The Determinants of Capital Structure of FTSE 100 Firms in the UK: A Fixed Effect Panel Data Approach

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Abstract
This study explores the determinants of capital structure of UK FTSE 100 firms. The aim is to examine the impact of profitability (ROA), non-debt tax shield (NDTS), tangibility (TANG), liquidity (LIQ), growth(GR) and size on the choice of debt in the capital structure of firms. The study uses a panel data fixed effect approach to examine the determinants of capital structure over a ten year period, from 2003 to 2012. The results show that profitability has a negative relationship with the long term debt, short term debt and total debt, consistent with the Pecking Order Theory (POT) of capital structure which states that a firm's desire to use leverage is driven by internal forces and information asymmetry and thus, managers rely on internal funding or retained earnings to finance assets or investment opportunity. Size and NDTS show a positive relationship. The Non debt tax shield rejected the Trade-off Theory (TOT) of capital structure. However, the positive effect of size is consistent with the prediction of the TOT which states that firms determine their capital structure by trading off the benefit and the cost of debt. Accordingly, the firms in the FTSE 100 are considered as big firms and bigger firms are viewed as less risky and well diversified by lenders. The remaining variables showed mixed impact on gearing. Generally, the coefficient of ROA, NDTS, TANG, LIQ and SIZE were statistically significant but the coefficient of growth was insignificant. Overall, the results of the research show some support for both Pecking Order Theory and Trade off Theory of capital structure. Evidence also supports Agency Cost Theory of capital structure
Keywords: Capital Structure, Determinants, FTSE 100

1.0 Introduction
In an advanced economy such as the United Kingdom, the capital structure decision is one of the most important decisions of the financial manager, especially in times of economic uncertainty. The primary objective of any financial manager is to increase the value of the firm and create wealth for shareholders. Thus, an understanding of the factors that influence the choice of debt will assist financial managers in making the decision as to the borrowing capacity, benefits and costs to the firm. Also, due to the tax shield benefit of debt financing and the cost of financial distress when a firm uses debt beyond optimum level, managers need to make the decision about the mix of debt and equity financing that optimises firms' value. This study enlightens managers and stakeholders on the various factors which influence or determine debt in the capital structure. Specifically, the study examines the impact of profitability, non-debt tax shield, tangibility, liquidity, growth and firms' size on the choice of debt in the capital structure of firms listed on the FTSE 100.

The framework of capital structure has been a subject of continuous academic debates since the Modigliani and Miller (m+m) study of 1958, yet still no satisfactory theoretical model has emerged. Many studies have been published to explain the behaviour of the firm with respect to the determinants of its corporate debt but have been unable to accurately describe firm's behaviour. Kouki and Said (2012) explained that the difficulty in implementing empirical tests is probably due to the approximations used to measure variables and under such circumstances, the results are insufficient in explaining the determinants of firms' debt.

Modigliani and Miller (1958), in their capital structure Irrelevance theory argued that in a perfect market with no taxation and bankruptcy cost the value of a firm is independent of how it is financed. In 1963, m+m modified their earlier argument and explained that debt lowered the weighted average cost of capital and increased the value of a firm. Consequently, they argued that firms should borrow as much as possible to increase value and create shareholders' wealth. Following these arguments, a vast theoretical literature evolved which led to the formulation of alternative theories (Sbeiti 2010). Critics were of the view that firms cannot borrow infinitely because of the direct and indirect costs of bankruptcy. These criticisms led to the proposition of alternate theories such as the Trade-off model and the Pecking order hypothesis to explain the determinants of capital structure. These theories argue that there is an optimum capital structure which a firm navigates towards and beyond this point; the utility for taking an additional unit of debt becomes negative. Hence, there is the limit to the use of debt in order to maximize the benefit of debt financing.

As the study of capital structure becomes more complex, the determinants of the structure of capital continued to be studied by academic scholars. Cortez and Susanto (2012), Sabir and Malik (2012), Sbeiti (2010) argued that the determinants of capital structure vary from country to country, and even from industry to industry within the same country. However, the focus of this paper is to identify the factors which determine capital structure and examine the relationship between these factors and the debt levels of firms listed on the FTSE 100. Although there are a number of theories which attempt to explain the determinants of capital structure, this research focuses on pecking order theory, trade off theory and agency cost theory.

1.1 Aims and Objectives

The aim of the study is to investigate the determinants of the capital structure of firms in the United Kingdom. Thus, in order to achieve this aim, the following objectives have been set:
1. To evaluate the impact profitability (measured by the return on total asset) has on the debt decision of a firm.
2. To evaluate the impact non-debt tax shield has on the debt decision of a firm.
3. To evaluate the impact assets tangibility has on the debt decision of a firm.
4. To evaluate the impact liquidity has on the debt decision of a firm.
5. To evaluate the impact asset growth has on the debt decision of a firm.
6. To evaluate the impact firm's size has on the debt decision of a firm.

1.2 Organisation of the Study

The remainder of this study is organised into four sections. Section two critically evaluates the relevant theories of capital structure, explains the various variables which determine debt in the capital structure and the expected signs predicted by theories. Section three is concerned with methodology adopted in this study while section four provides the analysis and the interpretation of the results. The last section highlights significant findings which directly addressed the research objectives, summarises the research findings and draw inferences based on observed data.

2.0 Theoretical and empirical Review of Literature
2.1 Modigliani and Miller (m+m) Theories

Modigliani and Miller (m+m) proposed the capital structure irrelevance theory in 1958. The m+m irrelevance theory argues that in the absence of taxes, brokerage costs, solvency costs, and symmetric information between insiders and outsiders, the value of a firm is irrelevant of the way it is financed. Hence, a firm's value is determined by the performance of its real assets alone (Ross et al 2008). Furthermore, (Atrill 2012), Hillier et al (2010), Watson and Head (2013) explain that if these factors are not present, the weighted average cost of capital (WACC) for all firms remain the same regardless of how the assets are financed. The implication is that there are no optimum capital structure that maximizes the value of firms and therefore no real determinants of the structure of capital. Thus, managers are better off concentrating their effort on a critical evaluation and management of the business to increase value.

In 1963, m+m relaxed one of the assumptions of their initial capital structure Irrelevance theory, namely the absence of taxes and argued that the value of the levered firm and unlevered firm will be different because of the tax shield advantage of debt financing. As a firm increases its leverage, more of its profit is shielded from corporate taxation and the weighted average cost of capital (WACC) decreases. Watson and Head (2013) explain that the lower the WACC, the higher the value of the firm. As a result, any manager who wants to maximize the value of the firm will focus on lowering the cost of capital. The implication is that there is an optimum capital structure that maximizes the value of the firm and this optimum is at the point where the firm is 100% financed by debt which does not conform to reality.

These prepositions have formed the basis of modern thinking of the capital structure puzzle (Ahmad and Abbas 2011, Ahmed, Ahmed, and Ahmed 2010 and Amjad, Bilal, and Tufail 2013). However, critics argued that m+m did not take account of both the direct and indirect costs of bankruptcy and financial distress associated with increased gearing in the capital structure so that firms cannot take on debt indefinitely (Watson and Head 2013). These criticisms eventually led to the proposition of alternate theories to explain the determinants of capital structure. Among these theories, are Trade-off Theory, Agency Cost Theory, and Pecking Order Theory which are be discussed below.

