An analysis of the determinants of bank performance in Malawi: A case of listed commercial banks

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Abstract

Using a sample of four listed Malawian banks, this paper assesses the determinants of bank performance in Malawi. We obtain evidence that asset quality, operating efficiency, quality of human capital as well as diversification of sources of income are key bank specific variables that affect performance. We also find that wide interest rate spreads and high depreciation of the local currency negatively affected bank profitability. However, banks seem to have thrived during periods of high inflationary pressures. We also note that Malawian banks have remained resilient against business cycles as measured by the growth rate of real per capita gross domestic product. We therefore conclude that banks need to pay particular attention to credit policy, human capital development as well as well as seeking out non-conventional sources of income to remain competitive. Ability to forecast and anticipate macroeconomic conditions and proper reaction to these changes will also help banks to avoid losses emanating from adverse macroeconomic conditions including foreign exchange movements and inflation.

Key words: Performance; Banks; Malawi

1.   Introduction

The banking sector in Malawi remains relatively shallow and generally stable. The country's banking sector, which includes 10 banks with over 100 branches across the country, remains generally profitable. The sector is highly concentrated with the largest 2 banks commanding over 50% of aggregate assets. Though prudential regulations by the central bank that limit foreign exchange exposure to 35% of total capital have tended to reduce foreign exposure, a rapidly depreciating local currency continues to pose significant risks to banks. Amidst serious macroeconomic challenges and unfavorable business environment such as foreign exchange shortages, fuel shortages, high cost of bowing and weather shocks, non-performing loans increased from about 3% of aggregate loans in 2007 to 10.7% at the end of 2015. Interest rate spreads remain high averaging 17.4% over the same period.

The profitability of a bank is essentially a function of internal bank specific determinants as well as external determinants. The internal determinants are a result of management strategy and other financial conditions that arguably reflect or are as a result of management decisions and financial capacity of the shareholders of the bank. The external variables reflect the legal and economic environment which can influence the process and performance of a business unit but over which management has no control.

Bank specific variables that affect the performance of banks have been explored at length in existing literature and include bank size, capital adequacy, asset quality, ownership, (government or private), liquidity, and risk (total loans over total assets)-see for example

Lipunga (2014), Abata, (2014), Shah & Jan (2014), Chirwa (2001), Berger (1995), and Athanasoglou et al (2006). On the other hand, macroeconomic determinants include economic growth, exchange rate movements, inflation, market concentration and other legal and regulatory factors-see Shuremo (2016), and Anbar & Alper (2011).

There are various studies relating to the performance of banks in Malawi. Lipunga (2014) attempts to evaluate the determinants of profitability of listed commercial banks in Malawi during the period 2009-2012. Using return on assets and earnings yield as proxies of internal and external profitability respectively, his analysis suggests that bank size, liquidity and management efficiency have a statistically significant impact while capital adequacy has insignificant effect. Chirwa (2001) finds a significant relationship between monopoly power and commercial bank profitability in Malawi.

Using a sample of eight Ethiopian commercial banks, Shuremo (2016) find that bank specific determinants such as liquidity risk, efficiency and productivity, loans to advances ratio and capital adequacy have significant and positive relationship with banks' profitability. On the other hand, variables like credit risk, expense management and regulation have a negative and statistically significant relationship with banks' profitability. They also find that macroeconomic determinants such as economic growth, interest rate spread and exchange rate have a positive and significant influence on banks' profitability.

At the regional level, Flamini et al (2009) used a sample of 389 banks in 41 Sub-Sahara African countries to study the determinants of bank profitability. They find that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification, and private ownership. Their study also finds evidence that bank returns are affected by macroeconomic variables. Using IMF monthly data from different emerging countries for the period 2005-2013 and a panel data approach, Albulescu (2015) discover that non-performing loans have a negative impact on banks' profitability while the level of liquidity has a mixed influence. Capitalization and interest rate margins are found to positively affect banks' profitability while non-interest expenses negatively impact the profitability. Their results prove robust both when they use return on assets or the return on equity indicator to measure the level of profitability.

The importance for banks to remain profitable cannot be overemphasized. While vast literature exists on the determinants of bank profitability, there are very few studies that have explored this topic in Malawi. While the banking sector has experienced many changes over the past two decades, existing literature is either old (e.g. Chirwa, 2001) or has a limited scope of the possible determinants as well as time period covered (e.g. Lipunga, 2014). This study, therefore, adds value to existing literature on the performance of Malawian banks by using more recent data covering a longer period of time and exploring a wider scope of variables to include quality of human capital and diversification of operations, as well as macroeconomic variables.

