credora by RedStone

Lotus

Preliminary Risk Assessment

cbBTC and wstETH Markets



17.04.2026

Summary

This report presents Credora's preliminary risk ratings for Lotus Protocol's cbBTC/USDC and wstETH/USDC lending markets across proposed Liquidation Loan-to-Value (LLTV) tranches. Ratings are produced using Credora's Monte Carlo simulation framework, applied independently to each tranche on a standalone basis.

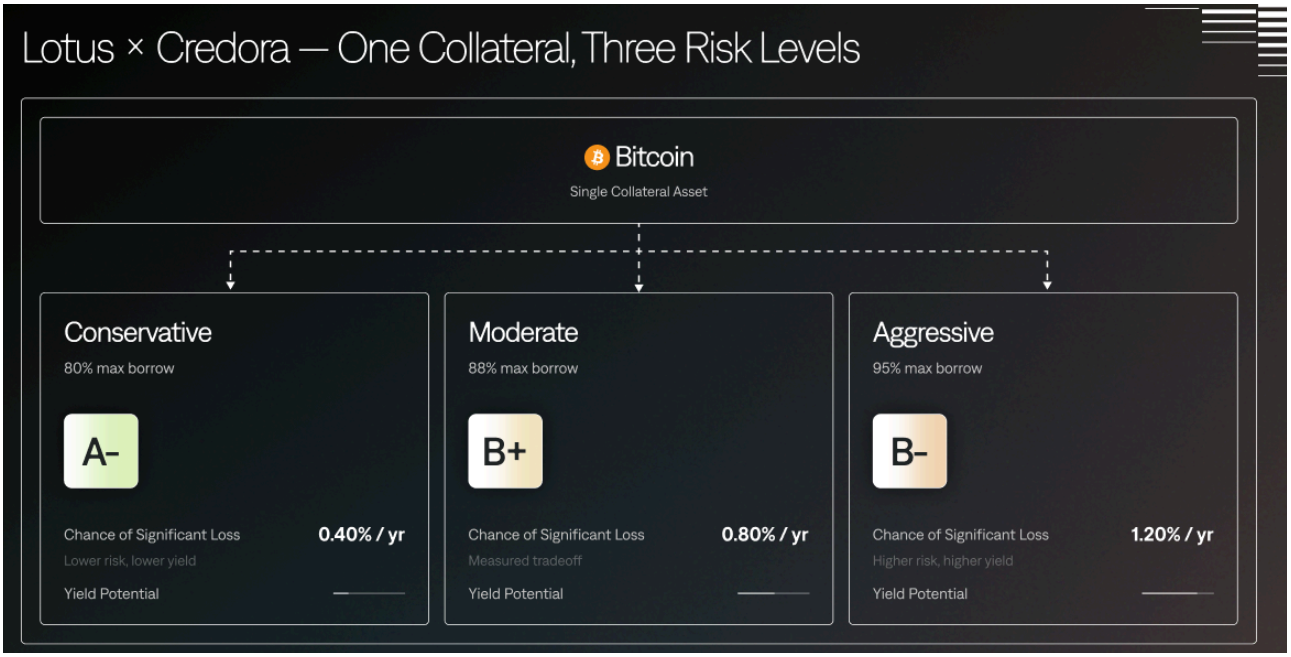
Protocol Structure

Lotus is a tranched lending protocol that lets borrowers and lenders choose their risk/return profile at the LLTV (loan-to-liquidation value) level within a single market.

Under the Lotus ecosystem, a market has a single collateral and loan asset, and contains multiple tranches with different LLTVs rather than a single loan-to-value ratio. This structure gives both borrowers and lenders precise control over their risk exposure. Borrowers select the tranche that matches their desired LLTV, while lenders choose tranches that align with their target risk/yield profile.

To maximize capital efficiency, the system employs a waterfall mechanism: when liquidity is supplied to a higher LLTV tranche but borrowing demand is insufficient, unused capital automatically flows down to lower, safer tranches. This means capital is first made available at the lender's chosen high-LLTV tranche, and when not fully utilized, cascades seamlessly to lower-LLTV tranches, ensuring optimal deployment across the entire market while maintaining lenders' risk preferences.

