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Determinants of Banking Sector Profitability in Zimbabwe

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ABSTRACT

The study sought to establish the determinants of banking sector profitability in Zimbabwe during the period 2009-2014. The study specifically looked at the evolution and determinants of banking sector profitability after Zimbabwe adopted a multicurrency system. Employing the fixed effects panel regression models the study shows that banking sector profitability in Zimbabwe is driven by the quality of decisions made by bank management with regard to liquidity risk, credit risk, asset composition and management, expense management and capital size. The results implies that profitability of the Zimbabwean banking sector can be improved by increasing the quality of the assets, improving expense management, improving liquidity and capital levels. The study confirms that bank managers have a significant role in shaping the profitability of the sector.

Keywords: Banking Profitability, External Determinants, Internal Determinants, Fixed Effects, Generalized Methods of Moments

JEL Classifications: C23, G21, L25

1. INTRODUCTION

In a competitive banking environment, a bank is able to survive if it is profitable. Profits are a cheaper source of funds and attract external funding (Gitman, 2007). Profits reassure bank stakeholders: Investors, borrowers, managers, employees, external product and service suppliers, and regulators (Anyanwaokoro, 1996). Profits are not just a result but a necessary condition for a bank to be successful in a competitive environment. Profitability lies at the core of the bank management key objective (Bobáková, 2003). The maintenance of ongoing activities and ability to generate returns for investors depends on the profitability of the bank. The profitability of the bank allows it to grow organically without resorting to the shareholders. On the other hand potential investors use the profitability information to make their investment decisions. Bank profits are used to strengthen institutions capital position. Accumulated profits over time are used to cushion banks from the effects of potential losses and its continued existence (Diebold and Yilmaz, 2013). Banks that continuously make losses end up eating into their capital base risking the shareholders capital. Profits are a way of preserving and creating wealth for the owners therefore the return on shareholders' funds should be greater than the cost of equity to create value (Gitman, 2007). The profitability of banks ensures the sustainability and resilience of the

banks even during the difficult periods. Without achieving enough profitability, banking institutions risk themselves consuming their capital. This then compromises the banks' ability to intermediate between savers and borrowers.

The main objective of the study is to establish the determinants of banking sector profitability in Zimbabwe during the period 2009-2014. The period is unique in the Zimbabwean banking sector given that it is the period the Government of Zimbabwe abandoned Zimbabwean dollar and adopted dollarization. A basket of foreign currencies (US dollar, SA Rand, Botswana Pula, British Pound) started operating as legal tender hence the term multicurrency. In light of adoption of dollarization, the study attempts to answer the following questions: How profitable was the banking sector under the multi-currency system? What drove the profitability of the banking sector under the multi-currency system? What policy measures should be adopted improve the profitability of the banking sector? The study contributes to the banking literature by examining the profitability of the Zimbabwean banking sector under a multi-currency system. The study differs from other similar studies in that it dwells on the unique period of the multi-currency system. During this period, the country used several foreign currencies and the monetary authorities had limited instruments to control credit growth.

Like other dollarized countries the country did not have a lender of last resort which altered the way the monetary authorities supervises and regulates the financial, liquidity and solvency risks. Without official currency, the authorities demand higher reserve requirements, higher liquidity requirements, and deposit insurance as a liquidity management mechanism. These demands have profound effects on banks' profits (Gulde et al., 2004). They reduces bank profits given the requirement for increased liquid assets, which have a lower return and also increased expenditures on insurance premiums. Banks also forgo some of the traditional revenue as they cannot generate revenues through facilitating foreign exchange transactions. Dollarization offers a good excuse for central banks to deny banks assistance even if those banks are in trouble (Gale and Vives, 2002). This allows local banks in need of liquidity support to make arrangements with foreign banks for credit lines. In this respect foreign banks acts as pseudo central banks providing the lender of last resort facilities.

The rest of the study is organized as follows, Section 2 looks at the Zimbabwean banking sector under multicurrency system, and Section 3 reviews the literature on banking sector profitability. Research methodology is outlined in Section 4 while the results are analyzed and presented in section 5. The study concludes by proffering policy recommendations in Section 6.

2. ZIMBABWEAN BANKING SECTOR UNDER MULTICURRENCY

Prior to the country switching to the multicurrency system, gross domestic product (GDP) is estimated to have declined by 40% between 2000 and 2008d (GoZ, 2009). Hyperinflation peaked in September 2008 at 231 million percent (GoZ, 2009). The hyperinflation reduced significantly banking public savings in real terms. The assets and liabilities of the banks that were also denominated in local currency were also eroded in the real terms. This reduced the confidence in the banking sector. The adoption of the dollarization in Zimbabwe is credited with bringing about economic stability and growth.

At the adoption of the multi-currency system, the balance sheet of the Reserve Bank of Zimbabwe (thereafter Central Bank) was wiped save for the foreign currency denominated assets. The government because of limited fiscal space failed to recapitalize the bank. This resulted in a situation where the Central Bank was unable to perform some of its functions including the lender of last resort function. This restricted the amount of activity on the interbank market. Those banks in need of liquidity support could not get it from the Central Bank hence had to rely on other banks or correspondence banks. The sources of liquidity included borrowing from other banks, foreign companies and deposits from individuals and institutions. Given the high country risk premium, the external sources offered loans at significantly high rates of interest. The poor performance in exports also exacerbated the liquidity situation.

