



Analysis of Long-term Determinants of the Profitability for Amalgamated Bank of South Africa

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Abstract

Averting the risk of falling short on the expected profitability of a bank requires the knowledge of the underlying determinants. Knowledge of long-run underlying determinants of profitability assists banks in comprehensive planning. In this backdrop, the paper seeks to identify the long-term fundamental risk factors and their impacts on their profitability. The FM-OLS regression method is employed using annual data on the components of profitability as well as internal and external determinants of profitability of Amalgamated Bank of South Africa (ABSA) bank from 1998 to 2014. The study is particularly importance since bank-specific studies aimed at identifying long-run fundamental factors of profitability has not been given much attention in literature. Evidence from the study indicates that profitability of ABSA is cointegrated with its determinants. It is further observed that, with the exception of inflation and GDP, all the determinants have significant long-term impact on profitability. However, although size has significant impact on net interest margins, its impact on return on equity is insignificant. The results further suggest that capital and stock market capitalization pose risk to aggregate profitability of ABSA. It is therefore recommended that in future, ABSA should resort to optimal equity financing to maximize its expected profitability.

Keywords: Profitability; Determinants; Risk; Cointegration; FM-OLS estimator

JEL Classifications: C02; C32; C52

Introduction

Financial risk constitutes any event or actions that may adversely affect the ability of an organisation to achieve its objectives and execute its strategies (Alexander et al; Rudiger & Paul, 2005). An indirect relationship exists between risk and profitability. When the fundamental determinants of a bank's profitability changes, the expected returns on assets, equity, capital employed and net interest margins are likely to be affected with some associated potential risks. When the direction of the impacts of the fundamental determinants of a bank's profitability is negative, and significant, the bank risk of falling short of its expected profit, thus prudent risk management is a key component to profit maximization. Banks, which are able to manage their internal drivers of profitability properly, stand a better chance of maximizing their overall profit than those that do not. Comprehensive and strategic managements of profitability risk require knowledge of both short and long-term drivers of profitability.

The banking sector of South African is well developed and regulated. In 2020, the sector together with the real estate and business services contributed to 16.5% of the annualised growth rates. The sector boost of over made seventeen registered, with ABSA being the third largest bank in the country. In 1991 Allied, Volkskas, United Bank and Trust Bank merged to form ABSA bank. ABSA was rebranded in 1998 and since then its headline earnings has increased by over 5533% by December 31, 2020. The bank's total asset as at by December 31, 2020 stood at 1531.12 billion.

In spite of the contributions of ABSA bank to the South African economy, studies geared towards its profitability are limited in literature. Although a recent study have been conducted on the impacts of the determinants of profitability of ABSA (Kyei & Antwi, 2017), the study is limited to the short-term impacts. However, the impacts of some of the fundamental factors such as loans may persist for longer periods, especially in the case of long-term loans. Therefore, in order to manage risk on profitability comprehensively and strategically, long-term determinants of profitability and their impacts need to be identified. In this regard, the study seeks to identify some of the long term fundamental risk factors of the profitability of ABSA bank and their impacts on ROA (returns) on asset, returns on equity (ROE) and net interest margins (NIM) of ABSA using the fully modified ordinary least square regression approach and data from 1998 to 2014. The results from the study may help ABSA bank's management to understand the long-term risks posed by some of its fundamental factors on its profitability. This knowledge will go a long way to assist the bank in its long-term strategic decision-makings. The result will also contribute to literature on the determinants of the profitability of banks in South Africa. Due to unavailability of data on all possible determinants of bank's profitability as identified in theoretical and empirical studies, only the basic and the most important determinants were considered in this study.

The rest of the paper is organised as follows: in section two, theoretical background of fully modified ordinary least square regression is given. Section three presents the data and data description and specifications of the models to be estimated as well as auxiliary test procedures to be performed on the data. The empirical tests and results are presented in section four while conclusions and recommendations are presented in section five.

