Analysis of the Relationship between Interest Rates and Gearing Ratios of Banks Listed on the Ghana Stock Exchange

**Matthew Kwabena Valogo[1*], Adinan Bahahudeen Shafiwu[2]
and Joyce Adabuge[3]**

[1]*Department of Secretaryship and Management Studies, Bolgatanga Polytechnic, Upper East Region, Ghana.*
[2]*Department of Mathematics, Faculty of Mathematical Sciences, University for Development Studies, Tamale, Ghana.*
[3]*Examination Unit, Faculty of Applied Sciences, University for Development Studies, Tamale, Ghana.*

Authors' contributions

This work was carried out in collaboration between all authors. Author MKV designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author ABS managed the analyses of the study. Author JA managed the literature searches. All authors read and approved the final manuscript.

Article Information

Original Research Article

ABSTRACT

This study aims at analysing the relationship between interest rates and gearing ratios of banks listed on the Ghana Stock Exchange. The research design was a correlational analysis using time series data. The population for this study consists of all the (10) banks listed on the Ghana Stock Exchange. The data for the study was purely secondary and the selected period ranged from 2012 to 2016, (5 years). The data were analysed with trend and correlation analysis and represented with charts and tables using descriptive statistics. The study findings revealed that of the listed banks the debt-to-equity ratio also known as the gearing ratio had both a minimum and maximum for 0.89 and 0.92 respectively with the expected mean being 0.79 which deviated from the actual mean by 0.18.

_____

*Corresponding author: E-mail: matkwo@yahoo.com;

Comparably the interest rate results showed a minimum and maximum value of 0.04 and 9.56 respectively with their respective mean values of 2.13, also deviating from the actual mean by 1.91. In addition GDP had minimum and maximum values of 3.70 and 9.30 with the mean standard deviation values of 5.51 and 2.26. Based on the findings the study concluded that there is a negative relationship between the gearing ratio and interest rate and a positive relationship between GDP and inflation. Thus, any increase in the interest rate could result in a decrease in gearing ratio. Based on conclusions above, the study recommends that financial managers must strive to obtain debt instrument with lower interest rate in order to boost the long-term financial strength (gearing) of their firms. Also the Bank of Ghana (BoG) should sanitise the monetary environment through their monetary policy regulation to ensure lower or stable interest rate so as to facilitate the strength of the gearing ratio of banks in the economy.

1. INTRODUCTION

One of the most important decisions in business financing policy is the principles of capital structure. Capital structure is the mixture of equity and debt that constitutes the capital stream of a business, [1]. The term equity financing refers to a process of raising capital through the sale of shares in an enterprise. In return for the investment, the shareholders receive ownership interests in the company. Thus, debt financing is where the firm finances its operations by issuing securities such as bonds and direct borrowing from financial institutions.

When a firm raises funds through debt financing, it introduces positive item in the financing section of the cash flow statement and also increases its liabilities on the financial statement in the same year. The concept of debt financing consist of principal which state repayment of loan with an interest to bondholders and lenders. The borrowing capacity of firms is influenced by the amount of the pay back which in effect also influences the profitability of the firms.

Gearing ratio is a financial ratio that compares some form of owner's equity (capital) to funds borrowed by the firm. It is also used to measure both the profitability strength and the long-term financial strength of a firm or business It is also seen as the ratio or the proportion of a firms debt to its equity and is usually computed by dividing the total debt over the total equity of a firm. The concept is subdivided into two and consists of Total short-term debt and Long-term debt. According to Billy (2014) a firm with more than or less than 50% debt-to-equity ratio is considered as either a high geared firm or a low geared firm. Fischer et al. [2] indicated that firms use different amount in differentiating the actual leverage ratio

and the target ratio. Also Flannery and Rangan [3] stated that firms target a long run capital structure with a typical firm converging toward its long run target at a rate of more than 30% per year.

Furthermore, interest rate is the rate charged on principal by a lender to a borrower for the use of asset at a particular business period. Literature shows that the interest rate has an effect on capital structure decisions.

The general lending rates in the Ghanaian economy has, however, remained relatively high over the same period, suggesting a connection of a sort between bank performance and interest rates, though this connection is yet to be proven empirically. Since gearing ratio measures the degree of profit generating ability (performance) of banks, the study seeks to empirically examine the connection between interest rates and a gearing ratio of banks listed on the Ghana Stock Exchange.

