

The Impact of Financing Decisions on Firm Performance

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Abstract: *This research investigates the impact of financing decisions on firm performance. Firm financing decision has been an issue of discussion among researchers for decades. However there is no consensus on the optimal mix of debt to equity ratio in firms capital structure, similarly there is mixed evidence on how capital structure variables influences debt to equity decision of a firm. Most of the existing empirical studies were conducted in the US; however few studies were conducted using UK firms. This study has provided evidence base on UK firms where the sample of the study consist of FTSE 100 and FTSE 250. The data for the study were collected from Thomson Reuters DataStream for the fiscal year 2015. Data were analysed using Eviews software and variables were regressed using ordinary least square.*

The results reveal that leverage decision of UK firms can be influenced by the traditional capital structure determinants in which it reveals evidence in support of trade-off theory. The result shows a strong evidence of positive relationship between profitability and leverage, firm size and leverage as well as debt tax shields with leverage. This suggests that target leverage exist within the UK firms. On the other hand the study finds a strong evidence of negative association between asset tangibility and leverage which contradicts the assumption of collateral power of an asset when raising debt. The result also shows evidence of negative relationship between non-debt tax shields and leverage as well as no relationship between market to book value and leverage.

The study has contributed by providing additional evidence on the influence of capital structure variables on UK firms financing decisions. The study recommends further research using large data for a longer period and also to include different variables such as macro-economic variables.

Keywords: *Capital, Decision, Financing, Leverage*

Date of Submission: 21-02-2019

Date of acceptance:08-03-2019

I. Introduction

Financing decision is a decision concerning the liabilities and stockholder's equity side of the firm's balance sheet, such as the decision to issue bonds (Graham, Harvey & Puri, 2012). Thus, financing decisions are decisions regarding the method that are used to raise funds for the purpose of making acquisitions and investments. These decisions are mainly concerned with the capital structure of the firm, which is the way in which the company finances its assets using the combination of financing sources. The relevance of capital structure in determining corporate performance regarding profitability and firm's value has been a topic of discussion to researchers. Capital structure decisions are vital because a change in the gearing ratio can affect a company's financing ability, risk, and cost of capital, investment and strategic decisions and ultimately shareholder returns (Adami et al. 2015; Muradoglu & Sivaprasad, 2012).

The stepping stone in modern day capital structure argument is Modigliani and Miller (1958). They argue that leverage decision has no impact on firm's value, which implies that firms, which fully finance their investment with equity alone or debt or a combination of debt and equity, will make no difference to the share value. Though they based their argument on an unrealistic assumption of a perfect world with no tax, no transaction cost. However, when they introduced tax in to their model in 1963, they then argue that with tax advantage of debt financing, firms can use as much debt as possible when they have choice of maximising share price. This assumption was criticised for not considering agency and bankruptcy cost of debt financing. This gave rise to the theory that takes bankruptcy costs into account, the trade-off theory.

The trade-off theory predicts that, despite the tax relief that favours debt financing, firm should consider balancing between the tax benefit and cost of financial distress to maximise share value. Hence the trade-off theory predicts a target leverage that optimises firm value. This notion is contradicted by the pecking order theory, introduced by Myers and Majluf (1984). The pecking order theory suggests that firms financing policy are made based on preference, but not a target debt ratio as proclaimed by the trade-off theory. They further state that firm financing decisions are determined by the cost of adverse selection emerging from asymmetry of information among the well-versed managers and less-versed investors. This theory posits that there is a preference of financing from internal source of finance and, when these are exhausted, firms prefer

safer debt to riskier equity. Hence inconsistencies exist within the literature on the effective financing pattern of firms.

Previous literature shows that there are various arguments on how firms finance their expansion and growth in both theories and empirical studies. One of the arguments is that firms make financing decisions to maintain an optimal capital structure that has a positive impact on firm's performance (Myers, 1984; Scott, 1977; Baumal & Malkiel, 1967). Consequently, many other studies examined the determinants of capital structure that can influence firm's debt to equity decision (Rampini & Viswanathan, 2010; Leland, 1994; Bierman & Thomas, 1972; Kraus & Litzenberger, 1973). This study is aimed at identifying whether there is evidence in support of this argument. In particular, this study aims to identify what factors determine capital structure choice on the example of the UK corporations in 2015 and to identify the relationship between leverage ratio and its determinants.

Empirical studies are victorious in pinpointing the variables that are vital for determining firm leverage choice; however the studies do not provide reconciled findings on the influence of such determinants on firms leverage decision. For instance, Fama and French (2002) argue that there is an adverse relation between profitability and leverage, and this adverse relation supports the pecking order hypothesis. However they reveal a balancing relationship between leverage and change in profitability. This suggests that the influence of profitability will partially be as a result of temporal change in leverage but not change in target. Baker and Wurgler (2002) reveals that the perceived debt to equity decision mirrors the aggregate result of equity market timing but not because of either the trade off or pecking order assumption. However, Hovakimian, Hovakimian and Tehranian (2004) contend that their aggregate result inclined to the argument that firms have target leverage. They reveal that choice of internal funding as well as attractiveness of selling equity by timing the market when stock value is high impede with the possibility to hold firms leverage towards its target. Similarly, Harford, Klasa and Walcott (2009) find evidence of target leverage and that company management try not to deviate from the target. Korteweg (2010) finds optimal leverage as positively related to the ratio of tangible assets and negatively related to depreciation, profit volatility and market to book ratio, while Salman and Munir (2012) argue that firms prefer equity financing than debt as against pecking order assumptions. Hence because of the inconsistency in findings further research was suggested by a number of scholars. Numerous studies conducted were based on firms in the United States, they recommend that further study is needed to enhance the understanding of the relationship between theories and empirical findings from outside the United States. Later research by Graham, Leary and Robert (2015) also identifies that current debt to equity structure models are unable to explain firms leverage change. Additionally Mugosa (2015) finds mixed evidence in support of pecking order and the trade-off theory and suggests that further study is required on target capital structure and its influence on corporate decision in Europe.

