A Model of Economic Indicators' Influence on Banks' Capital Structure: Evidence from South Africa

Abstract

This paper examines the influence of economic indicators on South Africa's bank capital structure. The study made use of secondary bank financial data and secondary statistical data for economic indicators from 2000 to 2013. A model is therefore estimated using SmartPLS, a structural equation modelling (SEM) software. With recent global crisis, there has been a huge interest from researchers to study company's capital structure. Numerous studies have conducted empirical investigations on capital structure, but there has not been an intense study in the influence of economic indicators to capital structure. The study specifically explores the South African Banking industry. The capital structure of a firm consists of a particular combination of debt and equity issues to relieve potential pressures on its long-term financing. It is therefore important for banks to make prudent financial decisions to ensure optimal financial performance. This study investigates the impact of economic indicators that include Gross domestic product (GDP), Consumer price index (CPI), Producer price index (PPI), exchange rate, repo rate and unemployment rate on the capital structure of a bank. The SEM results confirmed the simultaneity between capital structure and bank performance as well as between economic indicators and bank performance. The study found that there is a significant positive relationship between capital structure as measured leverage ratio and bank performance. It is envisaged that the research findings will enable banks to make better financial decisions.

Key words

Economic Indicator, capital structure, leverage

JEL codes: C3, C5, G21, M20

1. INTRODUCTION

1.1 Background of the Study

The finance function is essential for both private and public enterprises (Narain, 2011). This is as a result of the importance of prudent financial management to the survival and growth of an organisation (Narain, 2011). A number of studies (Turyahebwa, Sunday and Ssekajugo, 2013; Arif and Akbar, 2013; and Thauti, 2013) have therefore been conducted in the field of finance to make a contribution to financial policies and strategies that can be adopted by business organisations in order to achieve business objectives. The challenges in the global financial markets experienced recently make research in financial management even more important and to some extent urgent. The financial crisis of 2007/2010 affected world economies by diminishing economic growth causing increased unemployment, inflation, social instability and political instability (Saget and Yao, 2011).

Given the importance of financial management and the challenges in financial markets the study makes a further contribution by developing a model of capital structure determinants. Many studies (Awan, Rashid and Rehman, 2011; Cekrezi, 2013; and Ojo, 2013) have been carried on the determinants of capital structure but there is scant research reported on the impact of macroeconomic indicators on capital structure. Most previous studies (Sarlija and Harc, 2012; Pahuja and Sahi, 2012; and Cekrezi, 2013) centred on investigating microeconomic variables' (or firm characteristics') impact on capital structure. These microeconomic variables include growth opportunities, profitability, previous dividends level, firm size, liquidity and stakeholder power. Thus there is lack of literature on the effect of macroeconomic factors on the capital structure of business organisations.

It is essential to investigate all the factors that have an impact on the determination of capital structure given the importance of capital structure as reported in literature. Ojo (2012) reported that determination of optimal capital structure is important in order to preserve or maximise shareholders' value. According to Ojo (2012) financial leverage can have a positive effect on earnings per share if it is properly managed. This is because the after tax cost of debt is lower than cost of equity financing. Ogbulu and Emeni (2012) argued that financial leverage increases the firm's value as a result of the lowering of weighted average cost of capital (WACC). On the other hand Pandey (2008) reported that the existence of debt in the capital structure causes variability in the earnings of shareholders meaning financial leverage adds financial risk to the firm. The financial risk can also be increased as a result of debt interest obligations that are contractual unlike dividends paid to shareholders.

Given the reported advantages of optimal capital structure to the firm's value and the earnings to shareholders it is paramount therefore to understand all factors that influence the firm's capital structure.

The dangers of debt in the capital structure relating to increase of financial risk also makes it important to have a comprehensive understanding of the determinants of capital structure in order to limit the financial risk. A review of existing literature (Afza and Hussain, 2011; Lipson and Mortal, 2009; and Shehu, 2011) on capital structure reveals that previous research concentrated largely on company specific factors while neglecting macroeconomic factors. This study therefore determines the macroeconomic indicators' influence on a firm's capital structure with a view to develop a model of macroeconomic indicators' influence on capital structure. The paper uses banks as units of analysis. Thus the major research question is: Do macroeconomic indicators impact a bank's capital structure?

1.2 Problem Statement

The problem is that economic indicators' influence on a firm's capital structure has rarely been analysed. Although it is generally agreed that macroeconomic factors positively or negatively affect all firms operating in a given industry, the effect of economic indicators on a firm's capital structure has not been considered in previous research. For instance Schwarcz (2008) reported that systematic risk which is closely linked to macroeconomic factors has negative impact on all banks operating in a given country. Thus existing literature is silent on the effect of specific economic indicators on capital structure. Existing literature largely reports on firm specific factors or microeconomic factors' influence on capital structure. Thus this analytical study develops a model of economic indicators' influence on a bank's capital structure.

1.3 Research Objectives

The research achieves the following objectives:

- It determines the relationship between consumer price index (CPI), producer price index (PPI), gross domestic product (GDP), unemployment rate, exchange rate and repo rate with capital structure;
- It determines the extent to which economic indicators (CPI, PPI, GDP, unemployment rate, exchange rate and repo rate) influence capital structure;
- It develops a model of economic indicators' influence on capital structure.

1.4 Research Questions

The study answers the following research questions:

- Is there a relationship between economic indicators (which include CPI, GDP, PPI, unemployment rate, exchange rate and repo rate) and a bank's capital structure?; and
- To what extent do economic indicators impact a bank's capital structure?

1.5 Research Hypotheses

To determine the nature and strength of relationship between economic indicators and a bank's capital structure the following hypotheses are tested:

- $\mathbf{H_1}$: There is a negative relationship between GDP and a bank's gearing;
- $\mathbf{H_2}$: There is a positive relationship between CPI and a bank's gearing;
- $\mathbf{H_3}$: There is a positive relationship between PPI and a bank's gearing;
- $\mathbf{H_4}$: There is a negative relationship between unemployment rate and a bank's gearing;
- $\mathbf{H_5}$: There is a positive relationship between exchange rate and a bank's gearing; and
- $\mathbf{H_6}$: There is a negative relationship between repo rate and a bank's gearing.

1.6 Significance of the Study

The study contributes to empirical evidence for future research in related topics. Impact of economic indicators on capital structure has not been extensively explored by researchers; the study fills a void in the empirical evidence of capital structure determinants. The developed model of economic indicators is a foundation for future research on the same topic but for firms operating in a different industry other than the banking sector. Bank executives that are involved in financial management strategising and policing can also benefit to a great deal if they are to access the article to be published from this study. The findings will help them make better financial management decisions.

1.7 Delimitations of the Study

This study only investigates the impact of economic indicators on banks' capital structure. The targeted economic indicators are CPI, PPI, GDP, unemployment rate, repo rate and exchange rate. It therefore follows that microeconomic factors or firm specific factors' influence on banks' capital structure is not part of the scope of this study. The study is also limited to banks as units of analysis leaving out firms operating in other industries. Thus the results of the research can only be extrapolated to bank institutions. The results may not apply to non-banking institutions due to variation in regulation regimes between industries.

1.8 Assumptions

The following assumptions have been made for the study:

- The economic system prevailing in a given country is free market system or mixed system with minimal government intervention;
- A bank's specific factors have no multiplier effect on economic indicators' impact on a bank's capital structure;

- Banks are homogeneous institutions in terms of policies, strategies and structure;
- Banks can borrow at the same rate;
- There is no limitation on a bank's ability to raise equity funds or borrowed funds; and
- Bank management does not know the impact of economic indicators on the capital structure of a bank.

1.9 Limitations of the Study

Although every effort was made through the research methods employed to overcome any challenges, the study still has some limitations. The study only targeted listed banks as units of analysis. Banks that are not listed at Johannesburg Stock Exchange were excluded from the study as it is difficult to get reliable and financial statements from them to extract financial information for analysis. Thus the sample of the study is not necessarily representative. The study excluded other external factors that might have impact on capital structure of a bank. These factors might include competition, regulation by reserve bank and external social factors. The assumptions made for the study are not necessarily correct but are only made to simplify the data analysis.

2. FOUNDATION

2.1 Introduction

This section discusses aspects that establish the foundation of the study. The hypotheses are developed by discussing the postulated relationship between capital structure and economic indicators. These economic indicators include gross domestic product (GDP), consumer price index (CPI), producer price index (PPI), unemployment rate, exchange rate and repo rate.

2.2 Economic Indicators

Olsen (2009) defined economic indicators as statistical measures of economic conditions of a specific market or sector of the economy. According to Frank and Goyal (2009) macroeconomic conditions are part of capital structure determinants. However, as alluded before there is no research on the influence of specific economic indicators on capital structure. This study determines the influence of the following economic indicators on banks' capital structure: GDP, PPI, CPI, unemployment rate, exchange rate and repo rate. The descriptions of these indicators and their presumed relationship with capital structure are discussed in the coming sections.

