Capital Structure, Risk, and Performance of Banks: Empirical Study of Ghana and Nigeria

Kwasau Jeremiah Ishaya

Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the Degree of

Master of Science
in
Banking and Finance

Eastern Mediterranean University
January 2014
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

Prof. Dr. Elvan Yılmaz
Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Banking and Finance.

Prof. Dr. Salih Katırcıoğlu
Chair, Department of Banking and Finance

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Banking and Finance.

Assoc. Prof. Dr. Eralp Bektas
Supervisor

Examining Committee

1. Prof. Dr. Salih Katırcıoğlu
2. Assoc. Prof. Dr. Eralp Bektas
3. Assoc. Prof. Dr. Nesrin Özataç

ABSTRACT

This study examines the determinants of bank capital structure in Ghana and Nigeria. It also sought to investigate the linear relation between capital structure and risk (Beta) of banks in Ghana. A panel data of 7 listed commercial banks in Ghana was analyzed over a period of 2008-2012, using a generalized least squares technique to estimate fixed and random effect regression models. At the same time, a panel data of ten commercial banks in Nigeria was also analyzed over the same span but from 2007 to 2011 for lack of data on some banks in the year 2012.

The results indicate that liquidity, operating expenses, and return on average equity are the significant determinant of Capital Structure for both countries. All the variables except return on average equity have a negative association with leverage in the case of Ghana whereas liquidity and operating efficiency have a negative relationship with leverage in the case of Nigeria.

These results are in line with corporate finance theory such as Trade-off theory, Agency Cost, Pecking order theory and signaling effect. This will help analyst and financial managers to understand the dynamics of capital structure in the banking sector of Ghana and Nigeria.

Keywords: Capital Structure, Profitability, Equity Risk, Ghana, Nigeria

ÖZ

Bu çalışmada, Gana ve Nijerya'daki bankaların sermaye yapılarını belirleyen faktörler incelenmiştir. Ayrıca, Gana'daki bankaların, sermaye yapıları ve riskleri (Beta) arasındaki doğrusal ilişkide incelenmiştir. 2008-2012 yılları arasında faaliyet gösteren ve panel verisi şeklinde listelenmiş 7 ticari banka, genelleştirilmiş en küçük kare tahmincisi ve rastsal etkiler bağlaşım modeli yöntemleriyle analiz edilmiştir. Aynı zamanda, panel veri şeklinde listelenmiş Nijerya'daki 10 ticari banka, 2012'deki verilerin eksik olması nedeniyle aynı yöntemlerle ancak 2007-2011 yılları arasında incelenmiştir.

Sonuçlar her iki ülkede de, likidite, faaliyet giderleri ve öz sermayenin ortalama getirilerinin sermaye yapısını belirleyen ana faktörler olduğunu göstermektedir. Gana'daki bankalar için, öz sermayenin ortalama getirileri hariç diğer bütün değişkenlerin, Nijerya'daki bankalar içinse likidite ve faaliyet giderlerinin finansal kaldıraç ile negatif ilişkisi saptanmıştır.

Bu çalışmada bulunan sonuçlar, takas teorisi, temsil maliyeti, hiyerarşi ve sinyal etkisi gibi kurumsal finansman teorileriyle de uyumludur. Bu sonuçlar, Gana ve Nijerya'da bankacılık sektöründeki analizcilerin ve finans yöneticilerinin, sermaye yapısı dinamiklerini daha iyi anlamasına yardımcı olacaktır

Anahtar Kelimeler: Sermaye yapısı, karlılık, özkaynak riski, Gana, Nijerya

To God Almighty
The Author and Finisher of Our Faith
(The Beginning and the End)

ACKNOWLEDGMENT

I would like to thank Assoc. Prof. Dr. Eralp Bektas for his continuous support and guidance in the preparation of this study. Without his invaluable supervision, all my effort could have been short-sighted.

My gratitude also goes to all the instructors and Teaching Assistance of Banking and finance Department who help me in one way or the other to ensure the completion of this study.

My sincerest appreciation also goes to Seth Ofori for his immense assistance in providing the data on Ghana. I also wish to express my deepest gratitude to Behzan Rustamov, Volkan Turkoglu, Alice Nsenkyire and Vivian Ebi for their academic and moral support during this study. I really do appreciate you all.

Lastly, my profound appreciation goes to my family particularly my Dad Mr. Michael Ishaya and My Mum Mrs. Christiana Ishaya for their enormous and immeasurable support throughout my post graduate studies in Cyprus. I would like to dedicate this study to them as an indication of their significance in this study as well as in my life.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

GSE:	Ghana Stock Exchange
NSE:	Nigeria Stock Exchange
ROAA:	Return on Average Asset
ROE:	Return on Average Equity
AQ:	Asset Quality
Liq:	Liquidity
OE:	Operating Efficiency

Chapter 1

INTRODUCTION

Banks are the main financial institutions in any country and are inevitably the power houses of those economies, in the sense that, at least the bankruptcy of one bank can result in a severe financial and economic crisis. Thus, the primary objective of any economy concerning its financial system is to ensure that banks operate efficiently in order to achieve economic growth.

They are also integral in the economy development, acting as a pivot in the functional running of financial markets in most economies. Banks are organized to perform most of the financial and business transactions such as accepting deposit, granting loans as well as carrying out other financial transactions. Hence, it's recognized as a financial intermediary. How efficiently and effectively a financial institution functions (Banks inclusive) can be streamlined to the cash flow produced by its assets. These assets can be finance via equity, debt etc., referred to as gearing or leverage in finance.

Consequently, the term gearing or leverage is used interchangeably in financial context to signify the amount of debt to equity a company uses to finance its assets. The gearing/leverage of a firm can be evaluated using financial ratios such as:

- Debt/equity ratio (long term Debt/shareholders' funds)
- Capital leverage ratio (long term Debt/capital employed)

Financial managers all over the world contemplate on the kind of relationship that exists between capital structure (leverage), profitability, and stock prices at any point in time. This is true in the sense that, the market value of a company will be dependent on the level of weighted average cost of capital. Thus, the lower the weighted average cost of capital, the higher the net present value of its future cash flows and hence under efficient capital market condition, it reflects in the share prices of the company.

This study for the purpose of clarity adopts that of Pandey (1999). In his work he explicitly explained that book value of debt to equity ratio constitute capital structure of the organization. The key distinction in this regards is that, the ratio capital structure can be evaluated using leverage or in some context gearing.

The beta of a security of a firm measures the sensitivity of the returns on the security to alterations in market return. The systematic risk of a firm can although, be categorized into business risk and financial risk. Both risks are reflected in a company's equity beta. Hence one can conclude that, since the operating leverage affects the business risk and financial leverage affects the financial risk and both affect the total risk of the firm, the capital structure of a firm certainly has some effect on the equity beta of the firm.

The business risk is very dynamic and can change from time to time. Similarly, the business risk of a firm varies from industry to industry and again from firm to firm. It is

very imperative to recognize these facts when one is studying the relationship that exists between equity beta and capital structure of firms. It is in view of this some studies on the GSE has been built on one out of the possible three designs, which are: (1) industry, (2) leverage, and (3) size. This research is an industry based study which focuses on how capital structure, equity risk and profitability are connected in the financial sector of the Ghanaian and Nigerian economy.

The return on average asset (ROA) and the return on average equity (ROE) have been used extensively as measures of profitability. ROA can be derived by Net income to total asset usually expressed as percentage. The problem with ROA is that it excludes from the total assets off-balance sheet items (for instance, assets acquired through a lease) thereby understating the value of assets. This can eventually create a positive bias where ROA is overstated in the evaluation of bank performance. Nevertheless, Golin (2001), and Rose, P. & Hudgins, S. (2005) have debated that ROA is one of the most essential measures of profitability in recent banking literature. The studies of Haron (2004), Hassan, K. & Bashir M. *(*2003), Demirguc-Kunt, A. & Huizinga, H. (1999), Alkassim (2005), and Alrashdan (2002) have all adopted ROA as a measure of profitability.

1.1 Background of the Study

The Financial market largely consists of the Capital market and the Money market with the distinction mainly emanating from the trading investment securities. The Capital market also performs its functions in two main ways. This is where it functions as a primary market or a secondary market. The secondary market through its function of

providing a market (Selling and Buying) for securities increases the liquidity of securities and thereby enhancing their value.

The inchoate capital markets of Ghana and Nigeria have not been deeply researched in terms of capital structure, risk and performance relationship, therefore this is an opportunity to deepen this academic discipline in this study.

