Introduction

As anticipated in the individual reports about cohort, segmentation, and external dynamics analysis, BA Labs will provide periodic reports about the behavior of users utilizing SparkLend. The three aforementioned analyses will be the stepping stones of these reports in order to deepen the understanding of the protocol's users. This report focuses on the May 2023 - January 2024 timeframe in order to provide a deep understanding of how the protocol has developed, and will then be updated quarterly with the more interesting dynamics. The D3M wallet has been removed in order to provide more representative growth metrics, which is the reason why supply amounts are lower than in reality.

For a deep dive into how these analyses are conducted, refer to their original reports.

SparkLend User Metrics #1 - Cohort Analysis

SparkLend User Metrics #2 - Segmentation Analysis

SparkLend User Metrics #3: External Capital and Cross-Protocol Usage

1. Cohort Analysis

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

Positive growth patterns

The cohort analysis shows that the total amount supplied and borrowed have been growing steadily each month (Chart 1), reaching more than $2.5B supplied and $1.2B borrowed in total. We can see that by 31 January 2024, all the cohorts' supplied amounts have steadily increased, with the exception of the May and December cohorts.

On average, the amounts supplied as a percentage of total decrease through time due to the supply of new capital from new cohorts, but even if this is the case, we can see some positive retention patterns (Chart 2). It is also very interesting to point out the shift in whale dominance in the amounts supplied (Chart 8). While in the earliest cohorts this number was close to 100%, we can see an important shift towards lower levels of dominance, implying that the growth is not merely driven by the largest wallets but almost evenly by whales and smaller users, indicating organic growth.

This can be also seen by the number of new users (Chart 7), which increased by 490 in January, the largest number after 546 in August. This number is, on average, increasing every month, indicating more and more users opening new positions in SparkLend.

Supplied and borrowed amounts

Regarding total amounts supplied, $607M (or 23.6%) came from the November cohort, followed by the January (20.8%) and the August ones (17.6%), with respectively $536M and $452M. The cohorts that grew the most in respect to their initial amounts supplied (Chart 3) are July (+598%), September (+123%) and October (+91%). The initial May cohort saw their amounts supplied drop by 51% while the December one by 11%.

The largest cohorts by amount supplied are the same cohorts dominating borrowing (Charts 4 & 5), with November borrowing $326M (27.5%), January borrowing $208M (17.6%) and August still borrowing $191M (16.1%). Again, the cohorts that grew the most are July (+970%), September (+114%) and October (+87%). The pattern is very similar to the supply percentage changes (Chart 6), since the May cohort saw a -53% of borrowed amounts and the December one a drop of 10%.

It is also interesting to point out that the cohorts increasing their amounts in January compared to December are just June, July, and October, while the others are fairly stable.

Refer to the following charts for a deeper understanding of the cohorts.

Chart 1. Supply amount per cohort

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Chart 2. Supply amount percentage per cohort

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Chart 3. Supply growth percentage per cohort tenure

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Chart 4. Borrow amount per cohort

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Chart 5. Borrow amount percentage per cohort

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Chart 6. Borrow growth percentage per cohort tenure

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Chart 7. Wallet count per cohort

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Chart 8. Whale supply dominance percentage

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2. Segmentation Analysis

The segmentation analysis conducted was primarily focused on assessing what types of positions/strategies SparkLend users are deploying. In order to understand how they were calculated, refer to the previously conducted Segmentation Analysis. Compared to the previous segmentation analysis we have decided to add a new category "Diversified Borrower" since the "Other" segment was starting to become more and more important. To summarize briefly, here are the identified segments:

Identified Segments

- Long/Short Strategies:

- Long ETH LST: If ETH LST supply percentage and stablecoin borrow percentage are both above 80%.

- Short ETH LST: If stablecoin supply percentage and ETH LST borrow percentage are both above 80%.

- Long Type 1: If Type 1 supply percentage and stablecoin borrow percentage are both above 80%.

- Short Type 1: If stablecoin supply percentage and Type 1 borrow percentage are both above 80%.

- Long Type 2: If Type 2 supply percentage and stablecoin borrow percentage are both above 80%.

