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# The Relationship between Macroeconomic Variables and South African Commercial Bank Performance

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**Abstract**

**Purpose:** The study examined the short-run and long-run relationship between South African commercial bank performance and macroeconomic variables.
**Design/Methodology/Approach:** Six South African commercial banks (ABSA, Standard bank, Nedbank, Capitec Bank, Investec Bank and FirstRand Bank), two macroeconomic variables (money supply and policy uncertainty) and two control variables (debt-to-equity ratio and the South African volatility index) were administered for the sample period, 2006-2022, using a panel autoregressive distributed lag (ARDL) model.
**Findings:** The findings show that money supply and the debt-to-equity ratio has a positive long-run relationship with commercial bank performance. However, policy uncertainty and the South African volatility index has a negative long-run relationship with commercial bank performance. It is further evident that the error correction term exhibited negative and significant coefficients, which indicates a 76.08% imbalance between bank performance and independent variables.
**Practical Implications:** Firstly, when the South African Reserve Bank (SARB) conducts policy adjustments, such policy changes should be in line with the findings of the study as it poses a significant effect on short-run and long-run commercial bank performance. Secondly, the Asset-Liability Committees (ALCO) of banks should consider the allocation of debt and the leverage position of their banks. That being, although debt increases bank performance, as found in the study, it also poses a significant effect on the liquidity position of banks. Hence, there should be added control of the banks' liabilities as it will hamper the short-run and long-run performance of banks.
**Originality/Value:** This study is the first to consider macroeconomic variables as a determinant of commercial bank performance in South Africa. Hence, the study provides insight into the relationship between macroeconomic variables and commercial bank performance. Moreover, the study focused on commercial banks that are part of emerging markets, where the performance of these banks differs from that of developed markets' commercial banks. Lastly, the study considered the short-run/long-run relationship between macroeconomic variables and commercial bank performance, while the majority of studies consider current effects.
**Paper Type:** Research Paper.

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## INTRODUCTION

The aim with the formation of the first commercial bank in 1971 was to establish a prospect of economic growth through the facilitation of capital distribution, payments, and an increase in the production of individuals and businesses (Cowen 2000). Since then, the establishment of commercial banks globally has drastically increased, with the functions now expanded to include the transfer of risk, management of complex deals associated with financial instruments and financial markets, market transparency, and mitigation/control of risk (Albertazzi and Gambacorta 2009). Due to an increase in the functions of commercial banks, they now face an elevated risk exposure. This exposure includes the fluctuations of macroeconomic instruments used in the implementation of macroeconomic policy in various countries (Ratnoysi 2013). It is expected that when these macroeconomic instruments fluctuate, the central bank of any country will control the risk exposure through the implementation of macroeconomic policy. However, from history, it is evident that macroeconomic policy implementation has drastically affected the profitability of commercial banks and the functionality of the banking sector globally.

The failed implementation of macroeconomic policies in the 1970s, which compelled United States commercial banks to reduce their credit requirements for low-income households, gave rise to a market for subprime mortgages (Bordo 2008). This allowed for excess capital on hand, which created a subprime lending failure and a liquidity issue in the banking sector. Accordingly, the reduction in the liquidity of commercial banks reduced the function and profitability of the banking sector as the issue infiltrated other countries and gave rise to the dot-com bubble and global financial crises (Schularick and Taylor 2012). In an attempt to mitigate the liquidity contagion in the South African banking sector, the South African Reserve Bank (SARB) altered various macroeconomic rates (repo rate, prime rate and interest rates) to control inflation (Maredza and Ikhide 2013). The actions of the SARB did increase commercial banking profitability, but it was not enough to mitigate the low liquidity levels of commercial banks.

