

Introduction

This is a regular recurring SBE analysis update produced by BA Labs as an active Stability Scope Advisory Council member. In the analysed period, the Surplus buffer was below the required threshold for SBE to activate, which was the main reason for prolonged downtime. Otherwise, given the low gas price environment we believe the transacting parameters should be slightly reconfigured in order to further optimize the costs...

Since the last analysis there were no changes to the SBE The Annual Rate of MKR Accumulation meta-parameter defined in the Stability Scope.

The analysis covers the period from 14 March 2024 to 14 June 2024. The analysis considers effective changes on 18 March 2024, with a decreased hop

parameter to 19,710, and changes on 29 March 2024, with a change in hop

parameter to 11,826 and a bump

increase to 75,000.

Smart Burn Engine hop and bump Parameter Reconfiguration Proposal

We suggest the Stability Facilitator to propose the following parameter changes, which can go directly to the executive vote:

- Decrease the hop

parameter for 1,577 seconds from 11,826 seconds to 10,249 seconds.

- Decrease the bump

parameter for 10,000 DAI from 75,000 DAI to 65,000 DAI.

Stability Scope Bounded Mutable Alignment Artifact Changes

Assuming that the aforementioned changes are implemented, we also propose to incorporate these figures into the MIP104: Stability Scope Bounded Mutable Alignment Artifact as follows:

9.1.3.1A

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The hop

parameter is: 10,249 seconds

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9.1.3.3A

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The bump

parameter is: 65,000 DAI

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Data Gathering

All data is pulled and presented as of 00:00 UTC on 14 June 2024.

We pulled data from Etherscan on [Etherscan Uniswap DAI/MKR LP](#), as well as [Etherscan Dai Stablecoin](#), while ETH prices are weighted average prices across major exchanges. That provides a general overview of the amount of DAI used and LP tokens accumulated, which can help determine total execution costs, efficiency, and LP-focused metrics.

Smart Burn Engine - Transaction statistics and metrics [Smart Burn Engine - Performance to 13 June 2024 - Public](#)

Smart Burn Engine - Parameter configuration [Smart Burn Engine - Parameter Configuration June 13 2024 - Public](#)

Further information can be found on the Makerburn site [MakerBurn](#).

Smart Burn Engine (SBE) Transaction Analysis

For the period 14 March 2024 to 14 June 2024, the SBE used 46,602,657 DAI—of which 23,325,000 were spent and 23,277,657 paired—to accumulate 379,084 units of Uniswap v2 DAI/MKR LP token.

Compared to 13 March, the Uniswap v2 DAI/MKR LP has grown by \$29,287,114 in nominal terms, a 24.99% increase in pool size. This current total pool size is \$146,500,000.

In the period 14 March to 18 March, the DAI necessary to be paired dropped from 49,892.39 to 49,889.63 and from 49,890.20 to 49,886.15 in the period 18 March to 29 March, following the trend highlighted in the previous analyses. The same could be seen for 29 March to 14 June, where the DAI necessary to be paired dropped from 74,855.79 to 74,851.59. This time, the drop is also primarily due to the growth in the pool liquidity size, which comes from SBE’s transactions. In the last period, there had also been some visible impact on the market, which resulted in spikes. That could be primarily explained by a fast price movement or gaps in the maker price.



Distribution of Delay Periods

From 14 March 2024 to 18 March 2024 (4.29 days), the SBE executed 15 actions, equal to the theoretical maximum of 15 transactions given hop

26,280. The same is seen between 18 March 2024 and 29 March 2024 (10.75 days), where the SBE met the theoretical maximum and executed 48 transactions, given a hop

of 19,710. On the other hand, from 29 March 2024 to 14 June 2024 (76.96 days), the SBE executed a total of 269 actions, lower than the theoretical maximum of 562 transactions, given a hop

of 11,826. Thus, the efficiency dropped to 47.86%.



