

Example CR.1

Assume that a bank holds a portfolio worth \$ 100 millions. The Probability of Default in the holding period of $T = 1$ year is 3 %. The correlation rho the bank estimates as 0.05. The Recovery Rate is 0.6.

What is the CVaR within the holding period of one year at the confidence level of 99 % ?

Solution

We calculate:

$$V(0.99, 1) = \Phi \left(\frac{\sqrt{0.05} * \Phi^{-1}(0.99) + \Phi^{-1}(0.03)}{\sqrt{0.95}} \right) = 0.0816$$

$$CVaR_{99\%} = L * (1 - R) * V(0.99, 1) = 100 * 0.4 * 0.0816 = 3.264.$$

That means that with a likelihood of 99 % the losses of the portfolio within a holding period of one year will not exceed \$ 3.264 millions.