Backstop Protocol

Introduction

“Decentralized finance” this word is more powerful than people realize. It has the capacity to shake the banking sector more than anything else you can think off. And DeFi just started to put up a fight right against tough completions such as Traditional banks and Centralized exchanges.

DeFi has been improving day by day and is bringing all the features that are offered by centralized entities to all the users of DeFi platforms.

Best user products are being built “By the people for the people” Removing the middleman and distributing everything between the people themselves in a decentralized and permissionless manner.

What does liquidation mean in DeFi?

In traditional finance, liquidation occurs when a company or group must sell some of its assets at a loss to cover a debt. DeFi liquidations are similar in that users take out debt from a protocol and provide crypto assets as collateral to back the debt. Thus, DeFi liquidation is the process by which a smart contract sells crypto assets to cover the debt.

Loan-To-Value Ratio

Liquidation is basically a stop-loss for DeFi lenders. The liquidation threshold protects the lender from a sharp price drop, which could lead to under-collateralization followed by liquidation. If the borrower’s collateral value falls closer to your debt value or is unable to support your debt value, the protocol will allow someone else to repay your debt, at a discount, in exchange for the collateralized asset. Thus, liquidation also works as a penalty for borrowers, and the amount of assets sold for a discount depends on the assets used as collateral.

Liquidators

The DeFi lending platforms offer hefty incentives, also known as liquidation bonuses, to liquidators-those who buy the discounted collateral and cover the account’s debt. In practice, however, due to gas wars between liquidators, a big part of the incentives ends up with the Ethereum miners, because they decide which liquidator wins the transaction and

the included discount. Liquidators often develop bots to liquidate loans faster and earn more liquidation bonuses.

Liquidation Crisis

However, once the price drops below the liquidation threshold, and the collateral is sold at a discounted price, the market value of the collateral asset may drop even further. This can lead to a chain reaction of liquidations on a particular cryptocurrency. Considering the risk of purchasing a declining valued asset, liquidators are less likely to participate when market conditions are sub-optimal. If the price of the asset drops too far, liquidators will drop out completely, leaving the DeFi lenders to take huge losses, in what's known as a market liquidation crisis.

Backstop protocols in traditional (centralized) exchanges:

Backstop protocols in traditional (centralized) exchanges, Centralized futures and options crypto exchanges like Bitmex, Kraken, and FTX handle liquidations in the following way:

1. In small liquidations and normal market conditions the platform simply bid the borrower's collateral in the platform order-book.

2. Backstop liquidity provider program: In this scheme, liquidity providers are committed to hold certain balance in the exchange, and upon liquidations their balance is used to buy the bankrupted account collateral, at a discount over market price.

The problem

Decentralized lending platforms like Maker, Compound, dYdX, bZx, Aave, and others, notoriously enable a poor leverage ratio of x3-x5, despite having billions of dollars of liquidity at decentralized exchanges which can be used for liquidations at time of need.

Lending platforms are being conservative with their collateral factors (compared to CeFi systems like FTX, ByBit and others who offer x100 leverage to their users), because most of DeFi liquidity is concentrated on automated market makers (AMMs) who either (

1) offer relatively high slippage w.r.t deposited amount (e.g., Uniswap V2, Sushi, Balancer, and Bancor); or

(2) offer tight spreads which can get depleted upon price changes (e.g., Uniswap V3, Kyber's DMM).

Hence, AMMs like Uniswap V2, will fail to facilitate $20M DAI liquidation, despite having over $200M deposited inventory at its ETH/DAI pool.

This causes a negative spiral, in which lending platforms cannot offer decent leverage/higher collateral factors as they are uncertain of the liquidation results, and liquidators do not optimize their systems for anything more than arbitrages. Indeed, the paper compares liquidation volumes and expected returns on Binance Futures, which give liquidators very high yield even when they lock $200M only for liquidations. While the same amount will result in very poor APY in DeFi historical.

Some lending platforms try to mitigate this concern by keeping dedicated keepers on their payroll. This only makes the problem worse, as

(1) there is no certainty on how these will execute at time of need; and

(2) this solution is non-transparent, and gives rise to centralization and single point of failure.

These concerns are not only theoretical. A primary example is Maker's Black-Thursday failed liquidation events, despite Maker's great attempt to build a keeper's community.

The Solution

After liquidation happens, an automatic re-balance process begins. The re-balance process converts the seized collateral from the liquidation, back to the original asset.

The rebalance is done by offering the collateral for sale according to the market price, which is determined according to a price oracle (e.g., Chainlink). An optional discount on market price is given according to the imbalance size (the size of collateral to sell), and the exact formula is an adaptation of Curve Finance stable swap invariant.