Since then, there has been an increase in empirical literature to understand if bank profitability is macroeconomic driven or bank specific. The large number of literature studies point to the former, but the findings are largely centred around international studies with developed economies as opposed to emerging markets (Sangeetha and Moorarka 2019; Alfadli and Rioub 2020). It is evident that emerging market economies such as South Africa (SA) are more prone to shocks caused by macroeconomic variables, which affect each sector including the banking sector (Moodley 2020). Thus, it is important to determine how macroeconomic variables affect SA commercial bank profitably, as no study of this nature has been conducted in SA. Hence, this study examined the effect of macroeconomic variables (unemployment rate, policy uncertainty, money supply, inflation and gross domestic product (GDP)) on the profitability of eight SA listed commercial banks (ABSA, First Rand, Capitec, Investec, Sasfin, Nedbank, Standard Bank and Rand Merchant Bank).

## LITERATURE REVIEW

The review of empirical literature suggests that there is common consensus among research scholars that determinants of bank profitability are macroeconomic driven (Kiganda 2014; Amzal 2016; Bhattarai 2018). However, given the mixed and inconclusive findings among empirical evidence, there is no agreement on whether the effect is positive, negative, or significant in the short run and long run. Moreover, there is a lack of empirical literature demonstrating the effect of macroeconomic variables on SA commercial banks. Accordingly, to the best of the authors' knowledge, no study in the SA context exists. Despite the limited empirical evidence in SA, many studies advocate for the use of return on assets (ROA), net interest margin (NIM), or return on equity (ROE) as proxies for banking sector profitability (See Lall 2014: Duraj and Moci 2015; Sheefeeni 2015). In particular, a combination of all three proxies has been used in previous studies, as it accounts for both the bank's profitability and the principal interest of a bank owner (see, amongst others, Ebenezer, Omar and Kamil 2017; Al-Homaidi, Tabash, Farhan and Almagtari 2018; Sangeetha and Moorarka 2019; Alfadli and Rioub 2020).

Previous studies have examined the effect of macroeconomic variables on bank profitability. Some studies showed a positive relationship. Sheefeeni (2015) used the fixed effect model to examine the effect of inflation, GDP, exchange rate and interest rate on Namibia listed commercial bank profitability. The findings showed a positive significant relationship between macroeconomic factors and bank profitability. This was in line with a study conducted by Borio, Gambacorta and Hofmann (2017). Ebenezer, Omar and Kamil (2017) also examined the effect of macroeconomic factors on commercial bank profitability. Using the panel regression model for seven years, they found a significant positive relationship between GDP, inflation, and Nigerian listed banks profitability. Similarly, Zampara, Giannopoulos and Koufopoulos (2017) used the ordinary least squares (OLS) method to estimate the results and proved that GDP and

exchange rate had a positive significant effect on Pakistan listed banks profitability. Finding a positive relationship was in line with a study conducted by Hirindu and Kawshala (2017). In a more recent study, Alfadli and Rioub (2020) aimed at examining the effect of inflation on bank profitability of Gulf cooperation council countries. Using the OLS regression for a period of seven years, the findings illustrated a significant positive relationship between inflation and commercial banks profitability. The findings are supported by Chen and Lu (2021).

Some studies show a negative relationship. Saeed (2014) examined the effect of macroeconomic variables on United Kingdom listed commercial bank profitability. The data ranged from 2006 to 2012 and was used to regress the fixed effect panel model. The results suggested that inflation had a significant negative effect on bank profitability. Finding a negative relationship was in line with a study that was conducted by Amzal (2016) as the authors used the linear regression model for eight years and found a significant negative relationship between inflation and Islamic banks profitability. In a similar study, Abate and Mesfin (2019) used the fixed effect model to determine the effect of inflation, interest rates and GDP on Ethiopian listed commercial banks' profitability. The findings for the data sample of nine years, illustrated a significant negative relationship between macroeconomic factors and bank profitability. Similarly, Salee and AshFaque (2020) also used the fixed effect model. However, the study was conducted on the Malaysian listed commercial banks profitability for a period of six years. The findings showed a significant negative relationship between GDP and commercial banks profitability. Studies conducted by Neupane (2020), Saif-Alyousfi (2020), Rahman, Yousaf and Tabassum (2020) yielded identical conclusions.

