

Modeling Default Probabilities of the Chosen Czech Banks in the Time of the Financial Crisis

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Abstract : One of the most important tasks in the risk management is the correct determination of probability of default (PD) of particular financial subjects. In this paper a possibility of determination of financial institution's PD according to the credit-scoring models is discussed. The paper is divided into the two parts. The first part is devoted to the estimation of the three different models (based on the linear discriminant analysis, logit regression and probit regression) from the sample of almost three hundred US commercial banks. Afterwards these models are compared and verified on the control sample with the view to choose the best one. The second part of the paper is aimed at the application of the chosen model on the portfolio of three key Czech banks to estimate their present financial stability. However, it is not less important to be able to estimate the evolution of PD in the future. For this reason, the second task in this paper is to estimate the probability distribution of the future PD for the Czech banks. So, there are sampled randomly the values of particular indicators and estimated the PDs' distribution, while it's assumed that the indicators are distributed according to the multidimensional subordinated Lévy model (Variance Gamma model and Normal Inverse Gaussian model, particularly). Although the obtained results show that all banks are relatively healthy, there is still high chance that "a financial crisis" will occur, at least in terms of probability. This is indicated by estimation of the various quantiles in the estimated distributions. Finally, it should be noted that the applicability of the estimated model (with respect to the used data) is limited to the recessionary phase of the financial market.

Keywords : credit-scoring models, multidimensional subordinated Lévy model, probability of default

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