Optimal capital structure theory postulates that management, in their choice of debt and equity financing, will always try to use debt ratio that will maximize shareholder wealth of firm value. Miller and Modigliani (1958) suggest that under the symmetric information environment or settings, the choice between debt and equity is irrelevant to firm value, assuming that there is no tax and increasing debt will not increase cost of debt. But this thought should be seen from the other side of the coin that knowing the conditions under which the choice of capital structure is important implies knowledge under which debt or equity will be relevant. In view of this, they came back and reversed earlier thought latter when the 1963 research version proved that debt financing is preferable in the prevalence of corporate tax as the tax shield advantage will lower cost of debt. They suggest that in this case, a firm had better employ 100% debt. Subsequently, Miller (1977) revises this conclusion by showing that equity financing is not that bad since investors can enjoy lower taxes from capital gains, thereby leading to lower cost of debt. Hence, there is no clear conclusion whether debt or equity dominates one another.

Since the ability of a firm to carry out their stakeholders need is in line with the capital structure decision, financial managers are thus faced with problems in precisely determining the optimal capital structure. In other to maximize the value of a firm, the best blend of capital structure is equivalent to the lowest average WACC. However; the definitions of capital structure of financial institutions like banks have not been straight forward and clear for many researchers. This is largely because the debt of financial institutions like banks cannot be conspicuously defined from the financial statement of such institutions. In view of this, this thesis has adopted the Total Liabilities-to-Total Asset ratio of banks as a proxy of capital structure.

Risk is a vital component that should be taken into consideration; it has been adopted in this study. Hence the risk investor/firm faces can be categorized into systematic and unsystematic. However, there are two ways of diversifying unsystematic risks. The first approach is the company level where firms minimize the risk by diversifying their operations when the firm invests in a number of unrelated lines of business. The second approach is at the individual investor level where an investor can reduce the risk he/she bears through holding a diversified portfolio of shares. It is universally accepted that the best way to diversify unsystematic risks is at the investor level according to Watson and Head, (2010).

The beta coefficient of a security is a numerical measure of how sensitive or volatile the return of the security can be compare to the market return. Therefore adopting beta as a measure of how risky a bank is will be also more appropriate.

1.2 Statement of the Problem

There is extensive literature on performance or profitability of banks concerning many countries of which Ghana and Nigeria are not exempted. In a similar vein, some research have been carried out on the determinant of capital structure in some jurisdiction, in which there are a lot of questions on which of this factors significantly affect capital structure. For instance, Kusienyo (2011) did an extensive work on major determinants of banks profitability. He categorized the determinants into internal factors which are bank-specific characteristics and external factors which can further be divided into macroeconomic factors and financial structure factors. He used capital adequacy, operating expense, liquidity, asset quality, bank size, inflation, Gross Domestic Products (GDP), money supply and banking industry concentration as his explanatory variables.

It is therefore very imperative to ascertain how this is true especially on the Ghana and Nigeria Exchanges, particularly with respect to capital structure, risk (Beta) and profitability of banks.

1.3 Objective of the Study

Existing financial literature on the Ghana and Nigeria stock exchanges is small, therefore studying and comparing the two exchanges as the two largest in West Africa will bring out meaningful findings. It is of hope that the study will address the following objectives:

- To establish the relationship between capital structure and equity beta of listed banks on Ghana Stock Exchange (GSE).

- To account for the bearing of capital structure on banks' performance in Ghana and Nigeria.
- To compare and contrast the determinants of capital structure in Ghana and Nigeria

1.4 Research Questions

Following the objectives as indicated above, the study aims at addressing the following questions:

- Does the capital structure of listed banks have some degree of bearing on the equity beta of the banks in Ghana?
- What relationship exists between capital structure and banks performance Ghana-Nigeria Exchanges?
- What are the major determinants of capital structure of financial institutions in Ghana and Nigeria?

1.5 Scope of the Study

Capital Structure and Market value of a firm has been a subject of discussion both in theoretical and empirical literature. However, such study on exchanges in developing economies remains scanty and major work on the capital structure, risk and profitability of banks to ascertain their relationship on the Ghana and Nigeria exchanges have been a mirage. This study is thus; conducted to provide a preliminary study on these exchanges on the empirical work of the relationship among capital structure, risk and performance of financial intermediary and again the determinants of capital structure on the exchanges in question.

The monthly price index of banks is collected to aid in calculating the returns of shares of bank and subsequently the beta coefficient which proxies the riskiness of bank. Again, the return on average asset (ROAA) and return on average equity (ROAE) have been extensively used by different author as perfect measures of profitability. Also, seven and ten listed banks in Ghana and Nigeria respectively are used to conduct the study.

Chapter 2

LITERATURE REVIEW

The theory of capital structure was pioneered by Miller and Modigliani (1958) where they suggest that under the symmetric information environment or settings, the choice between debt and equity is irrelevant to firm value, assuming that there is no tax and increasing debt will not increase cost of debt. Miller and Modigliani thus came out with a popularly known theory called the “capital structure irrelevance” where a perfect market does not affect the nature of capital structure. But this thought should be seen from the other side of the coin that knowing the conditions under which the choice of capital structure implies knowledge under which debt or equity will be relevant. In view of this, they came back and reversed earlier thought latter when the 1963 research version proved that debt financing is preferable in the prevalence of corporate tax as the tax shield advantage will lower cost of debt. They suggest that in this case, a firm had better employ 100% debt. Subsequently, Miller (1977) revises this conclusion by showing that equity financing is not that bad since investors can enjoy lower taxes from capital gains, thereby leading to lower cost of debt. Hence, there is no clear conclusion whether debt or equity dominates one another.

The beta of a security of a firm measures the sensitivity of the returns on the security to changes in market return. The systematic risk of a firm can however, be categorized into

business risk and financial risk. But both risks are reflected in a company's equity beta while the asset beta reflects only the business risk of a firm. Since the operating leverage affects the business risk and financial leverage affects the financial risk and both operating and financial leverage affect the total risk of firm, the capital structure of a firm definitely has some bearing on the equity beta of the firm. The business risk is very dynamic and can change from time to time. Similarly, the business risk of a firm varies from industry to industry and again from firm to firm. It is very imperative to recognize these facts when one is studying the relationship that exists between equity beta and capital structure of firms.

There are two ways of diversifying unsystematic risks. The first approach is the company level where firms minimize the risk by diversifying their operations when the firm invests in a number of unrelated lines of business. The second approach is at the individual investor level where an investor can reduce the risk he/she bears through holding a diversified portfolio of shares. It is universally accepted that the best way to diversify unsystematic risks is at the investor level according to Watson and Head (2010).

The ability of investor to diversify an unsystematic risk by holding portfolio consisting of a number of different shares is the cornerstone of Markowitz's Portfolio Theory. Among this set is the efficient frontier which is a subset of the envelope curve consisting of all the portfolios which are considered to be superior to all other portfolios within the envelope curve. Since investor's choices are not restricted to only risky securities, Tobin recognizes this vital fact which further developed from Markowitz's

earlier work. By the mere assumption that investors can lend and borrow at a risk-free rate of return, one can construct what is called Capital Market Line (CML) Since investor are at liberty to move along the CML by changing the proportion of the risk-free asset and the market portfolio in what seems to be a two-share portfolio, a straightforward linear trade-off between risk and return emerged. The two-stage process of identifying the market portfolio (to diversify away unsystematic risk) and then combining this optimal portfolio of risky assets with lending and borrowing at the risk-free rate (to satisfy the individual investor's preference for risk and return) is often referred to as Tobin's Separation Theory" Watson and Head,(2010)

2.1 Empirical Evidence

The relation between leverage and beta has been studied by a myriad of scholars, such as Butler et al. (1991), De Jong and Collins. (1985), Hamada (1972), or Mandelker and Rhee (1984) in other jurisdictions. Harris and Raviv (1991) put together an interesting finding on capital structure, where he compare leverage with some factors which includes default probability, target premium etc. these factors are said to be endogenous.

In so many literature CAPM has be used to estimate the cost of capital. Using this method in a developing market might post a problem because there are no constant flow of money and base on high fluctuation. Iqbal and Syed (2007), point out that in evaluating a private and a public funded business, the most essential quantity required for decision making is by constantly estimating the model with expected return using the right cost of capital.

Begenau et al (2013) in their study noticed that economic worth of financial institutions hinge on their exposure to market risk. A typical bank lends for long term through risky loan and borrows for short term through deposit. Modern institutions through repurchase agreements, have increasingly borrowed short term in the money market, and lent long term through holding securities such as mortgage bonds. Recently banks have also played an important role in derivatives market. Hence Banks risk exposure is significant for economic analysis not only for regulation purposes.

Also in Ghana, Buchs and Mathisen (2005) measured the degree of bank competition; they also spoke about efficiency with respect to bank financial intermediation. They did so by applying panel data to variables derived from a theoretical model, where they found evidence for a noncompetitive market structure in the Ghanaian banking system, which may be obstructing financial intermediation. They further argue that the structure of the banking system, as well as the other market features, constitutes an indirect barrier to entry which in turn shields the large profits in the Ghanaian banking system.