Some studies show no relationship. For example, Kanwal and Nadeem (2013) used the pooled OLS method to investigate the relationship between macroeconomic variables and the Pakistan listed commercial banks' profitability. The results indicated no significant relationship between inflation, GDP, interest rates and bank profitability. Evans and Kiganda (2014) had similar findings when using the OLS technique. The findings show no significant relationship between GDP, exchange rate and Kenyan listed commercial banks profitability. Similarly, Simiyu (2015) used the fixed effect model to determine if macroeconomic variables affect bank profitability. The findings showed that there is no significant relationship between GDP, interest rates, inflation, and Nigerian listed banks profitability. The findings are in line with a study conducted by Akani, Nwanna, and Mbachu (2016).

The review of empirical literature has supported the notion of mixed and inconclusive findings pertaining to the effect of macroeconomic variables and bank profitability. It is clear from the above mentioned that there is no consensus on what effect each macroeconomic variable has on bank profitability. Where one macroeconomic variable is said to positively affect bank profitability, there is also evidence that it has a negative or insignificant effect on bank profitability. Moreover, more international studies exist that have captured the effect of macroeconomic variables on bank profitability than SA studies. Accordingly, to the best of the authors' knowledge, no study exists in the SA context. Thus, it is justifiable for a study of this context to be carried out, as it will not only add to the debate surrounding the effect of macroeconomic variables and bank profitability but will also be the first done in SA.

## DATA SETS AND METHODS

### Data sets

The study examined the effect of macroeconomic variables on the performance of banks in South Africa. Yearly data for the top six commercial banks in South Africa (ABSA Bank, Standard Bank, Nedbank, First Rand Bank, Capitec Bank and Investec Bank) was collected with a sample period from 2006 to 2022. These banks comprise more than 85 percent of all banking assets in South Africa (Du Toit and Cuba 2018) and were thus deemed sufficient for the study. The sample period was dictated by the availability of data on these banks and as such was limited to the prescribed period. The banks' data and the control variables were extracted from the audited financial reports of the bank. However, the macroeconomic data was extracted from Mc Gregor BFA and the South African Reserve Bank's (SARB) data bank. The construction of the variables used in the study is given below:

Macroeconomic variables

*Return on equity:*

Return on equity estimates how the management of a bank or a firm optimizes the utilization of the invested shareholder's fund to yield profit (Athanasoglou, Brissimis, and Delis 2008). It is also a measure of how much rand of profit are generated for each rand of shareholder's equity. This study employs return on equity as the dependent variable to measure the impact of the response variables or macroeconomic variables on it, as the bank's financial performance measure.

*Unemployment rate:*
According to the Organization for Economic Co-operation and development (OECD), unemployed individuals are people above a specific age usually (15) not being in paid employment or self-employment but are currently available for work during the reference period (OECD 2020). The broader definition includes discouraged workers (Altman 2022). Studies such as Zampara et al. (2017) and Horobet, Radulescu, Belascu and Dita (2021) discovered a negative impact between of unemployment rate on bank performance. The study expects a non-significant impact on unemployment rate on banks' return on equity. Unemployment rate is included as a macroeconomic measure to determine its effect on banks' return on equity in this study.

*Policy uncertainty:*
This is a class of economic risk where the future path of government policy is uncertain, raising risk premia and leading businesses and individuals to delay spending and investment until uncertainty has been resolved (Baker, Bloom and Davis 2013). Policy uncertainty could refer to risk or uncertainty about government monetary or fiscal policy, electoral outcomes and taxation policies in any particular nation. This study employs the South African policy uncertainty index as one of the macroeconomic explanatory variables which could possibly influence bank performance, owing to the fact that government policies as mentioned above are factored into a policy uncertainty index. Iqbal, Gan and Nadeem (2020) used policy uncertainty in their study, they found policy uncertainty has a negative effect on bank performance (ROE). Similarly, Nguyen, Nghiem and Tripe (2021) found out that the US and Indian economic policy affects Indian banks' profitability. Therefore, it is believed that the policy uncertainty index could impact bank performance whether positively or otherwise.