An overview of the banking sector in Ghana, by end-December 2016, shows that the sector comprised thirty-three banks of which sixteen were domestically controlled and the remaining seventeen were foreign-controlled. In total, the number of branches were 1,342 branches distributed across the ten regions of the country [4].

The performance of the banking sector remained strong, underpinned by relatively strong asset growth and marginal improvement in liquidity in 2016. Asset growth was largely driven by increases in banks' investment portfolio and foreign assets. Banks' solvency, as measured by the Capital Adequacy Ratio (CAR) recorded no significant change and remained well above the required threshold over the review period. Asset

quality, however deteriorated within the year, although the last quarter of 2016 reflected some improvement following the restructuring, reclassification and commencement of repayment of the energy related State Owned Enterprises (SOEs) debts owed banks.

Growth in banks' loans and advances remained modest for most parts of 2016, despite a slight pickup in the last quarter. The pickup in credit growth was corroborated by easing of banks' credit stance to both enterprises and households in the last quarter.

The outlook for the banking industry remains positive, especially after the successful restructuring arrangements to reduce debts owed by energy-related State Owned Enterprises (SOEs) to the banks. Similar arrangements have also been put in place to pay down debts owed by the Bulk Oil Distribution Companies (BDCs). As the repayments continue and the debt structure of the affected banks is reclassified, the non-performing loans (NPL) ratios in the banking industry are projected to improve further and will further project a have a direct impact on the solvency of the banking industry. Also, the introduction of the Internal Capital Adequacy Assessment Process (ICAAP) under the Basel II framework which would require banks to recapitalize to meet their economic capital requirements, together with finalization of plans on the new minimum capital requirements for banks, would ensure that the banking industry is well capitalized to effectively play its financial intermediation role in the economy [4].

One important issue that may nullify the relevance of capital structure is the operations or existence of different regulatory frameworks. Suh (2008) reported that different nations have different tax regulations and culture, thus interactions or relationship between various variables may not be the same hence the result of a particular nation may not or cannot be applied to the other nations. Many researchers have tried to establish a link between the interest rate and gearing ratios, for instance Muthama et al. [5] carried out a research in Kenya on the effect of macroeconomic variables influences on capital structure of the listed companies. They found that macroeconomic factors have strong influence on debt financing and also suggested that interest rate is having negative impact on gearing ratio on the firms listed. Also studies by (Shah and Khan [6], Rafique [7], Masnoon and Anwar [8]) on determinants of debt financing of Kenyan Stock Exchange (KSE) listed compnies

had similar which suggests for all industries, interest rate is inversely related to financial leverage.

However, all these studies on the relationship between debt financing and interest rate are centered in developed economies such as China, India, South Korea etc. This study wants to replicate this in Ghanaian context, precisely on Ghana Stock Exchange to see the effect. Thus, the need for this study in determining the relationship between interest rates and gearing ratio of banks listed on the Ghana Stock Exchange. In general, the study seeks to determine the relationship between interest rates and gearing ratios and to specifically; establish the relationship between interest rate and gearing ratio and how interest rate affects the gearing of listed banks on the Ghana Stock Exchange.

2. LITERATURE REVIEW

2.1 Overview of Ghana Stock Exchange

The Ghana Stock Exchange was introduced as a legal business entity on July 25, 1989 as a private company under the Company's Act 1963 (Act 179). Ghana Stock Exchange was the newest among the six (6) exchanges of AQ Africa south of the Sahara at the commencement of the 1990s: the other five being in Zimbabwe, Kenya, Nigeria, South Africa and La Cote d'Ivoire. On November 12, 1990, after 20 years of waiting, Ghana stock Exchange officially acquired its operating status. In the same period, it inaugurated its floor for trading activities to the general public. On November 7, 1990, the Ghana Stock Exchange Council or the Council for short, made the rules for regulating the listing of securities of firms on the exchange. These rules were captured in the Legislative Instrument (LI) 1509, dated January 11, 1991. The membership guidelines were prepared on January 9, 1991, and passed into law, by LI 1510. The number of companies listed on the exchange currently is forty-one (41)

The Ghana Stock Exchange was set up with the following aims.

