

Steakhouse and its contributors have been at the forefront of developing crypto-native understanding of the dynamics of cryptoeconomic systems, largely through research on-chain and building on discussions conducted in MakerDAO's forums with the community. Our Chefs have helped develop the first [real-time liability maturity model](#) for an on-chain decentralized stablecoin and have forged the foundations for MakerDAO's presently used ALM frameworks ([1](#), [2](#), [3](#)). These frameworks are widely recognized as pioneering cryptoeconomic models, and we would like to take them one step further. We discussed some of these possibilities in our proposals around maturity modulation and [automation](#).

We are committed to maintaining the stability of the DAI stablecoin and managing the balance sheet in a professional way, all the while keeping governance decentralized and in the hands of token holders. To do this, we are proposing to the community for their input on the below process, which will iterate on our work and continue research in a direction that can be autonomously picked up by the community in the future.

The objective function should solve for DAI stability and maximizing return on assets, subject to constraints governed by the output of each of the below steps. Any proposals should represent an improvement relative to the ALM modeling we are capable of today, or will not be worthwhile engaging. Logically, the steps should be solved in sequential order as the latter depend on the former. Someone who is versatile enough to solve all of the below is strictly preferable to specialists who solve individual problems, as these steps are all interrelated.

Step 1: Model for DAI Maturity On-Chain

- Develop a comprehensive factor model that enables us to classify the nature of [DAI maturity](#) on-chain at any given time
- The model should account for various factors such as the monetary supply of DAI, behavioral patterns, end-points where DAI is being used, and market conditions
- The model should be dynamic, allowing for updates and adjustments based on evolving market conditions
- The model should be robust, back-tested and capable of running autonomously with a view to implement in Chronicle's oracles

Step 2: Model for Assets

- The current MakerDAO ALM model uses the [Capital At Risk](#) developed by Blockanalitica, and the specific liquidity profile for each asset, but there is still a need for a more generalized and procedural framework to get to those numbers
- Regarding Capital At Risk (or any other measure), it should take in account credit risk, counterparty risk, market risk, illiquidity risk, duration risk and blend them in a meaningful way to depict the actual risk involved
- An emphasis should be put on modeling securitized assets like senior tranches of ABS/RMBS/CDO/CLOs where diversity of the underlying assets (for what correlation?) and the credit enhancement leads to an extreme tail risk that is difficult to highlight with traditional VaR-derived methods.
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- Regarding the liquidity profile, the model should take into account MakerDAO governance timeline if applicable, market liquidity in normal situations and stress test situations
- The final model should formalize in an integrated way all the possible assets that MakerDAO is actively investing in, or seeking to invest in, so it can be used in the following optimization of Step 3.

Step 3: Model for Optimal Asset Allocation

- Based on the DAI maturity model of step 1, and the assets model of step 2, create a factor model to determine the optimal asset allocation for MakerDAO, given DAI's maturity profile and other relevant variables
- The model should consider a diverse range of assets, including crypto-collateralized loans, centralized stablecoins, and US Treasuries
- An exhaustive list will be maintained in the [Real World Asset Scope Framework](#) and [Decentralized Asset Scope Framework](#)
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- Should step 1 show some risk of basing the whole MakerDAO liabilities on DAI only, also provide some liability

structuring options (notice DAI, longer-term ERC20 locking, ...) including corresponding implementation recommendations

- The model should optimize for maximizing returns under the constraint of solvency (DAI being >100% backed) and liquidity (DAI is trading at \$1 assuming a dollar peg)
- The model should provide conservative stress test scenarios and show how the hypothetical balance sheet would perform under various edge case drawdown or volatility scenarios
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Step 4: Provide an easy to use AI-empowered ALM software to monitor and evolve MakerDAO balance sheet

- Develop a format to communicate ALM targets and objectives in a simplified and easily understandable way for decentralized government actors to bring to life in line with the Maker Constitution
- Provide visualization tools to showcase in a real-time manner the areas in which the ALM model is being followed, or not (e.g. similar to daistats.com for monitoring collateral mix or Dai outstanding)
- Using ML to alert and help MakerDAO governance detect deviation for optimal situations and providing some course correcting action in natural language

The work should be compatible with decentralized governance and should trend to minimizing over time. It should provide ALM models for MakerDAO that are capable of withstanding various ranges of stress under different market conditions.

Steakhouse is happy to help the community by reviewing discussion and proposals on this forum thread.