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Introduction

In January, MakerDAO introduced a new component to the methodology used to determine Stability Fees (SFs) in Maker Core, referred to as the [Exposure Based Model](#).

The practical implementation of this new model was proposed on [January 17](#) and implemented on-chain on [January 29](#).

As a result, all Stability Fees in Maker Core, as well as the Spark DAI Effective Borrow APY, increased.

What was the reason behind this change? What was the impact on debt exposure and protocol revenue? And what are the plans going forward?

In this post, we aim to:

1. Highlight the reason for implementing the Exposure Based Model.
2. Uncover the broader impacts of the Exposure Based Model implementation on both MakerDAO and Spark.
3. Share future plans regarding the Stability Scope and SF changes.

The Reason for Implementing the Exposure Based Model

Up until the introduction of the Exposure Based Model, Stability Fees (SFs) in Maker Core were dictated by the following formula:

$$SF = \text{Initial Rate} + \text{LR Spread}$$

Where

1. The Initial Rate is set to the EDSR for ETH and WSTETH-based collateral and to the Yield Collateral Benchmark for WBTC-based collateral.
2. The LR Spread is set between 0% - 0.75% depending on the Vault Type and its associated risks.

With this methodology, Maker governance had limited ability to control the desired debt exposure of Maker Core crypto collateral.

To align borrowing cost with target exposure, and to help limit concentration risk and improve risk compensation, the Exposure Based Model was introduced.

Now, Stability Fees are calculated as follows:

$$SF = \text{Initial Rate} + \text{LR Spread} + \text{Exposure Spread} + \text{Asset Spread}$$

Where the Exposure and Asset Spreads are controlled by a Heaviside equation with two kinks:

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That produces an additional spread which dynamically changes depending on the exposure of a particular collateral type in Maker Core.

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Source:

[Atlas Rate System for Stability Fee Research & Introduction to Exposure Based Model](#)

Ideally, the Exposure Based Model should help Maker achieve three key goals:

1. Create a more balanced portfolio of crypto collateral backing DAI.
2. Incentivise more usage of Spark.
3. Preserve Maker Core revenue.

The remainder of this post will review the impacts of the new model and compare them to these goals.

Stability Fee Changes as a Result of the Exposure Based Model

The table below compares the Stability Fees before and after the implementation of the Exposure Based Model.

- The SF of ETH-based collateral increased by 1.49 percentage points.
- The SF of WSTETH-based collateral increased by 1.91 percentage points.
- The SF of WBTC-based collateral increased by 0.91 percentage points.
- Spark DAI Effective Borrow APY increased by 0.93 percentage points.

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Source:

[Stability Scope Parameter Changes #8](#)

Note that new Stability Fees have been proposed for February, available [here](#). However, at the time of writing, these changes have not been enacted yet.

Maker Core Collateral % Exposure Change

The chart below compares the collateral exposure on January 17 (the day of the Stability Fee change proposal) compared to February 21 (the time of writing). ETH and WSTETH exposure decreased by 6.00 and 4.87 percentage points respectively, while both WBTC (+0.60pp) and Spark (+5.28pp) exposure increased.

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[Stability Scope Parameter Changes #8](#) & [Makerburn](#)

At face value, since the debt exposure of ETH-based collateral types decreased while WBTC debt exposure increased, this might indicate an undesirable change in the portfolio. However, it is also important to note the increase in Spark D3M debt exposure. This increase indicates that more activity has moved to the Spark protocol, which in itself is a desirable goal for MakerDAO.

The section below tests this assumption by reviewing the ETH and WSTETH migration trends from Maker Core following the Stability Fee changes.

Maker Core Migration Analysis

BA Labs maintains on-chain user behaviour data from several protocols in the DeFi ecosystem. For this particular analysis, the data used covers Aave v2, v3, Compound v2, Maker Core, and Spark. The data has been used to identify migration patterns from Maker Core after the SF increase on [January 29, 2024](#). Exact figures are hard to identify because of (i) users

migrating with multiple wallets, (ii) users swapping in between migrations to change collateral assets, and (iii) users migrating to protocols that are not included in our data set.