1. To co-ordinate the stock dealing activities of members and facilitate the exchange of information including prices of securities listed for their mutual advantages and for the benefit of their clients;
2. To co-operate with associations of stockbrokers and Stock Exchanges in

other countries, and to obtain and make available to members' information and facilities likely to be useful to them or to their clients.

3. To provide the facilities and framework to the public for trading in financial securities;

4. To control the granting of quotations on the securities market in respect of bonds, shares and other securities of any company, corporation, government, municipality, local authority or other body corporate.

2.2 Theoretical Review

2.2.1 <u>Pecking order theory</u>

Myers and Majluf [9], developep the Pecking Order theory which is used to postulate that, cost financing increases with asymmetric information. They argued that, cost financing comes from three sources, internal funds, debt and new equity. Companies prioritize their sources of financing, first preferring internal financing, and then debt, lastly raising equity as a last sort. Hence: Internal financing is used first; when that is depleted, then debt is issued; and when it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses confirmed to a ranking of financing sources and mostly prefer internal financing when available. Also debt is preferred over equity if external financing is required (equity would mean issuing shares which meant bringing external ownership into the company) thus the form of debt a firm chooses can act as a signal of its need for external finance.

Myers concluded by stating that businesses confirmed to financing sources ranking and prefer both internal and debt financing when available over external financing and equity.

2.2.2 <u>Irving fisher's theory of interest rates</u>

This theory shows how money supply affects nominal interest rate and inflation rate as a tandem. The theory shows the relationship or differences between income and capital is the rate of interest. Fischer et al. [2] defined interest rate as the proportion of an amount of loaned which a lender charge as interest to the borrower. It is usually expressed at an annual percentage or at a rate determine by the bank.

The interest rate theory has a close look to the theory of prices and establishes a particular fact

in the special aspect of firms. In this theory the rate of interest expresses price in the exchange between present and future goods. (Fischer et al. [2]).

2.3 Some Empirical Review

Several studies have been carried out in order to find out how debt financing and its related factors affect firms. Among some of these studies are:

Muthama et al. [5] studied on macroeconomic influences and its relationship between interest rate and gearing ratio of listed companies in Kenya. Their findings reveals, macro-economic factors have strong influence on capital structure and showed that macroeconomics variables such as GDP growth rate, inflation and interest rate have negative influence on gearing ratio.

Owusu and Badu (2009) in their study stated inflation, GDP and interest rate as other factors that affect gearing ratio of firms. Inflation may encourage and discourage demand and supply of loan. In time with high inflation, loan provider will less likely to offer loan due to reduce in real value of money. High interest rate is required to compensate the reducing in real value of money.

Studies by Eriotis et al. [10] for the time period of (1997-2001) on determinants of financial leverage on Greek companies listed on Athens stock exchange revealed debt (gearing) ratio to have negative relationship with growth and interest rate.

Madan [11] investigated the relationship between debt financing and its overall performance on Indian firms. Study assessed how different debt-interest combinations play an important part in firm's overall performance and expansion. The findings is reported to have an inverse relationship between gearing ratio and interest rate.

Also studies by (Shah and Khan [6], Rafique [7], Masnoon and Anwar [8]) on on determinants of debt financing of KSE listed companies revealed a quite similar result, were interest rate, GDP and Inflation were found to negatively influence gearing ratio.

According to Maina and Ishmail [12] on the effect of capital structure on financial performance of firms listed on the National Stock Exchange (NSE) from the period of 2002-2011, debt and equity are major determinants of financial

performance of firms listed at the NSE and has a negative and significant relationship between capital structure and all measures of performance. This implies that the more debt the firms use us a source of finance the lower the performance.

Akinyomi and Olagunju [13] studied the determinants of financial leverage using a sample of twenty four (24) companies listed on Nigerian stock exchange. The findings of their study revealed that gearing ratio has a negative relationship with interest rate, GDP and inflation and on the other hand a positive relationship with tangibility, profitability and growth.

In summary, our theoretical review points out that, since the introduction of the capital structure theory by Modigliani and Miller [14], the concepts of debt-equity financing have been a source of much debate. Thus has led to the evolution of other models which are more advanced to explain debt-equity financing. Some of these advance models are the pecking order theory and Irving Fisher's Theory of Interest Rates.