The maximum delay was over 23 days, resulting in zero transactions between 14 May and 7 June. That is mainly due to the surplus buffer being below the threshold, which did hinder the SBE’s transactions.

Market Impact

The realized Market Impact of the SBE’s actions can be calculated by looking at the amount of DAI that must be paired with MKR to provide in the LP, accounting for the 0.3% swap fee charged by Uniswap. To calculate the average market impact of each execution, we use the equation:

After the new parameters were updated for the second time, the market impact remained relatively stable and higher than at the beginning of the analyzed period.



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](//makerdao-forum-backup.s3.dualstack.us-east-1.amazonaws.com/original/3X/e/9/e9e79269b1a1416eac382bf3f4b9bd1a111a8dcb.png)

Parameter Optimization

For the current pool liquidity size of \$146,500,000, parameters would be optimized to reduce costs at bump

= 65,000 and hop

= 10,249 seconds. Nonetheless, this theoretical optimization is close to the current value for bump at 75,000 DAI and hop

at 11,826 seconds. The following graphs illustrate the relationship between bumps and costs for the current LP size.

[

Chart

1200x742 31.2 KB

](//makerdao-forum-backup.s3.dualstack.us-east-1.amazonaws.com/original/3X/8/6/8687662a6f2c22740c045a791b46c43d09335f1c.png)

Furthermore, with those parameters, we are significantly below the sandwich limit bump, after which sandwich attacks become profitable. The [defi sandwich tool](#) allows us to simulate pool sizes and find which bump parameters sandwich attacks are profitable. Given the current size, sandwich attacks are not profitable up to a bump of 228,046 (with the optimized parameters).

Conclusion

The main takeaways from this analysis are the following:

- The SBE is currently (has been) transacting below the theoretical rate of MKR accumulation.
- The surplus buffer exceeded the DAI 55M threshold, resuming SBE's actions. At the same time, the last spell executed decreased the surplus buffer below the threshold.
- The market impact of SBE's activity is declining, even after the parameters update.
- Current parameters could be slightly optimized, they should move towards a smaller hop

and bump

for the current LP Size.

- BA Labs will continue monitoring the SBE and propose updates to the parameters and meta parameters according to the language in the Stability Scope when necessary.

References

Data sheets:

[Smart Burn Engine - Performance to 13 June 2024 - Public](#)

[Smart Burn Engine - Parameter Configuration June 13 2024 - Public](#)

More about SBE:

[Introduction of Smart Burn Engine and Initial Parameters](#)

[Smart Burn Engine - Performance to 30 July 2023](#)

[Smart Burn Engine Parameters Update #1](#)

[Smart Burn Engine - Transaction Analysis #2](#)

[Smart Burn Engine - Transaction Analysis and Parameter Reconfiguration Update #3](#)

[Smart Burn Engine - Transaction Analysis and Parameter Reconfiguration Update #4](#)

[Smart Burn Engine - The Rate Of MKR Accumulation Reconfiguration and Transaction Analysis & Parameter Reconfiguration Update #5](#)

[Smart Burn Engine - The Rate Of MKR Accumulation Reconfiguration and Transaction Analysis & Parameter Reconfiguration Update #6](#)

[Smart Burn Engine - Vow.hump \(Surplus Buffer Upper Limit\) Reconfiguration Update #7](#)

External Resources:

[https://etherscan.io/token/0x517f9dd285e75b599234f7221227339478d0fcc8?
a=0xbe8e3e3618f7474f8cb1d074a26affef007e98fb](https://etherscan.io/token/0x517f9dd285e75b599234f7221227339478d0fcc8?a=0xbe8e3e3618f7474f8cb1d074a26affef007e98fb)

[https://etherscan.io/token/0x6b175474e89094c44da98b954eedeac495271d0f?
a=0x0c10ae443ccb4604435ba63da80ccc63311615bc](https://etherscan.io/token/0x6b175474e89094c44da98b954eedeac495271d0f?a=0x0c10ae443ccb4604435ba63da80ccc63311615bc)