AdaBoost and Bagging Ensemble Approaches with Neural Network as Base Learner for Financial Distress Prediction of Chinese Construction and Real Estate Companies

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Abstract | **⬛** References | **❞** Citations | **☰** Supplementary Data

With the development of the economy, the construction and real estate industries have gradually become basic industries related to the people's livelihood and they play an important role. Because of their special characteristics in investment and financing structure, construction and real estate companies are faced with enormous pressure of financial risk, which urgently needs some effective models to send out early warning signals before financial distress. This study uses back-propagation neural network (BP-NN) as the base learner and constructs two classifier ensemble models, BPNNAdaBoost and BPNN-Bagging, based on AdaBoost and Bagging ensemble learning methods, for financial distress prediction of construction and real estate companies. We collect financial ratio data of 85 construction and real estate samples that are publicly traded in the Shanghai Stock Exchange and the Shenzhen Stock Exchange of China to construct three data sets and carry out empirical experiments. Results of BPNN-AdaBoost and BPNN-Bagging models are comprehensively compared with those of the single BP-NN and the classical Z3-score model. It is indicated that the two classifier ensemble approaches significantly outperform the single PB-NN and the classical Z3-score model, and BPNN-AdaBoost is more suitable for short-term and medium-term FDP in one- or two-year advance and BPNN-Bagging is more appropriate for long-term FDP in three-year advance. Besides, related recent patents are also reviewed.

Keywords: AdaBoost; bagging; classifier ensemble; construction and real estate companies; financial distress prediction; neural network

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