2.   **Data and estimation methods**
Our study is based on a sample of four Malawian banks that are listed on the Malawi Stock Exchange (MSE), namely National Bank of Malawi, Standard Bank, First Merchant Bank

and NBS Bank. The study used a balanced panel of annual bank and macroeconomic data covering the period 2007-2015. We have been confined to this period as the latest bank listing was done in 2007. Balance sheet and income statement information were obtained from the respective banks' annual reports and the Financial Sector Supervision annual reports produced by the Reserve Bank of Malawi (RBM). Additional data were collected from the MSE, RBM, World Bank and the National Statistics Office (NSO). Table 1 below gives a description of the variables used in this study.

Table 1: Description of variables

Dependent variables	Computation/proxy	Designation
Return on assets	Profit before tax/total assets	roa
Return on equity	Profit before tax/shareholder equity	roe
Bank specific independent variables		
Asset quality	Net impairment charge/total loans	impair
Operating efficiency	Operating costs/operating income	effic
Human capital	Staff costs/total assets	staff
Capital	Equity/total assets	capital
Diversification	Non-interest income/operating income	diversf
Risk	Loans/total assets	risk
Size	Bank assets/industry assets	size
Macro-economic variables		
Inflation	% change of Consumer Price Index	infl
Interest rate spread	Lending rate -3 months deposit rate	spread
Real GDP growth rate	% growth of real per-capita GDP	gdp
Exchange rate depreciation	% change of USD exchange rate	deprec

Model specification and the dependent variable
As a measure of bank profitability, we use the return on assets (ROA) and use the return on equity (ROE) as defined in table 1 above for comparison purposes. According to Flamini *et al.* (2009), ROA is a preferred proxy of bank profitability instead of the alternative ROE because an analysis of ROE disregards financial leverage and the risks associated with it. ROA, on the other hand, may be biased due to off-balance-sheet activities, but such activities are negligible in Malawian commercial banks, while the risk associated with leverage is likely to be substantial. We, therefore, use ROA as the primary profitability measure and use ROE for comparison purposes. We will, however, omit capital adequacy from the ROE model since the dependent variable and capital adequacy are derived using the same denominator.

For estimation purposes, we propose the following linear model;

$$Y_{it} = \alpha + \sum_j \beta_j X_{it}^j + \sum_k \beta_k X_t^k + v_{it} \tag{1}$$

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where: Y_{it} is the measure of the performance of bank i in period t; α is the regression constant; X_{it}^{j} denotes a vector of bank specific determinants; X_{t}^{k} refers to a vector of common macroeconomic factors and $v_{it} = \mu_i + \varepsilon_{it}$ is the disturbance, with μ_i the unobserved bank specific effect , and ε_{it} the idiosyncratic error.

Bank specific determinants
It is expected that asset quality and performance are positively related because if a bank's balance sheet contains a high percentage of problem loans, the bank will incur loses through bad debt provisioning as well as expend more resources on the collection of non-performing loans (Abata, 2014). We also expect operational efficiency to be an important determinant of profitability and expect a negative association between inefficiency and profitability (Lipunga, 2014).

The quality of human capital is another important determinant of performance in any business. However, this aspect appears to be neglected in existing literature. This may be as a result of lack of suitable measures for the variable. We proxy quality of human capital by a ratio of staff expenses to total assets and expect a positive association between quality of human capital and bank performance. We also use the loans to total assets ratio as a measure of risk since loans are generally riskier assets on the bank's balance sheet (Chirwa, 2001). Based on standard asset pricing arguments, we expect the level of risk to be positively associated with performance.

We proxy for capital adequacy with the ratio of equity to total assets and expect a positive association between capital and bank performance. Athanasoglou, *et al.* (2005) and Berger (1995) find a positive and significant effect of capital on bank profitability. We proxy for diversification of sources of income using the ratio of non-interest income to total operating income. We argue that banks that are capable of covering operating expenses using non-interest income are likely to be more profitable than banks whose net interest revenues are used up in covering for operating expenses. We, therefore, expect a positive association between diversification and performance.

