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Corporate Governance and Capital Structure Decisions of UK Listed Real Estate Companies

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Abstract
This paper examines how the capital structure decisions of UK listed real estate companies are influenced by some key corporate governance indicators. Using panel data methodology, it is documented that real estate companies with larger board sizes and greater CEO remunerations employ less leverage. There is also weak evidence showing a negative relationship between the proportion of outside directors and the level of leverage used. Additionally, there is evidence to show that there is generally no difference between REITs and Non-REITs regarding their respective leverage levels. This indicates that UK REITs may be highly geared contrary to expectations of lower debt levels. Overall, the results are relevant as they demonstrate that corporate governance impacts crucial corporate policy decisions such as those relating to capital structure even for such a unique industry as real estate.
Keywords: Corporate Governance, Capital Structure, Real Estate Companies, UK

1. Introduction

The concept of corporate governance largely stems from Jensen and Meckling (1976) who posit that the separation of ownership and control functions in firms results in conflicts of interest (agency costs) between shareholders and managers. The usage of leverage has been highlighted in the empirical literature as a way of alleviating these agency costs. For instance, more leverage decreases equity financing which in turn reduces the scope of the shareholder-manager conflict (Jensen and Meckling, 1976); increases the risk of bankruptcy thereby encouraging managers to reduce benefits whilst being more efficient (Grossman and Hart, 1982) and curbs the managerial free cash flow problem due to the regular interest payments on debt (Jensen, 1986).

In terms of leverage maturity however, short-term debt reduces the amount of 'free cash' available to managers and acts as an effective control tool of their behavior (see for instance Stulz, 2000; Datta et al., 2005) whereas long-term debt acts against empire building by managers (Hart and Moore, 1995). Managerial self-interest is often brought to the fore in both leverage and leverage maturity decisions owing to the fact that these decisions are at their discretion (Harford et al., 2008). For instance, managers with lower stock ownership incentives have a preference for long-term debt (Datta et al., 2005) whilst entrenched managers finance with long-term debt as a way of avoiding liquidation (Benmelech, 2006).

In line with the above, this study investigates how certain corporate governance indicators influence leverage choices. Specifically, the individual relationships between board size, board independence, CEO duality, CEO tenure, CEO remuneration and leverage decisions of 26 UK listed real estate companies are examined over a 10-year (2000-2009) period. In direct contrast to listed companies from other sectors, on which many studies have been undertaken, listed real estate companies make an interesting corporate governance research field owing to their unique governance structure (see for instance Feng et al., 2005). This 'uniqueness' is due in part to the distinctiveness of the real estate asset class and the special regulatory requirements that go with listed real estate vehicles such as REITs (see for instance Sagalyn, 1996).

The problem to investigate is whether corporate governance indeed has an impact on leverage choices as traditionally, real estate companies are highly geared with huge investments in landed property serving as collateral for debt financing. There is a variation for Real Estate Investment Trusts (REITs) however, who ideally should have no incentive to issue debt. The introduction of the UK REIT regime on 1 January 2007 has culminated in the assumption of REIT status by some UK listed property companies with the benefit of assuming a tax-exempt status upon distributing 90% of their pre-tax income as investor dividends. This feature, according to Feng et al. (2007), annuls two key benefits of debt: the loss of tax-deductibility benefits of interest payments and impact on alleviating the agency costs of free cash flow. This should imply lower leverage levels for REITs but contrarily, Feng et al. (2007) report that over 50% of REIT financing at Initial Public Offerings (IPO) is debt, rising to more than 65% in 10 years. Also, ownership and asset restrictions discourage hostile takeovers and create incentives for poor managerial decision-making, increasing the need for board monitoring (Feng et al., 2005). With such high levels of leverage for real estate firms in general and considerable room for managerial 'misbehaviour', it is expedient to examine the role corporate boards play in making crucial decisions such as those pertaining to leverage.