The total amount of deposits in the economy increased significantly during the multi-currency period. Total deposits increased from US\$ 382 200 in February 2009 when the government

introduced the multi-currency system to US\$ 1,400,000 by the end of December 2009 within a 1 year period. Deposits reached US\$ 4,320,000 by August 2014. This was a result of an increase in industrial production and resultant increase in salaries. Despite the increase in deposits, the growth rate in the total deposits started to decelerate in 2013.

The stability and growth registered after the multicurrency led to an increase in demand for loans and advances. The total amount of the loans in the banking sector increase from US\$ 103,100 in February 2009 to US\$ 700,000 in December 2009. This amount further increased to US\$ 3,726 670 in August 2014 (RBZ, 2014). The loans were advanced to industries which were in need of resources for retooling and working capital purposes. Banks had to also satisfy increased demand for personal loans from the banking public. The loans to the banking public were mostly salary based loans. The growth rate in the loans and advances were higher than the growth in deposits leading to an increase in loan deposit ratio.

Corresponding to the increases in loans and deposits the loan to deposit ratio was increasing starting 2009. The loan to deposit ratio is a measure of the financial sector liquidity. It measures the ability of banks' deposits to meet withdrawals and ascertain their ability to fulfill loan demands through reducing their assets. The increase in loan deposit ratio meant the growth in loans was greater than the growth in deposits.

Figure 1 shows that the loan - deposit ratio increased from 26.91% in February 2009, to 50% in December 2009 and further increased to 97.47% in August 2014. This shows that by August 2014, on average, banks were lending out 97.47% of every one dollar it was received as deposits. Banks were, to some extent, over lending in their quest to create assets. The banks lent in some circumstances without undertaking due diligence which led to an increase in non-performing loans (NPLs) in the banking system.

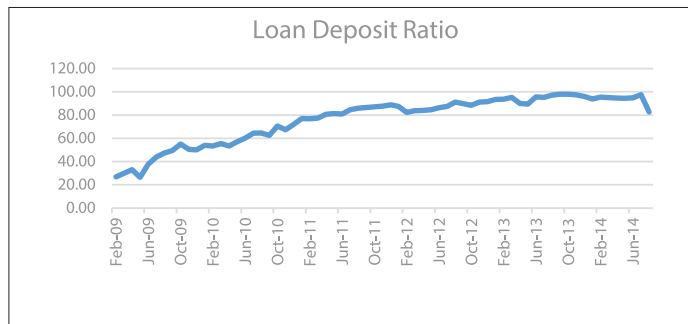
During the multicurrency period, NPLs grew from 2% in 2009 to 20.1% in September 2014 reflecting a decline in asset quality. Figure 2 shows that Zimbabwe did not favorably compare with regional counterparts. At the time NPLs were increasing in Zimbabwe, regional counterparts were experiencing declining NPLs. The growth in NPLs has been the biggest challenge for banks limiting their capacity to expand financial intermediation. The increasing amount of the NPLs led to the problem of disintermediation where the banks had to cut down on their lending and requested borrowers to pledge collateral even for small loans. NPLs affected bank performance, reducing the asset quality as well as profitability of the sector. The NPLs were caused by imprudent lending activities and insider loans. The increase in the amount of loans led some banks to suffer from insolvency and failure. Eight bank failures were experienced during the period 2009-2015. The bank closures were mostly a result of poor corporate governance, imprudent lending activities, insolvency and inadequate capitalization.

The profitability of the banking sector as measured by the return on assets (ROA) and return on equity (ROE) was not stable over

the review period. Two distinct phases of varying profitability performance can be dissected, with the first being of steady and stable growth (2009-2011) and the other volatile performance (2012-2014). Banking sector profitability was rising during for the period 2009-2011 before taking a downturn in 2012-2013 (Figure 3). The first phase coincided with the period of economic recovery with the economic growing by between 5.4% and 11.9%. The second phase came during the period of economic slowdown when growth rates decelerated to below 3.5%.

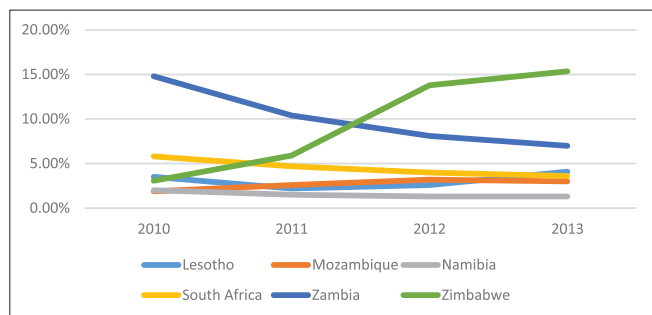
The period 2009-2011 was characterized by an increase in economic growth and capacity utilization in the industry. This was a result of firms borrowing to increase production. This increased the employment rates and improved economic stability. Despite continued stability in 2013, the growth rate started to decline from 2012. There was an increase in the NPLs as capacity utilization also started to decline. This was a result of poor credit risk management. Poor corporate governance also contributed to the increase in NPLs through increased insider loans which were not performing and continuously rolled over (RBZ, 2014).