2.2 Trade off Theory

Trade-off Theory developed by Kraus and Litzebnerger (1973) is one of the earliest theories developed in response to the m+m studies of 1958 and 1963. The theory states that firms determine optimum capital structure by trading off both the benefits and the costs of debt financing. Firms will continue to borrow as long as the tax shield benefit of taking an additional unit of debt in the capital structure outweighs the marginal cost of debt financing (Cortez and Susanto 2012, Saleem et al 2013, Seelanatha 2010). However, a firm cannot take on debt

in its capital structure indefinitely because of bankruptcy costs. The more a firm borrows, the higher the risk of default to the point that both direct and indirect costs of bankruptcy can no longer be ignored (Kouki and Said 2011, Lim 2012). Hence, there is an optimum capital structure which a firm navigates towards and beyond this optimum point, the value of the firm begins to fall due to the high risk associated with higher debt levels (Bundala 2012, Rasiah and Peong 2011). Therefore, a firm must find a compromise at the point of maximizing debt financing where the marginal cost outweighs the marginal benefit.

2.3 Agency Cost Theory

Agency cost theory was introduced based on information asymmetry between managers and investor by Jensen and Meckling (1976). Fama and Miller (1972), Jensen and Meckling (1976) and Stulz (1990) argued that the use of external financing in the presence of asymmetric information and incomplete contracting can give rise to the potential conflicts of interests between managers, stockholders and bondholders. Agency theory assumes two types of conflict of interest: Firstly, the conflict between managers and shareholders and secondly, the conflict between shareholders and bondholders (Amjad, Bilal, and Tufail 2013, Rehman and Rehman 2011). Agency theory argues that managers are agent of their principal and as agent they should act in the best interest of the shareholders but this is not always the case potentially resulting in conflict. As such, shareholders need to set up monitoring devices (which are costly) to ensure that managers are acting in their best interest (Ellili and Farouk 2011, Ho-Yin Yue 2011). One way of reducing this conflict of interests is by increasing the gearing of the firm (Jensen 1986, Jucá, de Sousa and Fishlow 2012, and Rehman and Rehman 2011). High leverage in the capital structure put pressure on manager to generate cash flow to honour its debt obligations and reduce expected bankruptcy cost. This reduces the free cash flow available to managers to invest it in suboptimal project or misuse cash by consuming it on their perquisite. Accordingly, the interest of the manager and the shareholders would be aligned. However, higher gearing increases conflict of interest between shareholders (who are long term oriented and would relinquish short term profit for long term capital gain) and debt-holders who are short term oriented. To mitigate the fear of creditors, they usually lean on tangible assets of firms as collateral. By implication a firm take on more debt to reduce the conflict of interests between the different stakeholders.

2.4 Pecking Order Theory

This theory was pioneered by Myers and Majluf (1984) and Myers (1984). The theory is based on the idea of information asymmetry between managers and investors. The proponents argued that managers of a firm are better informed than outside investors. That is, managers have more information on the investment decision and the return associated with a particular investment compared to outsiders. Managers better know the true value of a firm and the riskiness of that firm than outside investors and this make debt financing costly especially in times of poor financial performance. Debt-holders because of asymmetry information, charge higher interest rate to firms. Thus, to avoid this high rate, managers rely on internal financing such as retained earnings and move to using outside financing when this source becomes insufficient. Managers use internal financing, move to debt and finally to equity. This order is justified because in view of its fixed payments, debt is already less sensitive to information problems but incur issue costs, while internally generated resources do not suffer at all from issuing costs, information asymmetry and will not be undervalue (Ho-Yin Yue 2011, Sbeiti 2010). Issuing additional equity, in addition to the cost, suffers from information asymmetries and results in conflict between managers, existing shareholders and potential shareholders. This theory argues that there is no target level of gearing to which a firm navigates but companies use debt only when their internal funds are insufficient. Consequently, a firm's debt level is not driven by Trade-off theory but simply the attempt by managers to reduce information asymmetry (Amjad, Bilal, and Tufail 2013, Cortez and Susanto, 2012, and Nguyen and Nguyen 2012).

2.5 Other Theories of Capital Structure

Other theories have been developed by researchers over the years in reaction to the m+m studies of 1958 and 1963. Such theories include Signalling Theory which was developed by Leland and Pyle (1977)and Ross (1977),Dynamic Trade off Theory developed byFischer et al (1989)and Market Timing Theory of Bakerand Wurgler (2002).However, over the years, empirical research in the determinants of capital structures are usually modelled in line with pecking order theory or trade of theory with some finding evidence in support of agency cost theory (Kayo and Kimura 2011, Mateev, Poutziouris and Ivanov 2013, Nguyen and Nguyen 2012). Recently *Trade-off adjusted Order Theory* was proposed by Cortez and Susanto (2012). The theory is based on their findings that the capital structure determinants are predicted in both static trade off theory and pecking order theory but none of the theories shows a more dominant predictive capability over the other. The theory argued that firms will keep comparing the cost of debt and equity as in trade off theory. As long as the difference between cost of debt and equity does not reach certain level, even if the cost of equity is higher, firm will continue to use equity as their main source of finance. However, this order will change when the difference between the cost of debt and equity passes certain threshold.

2.6 Empirical Evidence

In this section, the specific determinants of capital structure are presented together with discussion of the relevant empirical evidence. Although, several factors have been identified in literatures, this study focuses on profitability, non-debt tax shield, tangibility, liquidity, assets growth, and firms' size.

2.6.1 Profitability

According to Pecking Order Theory of Myers and Majluf (1984) and Myers (1984), firms use internal sources of financing because it is cheaper and move to debt financing if this source is insufficient. In other word, the more profitable a firm is the less debt will be in its capital structure depicting a negative relationship between debt and profitability. This reflects managers' attitude to the handling of the conflict between the bond-holder and the shareholders. Empirical evidence in support of pecking order theory includes the studyof Akhtar (2005), AL-Shubiri (2010), Crnigoj and Mramor (2009), and Smith (2012).

On the other hand, according Trade-off Theory, a more profitable firm will use more debt because of its tax-shield benefit and because profitable firms have decreased in expected bankruptcy cost (Sbeiti 2010). The trade-off theory advocates that profitable firms are perceived to have lower risk of bankruptcy and due to the fact that interest expenses are tax deductible, they use more debt in their capital structure. Hence, a firm's profitability is expected to be positively correlated with leverage. Empirical works in support of trade of theory include the study of Teker, Tasseven, and Tukel, (2009), Kaur, and Rao (2009). Although several measures of profitability exist in practice, this study uses return on assets (ROA) in line with Berger et al. (1997), Gaud, Hoesli and Bender (2007) and Lim (2012). Thus, the following hypothesis is proposed

H0: Profitability does not significantly impact leverage
H1: Profitability significantly impact leverage

2.6.2 Non-Debt Tax Shield

According to Modigliani and Miller (1963) and Static Trade-off Theory of Kraus and Litzebnerger (1973), debt tax shield (interest) serve as an incentives to use more debt in the capital structure. This is because this debt tax shield is treated as tax deductible. Thus, a firm gains more when some of its return to investors is exempted from taxation. However, DeAngelo and Masulis (1980) put forward that Non-Debt Tax Shield (NDTS) such as depreciation expenses and investment tax credit could be regard as substitutes for tax benefits of debt financing and as such, firms with more or large non debt tax shield expenses need not take more debt in its capital structure. Hence, NDTS is expected to be negatively correlated with leverage. The empirical work of Bowen, Daley, and Huber (1982), Chen (2004), Lim (2012), and Wald 1999 confirm this relationship. Contrarily, some authors such as Al-Qudah (2011) and Bayrakdaroğlu, Ege, and Yazıcı (2013) have also found positive relationship between Non Debt Tax Shield and leverage which is the opposite of the assertion of Boquist and Moore (1984), Bradley Jarell and Kim (1984), Huang and Song (2006), and Chang, Lee and Lee (2009). The argument remains if NDTS determine leverage significantly and in what direction. Thus, the second hypothesis is:

H0: None Debt Tax Shield does not significantly impact leverage level
H1: Non debt tax shield significantly impact leverage level

2.6.3 Tangibility

According to agency cost theory of Jensen and Meckling (1976), managers are agent of the shareholders and there is the possibility of conflict between managers and shareholders and between shareholders and bondholders. Thus, lenders undertake more risks when shareholders make sub-optimal investment decisions and therefore will acquire one or more assets of the firm as collateral to mitigate their risk (Ellili and Farouk 2011, Harris and Raviv 1991). As argued by Lim (2012), a firm with significant proportion of fixed assets are associated with high ability to repay loan and therefore able to raise more debt capital easily. Therefore, tangibility is expected to positively impact leverage. The work of Nunkoo and Boateng (2010), Shah and Khan (2007),Teker, Tasseven and Tukel (2009) confirm positive relationship.