- Short Type 2: If stablecoin supply percentage and Type 2 borrow percentage are both above 80%.

- Long ETH LST: If ETH LST supply percentage and stablecoin borrow percentage are both above 80%.

- Short ETH LST: If stablecoin supply percentage and ETH LST borrow percentage are both above 80%.

- Long Type 1: If Type 1 supply percentage and stablecoin borrow percentage are both above 80%.

- Short Type 1: If stablecoin supply percentage and Type 1 borrow percentage are both above 80%.

- Long Type 2: If Type 2 supply percentage and stablecoin borrow percentage are both above 80%.

- Short Type 2: If stablecoin supply percentage and Type 2 borrow percentage are both above 80%.

- Recursive Strategies:

- Recursive Stablecoin: If stablecoin supply percentage and stablecoin borrow percentage are both above 80%.

- Recursive ETH LST: If either ETH supply or borrow percentage, and either ETH LST supply or borrow percentage, are above 80%.

- Recursive Stablecoin: If stablecoin supply percentage and stablecoin borrow percentage are both above 80%.

- Recursive ETH LST: If either ETH supply or borrow percentage, and either ETH LST supply or borrow percentage, are above 80%.

- Supply Only Strategies:

- Supply Only Type 1: If Type 1 supply percentage is above 80% and total borrow is less than 100.

- Supply Only Type 2: If Type 2 supply percentage is above 80% and total borrow is less than 100.

- Supply Only ETH LST: If ETH LST supply percentage is above 80% and total borrow is less than 100.

- Supply Only Stablecoin: If stablecoin supply percentage is above 80% and total borrow is less than 100.

- Supply Only Mixed: If the sum of stablecoin, Type 1, and Type 2 supply percentages is above 80% and total borrow is less than 100.

- Supply Only Type 1: If Type 1 supply percentage is above 80% and total borrow is less than 100.

- Supply Only Type 2: If Type 2 supply percentage is above 80% and total borrow is less than 100.

- Supply Only ETH LST: If ETH LST supply percentage is above 80% and total borrow is less than 100.

- Supply Only Stablecoin: If stablecoin supply percentage is above 80% and total borrow is less than 100.

- Supply Only Mixed: If the sum of stablecoin, Type 1, and Type 2 supply percentages is above 80% and total borrow is less than 100.

- Other Strategies:

- Long ETH + ETH LST: If the sum of ETH and ETH LST supply percentages is above 80% and stablecoin borrow percentage is above 80%.

- Diversified Borrower: If the sum of ETH, ETH LST, Type 1, and Type 2 supply percentages exceeds stablecoin supply percentage and stablecoin borrow percentage is above 80%.

- Other: Any situation that does not match the above conditions.

- Long ETH + ETH LST: If the sum of ETH and ETH LST supply percentages is above 80% and stablecoin borrow percentage is above 80%.

- Diversified Borrower: If the sum of ETH, ETH LST, Type 1, and Type 2 supply percentages exceeds stablecoin supply

percentage and stablecoin borrow percentage is above 80%.

- Other: Any situation that does not match the above conditions.

Bullish sentiment

Given the large amount of users, we can use the data from individual wallets to highlight the current market trend. We can see that the segments contributing the most to the protocol prefer taking long positions (Chart 9), as it can be seen through the segments Long ETH LST ($1.5B) and Long Type 1 ($453M), together accounting for 75% of the total supply in January. Even though the Recursive ETH LST segment has grown in nominal terms ($242M in November to $370M in January), it has shrunk in relative terms, from 18% to 14% (Chart 10). Short strategies have consistently dropped from October to January (from 10% to 3% of total supply), indicating the bullish sentiment of SparkLend users.

A snapshot taken on 27 February (Chart 11) found out that only 9 wallets took strictly Short strategies (Short Type 1 and Short ETH LST) with a considerate portion of wallets still preferring Supply only strategies (90 wallets in total considering Supply Type 1, Stablecoins, and ETH LST). Furthermore, we can see that wallets in the highest Supply Amount Buckets (Chart 12) prefer long ETH LST strategies, while those in the lowest prefer Long Type 1 strategies, as it can be also seen in the number of wallets per Supply Amount Bucket (Chart 13). The strategies dominated by largest wallets (Chart 14) are Short Type 1, Supply only stablecoins and Recursive ETH LST, while Long Type 1, Diversified Borrowers and Long ETH LST are still influenced by non-dominant wallets.

