THE IMPACT OF CAPITAL STRUCTURE ON PROFITABILITY OF BANKS IN MALAWI

MASTER OF ARTS (ECONOMICS) THESIS

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UNIVERSITY OF MALAWI
CHANCELLOR COLLEGE

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By

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University of Malawi
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September, 2018

DECLARATION

I the undersigned hereby declare that this thesis is my own work and has not been submitted to any other institution for similar purposes. Where other people's work has been used, acknowledgements have been made.

LOUISS MCMILLAN CHIDA SADDICK

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Full Legal Name

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Signature

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Date

CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

Signature: _____ Date: _____

Ben Kaluwa, PhD (Professor in Economics)

First Supervisor

Signature: _____ Date: _____

Regson Chaweza, PhD (Lecturer in Economics)

Second Supervisor

DEDICATION

To my family

Dad, Mom, Kondwani, Everson and Fazilla

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Firstly, I would like to thank Allah for making everything possible. He is the reason for all my success.

I am deeply indebted to my supervisors Professor Ben Kaluwa and Dr. Regson Chaweza for their time, dedicated insights and direction throughout the whole study. Special thanks to the Department of Economics for the financial support that made it possible for me to attain this degree. I would also like to thank all the lecturers in the Department of Economics for knowledge and skills I have used in this study.

I extend my sincere gratitude to my parents, my sister Fazilla, my brothers Kondwani and Everson and my best friend Lukia for their prayers, support and encouragements. I thank my friends Tony Kamninga, Lucius Cassim, Leaticia Pemba, Steven Kuchande, the whole Macleod family and the entire Masters class of 2016 for their support.

ABSTRACT

The relationship between capital structure and firm profitability is under researched in Malawi and most African countries. The theoretical explanation of the subject dates back to the Modigliani and Miller capital structure irrelevance theory of 1958 which states that the capital structure decision of a firm has no impact on profitability and firm value. Most recent theories suggest an existence of an optimal combination of debt and equity that maximises profits. Literature from different countries has produced mixed results on the subject. Using data of six banks from 2005 to 2016, this study examines the impact of capital structure on bank profitability in Malawi. Specifically, it examines the impact of debt equity ratio on profitability of banks in Malawi. We use the Arellano and Bover General Method of Moments estimator to estimate a dynamic panel model of the relationship between capital structure and bank profitability. Evidence shows that debt equity ratio has no impact on profitability measured by return on assets but has positive impacts on return on equity. The square of debt equity ratio is positive and significant on return on assets but insignificant on return on equity. The findings reject the existence of an optimal debt equity ratio in the Malawi banking sector. This study concludes that debt in Malawi has a positive impact on bank profitability. As debt increases, bank profitability measured by return on equity also increases. Banks should therefore focus on financing assets through debt than equity as it positively affects return on equity.

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DER	Debt Equity Ratio
EPS	Earnings per Share
FMB	First Merchant Bank
GDP	Gross Domestic Product
GMM	General Method of Moments
GPM	Gross Profit Margin
HHI	Hirschman Herfindhal index
MLR	Maximum Lending Rate
MM	Modigliani and Miller
NBM	National Bank of Malawi
NBS	New Building Society
RBM	Reserve Bank of Malawi
ROA	Return on Assets
ROE	Return on Equity

CHAPTER ONE

INTRODUCTION

1.1 Background

Banks play a very important role in the financial sector and the economy at large. They channel funds from depositors to investors (Ongore & Kusa, 2013). This is why the performance of the banking sector is an issue of concern to the whole economy. Amongst the factors that affect bank profitability is capital structure (Anarfo & Appiahene , 2017). According to Anarfo & Appiahene, empirical studies over the years have failed to come up with a conclusion on the relationship between capital structure and firm profitability. In financial economics, capital structure is the way a firm finances its assets across a blend of debt, equity and hybrid securities (Saad, 2010). It is the mixture of debt and equity that make up the total capital of a firm. Equity is raised through common stock and preferred stock while debt is raised through bonds (Ross et al, 2013).

To finance assets, firms use different combinations of debt and equity. Some are all equity financed while others use a combination of both debt and equity. For instance, most high technology firms such as biotechnology and internet companies are almost entirely financed by equity (Coleman & Robb, 2012). The nature of debt in banks is however different from debt in non-banking firms. While most of the debt from non-banking firms is raised through bonds, debt from banks mostly comes from deposits (Diamond & Dybvig , 1986). This kind of debt is usually short term. Bank debt also includes funds raised through borrowing from other banks and the central bank.

The banking sector in Malawi, like in most countries, is one of the largest of the financial sector and forms an integral part of the economy. According to Kaluwa and Chirwa (2017), the Malawi banking sector's assets amounts to 37% of the country's Gross Domestic Product (GDP) as such its performance has serious implications on the financial sector and the economy at large. The industry is highly regulated by the Reserve Bank of Malawi (RBM). For instance, the RBM adopted the Basel II in 2012 and uses this to set minimum liquidity reserve ratio and the minimum capital ratio. By end 2015, there were 12 registered banks and one leasing finance company that operated in the banking market in Malawi (RBM, 2016). This number however dropped to 10 in 2016 following the acquisition of Malawi Savings Bank (MSB) by FDH bank and Inde bank by National Bank of Malawi. This was largely a result of failure by the two acquired banks to meet minimum capital regulatory requirements.

The adoption of Basel II in January 2012 has created more competition on deposits among banks in Malawi over the years and this is evidenced by the decline in the Hirschman Herfindhal index (HHI) of concentration from 0.301 to 0.222 for deposits between 2001 and 2013 (Kaluwa & Chirwa, 2017). Over the years, the two largest banks have commanded a large market share in terms of deposits and loans. But the introduction of the Basel II has seen this share decline over the years. By June 2016, the sector continued to be dominated by two banks whose total assets and deposits constituted 50.1 percent and 52.4 percent of the industry respectively (RBM, 2016). However, the position was slightly lower than the September 2015 position of 52.4 percent and 53.3 percent, respectively.

In addition, bank deposit rates have shifted to higher rates suggesting competitiveness on deposits by banks. Figure 1 shows trends of savings deposit rate of large, middle and small banks in Malawi.

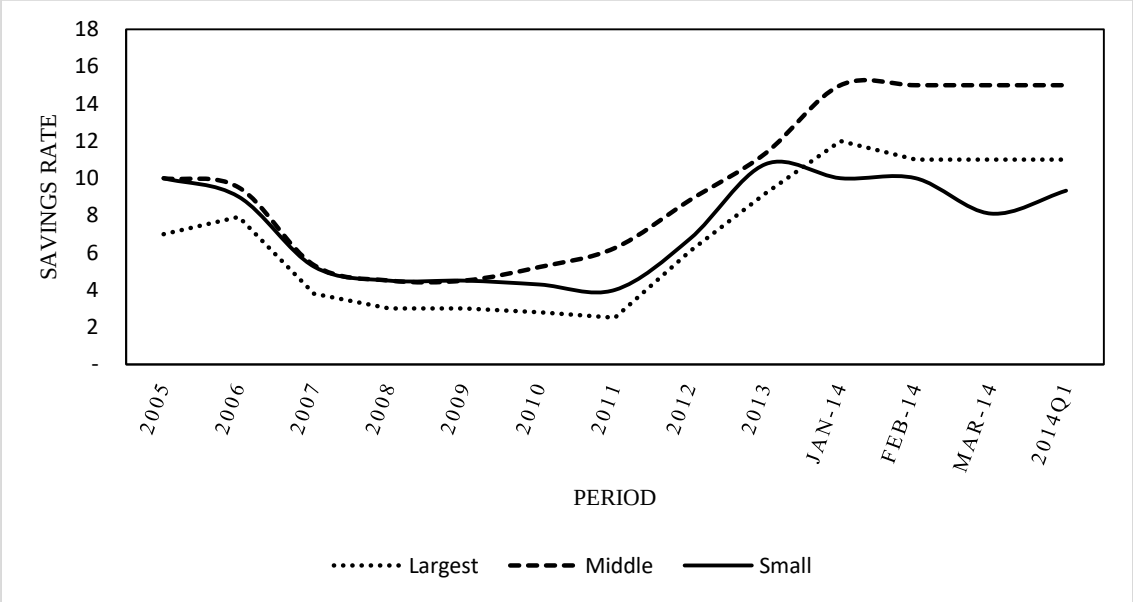

Figure 1: Savings rates: Competitive smaller but middle banks dominance

Largest dominated by National Bank of Malawi (2005-Jan2014), Middle by First Merchant Bank (throughout) and Small by Inde Bank (2008+). National Bank of Malawi and Standard Bank shares in deposit were 26% and 25% respectively in 2012.

Source**:** Reserve Bank of Malawi.

It is noted from Figure 1 that deposit rates are higher for middle and small banks on average as compared to large banks over the years 2005 to 2014. The figure also shows that the deposit rates increased rapidly between 2011 and 2014 despite the monetary policy instruments the bank rate increasing from 13% to 25% and the liquidity reserve ratio remaining fairly at 18.6% over the same period. This means that despite that the general movement in deposit rates is mainly due to monetary policy stance of the RBM, the conduct on deposits rates between 2011 and 2012 has been a

result of the intensifying competitive pressure from new entry and market share considerations (Kaluwa & Chirwa, 2017). All this suggests that banks in Malawi are competing for deposits as a source of funds. The result of this has been that the debt equity ratios for some banks have been increasing in recent years. Figure 2 presents trends of debt equity ratios (DER) for National Bank of Malawi, NBS bank and Ned bank from 2005 to 2016.

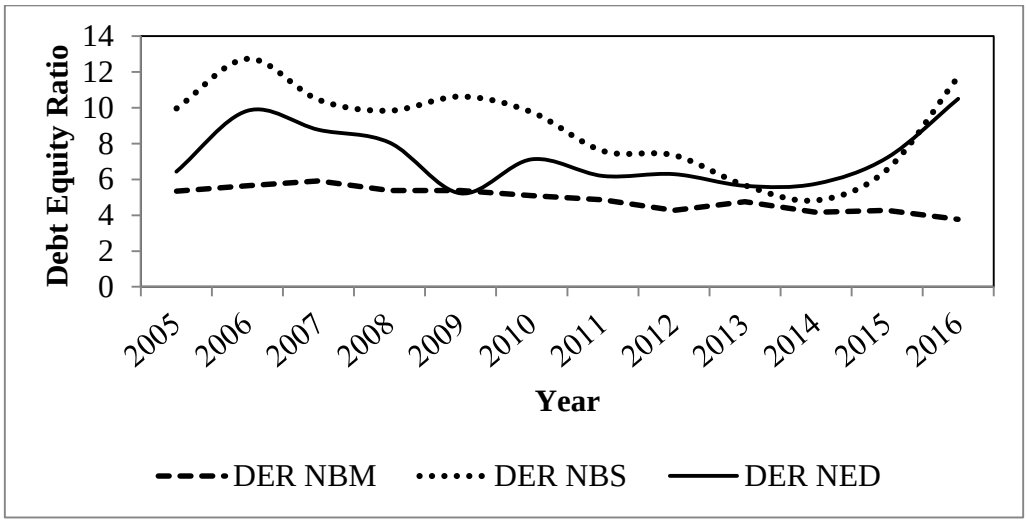

Figure 2: Trends of DER for NBM, NBS and Ned Bank 2005 to 2016

Source: Reserve Bank of Malawi.

From Figure 2, it is noted that the debt equity ratio for National Bank of Malawi has been fairly stable over the years. But for NBS and Ned bank, the ratio has on average been decreasing in the years 2006 to 2013. From 2014 to 2016, the debt equity ratio has been increasing. This implies that in recent years, these banks have been more into debt financing than equity financing. That is, Malawi banks are focusing on financing their assets through debt than equity leading to higher debt equity ratios.

Theories differ on how high debt equity ratios affect firm profitability. The theory of Modigliani and Miller (1958) suggests that when there are no taxes and no bankruptcy costs, capital structure decision of the firm is irrelevant (Myers, 1984). The consideration of a tax system and bankruptcy costs allowed the development of theories such as the static trade theory and the agency cost theory in an attempt to explain how capital structure affects firm profitability. These theories suggest that increasing debt equity ratio which is a measure of capital structure has a non-linear effect on firm value and profitability.

