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## **Credit loss modelling using beta distribution in Bayesian approach**

### **Abstract**

Advanced Internal Rating Based (AIRB) approach is more and more frequently approached by banks. Bank analytics decide to use their own approach to calculate basic risk parameters like: Probability of Default (PD), Exposure at Default (EAD), and Loss Given Default (LGD). Banks rely on their own data but in some portfolios like mortgages loans the number of observed defaults is always very small. Small samples problem in LGD estimation is always a challenge for researchers and analytics. Paper proposes the basic LGD model based on splitting recoveries into two classes of recoveries: close to 0 or close to 1, and based on that split the construction of LGD model with the combination of two binary models. The main advantage of the paper is however addressing the unresolved cases incorporating in the LGD estimation process. This problem is addressed by using Bayesian approach which assumes a Beta distribution of further recoveries for unresolved cases. Traditional methods used previously in different application studies in LGD estimation does not commonly include Bayesian approach. Most common approach use regression modeling or ensemble methods. Additional advantage of the paper is that proposed modeling approach for LGD is illustrated on real data for mortgage loans for one of European banks.

**Key words:** Loss Given Default LGD, Bayesian approach, beta regression, unresolved cases

**JEL:** C1, C11,