Amidu (2007) undertook a survey to ascertain the underlying forces involved in the determination of the capital structure of the Ghana banks. The dependent variables used in his paper are leverage (total debt to total capital) short-term debt ratio (total short-term debt to capital) and long-term debt ratio (total long-term debt divided by total capital). He also took profitability, Risk, Asset Structure, Tax, Size and sales growth into consideration in his explanatory variables. He had a negative relationship between profitably and leverage after using a regression line model in his study. The result also transcends to a prior study of Titman and Wessels (1988) which shows that higher

profits increase the level of internal financing. Profitable banks depend less on external funds because of accumulated internal reserves, there for, bank size, asset structure, corporate tax and profitability influence the capital structure decision or financing decision in this study. Interestingly, the research carried out shows that short-term debt seems to constitute more than three quarter of the bank's capital where about 87 percent of the bank's assets are being financed by debt. This shows the significant of short term debt over the long term debt in the Ghanaian banks financing.

Boahene et al (2012) also attempt to reveal the relationship between profitability in some selected banks in Ghana and credit risk. A panel data from six selected commercial banks covering the five-year period (2005-2009) was analyzed within the fixed effects framework. Credit risk net charge-off, non-performing loan rate, and pre-provision profit as a percentage of net total loans and advances had a positive and a significant relationship with bank profitability from the result of their findings.

This shows how Ghanaian banks in spite of high credit risk, still enjoys high profitability opposing to the popular view in prior study which says that profitability are negatively related to credit risk indicators . They attributed this controversial findings to the prohibitive lending/interest rates, fees and commission (non- interest income) charged. They also found support for previous empirical works which signified that bank growth, bank debt capital, and bank size influence bank profitability positively and significantly.

Abor (2005) also found a positive and a significant relationship between profitability and total debt. It is very clear that from the result of the investigation, the relationship between capital structure and profitability are indecisive and it requires further empirical work, based on ongoing discussion available in the empirical literature.

In his attempt to determine the profitability of Ghanaian banks, Kutsienyo (2011) categorized explanatory variables into internal factors which are bank-specific characteristic and external factors which can further be divided into financial structure factors and macroeconomic factors. He took 26 Ghanaian commercial banks into consideration, between a time frame of 2000 to 2009, using a generalized least squares method to estimate fixed effect regression models. The dependent variables where Return on equity (ROAE) and Return on Asset (ROAA). Operating expenses, Asset quality, Capital adequacy, Liquidity and Bank size where the incorporated Bank-specific factors. Lastly he used money supply, banking industry concentration and Gross Domestic Product (GDP) as macroeconomic factor and financial structure factor in the regression analysis.

Again, Dauda (2012) in his study showed the magnitude of changes in business risk that predicts capital structure selection of some listed firms in Nigeria. He concluded that polices which lower the expected bankruptcy costs relative to the firm worth will lower the needless use on debt in Nigeria.

Elsewhere in Pakistan, Saeed et al., (2013) conducted an empirical work on the listed banks in Karachi stock exchange, to ascertain the impact of capital structure on

performance of the Pakistani banks. Multiple regression models were carried out, spanning the period of 5 years (2007 to 2011). Return on equity, return on asset, and earning per share were used as a measure of performance. Also, short term debt to capital ratio, long term debt to capital ratio, and total debt to capital ratio where used as the determinant of capital structure. The result of the study confirmed a positive relationship between determinants of capital structure and performance of banking industry.

Most studies found from other jurisdictions show a negative relationship between profitability and leverage. Within this framework, Titman and Wessels (1988) concluded that firms with high profit levels, all things being equal, would maintain relatively lower debt levels since they can realize such funds from internal sources. Furthermore, Kester (1986) found a significantly negative relation between profitability and debt/asset ratios. Rajan and Zingales (1995) also confirmed a significantly negative correlation between profitability and leverage in their work. Despite the above empirical works, some authors are of a different opinion. These authors observed a positive relationship between profitability and debt levels in their studies. For example, Taub (1975) in a regression analysis of four profitability metrics against debt ratio found significantly positive association between debt and profitability.

Chapter 3

METHODOLOGY

The two most important statistical frameworks for modelling and estimating a linear relationship between two variables are the Ordinary Least Square (OLS) and the Maximum Likelihood approaches. In this study, we employ the OLS to estimate and test the linearity of relation if any between Debt-Equity Ratio (Capital Structure), Beta (Riskiness) and profitability of banks on the GSE and NSE. There exist a number of reasons for using this econometric technique for such a study on an inchoate exchange like the GSE and NSE. In the first place, the parameter estimates obtained from the OLS have some optimal and desirable properties described as BLUE (Best, Linear and Unbiased Estimation) and above all, minimum variance property. Secondly, the computational procedure of the OLS is fairly and relatively simple while the data requirement is also not excessive. Again, the least squares method has been used in a wide range of economic relationships with fairly satisfactory results, and, despite the improvement of computational equipment and of statistical information which facilitated the use of other more elaborate econometric techniques, OLS is still one of the most commonly employed methods in estimating relationships in econometric models.

Furthermore, the mechanics of least squares are simple to comprehend. Finally, OLS is an essential component of most other econometric techniques. In fact, with the exception of the Full Information Maximum Likelihood method, all other techniques involve the application of the least squares method, modified in some respects.

The variables used in this thesis are explained briefly in the table 3.1 below

Table 3.1 internal variable

Variable Code	**Measure**	**Description**
CAPSTR	Liability / Total Asset	Capital structure
CA	Equity / Total Asset	Capital Adequacy
OE	Operating Exp / Total Income	Operating Efficiency
AQ	Impairment / Advances	Asset Quality
LIQ	Advances / Customer's deposit	Liquidity
SIZE	Natural logarithm of Asset	Size
ROAA	Net Income / Total Avg Asset	Profitability
ROAE	Net Income / Total Avg Equity	Profitability

3.1 Research Work Definition

There exist numerous works on the relationship between leverage and beta done by a myriad of scholars, such as Butler et al., (1991), Harris and Raviv (1991), De Jong and Collins (1985), Hamada (1972), or Mandelker and Rhee (1984) in other jurisdictions. Convincingly, Bradley, Jarrell and Kim (1984) find that firm leverage ratios are negatively related to the volatility of firm earnings-measured by the standard deviation of the first difference in annual earnings, scaled by the average value of total assets-if

the costs of financial distress are non-trivial. They do this via both simulations and cross-sectional studies.

In studying the relationship among capital structure, beta and profitability of listed banks in Ghana, as well as relationship between capital structure and profitability of the listed banks in Nigeria, similar approach is employed to come out with vital findings of this study. We shall try to establish possible simultaneous relationship between capital structure (CAPSTR) and riskiness (BETA) of the listed Banks. Since there are series of argument that riskiness might be related to leverage, this thesis is thus going to use an empirical relationship between capital structure and risk of the listed Ghanaian Banks shown below.

$$\delta = \alpha_0 + \alpha_1 \beta$$

Where $\delta \; and \; \beta$ denote Debt-Equity Ratio and Beta of firms respectively and $\alpha_0 \; and \; \alpha_1$ are parameters to be estimated, as follows:

$$CAPSTR = \alpha_0 + \alpha_1 BETA$$

Where:

CAPSTR = Capital Structure which proxies leverage

BETA = Beta of the Bank which proxies Riskiness

The model can similarly be used to establish the linear relation between capital structure and Profitability in this study as follows:

$$CAPSTR = \alpha_0 + \alpha_1 ROAA$$

$$CAPSTR = \alpha_0 + \alpha_1 ROAE$$

Where:

CAPSTR = Capital Structure which proxies leverage

ROAA = Return on Asset which proxies profitability

ROAE = Return on Equity which proxies Profitability

The definitions given against the various variables are self-explanatory except perhaps what we mean by the Beta of a firm which has been estimated by different authors using different statistical techniques. In view of that, the next step was to calculate the beta of firm by adopting one of the following convenient and simple approaches such as the one given as:

$$\beta_i = \frac{\text{cov}(R_i, R_m)}{\text{var}(R_m)} \text{.....1}$$

Where: β_i = the Beta of the stock or share; $\text{cov}(R_i, R_m)$ =the covariance of the market return and the return on the stock, and $\text{var}(R_m)$=the variance of the market returns. The calculations for a firm's annual return could also be arrived at by using the definitions as follows;

$$R_1 = \frac{D_1 + (V_1 - V_0)}{V_0} \text{ .....2}$$

Where: R_1 =the return in the period; D_1= Dividend(s) received in the period; V_1= Value of share at the end; V_0= Value of share at the beginning of the period. However, this study for convenient sake employs the alternative two which is given in the following.

Beta of bank is calculated in this study by regressing monthly average returns of companies against monthly average returns of market. Returns are derived by the following formula;

R_t = Ln (P_t / P_{t-1})*100 where R_t is return for current month, P_t is the stock price at current month, P_{t-1} is the stock price of previous month and Ln is the natural logarithm.

Beta for each bank has been estimated by linear regression equation for the five-year span of the study. Estimated beta is derived by following regression equation: $Y = \beta o + \beta_1 X$ Where Y is monthly average returns of company; X is monthly average returns of market while coefficient β_1 is estimated beta on yearly bases.