Hence the aim of the study is to examine the relationship between leverage and its determinant using a sample of the largest UK non-financial firms in 2015. The study will, therefore, provide results on the influence of firm's variables on leverage decision.

II. Literature Review:

2.1 Introduction

After the pioneering study by Modigliani and Miller, a number of theories were developed to describe the capital structure Model of the firm. The theories include the trade off, pecking order, agency cost and market value theories. The trade-off theory predicts that, despite the tax relief that favours debt financing, firm should consider balancing between the tax benefit and cost of financial distress to maximise share value. Hence the trade-off theory predicts a target leverage that optimises firm value. This notion is contradicted by the pecking order theory, introduced by Myers and Majluf (1984). The pecking order theory suggests that firms financing policy are made based on preference, but not a target debt ratio as proclaimed by the trade-off theory. They further state that firm financing decisions are determined by the cost of adverse selection emerging from asymmetry of information among the well-versed managers and less-versed investors. This theory posits that there is a preference of financing from internal source of finance and, when these are exhausted, firms prefer safer debt to riskier equity. Hence inconsistencies exist within the literature on the effective financing pattern of firms. Scholars have mentioned some factors in the literature which they believe can determine the firm's financing decision. These factors include profitability, asset tangibility, firm size, non-debt tax shield, market to book value and taxation. The relationships between these variables and leverage were examined in the literature and finds inconclusive results. Hence, this study intends to bring some evidence of how these variables influence firm's financing option.

Relationships between Leverage and it's Determinants

Adami et al. (2015) examine the relationship between capital structure and shareholders returns in the UK between 1980 and 2008. They expand on Modigliani and Miller's (1958) Proposition II and find that

gearing impact negatively on firms value. Contrary to the known capital structure theory which states that firm's value increase with an increase in gearing to compensate the financing risk imposed by gearing that is the relationship between gearing and firm's value is linear. Adami et al. (2015) examines a company with gearing ranging from zero to ninety-nine percent and find a negative and significant relation between gearing and returns. Therefore, this study intends to contribute to the field of knowledge because of the gap about the relationship between leverage and stock returns, and also the optimal combination of debt and equity and its impact on firm's value. In fact, the already excellent contribution of Modigliani and Miller (1958) deals primarily with unrealistic assumptions, which show that the financing decision makes entirely no difference to firm value and any decision, is necessarily optimal. D'Mello and Gruskin (2014) observe that over the previous decades there is a declining propensity of firms to be levered. Graham's (2006) reveals that capital structure of the firms has less than optimal leverage despite the debt advantage. Hence understanding the relationship between leverage and its determinants can assist firms in their leverage ratio decision. These determinants include profitability, asset tangibility, firm size, non-debt tax shields, market-to-book ratio and taxation.

Profitability

The trade-off theory predicts a positive relationship between leverage and profitability; this is because firms generally prefer debt for tax considerations (Modigliani & Miller, 1963). Profitable firms would, therefore, employ more debt because increased leverage would increase the value of their debt tax shield. Moreover highly profitable firms may have more debt in their capital structure due to agency and bankruptcy costs. This is because highly profitable firms are less likely to be subject to bankruptcy risk because of the better position to meet their debt repayment obligations. Consequently, they will require more debt to maximise their tax shield at more attractive costs of debt. According to Jensen and Meckling (1976), managers of highly profitable firms may have excess cash to pursue more incentives, or to finance less profitable projects for the firm, but more in their own interests.

However, Myers and Majluf (1984) predict a negative association between leverage and profitability since highly profitable firms can generate more funds through retained earnings and then have less leverage (Rajan & Zingales, 1995). Compared with debt and equity, retained earnings have no adverse selection problem, and hence, they are the cheapest source of finance. However, when outside funds are necessary, firms prefer debt to equity because of lower information costs associated with debt issues. This notion is consistent with the pecking order theory.

Therefore, consistent with the most recent literature Kayhan and Titman, (2007); Frank and Goyal, (2009); Mugosa, (2015), this study predicts a negative relationship between leverage and profitability.

Asset Tangibility

Assets tangibility signifies the effect of the collateral values of assets on the firm's leverage level. The important debate on the use of tangible assets as collateral for debt is attributable to the higher liquidation value of these assets in the event of financial distress or bankruptcy (Rajan & Zingales, 1995). Lenders will demand a minimum risk premium from firms with more tangible assets, because the risk of lending to these firms is expected to be low. Moreover, by issuing a secured debt, opportunities of firm's to engage in asset substitution can be reduced. Equally, Jensen and Meckling (1976) and Myers (1977) reveals that, stockholders of levered firms may have a reward to invest sub-optimally in order to expropriate wealth from the firm's bondholders which gives rise to conflict among stockholders and bondholders. A borrower could be restrained to use the funds for a particular project, if the debt is collateralised, thus reducing the agency cost of asset substitution and then the cost of debt. Therefore, the trade-off theory supports a positive relationship between leverage and the tangibility of assets (Rajan & Zingales, 1995). Myers and Majluf, (1984) conclude that issuing debt which is collateralised, avoids the costs related with issuing shares. This suggests that firms with more secured tangible assets will be able to issue more debt at an attractive rate since debt may be more readily available. This can give raise to a positive relationship between leverage and tangibility. This is also consistent with more recent studies by Frank and Goyal (2009), Kortoweg, (2010). Hence the study predicts that there is a positive relationship between leverage and asset tangibility.