To ensure maximum efficiency even from idle assets, unlent USDC is deposited to a vault earning yield from WisdomTree’s money market fund (WTGXX) and Coinbase Prime rewards.



The protocol's inaugural market deployment will pair USDC against cbBTC and wstETH, with internal stress-testing conducted using a dynamic oracle framework across multiple liquidity scenarios and LLTV tranches.

Independent Tranche Assessment

Each tranche is rated independently, without credit for Lotus's waterfall/cascade mechanism. This is intentionally conservative — if capital concentrates in a single tranche under stress, the rating would otherwise diverge from the user's original allocation-time observation.

On the borrowing side, participants navigate a trade-off between leverage maximization and liquidation probability. Notably, the discrete tranche architecture is anticipated to generate materially different utilization patterns compared to Morpho's continuous market structure, where borrowing activity typically concentrates 17.5% below the LLTV ceiling; Lotus' segmented design should instead produce tranche-specific clustering behaviors that reflect distinct risk appetites.

Lender-Side Tranche Assessment

In practice, deposited liquidity will distribute dynamically across multiple tranches and may retain portions in the depository layer, creating a diversified exposure profile whereby capital allocated to any single tranche maintains fractional exposure to several underlying markets through the waterfall mechanism. Therefore, accurate risk quantification for LotusUSD deposits requires a composite methodology that weights the individual risk profiles of all constituent markets proportionally to their respective capital allocation percentages, rather than attributing the full risk of any single market to the aggregate deposit base.

Methodology

For each LLTV tranche, Credora runs 10,000 daily return simulations over a 30-day horizon on the relevant collateral/loan price pair. The model incorporates three dynamics: (1) normal returns modeled via historical volatility; (2) tail events fitted using a Generalized Pareto Distribution (GPD) calibrated to extreme historical price movements; and (3) collateral default scenarios constructed using asset-specific PD and loss-given-default distributions. Outputs include the probability of LLTV breach per tranche.

Price paths that breach the LLTV threshold are passed to a Liquidation Simulation, which applies a step function of sequential steps to model liquidation attempts. At each step, available DEX liquidity is applied against the collateral position, accounting for price impact. Successful partial liquidations reduce the outstanding loan balance before the subsequent step, producing a nonlinear LTV path. The simulation aggregates outcomes across multiple step configurations using rating rank averaging to derive the final PSL (Probability of Significant Loss).

The table below summarizes the key risk parameters for each tranche within the lending market. Most of the parameters will be constant across tranches within a certain market:

Table 1.Inputs for Independent Tranche Analysis

Parameter	Relevance
Collateral Asset	Determines the collateral probability of default (PD) and loss given default (LGD), volatility profile, liquidity characteristics that drive liquidation risk
Loan Asset	The asset at risk of loss if bad debt accumulates; its credit quality is assessed separately
LLTV	Liquidation threshold; higher LLTV reduces the buffer before liquidation triggers. Different per tranche.
Tranche Allocations	Current positioning of borrowers within the tranche.
LIF	Liquidation incentive Factor.
Oracle Type	Price feed mechanism; dynamic oracles adjust update frequency based on market conditions.
Daily Volatility	Measures typical price variation; higher volatility increases probability of rapid collateral devaluation.
On-Chain Liquidity	Available liquidity for liquidations relative to Total Borrowed Amount within Defi bigger lending protocols for the Loan-Collateral Pair in the market.
Protocol Smart Contract	Probability of Losses from a protocol level failure.

Inputs

Loan Asset

LotusUSD is a vault being developed by Lotus Labs as part of their broader DeFi lending protocol. It is backed by a mix of tokenized treasury assets (primarily WisdomTree) and Coinbase Prime USDC rewards, structured through a Morpho v2 vault. The goal is to keep it liquid and low-risk, with minimal smart contract risk compared to a pure USDC product. The key benefit is that it enables yield generation for holders while serving as the native loan asset within Lotus's tranched lending system — meaning depositors earn returns from the underlying treasury and USDC reward allocations, while the token also functions as productive collateral within the protocol's borrowing markets.

