Tenure

In the chart below, the y-axis represents the cohort date (the initial interaction with SparkLend) and the x-axis shows the cohort tenure (the number of months since the first interaction).

The observed measure is the percentage difference between supply in the initial month (eg. June for June's cohort) and the later months (cohort tenure). For example, June's cohort (y-axis) increased its supply by 33% in July, its second month (cohort tenure is 2 on the x-axis).

The usual behavior of cohorts is that they increase their supply over time. At the extreme end, May cohort more than 10x'd (+1279%) its supply by the end of September (tenure month = 5). Meanwhile, $210M out of $218M came from the SparkLend D3M wallet (since then the wallet increased its supply).

Other cohorts show similar patterns except the August cohort which decreased its supply in September (tenure month = 2) by 22%.

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Chart 6: Borrow Growth Percentage per Cohort Tenure

Similar to Chart 5 for supply amounts, the below visualization assesses the changes in borrow amounts since each cohort's inception month.

As opposed to May's cohort's massive increase in supply there is a different pattern with borrow amounts which is because SparkLend's D3M wallet only supplies DAI and doesn't borrow.

The largest increase in borrow amount came from July's cohort during August (cohort tenure = 2), likely because of above mentioned reasons.

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Chart 7: Wallet Count per Cohort

Number of wallets active at the end of September mostly came from August and September cohorts. That's again likely because of airdrop opportunity which can be an effective user acquisition strategy if these users continue to be retained over time.

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Chart 8: Top 5 Whale Supply Dominance Percentage

A small number of wallets (larger users) contribute to the majority of supply across all cohorts with August's cohort being the least extreme (the largest 5 wallets contributing to ⅔ of total supply at the end of September). The lower dominance of larger users in August and September cohorts is also related to a larger number of wallet inflow during these months (Chart 7).

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Conclusion

This analysis showed SparkLend's healthy growth patterns with a high retention percentage of both supply and borrow amounts.

The incoming airdrop opportunity and increased supply and borrow caps brought a lot of new capital into the protocol which is crucial to bootstrap its growth with sustainable long-term economics.

In our future work, we're aiming to dive deep into segmentation analysis to uncover more patterns of how different users interact with SparkLend.

Finally, thanks to [@PhoenixLabs](#) for feedback on this analysis.