

DYNAMICS OF PREDICTIVE POWER OF INSOLVENCY MODELS FOR RUSSIAN SMALL-MEDIUM ENTERPRISES: WHOLESALE AND RETAIL TRADE

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Abstracts

The chief aim of this paper is to analyse dynamics of linear and non-linear methods to predict bankruptcy for Russian private small and medium-sized retail and wholesale trade companies. We use financial and non-financial data prior and subsequent to the economic crisis of 2008—2009. We use the following methods: logistic regression and random forest.

Our dataset comprises from 200,000 to 600,000 companies depending on specific year. We use data from the Ruslana database which covers the period from 2004 to 2012.

The definition of default is extended to financial difficulties by adding voluntary liquidated firms to those liquidated as a result of legal bankruptcy. We study active companies and two types of liquidated ones.

Heterogeneity of Russian companies is taken into account in several ways. In addition to financial ratios derived from financial statements we include non-financial variables such as regional distribution, age, size and legal form into statistical models.

Evaluation of the prediction performance is done with the help of out-of-sample forecasts. We obtain models with quite high predictive power, area under ROC curve reaches 0.75. Random forest outperformed logit-model. Adding non-financial information such as age and federal region leads to the improved forecasts while legal form and size do not have a great impact on the outcome. Among financial measures liquidity, profitability and leverage ratios turned out to be essential. Moreover, our models captured a structural change which was likely to be caused by the crisis of 2008—2009.

This research will be of vital importance especially to banks and other credit organisations providing loans to small and medium businesses.

Keywords: Bankruptcy prediction, model comparison, small and medium enterprises, retail and wholesale trade, random forest, logit-model

JEL: C14, C45, G30, G33

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