Figure 1: Loan deposit ratio



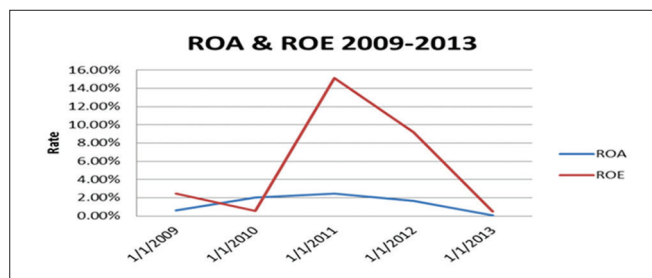
Source: Reserve Bank of Zimbabwe 2010-2014

Figure 2: Regional comparison of non-performing loans



Source: Reserve Bank of Zimbabwe 2015; World Bank

Figure 3: Return on assets and return on equity



Source: Reserve Bank of Zimbabwe 2009-2014

3. LITERATURE REVIEW

The determinants of bank profitability have been broadly categorized as either external or internal (Guru et al., 2002; Sufian, 2009; Hoffman, 2011). Internal determinants are those that can be controlled by management hence are dependent on the quality of decisions made by management (Javaid et al., 2011; Athanasoglou et al., 2006). Some of the variables that fall into this category include capital adequacy (CADEQ), income source, credit risk, efficient management, and bank size. These determinants can be derived from bank financial statements and can be termed micro or bank-specific determinants of profitability. External determinants are those outside the control of management and these reflect the legal and economic environment under which the banks operate. These also affects the operations of the banks hence its overall performance. These factors can be broadly categorized as industry specific and the macroeconomic environment. These variables are independent of bank management but reflect the economic and legal environment that affects the operation and performance of banking institutions.

The size of the institution can be used to account for economies or diseconomies of scale in the industry. Kosak and Cok (2008) found that larger banks because of their size are able to exploit economies of scale resulting in higher profits. The larger banks are also able to exert their market power using their brand image in providing related services. A bank might become involved in insurance, mortgage financing taking advantage of its broader branch network. This then improves the profitability of the bank (Elsas et al., 2010). Khrawish (2011) found a significant and positive relationship between profitability and the bank size. Javaid et al. (2011) in study of Pakistan also found that higher total assets did not lead to higher profits due to the diseconomies of scale.

Risk management lies at the core of banking business. Because of uncertainty, banks are forced to diversify their portfolio in order to reduce risk impacting credit risk. A negative relationship has been identified between credit risk and profitability (Miller and Noulas, 1997). Vong and Chan (2006) found that there was a negative relationship between loan loss provision and banking sector performance. A number of studies (De Young and Rice, 2004; Hernando and Nieto, 2007; Athanasoglou et al., 2008, Chiorazzo et al., 2008; and Alexiou and Sofoklis, 2009) also found a direct relationship between bank profitability and credit risk. This means poor credit quality has a negative effect on bank profitability and vice versa. When the amount of doubtful assets increases, banks are supposed to increase their provisions to cover expected credit losses which reduce the amounts of profitability. Iannotta et al. (2007) and Kasman et al. (2010) argue that if the financial system is well remunerated and risk is correctly priced as stipulated in the banking regulations of Basel II or Basel III, those assets that are riskier should produce higher interest income which will increase profitability. Mester (1996) argue that higher loan quality requires that banks incur higher underwriting and monitoring costs.

Banking profitability is also affected by how managers manage the overall costs of the bank (Guru et al., 2002). Studies by Kosmidou

et al. (2005); Alexiou and Sofoklis (2009) have shown that poor expense management reduces the levels of profitability. Efficient cost containment leads to higher profits (Brock and Rojas-Suarez, 2000 and Al-Haschimi, 2007). Oladele et al. (2012) found that operating expenses significantly affected the performance of the banking sector. Olweny and Siphon (2011) found that the reduction of operational expenses significantly influences bank profitability. Molyneux and Thornton (1992) found that personnel expenses were associated with higher net charge offs to total assets meaning that those banks with huge wage bills required large interest margins to maintain profitability.

CADEQ also impact banking sector profitability. Haron et al. (2004) argue that if a bank is highly capitalized, consumer confidence on the bank is increased which help attract more deposits. Athanasoglou et al. (2006) argue that capitalization of the bank signals to the market the performance of the bank. A well-capitalized bank signals that it is performing well and it will be perceived to be safer. Berger (1995) called it the signaling hypothesis. Management will be signaling private information that the future prospects of the bank is good by increasing capital. Athanasoglou et al. (2008) found that the positive relationship between capital and profitability arises because capital acts as defense mechanism during adverse times. As a result, the bank is able to finance its assets at more favorable interest rates which increase expected profitability. Banks will therefore not resort to expensive equity financing (García-Herrero et al., 2009). Abreu and Mendes (2001) in a study of European banks found that well-capitalized banks had lower expected bankruptcy costs and better profitability. Dietrich and Wanzenried (2009) found that better capitalized banks were more profitable. Sayilgan and Yildirim (2009) found a positive relationship between profitability and CADEQ. Basel accord regulations posits that higher capital levels reflect that banks are holding riskier assets which have a higher return increasing the bank profits (Iannotta et al., 2007).