2.2.1 Gross Domestic Product (GDP)

According to Case, Fair and Oster (2012) gross domestic product (GDP) is the total market value of a country's output. It is the market value of all final goods and services produced within a given period of time by sectors of production located within a country (Case et al, 2012). Thus it is a measure of how a country is performing in terms of production of goods and services. The fact that GDP is measured regularly and quite consistently in practically all countries of the world allows a direct comparison of the standard of living in individual countries. The frequency of measure makes it possible to analyse the trend. The trend determines whether the country's economy is growing or deteriorating. GDP is often used as an indicator of a country's standard of living (Olsen, 2009).

Mohr and Fourie (2009) noted that GDP calculations failes to correctly aggregate the national total output. Despite the said limitations, GDP per capita still seems to be the best indicator to measure a country's standard of living. The study investigates the impact of a GDP increase or decrease on a bank's capital structure. There is a negative relationship between debt and economic growth (Fosu, 2007; and Reinhart and Rogoff, 2010). The study hypothesizes a negative relationship between GDP and capital structure. The following hypothesis is formulated for the study:

H_1: *There is a negative relationship between GDP and a bank's gearing.*

2.2.2 Consumer Price Index (CPI)

Consumer price index is one of the economic indicators and widely followed price index. According to Mohr and Fourie (2009) consumer price index is the index of the prices of a representative basket of customer goods and services. Currently in South Africa, CPI is computed each month, using bundles of goods meant to represent the market basket purchased monthly by consumers. According to Case et al (2012) CPI market basket shows how a typical consumer divides his or her money among various goods and services. Most of consumer's money goes towards housing, transportation food and beverages (Case et al. 2012: 480). It measures changes in the prices paid for goods and services by urban consumers for the specified month (Case et al., 2012). Inflation refers to the constant increase in prices of goods and services over a longer period of time (Mohr and Fourie, 2009). One possible measure of inflation is the inflation rate, the annual percentage change in the consumer price index. Inflation is primarily caused by substantial increases in the money supply while stagflation occurs if there is high unemployment and a high inflation rate (Case et al., 2012). Statistics South Africa is responsible for the calculation of the country's periodic rate of inflation. The study investigates the impact of a drop or increase of CPI (or inflation rate) on capital structure of a bank. The definition of inflation entails erosion of the purchasing power of money of a country. The study postulates that in the periods of high inflation a bank's capital value is wiped out and thus the bank has to raise more capital through borrowing. The following hypothesis is formulated:

H_2: *There is a positive relationship between CPI and a bank's gearing.*

2.2.3 Producer Price Index (PPI)

According to Fu and Liu (2010) PPI is defined as a measure of change in prices of goods either as they leave their place of production or as they enter the production process. Alternatively the two authors described PPI as the measure of prices obtained by domestic producers for their output goods and services. Thus PPI is another measurement of inflation just like CPI. Statistics South Africa is responsible for measuring PPI for locally produced goods that include final manufactured goods, intermediate manufactured goods, electricity and water, mining, and agriculture, forestry and fishing products. It therefore follows that the study also postulates a positive impact of PPI on a bank's financial leverage. The following hypothesis is presented in line with the hypothesized relationship:

H_3: *There is a positive relationship between PPI and a bank's gearing.*

2.2.4 Unemployment Rate

Unemployment rate is the percentage of labour force that is unemployed (Case et al., 2012). According to Shadare and Tunde (2012) unemployment can be categorized between those who have never worked after graduation and those who have lost their jobs and are trying to enter the labour market again. Statistics South Africa is responsible for determining the unemployment rate of a country and the movements in the annual rate is normally released monthly. Unemployment rate is an important economic indicator that helps people understand how healthy or strong the economy is (Olsen, 2009). If people who want to work are able to find jobs, the economy is healthier than it is when people who want to work cannot find jobs. Unemployment rate is a key indicator of economy's health because unemployment rate is usually closely related to the economy's aggregate output (Case et al. 2012: 444). In micro economics theory, the response to excess supply is a decrease in the price of the commodity in question and therefore an increase in the quantity demanded a reduction in the quantity supplied and restoration of equilibrium. The study investigates the impact of a decrease or increase in unemployment rate on a bank's capital structure. According to Kreishan (2011) it is a widely accepted view in economics that the growth rate of GDP increases employment and decreases unemployment rate. Thus during declining growth (or high unemployment rate) the appetite for borrowed funds by firms is supposed to be low. The study therefore postulates a negative relationship between unemployment rate and capital structure as supported by the following hypothesis:

H_4: *There is a negative relationship between unemployment rate and a bank's gearing.*

2.2.5 Exchange Rate

Adeniran, Yusuf and Adeyemi (2014) defined exchange rate as the price of a country's currency against other currencies. According to the authors exchange rate determines prices of both domestic and foreign goods. The authors further noted that the movements in the exchange rate impact the economic performance of a nation. Sadiku, Saliu and Sadiku (2013) reported that there are two types of exchange rate regimes which are the float exchange rate system and fixed exchange rate system. In the float exchange rate system the exchange rate of a currency is determined by demand and supply forces of the market while in fixed exchange rate system the exchange rate of a currency is determined and fixed by the government against other currencies (Sadiku et al, 2013). It is important to note that exchange rate influence the imports and exports of a country as well as outside investments. The study investigates the effect of a devaluation or appreciation of exchange rate on a bank's capital structure. According to Ngerebo (2011) there is a positive significant relationship between exchange rate and commercial banks' intermediation activities. The study postulates a positive relationship between exchange rate and capital structure. The fifth hypothesis of the study is as follows:

H_5: *There is a positive relationship between exchange rate and a bank's gearing.*

2.2.6 Repo Rate

West (2008) defined repo rate as the rate that is used for borrowing and lending between South African Reserve Bank (SARB) and commercial banks. Dube and Zhou (2013) recognized repo rate as the policy rate that is used by the reserve bank to influence the banks' prime rates of lending. According to Dube and Zhou (2013) repo rate that is set by the Monetary Policy Committee can influence the short term interest rates that are influenced by the market demand and supply forces. According to the inflation targeting policy that is used by SARB an increase in repo rate leads to increase in prime rate thereby reducing borrowing by households and business organizations leading to the reduction of the inflation rate (Dube and Zhou, 2013). Thus monetary authorities use repo rate to influence economic activity to achieve economic objectives. An increase in the repo rate makes borrowing by businesses including banks unattractive and therefore reduces their leverage ratio. The study therefore postulates a negative relationship between repo rate and banks' capital structure. The following hypothesis is therefore formulated:

H_6: *There is a negative relationship between repo rate and a bank's gearing.*

3. LITERATURE REVIEW

3.1 Introduction

This section reviews literature in support of the study. The section commences by describing capital structure and then discusses the importance of optimal capital structure to a business organisation. The determinants of capital structure are then outlined followed by

importance of banks to an economy. The section ends by describing firm performance and then the relationship between firm performance and gearing.

3.2 Capital Structure

The theme of capital structure has been reported widely in literature. A number researchers or authors have therefore defined capital structure. Shubita and Alsawalhah (2012) defined it as a mix of debt and equity that a firm use in its operations. The two researchers further noted that a firm can use different securities that include lease financing, warrants, convertible bonds, forward contracts and bond swaps in the capital structure. Sarlija and Harc (2012) described capital structure as a way a business organisation finances its assets through combining debt and equity. It is measured by leverage ratios which represent a measure of the degree of investment risk in an organisation as well as determining the use of borrowed funds (Sarlija and Harc, 2012). Thauti (2013) explained capital structure by first defining capital and structure. According to the author capital is the means by which the wealth of firms is created while structure is a complex of relationships outlining clear and distinguishable patterns in a firm's operational varying circumstances. Thauti (2013) concluded by defining capital structure as a firm's permanent financing that includes long term debt financing, equity financing and preferred stock financing. Thus authors agree that capital structure relates to the mix of long term capital of the business. According to Chechet, Garba and Odudu (2013) capital structure decisions are the most important decisions made by a finance manager. On the other hand Sarlija and Harc (2012) noted that capital structure decisions are challenging for financial managers due to the dynamic business environment. It therefore follows that the optimal capital structure of a business organisation is not static as it should be continuously reviewed in line with changing business circumstances. Kumar, Ajum and Nayyar (2012) reckon that two firms can have different optimal capital structure positions. Kumar, Ajum and Nayyar (2012) also concluded that the optimal mix of debt and equity differs from industry to industry. Thus the mix of capital components regarded as optimal capital structure varies from organisation to organisation and from industry and industry. Financial managers should consider appropriate mix of capital components in order to achieve business objectives.

3.2.1 Importance of Optimal Capital Structure

Capital structure decisions have great impact on the firm's financial performance (Kumar, Ajum and Nayyar, 2012). According to Chechet et al (2013) optimal capital structure entails a proper mix of funds sources towards achieving business objectives. Pahuja and Sahi (2012) described it as a mix of capital components that strikes a balance between risk and return to achieve the ultimate goal of maximising the price of the stock. Kumar, Ajum and Nayyar (2012) also noted that optimal capital structure is the one that maximises shareholders' wealth through minimising a firm's weighted average cost of capital. The definitions point to an optimal capital structure having a positive effect on achievement of business objectives that relates to maximising of shareholders' wealth.