Firm's Size

Many empirical evidence shows that firm size plays an important role in the capital structure decision. Titman and Wessels (1988) in agreement with Chen and Strange (2005) argue that big firms are more diversified and possibility of being bankrupt is minimum compared to smaller firms. Hence firm size could be an inverse substitute of the likelihood of bankruptcy and, therefore, larger firms can borrow at more favourable risk-adjusted interest rates than smaller firms. As a result, the trade-off theory predicts a positive relationship between leverage and the firm size. The cost of issuing debt and equity can also be related to firm size. For instance, for a small firm to issue new equity the cost is higher than large firms and also to some extent higher to

issue long-term debt. Hence small firms could be more leveraged than large firms and may wish to borrow short-term debt, while large firms should be more capable of issuing equity (Rajan & Zingales, 1995). Titman and Wessels (1988) and Rajan and Zingales (1995) proposed that a firm prefer equity financing because growth prospects denote the expected growth of firm's intangible assets that is generated by managerial skills and competence. Subsequently, these assets do not have collateral value and decline rapidly in value if bankruptcy or financial distress arises, which will reduce the firm's ability to raise debt financing.

Furthermore, the agency costs are higher for growing industries since they have more flexibility in selecting their future investments and so to expropriate wealth from firm's bondholders (Titman & Wessels, 1988). Hence, lenders will require higher risk premium if the debt is not collateralized, making debt more expensive. Consequently, the trade-off theory suggests a negative relationship between leverage and growth opportunities.

However, the pecking order theory of Myers and Majluf (1984) suggest that internal funds may be insufficient to finance the positive investment opportunities of the growing firms and, hence, they are expected to be in need of external funds. According to the pecking order model, if external funds became necessary, firms will prefer debt to equity because of lower costs associated with debt issues. Hence, Frank and Goyal (2009) suggests a positive relationship between leverage and growth opportunities. Hence, this study predicts a positive relationship between leverage and firm size.

Non-debt tax shields

According to the trade-off theory, the main advantage of borrowing is the tax benefits of interest payment. Thus, firms that are bound to pay corporate tax will increase their leverage in order to reduce their tax bill (Modigliani & Miller, 1963). However, firms with non-debt tax shields, such as depreciation and investment tax credit deductions, will have less benefit to increase leverage for tax considerations because these deductions are independent of firms financing (DeAngelo & Masulis, 1980).

Moreover, leverage become more expensive due to the presence of non-debt tax shields, since the marginal tax savings from an extra unit of debt declines with increasing non-debt tax shields (DeAngelo & Masulis, 1980). Korteweg (2010) finds a negative relationship between leverage and non-debt tax shields. This is because the likelihood of bankruptcy rises with leverage, which makes the marginal benefit low which implies a negative relationship between leverage and non-debt tax shields. Therefore this study assumes a negative relationship between leverage and non-debt tax shields.

Market-to-book ratio

According to Myers (1977), higher bankruptcy cost is associated to firms with higher growth; hence managers might bring down the debt ratio to prevent bankruptcy. Similarly, firms with higher growth may need more cash to expand their business. Korteweg (2010) finds a negative relationship between leverage and market-to-book ratios. Graham, Leary and Roberts (2015) finds that, despite a sharp drop of market-to-book ratios in the 1970s, was highly stable or moderately increasing over the century. They further reveal that, this pattern is not easy to be reconciled with the high movements in leverage and existing empirical evidence showing a robust negative relationship between leverage and market-to-book. Hence, this study predicts a negative relationship between leverage and market-to-book ratio.

Taxation

To ascertain the impact of leverage on firm's value, taxes are an essential aspect to be considered (De Angelo & Masulis, 1980). Firms might be encouraged to borrow more so as to maximize their value because interest expenses are deducted from income before taxes there by reducing the tax base as well as the gross income. Hence, large firms are in a better position to benefit from this tax shield than the smaller firms (Lim, 2012), particularly when tax rates are high (De Angelo & Masulis, 1980). However, firms can gain a tax advantage through the non-debt tax shields, such as depreciation and/or amortisation, cost of research and development and investment tax credit deductions. Firms with non-debt tax shield will have less benefit to increase leverage for tax considerations because these deductions are independent of firms financing (DeAngelo & Masulis, 1980; Fama & French, 2002). In accordance with trade-off theory, firms raise debt so as to gain a tax benefit associated with debt and it suggest a positive relationship between leverage and taxes. Graham, Leary and Roberts (2015) find a robust positive relation between corporate tax rate and leverage decision. Therefore, this study predicts a positive relationship between corporate tax rate/debt tax shield effects and leverage decision

Research Methodology

Conducting a business research could be influenced by the strategy employed (Bryman & Bell, 2011). Essentially, there are two different methods to carry out research which is qualitative research and quantitative research. Quantitative research entails the collection of numerical data and exhibiting a view of the relationship

between theory and research as deductive. Hence this study employs a quantitative strategy in which hypotheses are developed and tested.

Deductive research is directed towards developing a hypothesis and therefore is an approach more suitable to quantitative research. The process involves theory development based on existing literature and then hypothesis testing to see whether same results are produced. This study uses a deductive approach, whereby theories are tested using hypotheses testing (Bryman & Bell, 2011). In this study, the model was developed to test whether there is any statistically significant relationship between leverage levels and its determinants. It helps to address the aim and objectives of the study.

Since the aim of study is to empirically investigate factors that influence capital structure choice of UK non-financial firms. The target population of the study includes all UK listed non-financial firms where a sample of the top 350 UK publicly listed firms (FTSE100 and FTSE250) was drawn. This study uses this sample because, FTSE100 are the largest UK listed firms and FTSE 250 is the second largest, which allows for a better representation of firms of different size. Consistent with the existing literature such as Rajan and Zingales (1995), Mittoo and Zhang (2008), Muradoglu and Sivaprasad (2012), Vatavu (2013) and Adami et al. (2015), all financial corporations are excluded from the sample.

