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TIME SERIES MODELS FOR NIM AND ROA FROM NEDBANK DATA

Abstract:

The paper attempts to fit time series regression models on two dependent variables: net interest margin (NIM) and return on asset (ROA) against the lag-one independent variables of: deposit, size, loan, capital, inflation, gross domestic product (GDP) and stock market capitalization, using secondary panel data spanning from the 2002-2014 fiscal years for Nedbank. Multivariate time series regression with lagged independent and dependent variables by the least square approach (Gauss-Newton/ Marquardt steps) with special consideration of the stepwise method was used in fitting the models to the data using Minitab, EVIEWS (IHS Global, 2015) and SPSS Statistical software. The backward and forward elimination options in linear regression procedure of Minitab were used to select the variables that needed to be included in the model after which the Least Squares (Gauss-Newton/Marquardt steps) estimation procedure of EVIEWS was used to obtain the estimates of the models. Graphical outputs such as Normal probability plots, Correlogram and scatter plots were obtained. The residuals of the models were tested for their satisfactions of the normality, constant variance and the independence assumptions.
The transformations that were applied to stabilize the data were natural logarithm to the base of ten of the absolute values of the data points and y=ln(1+x); where y is the transformed data and x is the original data.
The paper identifies some negative effects of some selected internal and economic factors on profitability of the bank.

Keywords:

Net interest margin; Loan; Inflation; Market imperfection; Multivariate modelling; Return on assets; lagging

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