According to Sarlija and Harc (2012) too much debt in an organisation is a source of investment risk (due to possibility of bankruptcy) but optimal level of debt can lead to increased return on investment. Pahuja and Sahi (2012) noted that capital structure policy is a trade off between risk and return. Hardiyanto, Achsani, Sembel and Maulana (2014) reported that debt in the capital structure has advantage over equity due to tax shield which increases profitability and value of the firm. However, Hardiyanto et al (2014) further noted that greater amount of debt exposes the firm to risk of financial distress. Antwi (2012) also found that optimal mix of debt and equity has positive effect on the value of the firm. There is need to compare benefits of using long term debt and the marginal cost of using the long term debt (Antwi, 2012). High level of debt finance has the effect of increasing investment return but also increase financial risk on the other side. Thus although leveraging a firm increases profitability to shareholders there is need to maintain an optimal gearing ratio to balance between increasing return and increasing financial risk. Various studies (Modigliani and Miller, 1963; Ibrahim, 2009; and Saeedi and Mahmoodi, 2011) concluded that capital structure has a positive effect on firm performance. An appropriate mix of debt and equity positively influence earnings per share (EPS) and return on equity (ROE) (Moscu, 2014). Moscu (2014) further noted that capital structure can positively influence investors on the market as a result of signal theory effect. Financial management relating to capital structure decisions is essential to organisations as it ensures business growth and competitiveness (Sarlija and Harc, 2012). Given that capital structure is made up of three broad categories of debt, equity and preferred stock it is essential to consider various instruments under each category in order to understand the risks and benefits associated with a specific instrument (or sub category).

3.3 Determinants of Capital Structure

Determinants of capital structure can be categorised into two broad categories namely company specific factors and market wide factors as presented below.

3.3.1 Company Specific Factors

Extensive research has been carried that confirmed various company specific factors as determinants of capital structure. However, it is important to note that results from past research are contradictory in some instances. This is because some factors were proven to

be significant in some studies but insignificant in other studies. The company specific determinants are presented below.

a) Firm Size

According to empirical evidence size of a firm influence an organisation capital structure. Negative significant relationship was confirmed in many previous studies (Chechet et al, 2013; and Awan, Rashid and Rehman, 2011) between capital structure as measured by gearing ratio and firm size. However, other studies confirmed a positive significant relationship between firm size and capital structure (Cekrezi, 2013; and Amjad, Bilal and Tufail, 2013). On the other hand Pahuja and Sahi (2012) found out that there is insignificant positive relationship between capital structure and firm size.

b) Firm Growth

Pahuja and Sahi (2012) confirmed a positive significant relationship between capital structure as measured by leverage ratio and firm growth while Amjad et al (2013) reported a negative significant relationship between the factors. However, Rila and Mansor (2008) found an insignificant negative relationship and Awan et al (2011) confirmed a positive insignificant relationship. Thus there is great variation in the findings of previous studies.

c) Liquidity

Most previous studies (Lipson and Mortal, 2009; Sharif, Naeem and Khan, 2012; Sarlija and Harc, 2012; and Afza and Hussain, 2011) confirmed a negative significant relationship between liquidity and capital structure. On the other hand, Pahuja and Sahi, (2012) and Amjad et al (2013) reported a positive significant relationship between the two factors. It therefore follows that there is contradictory empirical evidence on impact of liquidity ratios on leverage ratios.

d) Asset Tangibility

Asset structure is reported to be largely having a positive significant relationship with leverage ratio (Pahuja and Sahi, 2012; Voutsinas and Werner, 2011; Gropp and Heider, 2010; and Khrawish and Khraiwesh, 2010). This is because firms with high proportion of tangible assets can easily borrow due to their ability to provide collateral security needed by lenders. However, Chechet et al (2013) found a negative significant relationship between asset structure and leverage ratio.

e) Profitability

Empirical evidence largely supports a negative significant relationship between profitability and capital structure as measured by gearing ratio as well as insignificant relationship. Chechet et al (2013) and Awan et al (2011) found a negative significant relationship between profitability and leverage ratio. This is because a profitable firm is likely to use internally generated finance contrary to a loss making firm that lacks adequate internal resources. However Sahuja and Sahi (2012) reported an insignificant positive relationship between the two variables.

f) Firm Age

There is a positive relationship between age of firm and its leverage ratio (Shehu, 2011). This is because a grown up firm has an increased capacity to take up debt unlike a new firm (Chechet et al, 2013). Aged firms are likely also to get loans from lenders as a result of proven financial track record that is lacking in new firms. Some banks for instance request financial statements for previous three years to support a loan application and this rules out new start-up firms.

g) Other Factors

There are other company specific factors whose impact on capital structure has not been reported widely as the above factors. Thus research on these factors is limited. Nyanamba, Nyangweso and Omari (2013) reported the following factors as having significant relationship with capital structure of micro businesses: lender's attitude towards the firm, stability of future cash flows, the need for outside capital, ability of owners to raise funds and attitude of management towards risk. These factors are largely related to small businesses.

3.3.2 Market Wide Determinants

Although previous studies largely concentrated on company specific factors' impact on capital structure there is need to consider the impact of market wide factors on firm capital structure. According to Cariola (2010) there are industry and market specific factors that can influence the capital structure of a firm. Cariola (2010) reported that local financial developments have a positive significant relationship with leverage ratio. Nyanamba et al (2013) found that level of lending interest rates have a negative relationship with small enterprises' leverage ratio. Government policy towards small businesses also has an influence on capital structure of small businesses (Nyanamba et al, 2013). Ashcraft (2008) reported that capital structure of banks is influenced by regulatory framework of central banks as well as by the attitude of debt holders, depositors and shareholders. Hardiyanto, Achsani, Sembel and Maulana (2014) reported that the level of income tax rate that makes debt to have tax benefits has influence on a firm's capital structure. The higher the income tax rate the more attractive is debt financing over equity. Thus income tax has a positive relationship with leverage ratio of a firm. Chen (2010) using a dynamic capital structure framework found that unpredictable variations in macroeconomic conditions have a significant impact on firms' financing policies. Bhamra, Kuehn and Strebulaev (2010) argue that

business organisations use less debt financing during bad states of the economy to have financial flexibility rendering leverage to be pro-cyclical.

There is scant research relating to market wide factors that determine capital structure of a firm. This is contrary to research on company specific factors that has been widely researched. This research investigates the impact economic indicators, which are market wide factors, on the capital structure of banks. The economic indicators under investigation are gross domestic product, consumer price index, producer price index, unemployment rate, exchange rate and repo rate. There is no empirical evidence on the influence of economic indicators on capital structure of banks or of non banking sector institutions.

3.4 Banking Industry's Importance to Economy

Banks play important role in an economy. It is for this reason that they were chosen as units of analysis for this study. Literature reported on numerous advantages and roles of banks in any economy. Kanwal and Nadeem (2013) reported that the role of financial institutions should not be underestimated in an economy. Otto, Ekine and Ukpere (2012) noted that banks are important in economic development. This was also supported by Al Karim and Alam (2013). Kumar, Harsha, Anand and Dhruva (2012) also reported that the soundness of the banking sector is important in absorbing national and worldwide economic shocks and meltdowns. Thus according to literature the financial system which banks are an integral part to is the backbone of any economy. According to Chagwiza (2012) banks are the linchpin of the economy whose role determines the direction of the economy.

Rao (2014) reported on a number of essential retail banking services (or products) that are offered by banks. These services include credit cards, housing loans and mass market banking that include savings accounts, current accounts and ATM services (Rao, 2014). Acquah-Sam and Salami (2014) noted that banks have increased innovation through automation in their banking processes that aim to improve accessibility of services to the wider market. Banks are the engine of economic growth through their management and improvement of market liquidity (Otto et al, 2012). Ekpenyong and Acha (2011) also recognised the following essential secondary services that are offered by banks:

- Issuing letters of credit;
- Provision of safe custody to valuables, important documents and securities;
- Provision of foreign exchange facilities;
- Money transfer services;
- Guarantee services;
- Supplying and collection of business information; and
- Provision of creditworthiness reports of customers.

Furgani and Mulyany (2009) reported that banks play an economic growth promoting role when they direct financial resources to sectors that demand them. The two authors further reckoned that banks can channel financial resources for productive purposes rather than non productive uses to promote effective use of available resources. Chagwiza (2012) also explained the financial intermediary role that is played by banks in an economy. Banks create money in an economy by making loans to economic sectors (Chagwiza, 2012). According to Chagwiza (2012) banks provide short, medium and long term finance to priority economic sectors. Banks mobilise deposits from people to channel to economic sectors by offering attractive deposit rates (Chagwiza). According to Chagwiza (2012) banks also play monetisation role that entails exchanging securities for currency, trading a possession and making money on merchandise that was previously unprofitable.