A contrary opinion is expressed by Grossman and Hart (1982) who argued that there is a negative relationship between tangibility and leverage. They explained that due to agency relationship, companies monitor opportunistic managerial behaviour. These monitory costs are higher in firms with lower tangible assets because of the perquisites' consumption by the managers. In order to reduce this cost, firms prefer higher debt in its capital structure. This has been confirmed by Akinlo et al (2011), Booth et al (2001), Sayılgan et al (2006). Furthermore, other authors such as Ebadi, Chan and Yap (2011), Hall et al (2004) stressed that the relationship between leverage and tangibility is influenced by the type of debt. Mateev, Poutziouris and Ivanov (2013) and Sogorb-Mira (2005) found inverse relationship between tangibility and short term debt and direct relationship with long term debt. The argument is to determine what impact tangibility has on leverage. Hence, the third hypothesis is:

H0: A firm's tangibility does not significantly impact leverage
H1: A firm's tangibility significantly impact leverage

2.6.4 Liquidity

Several research works have used liquidity as an explanatory variable on capital structure determinants.

Liquidity is the ability of the firm to meet its short term obligation as they fall due. Ozkan (2001) reported that higher liquidity ratio implies that a firm has more power to re-pay its debt. Pecking order theory (POT) advocates that the higher the firms financing ability internally, the lesser it will depend on outside sources of finance such as debt financing. This means that a firm with higher liquidity will use less debt in its capital structure. In this respect, liquidity will be expected to have a negative relationship with leverage. This is confirmed by the work of Guney et al. (2011), Mishra and Tannous (2010), Tong and Green (2005). The results of Childs, Mauer, and Ott (2005) against expectation showed a negative coefficient between debt and liquidity in support of POT and they concluded that firms avoid interest rate and liquidity risk.

On the other hand, according to trade off theory, a firm with higher ability to take on more debt will probably do so in order to maximize the tax benefit of debt financing. A firm with higher liquidity will exercise its option of debt to maximize the benefit of debt financing. Therefore, liquidity is expected to have a positive relationship with leverage of firms as confirmed by the work of Yu (2000). Generally, the interest of this research is to determine what impact liquidity has on leverage and thus:

H0: Liquidity of a firm does not significantly impact gearing
H1: Liquidity of a firm significantly impact gearing

2.6.5 Asset Growth
Empirical research on the relationship between growth and the capital structure of a firm is ambiguous and conflicting (Ellili, and Farouk 2011, Nguyen, and Nguyen 2012). According to Pecking Order Theory, firms turn to debt financing when retained earnings are insufficient to finance growth opportunity. High growing firm usually require lots of capital and most cases the retained earnings or the company cash flows may not be sufficient to finance it (Ebadi, Chan and Yap 2011 and Lim 2012). In this case, a positive relationship will be expected between growth and gearing as confirmed by Anwar (2012), Baral (2004), Céspedes et al. (2010),Gill, et al (2009),Sharif, Naeem, and Khan (2012),Yang, et al (2010).

On the other hand, the trade-off theory argues that the cost of financial distress increases as firm grows. This suggests that lender will require more tangible assets as collateral for loan. Since growth opportunities cannot be collateralized because it is intangible, firms tend to issue less debt (Chen, 2004). Myer (1977) argued that firms investing in assets that may generate high growth opportunity in the future face difficulties in borrowing against such assets. In respect of this, it is expected that growth will be negatively correlated with leverage. This is confirmed by the empirical results of Akinlo et al. (2011), Eriotis (2007),Shah and Khan (2007). Thus:

H0: Asset growth does not significantly impact gearing levels
H1: Asset growth significantly impact gearing levels

2.6.6 Size of Firms
There are several theoretical assumptions why the size of firms is associated with the structure of capital (Keshtkar, Valipour, and Javanmard 2012). Pecking order theory hypothesize that size is negatively correlated with leverage. Larger firms have more stable cash flows and are well diversified. Because their internally generated revenue is large, these firms will rely less on outside financing such as debt capital. Therefore, size is expected to negatively correlate leverage or gearing as the results of Frank and Goyal (2003)and Titman and Wessels (1988) have confirmed. On the other hand, Trade-off Theory states that firms determine their capital structure by trading off the benefits and the costs of debt. Larger firms are more diversified and often have more stable cash flows and are viewed as less risky than smaller ones. Therefore, investors will be willing to lend more to larger firms connoting a positive relationship will exist between leverage and size as confirmed by the results of AL- Shubiri(2010),Sharif Naeem, and Khan (2012),Gurcharan (2010)and Liu and Ren (2009). Furthermore, it has been reported that larger firms prefer long term debt while smaller firms prefer short term debts (Chen, 2004, Keshtkar, Valipour and Javanmard 2012, Marsh 1982). If this is so, size will be positively correlated with long term debt and negatively correlated with short term debt. Hence:

H0: Size of firms does not significantly impact the gearing levels
H1: Size of firm significantly impacts the gearing levels

3.0 Research Methodology
3.1 Data Source
The study makes use of secondary data such a journal articles, textbooks and FAME data base. The study makes use of financial reports of companies listed on the London Stock Exchange, FTSE 100 for a period of ten (10) years, from 2003 to 2012. The financial variables of interest for this period are collected in order to permit a sound comparative study over time. Also, because the analysis will be subject to regression, longer length of time will help eliminate some of the errors encountered for time series analysis or cross sectional analysis. The data for the study are obtained from financial data of firms published on the FAME DATABASE. The choice of secondary data is due to the nature of topic under investigation and the fact that financial reports of firms are readily available and accessible to the general public.

3.2 Model Estimation

The relationship between leverage of firms and the various determinants of capital structure is represented in the model below:

$$LEV_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 NDTS_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 GR_{it} + \beta_6 SIZE_{it} + \varepsilon_{it}$$

Where i= is observed firms (65)

t= is years (10)

To estimate the research model, time series data are combined with cross-sectional data to form a panel data analysis. The panel data are analysed as a Fixed Effect Panel Data Analysis (FEM). Also, VIF test was carried out to determine the presence of multicolinearity but results showed no such problem. The Distribution Free Wald Test and the Durbin-Watson test were used to test for the presence of heteroskedasticity and autocorrelation respectively. The results revealed the presence of these errors and the model was corrected using heteroskedasticity corrected model. The P-value is used to determine the significant of the relationship between the explanatory variables and the explained variables. To do this, a significant level of 5% was set. Thus, if the P-value is less than 5%, the regression coefficient is said to be statistically significant and if it is greater than 5%, the regression coefficient is statistically insignificant. Also, to determine the fitness of the overall equation or the regression model, the ANOVA table was set and the F-Fisher test known as F-value are used to evaluate the overall significant or the goodness of fit of the model.

The use of quantitative approach is in line with previous researchers such Ahmed, Ahmed and Ahmed (2010), Anwar (2012), Cortez and Susanto (2012), Kouka and Said (2012) who also used this approach in their study.

3.3 Variable Measurements

The variables in this research are divided into dependent and independent variables. The study analyses capital structure proxy by debt ratio as the dependent variable and the determinants proxy by profitability, non-debt tax shield, tangibility, liquidity, growth and size as the explanatory variables.