Debt financing increases profitability up to a certain level where further increase reduces the value of the firm (Myers, 1984). However, in Malawi, the increasing debt equity ratio have been accompanied by decreasing profitability measured by return on assets (ROA). Figure 3 shows the trends of ROA for National Bank of Malawi, NBS bank and Ned bank from 2005 to 2016.

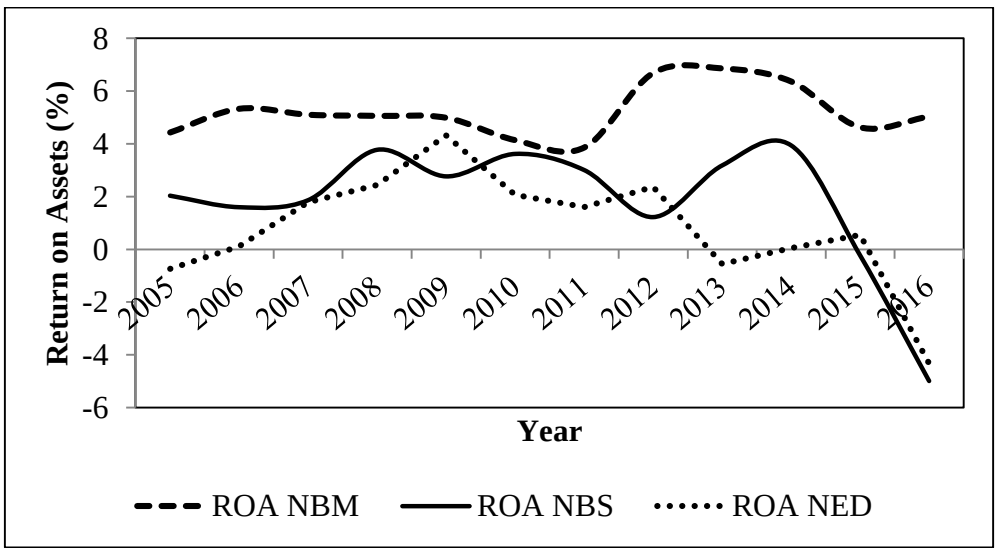

Figure 3: Trends of ROA for NBM, NBS and Ned Bank 2005 to 2016

Source: Reserve Bank of Malawi.

Figure 3 shows that return on assets for NBS bank and Ned bank has on average been decreasing since 2014. With reference to Figure 2, this is the same period characterized by increasing debt equity ratios. For the period 2005 to 2013, return on assets for these banks has been fluctuating.

1.2 Problem Statement

Worldwide, there are some notable empirical studies that have examined the impact of capital structure decisions on bank profitability. For instance, Siddik et al (2017), Birru (2016), Anafo et al (2015), Taani (2013), Sovbetov (2013) and Osborne et al (2011) in Bangladesh, Jordan, Ghana, Ethiopia United Kingdom and United states respectively. However, in Malawi, despite that increasing debt equity ratios have been accompanied by decreasing bank profitability in recent years, the relationship between capital structure and firm profitability has received limited research attention and more specifically in the banking industry. Most studies on bank profitability have focused on the impact of financial regulation and other determinants with limited or no particular interest on capital structure. Such studies include Kaluwa and Chirwa (2017), Chimkono (2015), Lipunga (2014), Mlachira and Chirwa (2004) and Chirwa (2003).

Literature on the impact of capital structure on bank profitability in other countries has produced mixed results. Some studies have noticed a positive impact, while others have noted either a negative effect or no effect. As such there is a strong need to do an examination of the same in Malawi to guide management on policy direction. This has motivated us to carry out an empirical analysis of the relationship between capital structure and bank profitability in Malawi.

1.3 Objectives of the Study

The main objective of this study is to examine the impact of capital structure on profitability of banks in Malawi. The study has the following specific objective:

(i) Examine the impact of Debt-Equity ratio on profitability of banks in Malawi.

1.4 Testable Hypotheses

In pursuit of the above objectives, the study tests the following null hypothesis:

(i) Debt-Equity ratio has no impact on profitability of banks in Malawi.

1.5 Significance of the Study

In the Malawi economy, commercial banks are extremely important because of their superior role in financial intermediation and the support which the sector provides to the overall financial stability of the economy. Therefore, the underperformance of the banking industry has negative consequences on the Malawi economy. This study theoretically adds to literature on whether capital structure is a determinant of firm profitability in the Malawi's financial sector. It essentially informs literature on whether banks should finance their operations through debt or equity or through an optimal combination of both. That is the study contributes to the pool of knowledge in literature by establishing whether an optimal debt equity ratio that maximises profits exists in the banking sector in Malawi.

1.6 Organisation of the Study

The paper is organized as follows: Chapter One gives the general introduction. That is the background of the study, the problem statement and objectives of the study, the hypotheses to be tested and significance of the study. Chapter Two gives an overview of the banking sector in Malawi. Chapter Three is about literature review and gives

both the theoretical and empirical review. Chapter Four presents the methodology in which an econometric model of the relationship between capital structure and bank profitability is discussed. Chapter Five discusses the empirical results; it interprets and discusses the results obtained from the econometric model and statistical tests. Finally, Chapter Six provides the summary of results, policy implications, recommendations, the limitations of the study and direction for further studies.

CHAPTER TWO

OVERVIEW OF THE BANKING SECTOR IN MALAWI

2.1 Introduction

This chapter presents an overview of the banking sector in Malawi. It presents the historical evolution that have taken place in the banking sector in terms of structure and market share. In addition, it discusses the regulatory framework that affect bank capital structure in Malawi and more importantly the chapter looks at the trends of profitability in relation to the trends of capital structure over the years. This is important as brings the Malawi situation into the context of this study.

2.2 Historical Background

Banking business is distinguished from financial institutions by the Banking Act of 1989 (Chirwa, 2001). On one hand, banking business involves using funds received from the public by either accepting demand, time and saving deposits or borrowing from the public and other banks for granting loans, advances and credit facilities. These funds can also be used for investing in other businesses. On the other hand, according to the Banking Act of 1989, financial institutions are institutions whose core businesses are granting loans, advances and credit facilities, and investing funds by other means (Chirwa, 2001). These instititutions are financed by own or borrowed funds. They do not mobilise funds by soliciting deposits from the public.

There has been a lot of evolution in the banking sector in Malawi especially in terms of the number of banks. In the early 1990's two commercial banks, two corporate banks, three leasing companies, one savings bank and one building society operated in Malawi (Chirwa, 2001). The number of banks has been incresing over the years. By 2015, there were 12 banks that operated in the country but this number dropped to ten in 2016 following the acquisition of Malawi Savings Bank by FDH Bank Limited and Inde Bank Limited by National Bank of Malawi Limited (RBM, 2017). The sector has also been growing in terms of the number of branches and agencies. RBM (2017) reports that the number of branches grew to 81 in 2016 from 70 in 2010 with agencies growing from 192 to 193 over the same period.

In terms of market share, the largest two banks National Bank of Malawi (NBM) and Standard Bank of Malawi (STD) have continued to dominated the banking industry in Malawi (RBM, 2017). These banks accounted for more than 50 percent of total assets, loans and deposits in 2016. Capitalization was at 51.5 percent for assets, 53.2 percent for loans and 52.7 percent for deposits. But since the adoption of the Basel II in 2012, the dominance by the two largest banks has been sightly declining. The 2016 position in terms of market share of deposits and loans was slightly lower than that of September 2015 of 52.4 percent and 53.3 percent respectively.

2.3 The Regulatory Framework

The banking industry in Malawi is highly regulated by the Reserve Bank of Malawi under the Reserve Bank and the Banking Acts of 1989. Among others regulatory tasks, the RBM sets the minimum reserve requirement ratio and the minimum capital ratio. The reserve requirement ratio is the ratio of deposits that must be kept as reserves while the capital ratio sets the proportion of assets that must be financed by shareholders equity. According to the Reserve Bank of Malawi (2017), the regulatory capital is analysed into two tiers. Core capital (Tier 1) represents permanent forms of capital such as share capital, share premium and retained earnings less investment in subsidiary and deferred tax asset. Total capital (Tier II), consists of revaluation reserves and general provisions, when such general provisions have received prior approval of the Reserve Bank of Malawi plus tier 1 capital (NBM, 2017). As of December 2016, the reserve requirement ratio was at 7.5 percent while the regulatory core and total capital ratios were 10 percent and 15 percent respectively (RBM, 2017). The average core and total capital ratios for the banking industry were 13.7 percent and 16.8 percent respectively.

2.4 Capital Structure in the Banking Sector in Malawi

The Reserve Bank of Malawi sets the minimum capital level for Malawi banks which means that bank capital structure is affected by the regulatory requirements. However, recent studies have shown that variables used to explain capital structure of non-financial firms, such as size, profit, leverage, liquidity and risk could also be helpful in understanding bank's capital structure (Aktas et al, 2015). In Malawi banking sector, banks finance their assets mostly through debt than equity.

Figure 4 shows the debt to asset ratios of the banking sector in Malawi in the years 2006 to 2016.

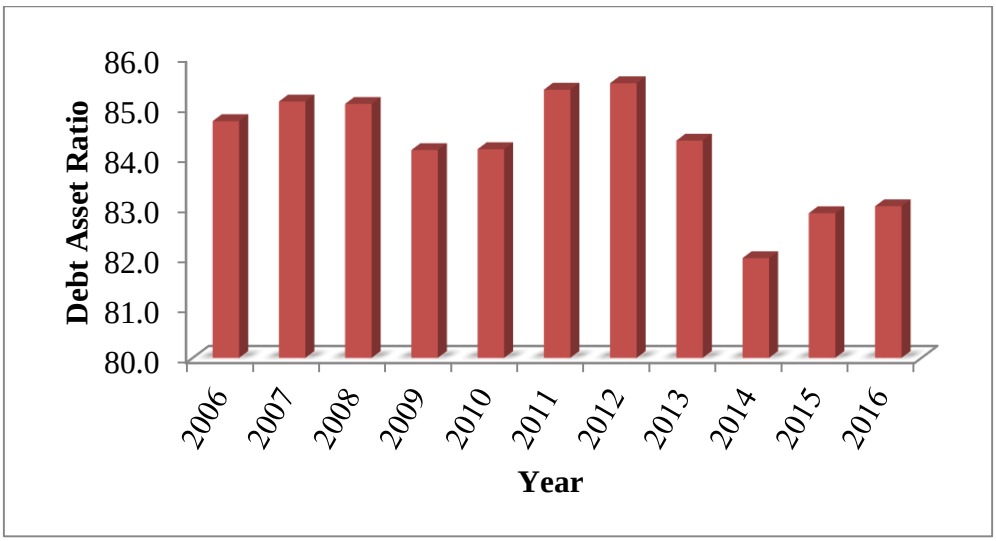

Figure 4: Debt Asset Ratio of the Banking Sector in Malawi

Source: Reserve Bank of Malawi.

Figure 4 provides evidence that Malawi's banking sector capital structure is dominated by debt. The debt asset ratio has always been above 80 percent implying that more than 80 percent of bank assets is financed by debt. In 2011 and 2012 the ratio was even above 85 percent. Of this debt a larger percentage comes from deposits. This is evidenced by Figure 5 which shows the deposit debt ratio of the banking sector from 2006 to 2016.

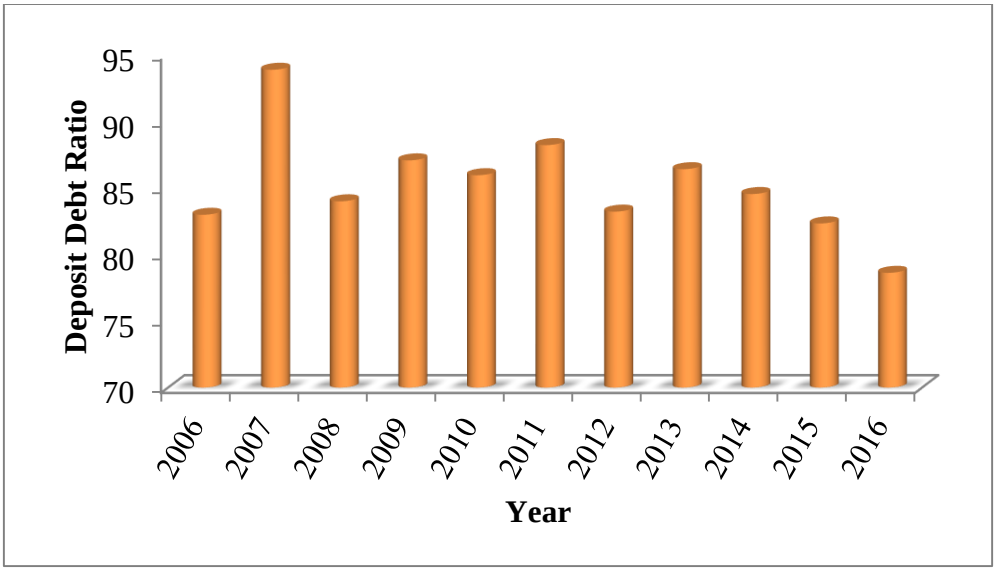

Figure 5: Deposit Debt Ratio of the Banking Sector in Malawi

Source: Reserve Bank of Malawi.