Acquah-Sam and Salami (2014) argued that the financial intermediation role played by banks is important to an economy for a number of reasons. The authors noted the following services that are carried by banks during financial intermediation: maturity transformation; transformation of denomination; monitoring and information processing; payment services; liquidity transformation; and transaction cost reduction. These services are integral to the wellbeing of an economy. However, it is important for the banks to be properly regulated or developed to be able to play a meaningful supporting role to economic development (Mohd and Jamil, 2011). Thus governments should formulate proper policies for the financial system as well as empowering central banks to effectively supervise other banks for an economy to fully realise the benefits of primary and secondary banking services.

3.5 Business Performance

Bank performance is important for the study as it is used in the analysis model of the study as discussed in the next section. The next section relates the relationship between bank performance and capital structure as well with economic indicators in the modelling of determining the impact of economic indicators on capital structure. It is important to first review what firm performance entails before discussing the relationship between performance and gearing. According to Santos and Brito (2012) and Tudose (2012) noted that there is no consensus of the definition of firm performance due to its multi dimensionality. Santos and Brito (2012) noted that firm performance should be distinguished from firm effectiveness which covers operational and financial outcomes of a firm. According to the two authors firm performance is a subset of firm effectiveness. Tudose (2012) reported that firm performance can be categorised into two categories namely financial performance and non- financial performance, with

financial performance being the most popular among scholars. According to Enekwe, Okwo and Ordu (2013) firm performance is determined by ratio analysis (or financial analysis) that include gross profit margin, total assets turnover ratio, inventory turnover ratio and debtors' turnover ratio.

Muhammad et al (2013) also reported that firm performance is determined by ratio analysis that includes liquidity ratios, profitability ratios, leverage ratios, activity ratios and market value ratio. Liquidity ratios include current ratio and quick ratio while profitability ratio includes gross profit margin, net profit margin, return on assets (ROA), return on equity (ROE) and return on investment (ROI). Activity ratios include accounts payable turnover and assets turnover while market value ratio comprises of earnings per share (EPS). Brito and Santos (2012) presented a more comprehensive model of firm performance that comprises of both financial and non- financial variables as presented below

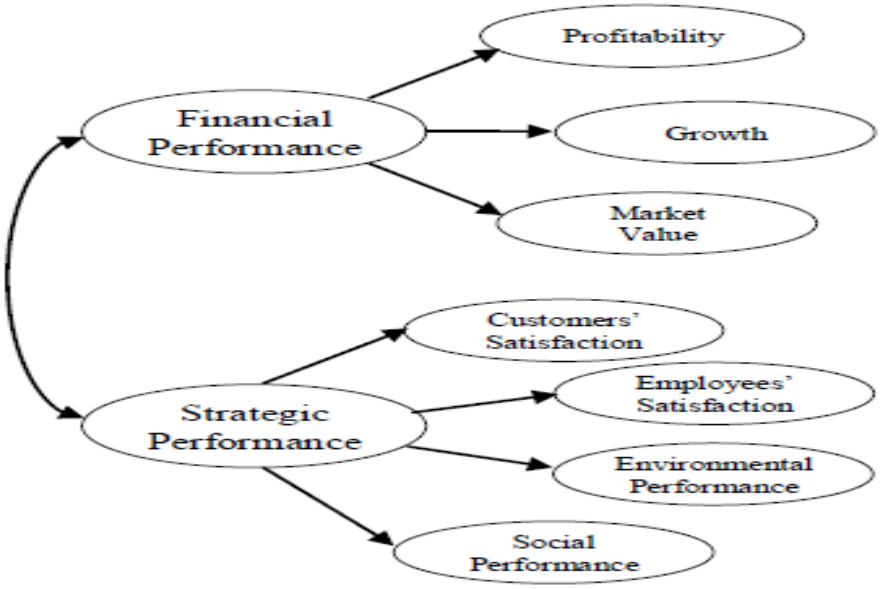

Figure 1: Firm Performance Dimensions (Brito and Santos, 2012)

The model in figure 1 stipulates that firm performance should be measured using both financial and non financial aspects. This study limited firm performance in terms of financial terms but excluding the leverage ratios. Performance measurement has been more anchored around profitability and market value ratios in the study.

3.6 Relationship between Capital Structure and Performance

This section reviews empirical evidence relating to impact of capital structure as measured by gearing ratio on firm performance. As seen above, firm performance can be measured by profitability ratios like ROE, ROA, EPS, gross profit margin and ROCE as well as by sales growth. Thus the impact of financial leverage should be considered on the various performance measurements. The literature therefore covers the various aspects of performance measurements.

Many researchers confirmed a significant negative relationship between ROA and financial leverage (Mwangi, Makau and Kosimbei, 2014; Mahmoudi, 2014; Abdul, 2012 and Sudiyatno, Puspitasari and Kartika, 2012). This relationship entails that an increase in financial leverage leads to a reduced ROA. On the other hand Saeedi and Mahmoodi (2011) reported a significant positive relationship between the two factors. Thus to a larger extent an increase in financial leverage decreases profitability as measured by ROA. ROE is largely reported to have a negative significant relationship with financial leverage (Mahmoudi, 2014 and Mwangi et al, 2014). This entails a decrease in ROE when financial leverage increases. However, Abdul (2012) reported an insignificant relationship between gearing ratio and firm performance as measured by ROE.

According to Saeedi and Mahmoodi (2011) and Ibrahim (2009) there is a positive significant relationship between financial leverage and firm performance as measured by EPS. This finding is also supported by Modigliani and Miller (1963) who noted that an increase in debt/equity ratio increases earnings of a company due to the fact that interest expense from debt is deductible for tax purposes. According to this finding an increase in debt proportion in the financing mix of a company has an effect of increasing firm performance.

Pratheepkanth (2011) reported a weak negative relationship between financial leverage and ROI and

between financial leverage and net profit margin. According to this finding an increase in gearing ratio leads to an insignificant decrease in profitability as measured by ROI and net profit margin. Pratheepkanth (2011) further reported that there is weak positive relationship between capital structure as measured by gearing ratio and gross profit margin. This entails an insignificant increase in gross profit margin when financial leverage is increased. In conclusion, the empirical evidence show that the impact of financial leverage on financial performance of a firm varies from measurement to measurement.

3.7 Relationship between Performance and Economic Indicators

The impact of economic indicators on firm performance is important for the study as it is also part of the analysis model for the research. Dragnic (2014) investigated the impact of general state of the economy on performance (as measured by sales growth) of small and medium businesses. The results show that there is a significant relationship between the two variables. According to Dragnic (2014) general state of the economy covers various factors that include stability or variability of macroeconomic factors as well as direction of macroeconomic factors. Ameur and Mhiri (2013) investigated the impact of macroeconomic indicators that include GDP and inflation on bank performance as measured by ROA, ROE and interest rate margin. According to the results both GDP and inflation has significant impact on bank's interest rate margin while only GDP has significant impact on ROE. However, both GDP and inflation have no impact on bank performance as measured by ROA.

Nazari et al (2013) also reported that GDP has significant impact on the performance (as measured by ROA and ROE) of listed companies. Otuori (2013) tested the impact of interest rate and inflation on bank performance as measured by ROE. According to the results interest rate has a positive significant relationship with bank performance while inflation has negative significant relationship. Gul, Irshad and Zaman (2011) investigated the relationship between external factors that include economic indicators on bank performance as measured by ROE, ROA and return on capital employed. The results show a significant relationship between the external factors and bank performance. The empirical evidence largely support that there is significant relationship between bank performance and economic indicators thereby supporting the data analysis model used in the next section.

4. RESEARCH METHODOLOGY AND DESIGN

4.1 Introduction

This section presents research methods and design employed for the study. Research methods and design are essential to scientifically solve the identified research problem and achieve the set research objectives. The section covers target population and sampling, data collection, study variables and data analysis techniques.

4.2 Population and Sampling

The target population for the study is all banks listed at the Johannesburg Stock Exchange (JSE). According to information obtained from JSE there are 7 banks listed at the local bourse. The list is provided in table 1 below.

Table 1: Banks Listed at JSE

Number	Name of Bank
1	Finbond Group Ltd
2	Capitec Bank Holdings Ltd
3	RMB Holdings Ltd
4	Firstrand Ltd
5	Barclays Africa Group Ltd
6	Standard Bank Group Ltd
7	Nedbank Group Limited
8	ABSA

Sampling is only necessary if the population size is too big to practically collect data from all the elements of the population. It is reasonable and practical to collect data for all the 7 banks and thus sampling was disregarded.

4.3 Data Collection

The study made use of secondary bank financial data and secondary statistical data for economic indicators from 2000 to 2013. Audited financial statements for the 7 chosen banks were collected through downloading from the banks' websites. The study uses profitability and leverage ratios from the financial statements as a measure of bank performance and bank capital structure, respectively. As discussed below bank performance is brought into consideration in simultaneous equation modelling in order to determine the impact of economic indicators on a bank's capital structure. Economic indicators information relating to GDP, CPI, PPI, unemployment rate, exchange rate and repo rate from 2000 to 2013 was collected from Statistics South Africa (StatsSA) and South African Reserve Bank (SARB) and some through McGregor BFA. McGregor is a leading supplier of financial data and news and the data is uniform and includes history since 1990. All standardisation of the data is carried out by the Bureau

for Financial Analysis and therefore the information is comprehensive, reliable and accurate.