The study uses cross-sectional data for the non-financial companies for the year 2015. In light of the recent global financial crisis, this can provide additional contribution to the existing literature on the factors that can explain capital structure decision of the firms. The source of all firm-specific financial data is Thomson Reuters DataStream.

Data Analysis

The study performs the following steps in order to investigate the determinant of leverage. It first provides the description/summary statistics of all the variables included in the analysis. This is done by means of the descriptive statistics. The second stage is to examine whether there is any linear relationship between leverage and its determinants by means of the correlation analysis. The final step is to perform the hypothesis testing by using regression model analysis.

Model Developments

To examine the relationship between leverage and firm specific determinant of capital structure, the following Regression Model is developed based on the underlying theories of capital structure and the existing empirical literature. Following Rajan and Zingales (1995), Mittoo and Zhang (2008) and Vatavu (2013) this study discloses some important factors in capital structure. Leverage ratio is regressed on six capital structure variables that are commonly used in the capital structure literature. The following model is developed.

$$LEV_i = \alpha + \beta_1 PRO_i + \beta_2 TAN_i + \beta_3 SZ_i + \beta_4 NDT_i + \beta_5 MTB_i + \beta_6 DTS_i + \varepsilon_i$$

Where LEV is leverage ratio, PRO is profitability, TAN means asset tangibility, SIZE – firm size, NDT is non-debt tax shields, MTB is market-to-book and DTS is debt tax shields. Alpha (α) is the unknown intercept, i represent a company, β 's are the coefficients for every independent variable and ε is the error term.

Leverage ratio is measured as total book value of debt divided by book value of equity plus debt ratio. Profitability is measured by two variables that is return on assets and return on equity. This is consistent with Cai and Zhang (2011) and Chadha and Sharma (2015), who also use return on assets and return on equity to measure profitability. Hence the study attempts to establish the relationship between return on assets and return on equity with firms leverage.

Following Rajan and Zingales (1995), Mittoo and Zhang (2008) and Vatavu (2013), the study also uses asset tangibility, firm size, non-debt tax shields, market-to-book ratios, and debt tax shields as additional variables that can influence leverage. Tangibility is measured by total assets minus current assets divided by the total book value of assets. Company size is measured by natural log of total assets as suggested by Bessler et al. (2013). Non-debt tax shield is measured by depreciation divided by equity plus total debt. Market-to-book is calculated using market value of equity divided by the book value of equity (Bessler et al., 2013). Debt tax shield is measured by the interest expenses on debt divided by the total assets.

III. Results, Analysis and Discussion

This section presents results from the empirical analysis that helps to examine firm characteristics and whether there are significant relationship between any of the firm characteristics and their debt ratios.

Descriptive Statistics

The first step involves the examination of the main features of the data by means of the descriptive statistics. It is performed in order to examine variables' characteristics and the distribution of each variable of interest.

Descriptive statistics can also help to find whether there are any errors in the data. The results are presented in Table 1.

Table 1 Descriptive Statistics

	LEV	ROA	ROE	TAN	SZ	NDT	MTB	DTS
Mean	0.250556	0.065211	0.190140	0.556688	15.08043	0.041481	1.109651	0.015267
Median	0.247142	0.069853	0.179693	0.477208	14.81970	0.036670	1.020018	0.013694
Maximum	0.666523	0.221226	2.186351	1.673473	19.52965	0.136570	2.677718	0.053950
Minimum	0.000000	-0.208469	-0.903402	0.026732	12.44801	0.000461	0.016794	0.000000
Std. Dev.	0.149332	0.069342	0.322942	0.364591	1.455729	0.030144	0.645676	0.010505
Skewness	0.256775	-0.974188	2.382989	1.001661	0.821496	0.698690	0.600277	0.749385
Kurtosis	2.672589	5.179122	19.93653	3.440774	3.318551	2.986823	2.660701	3.307351
Jarque-Bera	2.642882	60.88128	2205.619	29.97903	19.95638	13.91403	11.08974	16.67803
Probability	0.266751	0.000000	0.000000	0.000000	0.000046	0.000952	0.003907	0.000239
Sum	42.84500	11.15101	32.51402	95.19360	2578.754	7.093176	189.7504	2.610591
Sum Sq. Dev.	3.790998	0.817411	17.72956	22.59754	360.2550	0.154470	70.87247	0.018761
Observations	171	171	171	171	171	171	171	171

Table 1 above shows descriptive statistics of the study sample, in which most variables have skewness value less than one that is nearly zero after removing some outliers, except ROE and TAN with skewness value of 2.38 and 1.00 respectively. This implies that most of the variables are normally distributed as suggested by (Bryman & Cramer, 2009) a variable is said to be normally distributed if it has a skewness value of zero or nearly zero. However, any result influence by those variables that has a skewness value of 2.38 for return on equity (ROE) and 1.00 for tangibility (TAN) need to be interpreted with caution. Though considering the standard deviation of 0.32 and 0.36 for ROE and TAN, the data are spread close to the mean which implies a typical value for the distribution (Saunders, Lewis & Thornhill, 2016).

The table also reveal an average leverage of 0.25 which implies the average level of indebtedness by the UK firm's amount to 25% of their total assets, and a reasonable standard deviation of 0.15. Moderate variance around the mean might imply existence of target leverage but firms potentially deviate from target ratio. Bancel and Mitto (2004) find an evidence of target leverage in capital structure of European firms as suggested by trade-off theory. The table also reveal that the sample might include a number of firms that are underleveraged or overleveraged by taking into account the maximum and minimum value of the leverage ratio of 0.7 and 0.00 respectively (Uysal, 2007). Dang (2013) find an evidence of zero leveraged firm in the UK, in his study on zero-leverage using a sample of UK firm's for the period between 1980 to 2007.

