Risk Monitoring And Insurance Against Bad Debt

DeRisk by **Carmine Finance**

Executive Summary

The problem with bad debt for DeFi lending protocols	- Defi lending protocols don't have an easy way to hedge against bad debt. - Lending protocols can monitor their own protocol but there is no easy, aggregated way to monitor other protocols in the same chain. This prevents them from having good market intelligence and having an optimized amount of capital locked to cover the cost of bad debt, resulting in high cost of capital. - Lending protocols can't insure against risky loans, which leaves them exposed to bad debt.
That's why we are building	- A cross-protocol risk monitoring platform with insurance on risky loans for DeFi protocols.
That provides these benefits	- Protection against bad debt - Optimization of cost of capital - Differentiation vs your competitors - Save internal resources
Key differentiators vs. competitors	- Provide cross-protocol insights for capital optimization. - Offer insurance for risky loans

The problem with bad debt for DeFi lending protocols

Decentralized lending protocols can't afford bad debt. A single loan hurting a lender would damage the reputation of the whole protocol. But DeFi lending protocols don't have it easy to hedge against bad debt.

The conditions that make a loan risky are dynamic and depend on different market conditions, mainly driven by demand and price volatility. So a loan can be risky at a certain point, but become non risky when market conditions change.

The problem is that there are no insurance providers to insure non performing loans. Protocols monitor their own protocol but they don't have visibility on other protocols, so their "protocol intelligence" is limited. Protocols could benefit from a shared market intelligence if they would have access to shared metrics across their same blockchain. Especially, they would have a more realistic, data-driven assessment of the risk of debt at any given point. For a low volume of transactions in the current crypto winter it may not be a huge problem, but when volume picks up, a proper insurance strategy will be needed.

Another consequence of bad risk monitoring is a high cost of capital. The liquidity pools allocated as collateral for bad debt are not optimized which translates into a bigger amount of capital locked. That capital could be put to work instead of being stuck in liquidity pools.

Not being insured against bad debt presents a series of challenges for lending protocols.
- Protocols are fully exposed to risk of bad debt.
- Bad debt will have to be socialied at the end.
- Almost all users are risk averse which means that they view the risk of bad debt more costly than it actually is, and insurance is a cheaper way to fix that.

Example
*"In November 2022, lending protocol Aave discovered a weakness in the protocol's lending parameters exposing it to bad debt. In the incident, the protocol lent out tens of millions of dollars in CRV tokens against USD Coin collateral, but when the price of CRV spiked, arbitragers were unable to fully liquidate the collateral to repay the trader's debt. The outcome, ultimately, was more of a flesh wound: Aave wrote down **$1.7 million of bad debt**. But that was enough to briefly cause its native token AAVE to plummet on the news." (Own interpretation) The amount of capital in Aave's liquidity pool is above **$300 mil**, which has a yearly cost of capital of around **$15 mil**. At a 5% interest rate.*

Source: Michael Bodley, blockworks.co

A risk monitoring platform with insurance on risky loans

That's why we are building Carmine DeRisk, a solution to monitor risk and insurance risky loans.

The solution has two main components, 1) a monitoring platform to monitor all loans from all lending protocols in the same blockchain, with a our own risk assessment module that identifies risky loans from which we can offer 2) on-demand insurance via smart contract.

1. A cross-protocol, open source monitoring platform.

A risk monitoring platform that monitors all lending protocols in the same blockchain.

    I.   It will monitor outstanding loans on all participating lending protocols.
    II.   It will simulate the impact of price movement on the liquidity available to liquidators
    III.   We will identify situations with significant risk of liquidations being non profitable for liquidators (via our own in-house models). Custom alarms can be triggered to notify the protocol of specific situations taking place.

Example
Let's assume a lending protocol in Starknet has 100 loans, around some price level. Easy to liquidate on StarkNet's AMMs if you account only for Hashstack's position. But for example zkLend and Nostra has the same amount of loans, making it 300 loans, but the AMMs can swap only so much that just 200 loans are profitable for liquidators, the liquidators that have their own capital (don't need to swap during liquidation) can cover 50 loans and the remaining 50 might not be liquidated because of they would not be profitable to liquidate. For these specific loans we will provide insurance (read below).

The main part will be open source and on-chain, but there will be custom-made features (also off-chain).

2. On-demand loan insurance.

The monitoring module allows us to run our in-house algorithms and assess the level of risk on each loan. For these "potentially non-profitably liquidated" loans we will offer insurance via a smart contract (a regular contract is also possible).

The insurance is a long put/call option, the option sustains a high enough value of collateral, so that the borrowed capital is covered.

The price of the insurance will be transparent, with a % on top of the price provided by an oracle (e.g. Pragma). There will be an initial low amount of locked capital which will be increased as volume increases, in order to keep fixed costs down.
On liquidation (assuming that without insurance the liquidation would be non profitable) the loan is split into two. One that looks like it has been liquidated and follows standard pattern of behavior in the protocol and second part that contains "to be liquidated collateral", info about

sum that has to be repaid and the insurance as a secondary collateral guaranteeing value of the combined collateral being more than the borrowed asset.

