Introduction

So far, we have focused on internal (ie. protocol) dynamics in our user metric analyses (cohort analysis, segmentation analysis). Now we turn toward the evaluation of external dynamics related to two topics:

- External Capital (passive and active)
- Cross-protocol Usage (across other lending protocols)

When assessing the portfolio risk of SparkLend, we can look at the composition of individual positions (e.g. health rate) and the historical behavior of wallet owners (e.g. previous protections against market shocks).

Meanwhile, wallets can maintain low health rate buffers and be highly active in their reactions in case of market shocks to increase the position's collateralization. We use the term External Capital to describe the financial assets of users outside of SparkLend that could be used to protect their positions. We then split it into passive (idle) and active (in other protocols) categories. We look at passive external capital per asset (total asset amount) and active external capital per protocol (net amount). In lending protocols, the net amount is determined by subtracting the borrowed amount from the supplied amount.

The External Capital section is extended by looking into Cross-protocol usage across other lending protocols which represents the active portion of External Capital. Specifically, we're looking at Maker Vaults and Aave (all deployments across v2 and v3).

Analysis

The charts below are based on the December 15, 2023 snapshot.

External Capital

Capital held by the wallet externally is split into two categories: passive and active capital. As mentioned above, passive capital is idly held in the wallet while active capital is used in other protocols. Additionally, passive capital is defined as the entire asset amount in the wallet while external capital takes into account the net value used in the protocol.

Chart 1: Wallets' Active External Capital per Protocol

We begin by looking at the net amount used in other protocols. In total, there is $2.8B held by SparkLend users in other protocols, about half of which is held at Maker ($1.4B). These same wallets have $1B of net amount at SparkLend (supply subtracted by borrow) showing that users have ¼ of their capital at SparkLend.

At Maker, the net amount is defined by adding the vault collateral amount and subtracting the minted DAI.

Additionally, almost 30% (390) of all SparkLend wallets (1300) have some capital used in other protocols. It is important to note that one user can potentially own multiple wallets and thus the number of wallets analyzed is lower than the number of individual users. Provable knowledge of connected wallets is hard to obtain and thus is not used in this analysis.

The other protocols with significant exposure include Stakefish, Aave-Morpho, Compound v3, and Lido.

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Chart 2: Wallets' Passive External Capital per Asset

We continue by looking at idle capital held in the wallet - passive external capital. In the chart below, it is split by different tokens with most of the capital held in sDAI, (W)ETH, GNO, and MKR (80% out of $527M) with a long tail of assets with lower capital amounts (TEMPLE, LDO, WBTC, etc.)

Additionally, 166 SparkSpark wallets also deposited their DAI into the DSR for sDAI. Either ETH or WETH is held the most, currently at 343 wallets.

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Charts 3 and 4: Wallet's External Capital Relative to Debt

As the necessary amount to protect a position is proportional to its debt exposure, we also look at external capital held relative to its debt. Intuitively, the higher the ratio (more external capital relative to debt), the higher the price drop of collateral can the vault experience and still have enough capital to protect it against liquidations. Wallets with less than $100 of borrow are filtered out.

We focus on the passive portion of the capital because this is more likely to be useful during market shocks in contrast to capital held in other protocols which can be also exposed to the market risk (especially in the case of lending protocols).

The chart below compares passive external capital with SparkLend borrow. For over half of the wallets, the passive external capital is less than 25% of their debt. On the other extreme, in 10% of the wallets, the passive external capital is more than 5 times their debt.

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We next turn to look at debt distribution. Around ⅔ of SparkLend debt has less than 25% of passive external capital relative to their debt. After that, almost 20% of debt has from 50% to 100% of passive external capital relative to their debt.

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Chart 5: Large Wallets' Passive External Capital vs. SparkLend Borrow

Next, we filter out the largest 50 borrowers at SparkLend and visualize their SparkLend debt exposure (x-axis) and the comparison of their passive external capital to SparkLend debt (y-axis). The wallets' borrow ranges from $1.2M to $165M.

We focus again on the passive portion of the capital.

Similar to the previous chart, the key insight is that larger users at SparkLend have less passive capital in their wallets compared to their debt exposure (most of the dots are below the green line). Meanwhile, these users likely have multiple wallets to draw capital from, so the purpose of this measure is to estimate the minimal available capital.

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Cross-protocol Usage

The second section analyzes the usage of other protocols (active external capital). There's a focus on lending protocols, both with a complementary dynamic (Maker core vaults) and also competitive dynamic (Aave).