It is noted from Figure 5 that deposits on averege have contributed over 80 percent of bank debt over the years. In 2007 deposits were even above 90 percent of total debt. These statistics provide enough evidence that the capital structure of the banking sector in Malawi is leaned towards deposit financing. Reserve Bank of Malawi (RBM) annual reports have also been pointing to the same. In 2016, deposits constituted 65.3 percent of the total funding (RBM, 2017). RBM reported that in 2016, aggregate total assets for the banking sector grew by 20.4 percent from MK1, 047.5 billion in 2015 to MK1, 260.8 billion in 2016. This growth in total assets was mainly funded by a 14.8 percent growth in total deposits, from MK705.0 billion in 2015 to MK809.1 billion in 2016.

The overdependency on deposits to finance assets is explained by the lack of well developed capital markets. In 2016, the capital market was still characterised by few stock listings and low market activity (RBM, 2016). According to RBM,

despite having a well-functioning money market, the bond market consisted of only one listed treasury bond and no listed corporate bonds. This situation created a narrow financing base for enterprises and limited instruments for investors. The same issues were also pointed out in 2015. Capital markets in 2015 were characterised by a limited number of trading instruments, few listed counters, low participation by retail investors and low market liquidity (RBM, 2016). There was low performance in both the equities and debt markets with no new listings on both markets. In that year, one of the three listed government bonds matured on 30 December 2015 but no trades were registered on the secondary debt market. In agreement with this the Southen Africa Global Competitiveness Hub (2009) reported that in Malawi like in most African countries, bond markets are at the very early stages of development and remain undeveloped. Among the main challenges leading to this include a shallow financial market, with a limited range of financial instruments available in the market and a narrow investor base with a small pension fund sector and limited retail demand for bonds at this early stage of market development. These have also hindered the development of an effective yield curve.

2.5 Capital Structure and Bank Profitability in Malawi

To continue operating, banks have to be making profits and this is why the issue of profitability of banks has received a lot of research attention in recent years (Ayanda et al, 2013). Bank profitability in Malawi is among the highest in the world (Kaluwa & Chirwa, 2017). In 2006, the return on assets was 6.4% on average, 4.8% higher than the world average. Kaluwa and Chirwa (2017) attributed these high profits to high monopoly power and collusive pricing behaviour. Monopoly power and

collusive behaviour led to high lending rates and the rates were almost the same from 2005 to 2011 for the two largest banks National Bank of Malawi and Standard Bank. Figure 6 presents the trend of the lending rates of the largest two banks in Malawi for the period 2005 to 2013.

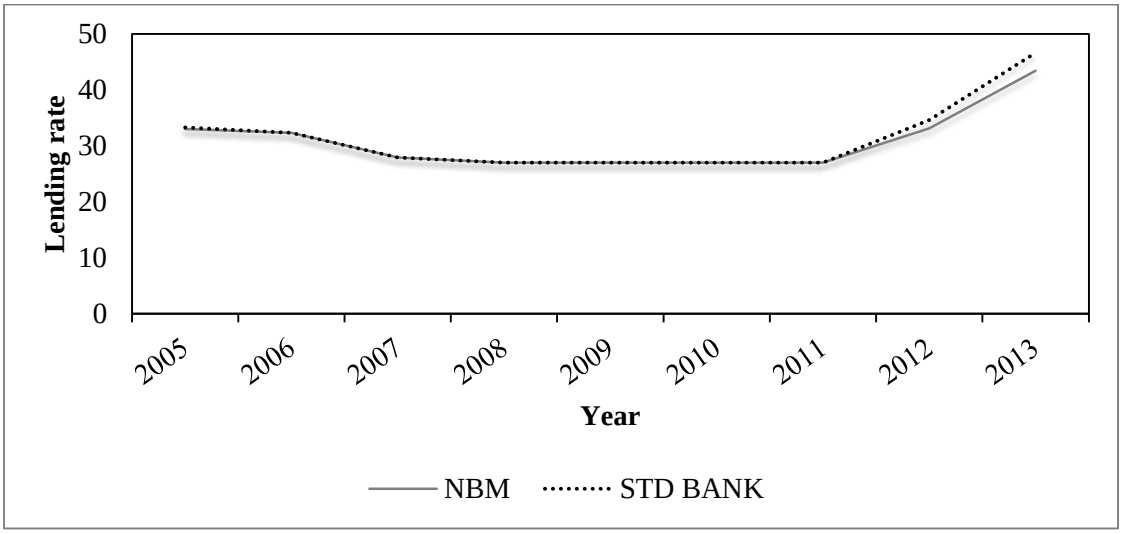

Figure 6: Maximum Lending rates for the two largest banks from 2005-2013

Source**:** Reserve Bank of Malawi

Figure 6 shows that there was collusive behaviour by the two largest banks in Malawi in the period 2005 to 2011. The lending rates were almost the same the years 2005 to 2011. There is evidence of no collusive behaviour from 2012 onwards. This is the period when the Basel II was adopted in Malawi. Before the adoption of the Basel II, only the two largest banks reported their maximum lending rates (Ngwira, 2014). Since 2012 all banks are required to report their maximum lending rates.

In 2016, the banking industry remained profitable with aggregate profit after tax growing from MK33.4 billion in 2015 to MK36.8 billion in 2016 (RBM, 2017). Despite this increase in profit after tax, return on assets and return on equity marginally declined from 3.2 percent and 20.1 percent in 2015 to 2.7 percent and 18.4

percent in 2016, respectively. The Researve Bank of Malawi attributed this decline to a lower growth in profit which grew by 10.2 percent relative to a higher growth in average total assets and average equity, which grew by 30.6 percent and 9.3 percent respectively. It has been noted that bank capital structure in Malawi is leaned towards debt. Figures 7 and 8 present the trends of return on assets and return on equity in relation to debt equity ratio over the period 2006 to 2016.

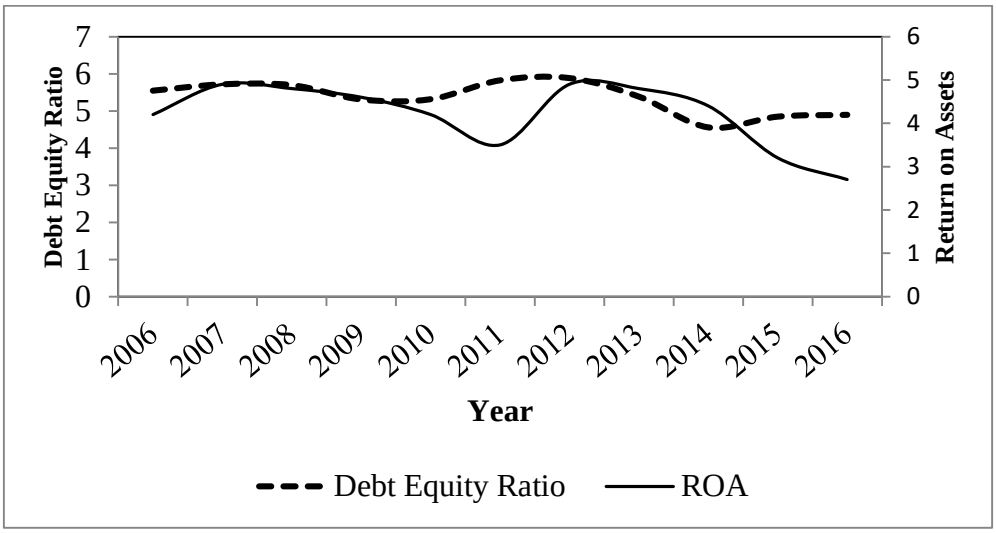

Figure 7: Trends of Debt Equity Ratio and Return on Assets

Source: Reserve Bank of Malawi.

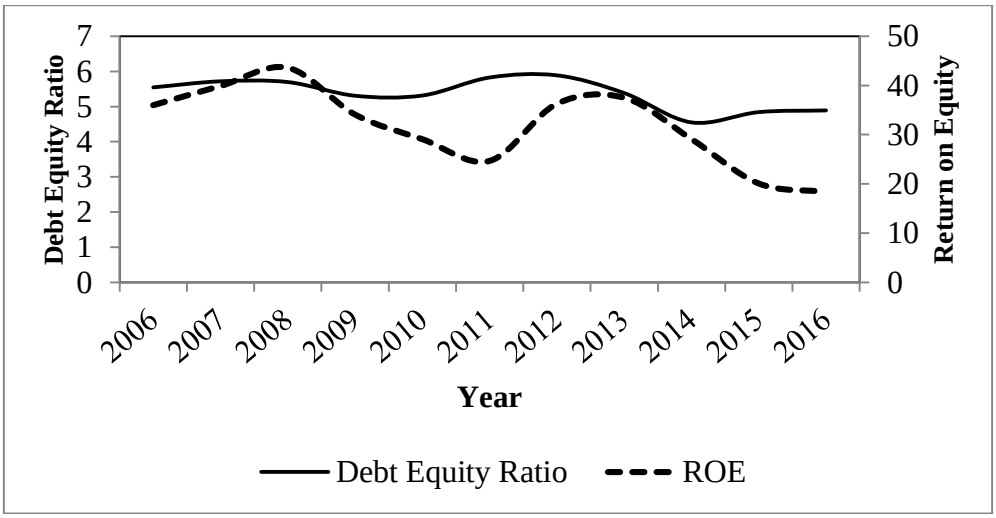

Figure 8: Trends of Debt Equity Ratio and Return on Assets

Source: Reserve Bank of Malawi

The trends from Figures 7 and 8 show that from 2006 to 2013 there has been a positive relationship between debt ratio and the two measures of profitability, return on assets and return on equity. From 2014 we note a negative relationship between debt equity ratio and profitability. Debt equity ratio has an upward trend while ROA and ROE has been decreasing. Further, we observe that profitability decline is more pronounced after the adoption of the Basel II accord in 2012. Perhaps this could be a result of competition on deposits which followed the adoption of the Basel II as suggested by (Kaluwa & Chirwa, 2017). This competition has contributed to the decline in the deposit debt ratio in recent years. Deposits are a cheaper source of funding as they are tax deductible and are paid low interest rate compared to other forms of debt.

2.6 Summary

This chapter has provided an overview of the banking sector in Malawi. It has provided the historical background, the regulatory framework and explored the capital structure of the banking sector in Malawi. Further, the chapter has explored the relationship between capital structure and bank profitability measured by return on assets and return on equity. The chapter has found that bank capital structure in Malawi is leaned towards debt financing and much of this debt comes from deposits. It has further been noted that despite the banking sector experiencing increase in profit after tax, return on assets and return on equity has been decreasing over the years.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter provides both the theoretical and empirical literature review. The first section of the chapter is the theoretical review, which is then followed by empirical review. On theoretical review, we provide some of the theories that attempt to explain the relationship between capital structure and firm profitability. The empirical review provides an overview of empirical studies on bank profitability and capital structure in both Malawi and other countries.

3.2 The theoretical review

In literature, there are a number of theories that attempt to explain firm profitability in relation to capital structure. The theoretical explanation of the link between the mixture of debt and equity and firm value dates back to 1958 following the work of Modigliani and Miller (Ebaid, 2009). They came up with the Modigliani and Miller (MM) proposition I, which led to the theory of capital structure irrelevance. Later in 1963, Modigliani and Miller modified proposition I, and came up with MM proposition II. Weaknesses of the theories of Modigliani and Miller led to the development of many theories in an attempt to explain the relationship between capital structure and firm value. Such theories include static trade theory; the pecking order theory and the agency cost theory.

