

Basel Requirement of Downturn LGD: Modeling and Estimating PD & LGD Correlations

Abstract

Basel II requires that banks use *downturn* loss given default (LGD) estimates in regulatory capital calculations, citing the fact that the probability of default (PD) and LGD correlations are not captured. We show that the lack of correlation can be taken care of by incorporating certain degree of conservatism in cyclical LGD in a point-in-time (PIT) framework. We examine a model which can capture the PD and LGD correlation in its entirety, differentiating the different components of correlations in question. Using historical LGD and default data of a loan portfolio, we calibrate our model and, through the simulation of economic capital, we show the mean LGD needs to be increased by about 35% to 41% in order to compensate for the lack of correlations. Our hope is to provide a framework that the banks can use based on their internal data to estimate and justify their LGD choices for different portfolios. Although the paper is presented within the context of Basel II, the applications could be much wider including structured finance, credit derivatives, economic capital and portfolio modeling in general, where PD and LGD correlations need to be estimated and modeled.

Keywords: Basel II, correlation, probability of default, downturn loss given default, economic capital, Point-in-Time, Through-the-Cycle, credit risk models, calibrations, simulations