3.3.1 Dependent Variables (Structure of Capital)

This study uses three measures of gearing in line with the study of Ellili and Farouk (2011). Hence, capital structure is calculated as:

$$DEBTSTD = \frac{Short\ Term\ Debt}{Total\ Assets} \qquad (1)$$

$$DEBTLTD = \frac{Long\ Term\ Debt}{Total\ Assets} \qquad (2)$$

$$DEBTTD = \frac{Total\ Debt}{Total\ Assets} \qquad (3)$$

Where DEBTSTD = the short term debt divided by the total assets of the firm

DEBTLTD = the long term debt divided by the total assets of the firm

DEBTTD = the total debt (DEBTSTD + DEBTLTD) divided by the total assets of the firm.

The total assets of the firms under investigation are used because assets better measure the use of firm resources to generate return. The effectiveness of a firm is sometimes measure in the amount of the assets it possesses. Moreover, the total asset of a firm is the combination of its total debt and equity. Therefore, it is the most appropriate measure to be used.

3.3.2 Explanatory Variables (Determinants)

The study makes use of a number of explanatory variables to explain the determinants of capital structure of firms. These variables, their measurements and expected relationship according to theory predictions are explained below:

Table 3.1 Predicted Signs and Theory Supported

Variables	Proxy By	Pecking Order Theory	Trade off Theory
Prof (ROA)	Operating profit/ Total Assets	-	+
Non-Debt Tax Shield (NDTS)	Depreciation/Total Assets		-
Tangibility(TANG)	Tangible Assets/Total Assets	-	+
Liquidity (LIQ)	Current assets/current liability	-	+
Growth (GR)	% Growth in total assets	+	-
Size of Firms(SIZE)	Total Assets	-	+

Source: The researcher from data gathered

4.0 Analysis and Discussion of Results
4.1 Descriptive Statistics
Table 4.1: Summary of Statistics of the Independent and Dependent Variables

Variables	N	Minimum	Maximum	Mean	Standard Deviation
DEBTSTD (%)	650	0.000000	0.904350	0.271758	0.139427
DEBTLT (%)	650	0.000000	0.927637	0.341137	0.163207
DEBTTD (%)	650	0.000000	1.15082	0.613214	0.179302
ROA (%)	650	-0.518300	0.562200	0.0953734	0.0878227
NDTS (%)	650	0.000000	0.158137	0.0300431	0.0235876
TANG (%)	650	0.000000	0.988545	0.663462	0.193757
LIQ (Ratio)	650	0.110000	60.4700	1.33178	3.09821
GR (%)	650	-0.944375	3.75109	0.120552	0.321949
SIZE (%)	650	5.24702	12.2775	8.74952	1.41321

Source: Output results of Gretl Computed from the 65 firms observed over 10 years

The table 4.1 above show the descriptive statistics of the data. While debt capital make up 34% of the long term financing on the average, the financial leverage of firms comprises 61% debt financing as seen by DEBTTD of 0.61. However, some firms seem to be heavily leveraged as seen by the maximum of 0.93 of DBTLT. Performance proxy by ROA has a mean average of 10% for the 65 firms observed, a minimum of -52% and a maximum of 56%. The loss of 51% seen in the sample period is probably due to the effect of the financial meltdown of 2008 – 09 as the sample period span over the period of economic depression. Despite the low profitability and performance of firms during the sample period and huge short term debt, the liquidity position of the firms seems fair as could be observed from the mean figure of 1.33. While average tangibility reveals that 66% of total assets is tangible, the mean of size is 8.7 with a minimum of 5.2 and a maximum of 12.3. Statistics show that the firms grow at an average of 12% and non-debt tax shield has an average of 3%.

4.2 Correlation Matrix
Table 4.2. Correlation coefficient between variables and the VIF indicators

Variables	DEBTLTD	DEBTTD	ROA	NDTS	TANG	LIQ	GR	SIZE	VIF
DEBTSTD	-0.3064**	0.4990**	0.0855**	0.0540	-0.5653**	-0.2315**	0.0112	-0.1146**	-
DEBTLTD		0.6719**	-0.1464**	0.0590	0.2327**	-0.0432	0.0918*	0.1426**	-
DEBTTD			-0.0668	0.0953**	-0.2282**	-0.2194**	0.0920*	0.0403	-
ROA				0.2770**	-0.1895**	-0.0500	0.0158	-0.0442	1.138
NDTS					0.0236	-0.1394**	-0.0284	0.0219	1.105
TANG						-0.2896**	-0.0788	0.4370**	1.379
LIQ							0.0297	-0.1790**	1.123
GR								-0.0405	1.007
SIZE									1.243

Source: Gretl output of data extracted from FAME
** Significant at 5% level
**cut off = 0.0769

The short term debt shows a significant correlation with ROA, TANG, LIQ and SIZE but the coefficient of correlation are insignificant for NDTS and GR. The positive relationship with NDTS, GR and the negative association with TANG is consistent with the work of Bayrakdaroğlu, Ege, and Yazıcı (2013) while the negative association with size contradicts the results of Al-Qudah (2011).

The long term debt also shows a negative coefficient with ROA and LIQ confirming the results of Sbeiti (2010) and pecking order theory. Also, the DEBTLTD shows a positive coefficient with NDTS, TANG, GROWTH and SIZE which is consistent with the results of Al-Qudah (2011) except for the tangibility which showed a negative relationship. These imply that long term debt decrease with increase in profitability and liquidity but increase with increase in non-debt tax shield, growth, tangibility and size of firm.

4.3 Regression Results and Hypotheses/Model Testing
In order to test the hypotheses set, a panel data with FEM analysis is undertaken and the results are presented below. The table 4.3 below shows the results of the regression for the short terms debt, long term debts and the total debt and the determinants of capital structure.
The model for the regression analysis is presented below:

$LEV_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 NDTS_{it} + \beta_3 TANG_{it} + \beta_4 LIQ_{it} + \beta_5 GR_{it} + \beta_6 SIZE_{it} + \varepsilon_{it}$

Table 4.3. Panel Data Regression Results (Fixed Effect Model)

Independent Variables	Dependent Variables		
	DEBTSTD (p-value)	DEBTLTD (p-value)	DEBTTD (p-value)
Const	0.6523 (0.0000***)	0.08122 (0.0687*)	0.6900 (0.0000***)
PROF (ROA)	-0.0009 (0.0332**)	-0.0019 (0.0021***)	-0.0039 (0.0000***)
NDTS	0.1470 (0.2559)	0.6506 (0.0066***)	0.9433 (0.0005***)
TANG	-0.5527 (0.0000***)	0.2231 (0.0000***)	-0.4381 (0.0000***)
LIQ	-0.0604 (0.0000***)	0.0158 (0.0042***)	-0.0261 (0.0000***)
GROWTH (GR)	-0.0015 (0.8942)	0.0307 (0.1748)	0.0489 (0.0132**)
SIZE	0.0070 (0.0022***)	0.0105 (0.0291**)	0.0291 (0.0000***)
R Square	0.5471	0.1178	0.2685
Adj R-Square	0.5429	0.1096	0.2616
F(6, 643)	129.4708 (0.0000***)	14.3126 (0.0000***)	39.3305 (0.0000***)

Source: Data extracted from regression output

*** Significant at a level of 1%

** Significant at a level of 5%

4.3.1 Profitability (ROA)

The return on total assets has negative and significant impact on the three levels of gearing of firms. The negative impact of Profitability on leverage indicates that there is an inverse movement between these two variables. The results of this research support the Pecking Order Theory of Myers and Majluf (1984) and Myers (1984) and consistence with the findings of Qiu and La (2010), Ahmed, Ahmed and Ahmed (2010), Afza and Ahmed (2010) but contradicts the findings of Teker, Tasseven, and Tukel (2009) who found a positive impact of profitability on leverage. The results reveal that firms do not use debt because of the tax shield benefit of debt as advocated by TOT but do so when internal source is insufficient.