The capital structure of the banks in this study was arrived at by dividing the total liabilities by the total asset of the bank. The other model used in the study is where Capital Structure is seen as a function of Capital Adequacy, Asset Quality, Liquidity, Size, and Operation Efficiency. Thus, by notation we write:

$$CS = F(CA, AQ, LIQ, SIZE, OE)$$

Because of high correlation between Capital Structure and Capital Adequacy, also ROAA and ROAE, we stage a multiple regression without two of the variables as follows:

$$CAPSTR = \alpha_0 + \alpha_1 ROAE + \alpha_2 AQ + \alpha_3 LIQ + \alpha_4 SIZE + \alpha_5 OE + u$$

Where:

CAPSTR= Capital Structure which proxies leverage

CA = Capital Adequacy

AQ = Asset Quality

LIQ = Liquidity

SIZE = Size

OE = Operating Efficiency

u = error term

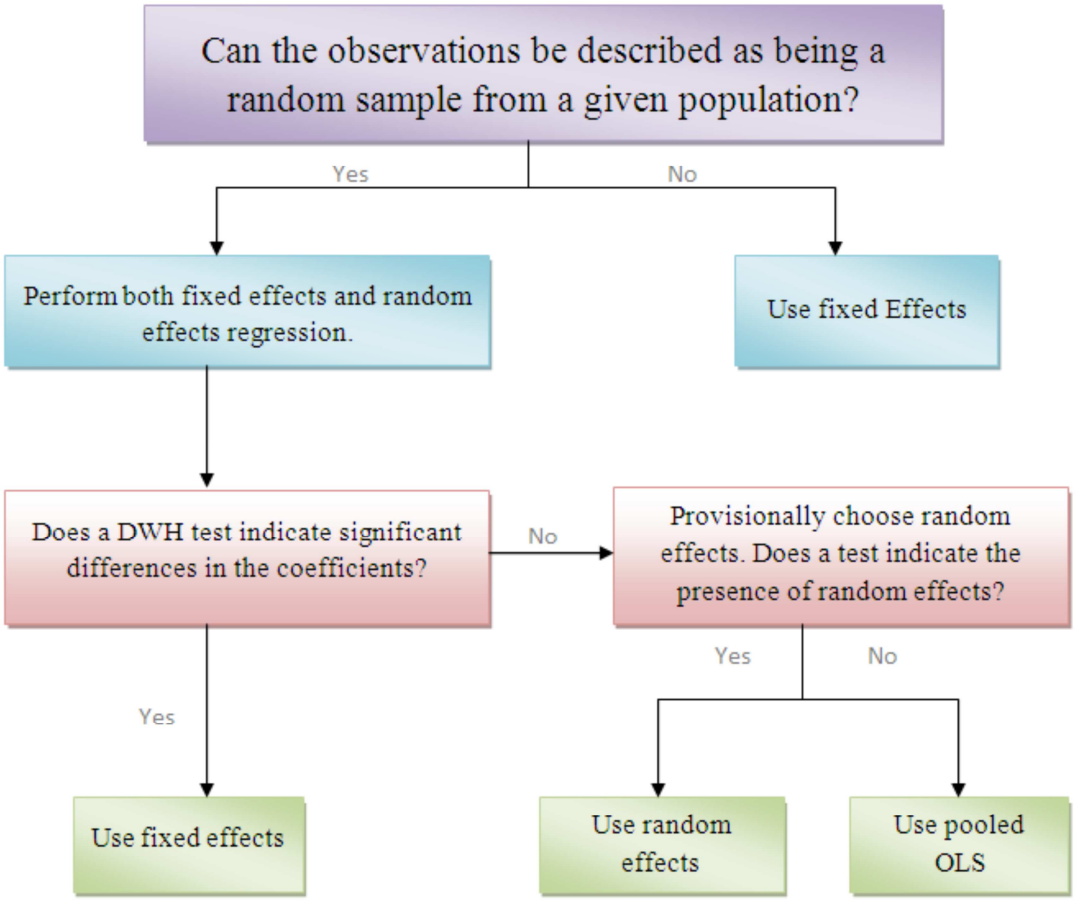

Figure 3.1 Choice of regression model for panel data

Source: Adopted from Dougherty (2011).

According to the Hausman Test, Fixed effect is the appropriate model for case of Nigeria and Random for the case of Ghana. For the sake of clarity, both cases are going to be taken into consideration.

3.2 Method of Data Collection

This study intends to use annual data to ascertain the capital structure, risk and profitability relation for financial institutions in Ghana and Nigeria. Variables gathered from financial statements include total assets (TA), profit before tax (PBT), long-term

debt (LTD), total liabilities (TL), common equity (CE), and total equity (TE). However, for lack of data on these variables for some listed banks, a sample of seven and ten banks was taken for Ghana and Nigeria respectively. Also, daily closing prices of stocks on the GSE were obtained from the GSE website. This was used to compute the monthly Index as the averages of the daily closing prices for all trading days within the month. Other variables such as monthly returns and annual Betas were computed from the monthly indices by applying appropriate procedure.

Furthermore, this thesis compares and contrasts the determinants of capital structure in Ghana and Nigeria. Seven banks are selected from Ghana while ten banks are taken from Nigeria. The banks selected for both countries are listed in table 3.2 below.

Table 3.2 List of Banks

Ghana	**Nigeria**
CAL Bank Limited	Access Bank
EcoBank Ghana Limited	Diamond Bank
Ghana Commercial Bank Limited	EcoBank Nigeria
HFC Bank Limited	Fidelity Bank Nigeria
Standard Chartered Bank Ghana Limited	First Bank of Nigeria
Societe Generale Social Security Bank	Guaranty Trust Bank
The Royal Bank Limited	Skye Bank
	Standard Chartered Bank
	United Bank of Africa
	Zenith Bank

3.3 Method of Data Analysis

Data analyses in the study used a combination of statistical tools and financial models including simple and multiple regression analysis, the returns model, and beta estimation model.

The first step was to define appropriately key variables in our models so as the variables could be mathematically be computed from available financial data. We then proceeded to gather the financial statements of selected banks in order to aid in the computation of the annual average indices for the same period of the study. This thesis examines the optimum level of capital structure through which a firm can increase its financial performance using annual data of seven banks spanning a five-year period from 2008-2012 for the case of Ghana. However, for lack of data for the financial year 2012 on major banks in the sample for Nigeria, the study is restricted within a five year spanning from 2007 to 2011 for Nigeria.

3.4 Regression Analysis

The capital structure theory has it that even in an imperfect capital market, where there are personal and corporate taxes, risky debts, and also costs of bankruptcy, optimal capital structure can still be obtained. The simple regression analysis was used to ascertain the linear relationship between capital structure and beta, capital structure and profitability of banks as depicted in the model. Since capital structure is a function of a number of financial variables, the multiple regression analysis was again used to assess other possible internal factors (Profitability, liquidity, Size, etc.) that affect capital structure in the Ghanaian and Nigerian settings.

The use of annual data of seven listed banks over a five year period to run a regression based on our model for each firm called “Panel Data” has been the simplest test of relationship between financial variables like Capital Structure and Beta. It is of our conviction that annual data for close to five years in this study could as well reveal interesting findings

Chapter 4

DATA PRESENTATION AND ANALYSIS

4.1 Beta of Selected Banks

The beta coefficient of a security is a numerical measure which shows sensitivity or volatility of bank return relative to the market return. It is worth noting that such a measure will not be constant for a reasonable period of time. In contrast, we expect the beta coefficient β_i of a bank vary from time to time, at most over a twelve month period. Hence, the use of longer estimation period of beta will not augur well for fair and proper statistical analysis, hence the estimation of annual beta of banks.

When the beta of a stock is equal to two, it implies that the stock is twice as volatile as the average stock where average stock has a beta coefficient of one. A beta value greater than one means a more risky stock and it's therefore called an aggressive stock. A value of beta less than one on the other hand is a less risky stock and is also referred to as a defensive stock Mensah (2008).

Stocks with negative beta would move in the opposite direction when the GSE All-Share Index falls or rises. That is, beta coefficient of -0.450 implies that an increase in the GSE-ASI by 100% will result in a decrease of returns of the stock in question by 45%.

4.2 Capital Structure and Risk of Banks

One of the objectives of this study is to investigate the kind of relationship that exists between Capital Structure and the Beta (Riskiness) of listed Banks on the GSE. The simple regression analysis between the variables indicates the absence of linear relationship between them as indicated in table 4.2.

Table 4.2 Simple Regression (Capital Structure & Beta)

Variables	**Coefficient**	**p-value**
Capital Structure		
Beta	0.8147	0.3183
R^2	0.0302	
F-statistic	1.0266	0.3183

The results from the analysis gives the R-Square value of 0.0302 which means that only a paltry of 3.0% of the total variation in the capital structure of banks could be explained by the Beta (Risk). This value which is the 'Goodness-of-fit' measure of a linear model is sometimes refers to as "coefficient of determination" and a small value as 0.0302 is an indication that the model does not fit the data. Thus, the relationship between capital structure and Beta of listed banks on the GSE if any cannot be said to be linear.