*Money supply (M2):*
Money supply of any nation is the total volume of money held by the public at a given time. Hence it refers to the currency in circulation i.e. (physical currency) and demand deposit i.e. (depositor's easily accessed assets on the books of financial institutions. Uruakpa (2019) establish that monetary policy including money supply when utilized effectively can have a positive effect on the banks' performance in Nigeria. The study envisages a positive impact of money supply on return on equity.

*Inflation:*
The South African inflation rate is the annual percentage change in the cost of a basket of goods and services for the average consumer. It is calculated using the consumer price index which is the average spending or living costs of a South African (Statistic SA 2024). This inflation rate is relevant to this study as its one of the macroeconomic instruments used by central banks to stabilize the economy. Studies such as Almansour, Alzoubi, Almansour and Almansour (2021) found that there exists a negative significant relationship with inflation and banks' performance in Jordan. As Maria and Hussain (2023) equally found a negative impact of inflation on marketing-based performance measure such as Tobin's Q. While it has a positive impact on accounting-based measures of banking performance such as return on equity. Hence, this study includes inflation as macroeconomic factor to ascertain its effect on return on equity.

*Gross domestic product:*
Gross domestic product is a monetary measure of the market value of all the final goods and services produced and sold in a specific time period in a country (Duignan 2017). It's also the measure of the size of an economy (Callen 2012). Jaouad and Lahsen (2018) established that there exists no significant impact of gross domestic product on banks' performance in Morocco. However, since banks directly fund or provide money to produce goods and services within an economy, this study includes the gross domestic product to examine its impact on banks performance. However, this study hypothesises a positive impact between banks' return on equity and gross domestic product.

Control Variables
*Debt-to equity ratio:*
Debt-to-equity ratio is a financial metric that measures a company's financial leverage. It shows how much debt is used to finance its operations compared to its available equity (OECD 2013). Yuan, Gazi, Harymawan, Dhar and Hossain (2022) employed the debt-to-equity ratio as a control variable alongside other bank variables and demonstrates that it has a significant impact on performance, which should be controlled for.

*Net asset value:*
Net asset value of a bank is the value of a mutual fund obtained by subtracting liabilities of the bank from its

assets. In the aim of determining the effect of bank specific and macroeconomic determinants of bank profitability, O' Connell (2022) employed net asset value as a control variable. In a similar way, this study employs net assets value as a control variable to determine the macroeconomic factors that impact bank's performance.

*Retention rate:*
This refers to the number of retained customers in a bank to the number at risk. No study has employed retention rate as a control variable to the knowledge of the authors.

*National deficit:*
This is also known as fiscal deficit. It occurs when government expenditure is more than its revenue. A country's primary deficit is the difference between the spending on goods and services and the revenues the country earns from taxes, minus transfer payments (IMF 2014). There is no prior study that has employed national deficit as a control variable on bank performance prior to this study. Hence, we employs national deficit as a control variable to examine its control effect on bank performance.

The summary of variables used in the study is presented in Table 1 bellow.

**Table 1.** Description of variables

| Variables employed in study | | | | |
|---|---|---|---|---|
| Variables | Abbreviation | Statement | Data range | Data Source |
| Return on equity | ROE | Performance measure | 2006-2022 | Bank's Audited Report |
| Unemployment rate | UNEMP | Macroeconomic measure | 2006-2022 | Mcgregor BFA |
| Policy uncertainty | LPU | Macroeconomic measure | 2006-2022 | Mcgregor BFA |
| Money supply | M2 | Macroeconomic measure | 2006-2022 | Mcgregor BFA |
| Inflation | CPI | Macroeconomic measure | 2006-2022 | Mcgregor BFA |
| Gross domestic product | GDP | Macroeconomic measure | 2006-2022 | Mcgregor BFA |
| Volatility index | SAVI | Control | 2006-2022 | Mcgregor BFA |
| Debt-to-equity ratio | D-E | Control | 2006-2022 | Bank's Audited Report |
| Net asset value | NAV | Control | 2006-2022 | SARB |
| Retention rate | RE | Control | 2006-2022 | SARB |
| National deficit | NE | Control | 2006-2022 | SARB |