The composition of bank assets is also a benchmark indicator the profitability of the bank. The main business of banks is issuing loans and taking deposits. The ability of the bank to transform deposits into loans increases its potential to generate income. There is mixed evidence on the relationship between asset composition and profitability. Abreu and Mendes (2000) found a negative relationship between asset composition and profitability. Staikouras and Wood (2004) and Bashir and Hassan (2003) found a positive relationship. García-Herrero et al. (2009) argue that holding a large portfolio of loans is associated with higher operating costs. A higher loan to asset ratio in a liberalized environment should increase profitability as banks employ markup pricing. Liquidity risk (LIRISK) is increased as banks increase the proportion of loans in their portfolio since this increases the chance of bank failing to meet its liabilities. Hassan and Bashir (2003) in a study of Islamic Banks found that a higher loan ratio actually impacts profits negatively.

Banks minimize portfolio risks by diversification of revenue streams. The profitability of banks is affected by how banks diversify their assets. Hayden et al. (2006) supports that an optimal bank asset portfolio should be diversified as a risk reduction

strategy. When a bank highly diversifies, it reduces the amount of monitoring as it opens up into new sectors. This brings in additional costs which might reduce the benefits of diversification. Acharya et al. (2006) studied the impact of diversification in Italy and conclude that diversification of bank assets does not necessarily result in the better performance of the bank. Elsas et al. (2010) found that the effect of diversification of income on bank profitability is not clear. Studies (Acharya et al., 2002; DeLong, 2001; De Young and Rice, 2004; Stiroh, 2004; and Stiroh and Rumble, 2006) argue that diversification can be harmful to the bank's profitability. According to Chiorazzo et al. (2008) and Elsas et al. (2010) revenue diversification is able to increase profitability through higher margins from non-interest businesses.

Funding management has got an effect on the performance of the banking institutions (Elsiefy 2013). Bank funding can be decomposed into capital, customer deposits, interbank borrowing and short and long term wholesale borrowing. Customer deposits on average have the lower interest expense as compared to other sources. A bank can increase its profits by increasing customer deposits as a proportion of its liabilities especially current accounts as they are free and improve bank profitability.

Elsiefy (2013) argues that banks with sufficient investment in liquid assets have the ability to withstand liquidity crisis. The challenge is defining the optimum amount of liquidity given the risk return tradeoff. Elsiefy (2013) argue that higher liquidity compared to the average for the sector also reflect inefficiency of the banking institution. Mustafa and Bassam (2013) argue that the lesser the bank is liquid, the lower the rates of return. The higher the liquidity the lower will be the profitability implying there is a negative relationship between profitability and liquidity.

Industry specific factors are those determinants of profitability attributable to the market in which banks operate. There are two competing hypothesis concerning concentration; the structure conduct performance (SCP) and the competing efficiency structure (ES). The SCP argument is that when a bank is operating in concentrated market, banks are able to collude and engage in other non-competitive behavior on bank charges and interest rates which will allow them to enjoy supernormal profits. The hypothesis assumes that in a concentrated market, there is no competition allowing the players to earn higher profits. According to ES hypothesis, market concentration is caused by bank-specific attributes such as higher cost efficiency. This then allows the banks to increase in size and market share which in turn leads to higher market concentration; (Athanasoglou et al., 2006).

GDP which measures the level of economic activity is a macroeconomic determinant of bank profitability. It is expected that the growth in economic activity should have a positive effect on bank profitability, (Athanasoglou et al., 2008). GDP growth takes cognizance of the ups and downs in economic activity (Flamini et al., 2009) which affects demand and supply of loans and deposits. For example, during a boom, the demand for lending increases and the positive impact on bank profitability is expected. On the other hand during a slump banks may suffer from increasing

share of nonperforming loans and consequently deterioration in profits (Athanasoglou et al., 2008).

Inflation (INF) which measures the general increase in the price level affects both bank costs and revenues. The effect of INF on the profitability of the bank is dependent on whether the INF is anticipated or not (Athanasoglou et al., 2008). If INF is fully anticipated banks are able to timely adjust interest rates in order to raise revenues and eventually bank profits (positive impact). If INF is unanticipated, banks may be slow to adjust their interest rates resulting in faster increase of bank costs as compared to revenues and resultantly lowering profitability (negative impact); Sayilgan and Yildirim (2009). Staikouras and Wood (2003) highlighted that INF may have direct effect on profitability through increases in wages and salaries and an indirect effect through changes in interest rates and asset prices of banks.

Interest rates are also a determinant of bank profitability. Ogunleye (2001) argues that a movement in the interest rate impacts banks' profitability through adjustment to revenues. He outlines two channels through which this happens. On one hand interest rate increase raises the amount of income a bank can earn on new assets. The other channel is determined by the banks decision on the amount it want to buy of loans and securities; and its cash holding outside the regulatory requirement. The bank lending rate is positively related to profitability (Obamuyi 2013).