Moreover, the F value (the ratio of two mean squares) is given as 1.0266, which confirms the test of non-linear relationship between the variables. When this value is

large and the significance level is small (typically smaller than 0.05 or 0.01) the null hypothesis can be rejected. Thus, the F-statistic has it that the assumption of existence of linear relationship between the capital structure and Beta of banks listed on the GSE should be rejected. This is because the high F value suggests that the difference between the two variances of the capital structure and Beta of banks is significant. In other words, the null hypothesis of no significant difference between the two variances should be rejected.

Furthermore, it is important to comment on the sign of the regression coefficient in the analysis. A negative regression coefficient is an indication of an inverse relation between the variables. In this case, the coefficient is 0.8147 which means that units increase in the riskiness of a company will call for 0.8147 increases in the debt-equity ratio of the company. This direct linear relation between capital structure and beta of banks is in conformity with our a priori assumption. The analysis has given the indication that higher value of the beta calls for higher debt-equity ratio. In other words, the higher the riskiness of companies, the higher the debt-to-equity ratio consistent to a priori assumption of high leverage ratio will imply a high risk.

Finally, the t test of the significance of the regression coefficient of the Beta confirms the above conclusions. The t-value obtained from the analysis (Refer to Appendix) is 1.0132 which leads to the failure to reject the null hypothesis of the existence of linear relationship between capital structure and Beta of listed firms on the GSE at 0.05 level of confidence. The significance of the constant is an indication that other variables other

than Beta determine the capital structure of listed banks and as such the riskiness of a firm cannot solely affect the capital structure decision of banks.

4.3 Capital Structure and Profitability

The next objective is to investigate the sole impact of capital structure on banks performance in Ghana and Nigeria. The Return on Average Asset as a profit measure shows clearly that capital structure decision in both countries are not relevant in determining the health of banks as shown in table 4.3.

Table 4.3 Simple Regression (Capital Structure, ROAA, ROAE)

	Ghana		**Nigeria**	
Variables	ROAA	ROAE	ROAA	ROAE
Coefficient	-0.1659	0.4208	-0.1046	0.2010
p-value	0.9446	0.0373	0.8474	0.0481
R^2	0.0001	0.1248	0.0008	0.0789
F-stat	0.0049	4.7087*	0.0374	4.1124*

*. Significant at 1% level (two tailed)

In Ghana, the analysis show an R-Square value of 0.0001 while that of Nigeria is 0.008, an indication that capital structure can virtually account for no variability in return on average asset of banks. This is clearly seen when the analysis shows a P-Value of 0.9446 and 0.8474 for Ghana and Nigeria respectively. These values imply that at 0.05 level of significance, one can reject the assumption of linear relation between capital structure and profitability as measured by return on average asset.

However, the contrary is the case when return on average equity is use in both countries as a measure of profit. The calculated P-Values are 0.0373 and 0.0481 for Ghana and Nigeria respectively which implies the refusal to reject the assumption of the existence of a linear relation between capital structure and profit of banks as measured by return on average equity. See tables in the appendix. Again, the positive regression coefficients obtained for both countries tell us that capital structure and profit move in the same direction. Thus, higher values of capital structure will result in higher values of profit in both countries.

4.4 Determinants of Capital Structure

The multiple regression analysis is used to investigate the factors of capital structure in both countries. Regression Result of both fixed and random effect are shown in the related tables below (table 4.4 a & b). The result shows a direct relationship only for return on average equity, but inverse relationship for the other four explanatory variables, which are Asset Quality, Liquidity, Operating Efficiency, and Size of banks. The calculated R-Squares for both countries are 0.6145 and 0.6185 for the fixed effect and 0.3943 and 0.4362 for the random effect. These give overall impression of how the data fit the specified model. As shown in the tables above, some variables are not significant when we look at the analysis individually; however, looking at the analysis in entirety, they are significant. This goes on to suggest that capital structure decision is multi-faceted one. Thus, management considers a lot of factors in deciding on the level of leverage of banks in Ghana and Nigeria.

Table 4.4a multiple Regression (Ghana)

Variables	**Fixed Effect**	**Random Effect**
Capital Structure		
Asset Quality	-0.1136***	-0.1396
Size	-0.0520	-0.0012
Liquidity	-0.1007*	0.0023
Operating Efficiency	-12.1029*	-8.6998*
Return on Avg Equity	1.1696*	1.0791*
R-squared	0.6145	0.3943
Adjusted R^2	0.4301	0.2898
F-statistic	3.3325*	3.7754*
DW	2.3191	1.4638
Chi-Sq. Statistic		13.1353**

*. Significant at 1% level (two tailed)
**. Significant at 5% level (two tailed)
***. Significant at 10% level (two tailed)

Table 4.4b Multiple Regression (Nigeria)

Variables	**Fixed Effect**	**Random Effect**
Capital Structure		
Asset Quality	0.0074***	0.0015
Size	0.0051	2.9000
Liquidity	-0.1086*	-0.0636
Operating Efficiency	-2.3352*	-2.9040*
Return on Avg Equity	0.6718*	0.7148*
R-squared	0.6185	0.4362
Adjusted R^2	0.4404	0.3639
F-statistic	3.4737*	6.0349*
Dw	2.2968	1.8016
Chi-Sq. Statistic		4.3879

*. Significant at 1% level (two tailed)
**. Significant at 5% level (two tailed)
***. Significant at 10% level (two tailed)

In table 4.4a, operating efficiency and return on average equity are significant at 0.01 level of significant for both the fixed and random effect, but liquidity is significant at 0.01 level of significant for only the fixed effect, also asset quality is significant at 0.10 level for the fixed effect. This suggests that management of banks in Ghana gives priority and should give premium to these four variables when deciding on the level of capital structure. However, the case of Nigeria, is the same with that of Ghana for the

fixed and random effect, these tells us that managers of banks in the two largest economy in west Africa think alike, in making decisions regarding capital structure.

Asset Quality

Asset quality as earlier mentioned is used as a measure of the efficiency of bank loan portfolio and credit quality. Impairment to advances is adopted as proxy for asset quality. Credit risk is the risk that an asset or a loan becomes irrecoverable in the case of outright default, or the risk of delay in the servicing of the loan, Heffernan (1996). Credit risk can have rippling effect thus leading to insolvency, Bessis (2002).

From our estimation, asset quality is significant at 0.10 for the case of the fixed effect in both countries.

Size

Trade off theory and pecking order theory comes in mind, when explaining the size of a bank in relation to leverage. Pecking order theory has it that since there is little or no information asymmetry in large firms, there is an inverse relation between leverage and size of bank, as such banks will prefer to use its equity to finance its asset. Conversely Trade off theory has it the large firm prefers to use debt to finance its equity, since it has a lower cost of bankruptcy; moreover they have easy asses to the capital market compare to the smaller firms. From our estimation, there is an insignificant inverse relationship between leverage and size of the bank which is in line with studies of Mishra and Tannous (2010), but in the case of Nigeria we have an insignificant direct relationship which is in line with the study of Céspedes et al. (2010), Cheng and Shiu (2007), De Jong, Kabir, and Nguyen (2008).

Liquidity

Liquidity measures the ability of banks to meet short-term obligation or commitments when they fall due. Traditionally, banks take deposit from customers and give out loans. For this reason, the ratio of bank's advances to customer deposits is used as proxy for liquidity. Liquidity in the fixed effect model is negative and significant at 0.01 for both countries and insignificant for the random effect model. Similar studies that shows this kind of relationship are Fama and French (2002), Ozkan (2001), Yu (2000), Afza & Hussain, (2011), Deesomsak et al. (2004), Guney et al. (2011), Sharif et al. (2012), Tong and Green (2005), Viviani (2008).

Operating Efficiency

Operating efficiency is another significant variable in our model but in the fixed and random effect for both countries, it is defined as the operating costs over total generated revenues. It is used to measure the impact of efficiency on the bank leverage. An inverse relationship is predicted, indicating lower operating expenses as the bank borrows more.

Return on Average Equity

Return on average equity was used in the multiple regression models because it a good explanatory variable of capital structure in the simple regression carried out. It is also significant at 0.01 level in both countries for both the fixed and random effect.

4.5 The Problem of Multicollinearity

A crucial condition for the application of least squares in a multiple regression analysis is that the explanatory variables are not perfectly linearly correlated. If the explanatory variables are perfectly linearly correlated, the parameters become indeterminate; it is

impossible to obtain numerical values for each parameter separately and the method of least squares breaks down. The other extreme side is when the explanatory variables are not intercorrelated at all in which case they are called 'orthogonal'. In such a situation there are no problems concerning the estimates of the coefficients, at least so far as Multicollinearity is concerned.