3. METHODOLGY

3.1 Data and Methods

The study employed correlation research design. The population for the study was made up of all the ten (10) banks listed on the Ghana Stock Exchange, namely: Access Bank Ghana, Agricultural Development, BankCAL Bank Limited, Ecobank Ghana Limited, Ghana Commercial Bank Limited, HFC Bank Limited, Mega African Capital Limited, Societe Generale Ghana Limited, Standard Chartered Bank Ghana Limited and the Trust Bank Limited (THE GAMBIA).

The data for the study was purely secondary and the selected period ranged from 2012 to 2016, (5 years). The data was analysis with a STATA software version 13, trend and regression analysis were performed and the result presented with charts and tables, with descriptive and inferential statistics interpretations.

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

This section presents the descriptive results. The measures of central tendency were presented then followed by trend analysis.

4.2 Measures of Central Tendency

Table 1 shows the results of the descriptive statistics of the variables that were used in the study. The results revealed that the gearing ratio also known as debt-to-equity ratio of the listed banks had a minimum of 0.89 and a maximum of 0.92 and its reported mean was 0.79 which deviated by 0.18. Similarly, the results of interest expense indicate that the minimum and maximum values were 0.040 and 9.56, respectively with a mean value of 2.13 deviating by 1.91. Also GDP had a minimum and a maximum values of 3.7 and 9.3, respectively with a mean value of 5.508 and a standard deviation value of 2.26. Other variable adopted in the study was inflation and has reported mean and standard deviation values 14.083 and 3.057, respectively.

4.3 Trend Analysis

In this section graphical representation of the movement and changes of the variables under study over the years; 2012 to 2016 were discussed.
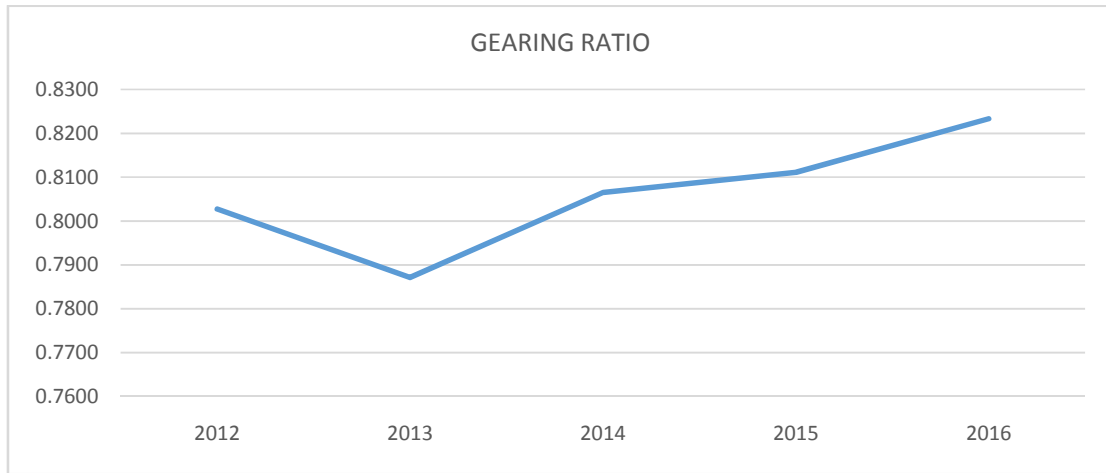
4.3.1 Trend analysis of gearing ratio

Fig. 1 indicates the gearing ratio of banks listed on the Ghana Stock Exchange (GSE) for the period 2012 to 2016. The figure showed that gearing ratio for the ten (10) banks used over the time period of the study have declined from 2012 to 2013 and also increased from 2014 to 2016. Thus, implying that the proportion of debt to equity has been on the declined and banks that have a higher preference for equity as over debt. On the contrary, it also implies that, the cost of debt is higher compared to that of equity.