We have also controlled for banks size. However, the effect of bank size on performance has been found to be insignificant in Malawi (Chirwa, 2001) and its sign is considered ambiguous (Flanmini *et al.* 2009).
Macroeconomic determinants
Bank performance is also expected to be influenced by macroeconomic conditions in which the banks operate. The growth rate of real per-capita GDP is used to capture cyclical output effects, and we expect a pro-cyclical relationship between growth and bank performance. As GDP growth slows down, and, in particular, during recessions, credit quality deteriorates, and defaults increase, thus reducing bank returns (Flamini *et al.* 2009).

We also control for inflation, as measured by the current period CPI growth rate. While we expect a positive effect of the price level on bank profitability, the extent to which inflation affects bank profitability depends on whether future movements in inflation are fully anticipated, which, in turn, depend on the ability of firms to accurately forecast future

movements in the relevant control variables. An inflation rate that is fully anticipated raises profits as banks can appropriately adjust interest rates in order to increase revenues, while an unexpected change could raise costs due to imperfect interest rate adjustment (Flamini *et al.* 2009). This is relevant to the Malawian context as the RBM typically reacts to growing inflationary pressure by adjusting the policy rate, to which commercial banks react by raising their own lending rates by a margin higher than deposit rates.

We also consider the effects of exchange rate movements as unexpected depreciation can lead to heavy exchange rate losses for banks with significant foreign exchange risk exposure. We, therefore, expect a negative relationship between depreciation of the local currency and bank profitability. Interest rate spreads are also controlled for. We expect interest rate spreads to be positively correlated with performance as higher spreads imply higher net interest revenues.

3. Presentation of results and discussion

We present in table 2 below descriptive characteristics of the variables used in this study. Notably, the summary statistics indicate that Malawian banks are fairy profitable, with the four banks in this study registering an average return on assets of 6.8% over the nine years. We also note the high interest rate spreads averaging 17.4% over the period and high depreciation of the local currency, averaging 21.3% annually, and reaching as high as 101% in 2012 (this was when the local currency was devalued followed by the adoption of a freely floating exchange rate regime). Whereas some banks have managed to control operating costs to as low as 38% of operating income, others have not been as efficient, registering cost to income ratios as high as 79%.

Table 2: Descriptive statistics

	roa	roe	impair	effic	staff	capital	diversf	spread	deprec	infl	gdp
Mean	0.068	0.421	0.023	0.546	0.041	0.162	0.449	0.174	0.213	0.149	0.059
Median	0.070	0.430	0.010	0.535	0.040	0.160	0.446	0.149	0.090	0.087	0.057
Minimum	-0.003	-0.020	-0.010	0.380	0.020	0.090	0.314	0.130	0.003	0.074	0.019
Maximum	0.120	0.780	0.210	0.790	0.070	0.240	0.610	0.255	1.010	0.273	0.095
Std.dev	0.026	0.430	0.043	0.091	0.010	0.040	0.078	0.046	0.306	0.080	0.025
Observations	36	36	36	36	36	36	36	36	36	36	36

Table 3 below displays a correlation matrix for the variables. We note from the correlation statistics that there exists strong linear association between the dependent variable and cost to income ratio (our proxy for operating efficiency), the ratio of non-interest income to total operating income (proxy for diversification), the capital to assets ratio, the ratio of impairment charges to total assets, ratio of staff cost to assets (proxy for quality of human resources, the loan to assets ratio (proxy for risk) as well as inflation.

Table 3: Correlation matrix of variables

	roa	roe	impair	effic	staff	capital	diversf	risk	size	spread	deprec	infl	gdp
roa	1.000												
roe	0.700	1.000											
impair	-0.364	-0.433	1.000										
effic	-0.813	-0.504	0.044	1.000									
staff	-0.229	-0.067	0.395	0.406	1.000								
capital	0.599	-0.116	-0.107	-0.588	-0.326	1.000							
diversf	0.615	0.534	-0.154	-0.490	0.023	0.269	1.000						
risk	-0.526	-0.440	0.837	0.268	0.347	-0.288	-0.303	1.000					
size	0.448	0.446	-0.482	-0.389	-0.267	0.122	0.119	-0.434	1.000				
spread	0.052	-0.228	0.435	-0.089	0.285	0.314	-0.215	0.260	-0.101	1.000			
deprec	0.092	0.025	0.173	-0.187	-0.033	0.106	0.186	0.054	-0.089	0.054	1.000		
infl	0.265	0.016	0.428	-0.312	0.174	0.310	-0.004	0.145	-0.126	0.739	0.569	1.000	
gdp	0.154	-0.080	0.419	-0.246	0.115	0.303	-0.129	0.162	-0.118	0.806	0.376	0.882	1.000

The Hausman test for the suitability of the random effects model over the fixed effect model was used to choose the reported models. For both dependent variables, the test was in favor of the random effects model. We present estimation results in table 4 below.