When profitability was measured by ROA (net earnings divided by total asset), it shows a mean of 7 percent which implies that these firms earns 7 percent profit on their assets, this show a moderate performance. However, when profit is measured by return on Equity it shows an average return of 19 percent, this suggest that the owners of these firms earns a profit of 19 percent on their assets which involves a better performance. Market-to-Book variable has a mean of 1.11; this implies that the market value of the companies in the sample on average equals 1.11 times the book value of their assets. This means that UK firms have valuable investment opportunities. Though a ratio of market to book above 1 might not necessarily show that a firm has viable growth opportunity, as market to book may also be more than 1 if the firm was committed to a positive net present value (NPV) projects. Nevertheless, market to book might not straight away measure growth opportunities it can be a good proxy as found in Barklay and Smith (1999) in which they reveal that market to book variable produce similar result to those found with other proxies for growth opportunities. Asset tangibility on average is shown to be 0.56, this suggest that large proportion of total assets of the firms in the sample represent tangible assets. Tangibility is considered as a proxy of collateral, hence large value of tangibility implies that firms have strength of increasing borrowing because collateral can minimise agency cost of debt by making managers responsible for the interest rate payments and less prone to wasteful activities, such as investing in negative NPV projects. Myers and Majluf (1984) suggest that tangibility could be related to higher debt capacity. As collateral minimises agency cost, hence firm with collateral might have less interest rate of debt. Another variable is the firm size which shows an average of £3.4m. This might be because the sample comprise firms on FTSE 100 and FTSE 250 the largest 350 UK firms. Large firm size implies the capacity of the firms to employ more debt. Myers and Majluf (1984) argue that problem of information asymmetry among firm insiders and capital market tend to be less for larger firms, as a result they are more prone to issue debt.

Correlation Analyses

The next step is to perform the correlation analysis in order to establish whether there is linear relationship between leverage and its characteristics.

Table 2 Correlation Analysis

	LEV	ROA	ROE	TAN	SIZE	NDT	MTB	DTS
LEV	1							
ROA	-0.081806	1						
ROE	0.186083	0.669599	1					
TAN	-0.368883	0.101119	0.050504	1				
SIZE	0.271527	-0.180053	0.024782	-0.102941	1			
NDT	0.162567	-0.155571	0.046563	-0.138978	0.277921	1		
MTB	-0.212677	0.460611	0.202004	0.020346	-0.432706	-0.225205	1	
DTS	0.669027	-0.123698	0.187583	-0.069266	0.230184	0.279265	-0.257028	1

Correlation analysis reveals the direction and strength of the relationship between leverage and its determinants. However, it only allows establishing the relationship between two variables at a time. According to Saunders, Lewis and Thornhill (2016), correlation of 0.00 is said to be perfectly independent, while correlation is said to have no relationship if the coefficient range from 0.01- 0.19, from 0.2-0.34 weak, from 0.35-0.59 moderate, from 0.60-0.79 strong, from 0.80-0.99 very strong and 1 perfectly strong. Correlation also explains how independent variables correlate with each other to identify multi-collinearity problem.

As it can be observed from table 2, there exist various levels of relationship between the dependent and the explanatory variables. For instance, the table indicates a negative correlation coefficient of 0.08 between return on asset and leverage ratio, which implies almost no relationship between ROA and the Leverage ratio. This result is consistent with the established hypothesis in terms of sign. However, the coefficient is very small, which it is contrary to the assumptions made in which it was presumed that there is a linear association between leverage and ROA. Hence any result related to ROA will be interpreted with caution because it might occur by chance. However, there is a positive though weak relationship between Leverage and ROE, with a correlation coefficient of 0.19. This result does not support the predicted sign made using pecking order theory assumptions that the relationship between leverage and profitability is negative. Rather it supports the assumption of the trade-off theory which state that firms generally prefer debt because of the tax benefit associated with debt financing.

On the other hand, the relationship between tangibility and leverage has a negative and moderate correlation with a coefficient of 0.37, which is contrary to the predicted sign made in line with the trade-off argument that there is positive correlation between leverage and tangibility of assets. This result is consistent with Hall (2012) who examines leverage and tangibility in small and privately held emerging market firms. From the range of countries he reviewed, he finds a negative coefficient on tangibility of 0.14 for Portugal firms. Though, for other countries his results reveal a positive relationship between leverage and tangibility. Correlation between leverage and size is consistent with the expected sign. The correlation coefficient of size is found to be 0.27 which is statistically significant but weak relationship. This implies that larger firms are more likely to have more debt in their capital structure as suggested by the trade-off theory. The table also reveals that the correlation coefficient for the relationship between leverage and non-debt tax shield is 0.16, which means there is almost no significant relationship between the two variables. The sign of the relationship is however consistent with the prediction. Consistent with the hypothesised sign, the results reveal a negative statistically significant relationship between leverage and market to book value. Though, it is a weak relationship with the coefficient value of a negative 0.21. An interesting finding is that among all of the variables, debt tax shield has the strongest relationship with leverage. Consistent with the predicted sign, debt tax shield has strong positive correlation with leverage.

Finally, it is important to address the issue of multi-collinearity. It can be observed that most of the cross-correlation terms for the explanatory variables are moderately small, hence given little cause for concern about the issue of multi collinearity among the variables, except the relationship between ROA and ROE in which there is a strong relationship, because both of the variables measure profitability. These variables will not be included in the model at the same time.