Corporate tax policy reflects government's broad fiscal policy, i.e. the policy on its income and expenditure (Wälti, 2005). When the government wants to increase its revenues, corporates including banks are subjected to greater direct taxation through corporate income tax and other taxes. Demirgüç-Kunt and Huizinga (2001) found that corporate income tax impact positively on bank profitability in developing and developed countries.

A country's exchange rate regime has also been found to affect bank profitability. Ogunleye (1995) asserted that bank profitability is largely constrained by a fixed exchange rate regime. Ogunleye (1995) argued that liberalization of the foreign exchange market gives the banking industry enough latitude to trade in foreign currencies which help improve the overall profitability.

The term financial structure expresses the relative development of bank versus the stock market in an economy. The financial structure can be captured by the relative reliance on bank against stock market finance in the economy. A country can either have a bank-based or market-based financial structure. In the case of the former, there is greater reliance on bank finance; while, in the case of the later, there is greater reliance on stock market finance. Studies have empirically demonstrated that financial structure has important implications for bank profitability. Demirgüç-Kunt and Huizinga (2001) indicate that bank profits are lower in market-based financial systems than in bank-based systems.

4. METHODOLOGY

The study identifies the determinants of the bank profitability in Zimbabwe during the multi-currency era. Two measures of

profitability; ROA and the ROE to ascertain the determinants of profitability.

4.1. Model Specification

Empirically the following models will be tested:

$$ROA_{it} = \alpha_1 + \beta_1 ROA_{it-1} + \beta_2 LNSIZE_{it} + \beta_3 LIRISK_{it} + \beta_4 CADEQ_{it} + \beta_5 NPL_{it} + \beta_6 OEM_{it} + \beta_7 VMI_{it} + \beta_8 INF_{it} + \beta_9 HHI_{it} + \varepsilon_{it} \quad (1)$$

$$ROE_{it} = \alpha_1 + \beta_1 ROE_{it-1} + \beta_2 LNSIZE_{it} + \beta_3 LIRISK_{it} + \beta_4 CADEQ_{it} + \beta_5 NPL_{it} + \beta_6 OEM_{it} + \beta_7 VMI_{it} + \beta_8 INF_{it} + \beta_9 HHI_{it} + \varepsilon_{it} \quad (2)$$

4.2. Definition of Variables and Justification

The profitability of the banking institutions is measured by ROE or ROA following Ganesan, 2001; Rice, 2004; Fries and Taci, 2004). ROA shows how a bank is able to utilize its assets to generate profits, hence reflecting management's efficiency. ROA also excludes off balance sheet activities which may be misleading. ROE shows the return on shareholders' equity reflecting the approximate benefit shareholders will receive from their investments in a bank. The ROE is a good approximation of profitability as it takes into account off balance sheet activities which contributes to the overall profitability of the bank.

4.2.1. Independent variables

The profitability determinants are divided into three main categories, namely the internal determinants (liquidity, CADEQ, expenses management, bank size and credit risk); financial structure indicator (concentration index) and external economic indicators (Economic Growth and INF). These are defined below.

Bank size (LNSIZE): Size shows the natural logarithm of total assets and has been used in many studies as an independent variable. Size of the bank shows the economies and diseconomies of scale. It would be beneficiary to take the natural logarithm of total assets before including in the mode.

LIRISK: Liquidity is the amount of short term responsibilities that could be met with the amount of liquid assets. Liquidity is measured by the ratio of total loans to total assets.

CADEQ: According to the conventional economics argument the higher the capital asset ratio, the lower the profitability since higher capital ratio lowers expected ROE. Other scholars believe that higher capital boost the confidence of the bank clients on the financial institution which might lead to a positive relationship.

Credit risk (NPL): Credit risk is defined as the risk of financial loss from the banks clients who fail to repay their loans and advances. This means that these borrowers reduce the quality of assets for the bank which directly impacts on the profitability of the bank. It is perceived that there is a negative relationship between credit risk and bank profitability.

Operating expense management (OEM): The ratio of total expenses to total assets is used to provide information on variation

in bank costs over the banking system. It is expected that reduction of operational expenses is supposed to lead to higher profitability hence expense reduction have a negative effect on banking sector profitability.

GDP growth rate (VMI): GDP approximates the business cycle and is expected to have a positive impact on bank's performance. It is therefore a barometer to gauge whether environment is favorable or not. GDP growth is anticipated to influence positively both the demand and supply of loanable funds in an economy. In this study GDP is proxied by the volume of manufacturing index.

INF: The effect of INF on bank profitability is felt through the effect on both the revenue and cost condition of the bank. The direction of the effect of INF on profitability depends on whether INF is anticipated or not.

Concentration index (HHI): The degree of concentration in a market exerts a direct influence on the degree of competition among its firms. Depending on the assumed hypothesis (SCH or ES) the relationship between profitability can be negative or positive respectively.