4.4 Study Variables

The study investigates the effect of economic indicators on capital structure. Thus capital structure is the dependent variable. In order to simplify the analysis capital structure is measured by leverage ratio or proportion of debt in the total capital of a bank. The following ratio for leverage (the dependent variable) was therefore chosen for this study:

Leverage = Total liabilities / Total book value (equity+ debt)
= Total debt / Total assets

This measurement of financial leverage was used by a number of researchers previously (Shubita and Alsawalhah, 2012; Strossmayer, 2012; and Pahuja and Sahi, 2012).

Independent variables are known as factors responsible for bringing about change in a phenomenon or situation. The study selected independent variables whose impact on financing behaviour of a firm is not known much due to limited research. The study ignored the impact of company specific factors as this has been extensively researched. The impact of macroeconomic factors on capital structure of a bank is being considered by the study. The following are the economic indicators that are being treated as explanatory variables (or independent variables) for the study: consumer price index (CPI), producer price index (PPI), gross domestic product (GDP), unemployment rate, exchange rate and repo rate. The study investigated the impact of deterioration or improvement of the economic indicators on the capital structure of a bank. The relationship between the dependent variable and the independent variables are hypothetically represented in the following model.

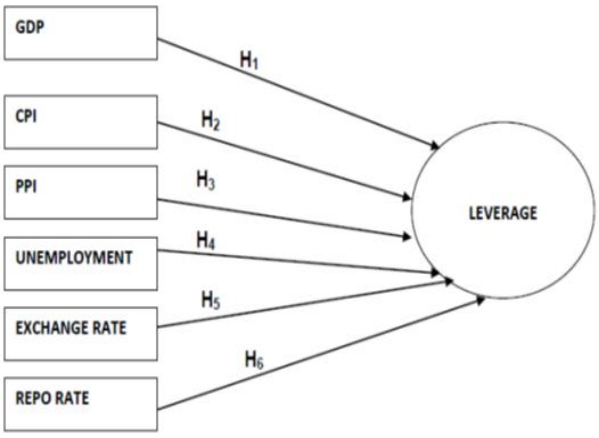

Figure 2: Study Hypothetical Model

Figure 2 above depicts that the leverage ratio of a bank is influenced by economic indicators that include GDP, CPI, PPI, unemployment, exchange rate and repo rate. The relationship between leverage ratio and GDP is postulated by hypothesis 1 (H_1) which presume a significant negative relationship while hypothesis 2 (H_2) is postulating a significant positive relationship between CPI and leverage ratio. A significant positive relationship is also presumed between PPI and leverage by hypothesis 3 (H_3). Unemployment and leverage ratio are presumed to have a significant negative relationship by hypothesis 4 (H_4). Hypothesis 5 (H_5) is presuming a significant positive relationship between exchange rate and leverage ratio. Finally, hypothesis 6 (H_6) is postulating that repo rate has a negative impact on a bank's leverage ratio.

The fact that the study seeks to eventually make recommendations to banks on how economic indicators influence their capital structure means the two variables cannot be tested directly. It is assumed that bank management does not know the impact of economic indicators on a bank's capital structure. The study uses simultaneous equation modelling that brings bank performance model in order to determine the impact of economic indicators simultaneously through substitution.

4.5 Data Analysis

The data analysis is centred on simultaneous equation modelling in order to test the impact of economic indicators (GDP, CPI, PPI, unemployment, exchange rate and repo rate) on capital structure of a bank.

The first model is as follows:

$$ROE_{it} = \beta_0 + \beta_1 LEV_{it} + \varepsilon_{it} \qquad \text{Eq.(1)}$$

Where: ROE is return on equity which is a measurement of firm performance;
LEV is financial leverage which is a measure of capital structure;
β_0 is intercept (or constant) of the equation;
ε is an error term;
i is a specific bank institution; and
t is time period.

The first equation is based on the reported significant relationship between firm performance as measured by return on equity (ROE) and firm capital structure as measured by leverage ratio. A number of researchers found that financial leverage has significant impact on the performance of a firm (Javed and Akhtar, 2012; Mwangi et al, 2014; and Mahmoudi, 2014). It is held in the study that there is a significant relationship between bank performance and bank financial leverage. The significance of the relationship is tested by structural equation modelling. The financial leverage ratio is calculated from the information provided in downloaded financial statements by the leverage ratio given above. On the other hand ROE is calculated from the financial information by the following formulae:

ROE = Profit attributable to ordinary shareholders / Total equity.

This formulae was applied by other researchers (Mwangi et al, 2014; Mohamad and Abdullah, 2012; and Mahmoudi, 2014).

Average ratios from 2000 to 2013 are used for both leverage ratio and ROE. ROE is treated as endogenous variable (dependent variable) while financial leverage (leverage ratio) is treated as exogenous variable (independent variable) in the structural equation modelling. SmartPLS, a structural equation modelling software, is used for the structural equation modelling. The hypothesised path model from the structural equation modelling of the first equation is portrayed below:

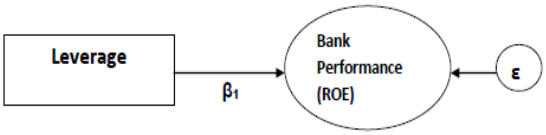

Figure 3: Hypothetical Path Model 1

The hypothetical path model in figure 3 above shows that financial leverage has an influence on a bank's performance. The magnitude of the impact of financial leverage on performance is measured by the financial leverage coefficient of β_1. The hypothetical model is also confirming that the change in bank performance is also due to some measurement error (ε).

The second equation for the simultaneous equation modelling is as follows:

$$ROE_{it} = \alpha + \beta_2 GDP_{it} + \beta_3 CPI_{it} + \beta_4 PPI_{it} + \beta_5 UE_{it} + \beta_6 ER_{it} + \beta_7 RR_{it} + \tau_{it} \quad \text{Eq.(2)}$$

Where: GDP is the gross domestic product;
CPI is the consumer price index;
PPI is the producer price index;
UE is the unemployment rate;
ER is the exchange rate;
RR is the repo rate;
β_2 to β_7 are coefficients for the economic indicators;
α is the intercept of the equation (or constant); and
τ is the error term.

This equation is based on the reported relationship between economic indicators and firm performance. Gul, Irshad and Zaman (2011) found that there is a significant relationship between a bank's profitability and external factors that include economic indicators. This study therefore held that there is a significant relationship between bank performance measured by ROE and economic indicators that include GDP, CPI, PPI, unemployment rate, exchange rate and repo rate. The significance of the relationship is tested by structural equation modelling using SmartPLS. The economic indicators measurements used in the analysis are averages from 2000 to 2013 from the data obtained from StatsSA and SARB. Bank performance as measured by ROE is treated as endogenous variable while economic indicators are treated as exogenous in the analysis. The hypothesised path model from equation two is given below:

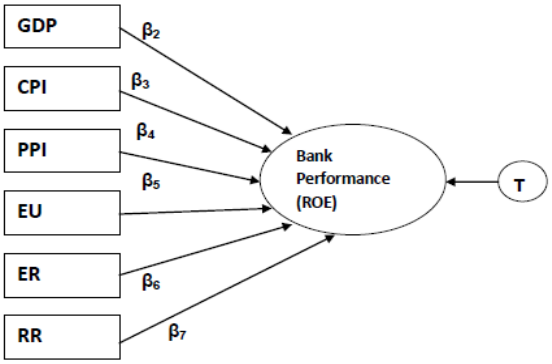

Figure 4: Hypothetical Path Model 2

Figure 4 above is confirming that economic indicators (GDP, CPI, PPI, EU, ER, and RR) have significant impact on a bank's performance. The magnitude of the impact is measured by economic indicators' coefficients (β_2 to β_7). The hypothetical path model also shows that change in bank performance is also due to measurement error (τ).

The above two equations are developed after the structural equation modelling to test the significance of the concerned variables. To determine the impact of economic indicators on capital structure of banks; equation 1 is substituted in equation 2 in order to solve the two equations. In substituting equation 1 into equation 2, the following third equation is determined:

$$LEV_{it} = \left(\frac{\alpha - \beta_0 + \beta_2 GDP_{it} + \beta_3 CPI_{it} + \beta_4 PPI_{it} + \beta_5 UE_{it} + \beta_6 ER_{it} + \beta_7 RR_{it} + \tau_{it} - \varepsilon_{it}}{} \right) / \beta_1 \quad \text{Eq.(3)}$$

The above model presents capital structure as measured by leverage ratio as the dependent variable and the economic variables as the independent variables. Solving the two first equations by substitution culminates in the determination of economic indicators as determinants of a bank's capital structure. Thus the research hypotheses are tested by a combination of structural equation modelling and simultaneity of relationship between bank performance and bank capital structure in first equation and between bank performance and economic indicators in the second equation. Only economic indicators that have a significant impact on bank performance are included in the equation 3 in determining the impact of economic indicators on a bank's capital structure.