Source: Authors' compilation (2024)

**Methodology**

To test the effect of macroeconomic variables, specifically money supply and the South African Policy uncertainty index, on banks' performance, we utilised the autoregressive distributed lag (ARDL) model. In the model we employed the log of PU and M2 as macroeconomic variables that could affect the performance of banks while controlling for other variables that could affect bank performance.

$$A_{it} = f\left(ME_{i,t}, ME_{i,t-1}\right) \tag{1}$$

Where $A_{it}$ denotes the response variable, $ME_{i,t}$ is the growth rate in loan provided by $i^{th}$ bank in year t, and $ME_{i,t-1}$ is one year of lagged macroeconomic variables of the $i^{th}$ bank. The ARDL model was applied for this estimation. In the estimation of the ARDL it is important that the variables are stationary at level or at first difference. Hence, we employed the unit root test established by Levin et al. (2002).

$$\Delta A_{i,t} = c_{0i} + uA_{it-1} + \sum_{t=0}^{p_i} c_i \Delta A_{i,t-j} + w_{i,t} \tag{2}$$

Where $c$ is the constant term, which is supposed to differ across cross-sectional entities, and while $u$ is the identical autoregressive coefficient, $c_i$ denotes the lag order, and $w_{i,t}$ represents the disturbance term.

The generalised ARDL $(p, q, q, \dots, q)$ model employed in the study is specified as follows:

$$A_{i,t} = \sum_{t=1}^{p} \pi_{ij} A_{i,t-j} + = \sum_{t=0}^{q} \Omega_{ij} \, X'_{i,t-j} + \alpha_i + \, e_{it} \quad (3)$$

Where $A_{i,t}$ is the response variable, $K'_{it}$is a K × 1vector that is allowed to be purely I (0) or I (1) or cointegrated, $\pi_{ij}$ is the coefficient of the lagged dependent variable called scalars, $\Omega_{ij}$ is $K \times 1$ coefficient vector, $\alpha_i$ is the units-specific fixed effects. Number of cross-sections $i = 1, 2, \dots, N$ and time $t = 1, 2, \dots, T$. $e_{it}$ is the error term.

Equation 3 can be deduced into the ARDL correction model as:

$$A_{i,t} = \theta_i \left[A_{i,t-1} - \beta_i \, X_{t,j}\right] + \sum_{j=1}^{p-1} \pi_{ij} \; \Delta A_{i,t-j} + \sum_{j=0}^{q-1} \Omega_{ij} \; \Delta X_{i,t-j} + \alpha_i + \, e_{it} \quad (4)$$

Where $\theta_i$ = group-specific speed of adjustment coefficient, $\beta_i$ is the vector of long-run relationships, $[A_{i,t-1} - \beta_i \, X_{t,j}]$ is the error correlation term or ECT, $\pi_{ij}$ and $\Omega_{ij}$ are short-run dynamic coefficients. This model was selected based on the Akaike Information Criterion (AIC), which employs the smallest possible lag length. Therefore, to evaluate the effect of macroeconomic variables on the profitability (return on equity) of banks, we captured both the long run and the short run of dynamics in the ARDL model.

## RESULT

### Multicollinearity test

Table 2 provides the variance inflation factor (VIF) test for the selected variables. The VIF test indicates whether multicollinearity exists among the selected independent variables and control variables. If the centred VIF value is between 1 and 2, this indicates no form of collinearity. However, if the centred VIF value lies above 2 then levels of collinearity exist among the selected variables. It is evident from Table 2 that the centred VIF value for the South African volatility index, money supply, policy uncertainty and debt-to-equity ratio is between 1 and 2. Hence, the study concludes only these variables exhibit no collinearity. Thus, the study omitted the rest of the variables and continued with the South African volatility index, money supply, policy uncertainty index and debt-to-equity ratio.