This paper contributes to the extant literature in the following ways: Firstly, it involves the hand-collection of a

new corporate governance database for UK real estate companies, which serves as a valuable input for further studies within this field. Secondly, to the best of our knowledge, this study is the first of this kind to be carried out on the UK listed property market. Finally, this study provides empirical backing for agency theory by showing that a relationship exists between corporate governance and leverage decisions even for a unique industry such as real estate.

The remainder of this paper is organised as follows: Section 2 reviews the subject matter literature and states the hypotheses. In Section 3, the methodology for the study is discussed. Section 4 reports results of the data analysis whilst Section 5 concludes the study.

2. Literature Review and Hypotheses

Following the corporate scandals of recent times such as those at Enron, WorldCom and Adelphia, corporate governance has become a major area of concern for firms in a bid to chiefly regulate board activities so as to improve upon the governance quality of firms. Boyd(1996) details the classic corporate governance structure for UK listed companies showing a chain of accountability between and amongst the board of directors, shareholders, CEO, management and the auditor. The importance of corporate boards notwithstanding, the empirical literature reveals mixed results with respect to the influence of certain board characteristics on leverage choices:

By relating board size to leverage, Berger et al. (1997) argue that a larger board size leads to strong pressure in the board room to pursue lower leverage as a way of enhancing firm performance hence an inverse relationship between the two. Contrarily, Abor (2007) finds a positive relationship arguing that large board sizes lead to conflicts in decision-making which weaken corporate governance and lead to the pursuit of high leverage.

Board independence measures the proportion of external directors on a firm's board. Pfeffer (1973) and Pfeffer and Salancik (1978) illustrate that external directors help a firm to guard against the external environment, uncertainties and enhance its fund raising abilities. In this regard, Berger et al. (1997) and Abor (2007) find a positive relationship between the percentage of non-executive directors on a board and leverage. On the contrary, Wen et al. (2002) and Kyereboah-Coleman and Biekpe (2006), for short-term debt, report a negative relationship.

CEO tenure refers to the number of years the CEO serves in that position. Berger et al. (1997) reveal an inverse relationship between CEO tenure and leverage (market value). They opine that entrenched CEOs pursue lower leverage to reduce the performance pressures associated with high debt usage. Ghosh et al. (2010) also show that CEOs of REITs with long tenure of office, have a preference for less leverage to minimize their personal risk associated with bankruptcy and the loss of prestige. Wen et al. (2002) similarly report an inverse relationship.

Managers with good fixed compensation have a tendency to pursue lower leverage as way of avoiding the financial risk of debt so as to maintain their jobs and attractive compensation (Harris and Raviv, 1988; Stulz, 1988). Friend and Hasbrouck (1988) and Friend and Lang (1988) similarly report a negative relationship between fixed compensation and leverage whereas Jensen and Meckling (1976), Leland and Pyle (1977) and Berger et al. (1997) discover a positive relationship.

CEO duality indicates a situation where the CEO is also the board chairperson. CEO duality "signals the absence of decision management and decision control…" (Fama and Jensen, 1983, p. 314). Fama and Jensen (1983) state that individual decision agents can be engaged in managing (initiation and implementation) some decisions and controlling (ratification and monitoring) others, but no individual agent must exercise exclusive management and control rights over the same decisions. Abor (2007) also reports a positive relationship between CEO duality and leverage whereas Fosberg (2004) and Kyereboah-Coleman and Biekpe (2006), for short-term debt, point to a negative relationship.

By constructing a board index to reflect the strength of corporate boards, Harford et al. (2008) report that strong boards (better governance quality), particularly director power, are positively related to leverage and negatively related to long-term debt. La Porta et al. (2000) show via the 'substitution hypothesis' that weaker governance is associated with more leverage due to a greater need for firms to establish a reputation for not taking over shareholder wealth. Using the G-index developed by Gompers et al. (2003), Litov (2005) finds that firms with the weakest shareholder rights use more leverage and have a higher propensity to engage in conglomerating mergers.