Table 3 summarises the results obtained from the correlation analysis together with the hypothesized relationship predicted in the beginning of the study.

Table 3: Summary of correlation results

Variables	Hypothesis	Correlation Result	Significance
Profitability (ROA)	-	-	No relationship
Profitability (ROE)	-	+	Weak
Tangibility	+	-	Moderate

Size	+	+	Weak
Non-debt Tax Shield	-	+	No relationship
Market to Book	-	-	Weak
Debt Tax shields	+	+	Strong

The following section presents results from the regression analysis where leverage is regressed on a set of firm characteristics.

Regression Analysis – multivariate analysis

The final step in the analysis is to perform a regression analysis, where firms’ leverage is regressed on a number of factors found to be important in determining debt levels. This is done using Ordinary Least Method in order to calculate coefficients, establish their sign and statistical significance. The analysis is performed using EViews software and results are presented in Table 4. Table 4 show results from four different models, where in Models1 & 2 leverage is regressed on ROA as a measure of profitability and a set of other firm-specific factors. While Models 3 and 4 leverage is regressed on ROE as a measure of profitability and a set of other firm-specific determinants.

Table 4: Regression Analysis

Variables	M1 ROA – all variables	M2 ROA –significant variables only	M3 ROE – all variables	M4 ROE–significant variables only
	Coefficient (standard error)			
PRO	0.095037 (0.119545)	0.083952 (0.075750)	0.045217* (0.024984)	0.057480*** (0.019510)
TAN	-0.136001*** (0.021284)	-0.118617*** (0.018961)	-0.136581*** (0.021145)	-0.125186*** 0.018784
SIZE	0.011006* (0.005984)	0.012148*** (0.004922)	0.010258* (0.005975)	0.012218*** (0.004734)
NDT	-0.465625* (0.273606)	-0.280849 (0.219744)	-0.493789* (0.271877)	-0.385239* (0.217646)
MTB	-0.009802 (0.014748)		-0.010469 (0.013872)	
DTS	9.035333*** (0.753110)	9.259490*** (0.672955)	8.824333*** (0.793975)	8.993184*** (0.678441)
Constant	0.046018 (0.097378)	-0.003057 (0.074336)	0.060673 (0.097871)	0.001747 (0.070286)
Regression Stats				
No obs	172	203	171	201
Adjusted R ²	0.558794	0.593980	0.561619	0.608707
F-stat	37.09574	60.10248	37.29847	63.22511
Prob(F-stat)	0.000000	0.000000	0.000000	0.000000

*** means significant at 1% level; ** at 5%; * at 10%; standard error is shown in brackets (); Model 1 (M1) shows results from the model where leverage is regressed on ROA as a measure of profitability and all other independent variables; Model 2 (M2) shows results from the regressions model where leverage is regressed on ROA and all independent variables that were significant in M1; Model 3 (M3) shows results from the model where leverage is regressed on ROE as a measure of profitability and all other independent variables; Model 4 (M4) shows results from the regressions model where leverage is regressed on ROE and all independent variables that were significant in M3.

Table shows a summary of the results from regression models and establishes whether these are consistent with the predicted relationship stated by the Hypotheses in the Literature Review Section.

Table 5: Summary of Results

Variables	Hypothesis	Sign from Regression	Results
PRO (ROA)	-	+	Reject
PRO (ROE)	-	+	Reject
TAN	+	-	Reject
SIZE	+	+	Support
NDT	-	-	Reject
MTB		- (insignificant)	Reject
DTS	+	+	Support

It can be seen from table 5 that regression analysis was performed on four models. By looking at the overall regression result (F-stats and R²), it can be observed that all the models reveal a statistically significant relationship between the leverage ratio and most of the explanatory variables. This can be shown by the F-stat that shows that overall the models perform well and at least one variable is statistically significant in explaining debt levels of the firms. Another characteristic of the overall result is that, the adjusted R²'s of the regression generally have a relatively high magnitude (ranges between 56-60%). This implies that the model generally explains about 60% of the variation in leverage ratios, whereas there could be some other factors that are not included in the model that could add to the explanatory power of the model. These could include economic factors, for example, GDP growth or interest rates.

Comparing the four models, it can be concluded that the results found are similar across all the models, specifically in terms of sign and its relationship with leverage ratio. It is important to indicate that in models 1 and 3, the author uses all determinants of capital structure. The difference is that in model 1 profitability is measured by return on assets, whereas in model 3 it is measured by the return on equity.

The analysis of models 1 and 3 with all the variables included reveals that relationship between leverage and market to book is not statistically significant in both models, while relationship between leverage and profitability was also not statistically significant only for model 1. Hence model 2 and model 4 were formulated by removing market to book variable which was statistically insignificant in both models (M1 & M3). By examining models 2 and 4, model 4 reveals that all the variables have statistically significant relationship with leverage ratio, while model 2 shows that leverage is not statistically significant with profitability and non-debt tax shields.

IV. Discussions of the Main Results

Leverage and Profitability

The author of this study defines leverage based on Adami et al., (2015) as the ratio of total debt to total assets. It can be observed from the first model in terms of sign, that the regression result reveal a positive relationship between profitability and leverage when profitability was measured by return on assets which is contrary to the predicted relationship. While in terms of its statistical significance in explaining the leverage ratio, models 1 & 2 shows that profitability measured by ROA is not statistically significant with leverage. This is consistent with Bennett and Donnelly (1993) in which they find a positive insignificant relationship between profitability and leverage when they use book value of asset in measuring leverage. Similarly, Korteweg and Strabulaev (2012) show an insignificant positive correlation between leverage and profitability, this might be because profitable firms have low possibility of financial distress which can boost their reputation from lenders view point. However, in models 3 & 4 when profitability is measured by ROE, the relationship becomes statistically significant. This is consistent with the trade-off theory which argues that Profitable firms would employ more debt because increased leverage would increase the value of their debt tax shield. Moreover highly profitable firms may have more debt in their capital structure due to agency and bankruptcy costs. This is because highly profitable firms are less likely to be subject to bankruptcy risk because of the better position to meet their debt repayment obligations. Jensen (1986) argues that positive relation between profitability and leverage occurs if the takeover market is effective in compelling businesses to commit to paying out cash by going for leverage. In this type of market profitable companies management cannot shun the disciplinary role of leverage and debt suppliers might be more eager to lend to businesses with higher profits.