4.3. Estimation Method

The study used a panel data approach since this method is better able to identify and measure effects that are simply not detectable in pure cross-section or pure time series. Panel data allow the construction of and test more complicated behavioral models than purely cross-sectional or time series data (Wooldridge, 2002; Hsiao, 2003; Brooks, 2008; Baltagi, 2008). A number of approaches are used in panel data analysis. These include the pooled ordinary least squares (POLS), fixed effects (FE) and random effects (RE) techniques. The POLS approach is simply an ordinary least squares approach. This approach does not consider the differences among individuals across time periods and thus it does not consider the panel nature of the dataset. In addition the estimates obtained by adopting this measure are heavily biased because of the heterogeneity between the error term and the independent variables. It is because of the inadequacy of the POLS to capture the panel nature of the dataset that the FE and the RE models become useful. To decide between fixed or random effects you can run a Hausman test where the null hypothesis is that the preferred model is RE versus the alternative the FE. It basically tests whether the unique errors U_i are correlated with the regressors, the null hypothesis is they are not.

4.4. Descriptive Statistics

Before undertaking any manipulations of the data, the study computes the descriptive statistics and correlation matrices for all banks in the sample. It is important that the econometrics results adhere to certain apriori expectations to avoid the problem of spuriousness in regression analysis. In order to avoid the production of the spurious regression associated with cross-sectional time series data a number of diagnostic tests were carried out.

4.5. Data

The empirical research employs quarterly data over the multicurrency period of 2009 Q1-2014 Q2. A total of 18 banks constituted the sample with equal number of observations across the banks reflecting a balanced panel. The study relied on published financial statements (balance sheet and income statement); quarterly bank returns to the Central Bank as the main sources of data on banks. The data on macroeconomic variables were sourced from Government Budget Statements and Zimbabwe Statistic Agents (ZimStats) publications.

5. FINDINGS

The descriptive statistics of the independent and dependent variables are summarized in Table 1. The Table 1 shows the characteristics of the variables used by revealing the statistical mean, median, minimum, maximum values, standard deviation and number of observations.

Table 1 shows that there are 396 observations for each variable recorded over the period 2009 quarter 1 to 2014 quarter 2. ROA and ROE fluctuated between -3.38% and 0.27% ; -7.224% and 0.42% respectively. ROE fluctuated more than ROA as shown by the standard deviations of the two variables.

LNSIZE which is the log of assets reflects the size of the banks lies between 6.453 and 9.233 with a standard deviation of 0.4916. LIRISK measures as a total loans over total assets lies between 0 and 0.77. Other variable are CADEQ which is capital over total assets; NPL which is proportion of NPLs over total loans; OEM is the operating expenses over total assets; VMI is the value of manufacturing index which is a proxy for the GDP. INF is the INF rate and has been both positive and negative over the study period. CONC is the measure of concentration index and it varies between 0 and 0.28.

Table 1: Descriptive statistics

Variable	Mean	Median	Maximum	Minimum	SD	Observation
ROA	0.0013	0.0100	0.27000	-3.8600	0.19989	396
ROE	0.05233	0.0640	0.71800	-7.224	0.4208	396
LNSIZE	8.1048	8.1705	9.2330	6.4530	0.4916	396
LIRISK	0.4420	0.4760	0.7770	0.0000	0.1935	396
CADEQ	0.2298	0.1605	0.9110	0.0360	0.1702	396
NPL	0.0680	0.0400	0.6220	0.0000	0.0897	396
OEM	0.09595	0.0830	0.4350	-0.0290	0.0636	396
VMI	45.7668	47.1650	57.300	31.6600	5.9848	396
INF	0.00182	0.00000	0.0300	-0.0800	0.0197	396
CONC	0.0503	0.0300	0.2800	0.0000	0.0572	396

Source: Own calculation. ROA: Return on asset, ROE: Return on equity, LNSIZE: Bank size, LIRISK: Liquidity risk, CADEQ: Capital adequacy, NPL: Non-performing loans, OEM: Operating expense management, INF: Inflation

The correlation coefficient matrix (Table 2) shows that there is no strong correlation among the variables. Gujarati (2007) argue that the problem of multicollinearity exist if the correlation between independent variables is above 0.8. All the correlation coefficients between the independent variables were <0.8. The variables were all taken into consideration in the estimation of the regression model.

5.1. Findings and Analysis

The choice between the FE and panel effects model was done on the basis of the Hausman specification test. The Hausman test results indicate that the FE model is superior to the RE model for the ROA with a Chi-square of 24.92 (Table 3). The results shows that 43.7% of the variation in ROA is explained by the dependent variables of bank size, CADEQ, LIRISK, levels of NPLs, OEM and INF.

Size of the bank have a negative significant influence on the profitability of the Zimbabwean banking sector. This means that smaller banks enjoy higher profitability as compared to bigger banks. The results are in conformity with studies by Staikouras and Wood (2004); Javaid et al. (2011) who found a negative relationship between profitability and size of the bank. Staikouras and Wood (2004) argue that as the size of the bank increase, banks start encountering diminishing marginal returns leading to reduced profits.

CADEQ variable is negative and highly significant. This result means that the higher the capitalization of the bank, the lower the profitability. The negative sign is supported by Hoffman (2011). He argue that capital ratios that are excessive will lead banks to be overcautious in their trading ignoring potential revenues. The results is also supported by Dietrich and Wanzenried (2011) who found a negative relationship between capitalization and profitability.

