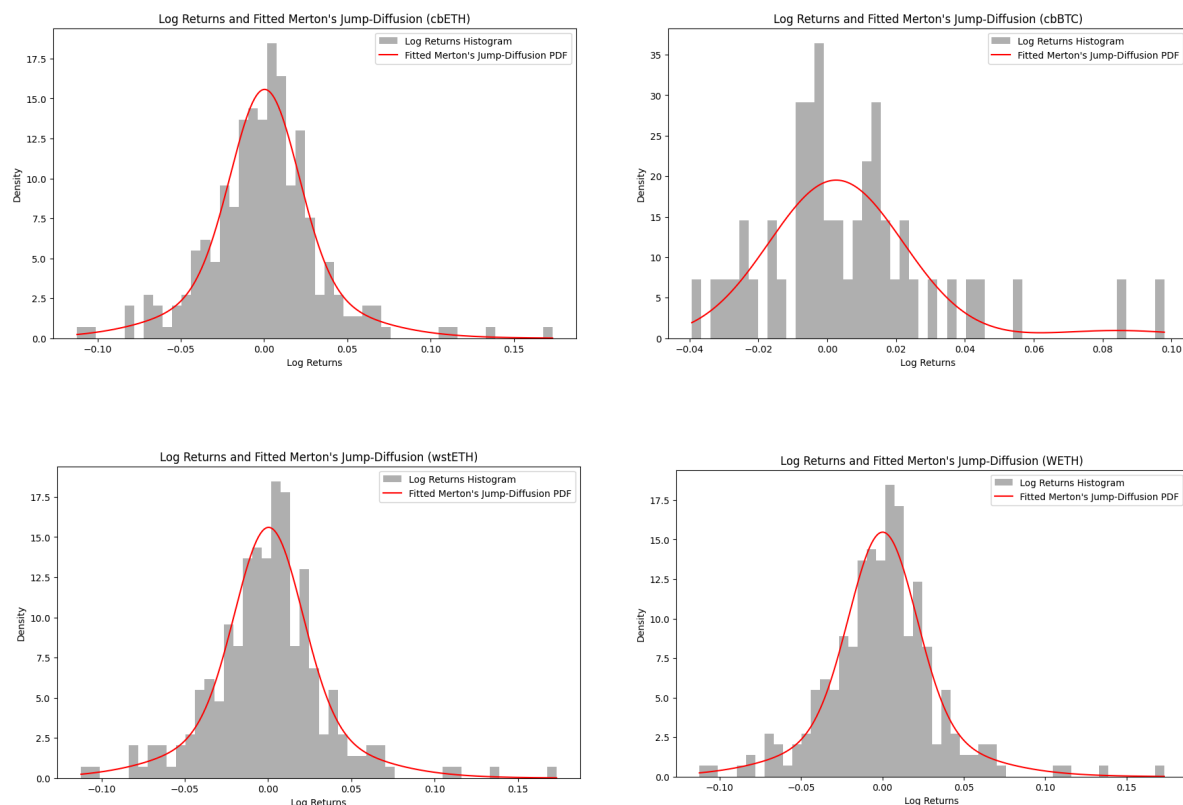


## On the Current Morpho Supply Caps

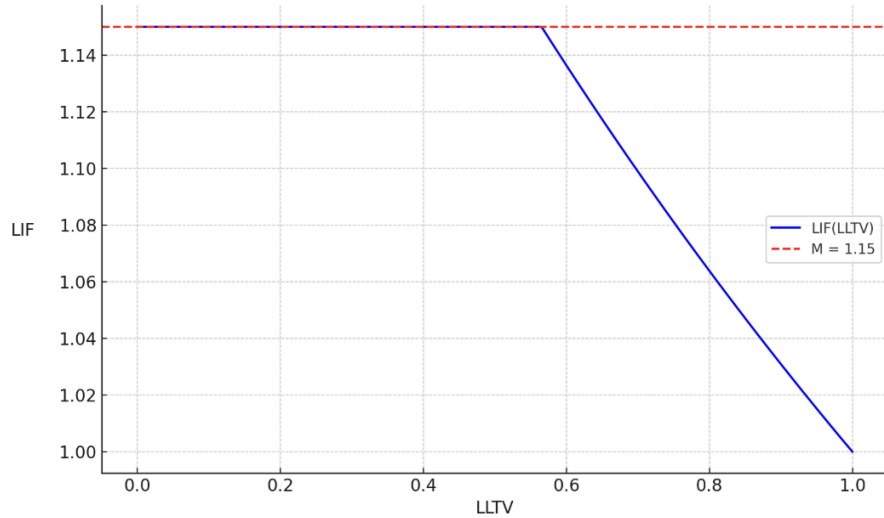
We recently developed a mathematical model to determine LLTV, Borrow/Supply Caps, and the Junior Capital [Framework for Automated LTV, Borrow Cap, and Junior Capital](#). This formalism requires input such as price statistics and market parameters, including liquidity and arbitrage time between CEXs and DEXs.

To apply this formalism to the studied Morpho markets, we do not need to determine the LLTV, as it is already fixed. However, we will use the current LLTV values to estimate or reverse-engineer some of the statistical parameters.

We plan to apply the formalism to the following markets: cbETH/USDC, cbBTC/USDC, wstETH/USDC, and WETH/USDC. First, we collected price history for the respective assets and fit their distributions to Merton's Jump Diffusion model. For some assets, the price history is limited due to their recent introduction, but the fit will be refined over time as more data becomes available. The resulting fits are shown in the following figures:



To assess market liquidity, we based our estimates on a 3% price impact. For the liquidation bonus, we use the Morpho's curve:



Liquidation Incentive in function of the Liquidation Loan-To-Value.

Using the current LLTV of 86% for these markets, we estimate a liquidation bonus of approximately 5%. The summarized values are presented in the following table:

Parameter	cbETH	cbBTC	wstETH	WETH
$\mu$	0.000391	0.00259	0.000397	0.00021
$\sigma$	0.02011	0.01946	0.02	0.0205
$\lambda$	0.45776	0.04877	0.460	0.433
$\mu_j$	-0.001128	0.08177	-0.00116	-0.0009978
$\sigma_j$	0.04104	0.000001	0.0411	0.041998
$l(3\% \text{ price impact})$	\$15m	\$18.5m	\$10.8m	\$24.3m
Liq. bonus	~5%	~5%	~5%	~5%
LLTV	86%	86%	86%	86%

The model can also determine the LLTV for a given pair. However, since these markets already have an LLTV set, we will use those values to reverse-engineer the remaining statistical parameters, such as the minimum liquidation in the distribution and the confidence factor of the Merton's distribution. By doing this and calculating the expected borrow caps, we can estimate the supply caps using the formula:  $\text{Supply Cap} = \text{Borrow Cap} / \text{LLTV}$ . Under the current market conditions, we obtain the following:

Parameter	cbETH	cbBTC	wstETH	WETH
Borrow Cap	35.9m	44.02m	25.8m	58m
Supply Cap	41.7m	51.2m	30m	67.3m

## Final Remarks

This case study highlights the applicability of the developed mathematical model for analyzing and determining critical parameters in Morpho markets, such as the supply caps. By using the current LLTV values and price statistics, we reverse-engineered the remaining statistical parameters, such as liquidation parameters in the user behavior and confidence factors.

We use the model to estimate the borrow and supply caps under existing market conditions. As more price data becomes available, particularly for newer assets, the model can be further refined to improve accuracy and adaptability. This iterative process ensures that the framework remains relevant during evolving market conditions.