3.2.1 Modigliani and Miller (MM) theorem

3.2.1.1 The Capital Structure Irrelevance Theory (MM proposition I)

The capital structure irrelevance theory of Modigliani and Miller (1958), forms the basis for the development of theoretical frameworks of captain structure and firm value (Lawal et al, 2014). This proposition states that under the assumptions of perfect and frictionless capital market, given no bankrupt cost and no taxes, capital decision of a firm is irrelevant. That is a firm with debt has the same value as the unlevered firm. When there are no taxes and capital markets function well, it makes no difference whether the firm borrows or individual shareholders borrow. Therefore, according to Lawal et al (2014), a firm's value does not depend on its capital structure. Myers (1984) adds that according to the capital structure irrelevance theory, financial leverage of a firm does not affect its value. The proposition also holds under the assumptions of no transaction costs and homogenous expectations.

3.2.1.2 MM proposition II

Modigliani and Miller in 1963 came up with MM proposition II by incorporating tax in their 1958 proposition. The modification recognizes the impact of tax shield on firm value. This is on the understanding that interest payment on debt is tax deductible (Myers, 1984). Thus, the best capital structure of a firm should be one with hundred percent of debt instruments (Lawal et al, 2014).

3.2.2 Static Trade Off-Theory

The simplifying assumptions of Modigliani and Miller led to the development of alternative theories of capital structure and firm value. Among these theories is the static trade-off theory. The theory starts by relaxing the assumption of no bankruptcy costs made by Modigliani and Miller (Myers, 1984). It makes the proposition that debt financing is accompanied with financial distress and the probability of financial distress increase rapidly with additional borrowing. The cost of financial distress little by little offsets the interest tax shied in MM proposition II. Therefore, a capital structure optimum is reached when the present value of costs of distress starts to offset the present value of tax savings due to additional debt. Managers will try to increase debt levels to the point where the value of additional interest tax shields is exactly offset by the additional costs of financial distress. The static trade theory suggests the existence of an optimal debt-equity ratio (Ghazouani, 2013). Figure 9 shows the static trade-off theory in a graphical representation. PV of bankruptcy cost is the present value of bankruptcy costs while PV of tax shield is the present value of the tax shield or saving. It shows that as debt increases, the value of the firm also increases up to a certain point where additional debt decreases firm value. This is optimal amount of debt that maximizes firm value.

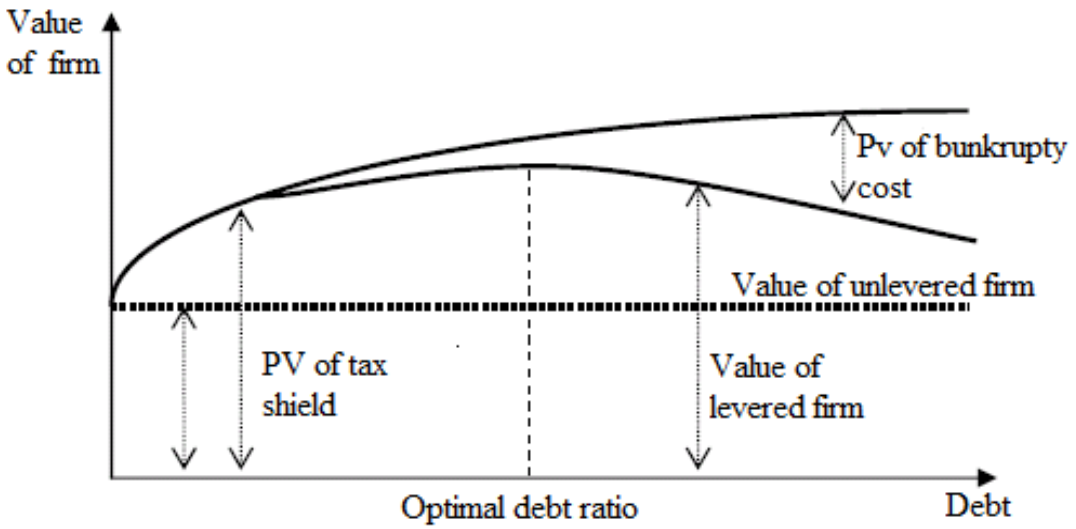

Figure 9: Graph of the Static Trade-Off Theory of Capital Structure

Source: Myers (1984).

3.2.3 The Pecking Order Theory

This theory is an alternative to the static trade off theory. It is based on asymmetric information and proposes that firms prefer internal finance to external finance (Myers, 1984). This is so because funds from internal sources such as returned earnings are raised without sending any adverse signals that may lower the share price. In addition, if external finance is required, firms issue debt first, then hybrid securities and issue equity only as a last resort. An issue of debt is less likely to be interpreted by investors as a bad omen than the issue of equity. Therefore, firms issue debt rather than equity if internal finance is insufficient. Unlike the static trade off theory, the pecking order theory proposes that there is no well-defined target debt-equity mix because of the existence of internal and external equity with internal financing a priority in the pecking order (Myers, 1984).

3.2.4 Agency Cost Theory

This theory states that an optimal capital structure will be determined by minimizing the costs arising from conflicts between managers, employees, creditors and shareholders (Iqbal, 2012). Developed by Jensen and Meckling (1976), the agency cost theory argues that agency costs results from the divergence of interest between shareholders and managers who do not have full ownership of the firm. Jensen and Meckling (1976) argue that the choice of capital structure may help mitigate agency costs. For instance, increase in debt reduces agency costs through the threat of liquidation (Grossman & Hart, 1986). Therefore, by reducing agency costs, debt increases firm performance. However, too much leverage generates significant agency costs such as financial distress, which has a negative impact on performance (Berger & Patti, 2006). The arguments set by this theory, suggests the existence of an optimal combination of debt and equity like the static trade off theory.

3.3 Empirical Literature

Several studies exploring the relationship between capital structure and firm profitability or performance have been carried worldwide. These studies have produced mixed results. Anarfo and Appiahene (2017) used a dynamic panel regression robust analysis and data from 37 countries in Sub-Sahara Africa and examined the impact of capital structure on the profitability of banks in Africa. This study used debt ratio to capture capital structure whereas bank profitability was measured by Risk Adjusted Return on Asset (RAROA), Risk Adjusted Return on Equity (RAROE) and Net Interest Margin (NIM). It finds that debt ratio is negatively related to RAROA, RAROE and NIM meaning that capital structure is an adverse driver of bank profitability in Sub-Sahara Africa. This study does well by using a

dynamic panel model which captures profit persistence but fails short on exploring the differences between short term and long term debt in affecting bank profitability.

Siddik et al (2017), empirically examined the impacts of capital structure on the performance of Bangladeshi banks using a pooled Ordinary Least Square (OLS) applied to panel data of 22 banks. They used return on equity (ROE), return on assets (ROA) and earnings per share (EPS) as measures of performance and showed that capital structure inversely affects bank performance. Capital structure was captured by total debt to total asset ratio (TDTAR), long-term debt to total asset ratio (LDTAR) and short-term debt to total asset ratio (SDTAR). Their results indicated that all the capital structure variables have significant negative impacts on Return on assets. Further, the study found out that TDTAR and SDTAR have significant negative impacts on ROE while LDTAR and SDTAR have significant negative impacts on EPS. This study does a commendable job on examining the separate effects of short term and long term debt. However, the use of a pooled OLS fails to capture the dynamic persistency of bank profits. A dynamic panel model would be more appropriate.

Using a fixed effects model, Birru (2016) studied the impact of capital structure on financial performance of selected commercial banks in Ethiopia. The study used two accounting-based measures of financial performance, return on equity (ROE) and return on assets (ROA). Debt ratio and debt to equity ratio were used as proxies for capital structure. The author found out that the debt ratio has a positive and significant impact on both ROA and ROE. This means that financial performance of banks will

increase as debt ratio increases, ceteris paribus. Debt Equity Ratio was found to be significant and negatively related to ROA but positively related to ROE.

Anafo et al (2015), investigated the relationship between Capital Structure and profitability of banks listed on the Ghana stock exchange. The study showed that financial leverage measured by short-term debt to total assets had significant positive relationship with profitability. Long term debt to total asset also had a significant positive relationship with return on assets and return on equity. These findings are in agreement with Birru (2016) who also found a positive relationship between debt and profitability. However, the authors found a negative relationship between long term debt to total asset ratio and earnings per share which concurs with the findings of Siddik et al (2017).

Taani (2013) examining the impact of capital structure on bank performance in Jordan using net profit, return on capital employed, return on equity (ROE) and net interest margin as performance indicators. The study used Total Debt to Total Funds and Total Debt to Total Equity as capital structure variables. The results of the study show that total debt has a positive impact on bank performance in Jordan. It has a significant and positive relationship with net profit, return on capital employed and net interest margin. However, it was found to be insignificant on ROE of banks.

Sovbetov (2013) used data from United Kingdom bank for the period 2007 to 2012 and found a negative relationship between debt equity ratio, total debt to total asset ratio and both return on assets and return on Equity in the United Kingdom banking system. Gropp & Heider (2009), Osborne et al (2011) and Dogan (2013) also found

that capital structure has a negative impact on bank profitability in United States and Europe, United States and Turkey respectively.

Using data from 1999 to 2005, Ebaid (2009) examined the impact of capital structure on performance of companies listed on Egyptian stock exchange. The study used short-term debt, long-term debt and total debt as capital structure variables while performance was measured by return on asset (ROA), return on equity (ROE) and gross profit margin (GPM). Ebaid found a negative significant relationship between short-term debt, total debt and ROA. Supporting the capital structure irrelevance theory of Modigliani and Miller, this study noted an insignificant relationship between short-term debt, long-term debt and total debt and gross profit margin and ROE. In this case capital structure decision is irrelevant. Long-term debt was also found to have no significant impact on ROA. The results found by Ebaid (2009) are in disagreement with the results of a study by Abor (2005). Abor studied the impact of capital structure on the performance of firms listed on the Ghana stock exchange. While Ebaid (2009) found capital structure irrelevant on return on equity (ROE), Abor found a significant positive impact of short-term debt and total debt on ROE.

In addition, the author also observed a negative association between long-term debt and ROE. This means that an increase in the long-term debt is associated with a decrease in firm profitability ceteris paribus. Salim and Yadav (2012) using data from 1995-2011 of 237 Malaysian companies examined the relationship between capital structure and firm performance on firms listed on Malaysia Stock exchange. With the view that a single measure is not adequate to measure a firm's performance, they used return on assets (ROA), return on equity (ROE), earning per share (EPS) and Tobin's

Q to capture performance. This study found that capital structure decision has a significant influence on firm performance. They observed a significant negative influence of total debt to total asset ratio, long-term debt to total asset ratio and short-term debt to total asset ratio on EPS, ROA, ROE and Tobin's Q.

In the Malawian context, there has been limited research attention on the relationship between bank capital structure and profitability. Most studies on bank profitability have focused on the impact of financial regulation and other determinants with limited or no particular interest on capital structure. Lipunga (2014) examined the determinants of commercial bank profitability in Malawi. The study used correlation and multivariate regression analysis to examine both internal profitability and external profitability which were measured by Return on Assets (ROA) and Earnings Yield (EY) respectively. The results showed that bank size, liquidity and management efficiency have a statistically significant impact on ROA. Furthermore, bank size, capital adequacy and management efficiency were found to be significant predictors of earnings yield. Capital adequacy and liquidity were found to be insignificant for ROA and EY respectively.

Another study on bank profitability is the study by Chimkono (2015). The study evaluated the impact of non-performing loans on the financial performance of commercial banks in Malawian. Chimkono established that non-performing loan ratio; cost efficiency ratios and average lending interest have significant impacts on bank performance in Malawi. Chirwa (2003) explored the relationship between market structure and profitability of commercial banks in Malawi. The author used a cointegration and error correction mechanism. The results of this study showed that

there is a positive long run relationship between profitability and concentration, capital-asset ratio, loan asset ratio and demand deposit ratio.

Kaluwa and Chirwa (2017) used bank specific, industrial specific and macroeconomic determinants to examine competition and pricing conduct of commercial banks in Malawi. Their study noted that there were high profits in the banking sector due to high monopoly power and collusive pricing behaviour. Monopoly power and collusive behaviour led to high lending rates leading to high profits. This was mainly a result of week regulations on reporting of maximum lending rates by the largest commercial banks. Before 2012 only the two largest banks reported their maximum lending rates (Ngwira, 2014).

