The Relationship between capital structure and FTSE 100 financial Industry Value: An Empirical Investigation into pre and post-2008 Financial Crisis Periods

Executive Summary

This study presents impact of capital structure on firms' financial value. Sample of the firms that belong to the FTSE 100 financial industry (3i GRP, Hargreaves Lans, London stock exchange, Provident Finance, and Schroders) were used in this study.The "debt to equity ratio (D/E ratio) " was used a proxy for the capital structure while "return on equity (ROE)" was used as a proxy for the firms' value, the time series data was collected for the period of 10 years (1995 to 2015), from the company's various end of the year's financial record and statement of accounts. The relationship was estimated using "panel regression model of fixed and random effects". To achieve the objectives of the study, univariate and multivariate unit root of the variables was examined. The result shows that all the variables are level stationary using Levin, Lin, and Chu (1992) procedure while the variables are level non stationary using Im, Pesaran, and Shin (1997), however, tax rate appeared to be level stationary using the two unit root testing procedure. The co-integrating evidence using Kao (1996) and Pedroni (1996, 1997 and 2000) for the post crisis period do not reflect any long term relationship between the two variable considered for this research. The impact model shows the presence of positive but insignificant relationship between D/E ratio and ROI, implying that company's value is not the most important factor of capital structure of the FTSE 100 financial industry firms. In terms of model evaluation, the "fixed effect model" outperformed "the random effect model" as both the measures of reliability and that of validity shows a higher value in the case of former model than in the latter. Therefore, the study concluded that the return on equity has no influence on the decision of FTSE 100 capital structure but tax rate on dividend do.

Chapter 1: Introduction

: Background of the Study

The importance of the capital structure of firms can't be overemphasized. That is why part of the incorporation requirement for any joint stock company is to have a well-organized capital structure; which explains in detailed how company plan to finance its operation using all available sources. The sources of the capital depend on the type of company under consideration; for example, sole proprietor and partnership business can only secure capital by reinvesting their profit or loan from friends and relative and contributions from the existing partners or admission of a new partner in the case of the partnership business. However, in the case of a joint stock company; be it private or public, the company can raise capital through either equity or debt financing or both. In the case of former, the structure can be in favor of long term or short term debt while for the latter it can be common or preferred equity. The mixture of the capital financing options; debt-equity, long or short debt-equity, are what most modern day companies used in as their capital structure. For a detailed discussion on the capital, structure composition see Jiahui (2015).

Firms' capital structure is mostly referred to as debt-equity ratio (D/E) which served as a risk indicator for investors. A company with large debt-equity ratio means that the most of the operation and growth plan of the company is largely financed by debt rather than equity and this implies higher risk from the investors' side. However, when the debt-equity ratio is low, it means that the company finances most of its operation using equity instead of capital and this is a sign of healthiness. However, it worth noting that companies preferred raising capital using debt rather than equity for three reasons: first, is the issue of tax advantage, this is because interest rate which is the price of debt is tax deductible and secondly, debt allows companies to retained their ownership unlike equity where new owners are introduced. Finally, equity is normally expensive than debt. For a discussion see, Gekrezi (2013) among others.

For the company value, there is no consensus in the financial literature on what determines the company value. For example, some studies assume that the best measure of a company value is to use any of the returns; that is a "return on asset", "return on equity" or "return on investment". See the works of Daniel et al. (2015), Dezso and Ross (2012), Jensen and Ruback(1983), Kiel and Nicholson (2003), Khanna and Zyla (2010), Tergesen and Couto (2015) and Zhao (2013) and Pirie and Smith (2005) among others. While other studies assumed that firms worthiness is determined by its market capitalization which is

found by multiplying share price by the total number of the existing shares, Mirza S.A and Javed A. (2013), Cekrezi A. (2013) and Ayako A. and Wamalwa (2015) among others. This shows that different indicators can be used in order to determine the worthiness of a company.

In terms of the relationship between capital structure and firms value, the relationship is expected to be bidirectional; that is, a good capital structure mix will result in high firm's value and a firm with a higher value is responsible for the good capital structure and vice versa. This is another point of empirical contestation on the relationship between the two variables. This study investigated the nature of the relationship between capital structure and firms value for the FTSE 100 financial industry. As it is known that it represents an index of 100 most capitalized firms in the "London Stock Exchange" (LSE) market. Firms are selected from different industries and they constitute about 80% of the total market capitalization of the London Stock Exchange (LSE).

: Research Questions

Here are the research questions of the study

- To what extent does firms value affects its capital structure?
- Was there any significant difference in terms of the relationship between capital structures of FTSE 100 financial industry value?
- What are the stochastic and Co-integrating properties of capital structure and FTSE Financial Industry Value?

: Objectives of the Study

The main objective of the study was to determine the nature of the relationship between capital structure and FTSE 100 financial industry value using panel regression analysis for pre and post 2008 crisis period. The specific objectives include:

- To determine the stochastic and integrating properties of the variables under consideration
- To assess the impact of firms value on capital structure using the financial industry of FTSE 100 as the case study
- To contribute to the debate on the nature of the causal relationship between firms' value and capital structure using the FTSE 100 financial industry.
- To examined the impact of capital structure on the FTSE 100 financial value for pre and post 2008 financial crisis period.

: Research Hypothesis

H_0: The FTSE 100 financial industry value doesn't affect the level of their capital structure

H_1: The FTSE 100 financial industry value has significant impact on their capital structure

H_0: There is no significant relationship between FTSE 100 financial industry value and their capital structure

H_1: There is a significant relationship between FTSE 100 financial industry value and their capital structure

H_0: There is no causal relationship between FTSE 100 capital structure and their financial value

H_1: There is a causal relationship between FTSE capital structure and their financial values

: Plan of the Study

Following is the plan of rest of the study; chapter two contained a detailed discussion on the literature review; which includes, both theoretical and empirical reviews. The methodological procedure that is used in achieving the objective of the study is discussed in chapter three while the estimated result is represented and discussed in chapter four while the work is concluded in chapter five.

Chapter Two: Literature Review

: Introduction

The theoretical, as well as empirical literature, were discussed and analyzed and a possible synthesis was identified between the various aspects of the literature. Finally, the gap in terms of the literature was identified and presented which form the basis of this research.

: Theoretical Literature Review

2.1.1: Theories of Capital Structure

"Modigliani and Miller's Capital Structure Theory"

Modigliani and Miller known as MM (1958) developed a theory of capital structure irrelevance known as "MM capital structure irrelevance proposition". The theory assumed that in a market economy, the capital structure (debt-equity) mix used by a company to finance its operation is not of any importance, as companies after tax profit and/or its risk management strategy determines company's value. The MM theory was developed based on the following assumptions; there is no tax, there is no bankruptcy cost, borrowing cost is same for both investors and companies across all markets (money and capital markets), the existence of information symmetry between companies and investors and finally, the debt of the company has no effect on its earnings before interest and taxes (EBIT).

