

A Model for Corporate Credit Migration : Multi-period ordinal Logistic regression with serial dependence

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Abstract

We propose a multi-period ordinal logistic regression model for credit rating transition probabilities. This is a natural choice since credit ratings can be viewed as categories with natural order which is related with quantitatively measured credit score. Classical static proportional odds models are extended to a multi-period case by including time varying covariates. By introducing latent time varying systematic factor, we further allow the model to explain serial correlation. A Bayesian updating method is adopted to obtain posterior mode estimates of the latent stochastic process. The suggested method is applied to Standard and Poor's long term credit rating data of U.S. industrial firms spanning 1986 to 2006. In-sample prediction and cross validation are implemented and compared using an entropy prediction accuracy measure.

Keywords : credit score, credit rating, ordinal regression, latent variable

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