Table 4.5a (correlation coefficient- Ghana)

	CapStr	AQ	Liq	Size	OE	ROAE
CapStr	1.0000					
AQ	0.0582	1.0000				
Liq	0.9067	-0.0649	1.0000			
Size	0.2205	0.2103	0.3868	1.0000		
OE	-0.1023	-0.2026	-0.3962	-0.5715	1.0000	
ROAE	0.3534	-0.0904	-0.2335	-0.2195	0.7236	1.0000

Table 4.5b (correlation coefficient- Nigeria)

	CapStr	AQ	Liq	Size	OE	ROAE
CapStr	1.0000					
AQ	-0.0639	1.0000				
Liq	-0.2788	-0.0523	1.0000			
Size	-0.0105	0.3728	-0.0531	1.0000		
OE	-0.1223	-0.0552	-0.1340	-0.3659	1.0000	
ROAE	0.2440	-0.1482	-0.3025	-0.2831	0.8215	1.0000

In view of this, the correlation analysis of the explanatory variables was conducted to ascertain the level of interrelationship between the variables. The analysis demonstrates a strong linear relationship between some of the variables. For instance, there exists a strong positive (0.7236 correlation coefficient) correlation between banks' Return on average equity and banks' operation efficiency in Ghana, also a correlation coefficient of 0.8215 for return on average equity and operating efficiency for the case of Nigeria. But many researchers are of the view that if the correlation among the

explanatory/independent variables is 0.9 or more will cause a serious problem of Multicollinearity. Going by similar reasoning, one will admit that the problem of Multicollinearity is not severe in this analysis.

4.6 The Test for Autocorrelation/Heteroskedasticity

A very vital assumption in Ordinary Least Square Analysis is that the error terms in the linear model are uncorrelated. In other words, we talk of the problem of Autocorrelation if the residuals for consecutive observations are correlated. Thus, successive terms or values of the random error term are temporally independent; meaning the value which the residual assumes in any one period is independent from the value it assumes in any previous period. This definition tells us that Autocorrelation is a special correlation in the sense that it refers to correlation between successive values of the same variable but not between two distinct variables, hence the name Serial Correlation.

The presence of serial correlation in any statistical analysis emanates from several reasons which include omitted explanatory variables, mis-specification of the model, interpolation in the statistical or econometric observations, and mis-specification of the true random error term.

A graphical way of portraying the existence of serial correlation in such analysis is by plotting the regression residuals either against their own lagged values, or against time. However, there are more accurate tests for the existence or the incidence of Autocorrelation. The traditional applied tests are the von Neumann ratio and the Durbin-Watson test. Since the latter test is suitable for small samples, we use that in this study to investigate the problem of serial correlation and also correct for possible

Heterskedasticity using the white cross-section. This test calculates a Durban-Watson value which if stands between 1.5 and 2.5 gives an indication of the absence of serial correlation. The Durbin-Watson value is given as 2.3191 and 1.4638, fixed and random effect respectively for Ghana which implies an existence of negative and positive serial correlation in the analysis for some reasons as cited above. The values for that of Nigeria are 2.2968 and 1.8016, fixed and random effect. For these reasons, it is recommended that subsequent studies on determinants of capital structure will look at what factors are the causes of serial correlation in Ghana and Nigeria. But it is generally believe that economic variables are interrelated and values at the present depend on past records, hence the phenomenon of Multicollinearity and serial correlation.

Chapter 5

SUMMARY

5.1 Summary of Findings

This study assesses Capital Structure and Risk (Beta) relationship as well as the determinants of Capital Structure on the GSE and NSE. The summaries of findings are given below:

The results of the study seem to reject the assumption of linear relationship between capital structure and beta (risk) of banks on the GSE. This assertion is made from the R-Square value of 0.0302 in the linear regression analysis conducted, which means that only 3.017% of variation in capital structure can be accounted for by the beta of the firm on the GSE. The P-Value of 0.3183 also gives the statistical confirmation of this rejection of existence of linear relation between capital structure and beta of banks on the GSE. However, it was observed that the relationship between capital structure and beta (if any) is positive as indicated by the regression coefficient of 0.8147. This appeared to contradict the findings of Osei (2002) and Junarsin (2011)

The simple regression of capital structure on return on average asset for both countries refutes the assumption of a linear relation with a calculated R-Square of 0.0001 and 0.0008 for Ghana and Nigeria respectively. However, the regression of capital structure

on return on average equity reported P-Values of 0.031 and 0.048 for Ghana and Nigeria respectively indicating the refusal to reject the assertion of linear relation. This implies that at the 95% confidence level, return on equity can be said be a statistical significant factor of capital structure in both countries which again contradicts studies in other jurisdictions Velnampy (2012).

The result of the multiple regression analysis of capital structure on identified explanatory variables gives intriguing revelations. The multiple regression analysis shows that there is significant linear relationship between capital structure and these variables on aggregate in both countries. The R-Square value in the fixed effect analysis stood at 0.6145 and 0.6185 in Ghana and Nigeria respectively indicating that 61.4% of the variability in capital structure in Ghana can be accounted for by explanatory variables selected, to wit: asset quality, liquidity, operation efficiency, and banks' size as defined in the study. But that of Nigeria is 61.8%, which is quiet close. This is an indication that capital structure decisions are multi-dimensional decision. Thus, bank's financial managers cannot make prudent capital structure decisions on a single variable. Moreover, the t-test shows statistical insignificance of some of these explanatory variables. For instance, the result shows that only asset quality and size are the insignificant factors at 95% confidence interval in both Ghana and Nigeria while return on average equity, operation efficiency and banks' liquidity are the significant factors.

In summary, the findings and results of this study on the relationship between capital structure and the selected explanatory variables are consistent with the results and

findings of other similar studies of firms on the GSE, such as Amidu (2007) and Oppong-Boakye et al (2013) as well as studies elsewhere like Bradley et al., (1984).

5.2 Conclusion

The main objective of this study is to investigate the kind of relationship that exists between capital structure and beta (Riskiness) of banks on the GSE and the determinants of capital structure in both GSE and NSE. The simple regression analysis of capital structure on beta of firms shows the absence of a linear relationship between the variables. It is worth noting that the findings of this study supports and affirms the fact that capital structure is a multi-dimensional decision in both countries as supported by data at the 0.05 levels of significance. Thus, no single variable can sufficiently be used in making a prudent capital structure decision of listed banks on the GSE and NSE.

It is worthwhile to conclude that the findings of this study are in harmony with theoretical frameworks and corroborates the findings of empirical studies on capital structure on the GSE/NSE and other jurisdictions.

Our conclusion is that management of banks on the GSE/NSE do consider a lot of factors in making the capital structure decision and notably among them are asset quality (Credit Risk), size of bank, operational efficiency, liquidity, and return on average equity.

5.3 Recommendation

In view of these findings, a great deal of policy recommendations could be provided for the growths of these exchanges in question and for that reason the private sector

development in Ghana and Nigeria. The pecking order theory of capital structure assumes that information asymmetry causes companies to prefer internally generated finance to other sources of finance. It thus, predicts an inverse relationship between profitability and debt on the premise that profitable companies are less likely to rely on debt finance because they are able at raise funds internally from accumulated profits.

Since the finding of this study shows no linear relationship between capital structure and beta of banks on the GSE, further studies of the kind of relationship between them is highly recommended. It is again recommended that, management of banks should be mindful of their issuance of debt and equity as investors on these exchanges can correctly interpret these actions in the view of the prospect of the bank since the signalling theory of capital structure works on the GSE and the NSE as the study has confirmed.

REFERENCE

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *The Journal of Risk Finance,* 6(5), 438-445.

Afza, T. & Hussain, A. (2011). Determinants of Capital Structure across Selected Manufacturing Sectors of Pakistan. *International Journal of Humanities and Social Science, 1*(12), 252-262.

Alkassim, F. A. (2005). The Profitability of Islamic and Conventional Banking in the GCC Countries: a Comparative Study, Master degree project, University of Wales Bangor, United Kingdom.

Alrashdan, A. (2002). Profitability Determinants of Jordanian Commercial Banks, Master degree project, Al al-Bayt University, Mafraq, Jordan.

Amidu, M. (2007). "Determinants of capital structure of banks in Ghana: an empirical approach*." Baltic Journal of Management*, 2(1), 67-79.

Begenau, J. Monika, P. & Martin, S. (2013). "Bank Risk Exposure." www.stanford.edu.

Bessis, J. (2002). *Risk Management in Banking*, John Wiley & Sons, Chichester.

Boahene, S. Hymore, D. Julius, A. & Samuel, K. (2012). “Credit Risk and Profitability of Selected Banks in Ghana”. Research Journel of Finance and Accounting, Vol. 3, No. 7.

Bradley, M. Jarrell, G. & Kim, E. H. (1984). “On the Existence of an Optimal Capital Structure: Theory and Evidence.” *The Journal of Finance.* July 1984. pp. 857-880.