On average, looking at Health Rates (Chart 15), the fact that most users are preferring these types of strategies is having a positive impact on the protocol, improving SparkLend's overall health. Recursive ETH LST strategies have the lowest debt-weighted health rate (1.09) along with Short strategies (1.42) indicating they might be a source of instability to the protocol if the market outlook stays the same (Chart 16).

Behavioral analysis

Interesting insights can be drawn from how users are interacting with the protocol. First of all, the need for active management can be predominantly seen in Short Type 1 and Diversified Borrower segments (Chart 17), which by definition would need to continuously adjust to market conditions. We can also see that, on average, a high number of events are performed by wallets with lowest and highest health rate (Chart 18), while average health rates on average perform fewer actions. This can indicate that those in these categories must execute more actions to maintain their strategies. There is also a positive relation between how much users supply to the protocol and the number of actions they perform (Chart 19), meaning that the more someone supplies, the more likely they are to execute more actions.

This distribution highlights a behavioral tendency towards active management in strategies perceived as higher risk, evidenced by the need for more events per month and a lower health rate associated with short positions and recursive ETH LST strategies. Furthermore, the lower the amount supplied, the higher the percentage invested in Type 1 assets, especially with Long strategies. This can be because those that operate with lower amounts are looking for faster gains compared to those that supply higher amounts, which prefer to stick to ETH-only long strategies.

Refer to the following charts for a deeper understanding of the segments.

Chart 9: Supply Amount Per Position Strategy

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Chart 10: Percentage Supply Amount Per Position Strategy

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Chart 11: Wallet Count Per Position Strategy

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Chart 12: Percentage Supply Amount Per Supply Amount Bucket

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Chart 13: Wallet Count Per Supply Amount Bucket

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Chart 14: Top 10 Large Wallet Supply Percentage Per Position Strategy

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Chart 15: Borrow Per Health Rate

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Chart 16: Debt-Weighted Health Rate Per Position Strategy

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Chart 17: Events Per Month Per Position Strategy

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Chart 18: Events Per Month Per Health Rate

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Chart 19: Events Per Month vs Supply Amount

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3. External Dynamics

The aim of this analysis is assessing how SparkLend users are behaving outside SparkLend, through an assessment on the external capital held and their cross-protocol usage. We define as external capital as the assets held outside the protocol that could be used to protect individual positions. External capital can either be passive (idle in the wallet) or active (used in other protocols). The active part is further analyzed to assess the cross-protocol usage in Maker vaults and Aave v2 / v3. The data refers to a snapshot taken on 27 February.

External capital analysis

In total, SparkLend users are holding approximately $3.1B in other protocols (Chart 20), $1.41B of which is in Maker (~45% of total). Looking at other lending protocols, $158M is supplied on Compound v3 and 210M jointly on Aave v2 / v3. Other important protocols used by SparkLend wallets are Stakefish, Morpho Aave, and Lido. Compared to the previous analysis, a lot of capital has been supplied to Morpho Aave (v1 and v3) by an increasing number of wallets. This is mainly driven by the higher number of wallets operating on SparkLend and not by a significant migration from SparkLend to other lending protocols.

By looking at the passive external capital per asset (Chart 21), we can see that users hold WETH ($120M), GNO ($119M), and MKR ($70M) with sDAI still being popular despite its drop compared to the previous analysis (from $301M to $51M, an 83% drop). DAI (191 wallets), USDC (208 wallets), and sDAI (153 wallets) are still the most popular by the number of wallets that hold them, while eUSD despite being just deployed is increasing in popularity, with $20M held by 11 wallets. Next, we assess the passive external capital relative to debt (Chart 22) and we can see that 57.3% of users have enough passive external capital to cover 25% of their debt, while 9.7% have a buffer of more than 500%. In general, 26.2% of wallets have enough external capital to cover the total debt exposure. This is slightly lower than the previously identified 28.5%, most likely due to the bullish market sentiment.