Table 1. Operational variables

| Variables	Observation	Mean	Std. Dev	Min	Max
Gearing ratio	50	0.7902	0.17641	0.8852	0.9239
Interest rate	50	2.12624	1.91127	0.0397	9.5613
GDP	50	5.508	2.25604	3.7	9.3
Inflation	50	14.0832	3.05746	9.16	17.52

Source: Authors estimation, 2018

5

Fig. 1. Trend analysis of gearing ratio
Source: Authors estimation, 2018

4.3.2 Trend analysis of interest expense

Fig. 2 shows the interest expense of banks listed on the Ghana Stock Exchange (GSE) for the period 2012 to 2016. It indicates that interest rate for the ten (10) banks used over the 5 years period of the study has a linear movement from 2012 to 2014.   There was also unsteady movement from 2014 to 2016 and implies the interest rates for borrowing were very high for all the banks from 2012 to 2014. This leads to decline in gearing ratio. And also interest rates for borrowing were very low for all the banks from 2014 to 2016. This leads to increase in gearing ratio.

4.3.3 Trend analysis of total assets

The total assets of banks listed on the Ghana Stock Exchange (GSE) for the period 2012 to 2016 are depicted in Fig. 3 which shows that, total assets for the ten (10) banks used in the study over the 5 years period was increasing linearly in nature from 2012 to 2016. This implies that the firms have been increasing their assets over time and could imply that banks have embraced diversification, hence establishing new ventures thus causing increase in their portfolios.
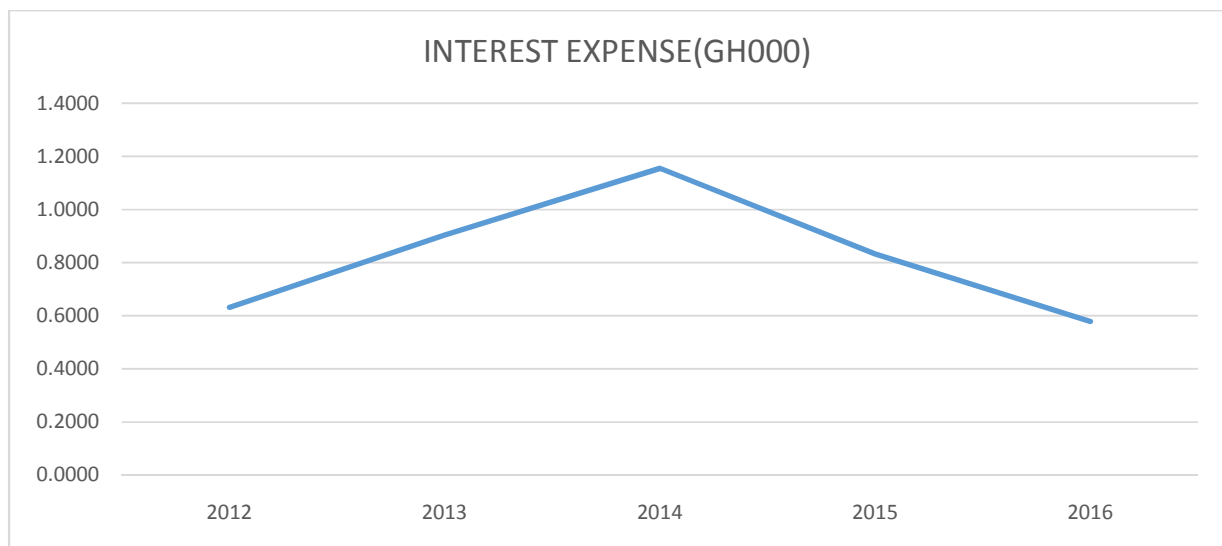
Fig. 2. Trend analysis of interest expense
Source: Authors estimation, 2018
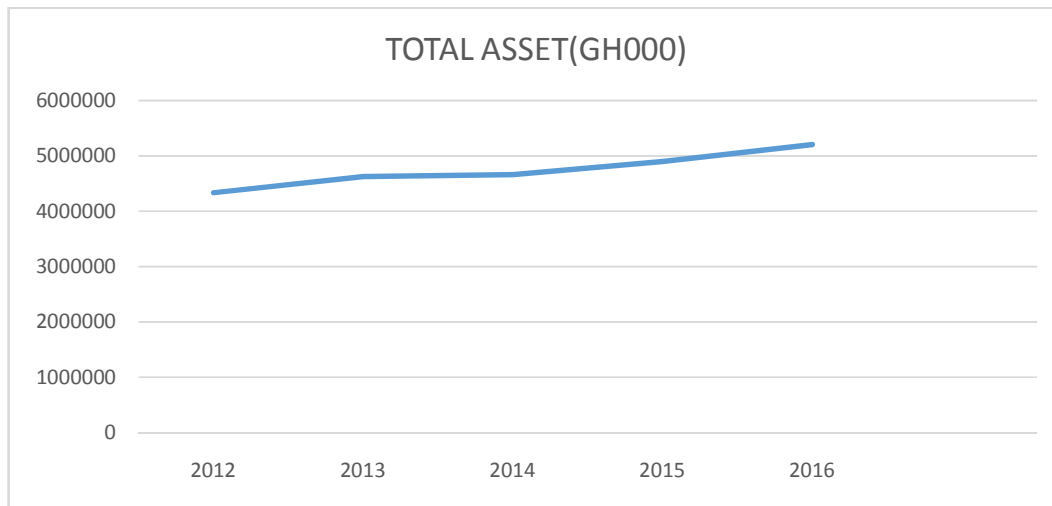
Fig. 3. Trend analyses of total assets
Source: Authors estimation, 2018