As user deposits are expected to sit idle for the majority of the time (when liquidations do not occur), the system will deposit it, on behalf of the users, into yield-bearing protocols, e.g., Uniswap, YFI, or Compound, and will withdraw it only to facilitate liquidations.

Backstop Protocol

B.Protocol is DeFi's backstop liquidity protocol.

It is a liquidation engine for DeFi lending platforms, using user-based backstop liquidity pools to handle liquidations in scale.

A new DeFi Lego primitive, bringing Traditional finance systems best practices (a backstop) into DeFi, aiming to stabilize the ever-growing market of DeFi assets which are crucially dependent on adequate liquidation processes - which were missing till now in this young ecosystem.

Decentralized lending platform, e.g., Compound, dydx, and Aave, are gaining wide popularity in the recent year, but suffer from two major drawbacks:

• Significant spread between the interest rate given to lenders and the interest rate borrowers pay.

• Big part of the lending protocol value is taken by the underlying blockchain miners due to so called gas wars between liquidators who undertake borrowers under-collateralized debt.

Birth of a backstop protocol, where backstop liquidity providers (BLP) buy their right to liquidate under-collateralized loans. In this protocol borrowers and lenders share the BLP payments in addition to the usual interest rate on their loan

Ways for liquidation

The backstop liquidity protocol provides an interface for users to lend and borrow via DeFi Lending platforms (such as Maker and compound). Lenders will get their user rating based on their deposits and the usual interest rate from compound, while borrowers will not get any rating due to technical difficulties. As we described, BLPs bid for BLP franchise, which give them a priority in liquidation of the backstop liquidity protocol users debt. The priority can be achieved in two ways:

1. Naive approach which changes the user interaction with the compound protocol, and then we present the seamless approach that allows the user to interact with our protocol in exactly the same way he would have interact with compound (and in addition benefit more due to his user rating). Naive approach Priority is achieved by tightening compound collateral factor by 3% (i.e., we effectively increase the users margin requirements by 3%). As a result, user debt will become unsafe in our platform before it becomes unsafe in the compound platform, and therefore only our platform's BLPs would be able to liquidate it. From the user side, the interaction is almost identical to how regular users interact with compound.

The downside of this approach is stricter collateral requirements for the users. However, the users are compensated for it by sharing the BLP revenues, which they would not get by interacting directly with compound. In this approach users enjoy the liquidity and tight interest spread of the existing compound platform while earning extra by giving BLPs

priority in liquidation of their collateral. In addition, the solvency of the system is guaranteed and taking care of by the compound platform, which take care of the liquidations that are not handled by our protocol BLPs.

2. The seamless approach Users deposits and borrows will be forwarded to compound, and they will get the same interest on their collateral and their rating will increase. BLPs get a priority by providing a cushion to the user debt, i.e., repaying part of the user borrow to compound, when the user managed assets are getting close to their liquidation price. As a result, in compound itself the recorded user debt is lower than the one on backstop protocol, and thus the BLPs with the franchise get a priority over compound's liquidators.

[1.0.0] Example: • 1 ETH = $3000

• Adam deposit 1 ETH to backstop protocol, and this 1 ETH is supplied to compound on behalf of Adam's smart contract avatar.

• Adam asks backstop protocol to borrow 1000 DAI. Backstop protocol borrows the 100 DAI with Adam's avatar and sends it to Adam. At this point Adam's liquidation price is 1 ETH = $1300.

• ETH price goes down to 1 ETH = $1350.

• BLPs provide their cushion by paying 100 DAI of Adam's borrow into compound via Adam's avatar. Now Adam's liquidation price on compound is $1250.

• ETH price goes down to $1290.

• Backstop's BLPs liquidate Adam's debt by interacting with his avatar.

Pros of Backstop Protocol

1. Backstop protocol aims to integrate as a second layer liquidations solution for existing platforms, without any change from their side. In such integration the underlying lending platform (Such as Maker) security guarantees remain, as no change was done from its side, but the platform users get more and the platform itself enjoys better security towards future liquidations.
2. It has a first mover advantage for building a backstop liquidation system in the DeFi space. And being integrated with top DeFi Platforms such as Compound and Maker. It can become a default building block of DeFi.

3. Democratize liquidation system - everyone can take part and profit from DeFi institutions.

- Backstop Liquidity protocol - lending platforms get a stronger safety net since there is a committed and dedicated pool to ensure that liquidations will take place.

- Unlock better capital efficiency - with better liquidation systems in place, higher leverage can be used so users can enjoy higher capital efficiency with better liquidation thresholds.

- The goal is to be a unified backstop primitive for DeFi across multi-chains and multi-layers.