The theory assumes that the "cost of capital" which is measured by the "weighted average cost of capital (WACC)" is constant irrespective of whether the capital structure of the company is financed through debt or equity. Since there is no benefit on interest hence the WACC will also remain unaffected. Also, since the level of debt has no effect on WACC, therefore, the capital structure doesn't have an impact on stock price hence the irrelevancy of the capital structure used by a company. See for example the work of Ghazouani T. (2013) and Raviv (1991) for a survey on the application of the theory.

MM's Trade-off Theory of leverage

The theory assumes the presence of benefit associated with leverage which will continue to exist until the maximum capital structure mix is achieved. Issuance of any debt instrument (be it bond or debenture) will have the tendency of reducing the tax liability of a company. This is so, because, interest, which is the price of debt, is taxable. However, the dividend which is the price of equity is not. Therefore, this theory suggests that the firm can continue to raise capital through debt until when the tax-interest rate compensation becomes optimal. The difference between the "MM capital structure theory" and "the trade-off theory of leverage" is on the assumption of taxable interest rate in the case of latter and its absence in the case of former. This theory has been empirically verified by different studies; see for example the works of Shahar et-al (2015) and Ghazouani T. (2013) among others.

"Static Trade-off Theory"

"The static trade-off theory" assumes that company has capital structures that is optimal and capital structure can be found by carrying out a cost benefit analysis of the advantage and disadvantage of using debt as a source of capital. The main benefit of using debt as a source of capital is due to taxable assumptions which lead to a reduction in the company's total tax liability. The disadvantage of using debt as the main source of capital is the potential cost of the bankruptcy of the company. The merit and the demerit of using too much debt have produced the trade-off. However, the trade-off associated with cost and benefit of using debt is higher than the one associated with debt-equity.

There is other costs structure associated with the "static trade-off theory", one of this is the agency costs which comes due to the existence of information asymmetry between different stakeholders of the company; that is, the existence of information asymmetric between the shareholders and management of the corporation. Therefore, the static trade-off capital structure assumes that the firm optimal capital mix is determined by the trade-off between the tax advantage and cost associated with the potential distress plus the agency costs associated with debt as compared to agency cost of equity. For a detailed discussion, see the works of (Jensen and Meckling (1976) and Jensen (1986) among others.

: Theoretical Framework

Given the forgone discussion in the theoretical literature review section, the study used static trade-off theory as the theoretical framework for the study. The study used this theory for two reasons. Firstly, the interest rate on debt is taxable hence getting more loan in favor of equity reduce the tax liability of the company. Secondly, firm's owners always don't want to lose their ownership and by issue more equity it entails admitting new owners which are against the wish of the owners. This theory has been used by

previous works, see, for example, Loncan and Caldeira (2014), Chijuka (2016) and He (2013), and Kodongo et-al. (2014) among others. Based on the theory, the following relationship is assumed:

$$CS = f(FV) \quad \text{.....} \quad (3.1)$$

Where CS is the capital structure and FV is the firm's value. The study further assumed that there are other variables that affect the capital structure of a firm; this includes taxation and interest rate. Hence the study used it as control variables. The channel within which taxation affect capital structure is the fact that firms base their decision on capital based on the prevailing tax rate, if the tax rate is high, the capital structure will be in favor of debt than equity and vice versa. For interest rate, it affects the decision of investors to either buy equity for capital gain or save in a bank for the interest rate. Hence based on this, the new relationship becomes:

$$CS = f(FV, i, t) \quad \text{.....} \quad (3.2)$$

Where i, and t are interest rate and tax rate. The other variables are as defined above. For the sake of this study, the model in Equation 3.2 serves as our theoretical framework for the study.

: Empirical Literature on the relationship between capital structure and Firms' financial values

Various empirical evidences that attempt to empirically examine how capital structure affect firms values were analyzed in this section, among which includes the work of Lawal (2014), Jiahui (2015), Gekrezi (2013), Loncan and Caldeira (2014), Kulati (2014), Draniceanu (forthcoming), Kulati (2014), Billecant (2003), Chiou, Cheng and Wu (2006), Filbeck, Krueger and Preece (2007), Padachi (2006), Nakamura and Nakamura (1982), Abor (2005), Ajlouni and Shawer (2013), Nimalathasan and Brabete (2010) among other. Others are Opoku, Kwame, and Anarfi(2014), Riaz, (2015), Shubita, and Aslawalhah (2012), Salawu, and Awolowo(2009) Sheik and Wang (2013) Panno (2003).

Lawal (2014) studied the capital structure and the value of firms for the banking industry in Nigeria by using ordinary least square (OLS) estimation techniques. He found among other things that commercial banks in Nigeria use combination of debt and equity as their capital structure, however, the major evidence reveals that banks use more of debt instrument than equity. Therefore, in Nigeria, debt instrument plays a crucial component of the capital structure of banking industry while equity's role is minimal . In the same direction, the work of Gekrezi (2013) studies the impact of firms' specific factors on the capital structure of non-listed firms in Albania. He used multiple indicators for the firms' specific factors (tangibility, liquidity, profitability, and size) to determine the robustness of the result. The regression model was estimated using OLS and the evidence reveals the presence relationship between capital structure and the firm's specific factors used. This relationship is both positive and significant.

This finding, although was carried out for different economies but was consistent with the work of Lawal (2014) as discussed above.

In different direction, the work of Jiahui (2015) studied the relationship between capital structure and financial value of SMEs for the Chinese economy using Generalized Method of Moment (GMM), this was done by estimating two different equations, with the first equation containing the financial value measure ("return on asset") as the dependent variable and the D/E ratio as the dependent variable for the second equation. The evidence shows the existence of bi-directional causality between capital structure and firms' performance for the SMEs in China. This implies that capital structure is responsible for increase or decrease in financial values of SMEs in China and vice versa.

Loncan and Caldeira (2014) analyzed the relationship between capital structure, firms' value and cash holding for listed firms in Brazil. The relationship was estimated using fixed and random panel data regression models. The result shows that debt (both short and long term) is negative and significantly related to cash holding. Also, the result reveals the existence of a negative relationship between the capital structure (short and long term debt; equity) and firms' financial value. In another development, the work of Kodongo et al (2014) who analyzed the relationship between capital structure and financial performance of listed companies in Kenya. The result was estimated using panel regression model, the result reveals the existence of a negative and significant relationship between leverage and the profitability of the listed companies. However, the leverage was found to have no impact on the firms' value (when Tobin's Q was used as the proxy).