What would require more attention is the current passive external capital as percentage of debt (Chart 23), since 78.6% of total debt is covered by only 25% of capital held in wallets, which was previously 66.2% (a 19% increase). In case of price drops or changing market conditions, this might have negative effects over the protocol's health, but the current situation is still very robust. On the other hand, 18.8% of total debt is fully collateralized by capital held in wallets. Looking at the 50 largest wallets (Chart 24), we can see that on average they have less passive external capital compared to their debt positions, with only 12% of them having enough to cover their debt.

Cross-protocol Usage

This part of the analysis focuses on the cross-protocol dynamics of SparkLend wallets. Chart 25 shows the amount supplied by the 10 largest wallets on Maker relative to SparkLend, from which we can see that on average these wallets have higher exposures in Maker Vaults compared to SparkLend. This can be also seen by the supply at Maker Vaults relative to SparkLend (Chart 26), where the same pattern applies. This trend has not reversed since the last analysis. When looking at Aave v2 / v3 (Chart 27), we can see there are 215 wallets (a 33% increase) supplying a total of ~$86M on Aave (an 11% increase).

The situation is slightly different in Aave (Chart 28), since more Aave wallets are increasing their exposure towards SparkLend. We then analyze the seven wallets that use all three protocols (Maker, Aave, SparkLend) and look at their positions (Chart 29). All of these wallets are more exposed to SparkLend than to Aave (above the red line), while 4 out of 7 are more exposed to SparkLend compared to Maker. This is good news for SparkLend compared to the previous analysis, where only 3 out of 7 wallets were more exposed to SparkLend than to Aave and only 1 out of 7 was more exposed to SparkLend than to Maker.

Refer to the following charts for a deeper understanding of the external dynamics.

Chart 20: Wallets' Active External Capital Per Protocol

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Chart 21: Wallets' Passive External Capital Per Asset

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Chart 22: Wallets' Passive External Capital Over SparkLend Borrow (Percentage of Wallets)

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Chart 23: Wallets' Passive External Capital Over SparkLend Borrow (Percentage of Debt)

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Chart 24: Large Wallets' Passive External Capital vs Protocol Borrow

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Chart 25: Relative Supply At SparkLend vs Maker Vaults

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Chart 26: Relative Supply In Maker Vaults vs SparkLend

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Chart 27: Relative Supply At SparkLend vs Aave

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Chart 28: Relative Supply At Aave vs SparkLend

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Chart 29: Relative Supply At SparkLend vs Aave and Maker

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Conclusion

The cohort analysis reveals a steady increase in both supplied and borrowed amounts, indicating a robust growth trajectory for SparkLend. The diversification in user base, with a shift away from whale dominance towards a more balanced contribution from both large and small wallets, suggests an organic growth pattern. The introduction of new users each month further highlights its expanding attractiveness.

The segmentation analysis highlights a predominant preference for long positions, reflecting bullish market sentiment among SparkLend users. The analysis also points to a dynamic interaction with the protocol, where users engaging in high-risk strategies exhibit active management behaviors to adjust to market conditions. This indicates a sophisticated user base that leverages SparkLend to execute more advanced strategies.

The external dynamics analysis, through the data on external capital and cross-protocol usage, provides insights into the diversification strategies applied by SparkLend's users. The increased exposure of SparkLend users to other protocols, particularly Aave, suggests a strategic diversification of investments and a healthy growth pattern among blue-chip lending protocols.

Even though the analysis highlighted SparkLend's positive growth pattern, it also showed some important aspects that need constant monitoring in order to ensure the protocol's health, such as the low passive external capital to offset potential shifts in market dynamics, or possible liquidations deriving from short strategies.

Future Work

BA Labs plans to keep monitoring user metrics to ensure the protocol's stability, by further providing quarterly analyses on the most significant dynamics and suggestions on how to tackle potential issues. At the same time, we plan to automate this kind of analyses in order to get live data on user behavior to promptly respond to changing market conditions.