4.6 Reliability and Validity of Research Findings

Quality of input data is essential in ensuring reliability and validity of the research findings. The data used for the study is of high quality as it is either audited or from credible government institutions responsible for compiling the data. The financial information used for

computing bank performance and bank financial leverage is from audited financial statements. Thus the financial information is valid and reliable. The economic indicators information was obtained from StatsSA and SARB, credible national institutions responsible for compiling the information which makes the data valid and reliable. Reliability for the study is checked by cronbanch's coefficient alpha and composite reliability values of the construct variables. Convergent Validity is measured through examination of factor loadings of each construct while discriminant validity is tested through examination of correlation matrix of latent variables.

5. RESEARCH FINDINGS AND DISCUSSIONS

5.1 Introduction

This section presents data analysis findings and discussions. SmartPLS, a structural equation modelling software was used for the analysis. The research findings are discussed in detail linking them to previous research findings where possible. The section begins by presenting descriptive analysis that covers capital structure average and range for each bank. The averages relating to bank performance as measured by ROE and economic indicators are also presented. Before presenting the structural equation modelling (SEM) results, the validity and reliability of the research findings are discussed.

5.2 Descriptive Analysis

This section presents averages of ROE, leverage ratio and economic indicators. The structural equation modelling analysis below made use of averages as input measurements of ROE, leverage ratio and economic indicators. The averages are calculated from data collected for 2000 to 2013.

5.2.1 Firm Performance

The first simultaneous equation relates firm performance as measured by ROE with capital structure as measured by financial leverage. The averages of ROE used in the simultaneous modelling for the 7 banks are summarised in table 2.

Table 2: Average Bank Performance

Bank	ROE (%)
First Rand	25.04
Standard Bank	23.18
Nedbank	16.65
Capitec	21.84
ABSA	18.88
RMB Holdings	16.29
Finbond	12.0

The range for the ROE is 12% to 25.04% with First Rand bank having the highest measurement and Finbond bank with the lowest.

5.2.2 Financial Leverage

The capital structure in the first simultaneous equation is measured by financial leverage ratio. The average financial leverage ratios for the 7 banks are presented in table 3.

Table 3: Average Bank Financial Leverage

Bank	Leverage Ratio (%)
First Rand	92.29
Standard Bank	92.43
Nedbank	62.64
Capitec	49.43
ABSA	92.79
RMB Holdings	16.0
Finbond	44.14

The leverage ratios for the 7 banks ranged from 16% to 92.43% with First Rand bank registering the highest and RMB Holdings the lowest.

5.2.3 Economic Indicators

The second simultaneous equation relates firm performance with economic indicators. The averages for the economic indicators used in the structural equation modelling analysis are given in table 4.

Table 4: Average Economic Indicators

Economic Indicator	Average
GDP	R2 003 345 857
CPI	73.42%
PPI	6.84%
Unemployment	24.84%
Exchange Rate	R7.81 / US$1
Repo Rate	8.36%

The GDP measurements are in terms of monetary values (per annum) while CPI, PPI and repo rate are annual percentages. The exchange rate used for the study is in terms of (South African) rands per (United States of America) dollar.

5.3 Measurement Accuracy Assessment

This section presents the reliability and validity of research results. According to the findings the research measurements are valid and reliable except for unemployment rates, CPI and ER.

5.3.1 Reliability

The reliability of the research measurements were proven by cronbach's coefficient alpha and composite reliability values.

5.3.1.1 Cronbach's Coefficient Alpha

Table 5 presents Cronbach's coefficient alpha for the latent variables.

Table 5: Cronbach's Coefficient Alpha

Variable	Alpha
Capital Structure	1.000
Economic Indicators	0.754
Performance	1.000

All the alpha values in the above table are greater than 0.7 and they meet the recommended the acceptable reliability measurements. Previous researchers accepted Cronbach's coefficient alpha of greater than 0.7 (Tavakol and Dennick, 2011 and Dunn, Seaker and Waller, 1994). However, an alpha greater than 0.95 is considered to be too high and it can be caused by narrow representation of a construct or redundancy. Redundancy tests presented below confirmed goodness of fit for the research construct and thus the alpha measurements of 1 for performance and capital structure are not as a result of redundancy. The higher alpha values are therefore as a result of narrowing performance and capital structure measurements. Bank performance has been measured by ROE and capital structure has been measured by a leverage ratio which is in line with hypothesised simultaneous relationships.

5.3.1.2 Composite Reliability

The composite reliability values for the research construct are given in table 6.

Table 6: Composite Reliability Values

Variable	Alpha
Capital Structure	1.000
Economic Indicators	0.712
Performance	1.000

All the composite reliability values for the latent variables in the table above are greater than 0.7 and therefore acceptable. Previous studies advocated for values of greater than 0.7 (Park, 2009 and Afthanorhan, 2013). However, the values for capital structure and performance are too high (as indicated by measurement of 1) due to narrowing of their measurements. In conclusion, composite reliability and Cronbach's coefficient measurements confirmed internal consistency of research constructs despite narrow measurements of performance and capital structure that are necessitated by simultaneous equation modelling.

5.3.2 Validity

Measurements that confirm the validity of the research measurements are presented in this section. The findings are categorised between convergent validity and discriminant validity.

5.3.2.1 Convergent Validity

Convergent validity was measured by analysing factor loadings (regression weights / outer loadings) of each construct item as well as by average variance extracted (AVE). The factor loadings of the individual items are given in table 7.

Table 7: Factor Loadings

Research Construct Item	Factor Loading
CPI	0.494
ER	-0.261
GDP	-0.706
Leverage	1.000
PPI	0.625
ROE	1.000
RR	0.864
UN	0.299

The table above shows that CPI, ER and UN have factor loadings of less than 0.5, the recommended threshold. Thus the 3 economic indicator variables are dropped from the study. GDP, leverage, PPI, ROE and RR have factor loadings of greater than 0.5 and are therefore used in further analysis. Previous studies recommended factor loadings of greater than 0.5 (Afthanorhan, 2013 and Park, 2009). Convergent validity was further measured by average variance extracted and the AVE values for the constructs are presented in table 8.

Table 8: AVE Values

Construct	AVE Value
Capital Structure	1.000
Economic Indicators	0.548
Performance	1.000

The AVE values for the three construct variables (latent variables) are greater than 0.5 thereby confirming the existence of convergent validity. The threshold of greater than 0.5 was also used in previous studies (Tselios, Daskalakis and Papadopoulou, 2011 and Afthanorhan, 2013).

5.3.2.2 Discriminant Validity

Discriminant validity was measured by correlation matrix of latent variables. The correlation between latent variables is given in table 9.

Table 9: Latent Variable Correlation

	Capital Structure	Economic Indicators	Performance
Capital Structure	1.000		
Economic Indicators	-0.637	1.000	
Performance	-0.135	0.604	1.000

The inter correlation for paired latent variables in the table above is below 1 (in terms of absolute values) as per recommended threshold thereby confirming the existence of discriminant validity. The threshold of

less than 1 was confirmed previously (Hoopper, Coughlan and Mullen, 2008).

5.4 Research Model Fit Assessment

This section presents statistics model fit indices derived from SEM output. These indices are given in table 10.

Table 10: SEM Model Fit Results

Indices	Results
Goodness of Fit (GIT)	0.916
Root Mean Square Residual (RMR)	0.041
Comparative Fit Index (CFI)	0.962
Root Mean Square Error of Approximation (RMSEA)	0.046
Normal Fit Index (NFI)	0.924
Incremental Fit Index (IFI)	0.966

The goodness of fit value of 0.916 is acceptable as it is above the minimum acceptable value of 0.9. This GTI value is closer to the perfect fit value of 1 which confirms that the construct measurements of the study are ideal for the conceptualised research model. Root mean square residual varies from 0 to 1 with fit index values close to 0 improving the model fit. The RMR of 0.046 in the above table is close to 0 and therefore confirms model fit. Comparative fit index values range from 0 to 1 with 0 confirming poor fit and 1 confirming perfect fit. The CFI value of 0.962 is almost perfect. This value entails that 96.2% of covariation in the data can be explained by the model. Thus this CFI value is acceptable.

Root mean square error of approximation determines how well the model fit the population covariance matrix if it is deduced. The RMSEA value equal to 0.05 or less is recommended to achieve a good model of fit. The RMSEA value of 0.046 given in the above table is below 0.05 and therefore supports the model to fit the population well. The normal fit index ranges from 0 to 1 with value of 1 confirming a perfect fit. The NFI determines the proportion at which the research model improves fit in comparison to random variables and values equal or greater than 0.9 are preferred. Thus a NFI value of 0.924 is confirming that the model is fit. Incremental fit index is closely related to NFI and values equal or greater than 0.9 are acceptable in confirming model fit. It therefore follows that an IFI value of 0.966 is acceptable.

