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Title:
Estimating Probabilities of Default for Low Default Portfolios

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Abstract:

For credit risk management purposes in general, and for allocation of regulatory capital by banks in particular (Basel II), numerical assessments of the credit-worthiness of borrowers are indispensable. These assessments are expressed in terms of probabilities of default (PD) that should incorporate a certain degree of conservatism in order to reflect the prudential risk management style banks are required to apply. In case of credit portfolios that did not at all suffer defaults, or very few defaults only over years, the resulting naive zero or close to zero estimates would clearly not involve such a sufficient conservatism.

As an attempt to overcome this issue, we suggest the "most prudent estimation" principle. This means to estimate the PDs by upper confidence bounds while guaranteeing at the same time a PD ordering that respects the differences in credit quality indicated by the rating grades. The methodology is most easily applied under an assumption of independent default events but can be adapted to the case of correlated defaults.

In its basic formulation, application of the "most prudent estimation" principle is restricted to the case of default observations from one period only and yields PD estimates that are higher than the observed portfolio-wide default rate. Therefore, extensions of the methodology are provided that deal with the multi-period case and with the question of how to scale down the PD estimates in a reasonable way.