Literature Review

In measuring profitability (optimal rate of return from assets of an organization under the constraints of expenses), ROA (return on assets), ROE (return on equity) and NIM (net interest margin) are the most common proxies used in literature. ROA measures the level of profit in comparison to net asset invested by an organization (Fields, 2002; Newton, 2015). ROE measures how well a company is able to turn investment funds to generate earning growth (Fields, 2002). NIM measures the investment returns and interest expenses differentials relative to total assets. Using these proxies, several studies have been conducted to unearth country and bank specific factors affecting short and long-term profitability of the banking industry. Factors including but not limited to gross domestic product, total asset of a bank or size, capital or capital adequacy ratio, loan, deposits, inflation, stock market capitalization, stock prices, non-performing loans, liquidity are some of the most commonly identified factors. In this section some of the recent studies on the determinants of profitability of banks are discussed.

Bhattarai (2020) investigated the effects of non-performing loans on profitability of commercial banks in Nepal using panel data from twelve commercial banks from 2013 to 2018 period. The pooled ordinary least square, fixed effect and random effect models were used. Return on equity was used as a proxy for profitability while

non-performing loans in addition to capital adequacy ratio, liquidity, banks size, and inflation were used as predictors. Evidence from the three models uncovered significant negative relationships between profitability and non-performing loans, capital adequacy ratio and liquidity while banks size has significant positive impacts on profitability. However, although inflation has positive impact on profitability, the effect is not significant. Among the factors considered, the impact of nonperforming loans on profitability is very strong.

Caliskana & Lecunab (2020) also examined the factors affecting the profitability of the banking sector in Turkey using data from 1980 to 2017 applied to the multiple linear regression model. ROA and ROE were used as proxies for profitability while the determinants of profitability such as bank size, deposit conversion ratio, and liquidity, inflation rate, interest rate and exchange rate were considered. Empirical evidence from the study suggest that inflation, interest rates and exchange rates have significant positive impacts on profitability. Among the significant factors, assets, efficiency and liquidity were found to be more crucial in determining profitability of the Turkish banking sector.

Alaagam (2019) examined the long term relationship between profitability and stock prices of listed Saudi Arabian banks. Autoregressive Distributed Lag model with panel data of quarterly profitability and stock prices from 2011 to 2018 were used in the study. Since Autoregressive Distributed Lag model relies on the assumption of stationarity of the variables involved in the model, the reseacher employed teh Levin, Lin & Chu's unit root approach to test for this assumption. The results of the unit root test indicates the presence of stationary in the first differences of all the variables. Evidence from the estimated model provides evidence of the non-existence of long-run relationship between profitability and stock prices although there is evidence of positive significant relationship between return on assets and stock prices in short-run.

Lohano & Kashif (2019) employed multiple linear regression models via the least-squares fixed effects estimator to investigate factors affecting profitability of banks in developing countries. They used panel data from 31 countries for 230 banks covering the financial years 2011 to 2016. Evidence from the study revealed that bank size, efficiency of management, capital ratio, credit risk, and diversification affect profitability significantly. It was further revealed that the relationships between profitability and capital ratio as well as that between profitability and bank size are quadratic. It was further found out that optimal levels of capital ratio exist such that profitability maximized. Similarly, we find a quadratic relationship between profitability and bank size. Lastly, evidence from the study revealed that country-specific factors such as per capita GDP, inflation, and corruption perception index also affect profitability of banks significantly.

Taking into consideration, the intensified globalization, competition, and enhanced concentration Ranajee (2018) studied the fundamental factors that alters the profitability of Indian commercial banks. The researchers relied on a balanced sampled-panel data from 89 banks from 2005 to 2015. The profitability proxies used include the return on assets and the return on equity. The study revealed that strength of equity capital, banking sector deposits to gross domestic product and operational efficiency have significant positive effect on profitability while cost of funds, credit risk, inflation and non-performing assets ratio have also has significant but negative impact on profitability. On the other hand, bank size and ratio of priority loans to total loans do not have no significant impact on profitability. Furthermore, the study revealed that an increase in GDP growth and inflation yield significant but negative effects on return of asset component of profitability but inflationon the other hand has positive effect on the return of equity componet of profitability.