The study also used collinearity statistics, construct crossvalidated redundancy and construct crossvalidated communality to validate the model fit. Collinearity measures the risk of the stability of research indicator weights. The existence of collinearity negatively affects the interpretation of research findings. The collinearity statistic (VIF) measurements are given in table 11.

Table 11: Collinearity Statistic Values

Indicator	VIF
GDP	2.030
Leverage	1.000
PPI	1.309
ROE	1.000
RR	2.292

Collinearity statistic values of less than 3.33 are acceptable (Diamantopoulos and Siguaw, 2006 and Cenfetelli and Bassellier, 2009). VIF for all indicator variables are below the recommended value of 3.33 meaning the model is fit as a result of insignificant collinearity. The construct crossvalidated redundancy values are given in table1.

Table 12: Redundancy Values

	SSO	SSE	1-SSE/SSO
Capital Structure	18.000	18.000	
Economic Indicators	54.000	54.000	
Performance	18.000	13.379	0.368

Redundancy measures the quality of structural model in the relation to the measurement model. Previous studies concluded that positive cv-redundancy is preferred as negative cv-redundancy entails poor estimation of corresponding latent variable (Cenfetelli and Bassellier, 2009). The cv-redundancy value of 0.368 is therefore acceptable as it confirms high quality for the research model. The cv-communality measurements are summarised in table 13.

Table 13: Communality Values

	SSO	SSE	1-SSE/SSO
Capital Structure	18.000		1.000
Economic Indicators	54.000	45.576	0.119
Performance	18.000		1.000

Cv-communality follows the same rule of acceptance as cv-redundancy. The fact that all the cv-communality values are positive confirms the model fit of the study. In conclusion, all the fit indices for the study support that the strength of the research model is strong and acceptable. Thus the research findings are strongly supported by the indices.

5.5 Hypotheses Testing

Three variables have been dropped for further analysis due to factor loadings of less than 0.5 that invalidates the validity of the research constructs. The dropped variables are unemployment (UN), consumer price index (CPI) and exchange rate (ER). These variables relates to the following hypotheses:

H_2: There is a positive relationship between CPI and a bank's gearing.

H_4: There is a negative relationship between unemployment and a bank's gearing.
H_5: There is a positive relationship between exchange rate and a bank's gearing.
The three variables were therefore excluded from the simultaneous equation modelling. It also follows that the above three hypotheses were excluded from testing. The remaining hypotheses were tested by analysing path model coefficients, t-statistic values and simultaneous equation modelling.

5.5.1 T-Statistic Measurements

The significance of the impact of independent variables on dependent variables is checked by analysing t-statistic values at 95% confidence interval. Variables that remained for significance testing are financial leverage (capital structure), ROE (performance), GDP, RR and PPI. Bootstrapping was performed for the significance testing. The bootstrapping results of the impact of capital structure on performance as well as of economic indicators on performance are summarised in table 14.

Table 14: Bootstrapping Results (T-Statistic)

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	T-Statistic (O/STERR)
CS → P	0.441	0.399	0.216	2.042
EC → P	0.888	0.887	0.262	3.387

In the table above CS represents capital structure, P is bank performance and EC is economic indicators. A t-statistic value of more than 1.96 is considered significant if tested at 95% confidence interval. The impact of capital structure on bank performance has a t-statistic value of 2.042 and thus significant while economic indicators' impact on bank performance has t-statistic value of 3.387 also confirming the significance of the relationship. Unlike capital structure that is measured by one indicator (which is financial leverage ratio) economic indicators comprise of three remaining indicators which are GDP, PPI and RR. It is therefore necessary to consider the significance of each economic indicator in relationship to the latent variable economic indicator. The outer loadings t-statistic value for each individual economic indicator in relation to the latent variable is shown in table 15.

Table 15: Economic Indicators' T-Statistics

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	T-Statistic (O/STERR)
GDP	-0.658	-0.583	0.278	2.365
PPI	0.676	0.690	0.191	3.541
RR	0.868	0.779	0.273	3.182

All the three indicators (GDP, PPI and RR) have t-statistic values of greater than 1.96 in relationship to the latent variable (economic indicators). This entails that the three indicators have a significant relationship with bank performance as latent variable capital structure is used to measure bank performance indirectly in the bootstrapping. In conclusion, the bootstrapping results show that financial leverage (capital structure), GDP, PPI and RR have significant relationship with bank performance.

5.5.2 Path Model Coefficients

Path model coefficients were also used for testing the significance of the relationships between variables. The coefficients were also used to measure the strength of relationship between variables. Table 16 gives the path model coefficients.

Table 16: Path Model Coefficients

Variables	Coefficient
CS ⟶ P	0.441
EC ⟶ P	0.888

According to table 15 above economic indicators have a greater impact on bank performance than capital structure as measured by the model coefficients of 0.441 and 0.888, respectively. The R^2 for the model is 0.475 meaning 47.5% of the variability in bank performance is influenced by both economic indicators and capital structure, with economic indicators having the greater impact. The fact that both path coefficients are greater than 0.2 validates the significance of the relationship between financial leverage and performance as well as the relationship between economic indicators and performance. A path coefficient of greater than 0.2 has been reported to entail a significant relationship previously (Teo, 2009).
The nature of the relationships between financial leverage and performance as well as between economic indicators and performance are also assessed by considering the signs of the path coefficients. A positive path coefficient of 0.441 confirms that there is a positive significant relationship between financial leverage and performance. It also follows that a path coefficient of 0.888 entails a positive significant relationship between economic indicators and bank performance. However, the fact that economic indicators included in the significance testing are three it is essential to consider the nature of relationship of the three individual indicators with bank performance. This is done indirectly by analysing the relationship between individual indicator and the latent variable, economic indicators. Table 17 summarises the path coefficients of individual indicators with latent variable, economic indicators.

Table 17: Economic Indicators' Path Coefficient

Variables	Path Coefficient
GDP ⟶ EC	-0.658

PPI ⟶ EC	0.676
RR ⟶ EC	0.868

It is important to note that economic indicator latent variable is used indirectly to measure bank performance. Thus the table above actually presents the relationships between individual economic indicators (GDP, PPI and RR) and bank performance. The results in the table confirm a negative significant relationship between GDP and bank performance as measured by a path coefficient of (-0.658). However, PPI and RR have a significant positive relationship with bank performance as measured by path coefficients of 0.676 and 0.868, respectively. The results also show that RR has the greatest impact, followed by PPI and then GDP as shown by the size of the absolute path coefficient value.

5.5.3 Development of Simultaneous Equations and Research Model

As a result of the validation of the significance of relationships between capital structure as measured by financial leverage and bank performance as measured by ROE as well as between economic indicators and bank performance it is now paramount to present the simultaneous equation models as explained in the research methods. The measurements required for the simultaneous equations that include betas (β) and error measurements (standard error) have been given in previous tables. What is remaining is the model intercepts. To get the model intercepts finite mixture (FMIX) segmentation is run (refer to table 18 below) and the following model intercepts are obtained.

Table 18: Model Intercepts

Model Identity	Intercept
EC ⟶ P	0.502
CS ⟶ P	-0.514

Given the output from the structural equation modelling first simultaneous equation that postulated a significant relationship between financial leverage and bank performance is now given as:

$ROE_{it} = -0.514 + 0.441LEV_{it} + 0.216_{it}$ Eq.(4)

Where: -0.514 is the model intercept;
0.441 is the beta (or path coefficient); and
0.216 is the error measurement (or standard error).

The second simultaneous equation model is also formulated from the structural equation modelling and is given as follows:

$ROE_{it} = 0.502 - 0.658GDP_{it} + 0.676PPI_{it} + 0.868RR_{it} + 0.262_{it}$ (2)

Where: 0.502 is the model intercept;
-0.658, 0.676 and 0.868 are betas for GDP, PPI and RR, respectively.
0.262 is the error measurement (or standard error).

In order to deduce the research model equation 1 is substituted in equation 2 as follows:

$-0.514+0.441LEV_{it}+0.216_{it}=0.502-0.658GDP_{it}+0.676PPI_{it}+0.868RR_{it}+0.262_{it}$

$0.441LEV_{it}=0.502+0.514-0.658GDP_{it}+0.676PPI_{it}+0.868RR_{it}+0.262_{it}+0.216_{it}$

$0.441LEV_{it}=1.016-0.658GDP_{it}+0.676PPI_{it}+0.868RR_{it}+0.478_{it}$

$LEV_{it} = (\underline{1.016 - 0.658GDP_{it} + 0.676PPI_{it} + 0.868RR_{it} + 0.478_{it}}) / 0.441$ Eq.(5)

The above research model is further simplified as follows:

$LEV_{it} = 2.304 - 1.492GDP_{it} + 1.533PPI_{it} + 1.968RR_{it} + 1.084_{it}$ Eq.(6)

The above research model entails that the capital structure of a bank is influenced by GDP, PPI and RR. GDP has a negative impact while PPI and RR have a positive impact.