**Table 2.** Variance inflation factor test

| Variable | Coefficient Variance | Uncentred VIF | Centred VIF |
|---|---|---|---|
| UNEMP | 25.77864 | 11737.31 | 14.49389 |
| SAVI | 0.633176 | 18.8596 | **1.167066** |
| RE | 0.059444 | 38.46258 | 2.303105 |
| NAV | 0.047148 | 1.771517 | 3.764579 |
| NE | 0.072277 | 418.1951 | 5.528234 |
| M2 | 0.104579 | 17.00404 | **1.519117** |
| LPU | 0.240001 | 19.735774 | **1.487552** |
| GDP | 9.555847 | 50979.39 | 25.65843 |
| D_E | 0.192685 | 41.77135 | **1.804528** |
| CPI | 1.324846 | 130.1524 | 2.648710 |
| C | 71.98643 | 16086.25 | NA |

Source: Author's estimation (2024)

### Descriptive statistics

The descriptive statistics for the variables used in this study are shown in Table 3. This study used one of the main measures of banking performance which is return on equity as the response variable. The return on equity ranges from minimum to maximum values of -1.0 percent to 1.55 percent with a mean of 0.739. Moreover, return on equity attained the highest volatility value of 0.759 as compared to the South African market (SAVI) of 0.0884. The South African policy uncertainty index is the only variable with a negative mean of -0.281, giving rise to a negative skewness of -0.296, which is also evident with median and maximum values of -0.3056 and -0.8303 respectively. The volatilities of money supply, policy uncertainty and debt-to-equity ratio appear to fall in the same range of 0.2424, 0.2738 and 0.2375 respectively. Return on equity, policy uncertainty, money supply and debt-to-equity ratio show a negative skewness, illustrating that the tail of these variables is more pronounced on the left rather than the right with the exception of the South African volatility index.

**Table 3.** Descriptive statistics

| | ROE | LPU | M2 | SAVI | D_E |
|---|---|---|---|---|---|
| Mean | 0.7390 | -0.2818 | 0.8594 | 1.3283 | 0.9686 |
| Median | 1.1676 | -0.3057 | 0.8561 | 1.3159 | 1.0386 |
| Maximum | 1.5494 | 0.1280 | 1.3159 | 1.5246 | 1.2352 |
| Minimum | -1 | -0.8303 | 0.2355 | 1.1886 | 0.0453 |
| Std. Dev. | 0.7594 | 0.2424 | 0.2738 | 0.0884 | 0.2376 |
| Skewness | -0.8027 | -0.2965 | -0.265 | 0.4614 | -1.9728 |
| Kurtosis | 1.9809 | 2.9236 | 2.9039 | 2.6184 | 6.6678 |
| Jarque-Bera | 15.2176 | 1.5047 | 1.2212 | 4.1964 | 122.1275 |
| Probability | 0.000496 | 0.4712 | 0.5430 | 0.1227 | 0.000000 |
| Sum | 74.6435 | -28.463 | 86.79606 | 134.1563 | 97.8326 |
| Sum Sq. Dev. | 57.6688 | 5.8771 | 7.4997 | 0.7821 | 5.6443 |
| Observation | 101 | 101 | 101 | 101 | 101 |

Source: Author's estimation (2024)

**Pairwise correlation coefficients between variables**

Table 4 presents the Pearson correlation coefficients of the variables. The results show that only the debt-to-equity ratio is significantly negatively correlated with the return on equity at a 1 percent level of significance. Similarly, the policy uncertainty is significantly negatively correlated with the South African volatility index. However, the correlation between policy uncertainty and the remaining variables are insignificant.