3.4 Conclusion

This chapter has given a review of both the theoretical and empirical literature. On the theoretical section, it has discussed theories such as the Modigliani and Miller theory, the static trade off, the pecking order theory and the agency cost theory that attempt to establish the relationship between capital structure and firm profitability.

Theoretically, we conclude that debt has a non-linear effect on firm value and profitability. Debt addition increases profitability and then decreases profitability after some time. However, despite these explanations, all the theories do not come out clearly to explain the separate effects of short term and long term debt. There is a need to establish which one is more important between short term and long term debt.

The empirical literature section has discussed empirical findings of some studies on profitability and capital structure in various countries. The empirical literature provide evidence that capital structure has mixed impacts on bank profitability. In some countries, it has a negative impact while a positive impact is noted in other countries. Again, other studies have found capital structure irrelevant in determining bank profitability. It is noted however that most studies on bank profitability in Malawi did not explore the effects of capital structure despite that increasing debt equity ratios have been accompanied by decreasing return on assets and return on equity in recent years. There is this research gap in literature that need to be filled considering the fact that profitability is one of the major factors that ensure continuity of the banking sector. This study therefore comes in to fill this research gap. In addition, most studies from other countries did not capture the dynamic persistency of bank profits. They mainly used pooled ordinary least squares and fixed effects models. These have short falls as they do not capture profit persistence as suggested by most literature. The existence of an optimal debt equity ratio as argued by the static trade off and the agency cost theories, has also not been tested in these studies. This study is therefore different from most of these studies as it uses a dynamic panel model that captures profit persistency and also tests the existence of an optimal debt equity ratio in Malawi.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter discusses the methods used to achieve the objective of the study. It puts presents the conceptual framework and how the model is specified and estimated. The chapter also describes the data that has been used and its sources. Further, it defines the variables used and their expected impacts on bank profitability in Malawi. It finally presents the estimation technique and diagnostic tests carried out in the study.

4.2 Data description

This study uses yearly secondary data collected from financial statements and balance sheets of banks in Malawi. Data for industry specific variable was sourced from the Reserve Bank of Malawi while economy wide variables came from the World Development Indicators (WDI). A panel of six banks is formed covering the period from 2005 to 2016. This is a representative sample selected using the selection criterion of Kaluwa and Chirwa (2017) of two largest banks, two middle banks and two smallest banks in terms of bank deposits. This criterion has been adopted mainly due to data availability. The six banks making the sample of the study are National Bank of Malawi (NBM), Standard Bank (STD), NBS Bank, First Merchant Bank (FMB), Inde Bank and Ned Bank.

4.3 Concerputal framework

Figure 10 presents the conceptual framework developed in this study. This study uses this conceptual framework to examine the impact of capital structure of bank profitability.

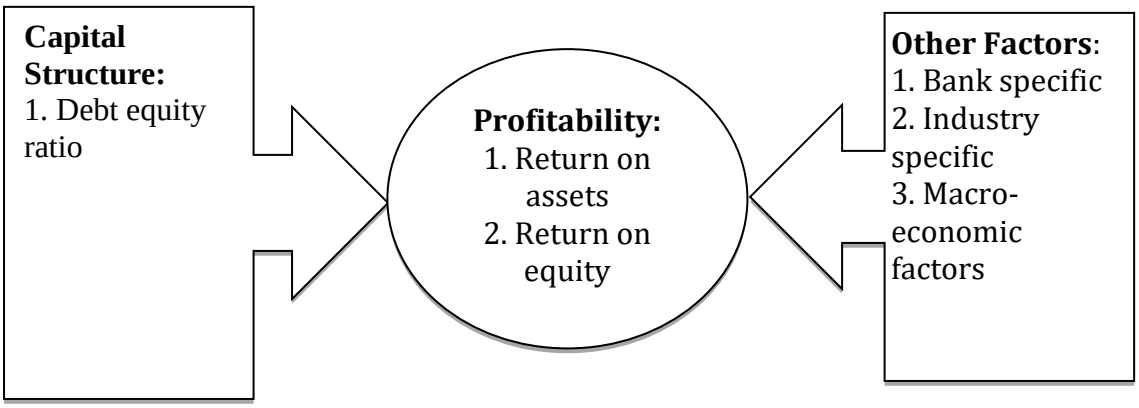

Figure 10: The Conceptual Framework

The framework indicates that profitability of commercial banks is affected by capital structure decisions of the bank and other factors. These factors are categorized into bank specific, industry specific and macroeconomic factors as suggested by Athanasoglou et al (2006) and Flamini et al (2009). They include bank size, liquidity, capital adequacy, management efficiency and asset quality. The dependent variable is profitability, which is captured by a number of different measures. These measures include Return on Assets (ROA), Return on Equity (ROE), Net Interest Margin (NIM), Tobin's Q and earnings Yield (EY). Among these the most common measures used in literature are accounting based measures ROA and ROE. The two capture how much profit a firm has earned on invested assets and how effectively managers use investors' funds (Vatavu, 2015).

The main independent variable of the study is capital structure. It is the composition of debt and equity financing required for a firm to finance its assets (Niresh, 2012). Niresh further argues that capital structure can also be defined as a mix of long-term debt, short-term debt, common equity and preferred equity. Debt equity ratio is used to capture capital structure in most literature (Opoku et al, 2013). This is consistent with theories such as the Modigliani and Miller and the static trade off.

4.4 Model specification

The study uses the structure conduct performance model and adopts the specification used by Athanasoglou et al (2005) and Flamini et al (2009). The general model is given as follows:

$$p_{it} = a + \sum_{i=1}^{K} b_k X_{it}^k + \eta_{it} \quad \text{.....(1)}$$

Where:

p_{it} is the profitability of bank i at time t, with i=1,…,N; t=1,…,T, a is a constant term, X_{it}^k are k explanatory variables and η_{it} is the disturbance with e_i the unobserved bank-specific effect and m_{it} the idiosyncratic error. This is a one-way error component regression model, where $e_i \sim$ IIN $(0, s_e^2)$ and independent of $m_{it} \sim$ IIN (0, s_m^2).

The explanatory variables are then grouped into bank specific, industry specific and macroeconomic factors. The general model then becomes:

$$p_{it} = a + \sum_{i=1}^{J} b_j X_{it}^j + \sum_{i=1}^{N} b_n X_t^n + \sum_{i=1}^{M} b_m X_t^m + \eta_{it} \quad \text{.....(2)}$$

Where X_{it}^{j} denotes bank-specific determinants and X_t with superscripts n and m denote industry-specific and macro-economic determinants respectively.

It is argued that bank profits are persistent over time meaning that past profits affect current profits (Berger et al, 2000). According to Berger et al. (2000), bank profits reflect impediments to market competition, informational opacity and sensitivity to regional or macroeconomic shocks to the extent that these are serially correlated. To take into account this persistency, the study adopts a dynamic panel model. We include a lagged dependent variable among the explanatory variables. Dynamic panel is based on generalized method of moments (GMM), which was developed by Hasen (1982). Since the focus of this study is on capital structure, we separate the capital structure variables from other bank specific factors.

The general model augmented with lagged profitability is given as follows:

$$\pi_{it} = \alpha + \delta\pi_{i,t-1} + \sum_{i=1}^{J} \beta_j X_{it}^{j} + \sum_{i=1}^{N} \beta_n X_{it}^{n} + \sum_{i=1}^{M} \beta_m X_t^{m} + \sum_{i=1}^{K} \beta_k X_t^{k} + \eta_{it} \quad \text{.....(3)}$$

Where:

π_{it} is bank profitability, $\pi_{i,t-1}$ is a one period lagged bank profitability, X_{it}^{j} is vector of capital structure variables, X_{it}^{n} is a vector of other bank specific variables, X_t^{m} is a vector of industry specific variables, X_t^{k} is a vector of economy wide or macroeconomic variables and η_{it} is a disturbance or error term. δ captures the speed of adjustment to equilibrium. A value of δ between 0 and 1 signals profit persistency but after time profits will eventually return to normal (average) level (Athanasoglou et al, 2005). The industry is fairly competitive (high speed of adjustment) if the value of

δ is close to 0 while a value of δ close to 1 means the industry is less competitive (very slow adjustment).

From the general model, the study estimates Equations 4 and 5 presented below:

$$ROA = \alpha_0 + \delta ROA_{i,t-1} + \beta_1 DER_{it} + \beta_2 SQDER_{it} + \alpha_1 \ln Assets_{it} + \alpha_2 LOD_{it} + \alpha_3 NPL_{it} + \alpha_4 OEOI_{it} + \lambda_1 HHI_t + \lambda_2 LRR_t + \phi_1 ChangeRGDP_t + \phi_2 INF_t + \phi_3 TFR_t + \nu_{it} \ldots\ldots\ldots\ldots (4)$$

$$ROE = \alpha_0 + \delta ROE_{i,t-1} + \beta_1 DER_{it} + \beta_2 SQDER_{it} + \alpha_1 \ln Assets_{it} + \alpha_2 LOD_{it} + \alpha_3 NPL_{it} + \alpha_4 OEOI_{it} + \lambda_1 HHI_t + \lambda_2 LRR_t + \phi_1 ChangeRGDP_t + \phi_2 INF_t + \phi_3 TFR + \nu_{it} \ldots\ldots\ldots\ldots (5)$$

Where ROA is return on assets and ROE is return on equity as proxies for profitability. ROA is measured as a ratio of net income to total assets while ROE is measured as a ratio of net income to total equity, DER is debt equity ratio and SQDER is the square of debt to equity ratio to capture nonlinear effects of debt. *LnASSET* is the natural logarithm of total assets capturing bank size. LOD represents the loan to deposit ratio as a measure of liquidity and NPL is non-performing loans to total loans ratio measuring asset quality. OEOI stands for operating expenses to operating income ratio capturing management efficiency, HHI is the Hirschman Herfindhal Index of concentration, LRR is the liquidity reserve ratio, ChangeRGDP is the percentage change in real GDP capturing economic growth, INF is inflation and TFR is total foreign reserves. The choice of these variables is mainly based on previous literature and theory.

4.5 Variable Definition, Measurement and Expected impact

Profitability: Bank profitability is measured by a number of variables some of which include return on assets (ROA), return on equity (ROE), net interest margin (NIM) and earnings per share (EPS). Among these the most common measures used in

literature are the accounting based measures return on assets and return on equity. This study uses both ROA and ROE as measures of bank's profitability.

The two capture how much profit a firm earns on invested assets and how effective are managers in using investors' funds (Vatavu, 2015). Despite that most literature favours ROA over ROE, Kalluci (2011) argues that studies on profitability should consider using both ROA and ROE because they remain the two main indicators of management efficiency towards generating income from funds. Return on assets measures the ability of bank management to generate income by utilising available company assets (Ongore & Kusa, 2013). Kumbirai & Webb (2010) and Davydenko (2011) and stress that return on assets indicates how much net income is generated on each unit of assets. It is generally expressed as a ratio of net profits before taxes to total assets. The ratio shows how efficiently resources are used to generate income (Ongore & Kusa, 2013).

$$ROA = \frac{Net\_Profits}{Total\_Assets} \quad \text{.....(6)}$$

Return on equity (ROE) captures profits earned by a firm in comparison to the shareholder equity (Ongore & Kusa, 2013). It is the ratio of net income to shareholders' equity. For banks, it is the percentage return on each unit of equity invested in the bank (Kumbirai & Webb, 2010). Ongore and Kusa, (2013) add that firms that are able to successfully generate cash internally, have high return on equity. It is captured as a ratio of net profits before taxes to total assets.

$$ROE = \frac{Net\_Profits}{Total\_Equity} \quad \text{.....(7)}$$

Capital structure: The objective of this study is to examine the impact of capital structure on bank profitability as such capital structure variables make the main independent variables of this study. Following Opuku et al (2013), one of the capital structure variables this study employs is debt equity ratio (DER). This is consistent with the definition of capital structure by theories such as the Modigliani and Miller theory, the static trade off theory and the agency cost theory. To capture the non-linear effects of debt as suggested by the static trade off theory and the agency cost theory, this study include the square of debt to equity ratio (SQDER). This will help to test if an optiamal capital structure exists as proposed by the two theories. Debt equity ratio is measured by dividing a company's total liabilities by its shareholder's equity (Ross et al, 2013). It is used to measure a company's financial leverage. Bank financial statement in Malawi separates liabilities from equity as such debt equity (DER) ratio in this study is measured as:

$$DER = \frac{Total\_Liabilities}{Shareholder's\_Equity} \quad \text{.....8}$$

Other bank specific factors: The study employs bank size, liquidity, asset quality and expenses management. The choice of these variables is based on theory and previous literature on determinants of bank profitability. Bank size is measured by the natural logarithm of total assets of banks (Gul et al, 2011). It is generally used to capture economies of scale that arise as the bank grows. It is expected that due to economies of scale bank size will have a positive impact on profitability. In agreement with this, Goddard, Molyneux, & Wilson (2004) and Lipunga (2014) found a positive association between bank profits and bank size.