The work of Kulati (2014) examined the relationship between capital structure and firms' value for the companies listed on "Nairobi Stock Exchange Market (NSEM)". The relationship was estimated using regression model and the result reveals the existence of a relationship between capital structure and firms' value; that is, the capital structure and firm's size affect the firms' value of listed companies in the Kenyan stock market. The work of Draniceanu (forthcoming) who studied the relationship between capital structure and the firms' value for the Romanian listed companies where six different types of regression models were used to ensure the robustness of the estimates. The result reveals that the presence of positive and significant impact of capital structure on firms values. Also, the study found that firm's specific factors (profitability, liquidity, and tangibility) negatively impact the capital structure. These results were consistent with study of Gekrezi (2013).

Chambers (2013) studied the effect of capital structure on the stock return for three different periods which correspond to various economic episodes in the Turkey (1992 to 2010, 1994 to 2010 and 1994 to 2010). The model was estimated using panel regression model and the result shows that the measure of capital structure (ratio of debt-market) were found to be positive and significantly affect stock returns for all the sample periods considered. The work of Panno (2003) who studied the determinant of the capital structure of the UK and Italia for the period of five years, the model was estimated using binary response model of probit and logit for the two countries. The result shows the existence of a difference between the UK and Italian financial market. The result shows a positive relationship between profitability and size of the capital structure and negative relationship between liquidity and bankruptcy on capital structure.

The work of Abbasi and Delghandi (2016) who studied the impact of firms' specific factors on the capital structure for the companies listed in the Iranian stock market companies. The study used firms' leverage ratio (debt to equity ratio) and tangibility, profitability, business risk and growth as the explanatory variables. The analysis was carried out for the period of 10 years using OLS regression analysis. The evidence reveals that profitability is the crucial component
That determine the capital structure for the Iranian companies. Also, tangibility, growth and business risk are important in determining the capital structure but not like profitability. The profitability and business risk are inverses although significantly related to the capital structure. These results were consistent with the "pecking order theory of capital structure".

The work of Tarigan (2006) who investigated the optimal capital structure in coal mining industry for the countries of South Africa, Australia, and USA, the relationship was examined using OLS multiple regression model. The study found that the coal industry use a relatively low debt as capital structure when compared with other industries. Hence the capital structure mix of the coal industry for USA, South Africa and Australia is in favor of equity rather than debt. In the same vein, Watson (2007) tries to identify the determinants of capital structure for the UK higher technology companies using Ordinary Least Square Method. The empirical evidence reveals that the major capital structure theories; that is, Agency, Static Trade-off, and pecking displays a significant role in the capital structure of the UK high technology firms. The study found that liquidity, profitability, tangibility, growth potential were the main determinants of capital structure for the UK high technology industry.

: Empirical Literature on how capital Structure affect FTSE 100 firms' value

Enakirerhi and Chijuka (2016) used "panel fixed effects model" to study the determinant of capital structure for the FTSE 100. Various proxies for the value of FTSE 100 were used this includes, profitability, tangibility, non-debt tax shield, liquidity, growth, return on asset, return on equity, return on capital invested and firm size. For the proxy of capital structure, a mixture of equity with short term, long term, and total debts were used. The result reveals among other things that: i) profitability is inversely related (although statistically significant) with capital structure, ii) firm size and non-debt tax shield is positive and statistically related to the capital structure while iii) the other determinants variables (return on asset, tangibility, and liquidity) are positive and significantly related to capital structure while growth is negatively related.

In the same vein, Ahi (2013) examined the determinant of capital structure for some selected 5 on financial companies of FTSE 100. The sample used includes mining and oil and gas industries. The analysis was carried out for the period of 22 years and the model was estimated using "fixed effect panel regression model". The variables used are; profitability, growth, non-debt tax shield, liquidity, tangibility and firms' size. The result shows that profitability, liquidity and firm size are important variables in determining the capital structure of the energy industry of FTSE 100 companies.

: Gap in the Literature

Literature review found following gaps"

- On all the empirical works reviewed, there is no consensus on the nature of the relationship between capital structure and firms' value, hence the need to carry out more research in the area. This will help in providing a synthesis on the existing findings.
- Based on the limited literature search, we found no work that attempts to determine the stochastic as well as the c-integrating properties of the variables; capital structure and firms' value.
- Although many works that have to do with capital structure and firms' value for FTSE 100 have been conducted, we found no evidence with regards to FTSE 100 financial industry.

Chapter Three: Methodological Procedure

: Introduction

In this chapter the methods and procedures applied to achieve the objectives of the study are discussed. This includes the sampling and sampling techniques, theoretical framework, data and definition of variables, and estimation techniques.

: Sampling and Sampling Techniques.

In order to draw the sample of this study, FTSE 100 was used as the population. The index represents the 100 most successful companies in the UK. The companies are drawn from different industries among the listed UK Companies. In terms of the sampling techniques, a multi-stage sampling technique was used. This involves dividing the companies into different strata (industry) and then random sampling method was used to select the financial industry. The companies that made up the financial industry includes **3i GRP, Hargreaves Lans, London stock exchange, Provident Finance, and Schroder's**. Hence the study examined the relationship between capital structure and above mentioned companies.

: Data and Definition of Variables

Various studies have used different proxies to represent the capital structure and firms value of the companies. For example, the work of Enakirerhi and Chijuka (2016) used three measures to represent capital structure this includes; (DEBTSTD), (DEBTLTD), and the total debt (DEBTSTD + DEBTLTD) (DEBTTD). He (2013) used Tobin's Q as the measure of the capital structure and Nasimi N. A(2016) used ROA, ROE and ROC invested as the measure of capital structure while Jiahui (2015) used debt to equity ratio and Lawal (2014) used summation of all equity and debt for the companies. For the measurement of firms' value, different proxies were used by different empirical researchers which include profitability, liquidity, tangibility, Return on equity, firm's size, board size, ownership structure and collateral value of the asset. For the sake of this study debt to asset ratio will be used for the capital structure and return on equity for the FTSE 100 financial industry value. **The data for these variables were collected for the period of 10 years (2005 to 2015) from the various years' annual report and statement of account of the firms.** For the control variables; that is, interest rate and taxation, we used

the **money market interest rate for the UK economy and tax rate on debt**. The data are sourced from **the Reserve Bank of England** for the same time period.

: Estimation Techniques

For estimation of the relationship between capital structure and firms' value and ex –anti diagnostic checks are performed. This involves the determination of the integration as well as the cointegrating properties of the series. In the case of former, Levin, Lin and Chu (1002) and Im, Pesaran and Shin (1996) was used. The Levin, Lin, and Chu (1002) is a panel version of DF and ADF in the time series analysis. The test assumes homogeneity of the cross sectional units and it belongs to the balanced panel. To understand the test, consider the following equation:

$$z_{i,t} = \alpha_i + \beta z_{i,t-i} + \delta t + \sum_{m=1} \phi_{.} \Delta z_{i,t-p} + \mu_i \quad \ldots\ldots (3.3)$$

Here, the null hypothesis of panel unit root is tested against and the alternative hypothesis of panel stationary. To test the hypothesis, two procedures are used; the first one involves checking whether the coefficient of the autoregressive component equals to zero in favor of the null or is less than zero in favor of the alternative. The second one involves comparing the calculated t-statistics with the corresponding critical values at a given level of significance.