**Table 4.** Correlations analysis

| | ROE | LPU | M2 | SAVI | D-E |
|---|---|---|---|---|---|
| ROE | 1 | | | | |
| | ----- | | | | |
| LPU | 0.022713 | 1 | | | |
| | -0.8216 | ----- | | | |
| M2 | 0.031426 | 0.1116 | 1 | | |
| | -0.7551 | 0.2665 | ----- | | |
| SAVI | 0.011187 | -0.50594 | -0.01324 | 1 | |
| | 0.9116 | 0 | 0.8954 | ----- | |
| D-E | -0.351674 | -0.08825 | 0.023569 | 0.10307 | 1 |
| | 0.0003 | 0.3802 | 0.815 | 0.3051 | ----- |

Source: Author's estimation (2024)

**Unit root and stationarity test**

The unit root test is presented in Table 5. Based on Levin et al. (2002), the individual test for stationarity reveals that return on equity, policy uncertainty, debt-to-equity ratio and money supply are all stationary at level I (0), while the South African volatility index shows a stationarity of first difference I (1). In addition, the augmented Dicky-Fuller (ADF) test was also carried out to support the Levin, Lin and Chu (2002) test. The ADF test reveals that return on equity, money supply and debt-to-equity ratio were stationary at levels, but at 1st difference all variables were stationary. Although debt-to-equity ratio has a

0.0891 p-value at 1st difference, we accepted it as a stationary variable since it was stationary at levels, i.e. with (0.0056).

**Table 5.** Unit root test

| Levin, Lin & Chu t-stat | | | | | |
|---|---|---|---|---|---|
| | Level | | 1st Difference | | |
| Variable | t-stat | p-value | t-stat | p-value | Order of Integration |
| ROE | -4.8142 | 0.0000 | -6.3739 | 0.0000 | I(0) |
| LPU | -3.239 | 0.0006 | -8.7755 | 0 | I(0) |
| SAVI | 0.6785 | 0.7513 | -3.544 | 0.0002 | I(0) |
| D-E | -4.733 | 0 | -2.0126 | 0.0221 | I(0) |
| M2 | -8.5372 | 0 | -6.8148 | 0 | I(0) |
| ADF Test | | | | | |
| | Level | | 1st Difference | | |
| Variable | t-stat | p-value | t-stat | p-value | Order of Integration |
| ROE | -3.1169 | 0.0015 | 54.0086 | 0.0000 | I(0) |
| LPU | 15.7715 | 0.2019 | 57.662 | 0 | I(0) |
| SAVI | 9.1275 | 0.692 | 38.5949 | 0.0001 | I(0) |
| D-E | 27.975 | 0.0056 | 18.976 | 0.0891 | I(0) |
| M2 | 56.2498 | 0 | 56.7176 | 0 | I(0) |

Source: Author's estimation (2024)

**Panel ARDL result and discussion**

Table 6 shows the panel ARDL (1, 2, 2, 2, 2) regression result. The short-run estimates demonstrate the error correction term, which is vital for the consistency and validity of the model. The error correction term must be negative and statistically significant. The result show that error correction term (-0.7608) is negative and significant at a 1 percent level of significance. Therefore, 76.08 percent of the imbalance between return on equity, policy uncertainty, money supply, South African volatility index and debt-to equity ratio was eliminated. However, from the long-run results, it could be concluded that all variables are significant at a 5 percent level of significance, with exception to money supply being significant at a 10 percent level of significance. While the coefficients of the policy uncertainty and the South African volatility index are negative, the coefficients of money supply and debt-to-equity ratio are positive. Therefore, it can be suggested that there is a short-term relationship between return on equity and the explanatory variables. In the long-run, it can be said that the South African volatility index (control variable) and policy uncertainty have a negative impact on the return of equity of banks in South Africa. However, it is suggested that the debt-to-equity ratio and money supply have a positive impact on the return on equity of banks.