4.3.2 Non-Debt Tax Shield (NDTS)

The Non Debt Tax Shield reveals a positive relationship with all three measures of leverage. However, the impact of NDTS on the short term leverage (DEBTSTD) is not significant but NDTS has a significant effect on the Long term debt (DEBTLTD) and total debt (DEBTTD) at 1% significant level. The insignificant impact indicates that depreciation expenses are not considered when taking on short term debt. This explanation is due to the logic that short term debt does not need asset collateral which is associated with long term debts. It could be argued that depreciation expenses increases as more fixed assets are acquired by the organisation. If this is the case, firm with more depreciable assets will likely secure more long term debt to finance their operations. This finding agree with the results of Huang and Song (2006), Bradley et al. (1984) and Bayrakdaroğlu, Ege and Yazıcı (2013) but contradict the study of Cortez and Susanto (2012) and DeAngelo and Masulis (1980). The result rejects the argument NDTS serve as a substitute for Debt tax shield and act as incentive to use more debt in the capital structure.

4.3.3 Tangibility (TANG)

Tangibility negatively and significantly impacts the short term and total leverage but positively and significantly impact the long term leverage. The positive impact on the long term debt indicates that debt increases as organisation acquire more fixed assets and this is consistent with the results of Afza and Hussain (2011), Lim (2012), Nadem et al (2012), Nunkoo and Boateng (2010) but contradicts Ahmad and Abbas (2011) who found a negative impact of tangibility on long term leverage. Also, the result supports the Agency Cost Theory and TOT of Capital Structure. The Trade-off Theory advocates that firm determines capital structure by trading the benefit and the costs of debt financing. Thus, a firm with large amount of tangible assets will be better placed to secure loan from lenders. On the other hand, tangibility has a negative impact on the short term leverage of firms in line with Ebadi, Chan and Yap (2011), Hall et al (2004), Mateev, Poutziouris and Ivanov (2013), Sogorb-Mira (2005). Earlier, these authors explained that the relationship between debt and tangible assets is influenced by the type of debt as confirmed above. Since, collateral are not required to secure a short term debt, the negative relationship was expected.

4.3.4 Liquidity

Liquidity has a statistically significant impact on the three levels of gearing at 1% level. The negative impact of liquidity on short term debts indicates that firms avoid liquidity problem by taking lesser debt in its capital structure while the positive impact on long term debts shows firms take advantage of their strong liquidity position in exploiting the tax advantage of debt financing as purported by the Trade-off Theory of capital structure. The negative impact agrees with the empirical work of Tong and Green (2005), Childs, Mauer, and Ott(2005), Guney et al. (2011), Mishra and Tannous (2010) while positive impact agrees with the empirical work of Yu (2000). Accordingly, the results support both POT and TOT of capital structure.

4.3.5 Assets Growth

Growth of firms are found to negatively impact the short term (DEBTSTD) but positively impact the long term and total debt of the firms. However, only the coefficient of the total leverage is significant at 5% level. The result shows that growth is not a significant factor in determining the long term debt of firm. This is expected as larger firms growth rate slows and as such does not play a significant role in determining debt. Also, the result of profitability indicates that these firms strongly finance their assets with internal funding probably due to their large cash flows. Although not significant, the positive impact on long term debt confirms the POT and consistence with findings of Baral (2004), Céspedes et al. (2010), Chen (2004),Yang, et al (2010). This is consistent with the study of Ahmed, Ahmed, and Ahmed (2010). Similarly, the impact of growth on the short term debt is insignificant in line with the study of Ellili and Farouk (2011), Saleem et al (2013). Again, the positive relationship of growth with total debts agrees with previous findings of Ellili and Farouk (2011), Al-Qudah (2011), Bayrakdaroğlu, Ege and Yazıcı (2013) except their results were not significant.

4.3.6 Size of Firms

Size of firms has positive and significant impact on all three levels of debts. This means that the larger the firm, the more debt it will have it its capital structure. The significant impact on short term debt indicates the willingness of lenders to lend on a short term basis to firms probably due to the impact of the melt down. The positive and significant impact is consistent with the TOT and the empirical results of Akhtar (2005), Akinlo et al. (2011), AL- Shubiri (2010), and Gurcharan (2010).

4.4 Observed Signs and Theories Supported

Having analysed and discuss the results of the findings in section 4.4 above, the results are summarised below.

Table 4.4 **Observed Signs and Theories Confirmed**

Variables	Observed Sign	Theory Confirmed
ROA	-	Pecking Order Theory
NDTS	+	
TANG	-/+	Agency Cost/Trade-off Theory
LIQ	-/+	Pecking Order Theory/Trade off Theory
GROWTH	+	Pecking Order Theory
SIZE	+	Trade-off Theory

Source: Generated from results of hypotheses testing

The table shows profitability and growth support POT while size show support for TOT. Tangibility support TOT and agency cost theory while the impact of liquidity is mixed. The results also show that the impact of tangibility depends on the type of debt, whether it be long or short term debt. NDTS contradicts the TOT and shows a positive impact on the three level of gearing.

5.0 Conclusion

This study examined the determinants of capital structure of London FTSE 100 firms using a panel data analysis (Fixed Effect Model). The study made use of three levels of leverage which include the short term leverage, the long term leverage and the total leverage to explain the capital structure of the sampled firms. The empirical analysis enable the researcher to classify the determinants of capital structure into Profitability, Non-Debt tax shields, Tangibility of assets, liquidity, growth and size of the firms. The panel data fixed effect results reveal that firm adjust their corporate debt level in line with Pecking order Model and Trade-off between the benefit and the cost of debt financing. Furthermore, against prediction, the NDTS does not show result consistent with trade off model, an indication that this may not serve as an alternative to debt tax shield as argued in finance literature. Overall, the results show that managers will adjust their debt level in response to internal need of firms and as well as the trade-off between the benefit and costs of debt financing. Findings also revealed large firms have advantage in securing short term debt and long term debt, consistent with Trade-off Theory. Thus, managers are subtle in their dealing with creditors and usually present the firm as a stable and well diversified firm when negotiating a short term debt or credit. Finally, firms' management are advised to seek more external funding in the wake of the boom presently kick starting especially in time where interest rate and taxes are at

their minimum in the economy. This is to enable firms benefit from the tax shield benefit of debt and the advantage possess by this big firms. Since firms have significant proportion of their assets as tangible, this will eliminate many of the agency problems that may be associated from the issue of debt financing.

Bibliography/References

Books

Atril, P. (2012) *Financial Management for Decision Makers*. 6th Ed. Essex: Pearson Education Limited

Blumberg, B. Cooper, D.R. and Schindler, P.S. (2011) *Business Research Methods*. 3rd ed. London: McGraw-Hill Education

Bryman, A. and Bell, E. (2007) *Business Research Methods*. 2nd Ed. Oxford: Oxford University Press

Collis, J. and Hussey, R. (2003) *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. 2nd Ed. Hampshire: Palgrave Macmillan

Fama, E. F., and Miller, M. (1972) *The Theory of Finance*. New York: Holt, Rinehart & Winston.

Grossman SJ. and O. Hart (1982) *Corporate Financial Structure and Managerial Incentives'* in McCall, ed.: The Economics of Information and Uncertainty, University of Chicago Press, Chicago

Hillier, D. et al (2010) *Corporate Finance*. European Edition: Berkshire: McGraw-Hill Higher Education

Ross, S.A., Westerfield, R.A., Jaffe, J.F. and Jordan, B.D. (2008) *Modern Financial Management*.8th ed. Berkshire: McGraw-Hill Higher Education

Ryan, B. Scapens, R. and Theobald, M., (2012) *Research Method and Methodology in Finance and Accounting*.2nd ed. Hampshire: Cengage Learning EMEA

Saunders, M. Lewis, P. and Thornhill, A. (2009) *Research Methods for Business Students*. 5th ed. Essex: Pearson Education Limited

Smith, M. (2003) *Research Methods in Accounting*. London: SAGE Publications Ltd.