Table 4: Econometric results - Random effects regression model

	Return on assets			Return on equity		
	Coef.	Std. Err.	P>|z|	Coef.	Std. Err.	P>|z|
impair	-0.3505	0.0831	0.0000	-2.9175	0.9369	0.0020
effic	-0.1550	0.0314	0.0000	-0.6372	0.3239	0.0490
staff	0.5023	0.2181	0.0210	5.1528	2.4184	0.0330
capital	0.1231	0.0523	0.0190			
diversf	0.0819	0.0261	0.0020	0.5141	0.2945	0.0810
risk	0.0130	0.0079	0.1010	0.1772	0.0887	0.0460
size	0.0202	0.0255	0.4300	0.2942	0.2768	0.2880
spread	-0.1677	0.0796	0.0350	-2.3582	0.8082	0.0040
deprec	-0.0274	0.0081	0.0010	-0.1987	0.0903	0.0280
infl	0.2143	0.0569	0.0000	1.3476	0.6363	0.0340
gdp	-0.0364	0.1398	0.7950	1.2354	1.5714	0.4320
_cons	0.0746	0.0291	0.0100	0.3859	0.2851	0.1760
R-sq within	=	0.8845		0.7061		
between	=	0.9972		0.7272		
overall	=	0.9295		0.7052		
Wald chi2(9)	=	316.48		59.8200		
Prob>chi2	=	0.0000		0.0000		

The two equations largely give similar information. We note that the model appears to fit the data well with an overall R-squared statistic of 93%. Consistent with our a-priori expectations, we find that bank specific variables of asset quality, operation efficiency and capital adequacy positively affect the profitability of Malawian banks. Of significance to this study is the finding that quality of staff which we proxy by staff costs as a percentage of total assets, as well as diversification of operations, which we proxy by the share of non-interest income in total operating income, have a positive and statistically significant influence on bank profitability. Bank size does not appear to be a significant factor of

profitability in Malawi, a result which is consistent with Chirwa (2001). Similarly, risk appetite, which we proxy by the loans to total assets level, does not seem to influence performance.

We also note that that high depreciation of the local currency has exerted negative and statistically significant influence on bank performance. On the other hand, consistent with our expectations, we note that commercial banks have thrived during periods of high inflationary pressures. This can be explained by the persistently high interest rates prevailing during periods of high inflationary pressures as the central bank tighten monetary policy in an effort to combat inflation. Other studies, for example, Bourke (1989), Molyneux and Thornton (1992), Demirgüç-Kunt and Huizinga (1998), have also found a positive relation between inflation, long term interest rates and bank performance.

Surprisingly though, we note that Malawian banks have been resilient to business cycles, weathering periods of very low output growth as the county struggled against various shocks including the freezing of donor aid that constituted about 40% of the national budget, fuel and foreign exchange shortages, insufficient power supply, as well as weather shocks that heavily affected the agriculture sector. The agriculture sector accounts for about 30% of GDP, employs about 80% of the population and produces about 80% of the county's exports. The results also indicate that high interest rate spreads actually have a negative effect on profitability, a finding that is inconsistent with a-priori expectations.

4. Conclusions

The objective of this study was to analyze bank specific as well as macroeconomic determinants of bank performance in Malawi using data from four listed banks. We conclude that asset quality, operation efficiency, quality of human capital as well as diversification of operations significantly determine bank performance. Further, we also note that while rapid depreciation of the local currency poses challenges to profitability, banks have tended to thrive in periods of high inflation. On the other hand, banks have shown resilience to business cycles.

We conclude that management should pay particular attention to credit policy, endeavoring to minimize problem loans thorough sound lending practices, proper due diligence, credit monitoring as well as preemptive rehabilitation of doubtful assets. Management need also to regard human capital as an important determinant of performance, seeking to improve the quality of human capital through careful recruitment, coaching and training, and proper incentive structures. Banks should also foster innovation and diversification, seeking out non-conventional sources of income and exploiting opportunities made available by technology. We also note the importance for banks to put in place proper risk management structures to safeguard against losses emanating from foreign exchange exposures. Finally, banks should enhance their ability to forecast macroeconomic conditions such as exchange rate movements and inflation to be able to properly anticipate changes and appropriately adjust pricing to avoid loses emanating from adverse movements in macro-economic conditions.

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