The problem associated with the Levin, Lin, and Chu (1992) model, is the heterogeneity assumption and Im, Pesaran and Shin (1996) extended the test by assuming heterogeneity; that is, differences among the cross-sectional units. The test specification is given as:

$$z_{i,t} = \alpha_i + \beta_i z_{i,t-i} + \delta t + \sum_{m=1}^{p} \phi_{.} \Delta z_{i,t-p} + \mu_i \quad \ldots\ldots (3.4)$$

Here, the assumption is that there is a difference among the cross-sections hence some part of the sample of the variables can be stationary will others may contain a unit root. But the testing procedures are as described in Levin, Lin, and Chu (1992) above. Having determined the order of integration, there are two possible outcomes; firstly, is for the series to be stationary if this happened the impact model is estimated directly. The second case is when the series contained a unit root, the next possibility is to see whether the combination of two or more series will produce a process (error) that is stationary. This is the test of cointegration. For the sake of this study, two co-integrating procedure is used; that is, Kao (1999) and

Pedroni (1997, 1999, 2000). The Kao (1999) is a residual based test to panel co-integration and it assumed cross-sectional homogeneity. The test equation is given as:

$$z_{i,t} = \alpha_i + \beta y_i + \mu_i \quad \text{.....(3.5)}$$

Where z and y are two sets of variables that are expected to be co-integrated. The resultant error equation specification is given as:

$$\mu_i = e\mu_{i,t-1} + \nu_i \quad \text{.....(3.5)}$$

Here, the null hypothesis of no cointegration is tested against an alternative of stationary and the decision is made if the statistic developed by Kao (1999) is greater than the tabulated value at a given level of significance. There are two problems associated with this test, that is, homogeneity assumptions and the null hypothesis of no panel co-integration. In order to correct the problem Pedroni, developed a panel test of cointegration which is a panel multivariate version of the KPSS (1992) test of a unit root. The test assumes homogeneity and a null of panel co-integration is tested against an alternative of no cointegration. The test model is given as follows:

$$z_{i,t} = \alpha_i + \delta t + \sum_{m=1}^{M} \beta_{mi} y_{mi,t} + u_i \quad \text{.....(3.6)}$$

Pedroni (1997, 1999, and 2000) developed seven sets of statics which includes parametric and non-parametric. For the sake of this study, the two testing procedures as specified in equations 3.5 and 3.6 are used.

The next task is to assess the nature of the causal relationship between the variables; that is, whether the capital structure is responsible for firms' value or the other way round. To do that, a panel Victor Autoregressive (VAR) based causality test was developed. The test is given in the following equations:

$$y_{i,t} = \alpha_i + \sum_{i=1}^{p} \theta_i x_{it-p} + \sum_{j=1}^{q} \phi_i y_{i,t-q} + \mu_i \quad \text{.....(3.7)}$$

$$x_{i,t} = \beta_i + \sum_{j=1}^{q} \phi_i y_{i,t-q} + \sum_{j-1}^{p} \theta_i x_{i,t-q} + \nu_i \quad \text{.....(3.8)}$$

Equation 3.7 is used in checking whether X caused Y (the existence of causality from X to Y), equation 3.8 is used in checking whether Y cause X (the existence of Causality from Y to X) and the two equations are used in checking the presence of the bi-directional causality between X and Y. The testing procedure involves restricting pth order to zero in Equation 3.7, if the resultant F or t statistics appeared to be greater than the zero, the evidence is in favor of uni-directional causality from X to Y. Also, the with order in equation 3.8 is restricted to zero and if it appeared to be statistically different from zero then the evidence is in favor of uni-directional causality from Y to X. finally, the case of bi-directional causality is tested by restricting the pth order in equation 3.7 and qth order in equation 3.8 to zero and when the resultant test

statistics appeared to be different then the evidence is in favor of alternative hypothesis of bi-directional causality between X and Y.

Having determined the directional of the causality, the next task is to test do the impact assessment. For the sake of this study, two sets of panel data models are used; that is, the "fixed and random effects model". "The fixed effect model" assumes that the relationship between the variables and the cross-section is guided by different mean value, that is, the economic fundamentals of the countries that make up the cross-sections are different. This can better be understood through the following equations:

$$x_{i,t} = \alpha_i + \beta_i y_{i,t} + \mu_i \quad \text{.....(3.9)}$$

Where x and y are two variables, which in our case they are the capital structure and firms value. The random effect model assumes the intercept for the countries are same but the only difference between the variables are derived from a random term. The model is given as:

$$x_{i,t} = \alpha + \beta_i y_{i,t} + \nu_i \quad \text{.....(3.10)}$$

Where $\nu_i = \mu_i + w$. Here, the w is the random disturbance term that determines the difference between the cross-sections. Equations 3.9 and 3.10 are used to study the relationship between capital structure and firms' value for the case of FTSE 100 financial industry.

Chapter Four: Result Presentation and Analysis

In this chapter, the empirical result was presented and analyzed. The analysis was carried out for pre and post 2008 global financial crisis as stated in the strategy of the work section. The empirical result includes the summary statistics, the unit root and co-integration test, and the panel data regression model with fixed and random effects models.

Table 4.1: Summary of the Descriptive Statistic

	Pre-2008 Crisis				Post-2008 Crisis			
	EDR	INTEREST	ROE	TAX	EDR	INTEREST	ROE	TAX
Mean	0.63	4.28	12.83	12262.69	0.62	1.80	16.71	10382.16
Median	0.63	4.79	10.99	13074.00	0.62	0.83	15.54	9298.500
Maximum	0.66	5.95	36.49	14634.00	0.67	5.95	57.45	14634.00
Minimum	0.59	0.55	-33.81	9499.000	0.58	0.49	-33.81	7141.000
Std. Dev.	0.02	1.91	16.53	2064.100	0.02	2.01	15.94	2427.318
Observation	16	16	16	16	32	32	32	32

Table 4.1 above presents the summary of the descriptive statistics for both the core variables; capital structure and firms' value, and also the control variables; that is, tax and money market interest rate. The descriptive statistic for the Pre 2008 crisis shows that the debt to equity ratio has a mean of 0.63 with a standard deviation of 0.02. The maximum and minimum debt to equity ratio for the companies are 0.66 and 0.59 respectively and the mean and median are the same. However for post crisis, the mean and median for the post crisis period are lower than that of the pre-period with a value of 0.62. But the standard deviation is the same while the maximum and minimum values were 0.67 and 0.58 respectively. The return on equity which measures the firms' value for pre crisis shows a mean of 12.83 with a standard deviation of 16.53, the minimum and maximum returns are 36.49 and -33.81 respectively. For the post crisis period, the mean and standard deviation for the return on equity it shows a value of 16.71 and 15.94 respectively which is higher than that of the pre crisis period. The minimum values are the same for the two periods but the maximum values are different since that of post period is 57.45 which is higher than that of pre period 36.49.

