PROFIT RISK MODELS FOR SOUTH AFRICAN BANKING SECTOR

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ABSTRACT

The study sought to fit individual multivariate time series regression models for the dependent variables: net-interest margin, return on asset and return on equity against all the lag one independent variables: deposit, size, loan, capital, inflation, gross domestic product and stock-market capitalization for each of the banks under-study using secondary data from ABSA and Ned Bank. The lag one of the dependent variables was also considered as independent variables in the fitted models.

Logarithm to the base of ten transformations of the absolute de-trended data, first differencing and inverse square root transformation were the smoothing techniques applied to the ABSA data. First differencing, logarithm to the base of ten of the absolute data values and natural logarithm transformations were applied to the Ned Bank data to make them stationary.

Multivariate time series regression by the least square approach (Gauss-Newton/ Marquardt steps) with special consideration of the stepwise method was used in fitting models onto the data. The Akaike information criterion was used in selecting the best model from the competing models.

Results from the ABSA data analysis indicated that, there exists a negative log-linear relationship between NIM and each of size and return on equity. The association between ROA and net-interest margin was found to be negative linear and that of ROA and each of inflation, capital and return on equity was positive. The association between ROE and capital was found to be negative log-linear. It was further found out that there exists positive log-linear between ROE and return on asset. It was deduced from these relationships that higher lag one values of loans, asset, stock market capitalization, net-interest margin, return on asset and return on equity were not risky to aggregate profitability except for inflation which was found to be more risky to aggregate profitability of ABSA.

In the case of Ned Bank models, the relationship between NIM and both of capital and gross domestic product was found to be positive log-linear and the relationship between NIM and Inflation was found to be negative log-linear. Positive natural logarithmic association exists between ROA and stock-market capitalization while

negative natural logarithm association exists between ROA and each of inflation and loan. The relationship between ROE and both of market capitalization and inflation was found to be negative linear. Higher values of all the lag one independent variables in the estimated Ned Bank models were found to be non-risky to aggregate profitability. Even though loans were found to impact negatively on ROA, increasing them result in higher net-interest income if proper credit-risk management procedures are strictly adhered to, leading to an increase in aggregate profitability.

Deposit was the only factor among those considered that did not significantly affect any of the components of profitability of ABSA and Ned Bank. Based on the estimates from the various independent variables considered, models for NIM, ROA and ROE were constructed for ABSA and Ned Bank.

Key words: Profitability; market imperfection; multivariate modelling; risks; lagging.

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