Liquidity risk in the decentralized finance protocol Aave

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1. Problem

- **Aave** - decentralized finance (DeFi) protocol.
- **DeFi** – finance on the blockchain.
- Aave provides a **lending** service for cryptocurrencies.

2. Research question

- How can the inability of withdrawing caused by illiquidity be mitigated in the Aave protocol during a bear market with a volatile asset?

3. Methodology

- Literature study.
- Academic papers, whitepapers, blogs and documentation.
- Game theoretic model.

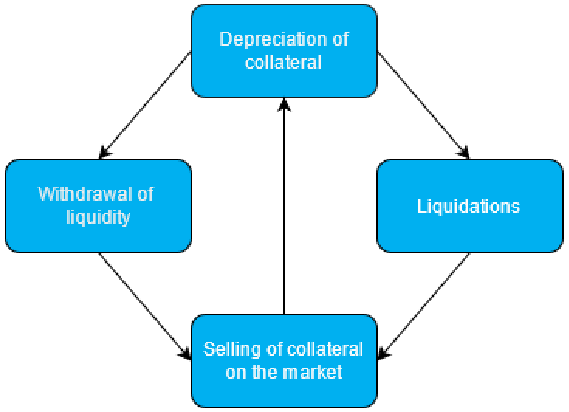

Figure 1: Negative liquidity spiral in case of negative market situation.

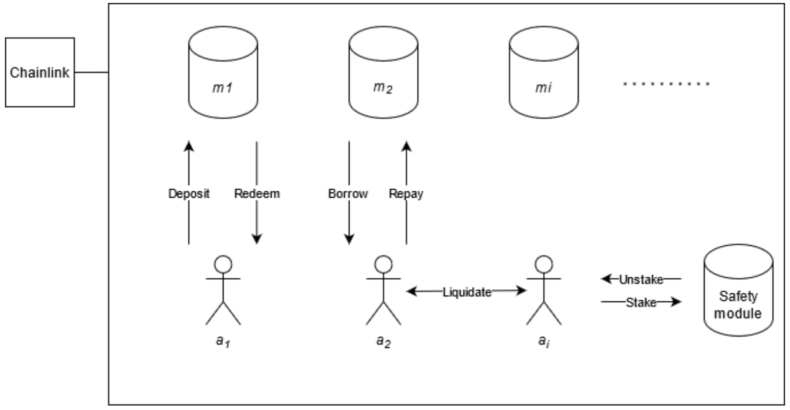

Figure 2: Model overview.

4. Evaluation

- Under assumption of rational short sighted agents, agents choose strategies which can lead to a deflationary spiral.

Aggravating factors are:

- Large portions of the available liquidity is in hands of a small portion of users.
- Liquidations (a mitigation) can work counterproductive to its intended goals.
- High natural utilization of biggest pools.

The current safety module of Aave:

- Highly correlated with most common collateral asset.

5. Conclusion

- There are liquidity risks in Aave in case of prolonged downward price pressure. Incentives can sometimes not lineup with the best interest of the protocol.
- Diversifying safety module can be benefical.

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