Buchs, T. & Mathisen, J. (2005). “Competition and Efficiency in Banking: Behavioral Evidence from Ghana”. IMF Working Paper.

Butler, K. Mohr, R. & Simonds, R. (1991). The Hamada and Conine leverage adjustments and the estimation of systematic risk for multisegment firms, Journal of Business Finance and Accounting 18, p. 885-901.

Céspedes, J. González, M. & Molina, C. A. (2010). Ownership and capital structure in Latin America. *Journal of Business Research, 63*(3), 248-254.

Cheng, S. R. & Shiu, C. Y. (2007). Investor protection and capital structure: International evidence. *Journal of Multinational Financial Management, 17*(1), 30-44.

Dauda, M. (2012). “Impact of Business Risk on Corporate Capital Structure of Publicly-Listed Nigerian Companies” Journal of Business and Management. Vol. 5, Issue 2.

Deesomsak, R. Paudyal, K. & Pescetto, G. (2004). “The determinants of capital structure: evidence from the Asia Pacific region.” *Journal of Multinational Financial Management, 14*(4), 387-405.

De Jong, A. Kabir, R. & Nguyen, T. T. (2008). Capital structure around the world: The roles of firm-and country-specific determinants. *Journal of Banking & Finance, 32*(9), 1954-1969.

De Jong, D. V. & Collins, D. W. (1985). Explanations for the Instability of Equity Beta: Risk-Free Rate Changes and Leverage Effects. Journal of Financial and Quantitative Analysis, 20, pp 73-94. doi:10.2307/2330678.

Demirguc-Kunt, A. & Huizinga, H. (1999). “Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence”, The World Bank Economic Review, Vol. 13. No. 2, p.379-408.

Dougherty, C. (2011). *Introduction to Econometrics.* (4th ed.): Oxford University Press.

Fama, E. F. & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *Review of financial studies, 15*(1), 1-33.

Golin, J. (2001). *The Bank Credit Analysis Handbook: A Guide for Analysts, Bankers and Investors.* John Wiley & Sons (Asia) Pre Ltd.

Guney, Y. Li, L. & Fairchild, R. (2011). The relationship between product market competition and capital structure in Chinese listed firms. *International Review of Financial Analysis, 20*(1), 41-51.

Hamada, R. (1972). The effect of the firm's capital structure on the systematic risk of common stocks, Journal of Finance 27, p. 435-452.

Haron, S. (2004). "Determinants of Islamic Bank Profitability". Global Journal of Finance and Economics. USA, Vol 1, No 1.

Harris, M. & Raviv, A. (1991). "The Theory of Capital Structure." *The Journal of Finance.* March 1991. pp. 297-355.

Hassan, K. & Bashir, M. *(*2003). "Determinants of Islamic Banking Profitability." *International Seminar on Islamic Wealth Creation,* University of Durham, U.K, 7-9 July, 2003.

Heffernan, S. (1996). *Modern banking in theory and practice,* John Wiley and Sons,Chichester.

Iqbal, M. J. & Syed, Z. A. (2007). "Determinants of Systematic Risk" The Journal of Commerce, Vol. 4, No. 1.

Junarsin, E. (2011). “Capital Structure and Beta Relation: Empirical Evidence from U.S. Firms in the Period of 1989-2008” Journal of Money, Investment and Banking” ISSN 1450-288X 22.

Kester, C.W. (1986). “Capital and Ownership Structure: A comparison of United State and Japanese Manufacturing Corporations”, Financial Management, 15: 5-16.

Kutsienyo, L. (2011). “The Determinants of Banks Profitability in Ghana”. A thesis submitted to institute of distance learning, KNUST, Ghana.

Mandelker, G. N. & Rhee, S. G. (1984). The Impact of the Degrees of Operating and Financial Leverage on Systematic Risk of Common Stock. Journal of Financial and Quantitative Analysis, 19, pp 45-57. doi:10.2307/2331000.

Mensah, S. (2008). ‘Securities Markets and Investment: A Ghanaian Primer (3rdedn), Smartline Limited, Ghana.

Miller, M. (1977). Debt and taxes, *Journal of Finance* 32, p. 261-275.

Miller, M. & Modigliani, F. (1958). “The Cost of Capital, Corporation Finance and the Theory of Investment.” *American Economic Review* 48, 261-297.

Mishra, D. & Tannous, G. (2010). Securities laws in the host countries and the capital structure of US multinationals. *International Review of Economics & Finance, 19*(3), 483-500.

Oppong-Boakye, K. P. Appiah, K. O. Afolabo, J. K. (2013). “Determinants of Capital Structure: Evidence from Ghanaian firms”. Research Journal of Finance and Accounting, Vol. 4, No. 4.

Osei, K. A. (2002). “Asset pricing and information efficiency of the Ghana Stock Market”. AERC Research Paper 115 African Economic Research Consortium, Nairobi March 2002.

Ozkan, A. (2001). Determinants of capital structure and adjustment to long run target: evidence from UK company panel data. *Journal of Business Finance and Accounting, 28*(1 & 2), 175-198.

Pandey, I. M. (1999). *Financial Management*, New Delhi, 7th edition: Vikas Publishing House Pvt Ltd.

Rajan, R. G. & Zingales, L. (1995). “What Do We Know About Capital Structure? Some Evidence from International Data”, Journal of Finance, Vol. 50, pp.1421-60.

Rose, P. & Hudgins, S. (2005). Bank Management & Financial Services, 6th Edition, New York: McGraw-Hill.

Saeed, M. Muzaffar, A. Ammar, G. & Yasran, R. M. (2013). “Impact of Capital Structure on Banking Performance (A Case Study of Pakistan)”. Interdisciplinary Journal of Contemporary Research in Business, Vol. 4 No. 10.

Sharif, B. Naeem, M. A. & Khan, A. J. (2012). Firm's characteristics and capital structure: A panel data analysis of Pakistan's insurance sector. *African Journal of Business Management, 6*(14), 4939-4947.

Taub, A. J. (1975). "Determinants of Firms' Capital structure", review of Economics and Statistics, vol.57, (Nov., 1975), pp. 410-416.

Titman, S. & Wessels, R. (1988). "The Determinants of Capital Structure Choice", The Journal of Finance, 43:1-19.

Tong, G. & Green, C. J. (2005). "Pecking order or trade-off hypothesis? Evidence on the capital structure of Chinese companies." *Applied Economics, 37*(19), 2179-2189.

Velnampy, T & Niresh, J. A. (2012). "The Relationship between Capital Structure & Profitability". Global Journal of Management and Business Research. Volume 12 Issue 13 Version 1.0

Viviani, J. L. (2008). Capital structure determinants: an empirical study of French companies in the wine industry. *International Journal of Wine Business Research, 20*(2), 171-194.

Watson, D. & Head, A. (2010). "Corporate Finance, Principles and Practice" Financial Times, Prentice Hall, 5th edn.

Yu, H. C. (2000). Banks Capital Structure and the Liquid Asset Policy Implication of Taiwan. *Pacific Economic Review, 5*(1), 109-114.

APPENDICES

Appendix I: (Simple Regression-Ghana)

Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 08:43
Sample: 2007 2011
Periods included: 5
Cross-sections included: 7
Total panel (balanced) observations: 35

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.814657	0.035198	23.14519	0.0000
BETA	0.099652	0.098351	1.013222	0.3183

R-squared	0.030171	Mean dependent var	0.830394
Adjusted R-squared	0.000782	S.D. dependent var	0.186937
S.E. of regression	0.186864	Akaike info criterion	-0.461424
Sum squared resid	1.152302	Schwarz criterion	-0.372547
Log likelihood	10.07492	Hannan-Quinn criter.	-0.430744
F-statistic	1.026619	Durbin-Watson stat	0.783619
Prob(F-statistic)	0.318326		

Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 09:51
Sample: 2007 2011
Periods included: 5
Cross-sections included: 7
Total panel (balanced) observations: 35

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.835647	0.081582	10.24309	0.0000
ROAA	-0.165943	2.369315	-0.070039	0.9446

R-squared	0.000149	Mean dependent var	0.830394
Adjusted R-squared	-0.030150	S.D. dependent var	0.186937
S.E. of regression	0.189734	Akaike info criterion	-0.430937
Sum squared resid	1.187973	Schwarz criterion	-0.342060
Log likelihood	9.541396	Hannan-Quinn criter.	-0.400257
F-statistic	0.004905	Durbin-Watson stat	0.702090
Prob(F-statistic)	0.944586		

Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 09:58
Sample: 2007 2011
Periods included: 5
Cross-sections included: 7
Total panel (balanced) observations: 35

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.729126	0.055481	13.14196	0.0000
ROAE	0.420876	0.193955	2.169969	0.0373

R-squared	0.124872	Mean dependent var	0.830394
Adjusted R-squared	0.098353	S.D. dependent var	0.186937
S.E. of regression	0.177507	Akaike info criterion	-0.564173
Sum squared resid	1.039783	Schwarz criterion	-0.475296
Log likelihood	11.87303	Hannan-Quinn criter.	-0.533493
F-statistic	4.708766	Durbin-Watson stat	1.039143
Prob(F-statistic)	0.037309		