Kyei & Antwi (2017) examined the relationship between future returns for ABSA bank and bank specific factors as well as external factors. They fitted a multivariate time series regression models for return on equity and selected lagged determinants of profitability and data from 1998 to 2014 fiscal years. The data was smoothed using logarithm transformation of the de-trended data and the first differenced lags. The model was fitted using stepwise regression. Evidence from the study suggests that, loan, inflation and capital are linearly related to ROE, but while loan is positively related to ROE, capital and inflation are negatively related to ROE. The evidence also suggests relationship between ROE and ROA to be positive and log-linear. In the same year, in an attempt to propose a better approach of setting attainable targets for profitability and to identify the effects of bank specific and economic factors on the profitability of ABSA bank, the authors employed least square estimation approach to estimate the parameters of multivariate time-series model. Secondary data from 1998 to 2014 was used. Interest margins, return on asset, and return on equity were used as profitability proxies. Evidence from the study concluded that the interval approach of profitability target setting is more likely to be attained than the point estimate approach. In addition to this observation, the first differences of net interest-margin and loan respectively have negative impacts on return on asset and net interest-margin but their aggregate effect on profitability is positive. Furthermore, inflation has positive

impact on aggregate profitability whereas both capital and loans have positive impacts on aggregate profitability.

Yakubu (2016) studied the impacts of bank-specific and macroeconomic determinants of profitability of commercial banks in Ghana. Linear regression approach and data on five commercial banks spanning from 2010 to 2015 were used. Profitability measures used includes ROA, ROE, and NIM while profitability determinants such as bank size, liquidity, capital adequacy, asset management, expenses management, GDP, inflation rate and real interest rate were considered. Evidence from the study revealed that bank size, liquidity, capital adequacy, asset management, expense management, and real interest rate have positive impacts on profitability while GDP growth and inflation rate have negative impact on profitability. However, among the factors considered, those with significant impacts on profitability are limitted size, liquidity, and expense management.

Hong et al (2015) investigated the profitability of Islamic banks in Malaysia via ratio analysis of profitability, liquidity, credit risk and impaired financing performance. Furthermore, they studied the impact of nominal gross domestic product and inflation rates on profitability, liquidity, credit risk and impaired financing performance during the period 2007 to year 2011 using regression log-linear model. They used return on average equity and return on average asset as profitability proxies. Empirical evidence from the ratio analysis Suggest that nominal GDP significantly affects ROA, liquidity ratio as well as equity to net loans. Evidence from the study indicates that gross domestic product has positive and significant impact on ROA, liquidity ratio and equity to total liquidity. Inflation rate on the other hand has negative impacts on the two profitability measures. The evidence however did not suggest any significant impacts of inflation rates on the profitability.

In studying the determinants of the profitability of banks in a developing economy, Aremu et al (2013) used data from Nigerian banking industry over the period 1980 to 2010. Cointegration and Error Correction techniques were employed in the study. Evidence from the study suggest that in the short run, capital adequacy and liquidity are the significant drivers of the profitability of Nigerian banks while loan loss provision-total assets and labour efficiency drive profitability in the short term. However, broad money supply growth rate significantly drives profitability in both short and long run.

Modelling Co-integration Relationships

Most economic or financial variables are cointegrated, i.e. they fluctuate conjointly in a long-run relationship. In other words, cointegrating relationship exist among these variables if they have the same order of integration and they can be expressed as a stationary linear combination (Engle & Granger, 1987). The cointegrating relationships among variables may be estimated using a cointegrating regression approach. Consider the vector process (y_t, X_t') having $n + 1$ dimension, the co-integrating relationship between the elements of the series y_t and X_t can be formulated as

$$y_t = X_t' \beta + H_{1t}' \gamma_1 + u_{1t} \tag{1}$$

$H_t = (H_{1t}', H_{2t}')$ denote the deterministic trend regressors and n stochastic regressors X_t , which is defined by

$$X_t = \psi_{21}' H_{1t} + \psi_{22}' H_{2t} + \varepsilon_{2t} \tag{2}$$

$$\Delta \varepsilon_{2t} = u_{2t} \tag{3}$$

In order to estimate the parameters of (1), Hansen (1992) made the following assumptions about the innovations $u_t = (u_{1t}, u_{2t})'$. The innovations

- i. are stationarity and ergodicity process with zero mean,
- ii. have covariance matrix Σ which is contemporaneous and
- iii. have one-sided long-run covariance matrix Λ and a covariance matrix Ω .