The long-run coefficients in Table 6 show that money supply has a coefficient of 0.1456. This implies that approximately 15 percent of the increase in the return of equity of banks in South Africa is obtainable when there is an increase in money supply in the economy in the long run. The positive relationship between money supply and bank equity return is supported by Liu, Bashir, Abdalla, Salman Ramos-Meza, Jain and Shabbir (2024). Similarly, a positive long-run coefficient between the debt-to-equity ratio and return on equity suggest that return on equity increases with the debt-to-equity ratio of the banks in South Africa. This finding is in line with theory, which stipulates that the more debt a bank requires, it will increase net profits by an amount greater than the interest cost of the additional debt, which leads to banks delivering a higher return on equity to its investors. Moreover, the negative coefficient between return on equity and policy uncertainty implies that a 30 percent decrease in the rate of policy uncertainty will result in a decrease in the return on equity of banks in South Africa. Ozili and Arun (2022) established that high economic policy uncertainty has a positive effect on banks' profitability in Asia and the region of the Americas. This indicates that improvement and stability in policies that stimulate economic growth directly impact and empower banks to make profits in such an economy. The South African volatility index as a control variable in this study shows that it has a negative long-run relationship with return on equity. This implies that about 87 percent of the decrease in volatility results in a decrease in the return on equity of the banks in South Africa.

**Table 6.** Panel ARDL

| Model: ARDL (1, 2, 2, 2, 2) | | | | |
|---|---|---|---|---|
| **LONG-RUN EQUATION** | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
| LPU | -0.3001 | 0.1384 | -2.1686 | 0.0366 |
| M2 | 0.1456 | 0.0805 | 1.8097 | 0.0785 |
| SAVI | -0.8655 | 0.3097 | -2.7943 | 0.0082 |
| D-E | 0.7102 | 0.2919 | 2.4324 | 0.02 |
| **SHORT-RUN EQUATION** | | | | |
| ECT (-1) | -0.7608 | 0.2358 | -3.2261 | 0.0026 |
| D(LPU) | 0.339998 | 0.110677 | 3.072 | 0.004 |
| D(LPU(-1)) | 0.111767 | 0.087486 | 1.277538 | 0.2094 |
| D(M2) | -0.242346 | 0.088432 | -2.740466 | 0.0094 |
| D(M2(-1)) | -0.128371 | 0.064416 | -1.992833 | 0.0537 |
| D(SAVI) | -0.048244 | 0.197751 | -0.243963 | 0.8086 |
| D(SAVI(-1)) | -0.434834 | 0.190286 | -2.285168 | 0.0281 |
| D(D_E) | 0.312825 | 0.498814 | 0.627138 | 0.5344 |
| D(D_E(-1)) | 0.302316 | 0.573602 | 0.527048 | 0.6013 |
| C | 0.978496 | 0.372772 | 2.624923 | 0.0125 |

Source: Author's estimation (2024)

## CONCLUSION

At the inception of this study, the academics' aim was to investigate the short-run and long-run relationship between macroeconomic variables and South African commercial bank performance. The choice of South African commercial banks was in line with data availability and comprised of ABSA Bank, Standard Bank, Nedbank, First Rand Bank, Capitec Bank and Investec Bank. The return on equity was used as a proxy for the bank performance whereas the macroeconomic variables comprised money supply and policy uncertainty. The macroeconomic variables were restricted due to the study finding multicollinearity among the omitted variables. The study further imposed control variables such as the debt-to-equity ratio and South African volatility index to isolate bank performance. The findings of the panel ARDL model illustrated that policy uncertainty and the South African volatility index have a negative long-run relationship with commercial bank performance. However, money supply and debt-to-equity ratio have a positive long-run relationship with commercial bank performance. It is further evident that the error correction term exhibited negative and significant coefficients, which indicates a 76.08% imbalance between bank performance and independent variables.

The findings of the study are significant for the body of literature. Firstly, the findings illustrate that fluctuating macroeconomic variables have an influence on bank performance. This indicates that the SARB should consider this when conducting policy adjustments, which should be in line with the findings of the study as it would ensure a significant effect on short-run and long-run bank performance. Secondly, the ALCO committee of banks should consider the allocation of debt and the leverage position of their banks. That being, although debt increases bank performance, as found in the study, it also has a significant effect on the liquidity position of banks. Thus, if there is not enough control over the banks' liabilities as generated from interest expenses, it will hamper the short-run and long-run performance of banks. Appropriate measures should therefore be implemented in line with the findings of this study.

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