Chart 6 and Chart 7: Cross-protocol Usage (SparkLend vs. Maker Vaults)

We begin by a comparison with Makers' core vaults which represent a complementary service by Maker without any competitive dynamic.

The chart shows individual wallets with their SparkLend supply on the x-axis and the relative comparison of vault collateral amount in Maker vaults. The green line splits the wallets that have a larger supply at Maker (red area) versus the wallets that have a larger supply at SparkLend. Y-axis at 10 means 10x more supply at Maker compared to SparkLend, the value below 1 means more supply at SparkLend.

The filtered wallets include only wallets that use SparkLend and Maker vaults but not Aave (which is analyzed later). In total, there are only 7 wallets that use both of these protocols with $1M of collateral in Maker vaults with more SparkLend users either using Aave or both Aave and Maker (addressed in the later charts).

The key insight is that most of these wallets have a larger exposure in Maker vaults (dots are mostly above the green line, in the red area). Meanwhile, none of SparkLend's large users are included in this set of wallets (the largest wallet has $115k in

supply).

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We can also look at results from Maker's perspective (supply on the x-axis) for these same wallets and notice the same pattern. Apart from two smaller wallets, the other ones have a larger supply at Maker (y-axis at below 1, comparing the wallet's supply at SparkLend to Maker vaults).

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Chart 8 and Chart 9: Cross-protocol Usage (SparkLend vs. Aave)

We now look at the usage of SparkLend users that also use Aave (v2 and v3) which forms more of a competitive dynamic compared to the previous example.

The chart shows individual wallets with their SparkLend supply on the x-axis and the relative comparison of supply in Aave. The green line splits the wallets that have a larger supply at Aave (red area) versus the wallets that have a larger supply at SparkLend.

The filtered wallets include only wallets that use SparkLend and Aave but not Maker vaults. In total, 161 wallets use both of these protocols with $77M of supply in Aave.

The chart shows that most of the large users have a larger exposure at SparkLend compared to Aave (dots further on the right are below the green line, not in the red area).

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A similar conclusion when looking from Aave's perspective. The larger wallets (in this chart larger than $1M) at Aave that also use SparkLend tend to have a larger supply at SparkLend (more wallets on the right are above the green line as opposed to under it) although it's less of a clear pattern in this case.

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Chart 10: Cross-protocol Usage (SparkLend vs. Aave and Maker Vaults)

We now look at the usage of SparkLend users using both Aave and Maker vaults. As opposed to the previous charts in this section which excluded users that used all three protocols, we now focus on all those.

The chart shows individual wallets with their relative supply comparison at Aave on the y-axis and the relative comparison of supply in Maker Vaults on the x-axis. The size of the dot and added text shows the SparkLend supply.

In total, 7 wallets use all of these protocols with $1B of supply in Aave and Maker vaults. Meanwhile, this category is dominated by a single wallet with $967M held in Maker vaults. The relevant positions of this wallet be found for Maker Vaults, Aave Ethereum v3, and SparkLend v1 Ethereum.

Splitting the chart into four quadrants based on the supply comparison across protocols shows that the large user (with $116.5M in SparkLend supply) has more supply at SparkLend compared to Aave (above the red line which crosses at x-axis = 1) and less supply at Sparklend compared to Maker (left of the green line which crosses at y-axis = 1). The category of the other wallets can also be interpreted based on which quadrant they are positioned in.

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Conclusion

This analysis shared insights into the capital of SparkLend users that are either held or used outside of the protocol. Half of the active capital is used in Maker vaults, dominated by a few wallets. About 1 in 3 SparkLend wallets are using other protocols.

Passive capital, held in the wallets of SparkLend users is dominated by sDAI, (W)ETH, GNO, and MKR which contribute to 80% of total amount.

For over half of the SparkLend wallets, the passive external capital is less than 25% of their debt. For 10% of the wallets, the passive external capital is more than 5 times their debt.

Additonally, ⅔ of SparkLend debt has less than 25% of passive external capital relative to their debt which is followed by a category between 50% and 100% (20% of wallets).

Cross-protocol usage shows that larger SparkLend users tend to have smaller positions at SparkLend compared to Maker vaults and larger positions at SparkLend compared to Aave (although the latter is less clear).

We aim to continue developing new metrics related to the growth and risk of SparkLend, sharing relevant insights with the community semi-regularly, and integrating the metrics into our Spark dashboard. We also plan to begin publishing a comprehensive analysis quarterly, which combines cohort, segmentation, and external capital dynamics analysis with potential new metrics or analyses, starting in Q1 2024.