Watson, D. and Head, A. (2013) *Corporate Finance Principle and Practice*. 6 ed. Essex: Pearson Education Limited

Conference Papers

Amjad, S., Bilal, and Tufail, S. (2013). The Determinants of Capital Structure: What can be the Determinants of Capital Structure of Banking Sector of Pakistan? International Conference on Business Management (3), 1-27. http://cgr.umt.edu.pk/icobm2013/index.html [February 27-28, 2013]

Journals

Abdou, H. A., Kuzmic, A., Pointon, J., and Lister, R. J. (2012) 'Determinants of Capital Structure in the UK Retail Industry: A Comparison of Multiple Regression and Generalized Regression Neural Network'. *Intelligent Systems in Accounting, Finance & Management* 19 (3), 151-169

Afza, T. and Hussain, A. (2011) 'Determinants of Capital Structure: A Case Study of Automobile Sector of Pakistan'. *Interdisciplinary Journal of Contemporary Research in Business*

Afza, T. and Ahmed, N. (2010) 'Determinants of Capital Structure: A Case of Non-Life Insurance Sector of Pakistan'. *Interdisciplinary Journal of Contemporary Research in Business* 2 (8), 133-142

Ahmad, F. and Abbas, Z. (2011) 'Role of Firm's Level Characteristics in Determining the Capital Structure of Banks: Evidence from the Pakistan Banks'. *Interdisciplinary Journal of Contemporary Research in Business* 2 (12), 201-216

Ahmed, N., Ahmed, Z., and Ahmed, I. (2010) 'Determinants of Capital Structure: A Case of Life Insurance Sector of Pakistan'. *European Journal of Economics, Finance & Administrative Sciences* (24), 7-12

Akhtar, S. and Oliver, B. (2009) 'Determinants of Capital Structure for Japanese Multinational and Domestic Corporations'. *International Review of Finance* 9 (1), 1-26

Akhtar, S. (2005) 'The Determinants of Capital Structure for Australian Multinational and Domestic Corporations'. *Australian Journal of Management (University of New South Wales)* 30 (2), 321-341

Akinlo O. (2011) 'Determinants of capital structure: Evidence from Nigerian panel data'. *African Economic and Business Review* 9 (1), 1-16.

AL- Shubiri, F., N. (2010) 'Analysis of the Relationship between Working Capital Policy and Operating Risk: An Empirical Study of Jordanian Industrial Companies'. *Investment Management and Financial Innovations* 7 (2), 167-176

Al-Qudah, A. (2011) 'The Determinants of Capital Structure of Jordanian Mining and Extraction Industries: Empirical Evidence'. *European Journal of Economics, Finance & Administrative Sciences* (29), 156-164

Antoniou, A., Guney, Y., and Paudyal, K. (2008) 'The Determinants of Capital Structure: Capital Market-Oriented Versus Bank-Oriented Institutions'. *Journal of Financial & Quantitative Analysis* 43 (1), 59-92

Antoniou, A., Guney, Y., and Paudyal, K. (2006) 'The Determinants of Debt Maturity Structure: Evidence from France, Germany and the UK'. *European Financial Management* 12 (2), 161-194

Anwar, W. (2012) 'Cross-Industry Determinants of Capital Structure: Evidence from Pakistani Data'. *International Journal of Management & Innovation* 4 (1), 79-86

Aoun, D. (2012) 'Capital Structure of ICT Vs. Non-ICT Firms: Evidence from the UK'. *International Research Journal of Finance & Economics* (89), 15-31

Baker, M. and Wurgler, J. 2000 'The Equity Share in New Issues and Aggregate Stock Returns'. *Journal of Finance* (55), 2219-2257

Baral K. (2004) 'Determinants of Capital Structure: A Case Study of Listed Companies of Nepal'. *The Journal of Nepalese Business Studies* (1), 1-13

Bayrakdaroğlu, A., Ege, İ., and Yazıcı, N. (2013) 'A Panel Data Analysis of Capital Structure Determinants: Empirical Results from Turkish Capital Market'. *Canadian Center of Science & Education*

Berger, P.G., Ofek, E. & Yermack, D.L (1997) 'Managerial Entrenchment and Capital Structure Decisions'. *Journal of Finance* 52 (4), 1411-38.

Bevan, A. A. and Danbolt, J. (2004) 'Testing for Inconsistencies in the Estimation of UK Capital Structure Determinants'. *Applied Financial Economics* 14 (1), 55-66

Bevan, A. A. and Danbolt, J. (2002) 'Capital Structure and its Determinants in the UK – a Decompositional Analysis'. *Applied Financial Economics* 12 (3), 159-170

Booth, et al (2001) 'Capital Structures in Developing Countries'. *Journal of Finance* 56 (1), 87-130

Boquist, J. A., and Moore, L. A. (1984) 'Inter-industry Leverage Differences and the DeAngelo-Masulis Tax Shield Hypothesis'. *Financial Management* (*1*), 5–9.

Bowen, R., Daley, L., & Huber, C. (1982) 'Evidence on the Existence and Determinants of interindustry Differences in Leverage'. *Financial Management* 11 (4), 10-20

Bradley, M., Jarell, G.A. & Kim, E.H. (1984) 'On the Existence of Optimal Capital Structure Theory and Evidence'. *Journal of Finance* 39 (3), 857-78

Bundala, N. N. (2012) 'Do Tanzanian Companies Practice Pecking Order Theory, Agency Cost Theory Or Trade-Off Theory? An Empirical Study in Tanzanian Listed Companies'. *International Journal of Economics & Financial Issues (IJEFI)* 2 (4), 401-422

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

Chang, C., Lee, A. C., and Lee, C. F. (2009) 'Determinants of Capital Structure Choice: A Structural Equation Modeling Approach'. *Quarterly Review of Economics and Finance* 49 (2), 197-213

Chen J.J. (2004) 'Determinants of Capital Structure of Chinese-listed Companies'. *Journal of Business Research* (57), 1341-1351

Chen, C. J. P., Cheng, C. S. A., He, J., & Kim, J. (1997) 'An Investigation of the Relationship between International Activities and Capital structure. *Journal of International Business Studies*, 563-577

Childs, P. D., Mauer, D. C., & Ott, S. H. (2005) 'Interactions of Corporate Financing and Investment Decisions: The Effects of Agency Conflicts'. *Journal of financial economics* 76 (3), 667-690

Cortez, M. A. and Susanto, S. (2012) 'The Determinants of Corporate Capital Structure: Evidence from Japanese Manufacturing Companies'. *Journal of International Business Research* 11, 122-134

Crnigoj, M. and Mramor, D. (2009) 'Determinants of Capital Structure in Emerging European Economies: Evidence from Slovenian Firms'. *Emerging Markets Finance and Trade* 45 (1), 72-89

DeAngelo H., & Masulis R.W. (1980) 'Optimal Capital Structure under Corporate and Personal Taxation'. *Journal of Financial Economics* (8), 3-29

Delgado, F. J., Fernandez-Rodriguez, E., and Martinez-Arias, A. (2012) 'Size and Other Determinants of Corporate Effective Tax Rates in US Listed Companies'. *International Research Journal of Finance & Economics* (98), 160-165

Ebadi, M., Chan, K. T., and Yap, V. C. (2011) 'Impact of Firm Characteristics on Capital Structure of Iranian Listed Firms'. *European Journal of Economics, Finance & Administrative Sciences* (42), 160-171

Ellili, N. O. D. and Farouk, S. (2011) 'Examining the Capital Structure Determinants: Empirical Analysis of Companies Traded on Abu Dhabi Stock Exchange'. *International Research Journal of Finance & Economics* (67), 82-96

Eriotis, N., Vasiliou D., and Ventoura-Neokosmidi, Z. (2007) 'How Firm Characteristics Affect Capital Structure: An Empirical Study'. *Managerial Finance* (33), 321–31

Fama, E.F. and K.R., French (2002) 'Testing Trade-off and Pecking Order Predictions about Dividends and Debt'. *The Review of Financial Studies* (15), 1-33

Fattouh, B., Harris, L., and Scaramozzino, P. (2008) 'Non-Linearity in the Determinants of Capital Structure: Evidence from UK Firms'. *Empirical Economics* 34 (3), 417-438

Fischer, E. O., Heinkel, R., and Zechner, J. (1989) 'Dynamic Capital Structure Choice: Theory and Tests'.