Each of the assumptions is partitioned such that

$$\Sigma = E(u_t, u_t') = \begin{bmatrix} \sigma_{11} & \sigma_{12} \\ \sigma_{21} & \sigma_{22} \end{bmatrix}, \quad (4)$$

$$\Lambda = \sum_{j=0}^{\infty} E(u_t, u_{t-j}') = \begin{bmatrix} \lambda_{11} & \lambda_{12} \\ \lambda_{21} & \lambda_{22} \end{bmatrix}, \quad (5)$$

$$\Omega = \sum_{j=-\infty}^{\infty} E(u_t, u_{t-j}') = \begin{bmatrix} \omega_{11} & \omega_{12} \\ \omega_{21} & \omega_{22} \end{bmatrix} = \Lambda + \Lambda' - \Sigma. \quad (6)$$

It is further assumed that Ω has n ranks with a non-singular sub matrix Ω_{22} . All the assumptions together imply that the elements of y_t and X_t are I(1) and co integrated but exclude both co-integration amongst the elements of X_t and multi-co integration. Fully modified least squares (FM-OLS) regression method is used estimate the co integrating vector β . Due to an induced serial correlation and endogeneity in the regressors due to the presence of cointegrating relationship, the FM-OLS estimator employs semi-parametric approach to correct this. One advantage of the FMOLS estimator is that it is asymptotically unbiased and has a normal mixture distribution, which is asymptotically fully efficient. This allows us to perform standard Wald tests via asymptotic Chi-square inference. The FMOLS estimator requires a pre-estimation of the symmetric and one-sided long-run covariance matrices of the residuals. Assume the residuals resulting from the estimation of (2) is \hat{u}_{1t} , then we can indirectly estimate \hat{u}_{2t} from $\hat{u}_{2t} = \Delta \hat{\varepsilon}_{2t}$ where $\hat{\varepsilon}_{2t}$ is obtained from

$$X_t = \hat{\psi}_{21}' H_{1t} + \psi_{22}' H_{2t} + \hat{\varepsilon}_{2t}. \quad (7)$$

Alternatively, \hat{u}_{2t} can be directly estimated from the difference equation

$$\Delta X_t = \hat{\psi}_{21}' \Delta H_{1t} + \psi_{22}' \Delta H_{2t} + \hat{u}_{2t}. \quad (8)$$

If we let $\hat{\Lambda}$ and $\hat{\Omega}$ represent the long-run covariance matrix computed from the estimated innovations $\hat{u}_t = (\hat{u}_{1t}, \hat{u}_{2t}')'$, then the modified data may be defined as

$$y_t^* = y_t - \hat{\omega}_{12} \hat{\Omega}_{22}^{-1} \hat{u}_{2t}. \quad (9)$$

The estimated correction factor is given by

$$\hat{\lambda}_{12}^* = \hat{\lambda}_{12} - \hat{\omega}_{12} \hat{\Omega}_{22}^{-1} \hat{\Lambda}_{22}. \quad (10)$$

If we let $Z_t = (X_t', H_t')'$, the FMOLS estimator, $\hat{\theta} = \begin{bmatrix} \beta \\ \hat{\gamma} \end{bmatrix}$ can be defined as

$$\hat{\theta} = \left(\sum_{t=2}^T Z_t Z_t' \right)^{-1} \sum_{t=2}^T \left(Z_t y_t^* - T \begin{bmatrix} \hat{\lambda}_{12}^* \\ 0 \end{bmatrix} \right). \quad (11)$$

Hansen (1992) showed that the Wald statistic, W for the null hypothesis $R\theta = r$ could be written as

$$W = (R\hat{\theta} - r)' \{RV(\hat{\theta})R'\}^{-1} (R\hat{\theta} - r), \quad (12)$$

where

$$V(\hat{\theta}) = \omega_{12}^* \left(\sum_{t=2}^T Z_t Z_t' \right)^{-1}, \quad (13)$$

and

$$\omega_{12}^* = \hat{\omega}_{11} - \hat{\omega}_{12} \hat{\Omega}_{22}^{-1} \hat{\omega}_{21}. \quad (14)$$