As of the date of this report, the exact structure of lotusUSD is unclear. For that reason, Credora team used USDC as a proxy for the loan asset simulations.

Collateral Asset

Each collateral asset is rated via the Credora Token Methodology, producing an annualized PD. Both assets are blue-chip assets with low probability of default. Credora underwent a full assessment of the two assets and the ratings as of the report date are:

Table 2.Collateral Ratings and Probabilities of Default

Asset	Probability of Default	Rating
cbBTC	0.38%	**A-**
wstETH	0.10%	**A+**

Liquidation Loan-to-Value (LLTV)

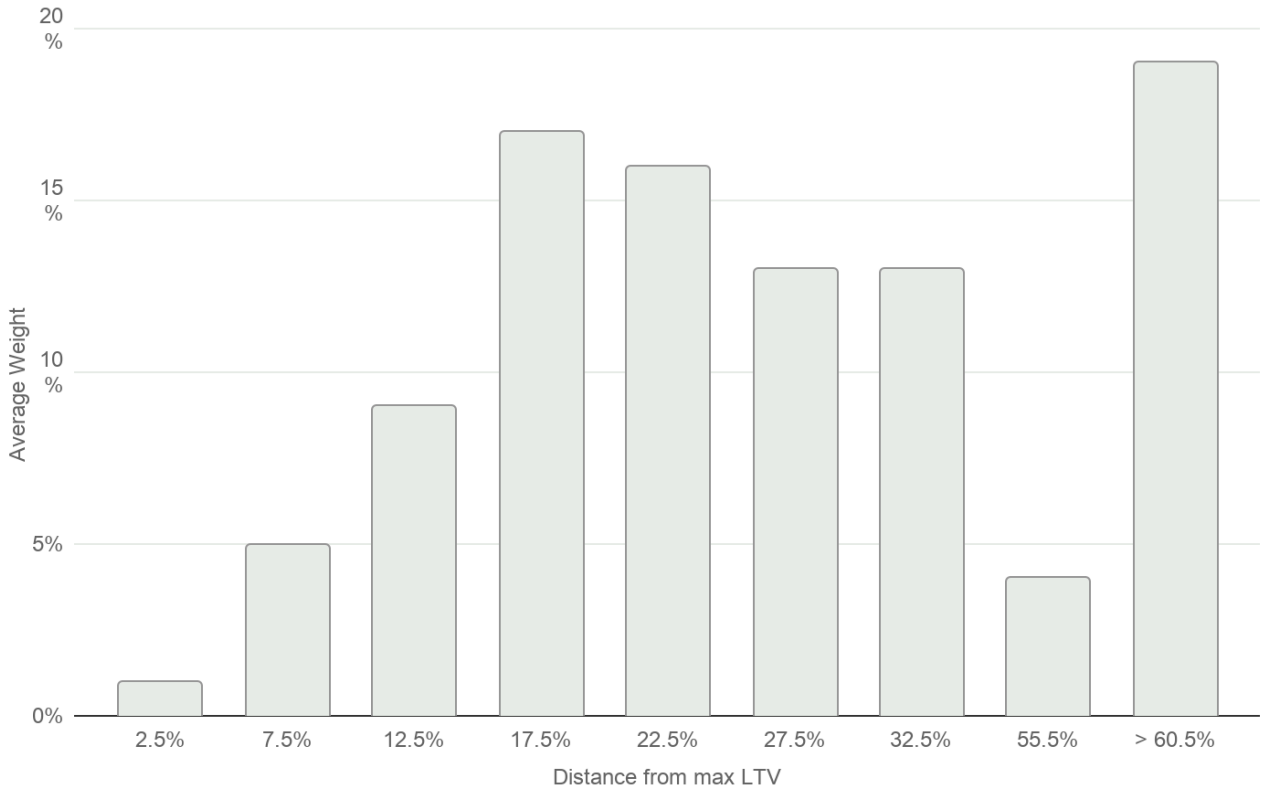
The threshold at which a borrower's position becomes eligible for liquidation. When a borrower's loan balance reaches LLTV × collateral value, liquidators may seize and sell the collateral. Higher LLTVs extend leverage capacity to borrowers but compress the buffer available to absorb collateral price movements before lenders sustain losses. Each tranche will have a different LLTV.

