Preamble

The Smart Burn Engine (SBE) needs periodic assessments in order to make sure parameters are optimized for cost efficiency while ensuring it moves towards the strategic goals it was made for. The previous analysis showed that the SBE should move towards higher hop

and bump

parameters to do so.

According to the Stability Scope 9.1.2, The Rate Of MKR Accumulation meta-parameter should be configured in a way where excess surplus buffer above The Upper Limit of 50M DAI should not be accumulating. Due to recent protocol surplus buffer inflow increase which is a result of various factors, such as recent stability fee increase, The Rate Of MKR Accumulation should be reconfigured.

This proposal accompanied by the analysis consists of (i) increase to The Rate Of MKR Accumulation for 20M, from 60M to 80M and (ii) reconfiguration of hop

parameter which accounts for increase to the new target rate of accumulation.

To sum up, we suggest the Stability Facilitator to propose increasing the Rate of MKR Accumulation to 80M and lowering the hop

parameter to 19,710 seconds. Refer to the analysis section for a breakdown of how these numbers were calculated.

Smart Burn Engine Meta-Parameter Reconfiguration Proposal

We suggest the Stability Facilitator to propose the following parameter changes which require an on-chain poll:

Increase The Rate Of MKR Accumulation for 20M DAI per year from 60M DAI per year to 80M DAI per year.

Smart Burn Engine hop Parameter Reconfiguration Proposal

We suggest the Stability Facilitator to propose the following parameter changes which can go directly to executive vote, assuming that the Meta-Parameter Reconfiguration Proposal passes:

Decrease the hop parameter for 6,570 seconds from 26,280 seconds to 19,710 seconds.

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:

9.1.2A

The Rate Of MKR Accumulation is:

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80 million Dai per year

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9.1.3.1A

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The hop

parameter is: 19,710

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Analysis

Data Gathering

The analysis covers the period 14 January 2024 - 20 February 2024, and takes into account the parameters update proposed on 17 January and effective on-chain on 29 January at 17:42 UTC. The update effectively changed the hop

parameter, raised from 15,768 seconds to 26,280 seconds, and the bump

parameter, raised from 30,000 DAI to 50,000 DAI.

All data is pulled and presented as of 00:00 UTC 21 February 2024.

We pulled data from Etherscan on Uniswap v2 DAI/MKR LP accumulation by the DSS Pause Proxy, as well as DAI tokens Transferred from the DSS Flapper, while ETH prices are weighted average prices across major exchanges. This 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 20 February 2024

Smart Burn Engine - Parameter Configuration 20 February 2024

Further information can be found on the Makerburn site.

SBE Transaction Analysis

For the period 14 January 2024 - 20 February 2024, the SBE has used a total of 11,348,587 DAI - of which 5,680,000 spent and 5,668,587 paired - to accumulate a total of 116,229 units of Uniswap v2 DAI/MKR LP token - of which 40,724 before the effective parameters update and 75,505 afterwards. Compared to 14 January the Uniswap v2 DAI/MKR LP has grown by $11,781,886 in nominal terms (a 14.50% increase) to reach a total pool size of $93,048,711.

In the period 14 January - 29 January, the DAI necessary to be paired has dropped from 29,932 to 29,931 and in the period 29 January - 20 February from 49,910 to 49,902, following the trend highlighted in the previous analyses. This time too, the reason behind the drop is the growth in the pool liquidity size, which comes from SBE's transactions but also due to general increases in the price of MKR.

Distribution of Delay Periods

During the 14 January - 29 January period (15.72 days), the SBE executed a total of 66 actions, 22% lower than the theoretical maximum of 84 transactions given hop

of 15,768.

On the other hand, during the 29 January - 20 February period (22.25 days), the SBE executed a total of 73 actions, corresponding to the theoretical maximum of 73 transactions given hop of 26,280.

In the first case, the main issue was the Surplus buffer being below the activation threshold of 50M. After the issue was solved, the SBE went back to transacting at the theoretical maximum.

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We can see that most of the delay (98.51% of total delay time) is attributable to the period between 14 January and 17 January where the surplus buffer was below the activation threshold. Except for this, the maximum delay registered was 3.20 minutes, which is even lower than the previous one (6 minutes), indicating the SBE's transition towards greater efficiency.

Market Impact

The realized Market Impact of the SBE's trades 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:

Even after the new parameters update, the market impact has been declining, in percentage terms even more than the previous analyzed periods, indicating a suitable bump

for the current size of the Uniswap v2 LP.

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Chart

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Parameter Optimization

The aim of the analysis is assessing whether raising the Rate of MKR Accumulation to 80M would impact current parameters. Given the fact that the estimate of annual profits has risen significantly after the stability fee update proposed on 17 January, this is enough to offset the effect of ETH price appreciation which, ceteris paribus, would have likely pushed towards higher hop

(so lower uptime) and higher bump

(lot size). It is also important to take into account that even if the LP size reached significant levels, increasing bump

would still have some impact on the slippage. These are important considerations for the rationale behind the parameter update.

For the current pool liquidity size of $93,048,711, parameters would be optimized to reduce costs at bump

= 50,000 and hop

= 19,710 seconds. This can be seen from the following graphs, illustrating the relationship between bumps and costs for the current LP size.

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Chart

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This is significantly below the sandwich limit bump after which sandwich attacks become profitable. Thanks to thedefi sandwich tool, we can simulate pool sizes and find at which bump size sandwich attacks are profitable. Given the current size, sandwich attacks are not profitable up to a bump size of 140,750.

Conclusion

The main takeaways from this analysis are the following:

- The SBE is currently transacting at the theoretical rate of MKR accumulation.
- The surplus buffer is currently above the DAI 50M threshold and does not hinder SBE's actions
- The market impact of SBE's activity is declining, even after the parameters update.

- Current parameters are not optimized for cost efficiency in case of an increase in the theoretical rate of MKR accumulation, and should move towards a smaller hop

for the current LP Size.

- BA Labs will continue monitoring the SBE and propose an update to the parameters and meta parameters according to the language in the Stability Scope when it is needed.

In the future iterations of SBE design and parameter configuration, new factors should likely be considered: (i) optimization for decreasing MKR volatility, since differences in costs optimization between various bump sizes at current levels are very slim, an higher amount of actions per time can have positive effects on decreasing MKR volatility which could outweigh the slim difference in price optimization and (ii) implementation of meta-parameters or introduction of new parameters which would limit SBE activity when MKR price is not favorable and activate when the price is favorable.

References

Data sheets:

Smart Burn Engine - Transaction Statistics and Metrics 20 February 2024

Smart Burn Engine - Parameter Configuration 20 February 2024

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

External Resources:

https://etherscan.io/token/0x517f9dd285e75b599234f7221227339478d0fcc8?a=0xbe8e3e3618f7474f8cb1d074a26affef007e98fb

https://etherscan.io/token/0x6b175474e89094c44da98b954eedeac495271d0f?a=0x0c10ae443ccb4604435ba63da80ccc63311615bc

Stability Scope Parameter Changes #8 [Maker Core

](/c/maker-core/92)

Stability Scope Parameter Changes #8 Introduction This post covers BA Labs' eighth parameter changes proposal as a member of the Stability Advisory Council. Final changes are pending approval by the responsible Stability Facilitators. For further context, refer to BA Labs' previous Stability Scope Parameter Changes proposals below. Previous Stability Scope Parameter Change Proposals

<a href="https://forum.makerdao.com/t/decentralized-collateral-scope-parameter-changes-1-april-2023/20302…

makerburn.com

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Dashboard for watching DAI minting and MKR token burning in real time.