For the control variables, the interest rate for the pre sample shows a mean of 4.28 with a standard deviation of 1.91. The median is 4.97 while the maximum and minimum values for the money market interest rate were 0.66 and 0.59 respectively. For the post sample period, the mean and standard deviation have a value of 1.80 and 2.01 respectively. The result reveals that the mean for pre sample period is higher than that of the post sample while the standard deviation of post sample is greater than that of pre-period. The maximum values have the same value of 5.95 while the minimum values are 0.55 and 0.49 respectively. The total tax collected for the pre crisis period shows an average value of $12262.69 million with a standard deviation of $2064.1, the maximum and minimum capital tax collected by the UK government over the pre sample period was $14634 million and $9499 million respectively. For the post crisis period, the evidence shows that the mean and standard deviations were $10382.16 million and $2427.318 million respectively while the maximum and minimum values were $14634 and $7141 respectively. The median values for the pre and post sample are $13074 million and $9298.5 million respectively. This shows that the median for pre crisis period is higher than that of the post crisis period.

Stochastic Properties of the series

Having described the summary statistics, the next task is to analyze the stochastic prosperities of the series' this has to do with checking whether the mean and variances are zero and a constant covariance across different sample period. To do this, as explained in the methodology section, two testing procedures are used; that is, the Levin, Lin and Chu (1992) and Im, Pesaran and Shin (1996) the analysis was done for both pre and post 2008 financial crisis period

Table 4.2: Unit Root Estimate

	Pre-2008 crisis				Post-2008 crisis			
	LLC(1992)		IPS(1996)		LLC(1992)		IPS(1996)	
Interest	6.13	0.00	-1.90	0.13	2.45	0.00	-0.10	0.45
EDR	7.40	0.00	-1.30	0.09	-1.77	0.03	-0.45	0.32
ROE	5.03	0.00	1.00	0.8	-1.94	0.02	0.37	0.35
Tax	2.85	0.002	1.88	0.97	-0.82	0.20	-0.04	0.48

Table 4.2 presents the result of the unit root test; the test was conducted for the level of the series. For the pre-2008 financial crisis, the Levin, Lin, and Chu (1992) procedure shows that all the series are level stationary. This is because the test statistics show that the null hypothesis has to be rejected in favor of the alternative hypothesis. This is because the test is an ADF based test hence the test statistic is t-statistic. When the t-statistic is compared with the critical values at 5% level of significance, the calculated statistic

is greater than the tabulated hence the decision to accept the alternative. This can also be confirmed from the probability values. The values show that the test statistic is significant at 1% level.

However, the Levin, Lin, and Chu (1992) evidence for the post crisis period shows that interest rate, debt to equity ratio, ROE are stationary at level. This happens as the corresponding test statistic is greater than the critical value at 5% significance level. However, in the case of a tax, the null hypothesis of unit root can't be rejected hence the series contained a unit root. This can also be confirmed from the probability values as all the series except tax have probability value that is less than 3%. However, that of tax is 20% and the decision rule is that the null hypothesis is accepted if the probability value is greater than 1%, 5% and 10% depending on the level of significance used. However, the evidence is in favor of the alternative hypothesis if the probability value is less than 1%, 5%, a 10% as the case may be.

Now having seen the Levin, Lin, and Chu(1992) evidence for pre and post 2008 crisis period, the next task is to compare it with that of Im, Pesaran, and Shin (1996). The essence is to see the robustness of the result. The Im, Pesaran, and Shin (1996) for the pre crisis period show that the evidence for return on equity and tax is in favor of the null hypothesis of a unit root. For interest rate, we can only reject the null hypothesis of a unit root at 13% level of significance which is beyond the benchmark of 5% this study adapt in order to accept or reject a hypothesis. Hence the conclusion is that interest rate also contained unit root at level. However, debt to equity ratio evidence shows that the null hypothesis of unit root is rejected in favor alternative hypothesis of stationary. This means that for the Pre sample period, only debt to equity ratio is stationary using Im, Pesaran, and Shin (1996) testing procedure.

For the post crisis sample, the Im, Pesaran, and Shin (1996) test result shows that all the evidence for all the series is in favor of the null hypothesis of a unit root. This is because; the test statistic is less than the critical value at 5% significance level. So also, the probability value is greater than the benchmark of 5%. Now, what how will the conclusion be? Since the two testing procedures show two divergent results. There may be some reasons that lead to the contradiction in the evidence and the first and most important one is the homogeneity assumption made by Levin, Lin, and Chu (1992) and the heterogeneity assumption made by Im, Pesaran, and Shin (1996). Therefore, in terms of the evidence, this study concludes that when the cross sectional units are assumed to be homogeneous all the series used in the study are stationary. However, when the cross sectional units are assumed to be heterogeneous, the series is level on stationary.

Test of Co-integration

Now, having determined the stochastic properties of the series, the next task is to see the co-integrating evidence. This is done in order to see if a series contained unit root at the level, whether the combination of two or more series will produce a process (error) that will be level stationary when subjected to any of the unit root tests. As discussed in the literature section, various testing procedures are available but for the sake of this study, two procedures are used; that is, the Kao (1992) and Pedroni (1997, 1999, and 2000). For a detailed discussion on these tests, see for example the methodology section of the study. The results of the test conducted are shown in table 4.3. It is important to note that the result we presented is only available for the post crisis sample period, this is because the sample size for the pre crisis period is too small to estimate the co-integrating evidence hence we ignore it. The post-2008 crisis co-integration evidence is presented in table 4.3 below.

Table 4.3: Post-2008 financial crisis

	Kao (1997)		Pedroni (1997, 1999, 2000)	
ADF	Stat	Prob.	Stat.	Prob.
EDR/int., ROE, Tax	-0.70	0.23	1.51	0.93

Table 4.3 presents the result for the post crisis co-integration test. The test was conducted using Kao (1997) and Pedroni (1997, 1999, and 2000). The former assumes homogeneity among the cross sectional units while the latter assumes heterogeneity. Also, the null hypothesis of no cointegration is tested against an alternative of cointegration in the case of Kao (1997) while the null of cointegration is tested against an alternative of no cointegration in the case of Pedroni (1997, 1999, and 2000). As stated in the methodology section, that both the tests are residual base and the Kao (1997) is based on ADF while Pedroni (1997, 1999, and 2000) is based on seven sets of statistics. This study has selected the ADF type statistic in order to ensure consistency among the two tests.