Tranche Allocations

Given the protocol's pre-launch status, the modeling framework relies on positional data from Morpho vault ratings to establish baseline assumptions for the user allocations inside each tranche. The position allocation distribution used was an average of the distributions in dynamic morpho markets

where the loan to collateral pair is a stablecoin (such as USDC) against a volatile collateral asset (such as cbBTC or wstETH).

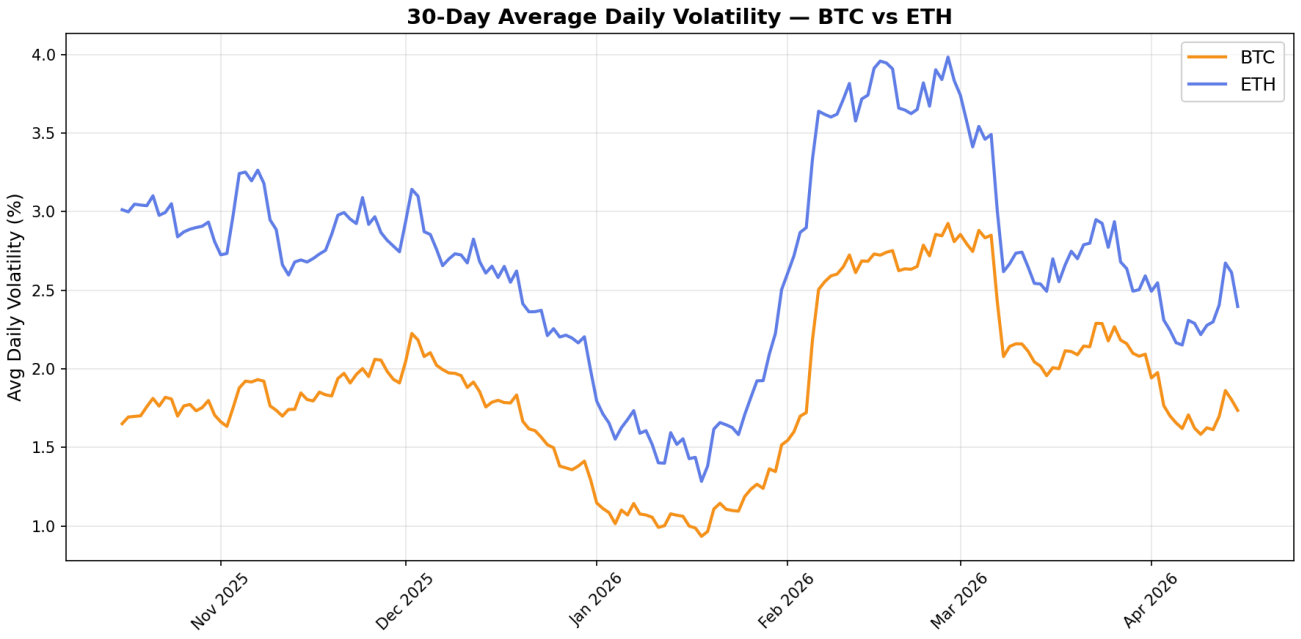
The picture below shows the distribution of LTV positions by distance to LLTV. Positions follow a bell curve distribution, with an accumulation across very conservative LTVS where the distance to LLTV is higher than 60%.



