Detecting Earnings Management via Statistical and Neural Networks Techniques

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Abstract : Predicting earnings management is vital for the capital market participants, financial analysts and managers. The aim of this research is attempting to respond to this query: Is there a significant difference between the regression model and neural networks' models in predicting earnings management, and which one leads to a superior prediction of it? In approaching this question, a Linear Regression (LR) model was compared with two neural networks including Multi-Layer Perceptron (MLP), and Generalized Regression Neural Network (GRNN). The population of this study includes 94 listed companies in Tehran Stock Exchange (TSE) market from 2003 to 2011. After the results of all models were acquired, ANOVA was exerted to test the hypotheses. In general, the summary of statistical results showed that the precision of GRNN did not exhibit a significant difference in comparison with MLP. In addition, the mean square error of the MLP and GRNN showed a significant difference with the multi variable LR model. These findings support the notion of nonlinear behavior of the earnings management. Therefore, it is more appropriate for capital market participants to analyze earnings management based upon neural networks techniques, and not to adopt linear regression models.

Keywords : earnings management, generalized linear regression, neural networks multi-layer perceptron, Tehran stock exchange

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