Liquidity is the proportion of the current assets to the current liabilities of a bank. It measures the capacity of a bank to pay off the debt obligations that are short-term (Yeo, 2016). Following Makri (2014), this study captures liquidity of banks using the loan to deposit ratio (LOD). This is because current assets of banks are in form of loans and current liabilities in form of deposits. Literature suggests that there is a nexus between profitability and liquidity. On one hand, it can boost bank profits while on the other hand, an increase in liquidity may negatively affect profitability.

Asset quality is also a significant factor that affects bank profitability in literature (Ally, 2014). Ally (2014) posits that the quality of assets of a bank depends on its exposure to specific risks, trends in nonperforming loans, and the health and profitability of bank borrowers. Following Ally (2014), this study uses non-performing loan to total loan ratio (NPL) to measure asset quality. This ratio is also used to measure credit risk. An increase in this ratio implies that the firm is exposed to high credit risk, which negatively affects profits (Olweny & Shipho, 2011). We expect an inverse relationship between bank profitability and non-performing loan to total loan ratio.

Expenses management is used to capture management efficiency in this study. Kosmidou (2008), points out that in literature, it is commonly expressed as ratio of operating expenses to operating income (OEOI). Athanasoglou *et al*. (2005) argue that this ratio is expected to negatively affect profitability since improved management of these expenses will increase efficiency and raise profits.

Industry specific factors: Under this category, the study employs the Hirschman Herfindhal Index of concentration (HHI) and the liquidity reserve ratio (LRR). HHI ranges between 0 and 1 and is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers (Ana et al, 2011). The greater the HHI, the more concentrated the market. We expect HHI to have a positive effect on profitability because in more concentrated markets, banks are able to adjust spreads in response to unfavourable changes in the macroeconomic environment leaving returns unaffected (Flamini et al, 2009). The liquidity reserve ratio is used as a regulatory instrument by the central banks (Kaluwa & Chirwa, 2017). Usuagwu, (2014) argue that the LRR is seen as a tax to bank since it limits the banks capacity to extend loans. Therefore, it is expected to be negatively related to profitability.

Macroeconomic factors: This study uses economic growth measured as the percentage change in real GDP, inflation and total foreign reserves as macroeconomic variables. Economic growth and inflation are the most common factors under macroeconomic determinants used in literature (Petriaa et al, 2015). The authors point out that economic growth has positive impacts on bank profits. It increases customer deposits and loans granted which leads to increase in profitability. Sufian & Chong (2008) adds that when economic growth decrease, bank deposits and the demand for loans decrease which negatively affects profits. Inflation affects bank profitability either positively or negatively depending on whether it is anticipated or not (Athanasoglou et al, 2005). Higher anticipated inflation rates allow banks to increase interest rates on loans, which increases bank profitability.

If inflation is not anticipated, banks slowly adjust interest rate, which increases financing costs and negatively affecting profitability (Petriaa *et al*., 2015). Total foreign reserves have been included because Malawi banks earn approximately over 25% of their revenue from foreign exchange transactions. Also, foreign exchange reserves play a bigger role in the growth and stability of Malawi economy which is predominantly an importing nation. Total foreign reserves influence the overall exchange rate movement. Usuagwu (2014) in Nigeria used foreign exchange rate to measure the impact of environmental conditions on the banking system. Since banks generate income from foreign exchange transactions, we expect a positive relationship between total foreign reserves and bank profitability.

4.6 Estimation technique

In econometrics literature, dynamic panels are often faced with the problem of endogeneity because of the introduction of a lagged value of the dependent variable as a regressor (Baltagi, 2009). With endogeneity, standard panel data estimators such as fixed effect and random effect estimators are biased and inconsistent. To deal with endogeneity, Baltagi (2009), suggests the use of an Arellano and Bover estimator. It is a System GMM estimator, which was proposed by Arellano and Bover (1995) to control potential endogenous explanatory variables in panel data (Ayaydin & Karakaya, 2014). It estimates a level-equation and a difference equation. The first difference model is used by this method to eliminate the time-invariant firm-specific effect (Mueller, 1977). According to Mueller (1977), lags of original level endogenous variables generated instrumental variables. This study therefore uses the Arellano and Bover system GMM estimator that controls for endogeneity and firm

specific effects. Even when the sample period is short the estimator produces unbiased and consistent estimates.

4.7 Diagnostic Tests

The validity of the results of Arellano and Bover estimator is tested using two types of tests; the Sargan test and test of serial correlations (Curak et al., 2012). The Sargan test, tests how adequate are the tool variables for estimating the results (Allerano & Bond, 1991). It tests whether the instruments are accurate and complete for the Generalized Method of Moments estimator. Curak et al (2012) add that it is a test of the over identifying restrictions with the null hypothesis that there is no correlation between the instruments and the errors. Failing to reject the null hypothesis means that the chosen instruments are valid.

The second test is a test for first and second-order autocorrelation. This tests for autocorrelations in the differenced residuals (Curak *et al*, 2012). Arellano and Bond (1991) developed tests for first and second order serial correlation for dynamic panel models. A good model is the one with no second-order autocorrelation (Allerano & Bond, 1991). Consistent estimates are produced when there is no second-order autocorrelation in the differenced residuals (Curak *et al*., 2012).

4.8 Summary

The chapter has discussed the estimation techniques used to achieve the objective of the study. It has given the model used, the estimation methods and diagnostic tests. In addition, the chapter has also described the data used in the study and the conceptual framework developed.

CHAPTER FIVE

EMPIRICAL RESULTS AND DISCUSSION

5.1 Introduction

This chapter presents the results of the empirical estimations presented in Chapter Four. The first section of this chapter presents the descriptive statistics which is then followed by the diagnostic tests carried out in this study. The third section discusses the empirical results from the Arellano and Bover estimation technique and the fourth section provides the chapter summary.

5.2 Descriptive statistics

As pointed out in Chapter Three section 3.2, this study has a sample of 6 banks with the sample period of 12 years from 2005 to 2016. Table 1 below presents the descriptive statistics of the variables used in this study.

Table 1: Descriptive Statistics

Variable	Observations	Mean	Std Deviation	Minimum	Maximum
ROA	70	0.0334	0.0276	-0.0500	0.1000
ROE	70	0.2053	0.1890	-0.6361	0.5269
DER	70	6.1057	2.1487	3.3475	12.7428
LOD	70	0.6224	0.2067	0.2508	1.2002
NPL	68	0.0914	0.1841	0.0003	0.9274
OEOI	69	0.6489	0.2064	0.3269	1.2843
HHI	66	0.2307	0.0325	0.1700	0.2972
LRR	72	13.4250	5.3070	7.5000	18.6000
ChangGDP	72	5.2779	2.3672	1.8858	9.6000
Inflation	72	15.3101	7.0265	7.4116	27.2833
TFR	72	0.3385	0.1866	0.1419	0.6787

Table 1 shows that over the years, the mean of return on assets and return on equity are 3.3% and 20.5% respectively. This means that on average, banks in Malawi have earned profitability of 3% in terms of ROA and 20.5% in terms of ROE. The highest ROA over the period is 10% while the lowest is -5% which means that some banks have been experiencing losses over the period. Equity holders have also been experiencing losses evidenced by the minimum ROE of -63.6%. The highest ROE is 52.7%. In terms of capital structure, the average debt equity ratio is 6.1 with the minimum values at 3.4. This means that for the sample banks, debt has dominated equity over the years. Debt finances nearly 81% of bank assets.

The mean for the loan deposit ratio is 0.622, which means that on average banks over the period have been converting 62.2% of deposits into loans. With the average required liquidity reserve ratio at 13.4 percent, bank in Malawi hold excess liquidity. They hold reserve 24.4% above the required amount. It is noted however that the maximum loan deposit ratio is 1.2 meaning that sometimes banks issue loans more than their deposits. This tells us that banks do not depend on only deposits to fund their assets. The other funding comes from other forms of debt or equity. On average, out of the loans extended 9.1% become impaired or non-performing.

5.3 Diagnostic Tests

This study carried out two diagnostic tests as suggested by Curak et al (2012) to ensure validity of the results of Arellano and Bover estimator. These are the Sargan test for over identification restrictions and the abond test for second order serial correlation. Pairwise correlation matrix was used to test for multicolinearity between

the regressors. Results presented in the Appendix, Table 5, show that there is no multicolinearity since all the pairwise correlations are less than 0.7.

5.3.1 Sargan test

This test was carried out to test whether the over identifying restrictions are valid or not. That is whether the tool variables used for estimating the results are adequate or not for the GMM estimator (Allerano & Bond, 1991). Table 2 presents the results of the test for two models. Model 1 has return on assets as the dependent variable and return on equity is the dependent variable for model 2.

Table 2: Results of the Sargan test for Over Identification Restrictions

Null hypothesis: Over identifying restrictions are valid

Model	Chi-square statistic	Probability	Decision
Model 1	50.95392	0.2510	Fail to reject null hypothesis
Model 2	42.73759	0.5683	Fail to reject null hypothesis

The results from Table 2 show that the probabilities for the chi-squares are greater than the 5% significance level. This means that we fail to reject the null hypothesis that over identifying restrictions are valid. The used instruments are therefore adequate and the results are valid.

5.3.2 Abond test

Abond test was carried out to test for second-order autocorrelation in the model. A model with no second-order autocorrelation is a suitable model (Allerano & Bond, 1991). The results are tested against the null hypothesis of no autocorrelation. Results of this test for two the models are presented in Table 3.

Table 3: Results of the Abond test for Second Order Autocorrelation

Null hypothesis: No autocorrelation

Model	Z-Statistic	Probability	Decision
Model 1	-1.2901	0.1970	Fail to reject null hypothesis
Model 2	-.54686	0.5845	Fail to reject null hypothesis

The results of the abond test from Table 3 shows that there is no second order autocorrelation in all the two models. The probabilities for the chi-squares are greater than the 5% significance level, which means we fail to reject the null hypothesis.

5.4 Arellano and Bover Estimation Results

The results of the two tests conducted in this study allow us to proceed to interpretation and discussion of the Arellano and Bover estimation results. The results of the Arellano and Bover estimation technique are valid. We present results for two regression models; one model with return on assets as the dependent variable and another with return on equity as the dependent variable. The Arellano and Bover estimation results of the two models are presented in Table 4. ROA has been used as a general measure of profitability, which captures the ability of bank management to generate profits by using the available financial and real assets (Obamuyi, 2013). Return on equity has been used to measures profits earned by a bank in comparison to the shareholder equity invested. Return on equity is one of the main indicators of management efficiency towards generating income from funds. It has been used in this study to examine how capital structure decisions affect profits earned by bank shareholders.

The results from Table 4 indicate that the coefficient on the one year lagged values of ROA is positive and significant at 1% significance level while that of ROE is positive but insignificant. For ROA the value of the coefficient is 0.273 which is between 0 and 1. This means that profitability in terms of ROA in the banking sector in Malawi is persistent. A value between 0 and 1 implies that profits are persistent, but will eventually return to normal (average) level. The previous year's return on assets positively influences the current year's ROA. The results for return on equity implies the ROE is not persistent. Thus, the previous year's return on equity does not affect the current year's ROE.