The probability value can be used as a way of making a decision on whether to accept the null or the alternative hypothesis. This is done as follow when the probability value is less than 1%, 5% or 10% as the case may be, the evidence is in favor of alternative hypothesis otherwise when the probability value is greater the evidence is now in favor of the null hypothesis. Based on these decisions rule, we reject the evidence of co-integration between debt to equity ratio and return on equity. This is because the calculated ADF test statistic is less than the tabulated critical values at all level of significance. Also, if we look at the probability value, the evidence shows that the probability for the Kao (1997) test is 23%

which favors the null hypothesis of no cointegration. So also, the probability value for the Pedroni (1997, 1999, and 2000) is about 93% which is also in favor of the null hypothesis. The conclusion in terms of the cointegrating properties of the series is that there is no long run relationship between capital structure as represented by debt to equity ratio and the FTSE 100 financial industry value as represented by the return on equity. This finding is consistent with the works of Jiahui (2015) and Loncan and Caldeira (2014) among others.

For the second hypothesis, we analyze the long run relationship between the capital structure and the financial performance of FTSE 100 firms using Kao (1997) and Pedroni (1997, 1999, and 2000). The evidence is in favor of null hypothesis which states that there is no significant relationship between the capital structure and firms' value for both short and long run.

Test of Causality

Having determined the nature of the long run relationship between the variables, the next task is to is the nature of causality. By this, it means we will find out which of the variables causes which. The causality procedure was estimated in detailed in the methodological chapter of the work.

Table 4.4: Causality Test between ROE and debt to equity ratio

Hull hypothesis	Pre-2008 crisis		Post-2008 crisis	
	F-statistic	Prob. value	F-statistic	Probability value
ROE does not cause EDR	0.16	0.84	2.58	0.22
EDR does not cause ROE	0.06	0.93	0.57	0.61

Table 4.4 above displays the results of the causality test for the variables. In this case, the null hypothesis of no causality is tested against an alternative of a causal relationship between the variables at a given level of significance. This is done by comparing the calculated F-statistic with the corresponding tabulated value at a given level of significance. The decision rule is to accept the null hypothesis of no causal relationship if the tabulated value is less than the critical value at a given level of significance otherwise if the calculated value is greater than the tabulated value, the evidence is in favor of the alternative hypothesis of a causal relationship. For the Pre 2008 crisis period, the evidence shows that there is no causality between return on equity and debt to equity ratio as both the F-statistic and the

probability value fails to reject the null hypothesis. In terms of the causal relationship running from debt to equity ratio to return on equity, the result shows that there is no causal relationship between the two variables. Therefore the conclusion is that for pre crisis period, there is no causality between capital structure and firms' value.

For the post-2008 crisis period, the evidence shows that there is no causality running in either of the directions; that neither does ROE cause debt to equity ratio nor debt to equity ratio cause return on equity. This is evident because the F-statistic is only significant at 22% level which is beyond the benchmark of accepting or rejecting hypothesis as set by the study. Hence, the failure to reject the null hypothesis of no causal relationship between the variables, the conclusion now is that there is no causality between return on equity and debt to equity ratio for both pre and post-2008 financial crisis.

Therefore, based on the above discussion, we can evaluate the third hypothesis which seeks to measure the causal relationship between capital structure and firms' value. The evidence is in favor of the null hypothesis of no causal relationship between capital structure (debt to equity ratio) and firm's value (return on equity).

Panel Data Regression Model for the pre 2008 financial crisis period

Now, since the causality doesn't determine the impact, we have to run a model that will show us the impact of firms' value on capital structure. To do that, a "panel data regression model" was used. This has to do with the estimation of fixed and random effects models. This type of model has been estimated by different researchers that attempted to analyze the relationship between firms' value and capital structure. See for example the works of Jiahui (2015) and Loncan and Caldeira (2014) Daniel et al(2015), Dezso and Ross(2012), Jensen and Ruback(1983), Kiel and Nicholson (2003), Khanna and Zyla (2010), Tergesen and Couto(2015) and Zhao(2013) and Pirie and Smith (2005) among others. The results of these models are presented in table 4.5 and 4.6 below.

Table 4.5: Pre 2008 financial Crisis Panel Regression Result

	Fixed effect		Random Effect	
C	0.64	0.00	0.63	0.00
ROE	0.0001	0.67	0.00035	0.15
Tax	-7.30	0.62	2.73	0.84
Interest Rate	-0.0009	0.64	-0.001	0.42
R-square/F-stat.	0.86	9.96	0.04	0.17

The result in table 4.5 presents the estimates of the Pre 2008 financial crisis for both "fixed and random effect regression model". The model was estimated by assuming the capital structure (debt to equity ratio) as dependent variable while the firms' value (return on equity) as the main explanatory variables. Also, both tax and interest rate were used as control variables which represent the other parameter that impact capital structure of firms. For the fixed effect model, the sign shows that return on equity is positively related to debt-equity ratio. This implied that an increase in the value of the firm will lead to increase in its ability to secure more debt in favor of equity hence the higher value of the debt to equity ratio. However, the tax an interest rate shows the presence of a negative relationship with capital structure. This implies that an increase in tax and/or interest rate will lead to a decrease in the capital structure. This evidence is consistent with the "Midgniliani and Miller trade off theory". For the intercept, the result shows that the intercept is positively related to the capital structure of the firms.

In terms of significance, the probability values were used. The decision rule was that we accept that any variable is statistically significant if its probability value is less than 5%. From the result in table 4.5 above, the probability value less than 5% only for the intercept, this implies that all the variables used in estimating the fixed effect model for the pre crisis period are statistically insignificant. In terms of the magnitude of the relationship, the evidence shows that when all other variables are held constant, expected a ROE, D/E ratio will increase by 0.0001 or 0.001%. However, for the magnitude of tax and interest rate relations, it shows that when the former is allowed to vary while all other variables were held constant, the value of firms' capital structure will decline by 7.30%. For the interest rate, the magnitude of the coefficient shows a value of 0.0009. On considering all the variables in the relationship as constant, the capital structure (debt to equity ratio) of the FTSE 100 firms will still be 0.64%.