Research Methodology

Data

Profitability of banks are mostly measured by Return on asset (ROA), Return on equity (ROE), Return on capital employed (ROCE) and net interest margin (NIM). The formula for calculating ROA is conceptually the same for ROCE (Fields, 2002 and Newton, 2015) therefore the study will consider only ROA, ROE and NIM as measures of profitability for ABSA. Empirical evidences from Almazari (2014), Housseem (2013), Aremu et al (2013), Hong et al (2015), Yong & Christos (2012), Javaid et al (2011) and Gul et al (2011) among others have identified internal size, capital, deposit and loans and the external factors inflation, gross domestic product and stock market capitalization as some of the factors affecting the components of profitability. Following evidence from the empirical studies rand-denominated annual historical data on components of ABSA profitability (ROA, NIM and ROE), internal factors on profitability (size, loan, deposit and capital) and external factors (inflation (INF), gross domestic product (GDP) and stock market capitalization (SMC) from 1998 to 2014 were sourced from annual reports of ABSA and the South African Reserve Bank.

Methodology

As earlier pointed out in the introductory section, we shall employ the fully modified ordinary least square regression method of Phillips & Hansen (1990). One of the imposed conditions on FMOLS is that the vector generating process is an I (1), hence it is necessary to test for this condition before apply FMOLS to model the data. For this purpose, we shall employ the Phillips-Perron unit root test to check if the data satisfy this assumption. Since it is possible that all the factors of profitability may not have impact on each of the individual components of profitability, all factors will be entered into the model and variables with highest probabilities and whose removal do not cause a much drop in the R-square will be kept in the model. The FMOLS models to be considered are:

$$ROA_t = X'_{(ROA)t} \beta + H'_{1t} \gamma_1 + u_{1t}, \quad (15)$$

$$ROE_t = X'_{(ROE)t} \beta + H'_{1t} \gamma_1 + v_{1t}, \quad (16)$$

$$NIM_t = X'_{(NIM)t} \beta + H'_{1t} \gamma_1 + \xi_{1t}. \quad (17)$$

$X_{(ROA)}$, $X_{(ROE)}$ and $X_{(NIM)}$ are vectors consisting of all considered determinants of profitability and excluding ROA, ROE and NIM in the respective models. The errors u_{1t} , v_{1t} and ξ_{1t} of the respective cointegrating models in (15), (16) and (17) are governed by similar appropriate systems of equations in (2) and (3). All variables were entered into the respective equations and through the backward stepwise regression approach; variables that are highly insignificant and contributes less to the total variations were removed. The default kernel and lag selection option of EVIEWS were used in calculating the long-run variances.

Empirical Results and Discussions

Descriptive statistics

One of the main assumptions underlying the use of the FMOL method is that, the variables should be normally distributed. Therefore, before modelling, it is imperative to test for this assumption. In Table 1, the descriptive as well as the Jacque-Bera test are reported. It is observed that all the variables have small kurtosis and skewed values as well as small Jacque-Bera statistics. The observations suggest that all the variables are normally distributed; hence, the normality assumption underlying the use of FMOLS model is satisfied.

Table 1: Descriptive statistics

Variable	CAP	DEP	GDP	INF	LOAN	SMC	NIM	ROA	ROE	SIZE
Skewnes	0.736	0.018		-	-	0.559	0.3071	0.1710	0.302	0.008
Kurtosis	2.547	1.598	3.4809	3.900	1.213	2.253	2.3788	2.3694	1.812	1.271
JB Stat	1.680	1.392	1.4400	1.240	2.288	1.280	0.5406	0.3645	1.258	2.115

Unit root

The use of FMOLS requires that the variables are integrated of order one. The Phillips-Perron unit root test was employed for testing whether the series are integrated of orders one. First, we apply the test on the original variables to detect the absence of unit roots in the variables. If this fails to detect unit roots in the variables, the variables are integrated; but to detect the order of the integration, it is necessary to further apply the test on the first differences of the variables to detect the presence of unit roots. The probabilities of the Phillips-Perron unit root tests on the variables and the first differences of the variables are reported in Table 2.