Table 4: Arellano and Bover Estimation Results

Variable	Return on Asset	Standard Error	Return on Equity	Standard Error
Lagged profitability	0.2143***	(0.0824)	0.0921	(0.1467)
Debt equity ratio	-0.0041	(0.0028)	0.0399***	(0.0117)
Squared debt to equity ratio	0.0003*	(0.0002)	-0.0004	(0.0008)
Bank size	-0.0015	(0.0038)	0.0128	(0.0245)
NPL to gross loans ratio	-0.0187**	(0.0074)	-0.1445***	(0.0496)
Loan to deposit ratio	-0.0104	(0.0081)	-0.0897	(0.0645)
Operating expense to income ratio	-0.1108***	(0.0222)	-0.8194***	(0.1650)
Hirschman Herfindhal Index	0.0412	(0.0265)	0.1979	(0.1323)
Liquidity reserve ratio	-0.0002	(0.0003)	-0.0017	(0.0026)
Economic growth	0.0008	(0.0007)	0.0092	(0.0064)
Inflation	0.0008***	(0.0003)	0.0033*	(0.0018)
Total Foreign Reserves	-0.0230*	(0.0125)	-0.1269	(0.1079)
_Cons	0.1196***	(0.0403)	0.3547	(0.2707)
N	57		57	

Note: Standard errors in parentheses; **Levels of significance:** $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$

It is further noted from the results that capital structure which is the focus of this study, has different impacts on return on return on assets and return on equity. It is a significant determinant of on return on equity but not return on assets. Debt equity ratio which as our measure of capital structure, has a positive impact on return on equity and it is significant at 1% significance level. That is, increasing debt relative to equity increases ROA. We find that a one point increase in the debt equity ratio, on average leads to 0.0399 points increase in ROA ceteris paribus.

On the square of debt equity ratio, the results show that it is only significant for ROA and has a positive coefficient. This result means that in Malawi, the relationship between debt and bank return on assets is non-linear in nature. There exist positive non-linear effects of debt on return on assets despite the non-existence of linear effects. For return on equity, the coefficient of the square of debt equity ratio is insignificant refuting the existence of a non-linear relationship between debt and return on equity. Combined with the finding that the non-linear effects of debt on return on assets are positive, these results do not support the existence of an optimal debt equity ratio as advanced by the static trade off and agency cost theories.

On the square of debt equity ratio, the results show that it is only significant for ROA and has a positive coefficient. For return on equity, the coefficient of the square of debt equity ratio is insignificant refuting the existence of a non-linear relationship between debt and return on equity. These results therefore do not support the existence of an optimal debt equity ratio as advanced by the static trade off and agency cost theories. This is in agreement with Modigliani and Miller proposition II, which argues that the best capital structure is one with 100 percent debt. It is also in

line with the findings of Birru (2016), Anafo, Amponteng, & Yin (2015) and Taani (2013) who found a significant positive impact of debt on bank profitability in Ethiopia, Ghana and Jordan. The similarity between Malawi and these countries may be due to the fact that these countries are developing as such their capital markets are not well developed. For instance, bond markets are almost non-existent (Lesle, 2012).

However, these results are in contrast to the findings of most studies in Europe, Asia and some African countries. Sovbetov (2013), found a negative relationship between debt equity ratio, total debt to total asset ratio and both return on assets and return on equity in the United Kingdom banking system. Siddik et al (2017), Gropp and Heider (2009), Osborne, Fuertes and Milne (2011) and Dogan (2013) also found that capital structure has a negative impact on bank profitability in Bangladeshi, United States and Europe, United States and Turkey respectively. In Sub-Sahara Africa, Anarfo and Appiahene (2017), found a negative relationship between debt and profitability.

The difference on the effects of debt on bank profitability between Malawi and European countries can be attributed to the difference in the composition of bank debt in these countries. As pointed out in Chapter Two, much of the bank debt in Malawi is bank deposits. Deposits financing as retail funding is more stable that wholesale funding (Lesle, 2012). According to Lesle (2012), in developing countries like Malawi, retail funding dominates and loans are primarily financed by deposits, reflecting low levels of private sector debt and high savings ratios. European banks on the other hand have the highest level of reliance on wholesale funding, averaging 61 percent of total liabilities twice that of emerging economies (37 percent) (Lesle, 2012). In addition, core funding ratios are lower in Europe than in developing

countries. According to Lesle (2012), deposits finance 36 percent assets in Europe. This is a smaller proportion compared to more than 80 percent in Malawi and 62 percent for North America and Asia. This is due to the fact that the customer funding gap is the high in Europe than in Malawi. This is the amount by which customer loans exceed customer deposits. Capital markets are also more developed in Europe than in Malawi and other in developing countries (Lesle, 2012).

For the other bank-specific factors, only asset quality and expense management significantly influence bank profitability. Both the ratio of non-performing loans to gross loans (NPL) and the ratio of operating expenses to operating income (OEOI) have a negative impact on both return on assets and return on equity. This conforms to *a priori* expectations. The negative impact of non-performing loans on ROA is also consistent with the finding of Chimkono (2015) who found a negative relationship between non-performing loans and return on assets in Malawi commercial banks. Bank size and the loan to deposit ratio capturing liquidity, have been found to be insignificant on both measures of profitability. However, Lipunga (2014) who found a positive relationship between bank size and profitability.

In terms of industry specific variables, both the liquidity reserve ratio and the Hirschman Herfindhal Index of concentration have insignificant impacts on both ROA and ROE. It is not surprising that the liquidity reserve ratio (LRR) is insignificant because as discussed in Section 5.2, banks in Malawi hold excess reserves as such hanging the LRR does not affect profits. They hold reserves 24.4% higher than the required reserve ratio. This is in agreement with Ngwira (2014) who argues that the reserve bank of Malawi rarely changes the liquidity reserve ratio and is

not used as monetary policy because banks already hold reserves above the required minimum.

For macroeconomic variables, inflation has a positive significant impact on both return on assets and return on equity. A one percent increase in inflation increases ROA and ROE by 0.001 and 0.003 points respectively. This is consistent with our a priori expectations. In Malawi, inflation has been one of the highest in the SADC region over the years (RBM, 2013). This has allowed banks to factor inflation into interest rates charged on loans hence the positive significant impact on profitability. Higher anticipated inflation rates allow banks to increase interest rates on loans to raise revenue, which increases bank profitability (Athanasoglou *et al*., 2005).

Total foreign reserves only influence return on assets. It has a negative effect on ROA and is significant at 1% significance level. This is a surprising result because we expected total foreign reserves to positively influence profitability. Another macroeconomic factor, economic growth measured by percentage change in real GDP has an insignificant impact on profitability in Malawi. Despite postulating a positive relationship between bank profitability and economic growth, Malawi has been experiencing little economic growth over the year and this is possibly the reason for the insignificant impact.

5.5 Summary

The chapter has presented and discussed the empirical findings of this study. The chapter finds that in Malawi, debt equity ratio has a significant positive impact on bank profitability measured by return on equity but does not significantly affect return on assets. The study concludes that in Malawian banking sector, the existence of an

optimal debt equity ratio that maximises profits and firm value is not supported. The findings of the study support the Modigliani and Miller proposition II but go against the static trade off and agency cost theories. This finding means that the objective of this study has been met.

For the other bank-specific factors, only asset quality and expense management significantly influence bank profitability. Inflation and total foreign reserves have been found to be the significant predictors of bank profitability in Malawi among the macroeconomic factors. Inflation has a positive impact while total foreign reserves has a negative impact. Industry specific variables-liquidity reserve ratio and Hirschman Herfindhal Index are insignificant determinant of both ROA and ROE.

CHAPTER SIX

CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Introduction

This chapter gives a summary of the study findings and makes conclusions. It also provides the policy implications from the findings and areas of further research.

6.2 Summary of findings

The main objective of this study was to examine the impact of capital structure on bank profitability in Malawi. Specifically, it aimed at examining the impact of debt equity ratio on Malawi bank profitability. Using data from six banks for the period 2005 to 2016, this study used the Arellano and Bover General Method of Moments estimator to estimate a dynamic panel model of the relationship between capital structure and bank profitability. The study used the structure conduct performance model used by most studies of profitability as such apart from the capital structure variables, we included other equally important determinants of bank profitability as suggested by literature. These variables include bank size, asset quality, liquidity, expense management, liquidity reserve ratio, Hirschman Herfindhal index of concentration, economic growth, inflation and total foreign reserves.

After examining the impacts of debt equity ratio on bank profitability in Malawi, the study finds that debt equity ratio has no impact on profitability measured by return on assets (ROA) but has a positive impact on return on equity (ROE). This means that bank debt in Malawi does not significantly affect ROA but positively effects ROE. The square of debt equity ratio is only significant on ROA with a positive impact. The findings on ROA supports the capital structure irrelevance theory advance by

Modigliani and Miller proposition I. On ROE, the results are in agreement with the argument raised by the Modigliani and Miller proposition II that the best capital structure is the one with 100% debt. Increasing debt, increases bank profitability. However, the findings reject the existence of an optimal debt equity ratio as advanced by the static trade off and agency cost theories.

In terms of empirical findings, these results are consistent with the findings of most African studies such as Birru (2016), Anafo et al (2015) and Taani (2013) in Ethiopia, Ghana and Jordan respectively. This is explained by the fact that bank debt in Malawi and indeed most African countries is mostly composed of deposits. Deposits are paid lower interest rates and do not send bad signals to the market. The findings however do not agree with most findings from Europe, Asia and America. In addition, the study finds that bank capital structure in Malawi is leaned towards debt and more specifically towards deposits.

We conclude that in Malawian banking sector, the existence of an optimal debt equity ratio that maximises profits and firm value is not supported. Banks should focus on financing assets through debt rather than equity as it has a positive impact on return on equity. The study has contributed to literature by establishing that bank debt enhances bank profitability in Malawi. It has informed empirical literature that the best capital structure in the Malawi banking sector is the one with 100 percent debt.

6.3 Policy implications

The findings suggest that bank debt equity ratio has a positive effect on profitability. This implies that banks in Malawi are be best served by increasing debt relative to equity. Banks should resort to debt financing to enhance their profitability since higher debt equity ratios increases their profitability. The positive impact of bank debt on profitability is due to the fact that bank deposits form a larger percentage of bank debt in Malawi. In addition to being tax deductible, Lesle (2012) suggests that bank deposits are a cheaper source of funding as they are paid relatively low interest rates compared to other forms of debt such as corporate debt.

For banks to be able to raise enough debt, the government should enact policies that will help the capital market to thrive. There is need for a vibrant capital market for banks to be able to raise the amount of debt needed to maximise profits since this study has found out that debt increases bank profitability. In most Sub-Saharan African countries, capital markets are underdeveloped as such it is not easy for banks to raise other forms of debt other than deposits (Southen Africa Global Competitiveness Hub , 2009). The government need to put up policies to develop the bond market in Malawi. This is to reduce bank reliance on deposits as a source of funding. The study found that banks in Malawi raise funds mainly through deposits. But as argued by Gropp and Heider (2009), there may be limited scope for raising funds via this route in periods of low levels of savings in a country. The study has also shown that there is increased competition for deposits in recent years forcing banks to increase interest rates paid on customer deposits. Such competition may force banks to raise interest rates to the extent that they fail to pass on these increased funding costs to their lending customers which leads to low profits (Gropp & Heider, 2009).

Furthermore, despite that retail funding is viewed generally as more stable than wholesale sources of funding, their maturity is very short or at call as such banks are not protected from a sudden out flow of funds (Gropp & Heider, 2009).

Government should also reduce corporate tax rate in order to make equity financing a viable option. The overreliance on bank deposits as a source of finance may also be due to higher tax rates on equity which reduces bank profitability. Reducing taxes makes banks more profitable and enables them to create more jobs and reduce unemployment (Southen Africa Global Competitiveness Hub , 2009).

Finally, the Reserve Bank of Malawi should keep the minimum capital requirement ratio as low as possible to help banks maximise profits by reaping the benefits that come with debt. Setting a high minimum capital requirement ratio, will act as a tax to the banks thereby negatively affecting their profitability. Therefore, keeping the capital requirement as low as possible, will help banks maximise profits and enhance their contribution towards development in Malawi.

6.4 Limitations of the study and areas for further study

The main challenge of the study was the limited access to bank data. We failed to access some data that could have improved this study. The sample period and size was mainly dependent on the availability of data. In addition, disaggregating debt into short term debt and long term debt was so challenging as such the study failed to examine the impact of short term debt and long term debt on profitability. It would be more interesting to understand which one is more important between long term debt and short term debt.

REFERENCES

Anarfo , E. B., & Appiahene , E. (2017). The Impact of Capital Structure on Banks' Profitability in Africa. *Journal of Accounting and Finance , 17*(3).