In order to validate the model, two measures of validity were used; these are the R-square and F-statistic. In case of the former, it measures the goodness of fit of the regression line. It takes a value between zeros to one, as zero implies all the points are off the regression line and one implies all the points are on the regression line. However, it can take any value between zeros to one and the closer the value is to one, the goodness of fit is the regression line and vice versa. In order to validate our model, we check the value of the R-square and the result shows that the Pre 2008 fixed effect model has an R-square of 0.86 which implies that about 86% of the relationship between the variables has been explained by the regression line. For the F-statistic, it is use in measuring the overall significance of the explanatory variables as used in explaining the dependent variable. In order to see whether a set of explanatory variables are jointly significance in explaining the relationship between them, the calculated and tabulated F-statistic are

compared at given critical value. The decision rule is that compare the calculate and tabulated value and when the tabulated value is greater than the calculated value at given level of significant, then the evidence is in favor of null hypothesis which implies that the variables are statistically insignificant. However, when the calculated F-statistic is greater than the tabulated critical value at a given level of significance, then the evidence is in favor of alternative hypothesis that the variables are jointly statistically significant. In case of the fixed effect model for the pre crisis period, the value of the calculate F-statistic is 9.96 which is greater than the tabulated value at 5% level of significance. Therefore, the conclusion is that the variables are jointly statistically significant in explaining the capital structure of the FTSE 100 financial industry.

The result in table 4.5 presents the estimates for the 2008 post financial crisis for "random effect regression model". The model was estimated by assuming the capital structure (debt to equity ratio) as dependent variable while the firms' value (return on equity) as the main explanatory variables just as in pre crisis period. Also, both tax and interest rate were used as control variables which represent the other parameters that impact capital structure of firms. For the random effect model, the sign shows that return on equity and tax are positively related to capital structure. This implied that an increase in the value of the firm and the level of taxation will lead to increase in its ability to secure more debt in favor of equity hence the higher value of the debt to equity ratio. However, interest rate shows the presence of a negative relationship with capital structure. This implies as the interest rate increases there is decrease in the capital structure. The results are is consistent with the Midgniliani and Miller trade off theory. For the intercept, the result shows that the intercept is positive and significantly related to the capital structure of the companies.

In terms of assessing the significance of the variables, the probability values and t-statistic(s) are used, but for the sake of this study, the former is used. The decision rule is to accept that a variable is statistically significant if its probability value is less than 5%. From the result in table 4.5 above, the probability value is less than 5% only for the intercept, this implies that all the variables used in estimating the random effect model for the pre crisis period are statistically insignificant. In terms of the magnitude of the relationship, the evidence shows considering all other variables as constant, a change in return on equity will lead to increase in debt to equity ratio by 0.00035. However, for the magnitude of tax and interest rate relations, it shows that when the former is allowed to vary while all other variables were held constant, the value of firms' capital structure will increase by 2.73%. For the interest rate, the magnitude of the coefficient shows a value of 0.001. If all the variables in the relationship were to be held constant, the capital structure (debt to equity ratio) of the FTSE 100 firms will still be 0.63% which is lower than that of the fixed effect model.

In order to validate the model, two measures of validity were used; these are the R-square and F-statistic. In case of the former, it measures the goodness of fit of the regression line. It takes a value between zeros to one, as zero implies all the points are off the regression line and one implies all the points are on the regression line. However, it can take any value between zeros to one and the closer the value is to one, the goodness of fit is the regression line and vice versa. In order to validate our model, we check the value of the R-square and the result shows that the Pre 2008 fixed effect model has an R-square of 0.04 which implies that about 0.4% of the relationship between the variables has been explained by the regression line. For the F-statistic, it is use in measuring the overall significance of the explanatory variables as used in explaining the dependent variable. In order to see whether a set of explanatory variables are jointly significance in explaining the relationship between them, the calculated and tabulated F-statistic are compared at given critical value. The decision rule is that compare the calculate and tabulated value and when the tabulated value is greater than the calculated value at given level of significant, then the evidence is in favor of null hypothesis which implies that the variables are statistically insignificant. However, when the calculated F-statistic is greater than the tabulated critical value at a given level of significance, then the evidence is in favor of alternative hypothesis that the variables are jointly statistically significant. In case of the fixed effect model for the pre crisis period, the value of the calculate F-statistic is 0.17 which is greater than the tabulated value at 5% level of significance. Therefore, the conclusion is that the variables are jointly statistically significant in explaining the capital structure of the FTSE 100 financial industry.

Panel Data Regression Model for the post 2008 financial crisis period

Table 4.6: Post 2008 Financial Crisis Panel Regression Result

	Fixed effect		Random Effect	
C	0.64	0.00	0.61	0.00
ROE	8.10	0.59	-0.0001	0.48
Tax	1.96	0.047	1.50	0.12
Interest Rate	0.0003	0.78	0.00096	0.40
R-square/F-stat.	0.77	14.67	0.04	0.45

The result in table 4.6 presents the estimates of Pre and Post 2008 financial crisis for both "fixed and random effect regression model". The model was estimated by assuming the capital structure (debt to

equity ratio) as dependent variable while the firms' value (return on equity) as the main explanatory variables. Also, both tax and interest rate were used as control variables which represent the other parameters that impact capital structure of firms. For the fixed effect model, the sign shows that return on equity, tax, and interest rate are positively related to debt-equity ratio. This implied that an increase in the value of any of them will lead to increase in its ability to secure more debt in favor of equity hence the higher value of the D/E ratio.

In terms of significance, the probability values were used. The decision rule was that we accept that any variable is statistically significant if its probability value is less than 5%. From the result in table 4.5 above, the probability value less than 5% only for the intercept and tax, this implies that all the variables used in estimating the fixed effect model for the pre crisis period are statistically insignificant except taxation. In terms of the magnitude of the relationship, the evidence shows that when all other variables are held constant, expected a ROE, D/E ratio to equity ratio will increase by 8.10 or 8.10%. However, for the magnitude of tax and interest rate relations, it shows that when the former is allowed to vary while all other variables were held constant, the value of firms' capital structure will decline by 1.96%. For the interest rate, the magnitude of the coefficient shows a value of 0.0003. Considering all the variables in the relationship to be constant, the capital structure (debt to equity ratio) of the FTSE 100 firms will still be 0.64%.

In order to validate the model, two measures of validity were used; these are the R-square and F-statistic. In the case of the former, it measures the goodness of fit of the regression line. It takes a value between zeros to one, as zero implies all the points are off the regression line and one implies all the points are on the regression line. However, it can take any value between zeros to one and the closer the value is to one, the goodness of fit is the regression line and vice versa. In order to validate our model, we check the value of the R-square and the result shows that the Pre 2008 fixed effect model has an R-square of 0.77 which implies that about 77% of the relationship between the variables has been explained by the regression line. For the F-statistic, it is used in measuring the overall significance of the explanatory variables as used in explaining the dependent variable. In order to see whether a set of explanatory variables are jointly significance in explaining the relationship between them, the calculated and tabulated F-statistic are compared at given critical value. The decision rule is that compare the calculate and tabulated value and when the tabulated value is greater than the calculated value at given level of significance, then the evidence is in favor of null hypothesis which implies that the variables are statistically insignificant. However, when the calculated F-statistic is greater than the tabulated critical value at a given level of significance, then the evidence is in favor of the alternative hypothesis that the variables are jointly

statistically significant. In the case of the fixed effect model for the pre crisis period, the value of the calculate F-statistic is 14.67 which is greater than the tabulated value at 5% level of significance. Therefore, the conclusion is that the variables are jointly statistically significant in explaining the capital structure of the FTSE 100 financial industry.