Evidences from the Table indicate that unit roots are absent in all the variables levels for all test equations, suggesting that all the variables are integrated. A further look at the Table reveals that unit root is present in the first differences of all the variables at all test equations with the exception of capital, loans, and size and stock market capitalization variables. However, unit root is present in at least one test equation for capital, loans, deposit, size, and stock market capitalization. We thus conclude that with the exception of deposit, all the variables are integrated of order one, and the I(1) assumption of FMOLS model is nearly satisfied, hence it was appropriate to use the FMOLS estimator to estimate the cointegrating relationships among the variables. Based on the absence of unit root in the first difference of deposit, we exclude it from all the co integrating models.

Table 2: Probabilities of Phillips-Perron test

Equation	CAP	DEP	GDP	INF	LOAN	SMC	NIM	ROA	ROE	SIZE
Intercept	0.4702 (0.0125)	0.9352 (0.1140)	0.0835 (0.0006)	0.1819 (0.0009)	0.8236 (0.0620)	0.999 (0.0800)	0.1343 (0.0002)	0.0553 (0.0000)	0.3733 (0.0094)	0.8651 (0.0822)
Both	0.6906 (0.0565)	0.4166 (0.3951)	0.1883 (0.0003)	0.4662 (0.0080)	0.6705 (0.2022)	0.9145 (0.0449)	0.4403 (0.0007)	0.1560 (0.0000)	0.6147 (0.0412)	0.7885 (0.2605)
None	0.6876 (0.0006)	0.9953 (0.0669)	0.2447 (0.0000)	0.3851 (0.0000)	0.9351 (0.0176)	0.9996 (0.0508)	0.4285 (0.0000)	0.5300 (0.0000)	0.4969 (0.0004)	0.9860 (0.0392)

Note: Both denote intercept and trend. The probabilities in the brackets are for the first differences of the variables. The test is significant at 5%.

Model diagnostic tests

The assumptions underlying the FMOLS requires that the residuals are normally distributed, cointegrated, non-serially and auto-correlated. The Jacque-Bera test is used to test for normality of the residuals while the Hansen's parameter instability test is used to test for the presence of cointegration among the variables. Correolograms are also used to assess the absence of serial and auto-correlation in the residuals. The test results are reported in Table 3, while the correolograms are displayed in Figure 1 and 2. Residuals are normally distributed and cointegrated if the probabilities of LC-Stat for Hansen's tests and JB-Stat for test of normality are both greater than 0.05. It is evident from the Table 3 that the null hypotheses of co-integration and normality for all models are not rejected since the corresponding p-values are all less than 5%. In Figures 1 and 2, it is observed that, all the bars in the correolograms from the Lung-Box test for serial correlation, autocorrelation and partial autocorrelation are within the 5% bound. These results suggest that the normality, co integration, serial correlation and autocorrelation assumptions on the errors are deemed satisfied.

Table 3: Cointegration and Normality tests

	ROA	NIM	ROE
LC stat.	0.64209 (0.1849)	0.964310 (0.0645)	0.88378 (0.0540)
JB-Stat	0.09716 (0.952581)	0.972521 (0.614921)	0.53300 (0.766033)

Probabilities are reported in round brackets.

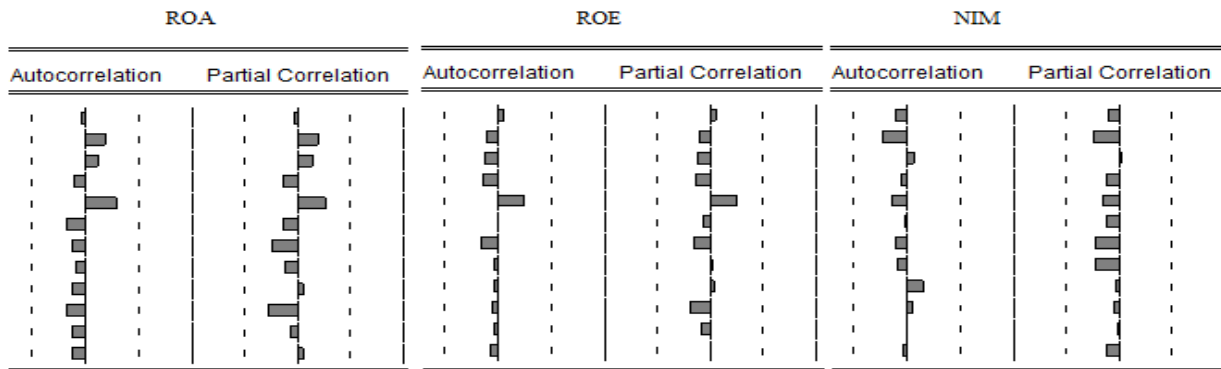


Figure 1: Ljung Box test on standardised residuals

No remaining autocorrelation or partial autocorrelation in residuals if bars are within the 5% bound (dotted lines).