This allows the protocol to wait for the market to settle back into an efficient state and not lose value. When in efficient market conditions, the liquidator can efficiently swap the collateral for a borrowed asset, repay the borrowed asset, sell the option and make profit.

In the case of a smart contract, the duration can be set for 1 month as standard, but can be changed and agreed differently as needed.
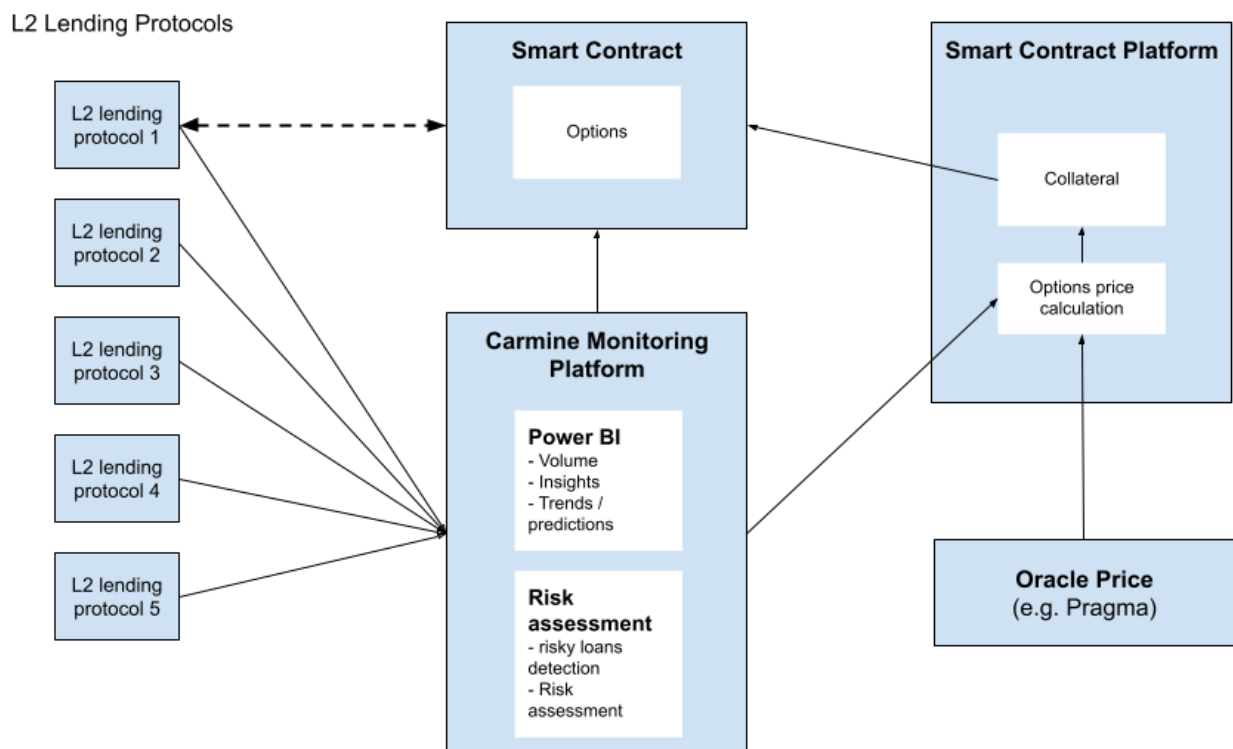

Fig. 1.- Solution diagram

Benefits

- Reduce risk of bad debt and associated reputation impact on the protocol.
- Reduce cost of capital with optimized risk assessment. The collateral for loans could be added to the liquidity pool(s) of the protocol to decrease the cost of capital. (i.e. Aave has $300 mil. liquidity pool, which has a cost of $15 mil. yearly at a 5% interest rate).
- Outsource risk.
- Save internal resources (free up your team).

Key differentiators vs. competitors

- DeRisk provides a detailed view not only on your platform but on other lending protocols to provide you with cross-protocol insights.
- No other monitoring platform provides insurance on risky loans.

FAQs

Do I really need it? We have a manageable amount of loans, and I haven't had a serious event so far.

- The risk is there even though it might not manifest itself in a few years.
- Your cost of capital will be higher if you don't optimize the risk assessment.
- You will spend previous internal resources on this instead of moving on with your development roadmap.

Does it really help me with my community?

- It adds an additional layer of protection for your stakers.
- The risk and eventually the cost of bad debt does not have to be socialized. - DeRisk removes the socialization of risk and its cost. If the bad debt manifests, the cost for the insurance will be most likely (99% chance) socialized.

I don't want to spend money on this at this moment

- If you are not ready to insure risky loans yet, we can at least reduce your costs by our monitoring. With that you can optimize the capital allocated to cover the cost of bad debt which results in lower cost of capital.

What are the development timings?

- The solution is under development, these are the times from the moment of agreement with the lending protocol.
- Phase 1 - Monitoring: cca. 4 weeks
- Phase 2 - First smart contract: cca. 4 weeks
- Total cca. 8 weeks