4. Backstop Protocol is Blockchain agnostic and will work with any EVM compatible chain.

Impact of Backstop protocol

Leverage:

One critical need for people seeking to use leverage (e.g., mint DAI in Maker) is to become more efficient. If the Collateral Ratio for liquidation is 150%, the most optimal used ratio should be around 151%, to gain maximum efficiency. However, you would be liquidated very fast and lose all that efficiency.

A great new primitive would be to create a Common Pool for participants to take loans out: it would allow to avoid liquidation as it could be managed in a more dynamic, automated way. This would be accomplished by creating a "Super Account" that manages Collateral Ratio more dynamically. Instead of users depositing into Maker, they would deposit into this account, which could be held close to the limit and therefore be more capital efficient Participation in it would require a fee and maybe some upfront collateral as a liquidity backstop. Why would you participate? you avoid liquidations and get more capital efficiency (higher leverage, on a safer way). Yearn seems to be doing this for their vaults, i.e., managing the collateralization ratio dynamically.

Some other protocol or party could take the short side of this and provide the insurance for a fee. I am pretty sure there would be a strong market for this, more so than for being more efficient at liquidations. In the end, we want to avoid liquidations while still being the most capital efficient we can. * Taken from the forum

The proposal given above could be a real game changer as it would fetch more users, who are looking for more efficient loans on their crypto assets. Inevitably increasing the value of the Protocol and its users.

Risk Parameters:

Smart contract and software

Using Backstop protocol introduces no other risk in form of liquidation. But there is still a possibility of smart contract having a bug using which funds could be at risk. This problem is unlikely to occur given that Backstop protocol have been audited and has a team with strong development background. Nevertheless, this problem is common for the whole defi space and not just B.protocol

The risks that the protocol reduce the risk of losing your funds to the miners as the profits generated, the protocol eliminates all aspects of competitions among the liquidators, and lets them fairly share all the liquidations. In return to higher certainty, the liquidators are willing to settle for a lower discount and share their proceeds with all the users of the platform.

User Score and rewards

The protocol was designed with intention to keep user funds safe, and under user custody (unless the users reached a liquidation state). However, the user score and the proceed sharing scheme comes without strong guarantees,
and the user should consider it only as a potential bonus that might not be exercised. Moreover,
the parameters that dictate the proceeds sharing could be changed over time by the liquidators.

The user score itself is subject to slashing (decrease of score) in the cases where someone increased a deposit or repaid some of the user debt on behalf of the user without using the B.Protocol smart contract. However, to protect the user from such a line of attacks, the expected reward loss due to the slashed will typically be smaller than the extra value that the user benefited from an external deposit or debt repayment.

Default Risk:

B.Protocol does *not* help the user to avoid liquidations.
A liquidation in B.Protocol will happen under exactly the same conditions as in the underlying platforms. E.g., when interacting with MakerDAO via B.Protocol, the liquidation will be triggered according to the same conditions that would trigger it if the user would interact with MakerDAO directly. The liquidation penalty is also identical to the underlying platform penalty.

Once a liquidation is triggered, the liquidation process relies on a price feed that is provided by the underlying platforms, to determine the fair value of the user’s debt and deposit. It’s worth noting, that in the case of MakerDAO, this is different from the original liquidation

process, and while we expect that in most cases the outcome will be favorable to the user, it might not be the case if the price feed does not well reflect the market conditions.

Conclusion

Considering B.Protocol's first-mover advantage in solving inefficient liquidation systems of decentralized platforms, it can become one of DeFi's default building blocks.

The team plans to make B.Protocol compatible with any decentralized application down the road. If it can improve liquidators' reliability by taking upfront deposits, many platforms would want to direct their user traffic through B.Protocol.

Suppose the B.Protocol's user base will continue to expand at the same rate. In that case, it's network effect can grow to a critical point, where the solution is so ubiquitous that developers use it as a default for backstopping liquidity.

Some Relatively New Projects which could use Backstop Protocol:

1. Sushiswap – this is primarily used as a DEX, but is also a lending platform. Available on Ethereum, Binance smart chain, polygon and etc.

Website: https://app.sushi.com/lend

Discord: https://discord.gg/AnfmSaeKUp

2. Ooki protocol – This is a project that would be a perfect match for Backstop Protocol.

Website: https://ooki.com/dashboard/lobby

Discord: https://discord.gg/XmfmPgjQq8

3. Unilend – It is an upcoming project with team of strong credentials. The project is audited by CERTIK.

Website: https://unilend.finance/

Twitter: https://twitter.com/UniLend_Finance

Telegram: https://t.me/UniLendFinance

4. C.R.E.A.M - This project is relatively bigger than the other projects. But could still benefit from Backstop Protocol.

Website: https://cream.finance/

Discord: https://discord.gg/HpzRfnF4EG

All the projects mentioned above have been verified to work on EVM compatible chains.

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