Hypotheses

It is argued that a large board size leads to strong pressure in the board room to pursue lower leverage as a way of enhancing firm performance (Berger et al., 1997; Wen et al., 2002). In line with this reasoning, it is proposed that:

H1: Board size is negatively related to leverage.

Pfeffer (1973) and Pfeffer and Salancik (1978), from the resource dependence perspective, illustrate that external directors help a firm to guard against the external environment, uncertainties and also enhance its fund raising

abilities, whilst improving upon its status. This suggests a direct relationship between the proportion of non-executive directors and leverage hence:

H2: Board independence is positively related to leverage.

As an effective decision control measure, Fama and Jensen (1983) state that individual decision agents can be engaged in managing (initiation and implementation) some decisions and controlling (ratification and monitoring) others, but no individual agent must exercise exclusive management and control rights over the same decisions. In line with this, a two-tier board structure (where CEO is not chairperson) may translate into prudent decision-making including restricting debt to below risk levels therefore:

H3: A two-tier board structure (CEO duality) is negatively related to leverage.

Entrenched CEOs tend to pursue lower leverage to reduce the performance pressures associated with high debt usage and to minimize bankruptcy risk (Berger et al., 1997; Ghosh et al., 2010). This leads to the hypothesis that:

H4: CEO tenure is negatively related to leverage.

Harris and Raviv (1988) and Stulz (1988) posit that managers with good fixed compensations tend to pursue lower leverage as way of avoiding the financial risk of debt so as to maintain their jobs and attractive compensation. In line with their reasoning, a proposal is made that:

H5: CEO remuneration is negatively related to leverage.

3. Methodology

Data & Variables

Corporate governance data on a sample of 26 real estate companies (14 REITs and 12 Non-REITs) listed on the London Stock Exchange (LSE) for the period 2000-2009 is collected, for which an unbalanced panel of 231 observations is realized. With the UK REIT regime being introduced only in 2007, the 14 sampled REITs are treated as Non-REITs in the years preceding their assumption of REIT status.

Data on the corporate governance characteristics (independent variables) namely board size, number of non-executive directors, CEO tenure, CEO remuneration, and CEO duality are hand-collected from the annual reports of the companies in question. However, company financials such as fixed assets, total assets, leverage ratios, annual depreciation, operating profit and capital expenditure (CAPEX) are extracted from Bloomberg.

Leverage, which is the dependent variable, is given by the ratio of total debt to total assets (TD/TA). However, for robustness, three other leverage ratios are used: total debt to total capital, long-term debt to total capital, and EBIT to interest expense (see Rajan and Zingales, 1995). To help address model specification issues, some major determinants of capital structure are employed as control variables. These are firm size, asset tangibility, profitability, volatility, growth opportunities, and non-debt tax shield.

Model Specification

The results of a Hausman specification test conducted indicate that a Random Effects Model represents the data best (Appendix IV). The model is expressed as follows:

$$TD/TA_{it} = \alpha + \beta_1 BSize_{it} + \beta_2 BIndp_{it} + \beta_3 CEODual_{it} + \beta_4 LnCEOTenu_{it} + \beta_5 LnCEORemu_{it} + \beta_6 Tang_{it} + \beta_7 Size_{it} + \beta_8 Prof_{it} + \beta_9 Volt_{it} + \beta_{10} NDTaxShld_{it} + \beta_{11} Grth_{it} + z_{it}$$