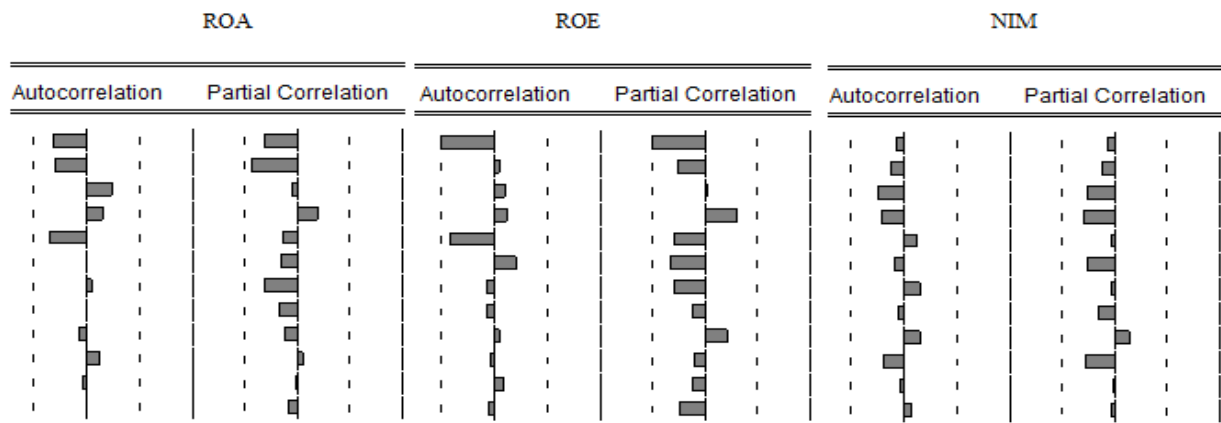


Figure 2: Ljung Box test on standardised residuals

No remaining autocorrelation or partial autocorrelation in residuals if bars are within the 5% bound (dotted lines).

Although the satisfactions of the underlying assumptions of the FMOLS are necessary conditions for model validations, they are not self-sufficient unless the model has sufficiently smaller in-sample RMS, MAE and MAPE values and the regressors are able to explain much of the total variations in the dependent variable. References to Table 4 reveals that the regressors explained more than 88% of the total variations in their respective models and the models produced acceptable in-sampling RMSE, MAE and MAPE. These results suggest that the models fit the data appropriately and thus they could be used in making valid conclusions. It further suggests that cointegrating relationships runs among the components of profitability and their respective determinants.

Table 4: In-sampling statistics

Model	Adj-Rsq	RMSE	MAE	MAPE
ROA	0.8803	0.115348	0.095596	2.530464
NIM	0.9670	0.839223	0.642075	3.508806
ROE	0.9235	0.05168455	0.042488	3.516860

Discussions

Table 5 reports the estimates for the cointegrating relationships for the three components of profitability of ABSA as well as their associated significant measures and the aggregate estimates for the determinants that have impact on more than one component of profitability. During the period under consideration, it is observed that significant positive relationships exist between stock market capitalization and both of NIM and ROA but that of ROE is negative. These observations suggest that, an increase in stock market capitalization yield significant positive impacts on NIM and ROA but negative impact on ROE. However, the aggregate effect of stock market capitalization on profitability is negative. The negative impacts suggest that ABSA resorted more to equity financing which is consistent with the results from Gul et al (2011). The positive impact is also consistent with empirical results from Naceur (2003).