Journal of Finance 44 (1), 19-40

Frank and Goyal (2003) 'Testing the Pecking Order Theory of Capital Structure'. Journal of Financial Economics 67 (2), 217-248

Gaud, P., Jani, E., Hoesli, M., & Bender, A. (2005) 'The Capital Structure Of Swiss Companies: An Empirical Analysis Using Dynamic Panel Data'. *European Finance Management* 11 (1), 51-69

Gill, A. et al (2009) 'The Determinants of Capital Structure in the Service Industry: Evidence from United States'. *The Open Business journal* (2), 48-53

Guney, Y., Li, L., & Fairchild, R. (2011) 'The Relationship between Product Market Competition and Capital Structure in Chinese Listed firms. *International Review of Financial Analysis* 20(1) 41-51

Gurcharan, S. (2010) 'A Review of Optimal Capital Structure Determinant of Selected ASEAN Countries'. *International Research Journal of Finance and Economics* (47), 30-41

Hall, G. C., Hutchinson, P. J., and Michaelas, N. (2004) 'Determinants of the Capital Structures of European SMEs'. *Journal of Business Finance & Accounting* 31 (5), 711-728

Harris, M., & Raviv, A. (1991) 'The Theory of Capital Structure'. *Journal of Finance* (1), 297-355

Ho-Yin Yue (2011) 'Determinants of Corporate Capital Structure Under Different Debt Maturities'. *International Research Journal of Finance & Economics* (66), 99-106

Huang S.G.H., and Song F.M. (2006) 'The Determinants of Capital Structure: Evidence from China'. *China Economic Review* (17), 14-35

Jensen, M.C., (1986) 'Agency Costs of Free Cash Flow, Corporate Finance and Takeovers'. *American Economic Review* (76), 323–329

Jensen M. C., Meckling W.H., (1976) 'Theory of the Firm: Managerial Behaviour, Agency Costs, and Ownership Structure'. Journal of Financial Economics 3 (4), 305– 360

Jucá, M. N., de Sousa, A. F., and Fishlow, A. (2012) 'Capital Structure Determinant's of North American Banks and the Compensation Executive Program-an Empiric Study on the Actual Systemic Crisis'. *International Journal of Business & Management* 7 (17), 13-26

Kaur, R. and Rao, N. K. (2009) 'Determinants of Capital Structure: Experience of Indian Cotton Textile Industry'. *Vilakshan: The XIMB Journal of Management* 6 (2), 97-112

Kayo, E. K. and Kimura, H. (2011) 'Hierarchical Determinants of Capital Structure'. *Journal of Banking & Finance* 35 (2), 358-371

Keshtkar, R., Valipour, H., and Javanmard, A. (2012) 'Determinants of Corporate Capital Structure Under Different Debt Maturities: Empirical Evidence from Iran'. *International Research Journal of Finance & Economics* (90), 46-53

Khan, Z. S. (2010) 'Determinants of Capital Structure: Case of Listed Paint Manufacturing Companies'. *Interdisciplinary Journal of Contemporary Research in Business* 2 (6), 253-271

Kouki, M. and Said, H. B. (2012) 'Capital Structure Determinants: New Evidence from French Panel Data'. *International Journal of Business & Management* 7 (1), 214-229

Kraus, A., and Litzebnerger, R. (1973) 'A State-Preference Model of Optimal Financial Leverage'. *Journal of Finance* (28), 911-922

Leland H.E., & Pyle D.H. (1977) 'Informational Asymmetries, Financial Structure, and Financial Intermediation'. *Joumal of Finance* (32), 371-387

Lim, T. C. (2012) 'Determinants of Capital Structure Empirical Evidence from Financial Services Listed Firms in China'. *International Journal of Economics and Finance* 4 (3), 191-203

Liu, Y. and Ren, J. (2009) 'An Empirical Analysis on the Capital Structure of Chinese Listed IT Companies'. *International Journal of Business and Management* (4), 46–51

Marsh, P. (1982) 'The Choice between Equity and Debt: An Empirical Study'. *Journal of Finance* (37), 121-144

Mateev, M., Poutziouris, P., and Ivanov, K. (2013) 'On the Determinants of SME Capital Structure in Central and Eastern Europe: A Dynamic Panel Analysis'. *Research in International Business and Finance* 27 (1), 28-51

Mishra, D., & Tannous, G. (2010) 'Securities Laws in the Host Countries and the Capital Structure of US Multinationals'. *International Review of Economics & Finance* 19 (3), 483-500

Modigliani, F. and Miller, M.H. (1958) 'The Cost of Capital, Corporation Finance and the Theory of Investment'. *The American Economic Review* 48 (3), 261–297

Modigliani, F. and Miller, M.H. (1963) 'Corporate Income Taxes and the Cost of Capital: A Correction'. *The American Economic Review* 53 (3), 433–443

Myers, S.C. (1977) 'Determinants of Corporate Borrowing'. *Journal of Financial Economics* (5), 147-175

Myers S. C. (1984) 'The Capital Structure Puzzle'. *Journal of Finance*, (34), 575–592

Myers, S., and N. Majluf (1984) 'Corporate Financing and Investment Decisions When Firms Have Information Investors Do not Have'. *Journal of Financial Economics* (13), 187-222

Nadem, M., Nabiei, H., Noroozi, M., Madine, S. M., and Chadegani, A. A. (2012) 'Determinants of Capital

Structure: Evidence from Iranian Listed Companies'. *International Research Journal of Finance & Economics* (101), 81-89

Nguyen, T. C. and Nguyen, T. C. (2012) 'The Factors Affecting Capital Structure for each Group of Enterprises in each Debt Ratio Threshold: Evidence from Vietnam's Seafood Processing Enterprises'. *International Research Journal of Finance & Economics* (94), 23-37

Nunkoo, P. K. and Boateng, A. (2010) 'The Empirical Determinants of Target Capital Structure and Adjustment to Long-Run Target: Evidence from Canadian Firms'. *Applied Economics Letters* (17), 983–90

Ozkan, A. (2001) 'Determinants of Capital Structure and Adjustment to Long Run Target: Evidence from UK Company Panel Data'. *Journal of Business Finance & Accounting* 28 (1), 175-198

Psillaki, M. and Daskalakis, N. (2009) 'Are the Determinants of Capital Structure Country or Firm Specific?'. *Small Business Economics* 33 (3), 319-333

Rasiah, D. and Peong, K. K. (2011) 'A Theoretical Review on the use of the Static Trade Off Theory, the Pecking Order Theory and the Agency Cost Theory of Capital Structure'. *International Research Journal of Finance & Economics* (63), 150-159

Rehman, S. u. and Rehman, M. u. (2011) 'Revisiting Determinants of Capital Structure: Evidence and Arguments'. *Interdisciplinary Journal of Contemporary Research in Business* 3 (7), 741-747

Ross, S.A. (1977) 'The Determination of Financial Structure: The Incentive Signalling Approach'. *Bell Journal of Economics*, 23-40