Picture 1. Dynamic Morpho Market Allocation Distribution

Daily Volatility

A Normal Distribution is used to model non-extreme returns, with distribution parameters derived from historical pair volatility. Volatility has greater impact at higher LLTVs; at more conservative thresholds, the collateral buffer is sufficient to absorb losses even under elevated volatility. The image shows the 30-Day Average Volatility over the last 6 month for the underlying collateral assets:



Picture 2. 30-Day Daily Volatility over the past 6 months

Protocol Smart Contract Risk

Credora conducts a full protocol assessment as part of its standard rating process; for this exercise, a placeholder value of 0.5% has been assumed based on available protocol documentation. A detailed protocol level risk analysis will be performed prior to going live.

Liquidity

Credora ran multiple liquidity scenarios independently for each tranche, testing how different market depth assumptions affect the probability of significant loss. Our liquidity assessment focuses on how well the market can absorb forced liquidations during stress events: specifically, whether there is sufficient DEX depth to execute liquidations at reasonable prices before positions become undercollateralized.

In stress events the liquidation pressure will come not only from the protocol being evaluated but also from markets provenient of other lending protocols that can cause the stress to accumulate.

The liquidity framework looks at a relationship between:

- Liquidity at 2% depth aggregated across DEXs
- Amount Borrowed at the loan network or across networks

Below the liquidity assessment at the date of this report:

USDC-cbBTC:

Table 3.Liquidity Inputs or cbBTC/USDC

Metric	Value
Pair DEX Liquidity on Loan Network (2%)	$9.3M
Pair Borrow on Loan Network (Morpho)	$369M
Pair Liquidity Ratio (Loan Network)	39.7
Pair DEX Liquidity Across Chains (2%)	$17.2M
Pair Borrow Across Chains (Morpho)	$1.32B
Pair Liquidity Ratio (Cross-Chain)	76.7
Lending Usage across other DeFi Protocols	High
30-day Average Turnover	7.43%
Final Liquidity Assessment	**Low Liquidity**

USDC-wstETH:

Table 4.Liquidity Inputs or wstETH/USDC

Metric	Value
Pair DEX Liquidity on Loan Network (2%)	$14.1M
Pair Borrow on Loan Network (Morpho)	$69M
Pair Liquidity Ratio (Loan Network)	4.9
Pair DEX Liquidity Across Chains (2%)	$20.5M
Pair Borrow Across Chains (Morpho)	$83M
Pair Liquidity Ratio (Cross-Chain)	4.05
Lending Usage across other DeFi Protocols	High
30-day Average Turnover	3.6%
Final Liquidity Assessment	**Mid Liquidity**

The Liquidity input will shape the rating curve across LLTVs. Better liquidity shifts the entire curve toward safer ratings, while shallow liquidity degrades outcomes significantly across all tranches. This is why we present results across multiple liquidity scenarios rather than a single point estimate, giving Lotus a range from conservative to aggressive assumptions to inform their LLTV and market positioning decision.

