CREDIT RISK ASSESSMENT USING SURVIVAL ANALYSIS FOR PROGRESSIVE RIGHT-CENSORED DATA

[1]JAMIL J. JABER, [2]NORISZURA ISMAIL

[1]Department of Risk Management and Insurance Faculty of Management and finance, University of Jordan, Jordan
[2]School of Mathematical Sciences, Faculty of Science and Technology Universiti Kebangsaan Malaysia, Malaysia

Abstract- In credit risk management, the Basel Committee provides a choice of three approaches for financial institutions to calculate the required capital; standardized, Internal Ratings-Based (IRB) and Advanced IRB. The IRB approach is usually preferred compared to the standard approach due to its higher accuracy and lower capital charges. The objective of this study is to use several parametric models (exponential, log-normal, gamma, Gompertz) and non-parametric models (Kaplan-Meier, Nelson-Aalen) to estimate the probability of default which can be used for evaluating the performance of a sample of credit risk portfolio. The models are fitted to a sample data of corporate portfolio obtained from Jordan for the period of January 2010 until December 2014. The best parametric and non-parametric models are selected using several goodness-of-fit criteria, namely MSE, AIC and BIC for parametric models and SE and MAD for non-parametric models. The results show that the Gompertz distribution is the best parametric model, whereas the Nelson-Aalen estimator is the best non-parametric model for predicting the probability of default of the credit portfolio.

Keywords- survival, credit risk, time to default