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *The Journal of Risk Finance, 6*, 438-445.

Aktas, R., Acikalin, S., Bakin, B., & Celik, G. (2015, February). The Determinants of Banks' Capital Adequacy Ratio: Some Evidence from South Eastern. *Journal of Economics and Behavioral Studies, 7*(1), 79-88.

Allerano, M., & Bond, S. (1991). Some Test of Specification for Panel Data,Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies*, 277-297.

Allerano, M., & Bover, O. (1995). Another Look at the Instrumental Variable Estimation of the Error Component Model. *Journal of Econometrics*, 29-51.

Ally, Z. (2014). Determinants of Banks' Profitability in a Developing Economy: Empirical Evidence from Tanzania. *European Journal of Business and Management, 6*(31), 363-375.

Anafo, S. A., Amponteng, E., & Yin, L. (2015). The Impact of Capital Structure on Profitability of Banks Listed on the Ghana Stock Exchange. *Research Journal of Finance and Accounting, 6*(16), 26-34.

Athanasoglou, P., Brissimis, S., & Delis, M. (2005). Bank Specific, Industry Specific and Macroeconomic Determinants of Bank Profitability. *Bank of Greece Working Paper*, 06-47.

Athanasoglou, P., Delis, M., & Staikouras, C. (2006). Determinants of Banking Profitability in the Southern Eastern Europian Region. *Bank of Greece Working Paper*.

Ayanda, M. A., Christopher, L. E., & Mudashiru, M. A. (2013). Determinants of Banks' Profitability in Developing Economy: Evidence from Nigerian Banking Industry. *Interdisciplinary Journal of Contemporary Research Business, 4*(9), 155-181.

Ayaydin, H., & Karakaya, A. (2014, January). The Effect of Bank Capital on Profitability and Risk in Turkish Banking. *International Journal of Business and Social Science, 5*(1), 252-271.

Baltagi, B. H. (2009). *A Companion to econometric analysis of Panel data.* New York: John Wiley and Sons.

Berger, A., & Patti, B. E. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking and Finance., 30,* 1065-1102.

Berger, N. A., Bonime, D. S., Covitz, M. D., & Hancock, D. (2000). Why are bank profits so persistent? The role of product market competition, informational opacity, and regional/macroeconomic shocks. *Journal of Banking and Finance, 24,* 1203-1235.

Birru, M. W. (2016). The Impact of Capital Structure on Financial Performance of Commercial Banks in Ethiopia. *Global Journal of Management and Business Research: C Finance, 16*(8), 42-52.

Chimkono, E. (2015). *Effect of Non-Performing Loans and other Factors on Performance of Commercial Banks in Malawi*. PHD thesis.

Chirwa. (2001). Market Structure, Liberalization and Performance in the Malawian Banking Industry. *AERC Research Paper 108, African Economic Research Consortium, Nairobi, July 2001,* 2-55.

Chirwa, E. (2003). Determinants of Bank's Profitability in Malawi-Cointergration Approach. *Applied Financial Economics,Taylor and Francis*.

Chirwa, E., & Mlachila, M. (2004). *Financial reforms and Interest Rate Spreads in the Commercial Banking System in Malawi.* IMF working Paper.

Coleman, S., & Robb, A. M. (2012). Capital Structure Theory and New Technology Firms: Is There a Match? *Management Research Review, 35*(2), 106-120.

Curak, M., Poposkib, K., & Pepura, S. (2012). Profitability Determinants of the Macedonian Banking Sector in Changing Environment. *Procedia: Social and Behavioral Sciences, 44*, 406-416.

Davydenko, A. (2011). Determinants of Bank Profitability in Ukraine. *Undergraduate Economic Review, 7*(1).

Diamond , D. W., & Dybvig , P. H. (1986, January). Banking Theory, Deposit Insurance, and Bank Regulation . *The Journal of Business , 59*(1), 55-68.

Dogan, M. (2013). Does Firm Size Affect The Firm Profitability? Evidence from. *Research Journal of Finance and Accounting, 4*(4), 53-59.

Ebaid, E.-S. I. (2009). The impact of capital structure choice on firm performance: Empirical evidence from Egypt. *The Journal of risk finance, 10*, 477-487.

Flamini, V., McDonald, C., & Schumacher, L. (2009). *The Determinants of Commercial Bank Profitability in Sub-Saharan Africa*. USA: IMF.

Ghazouani, T. (2013). The Capital Structure Through the Trade-Off Theory: Evidence from Tunisia. *International Journal of Economics and Financial Issues, 3*(2), 625-636.

Goddard, J., Molyneux, P., & Wilson, J. O. (2004). Dynamics of Growth and Profitability in Banking. *Journal of Money, Credit and Banking, 36*, 1069-1090.

Gropp, R., & Heider, F. (2009, September). Working Paper Series. *The Determinants of Bank Capital Structure(1096)*.

Gropp, R., & Heider, F. (2009, September). Working Paper Series. *The Determinants of Bank Capital Structure*. Eurosystem: European Central Bank.

Grossman, S., & Hart, O. (1986). The Costs and Benefits of Ownershi: A Theory and Lateral Integration. *Journal of Political Economy, 94*, 691-719.

Gul, S., Irshad, F., & Zaman, K. (2011). Factors Affecting Bank Profitability in Pakistan. *The Romanian Economic Journal, 14*(39), 61-87.

Iqbal, S. M. (2012, November). A Critical Review of Capital Structure Theories. *Information Management and Business Review, 4*(11), 553-557.

Jensen, C. M., & Meckling, H. W. (1976). Theory of the firm: managerial behavior, agency costs and ownership. *Journal of Financial Economics, 3*, 305-360.

Kalluci, I. (2011). Analysis of the Albanian banking system in a risk-performance framework. Proceeding of 3rd. *Annual South-Eastern European Economic Research Workshop*. Athens: Bank of Greece & Bank .

Kaluwa, B., & Chirwa, G. C. (2017). Competition, regulation and banking industry pricing conduct in Malawi. *African Review of Economics and Finance, 9*(2).

Kosmidou , K. (2008). The determinants of Banks' Profits in Greece during the period of EU financial integration . *Managerial Finance, 34*, 146-159.

Kumbirai , M., & Webb, R. (2010). A financial Ratio Analysis of Commercial Bank Performance in South Africa. *African Review of Economics and Finance, 2*, 30-53 .

Lawal, A. B., Terer , E. K., Kiyanjui, M. W., & Kayode, A. M. (2014). Effects of capital structure on firm's performance: Empirical study of manufacturing companies in Nigeria. *Journal of Finance and Investment Analysis, 3*, 39-57.

Lesle, V. (2012). IMF Working Paper. *Bank Debt in Europe: "Are Funding Models Broken?"* . USA: International Monetory Fund.

Lipunga, A. M. (2014). Determinants of Profitability of Listed Commercial Banks in Developing Countries: Evidence from Malawi. *Research Journal of Finance and Accounting*, *5*(6), 41-49.

Makri , V. T. (2014). Determinants of Nonperforming Loans: The Case of Eurozone. *Panoeconomicus, 2,* 193-206.

Mlachila, M., & CHirwa, E. W. (2004). *Financial Reforms and Interest Rate Spreads in the Commercial Banking System in Malawi.* IMF. IMF Staff Paper.

Modigliani, F., & Miller, M. (1958, June). The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review, 53*, 261-297.

Mueller, D. C. (1977). The Persistence of Profits above the Normal. *Economica, 44*(176), 369-380.

Myers, S. C. (1984). The Capital Structure Puzzle. *The Journal of Finance,, 39*(3), 575-592.

NBM. (2017). *Annual Report 2016.* Lilongwe: National Bank of Malawi.Malawi: National Bank.

Ngwira, N. (2014). Implementing Monetary Policy in Malawi. *Monetary and Exchange Rate Policy.* Nkopola, Mangochi, Malawi.

Niresh, A. J. (2012). Capital Structure & Profitability in Srilankan Banks. *Global Journal of Management and Business Research, 12,* 83-90.

Obamuyi, M. T. (2013). "Determinants of banks' profitability in a developing economy: Evidence from Nigeria. *Organizations and Markets in Emerging Economies, 4*, 97-111.

Olweny, T., & Shipho, T. M. (2011). Effects of Banking Sectoral Factors on the Profitability of Commercial Banks in Kenya. *Economics and Finance Review, 1*(5), 01-30.

Ongore, O. V., & Kusa, B. G. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues, 3*, 237-252.

Opoku, E. F., Adu, J. K., & Anarfi, B. O. (2013). The Impact of Capital Structure and Profitability of Listed Banks on the Ghana Stock Exchange . *Social and Basic Sciences Research Review, 1*(2), 74-91.

Osborne, M., Fuertes, A., & Milne, A. (2011). *Capital and Profitability in banking: Evidence from US banks.* London: UK Financial Services Authority.

Petriaa, N., Caprarub, B., & Ihnatovc, I. (2015). Determinants of banks' profitability: Evidence from EU 27 banking systems. *Procedia Economics and Finance, 20,* 518-524.

RBM. (2013). Bank Supervision Report. Malawi: RBM 6-9.

RBM. (2016). *Financial Institutions Supervision Annual Report.* Lilongwe: Reserve Bank of Malawi.

RBM. (2016). *Financial Stability Report June 2016.* Lilongwe: Reserve Bank of Malawi.

RBM. (2017). *Financial Institutions Supervision Annual Report.* Lilongwe: Reserve Bank of Malawi.

Ross, S. A., Westerfield, R. W., & Jaffe, J. (2013). *Corporate Finance* (10th ed.). New York, NY, 10020.: McGraw-Hill/Irwin.

Saad, M. N. (2010). Corporate Governance Compliance and the Effects to Capital Structure. *International Journal of Economics and Financial, 2*(1), 105-114.

Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia - Social and Behavioral Sciences, 65*, 156-166.

Siddaganga , S. R., & Baligatti, , Y. G. (2010, November). Funds Management In Banks: A Cost-Benefit Perspective . *International Business & Economics Research Journal , 9*(11), 21-30.

Siddik, M., Kabiraj, S., & Joghee, S. (2017, May 3). Impacts of Capital Structure on Performance of Banks in a Developing Economy: Evidence from Bangladesh. (N. Apergis, Ed.) *International Journal o f Financial Studies, 4*(13).

Southen Africa Global Competitiveness Hub . (2009). *SADC – COMESA Bond Market Mapping Study.* Gaborone: USAID/Southern Africa.

Sovbetov, Y. (2013, May). Master in Business Administration. *Relationship Between Capital Structure and Profitability: Evidence from UK Banking Industry Over the Period of 2007-2012*. Cardiff Metropolitan University.

Sufian, F., & Chong, R. R. (2008). Determinants of Banks Profitability in a Developing Economy: Empirical Evidence from the Philippines, Asian Academy of Management. *Journal of Accounting and Finance, 4*(2), 91-112.

Taani, K. (2013). Capital structure effects on banking performance: A case study of Jordan. *International Journal of Economics, Finance and Management Sciences, 1*(5), 227-233.

Tan, Y., & Floros, C. (2012). Bank profitability and GDP growth in China. *China Economic Business Studies, 10*, 267–273.

Vatavu, S. (2015). The impact of capital structure on financial performance in Romanian listed companies. *Procedia Economics and Finance, 32*, 1314-1322.

Yeo, H. (2016). Solvency and Liquidity in Shipping Companies. *The Asian Journal of Shipping and Logistics, 32*(4), 235-241.

APPENDIX

Table 5: Pairwise Correlation Matrix

Pwcorr	DER	lnAssets	LOD	NPL	OEOI	HHI	LRR	RGDP	INF	TFR
DER	1									
lnAssets	-0.3249	1								
LOD	0.4167	-0.017	1							
NPL	0.1518	0.2216	0.1241	1						
OEOI	0.5534	-0.5689	0.0157	0.1086	1					
HHI	0.1126	-0.1847	0.1377	-0.2267	0.0392	1				
LRR	-0.2077	0.2179	0.1529	-0.0566	-0.2082	0.3077	1			
RGDP	0.056	-0.2731	0.1095	-0.2109	-0.1459	0.2003	0.1573	1		
INF	-0.1855	0.3929	-0.164	0.3295	0.0111	-0.4852	0.0322	-0.6302	1	
TFR	-0.1717	0.594	-0.169	0.4344	-0.0065	-0.4124	-0.0637	-0.357	0.6573	1