Table 4.6 also presents the estimates for the 2008 post financial crisis for random effect regression model. The model was estimated by assuming the capital structure (D/E ratio) as dependent variable while the firms' value (ROE) as the main explanatory variables just as in pre crisis period. Also, both tax and interest rate were used as control variables which represent the other parameters that impact capital structure of firms. For the random effect model, the sign shows that tax and interest rate are positively related to capital structure. This implied that an increase in the level of taxation and interest rate will lead to increase in firms' ability to secure more debt in favor of equity hence the higher value of the debt to equity ratio. However, ROE shows the presence of a negative relationship with capital structure. This implies that an increase in interest rate will lead to a decrease in the capital structure. This evidence is inconsistent with the Pre crisis estimates and all the fixed effect model of the post crisis period. For the intercept, the result shows that the intercept is positive and significantly related to the capital structure of the companies.

In terms of assessing the significance of the variables, the probability values and t-statistic(s) are used, but for the sake of this study, the former is used. The decision rule is to accept that a variable is statistically significant if its probability value is less than 5%. From the result in table 4.5 above, the probability value is less than 5% only for the intercept, and 12% for the tax, however, we reject the evidence of the tax become it is beyond the 5% benchmark of accepting or rejecting the significance of a variable as used by the study. This implies that all the variables used in estimating the random effect model for the post crisis period are statistically insignificant. In terms of the magnitude of the relationship, the evidence shows that considering all other variables as constant, a change in return on equity will lead to increase in debt to equity ratio by 0.0001. However, for the magnitude of tax and interest rate relations, it shows that when the former is allowed to vary while all other variables were held constant, the value of firms' capital structure will increase by 1.5%. For the interest rate, the magnitude of the coefficient shows a value of 0.0006. Considering all the variables in the relationship to be constant, the capital structure (debt to equity ratio) of the FTSE 100 firms will still be 0.61% which is lower than that of the fixed effect model.

In order to validate the model, two measures of validity were used; these are the R-square and F-statistic. In the case of the former, it measures the goodness of fit of the regression line. It takes a value between zeros to one, as zero implies all the points are off the regression line and one implies all the points are on the regression line. However, it can take any value between zeros to one and the closer the value is to one,

the goodness of fit is the regression line and vice versa. In order to validate our model, we check the value of the R-square and the result shows that the Pre 2008 fixed effect model has an R-square of 0.04 which implies that about 0.4% of the relationship between the variables has been explained by the regression line. For the F-statistic, it is used in measuring the overall significance of the explanatory variables as used in explaining the dependent variable. In order to see whether a set of explanatory variables are jointly significance in explaining the relationship between them, the calculated and tabulated F-statistic are compared at given critical value. The decision rule is that compare the calculate and tabulated value and when the tabulated value is greater than the calculated value at given level of significance, then the evidence is in favor of null hypothesis which implies that the variables are statistically insignificant. However, when the calculated F-statistic is greater than the tabulated critical value at a given level of significance, then the evidence is in favor of the alternative hypothesis that the variables are jointly statistically significant. In the case of the fixed effect model for the pre crisis period, the value of the calculate F-statistic is 0.45 which is greater than the tabulated value at 5% level of significance. Therefore, the conclusion is that the variables are jointly statistically significant in explaining the capital structure of the FTSE 100 financial industry.

The analysis from the fixed and random effect models both for the pre and post 2008 financial crisis period shows that the evidence is in favor of null hypothesis that the firms' value has no effect on the capital structure of the FTSE 100 financial industry. This is because the probability value(s) and the corresponding test statistics provide evidence in favor of null. The probability value appeared to be greater than 5% and the tabulated critical value is greater than the calculated value at 5% level of significance.

Chapter Five: Summary Conclusions and Recommendations

Summary of the Dissertation

The study was carried out in order to examine how capital structure affect firms' performance. A sample of the firms that belong to the FTSE 100 financial industry was used, taking into consideration the objective of the study. The D/E ratio was used as the measure of the capital structure while ROE was used as a proxy for the firms' value. The first chapter presented background of the study, the objectives, research questions as well as the hypothesis of the study. In chapter two, the theoretical, as well as empirical literature, were reviewed and a gap that this study filled was identified. In chapter three, the methodological procedure was discussed, while in chapter four the result was presented and analyzed and finally the chapter five presents the conclusions and recommendations of the study.

Summary of Findings

The descriptive statistics show that there is no significant difference in terms of the estimates of the pre and post sample periods. This implies that the fundamentals of the financial industry of FTSE 100 have not changed to a large extent. But the tax and interest rate shows a significant change as the interest rate decreased from 6% to 0.5% from 2005 to 2015.

The unit root result for the pre sample period shows all the variables are level stationary using Levin, Lin, and Chu (1992). However, the Im, Pesaran, and Shin (1996) testing procedure shows that all the variables contain unit root at level. Hence the inconsistent evidence between the two tests. The evidence is the same for the post crisis period only that tax appeared level stationary in the post sample period using Im, Pesaran, and Shin (1996).

The co-integrating evidence shows that there is no evidence of a long run relationship between capital structure and firms' value. This implies that the two variables can only cause themselves in the short run. The same evidence was found for the causality test.

In terms of the impact model, the result shows that the fixed and random effect models for both the pre and post 2008 financial crisis period, there is an insignificant evidence in terms of the relationship between capital structure and firms value. This evidence is in favor of the null hypothesis that capital structure has no effect on the firms' value. This result is consistent with what was found in the works of Mirza S.A and Javed A. (2013), Cekrezi A. (2013) and Ayako A. and Wamalwa (2015) although it is a different case study.

For the control variables, the result shows that all the variables except tax in the post-2008 crisis period are statistically insignificant in affecting the relationship between debt to equity ratio and return on equity. This finding is consistent with the work of Enakirerhi and Chijuka (2016).

Conclusions

On the basis above results, the conclusions are:

Using the LLC (1992) unit root testing procedure, all the variables are level stationary and the IPS(1997) are level on stationary. This difference is due to homogeneity and heterogeneity assumption of the former and latter test.

There is no co-integration relationship between capital structure and debt to capital ratio. This evidence is consistent for both Kao (1996) and Pedroni (1996, 1997, 2000).

There is no relationship between capital structure and firms' value in the case of FTSE 100 financial industry.

Recommendations

The following recommendations were made:

The firms should make more use of debt in their capital structure than the equity. This is because the tax has no impact on the composition of the capital structure of the FTSE 100 financial industry.

The UK should sustain the current money market interest rate because it promotes business. That is why the interest rate is found to be statistically insignificant in affecting the capital structure.

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