5. SUMMARYS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

From the trend analysis, the study established that interest rate increased annually from 2012 to 2014, but declined annually from 2015 to 2016. Also, the study showed that there is an inverse relationship between interest rate and the gearing ratio. Finally, to control for the influence of the macroeconomic environment on the relationship of interest, GDP and inflation rate were captured in the model. The result is that the macroeconomic environment has a statistically significant influence on the relationship between interest rate and gearing ratio.

5.2 Recommendation

Based on the conclusions above, the study recommends that since high-interest rate affects gearing negatively, financial managers must strive to obtain debt instrument with a lower interest rate in order to boost the long-term financial strength (gearing) of their firms. Finally, the study recommends that the Bank of Ghana (BoG) should sanitise the monetary environment through their monetary policy regulation to ensure lower or stable interest rate that will facilitate the strength of the gearing ratio of banks in the economy.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Watson D, Head A. Corporate finance, Principles & Practice (4th ed.). UK: Prentice Hall; 2007.
2. Fischer EO, Heinkel R, Zechner J. Dynamic capital structure choice: theory and tests J. Finance. 1989;44(1):19-40
3. Flannery, Rangan MJ, Flannery KP, Rangan partial adjustment toward target capital structures. J. Financ. Econ. 2006; 79(3):469-506
4. BoG; 2016. Aailable:https://www.bog.gov.gh/privatecontent/MPC_Press_Releases/Banking%20Sector%20Summary%20-%20January%202017.pdf
5. Muthama C, Mbaluka P, Kalunda E. An Empirical analysis of macro-economic influences on corporate capital structure of listed companies in Kenya. Journal of Finance and Investment Analysis. 2013;2: 41-62.
6. Shah A, Khan S. Determinants of capital structure evidence from Pakisatni panel data. International Review of Business Research. 2007;3(4):265-282.
7. Rafique M. Effect of profitability and financial leverage on capital structure of Pakistani"s automobile companies. Economics and Finance Review. 2011; 1(4):50 –58.
8. Masnoon M, Anwar F. Capital structure Determinants of KSE listed Pharmaceutical companies. GMJACS. 2012;2(1).

Available:http://ssrn.com/abstract=2207630

9. Myers SC, Majluf NS. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics. 1984; 13(2):187-221.

10. Eriotis N, Vasiliou D, Neokosmidi Z. How firm characteristics affect capital structure. Managerial Finance. 2007;33(5):321-331. Available:www.emeraldinsight.com/0307-4358

11. Madan K. An analysis of the debt-equity structure of leading hotel chains in India. International Journal of Contemporary Hospitality Management. 2007; 19(5):397-414.

12. Maina L, Ishmail M. Capital structure and financial performance in Kenya: Evidence from firms listed at the Nairobi Securities Exchange. International Journal of Social Sciences and Entrepreneurship. 2014; 1(11):209-223. Maina L, Kondongo O. Capital structure and financial performance in Kenya: Evidence from firms listed at the nairobi securities exchange. Paper Presented at the Jomo Kenyatta University of Science and Technology Research Conference, Kenya; 2013.

13. Akinyomi O, Olagunju A. Determinants of capital structure in Nigeria. International Journal of Innovation and Applied Studies. 2013;3(4):999-1005. Available:http://www.issr-journals.org/ijias/

14. Modigliani F, Miller MH. The cost of capital, corporation finance and the theory of investment. The American Economic Review. 1958;48(3):261-297.