Rating Results

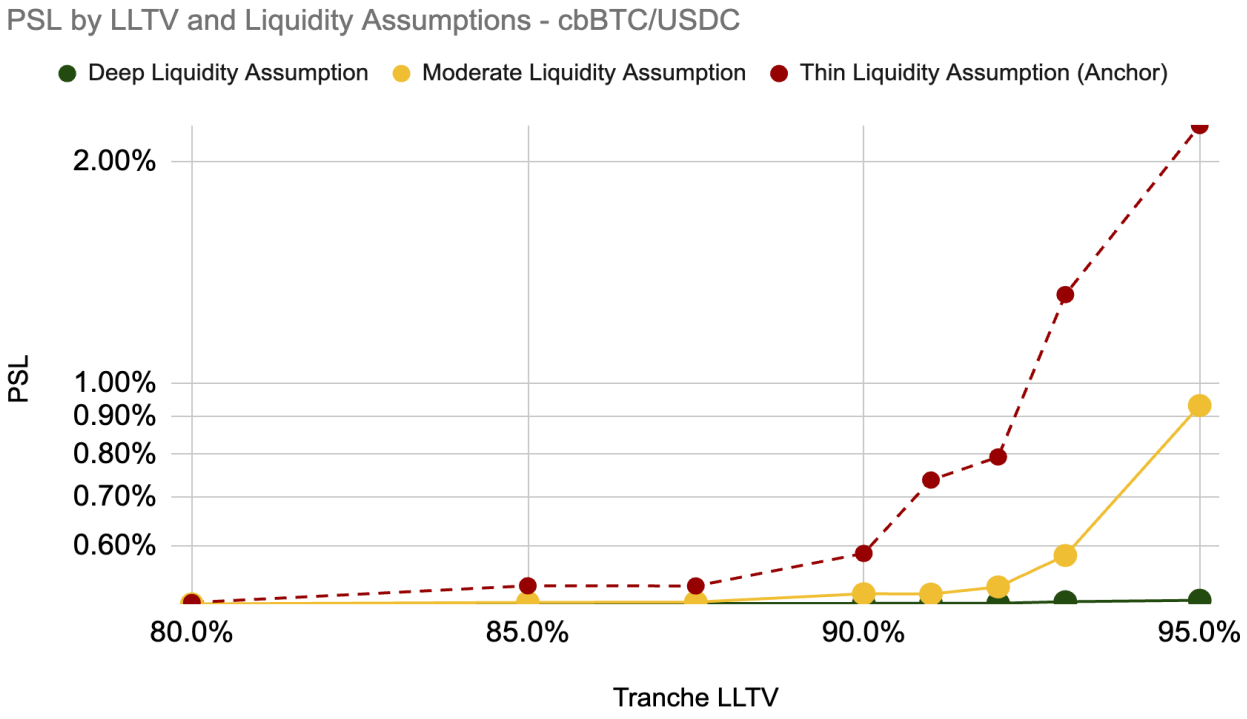
cbBTC/USDC

The table below presents the rating output across all LLTV × liquidity ratio combinations.

Table 5. Variables for market simulation

	Market PSL by Liquidity Ratio			DeFi Rating by Liquidity Ratio		
LLTV	Deep	Mid	Low	Deep	Mid	**Low**
80.0%	0.50%	0.50%	0.50%	A-	A-	**A-**
85.0%	0.50%	0.50%	0.53%	A-	A-	**A-**
87.5%	0.50%	0.50%	0.53%	A-	A-	**A-**
90.0%	0.50%	0.52%	0.59%	A-	A-	**A-**
91.0%	0.50%	0.52%	0.74%	A-	A-	**A-**
92.0%	0.50%	0.53%	0.79%	A-	A-	**A-**
93.0%	0.50%	0.58%	1.32%	A-	A-	**B+**
95.0%	0.51%	0.93%	2.24%	A-	B+	**B**

Reading note: *Market PSL = Simulation PSL + Protocol PD (0.5% fixed). A Protocol PD of 0.5% reflects Credora's assessment of Lotus smart contract and operational risk. Simulations run on Ethereum with a dynamic oracle configuration.*