5.5.4 Decision on Research Hypotheses

Three variables (which are CPI, ER and UN) related to the research hypotheses were dropped for significance testing due to failure to achieve validity in measurements. Thus as alluded before, hypotheses postulated using three dropped variables (H_2, H_4 and H_5) were rejected at an early stage. The study therefore found that CPI, ER and UN have no reliable and valid impact on a bank's capital structure. Variables that relate to the research hypotheses that remained for significance are GDP, PPI, RR and financial leverage.

The three remaining hypotheses are therefore considered as follows:

H_1: There is a negative relationship between GDP and a bank's gearing.

A t-statistic value of 2.365 that is above 1.96 confirmed a significant impact of GDP on a bank's gearing while a negative path coefficient of 0.658 confirmed a negative relationship as postulated by the hypothesis. Thus H_1 is accepted while rejecting its null hypothesis.

H_3: There is a positive relationship between PPI and a bank's gearing.

A t-statistic value of 3.541 (that is more than 1.96) confirmed a significant relationship between PPI and a bank's gearing while a positive path coefficient of 0.676 confirmed that the relationship is positive. H_3 is therefore accepted while rejecting its null hypothesis.

H_6: There is a negative relationship between repo rate (RR) and a bank's gearing.

A t-statistic value of 3.182 validated a significant relationship between repo rate and a bank's gearing. However, a positive path coefficient of 0.868 entails a positive relationship between the two variables. Thus H_6 is rejected on the basis of the sign of the beta that

is in contrast to the hypothesised nature of relationship. Although there is a significant relationship between repo rate and a bank's gearing, it is the nature of the postulated relationship that is not supported by the research finding. The rejection of H_6 does not entail the acceptance of its null hypothesis as according to the finding there is a significant relationship between repo rate and bank's gearing.

The simultaneous equation modelling made it possible to link GDP, PPI and RR with bank capital structure. This is despite the fact that the three variables were tested against bank performance. The linking with bank capital structure made it possible to make a decision on the research hypotheses.

6. CONCLUSIONS AND RECOMMENDATIONS

According to the reviewed literature too much debt increases financial risk to a firm and optimal capital structure can spur the performance of a firm. Firm size, firm growth, liquidity, asset tangibility, profitability and firm age are reported to be the micro factors influencing the capital structure of a firm. Banks are reported to have a number of benefits to the economy that include playing an intermediary role in the financial system and offering essential financial services to the market. Capital structure (as measured by leverage ratio) and economic indicators are reported to have a significant relationship with firm performance as measured by ROE.

Construct measurements were assessed for accuracy. According to cronbach's coefficient alpha and composite reliability values the research constructs measurements are reliable. Validity of research measurements was assessed by AVE, facto loadings and correlation matrix of latent variables. Exchange rate, consumer price index and unemployment rate were dropped for failure to achieve the required validity requirements as prescribed for AVE. Model fit was validated through GIT, RMR, CFI, NFI, IFI, RMSEA, collinearity, redundancy and communality statistics.

The SEM results confirmed the simultaneity between capital structure and bank performance as well as between economic indicators and bank performance. The study found that there is a significant positive relationship between capital structure as measured leverage ratio and bank performance. Economic indicators as a whole were found also to have a significant positive relationship with bank capital structure as measured by leverage ratio. However, GDP as an individual indicator was found to be having a significant negative relationship with leverage ratio while PPI and RR have a significant positive relationship with leverage ratio. In accordance with the research results the following were the decisions on the six research hypotheses:

H_1: *There is a negative relationship between GDP and a bank's gearing*. The null hypothesis was rejected on the basis of a t-statistic value of greater than 1.96 as well as a negative path coefficient.

H_2: *There is a positive relationship between CPI and a bank's gearing*. The null hypothesis was accepted on the basis of failure of CPI measurements to meet validity requirements as per AVE.

H_3: *There is a positive relationship between PPI and a bank's gearing*. The null hypothesis was rejected due to a t-statistic value of greater than 1.96 as well as a positive path coefficient.

H_4: *There is a negative relationship between unemployment rate and a bank's gearing*. The null hypothesis was accepted on the basis of unemployment rate measurements failing to achieve validity requirements as per AVE.

H_5: *There is a positive relationship between exchange rate and a bank's gearing*. The null hypothesis was accepted due to exchange rate measurements failing to achieve validity requirements as per AVE.

H_6: *There is a negative relationship between repo rate and a bank's gearing*. Although repo rate had a significant relationship due to a t-statistic value of greater than 1.96 the null hypothesis was accepted due to a positive relationship shown by a positive path coefficient. The alternative hypothesis postulated a negative relationship.

6.1 Recommendations

In line with major findings relating to impact of economic indicators on capital structure as well as the influence of capital structure on bank performance the following recommendations are proposed for banks.

6.1.1 Recommendations to Supervised Banks

In accordance with the rejection of three hypotheses and acceptance of other three research hypotheses the following guidelines are proposed to banks when making capital structure decisions:

a) Banks should ignore adjusting their capital structure in the face of movements in the unemployment. The banks should not be influenced by shifts in employment to adjust their gearing level;
b) Banks should not adjust their financial leverage on the basis of movements in a country's exchange rate;
c) Bank management should ignore movements in a country's consumer price index when setting optimal capital structure;
d) Relating to GDP banks should reduce their financial leverage when GDP increases while increase financial leverage when GDP decreases;
e) However, banks need to increase financial leverage when produce price index increases

and decrease financial leverage when produce price index decreases; and

f) Finally, bank management should increase financial leverage when repo rate goes up and decrease financial leverage when repo rate goes down.

6.1.2 Recommendations to Central Banks

Central banks regulate other banks to ensure financial system stability. The findings of the study have a bearing on the central bank's instrument of regulating other banks. Central banks use repo rate to bring down money supply or inflation. Thus central banks should appreciate the effect of increasing repo rate on the capital structure of regulated banks. The finding of a positive significant relationship between repo rate and financial leverage is strange as central bank seeks to reduce borrowings by institutions and individuals when it increases repo rate. This finding entails that regulated banks find it is attractive to increase financial leverage when the repo rate increases and unattractive when the repo rate decrease. This can be explained by increase in risk premium on cost of equity in the face of increasing interest rates. Although increasing repo rate increases lending rates it also increases cost of equity indirectly as a result of increased risk to equity holders due to increased interest obligations.

Central banks should therefore understand the unintended effect of increasing repo rate which is increasing financial risk in regulated banks. Increased financial risk in regulated banks also entails increased risk in the financial system. It therefore follows that central banks can reduce repo rate in order to reduce financial risk in regulated banks.

6.1.3 Recommendations for Further Research

- To further develop this study, the data could be collected from all banks across the world to test if it yields similar results.
- While this study is focuses on banks, the other listed financial sectors are excluded in this study; It would be interesting to study all financial companies listed on stock exchange.
- It is also possible that financing decisions are a function of several other quantifiable or non-quantifiable variables uncommon to earlier empirical studies, and which are not in these models. Further research should focus more on identifying other variables that have big influence of capital structure decision.

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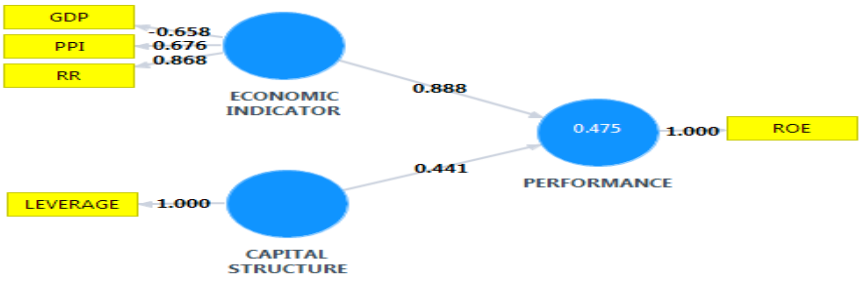
Appendices

Appendix A: Research Path Model



Appendix B: SEM Non Diagrammatic Results

Bootstrapping Outer Weights Output

	Original Sample (O)	Sample Mean (M)	Standard Error (STERR)	T-Statistic (O/STERR)	P Value
GDP<EC	-0.409	-0.395	0.151	2.703	0.007
LEV<CS	1.000	1.000	0.000	0.000	0.000
PPI<CS	0.552	0.560	0.232	2.381	0.018
ROE<P	1.000	1.000	0.000	0.000	0.000
RR<EC	0.12	0.375	0.186	2.212	0.027

Other Fit Indices

Indices	**Value**
Akaike's Information Criterion	31.858
Bayesian Information Criterion	38.091
Consistent AIC	45.091
Modified AIC (Factor 3)	38.858
Minimum Description Length (Factor 2)	58.324
Minimum Description Length (Factor 5)	119.021
Hannan Criterion	32.718
Entropy Criterion	0.645
Classified Likelihood Criterion	26.719
Integrated Likelihood Criterion	46.951
LnL	-8.929
E	4.430
PC	0.838
PE	0.246
NPE	0.277
C	26.719
AWE	67.184
LP	2.602