The results depicts that there is a negative relationship between credit risk and profitability. This means poor credit quality has a negative effect on bank profitability in Zimbabwe. An increase in the amount of toxic assets has been decreasing the amount of profitability of the banking institutions. This is in line with the finding of Miller and Noulas, 1997; Vong and Chan (2006). These studies found that there was a negative relationship between loan loss provision and banking sector performance. De Young and Rice, 2004; Hernando and Nieto, 2007 and Alexiou and Sofoklis,

2009 also found a direct negative relationship between bank profitability and asset quality of the balance sheet.

The results suggest that there is a negative relationship between operational expense management and profitability. This implies that efficient cost management is a prerequisite for improving the profitability of the Zimbabwean banking system. The most profitable banking institutions have lower operational expenses meaning they maintained low expenses for a given level of output. This result is supported by a number of studies (Kosmidou et al., 2005; Alexiou and Sofoklis, 2009) who show that poor expense management reduces the levels of profitability and (Brock and Rojas-Suarez, 2000 and Al-Haschimi, 2007) efficient management of expenses leads to higher profits. This result is in support of the efficient structure hypothesis which argue that an efficiently managed bank will perform better.

LIRISK have a positive and significant relationship with profitability. The result implies that an increase in liquidity will cause an increase in profitability. This result augurs well for the banking sector in Zimbabwe which faced liquidity challenges. Bank institutions which were able to generate enough liquidity were able to generate more business. The result is supported by Dietrich and Wanzenried (2011). This contrast with situations where there is trade-off between liquidity and profitability. Ceteris paribus, the more resources that are tied up to meet future liquidity demands, the lower the bank's profitability (Alexiou and Sofoklis, 2009).

INF has negative significant impact on profitability. The negative relation arises since INF increase bank cost which erodes amounts of profits. Abreu and Mendes (2001) also found that there was an inverse relationship between INF and profitability of Europe banks.

Output growth, previous period's profits and concentration index are not significant. This implies that these variables do not influence banking sector profitability in Zimbabwe. Literature shows that the relationship between GDP and banking sector profitability is ambiguous. Bank concentration is relatively insignificant though it affects bank profitability negatively. This result dismisses the SCP hypothesis in line with the results of Berger (1995). The coefficient on the lagged ROA fails to confirm the dynamic nature of the model. The coefficient estimate of 0.01 suggests the non-existence of market power in the Zimbabwean banking sector implying does not adjust fairly fast to their average level.

Table 2: Correlations matrix

Variable	ROA	ROE	LNSIZE	LIRISK	CADEQ	NPL	OEM	VMI	INF	CONC
ROA	1									
ROE	0.9374	1								
LNSIZE	0.1766	0.3054	1							
LIRISK	0.1076	0.1627	0.4868	1						
CADEQ	-0.0717	-0.1450	-0.7509	-0.4809	1					
NPL	-0.0189	-0.0944	0.1234	0.3423	-0.2124	1				
OEM	-0.1105	-0.1822	-0.2829	0.1155	0.0640	0.1725	1			
VMI	0.0978	0.1383	0.4489	0.5897	-0.3584	0.1917	0.1093	1		
INF	0.1977	0.2101	0.2432	0.3286	-0.2301	0.0336	0.1165	0.3056	1	
CONC	0.0565	0.1846	0.6988	0.1049	-0.5100	-0.1265	-0.3039	-0.0057	-0.0088	1

Source: Own calculation. ROA: Return on asset, ROE: Return on equity, LNSIZE: Bank size, LIRISK: Liquidity risk, CADEQ: Capital adequacy, NPL: Non-performing loans, OEM: Operating expense management, INF: Inflation

The robustness of the results from the FE model are compared with the generalized method of moment (GMM) result. The results from GMM produced the coefficients with the same signs as FE though the only significant coefficients at 5% level were previous period profits, LIRISK and volume of manufacturing index. The overall results from the model are weak hence the results cannot be relied upon.

Table 4 also shows the regression results for the ROE an alternative profitability measure. The FE model was also preferred in favor of RE with a Chi-square of 33.93. The model shows that the significant variables in explaining profitability are previous period profits, LIRISK, NPLs and the operational expense management. The other variable of bank size, CADEQ, banking sector concentration ratio, volume of manufacturing index and INF were not significant at 5% level of significance. The signs

of the significant coefficient were the same as those obtained for the regression on ROA. This serves to confirm that the variables of LIRISK, NPLs and the operational expense management are the main determinants of profitability as there have proven to be significant in the two models. This implies that profitability in the banking sector is driven by internal determinants. In other words profitability is dependent on the quality of decisions made by management (Javaid et al., 2011; Athanasoglou et al., 2006).

6. CONCLUSION AND RECOMMENDATIONS

The study investigated the determinants of the banking sector profitability in Zimbabwe for the period 2009 Q1-2014 Q2. Overall the results from the study show that banking sector profitability in Zimbabwe is mostly driven by bank-specific factors. This implies that the profitability of the banking sector is dependent on bank-level management variables. This result is very important for suggesting optimal policies to bank management on how they can improve the profitability for the banking sector. Profitability is associated with banks that hold a relatively high amount liquid assets, high capital, and low levels of NPLs together with efficient expense management. The results implies that profitability of the Zimbabwean banking sector can be improved by increasing the quality of the assets, improving expense management and improving liquidity.