Leverage and Tangibility of Assets

The result for all four models reveals a negative and statistically significant relationship between leverage and tangibility of assets (-0.1360, -0.118617, -0.136581 and -0.125186) with p-value less than 0.01. This is an interesting result, because it is contrary to the stated hypothesis and the trade-off model of capital structure in which it emphasised the collateral power of tangible assets for an attractive interest rate of debt financing thereby increasing debt. This view was supported by various empirical studies (Rajan & Zingales, 1995; Frank & Goyal, 2004; Korteweg, 2010). However, this study's finding of negative relationship between leverage and tangibility is consistent with some empirical studies. For instance, Titman and Wessel (1988) finds a negative relationship between leverage and tangibility, they argue that profitable firms tend to use internal fund to finance their investment in line with pecking order theory assumptions. Similarly, Cornelli et al (1996) and Nivorozhkin (2002) argue that the negative association between leverage and tangibility of assets was influenced by the absence of long term financing, while Lauk (2014) concluded that central banks in the Europe encourages short term financing in the last decade. He further pointed that firms are largely refinancing long term projects with short term debt. As this study uses data for of post financial crisis period, Malinic et al. (2013) posit that period of post financial crisis are connected with high interest rates and lower bank credits activities. This implies moving from bank loans and bonds to internal finance or equity issuance, likely causing a negative relation between tangibility and book leverage. Bevan and Danbolt (2002) argue that evidence on

relationship between leverage and tangibility depends on the measure of gearing applied. When they defined leverage as adjusted debt to adjusted capital, they find a positive significant relationship between leverage and tangibility. Similarly, when they measure gearing as the total debt to total asset, they find the same positive significant relationship. However when they change the leverage measure to non-equity liability to total assets it reveals a negative significant relationship between leverage and tangibility. Therefore, there are various possible explanations to this negative relationship supported by the findings of some of the previous literature.

Leverage and Size

The result for size is consistent with the predicted hypothesis, which shows positive and statistically significant relationship between firm size measured by the log of assets and leverage though weak at p-value less than 0.1 for model 1 and 3, while the relationship is strong at p-value less than 0.01 for model 2 and 4. This is consistent with the trade-off theory which states that larger firms have lower risk of default and face low information asymmetry which implies ability to raise more debt. Titman and Wessels (1988) in agreement with Chen and Strange (2005) argue that big firms are more diversified and possibility of being bankrupt is minimum compared to smaller firms. Hence firm size could be an inverse substitute of the likelihood of bankruptcy and, therefore, larger firms can borrow at more favourable risk-adjusted interest rates than smaller firms. As a result, the trade-off theory predicts a positive relationship between leverage and the firm size. However, it was also argued that the cost of issuing debt and equity can also be related to firm size. For instance, for a small firm to issue new equity the cost is higher than large firms and also to some extent higher to issue long-term debt. Hence small firms could be more leveraged than large firms and may wish to borrow short-term debt, while large firms should be more capable of issuing equity (Rajan & Zingales, 1995; Titman & Wessels, 1988). On the other hand, Myers and Majluf (1984) reveal that problem of information asymmetries among firm insiders and capital is less for large companies, as a result large firms are more prone to debt issue. Large firms also have greater access to capital market than small firms and thus size might be positively correlated to debt. Therefore, the positive relationship found in this study is supported by a lot of previous literature and in consistence with the trade-off theory of capital structure.

Leverage and Non-Debt Tax Shields

Consistent with the hypothesis, non-debt tax shield is found to be negatively correlated to leverage with p-value less than 0.1 for model 1, 2 and 3. This result agrees with some empirical studies in which it is argued that firms preference for debt is due to tax benefit associated with debt financing, however firms with non-debt tax shields, such as depreciation and investment tax credit deductions, will have less benefit to increase leverage for tax considerations because these deductions are independent of firms financing (DeAngelo & Masulis, 1980). Moreover, leverage become more expensive due to the presence of non-debt tax shields, since the marginal tax savings from an extra unit of debt declines with increasing non-debt tax shields (DeAngelo & Masulis, 1980). Korteweg (2010) finds a negative relationship between leverage and non-debt tax shields. This is because the likelihood of bankruptcy rises with leverage, which makes the marginal benefit low which implies a negative relationship between leverage and non-debt tax shields. However no evidence of relationship between non debt taxes shields with leverage in model 1.

Leverage and Market-to-Book Ratio

The findings for relationship between leverage and market to book reveal no evidence of the statistically significant relationship.