The charts below represent aggregated migrations data. The methodology used for analysing the migrations works as follows:

Shared users across multiple protocols were identified and compiled into a list of events, including (i) deposits, (ii) withdrawals, and (iii) transfers, from all protocols for each user. Subsequently, the events were processed using our logic. For example, if a user took out 1k ETH from Maker Core and added 500 ETH to Spark, we noted a 500 ETH migration from Maker Core to Spark. If 1k ETH was withdrawn from both Maker and Spark, but 1k ETH was deposited to Compound v2, we noted a 500 ETH migration from each protocol.

To learn more about our migration analyses, refer to our [Twitter thread](#) on the topic.

ETH Migration Trends

From around the time of the Maker Core SF increase up until the time of writing, approximately 14.97K WETH migrated from Maker Core to Spark. Apart from a slight increase in migrations to Aave v3, other lending protocols included in the analysed data set did not see any considerable inflows of ETH from Maker Core during the observed time period.

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Source:

[Compound Risk Dashboard](#), [Spark Risk Dashboard](#), [Maker Risk Dashboard](#), and [Aave Risk Dashboard](#)

WSTETH Migration Trends

Similarly with WSTETH, Spark was the main beneficiary of the Maker Core migrations following the increase in the Stability Fee of WSTETH Vault Types. Approximately 84.42K WSTETH worth of migrations from Maker Core to Spark were identified during the observed time period.

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Source:

[Spark Risk Dashboard](#), [Maker Risk Dashboard](#), and [Aave Risk Dashboard](#)

Maker Annual Estimated Profit Change

The chart below shows that Maker annual estimated profit rose considerably directly after the SF increase on January 29, 2024. It then tapered off due to some Maker Core unwinding, while shortly thereafter regaining momentum.

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[Makerburn](#)

This pattern indicates that MakerDAO was able to not only preserve protocol revenue while decreasing risk exposure, but in fact increase estimated revenue by approximately 34%. It is worth noting that this revenue increase was not only due to the increase in SFs for Maker Core crypto collateral. Within the same time period, RWA solutions also increased in usage. Nevertheless, this trend suggests that Maker was able to increase its estimated annual profit figures even after a considerable change in crypto collateral stability fee methodology.

Conclusion

The Exposure Based Model for determining Stability Fees provides Maker Governance with an additional lever for managing crypto collateral risk concentration and risk compensation.

After the implementation of the first iteration of the Exposure Based Model, the following effects took place:

1. ETH and WSTETH exposure decreased while WBTC and Spark exposure increased.
2. Some of the increased Spark exposure was explained by ETH and WSTETH migrations from Maker Core to Spark.
3. Maker annual estimated profit was positively impacted by the change.

The Exposure Based Model has a number of metaparameters that dictate the exposure/spread dynamics. If Maker Governance wants to change the desired exposure of a particular collateral, the metaparameters dictating the spread for the Vault Types of that collateral can be changed, which in turn will change the SF and ultimately impact debt exposure.

Future Plans

In the future, BA Labs will continue to assess the effects of the Stability Scope methodology and the Exposure Based Model on Maker Core SFs and debt exposures. Our analyses will include (i) migration trends, (ii) Maker annual estimated profit over time, (iii) debt exposure changes, and (iv) competitive rates in the DeFi ecosystem.

Furthermore, regular changes and new iterations of the Exposure Based Model are expected in order to (i) adapt to market volatility, (ii) work towards a more balanced portfolio of crypto collateral backing Dai, (iii) automate certain functions in the Stability Scope, and (iv) adapt to other changes in the Endgame plan. For example, in February 2024, BA Labs posted two proposals regarding the Exposure Based Model:

1. [Atlas Rate System - Implementation Adjustments](#): To work towards automated tooling, BA Labs decided to transition from spreadsheet-based modelling to Python-based modelling. In order to do so, certain changes to the Exposure Based Model were proposed: (i) make the exposure-series continuous, (ii) change the KFb metaparameter to be the sum of the previously calculated KFa and KFb, and (iii) increase the model's sensitivity to 0.01% exposures.
2. [Atlas Rate System Iteration #1 - Adjusting WSTETH Asset Spread](#): In order to make the Asset Spread curve for WSTETH more representative of market conditions, BA Labs decided to propose a lower KFb factor to reflect potential user behaviour after a certain cap is reached. The proposal included a decrease of the WSTETH KFb factor by 6 percentage points, from 13.5% to 7.5%.