An increase in capital resulted in a significant increase in NIM and ROA, a decrease in ROE and a decrease in overall long run profitability. The result is inconsistent with theory (Berger, 1995) but consistent with empirical studies (Aremu et al, 2013; Housseem, 2013; Yong & Christos, 2012). The negative effect of capital on overall profitability supports the earlier suggestion of ABSA resorting towards to more equity financing. A change in inflation has positive impact on NIM and a negative impact on ROE, however these impacts were insignificant. The result is a clear indication that the pricing behaviour of ABSA has no significant bearing with its profitability. With reference to the directions of impacts of inflation on profitability, previous studies suggest mixed conclusions in respect to consistency with this study (Housseem, 2013).

Loans play significant role in profitability of banks. With properly managed credit risk, higher loans are supposed to lead to significant higher levels of profitability (Gul et al, 2011). The result of the study indicates that loans have significant negative impact on NIM and ROA and a positive impact on ROE. The negative impacts suggest a possible loss of capital and interest on loans due to credit risk. However, the overall aggregate impact of loans on profitability is positive, suggesting that ABSA is able to properly manage its credit risk and thus relatively more income is generated from loans than it is lost to default. The result of the study is inconsistent with findings from Javaid et al (2011).

Size had an insignificant negative impact on ROE, which is consistent with empirical studies (Almazari, 2014; Naceur, 2008), and a positive impact on NIM which is also consistent with empirical studies (Housseem, 2013). GDP had a positive but insignificant effect on NIM. An empirical study by Housseem (2013) is in agreement with the negative direction of impact of GDP on profitability but similar studies by Yong and Christos (2012) is in direct contrast with the direction of the effect of GDP.

Table 5: Parameter estimates for co integrating relationship for ROA, NIM, and ROE

Model		INF	LOANS	SMC	ROA	Const.	SIZE	GDP	Trend	
NIM		0.2701	0.0381	-3.8-06	1.7-07	0.2291	1.7213	3.0-06	0.0367	-0.1524
		0.0016	0.0744	0.0029	0.0090	0.3580	0.0152	0.0368	0.1384	0.0123
ROE		-1.6568	-0.1801	2.5-05	-9.4-07	15.283	10.685	-7.1-06		
		0.0005	0.1136	0.0029	0.0033	<0.001	0.0080	0.1611		
ROA	CAPITAL		LOANS	SMC		Constant		ROE		
		0.0900	-6.5-07	3.5-08		-0.2806		0.0520		
		0.0001	0.0006	0.0044		0.0521		<0.001		
AGP		-1.2968	-0.1420	2.0-05	-7.4-07	15.512				

Note: AGP: Aggregate profitability, INF: inflation, SMC: stock market capitalization. An estimate is significant if the p-value (bold values) is less than 0.05.

Conclusions

The paper aimed at analysing the long-run impacts of determinants of profitability on ABSA using fully modified co-integrating regression. The results indicated that profitability of ABSA is co-integrated with its determinants. Among the factors considered, inflation is the only factor, which did not have any significant effects on the long-run profitability of ABSA. It can be concluded from the co-integrating relationships that, higher capital and stock market capitalization pose long-term risk to the profitability of ABSA. When market conditions are perfect, debt and equity financing act as perfect substitute (Gul et al, 2011). Size poses insignificant risk to profitability but significant positive impact on profitability while inflation poses an insignificant risk to overall profitability. GDP does not pose risk to long-run profitability of ABSA and it does not have significant positive impact on profitability. Based on these results, the following recommendations are made:

ABSA should endeavor to institute long-term measures aimed at increasing its total asset.

Since stock market capitalization is beyond the control of ABSA bank, the bank should divert less capital towards equity financing in the long-run. This may minimize the negative impact on profitability when stock market capitalization increases in the future.

Although inflation poses an insignificant risk to overall profitability, ABSA should continually maintain a long-term competitive pricing and interest rates in the wake of inflationary pressures. This will ensure that their services and products remain attractive to clients. It will also ensure that in the long-run, clients get access to more affordable loans, thus increasing the overall interest on loans since increase in loans is associated with an overall increase in profitability.

To take advantage of expansion in the economy, the bank may relatively reduce its borrowing rates and increase its investment rates to serve as incentives to attract new clients to patronise its loan and investment products.

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