Leverage and Debt Tax Shields

The regression result with regards to debt tax shield is consistent with the proposed hypothesis; it shows a positive statistical significant relationship at a p-value less than 0.01 for all the models. This is in agreement with the predictions of Modigliani and Miller (1963) and the trade-off hypothesis, in which they argue that firms use more debt in their capital structure to benefit from tax advantage of debt. Firms might be encouraged to borrow more so as to maximize their value because interest expenses are deducted from income before taxes there by reducing the tax base as well as the gross income. Hence, firms are in a better position to benefit from this tax shield by increasing the level of debt (Lim, 2012), particularly when tax rates are high (De Angelo & Masulis, 1980). However, firms can gain a tax advantage through the non-debt tax shields, such as depreciation and/or amortisation, cost of research and development and investment tax credit deductions. Firms with non-debt tax shield will have less benefit to increase leverage for tax considerations because these deductions are independent of firms financing (DeAngelo & Masulis, 1980; Fama & French, 2002). In accordance with the trade-off theory, firms raise debt so as to gain a tax benefit associated with debt and it suggest a positive relationship between leverage and taxes. Consistent with the trade-off theory assumes a target leverage to optimise capital structure, Graham, Leary and Roberts (2015) find a robust positive relation between

corporate tax rate and leverage decision. Hence this result provides evidence for the existence of target leverage by the UK firms.

V. Conclusions, Implications and recommendations

The study analyses the capital structure and its determinants by using ordinary least square to examine whether leverage decision is influenced by the capital structure variables and to examine whether there is any evidence of target leverage that can maximise UK firm's value. The study uses the sample of 350 UK largest firms for the year 2015 which is a period of recent post financial crisis.

This study provides important contribution because many previous studies on leverage ratio determinants provide mixed evidence on how capital structure variables influence leverage ratio. The result reveals evidence that firm specific variables have some degree of influence on debt to equity ratio. The study provides strong evidence of positive statistical relationship between profitability and the leverage ratio when profitability is measured by the return on equity (ROE). This result supports the trade-off theory because profitable firms would employ more debt as increased leverage would increase the value of their debt tax shield. Hence this finding implies the existence of target leverage among the UK firms that can maximise firm's value. This contradicts the pecking order hypothesis which states that firms prefer internal financing over external financing in which it assume that most profitable firm have the lowest leverage. Robichek and Myers (1966) for example, states that with bankruptcy and reorganisation costs debt strategy is relevant, and internal optimal capital structure can exist that can maximise firm value. However when profitability is measured by return on assets (ROA), no evidence was found for the relationship between leverage and profitability.

Another evidence for the existence of target leverage is the findings on the relationship between debt tax shields and leverage ratio. The study finds a strong positive relationship between debt tax shields and leverage ratio. This shows that UK firms go for debt financing in order to shelter their income from taxation. According to Myers (1984), firms that implement their financing decision with the view of attaining tax benefit of debt, are considered as setting a target debt to equity ratio with the aim of achieving it.

However, this study's result has rejected the prediction made with regards to asset tangibility, as it reveals a strong evidence of negative relationship between asset tangibility and the leverage ratio which contradicts the assumption on collateral power of an asset that can encourage debt financing, as it can minimise the agency cost of debt financing and the cost of debt. However, the result implies that firms with high tangible assets prefer to use their internal source of finance despite the potential to raise debt at lower cost. For instance, Titman and Wessel (1988) argue that profitable firms tend to use internal fund to finance their investment in line with pecking order theory assumptions. In agreement with the hypothesis, the study finds strong evidence of positive relationship between leverage and firm size and a weak negative relationship between non-debt tax shields and leverage. Finally the study does not find any evidence of statistically significant relationship between leverage and market to book value.

Implications and Contribution of the Study

The study has supplied additional evidence of the influence that capital structure determinants have on firms' leverage decision. The findings can assist firms in making appropriate capital structure decision, as it uncovered which variables can help increase debt ratio by a firm. The study will also inform younger firms that there is existence of target leverage among UK listed firms, hence they will be aware of what factors can be relevant for them when they intend to attain a target leverage that can maximise firm value. The finding also can inform firms that even without collateral power, profitability can positively influence debt ratios.

Limitations and Recommendations for Further Research

This study uses cross sectional data for one year (2015), which could be a potential limitation. Michaelas, Chittenden and Poutziouris (1999) posits that cross sectional analysis of debt to equity ratio determinants for single period will only reveal minimum information about the firm leverage decision. As debt to equity determinants vary over time, hence debt to equity choice has to analyse in a vigorous perspective. This study recommends further research on the relationship between leverage and its determinants over longer periods, it is also recommended to include more firms into the sample.

The model's R^2 of 56% suggests that 44% of the result is not explained by the variables included. The study therefore, also recommends that examining relationship between leverage and its determinants could include other variables, such as volatility and macro-economic conditions. This is because other studies suggest that there can be other important capital structure determinants, for instance, Mugosa (2015) suggests the use of inflation rate and macroeconomic indicators. But it is difficult to include in this study due to a 1-year period only.

The study also recommends the use of different measures of variables such as profitability measure to include in addition to return on assets and return on equity; leverage measure to include both book leverage and

market leverage; while size to be measured by natural log of total sales and log of total assets as suggested by Rajan and Zingales(1995).

Finally, the overall result of the study supports the trade-off model of capital structure, though the result for tangibility supports the pecking order assumptions. Therefore, the results of this study provide partial support to both theories. This is consistent with previous findings by Mugosa (2015) who also finds the existence of mixed evidence in support of pecking order and the trade-off theory in Europe. This also supports the notion that capital structure choice is a complex decision and none of the theories are able to provide a thorough explanation of firm debt ratios (Graham, Leary & Robert, 2014).

Despite the existence of the mixed evidence, this study finds evidence that many traditional capital structure determinants (such as, profitability, size, taxes shield effects and asset tangibility) are important in influencing UK firms leverage decision. It also reveals evidence for the existence of target leverage in UK firms financing choice.

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Ba'aba Sule. "The Impact of Financing Decisions on Firm Performance." *IOSR Journal of Economics and Finance (IOSR-JEF)* , vol. 10, no. 1, 2019, pp. 79-92.