Appendix II: (Simple Regression-Nigeria)

Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 10:03
Sample: 2008 2012
Periods included: 5
Cross-sections included: 10
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.822984	0.016033	51.33221	0.0000
ROAA	-0.104630	0.540740	-0.193494	0.8474

R-squared	0.000779	Mean dependent var	0.820570
Adjusted R-squared	-0.020038	S.D. dependent var	0.070509
S.E. of regression	0.071212	Akaike info criterion	-2.407144
Sum squared resid	0.243413	Schwarz criterion	-2.330663
Log likelihood	62.17859	Hannan-Quinn criter.	-2.378019
F-statistic	0.037440	Durbin-Watson stat	1.337592
Prob(F-statistic)	0.847388		

Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 10:05
Sample: 2008 2012
Periods included: 5
Cross-sections included: 10
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.794412	0.016121	49.27928	0.0000
ROAE	0.201000	0.099117	2.027917	0.0481

R-squared	0.078915	Mean dependent var	0.820570
Adjusted R-squared	0.059726	S.D. dependent var	0.070509
S.E. of regression	0.068371	Akaike info criterion	-2.488567
Sum squared resid	0.224379	Schwarz criterion	-2.412086
Log likelihood	64.21417	Hannan-Quinn criter.	-2.459442
F-statistic	4.112447	Durbin-Watson stat	1.275841
Prob(F-statistic)	0.048139		

Appendix III: (Multiple Regressions-Ghana)

Fixed Effect

Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 14:39
Sample: 2007 2011
Periods included: 5
Cross-sections included: 7
Total panel (balanced) observations: 35
White cross-section standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.044080	1.086927	1.880605	0.0727
AQ	-0.113682	1.416787	-0.080239	0.9367
SIZE	-0.051958	0.059145	-0.878480	0.3888
LIQ	-0.100650	0.033401	-3.013378	0.0062
OE	-12.10289	1.018616	-11.88170	0.0000
ROAE	1.169250	0.178090	6.565484	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.614465	Mean dependent var	0.830394
Adjusted R-squared	0.430078	S.D. dependent var	0.186937
S.E. of regression	0.141125	Akaike info criterion	-0.812482
Sum squared resid	0.458073	Schwarz criterion	-0.279220
Log likelihood	26.21844	Hannan-Quinn criter.	-0.628400
F-statistic	3.332484	Durbin-Watson stat	2.319104
Prob(F-statistic)	0.007182		

Random Effect

Dependent Variable: CAPSTR
Method: Panel EGLS (Cross-section random effects)
Date: 01/28/14 Time: 14:39
Sample: 2007 2011
Periods included: 5
Cross-sections included: 7
Total panel (balanced) observations: 35
Swamy and Arora estimator of component variances
White cross-section standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	0.940936	0.221130	4.255125	0.0002
AQ	-0.139606	1.381061	-0.101086	0.9202
SIZE	-0.001161	0.009452	-0.122834	0.9031
LIQ	0.002305	0.040200	0.057333	0.9547
OE	-8.699798	0.526533	-16.52280	0.0000
ROAE	1.079151	0.245277	4.399730	0.0001

Effects Specification	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	0.141125	1.0000

Weighted Statistics

R-squared	0.394285	Mean dependent var	0.830394
Adjusted R-squared	0.289851	S.D. dependent var	0.186937
S.E. of regression	0.157533	Sum squared resid	0.719680
F-statistic	3.775462	Durbin-Watson stat	1.463835
Prob(F-statistic)	0.009364		

Unweighted Statistics

R-squared	0.394285	Mean dependent var	0.830394
Sum squared resid	0.719680	Durbin-Watson stat	1.463835

Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	13.135331	5	0.0221

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
AQ	-0.113682	-0.139606	0.341654	0.9646
SIZE	-0.051958	-0.001161	0.011401	0.6343
LIQ	-0.100650	0.002305	0.010263	0.3095
OE	-12.102893	-8.699798	2.279640	0.0242
ROAE	1.169250	1.079151	0.033212	0.6210

Cross-section random effects test equation:
Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 14:41

Sample: 2007 2011
Periods included: 5
Cross-sections included: 7
Total panel (balanced) observations: 35

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.044080	1.985854	1.029320	0.3140
AQ	-0.113682	1.765844	-0.064378	0.9492
SIZE	-0.051958	0.107254	-0.484437	0.6327
LIQ	-0.100650	0.131254	-0.766831	0.4510
OE	-12.10289	3.132262	-3.863947	0.0008
ROAE	1.169250	0.299840	3.899582	0.0007

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.614465	Mean dependent var	0.830394
Adjusted R-squared	0.430078	S.D. dependent var	0.186937
S.E. of regression	0.141125	Akaike info criterion	-0.812482
Sum squared resid	0.458073	Schwarz criterion	-0.279220
Log likelihood	26.21844	Hannan-Quinn criter.	-0.628400
F-statistic	3.332484	Durbin-Watson stat	2.319104
Prob(F-statistic)	0.007182		

Appendix IV: (Multiple Regressions-Nigeria)

Fixed Effect

Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 14:44
Sample: 2008 2012
Periods included: 5
Cross-sections included: 10
Total panel (unbalanced) observations: 45
White cross-section standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.834082	0.067327	12.38856	0.0000
AQ	0.007352	0.003881	1.894324	0.0679
SIZE	0.005076	0.004004	1.267767	0.2146
LIQ	-0.108636	0.029930	-3.629705	0.0010
OE	-2.335249	0.294740	-7.923075	0.0000
ROAE	0.671762	0.201292	3.337257	0.0023

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.618476	Mean dependent var	0.821171
Adjusted R-squared	0.440432	S.D. dependent var	0.071126
S.E. of regression	0.053205	Akaike info criterion	-2.768128
Sum squared resid	0.084923	Schwarz criterion	-2.165907
Log likelihood	77.28288	Hannan-Quinn criter.	-2.543626
F-statistic	3.473717	Durbin-Watson stat	2.296813
Prob(F-statistic)	0.002053		

Random Effect

Dependent Variable: CAPSTR
Method: Panel EGLS (Cross-section random effects)
Date: 01/28/14 Time: 14:44
Sample: 2008 2012
Periods included: 5
Cross-sections included: 10
Total panel (unbalanced) observations: 45
Swamy and Arora estimator of component variances
White cross-section standard errors & covariance (d.f. corrected)

WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.845059	0.053804	15.70636	0.0000
AQ	0.001544	0.003500	0.441024	0.6616
SIZE	2.90E-05	0.001561	0.018563	0.9853
LIQ	-0.063636	0.054174	-1.174650	0.2473
OE	-2.903963	0.247358	-11.73993	0.0000
ROAE	0.714769	0.183735	3.890211	0.0004

Effects Specification	S.D.	Rho
Cross-section random	0.030055	0.2419
Idiosyncratic random	0.053205	0.7581

Weighted Statistics			
R-squared	0.436208	Mean dependent var	0.523725
Adjusted R-squared	0.363926	S.D. dependent var	0.067233
S.E. of regression	0.052791	Sum squared resid	0.108687
F-statistic	6.034878	Durbin-Watson stat	1.801648
Prob(F-statistic)	0.000315		

Unweighted Statistics			
R-squared	0.382986	Mean dependent var	0.821171
Sum squared resid	0.137341	Durbin-Watson stat	1.425771

Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.387852	5	0.4950

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
AQ	0.007352	0.001544	0.000382	0.7663
SIZE	0.005076	0.000029	0.000015	0.1897
LIQ	-0.108636	-0.063636	0.001783	0.2866
OE	-2.335249	-2.903963	0.749636	0.5113
ROAE	0.671762	0.714769	0.012152	0.6964

Cross-section random effects test equation:
Dependent Variable: CAPSTR
Method: Panel Least Squares
Date: 01/28/14 Time: 14:45
Sample: 2008 2012
Periods included: 5
Cross-sections included: 10
Total panel (unbalanced) observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.834082	0.062410	13.36455	0.0000
AQ	0.007352	0.022006	0.334093	0.7406
SIZE	0.005076	0.004891	1.037684	0.3077
LIQ	-0.108636	0.070191	-1.547715	0.1322
OE	-2.335249	1.193189	-1.957150	0.0597
ROAE	0.671762	0.204764	3.280660	0.0026

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.618476	Mean dependent var	0.821171
Adjusted R-squared	0.440432	S.D. dependent var	0.071126
S.E. of regression	0.053205	Akaike info criterion	-2.768128
Sum squared resid	0.084923	Schwarz criterion	-2.165907
Log likelihood	77.28288	Hannan-Quinn criter.	-2.543626
F-statistic	3.473717	Durbin-Watson stat	2.296813
Prob(F-statistic)	0.002053		