There is need for the banking sector to follow through the various initiatives that are being put in place by the government to resolve the NPL problem. Banks should take heed of the advice by the Central Bank outlawing the issuance, renewal, rollover of insider loans. Banks should also adequately provide for the loan loss so as to reflect their true positions in terms of credit risk in their portfolio and improve their risk management through stress testing. The legal framework for credit reference bureaus to strengthen the credit risk management in the banking system should be expedited. The credit reference system would assist to deal with errant clients. The operationalization of the SPV should be expedited as it will help clean bank balance sheets by buying secured NPLs from banks. This would increase the amount of liquidity in the banking system.

OEM should be enhanced by the banking sector. In an effort to resolve some of the huge costs challenges there is need for the banks to adhere to good corporate governance hence reducing the cases of malpractice and indiscipline in the banking sector. This should include falsification of records, deliberate mis-classification of loans, camouflaging the level of NPLs resulting in under provision and control overrides to imprudent lending practices. The malpractices cast doubt on the fitness and probity of the banking officials involved.

Banks should adhere to the new capital threshold as determined by the Central Bank. The Central bank needs to punish banks whose capitalisation plans are devoid of credibility and substance. Those banks which are unable to meet the new capital thresholds should consider consolidating and/or merging with other banks, diluting shareholding of current shareholder by potential investors, and

Table 3: Panel regression results for ROA

Variable	Dependent variable: ROA			
	Fixed effects		GMM	
	Coefficient	t-statistic	Coefficient	t-statistic
C	0.2752	2.6591*	0.3859	2.0306*
ROA(-1)	0.0142	1.5086	0.0250	2.0865*
LNSIZE	-0.0288	-2.0164*	-0.0539	-1.8514
LIRISK	0.0688	3.0963*	-0.1064	2.2753*
CADEQ	-0.0648	-2.2950*	-0.0511	-0.8216
NPL	-0.0949	-3.4794*	-0.0904	-1.8441
OEM	-0.2418	-6.8925*	0.1141	0.6980
CONC	-0.2414	-1.7359	0.0007	0.5403
VMI	-2.54e-05	-0.0530	-1.3101	-3.311*
INF	-0.5685	-2.7895*	-0.0814	-0.3115
	R ² : 0.4369		R ² : 0.172	
	Adjusted R ² : 0.3941		Adjusted R ² : 0.111	
	SIC: -3.5671			
	AIC: 2 to -3.8481			
	P>Chi-square>24.918			

Source: Own calculation, *Significant at 0.05, ROA: Return on asset, ROE: Return on equity, LNSIZE: Bank size, LIRISK: Liquidity risk, CADEQ: Capital adequacy, NPL: Non-performing loans, OEM: Operating expense management, INF: Inflation

Table 4: Panel regression results for ROE

Variable	Dependent variable: ROE			
	Fixed effects		GMM	
	Coefficient	t-statistic	Coefficient	t-statistic
C	0.4606	0.9733	1.1845	1.4558
ROE(-1)	0.0627	2.8906*	0.0458	1.7152
LNSIZE	-0.0577	-0.8857	-0.1983	-1.5953
LIRISK	0.4518	4.5035*	0.5884	2.9773*
CADEQ	0.0442	0.3441	0.0383	0.1441
NPL	-0.3931	-3.1590*	-0.2901	-1.3762
OEM	-0.6478	-4.066	0.5042	0.7205
CONC	0.0294	0.0465	0.0038	0.6334
VMI	-0.0008	-0.3750	-5.0430	-2.9820*
INF	-1.6925	-1.8174	0.8990	0.8081
	R ² : 0.4799		R ² : 0.3224	
	Adjusted R ² : 0.4414		Adjusted R ² : 0.2722	
	SIC: -0.8207			
	AIC: -0.5396			
	Prob>Chi-square>33.93			

Source: Own calculation. *Significant at 0.05, ROA: Return on asset, ROE: Return on equity, LNSIZE: Bank size, LIRISK: Liquidity risk, CADEQ: Capital adequacy, NPL: Non-performing loans, OEM: Operating expense management, INF: Inflation

converting their banking licenses to deposit taking micro-finance banks which require less capital.

The study shows that there is a positive significant relationship between profitability and LIRISK. This means that profitability can be increased by increasing the amount of liquidity. This is expected under a multicurrency system where the sources of liquidity are limited. The amount of liquidity in the economy is dependent on the development in the external sector. Besides domestic deposits, other sources of liquidity are export earnings, diaspora remittances, offshore credit lines, foreign direct investment inflows; and portfolio investment inflows. Banks are also supposed to improve their LIRISK management, credit risk management and improve CADEQ. These risk measures have the potential to improve liquidity in the economy. Addressing the problem of NPLs would lead to an improvement in liquidity as resources currently tied in these non-performing assets will be released. Shareholders injection of fresh capital also has the potential to increase the amount of banks. The capitalisation of the Central Bank will also help as the interbank market becomes active with the central bank playing its lender of last role.

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