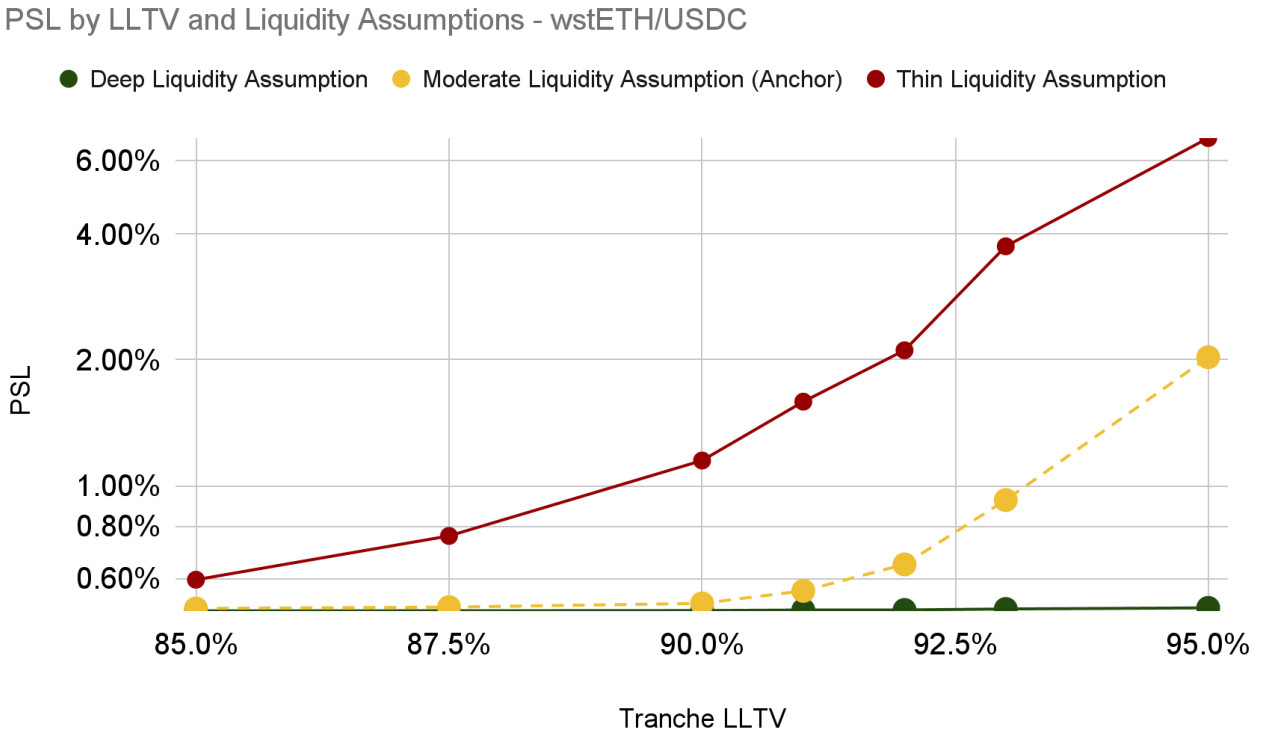
Picture 3. PSL by Tranche LLTV

wstETH/USDC

The table below presents the full simulation output across all LLTV × liquidity ratio combinations.

Table 6. Variables for market simulation

	Market PSL by Liquidity Ratio			DeFi Rating by Liquidity Ratio		
LLTV	High	Mid	Low	High	**Mid**	Low
80.0%	0.50%	0.50%	0.52%	A-	**A-**	A-
85.0%	0.50%	0.51%	0.60%	A-	**A-**	A-
87.5%	0.50%	0.51%	0.76%	A-	**A-**	A-
90.0%	0.50%	0.52%	1.15%	A-	**A-**	B+
91.0%	0.50%	0.56%	1.59%	A-	**A-**	B
92.0%	0.50%	0.65%	2.11%	A-	**A-**	B
93.0%	0.51%	0.92%	3.74%	A-	**B+**	B-
95.0%	0.51%	2.03%	6.80%	A-	**B**	C+



Picture 4. PSL by Tranche LLTV

Conclusion

Both markets exhibit a nonlinear relationship between LLTV and Market PSL: risk remains contained through 92%–93% LLTV under reference liquidity before accelerating at the 95% tranche as the collateral buffer narrows. The acceleration is more pronounced in wstETH/USDC under Low Liquidity, where PSL at 95% reaches 6.80% against 2.24% for cbBTC/USDC at the same LLTV and liquidity condition. This differential reflects the joint impact of wstETH's higher realized volatility and the market's greater sensitivity to cross-chain liquidation flows.

The ratings presented are produced on a standalone tranche basis and exclude the risk mitigation provided by Lotus's waterfall mechanism. In deployment, the redistribution of unlent capital toward lower-LLTV tranches reduces the effective risk exposure of lender deposits relative to the standalone ratings.

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