Sabir, M. and Malik, Q. A. (2012) 'Determinants of Capital Structure - A Study of Oil and Gas Sector of Pakistan'. *Interdisciplinary Journal of Contemporary Research in Business* 3 (10), 395-400

Saleem, F., Rafique, B., Mehmood, Q., Irfan, M., Saleem, R., Tariq, S., and Akram, G. (2013) 'The Determination of Capital Structure of Oil and Gas Firms Listed on Karachi Stock Exchange in Pakistan'. *Interdisciplinary Journal of Contemporary Research in Business* 4 (9), 225-235

Sayılgan et al. (2006) 'The Firm-Specific Determinants of Corporate Capital Structure: Evidence from Turkish Panel Data'. *Investment Management and Financial Innovations* 3 (3), 125-139

Sbeiti, W. (2010) 'The Determinants of Capital Structure: Evidence from the GCC Countries'. *International Research Journal of Finance and Economics* (47), 54-79

Seelanatha, S. L. (2010) 'Determinants of Capital Structure: Further Evidence from China'. *Economics, Management, and Financial Markets* 5 (4), 106-126

Shah, A. and S. Khan. (2007) 'Determinants of Capital Structure: Evidence from Pakistani Panel Data'. *International Review of Business Research Papers* 3 (4), 265-282

Shahjahanpour, A., Ghalambor, H., and Aflatooni, A. (2010) 'The Determinants of Capital Structure Choice in the Iranian Companies'. *International Research Journal of Finance & Economics* (56), 167-178

Sharif, B., Naeem, M. A., & Khan, A. J. (2012) 'Firm's Characteristics and Capital Structure: A Panel Data Analysis of Pakistan's Insurance Sector'. *African Journal of Business Management* 6 (14), 4939-4947

Smith, G. P. (2012) 'Capital Structure Determinants for Tax-Exempt Organisations: Evidence from the UK'. *Financial Accountability & Management* 28 (2), 143-163

Sogorb-Mira, F. (2005) 'How SME Uniqueness Affects Capital Structure: Evidence from A 1994–1998 Spanish Data Panel'. *Small Business Economics* 25 (5), 447–457

Stulz, R. M. (1990) 'Managerial Discretion and Optimal Financing Policies'. *Journal of Financial Economics* (26), 3-27

Teker, D., Tasseven, O., and Tukel, A. (2009) 'Determinants of Capital Structure for Turkish Firms: A Panel Data Analysis'. *International Research Journal of Finance and Economics* (29), 179-187

Titman, S, and R. Wessels (1988) 'The Determinants of Capital Structure Choice'. *Journal of Finance* 43 (1), 1-19

Tong, G., & Green, C. J. (2005) 'Pecking Order or Trade-off Hypothesis? Evidence on the Capital Structure of Chinese Companies'. *Applied Economics* 37(19), 2179-2189

Wald, J. (1999) 'How Firm Characteristics Affect Capital Structure: An International Comparison'. *Journal of Financial Research* 22 (2), 161-187

Westgaard, S., Eidet, A., Frydenberg, S., and Grosås, T. C. (2008) 'Investigating the Capital Structure of UK Real Estate Companies'. *Journal of Property Research* 25 (1), 61-87

Yang, C. C. et al (2010) 'Co-determination of Capital Structure and Stock Returns--A LISREL Approach: An Empirical test of Taiwan Stock Markets'. *The Quarterly Review of Economics and Finance* 50(2), 222-233

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

Appendix 1: List of all FTSE 100 Non- Financial Firms as 5th March 2013

Company	Sector	Market cap (£bn)	Employees
Royal Dutch Shell	Oil and gas	135	90,000
BP	Oil and gas	85	97,700
Vodafone Group	Telecomms	83	86,373
GlaxoSmithKline	Pharmaceuticals	73	97,389
British American Tobacco	Tobacco	69	87,813
SABMiller	Beverages	53	70,000
Diageo	Beverages	50	25,000
Rio Tinto Group	Mining	48	67,930
BHP Billiton	Mining	44	46,370
BG Group	Oil and gas	49	6,625
AstraZeneca	Pharmaceuticals	38	57,200
Xstrata	Mining	35	38,561
Unilever	Consumer goods	34	171,000
Reckitt Benckiser	Consumer goods	32	32,000
Tesco	Supermarket	29	519,671
Glencore International	Mining	27	57,656
National Grid plc	Energy	26	27,000
Anglo American plc	Mining	26	100,000
Imperial Tobacco Group	Tobacco	24	38,200
BT Group	Telecomms	20	89,000
Rolls-Royce Group	Manufacturing	19	40,000
Centrica	Energy	18	40,000
Compass Group	Food	15	471,108
Associated British Foods	Food	14	102,000
BSkyB	Media	14	22,800
SSE plc	Energy	13	20,000
WPP plc	Media	13	162,000
ARM Holdings	IT	13	2,000
BAE Systems	Military	11.8	107,000
Shire plc	Pharmaceuticals	11.7	4,200
Experian	Information	11.7	17,000
Tullow Oil	Oil and gas	11.2	890
CRH plc	Building materials	10.9	76,433
Fresnillo plc	Mining	10.8	2,449
Antofagasta	Mining	10.7	4,005
Pearson plc	Publishing	9.6	37,000
Wolseley plc	Building materials	9.1	44,000
Reed Elsevier	Publishing	8.9	30,200
Next plc	Retail clothing	6.9	58,706
Kingfisher plc	Retail homeware	6.7	80,000
Land Securities Group	Property	6.6	700
Morrison Supermarkets	Supermarket	6.5	132,000
J Sainsbury plc	Supermarket	6.5	150,000
Smith & Nephew	Medical	6.4	11,000
Burberry Group	Fashion	6.1	9,000

Company	Sector	Market cap (£bn)	Employees
Marks & Spencer Group	Supermarket	5.9	81,223
Capita Group	Support Services	5.9	46,500
InterContinental Hotels Group	Hotels	5.7	345,000
Intertek Group	Product testing	5.5	33,000
British Land Co	Property	5.1	177
Petrofac	Oil and gas	5.1	18,200
United Utilities	Water	5.0	5,096
Smiths Group	Engineering	5.0	23,550
Weir Group	Engineering	5.0	14,000
Aberdeen Asset Management	Fund management	4.9	1,800
Randgold Resources	Mining	4.9	6,954
Johnson Matthey	Chemicals	4.9	9,700
ITV	Media	4.8	4,059
Aggreko	Generator hire	4.6	4,262
Carnival plc	Leisure	4.6	86,800
Whitbread	Retail hospitality	4.5	86,800
International Consolidated Airlines Group SA	Transport air	4.5	58,476
GKN	Manufacturing	4.4	40,000
Eurasian Natural Resources	Mining	4.3	72,000
Bunzl	Industrial products	4.3	12,368
Sage Group	IT	4.3	12,300
G4S	Security	4.1	657,125
Rexam	Packaging	4.1	19,000
IMI plc	Engineering	3.9	14,700
Babcock International	Consulting	3.9	25,000
Tate & Lyle	Food	3.9	5,616
Severn Trent	Water	3.8	8,051
Polymetal International	Mining	3.7	8,051
Hammerson	Property	3.7	277
Resolution plc	Investment	3.7	40
Meggitt	Engineering	3.6	7,370
Croda International	Chemicals	3.5	3,200
TUI Travel	Leisure	3.5	53,000
Evraz	Mining	3.5	110,000
AMEC	Consulting	3.3	29,000
Serco Group	Outsourced services	3.1	100,000
Vedanta Resources	Mining	1.2	32,000
Wood Group	Oil and gas	0.8	41,000
Kazakhmys	Oil and gas	0.5	61,000
Intu Properties	Property services	0.3	600