where *TD/TA* is the ratio of total debt to total assets; α represents the common mean value; *BSize* is the board size (measured by the number of directors on the board); *BIndp* is board independence (given by the percentage of non-executive directors on the board); *CEODual* is CEO duality (a dummy variable which takes on a value of 1 if the CEO is not the board chairperson and 0 otherwise). *LnCEOTenu* represents the natural logarithm of CEO tenure (the number of years the CEO serves in that capacity) and *LnCEORemu* stands for the natural logarithm of CEO remuneration (comprising CEO salary, bonus and allowances but excluding pension benefits). The six control variables representing leverage determinants are defined as follows: *Tang* represents asset tangibility (given by the ratio of fixed assets to total assets); *Size* is firm size (measured as the natural logarithm of total assets); *Prof* is for profitability (defined as the ratio of operating profit to total assets); *Volt* measures volatility (given as the standard deviation of percentage changes in operating profit); *NDTaxshld* stands for non-debt tax shield (captured by the ratio of depreciation expense to total assets) and *Grth* is for growth opportunities (given as CAPEX over total assets). The composite error term is represented by z_{it}., comprising the firm-specific (u_i) and combined cross-section and time-series (ε_{it}) error components (i.e. $z_{it.} = u_i + \varepsilon_{it}$).

4. Results of Data Analysis

Descriptive Statistics

Summary statistics of the dependent and independent variables are presented in Table 1. Board size (bsize) ranges from a high of 16 to a low of 3, with a mean number of approximately 9. Figure 1 shows that the board size distribution is nearly symmetrical. The minimum and maximum number of non-executive directors (nedirs) on the board is 1 and 9 respectively.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
nedirs	231	4.584416	1.617975	1	9
ceotenu	231	10.38528	8.219465	1	33
ceoremu	231	623112.9	431053.9	10625	3260000
bsize	231	8.606061	2.326736	3	16
bindp	231	.5245521	.1089765	.2	.8571429
ceodual	231	.9177489	.2753435	0	1
lnceotenu	231	1.973472	.9351201	0	3.496508
lnceoremu	231	13.09891	.83668	9.270965	14.99724
reitnonreit	231	.1731602	.3792074	0	1
tang	231	.7578541	.264515	.0017304	.9942213
size	231	6.830701	1.338187	3.397223	9.849955
prof	231	.0358753	.0326204	-.2401861	.1052326
volt	231	.6981197	1.559579	.0130589	10.05976
ndtaxshld	231	.001126	.0029254	0	.0268868
grth	231	.0745353	.0760237	0	.609519
tdta	231	.403038	.1496388	0	.899285
tdtc	231	.4468876	.164133	0	1.068435
ltdtc	231	.4087129	.16198	0	1.036183
ebitint	231	1.428852	4.603686	-55.5952	24.7235

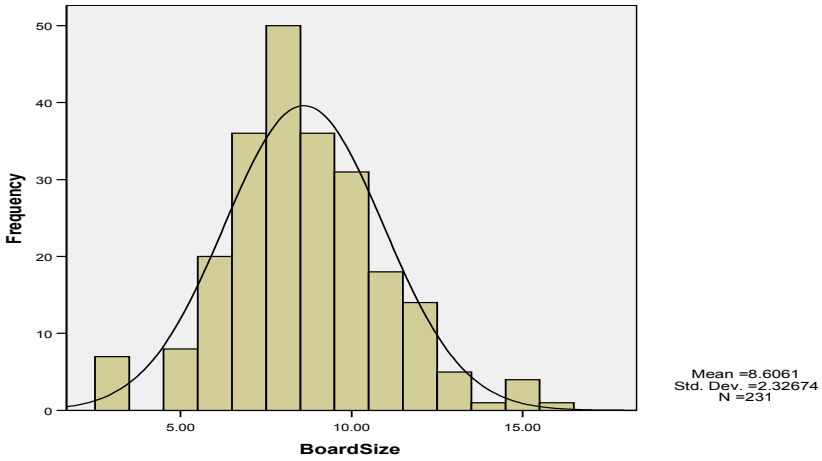

Figure 1. Histogram of Board Size

On average, the number of non-executive directors is nearly 5. This is strongly in line with the Cadbury Committee report of 1992 which advocates a minimum number of 3 non-executive directors on a firm's board. The proportion of outside directors on the board is a maximum of 86% and a minimum of 20%. An average of about 52% however indicates a marginally higher proportion of outside directors on most boards. The longest CEO duration in office is 33 years and the shortest is a year. The mean CEO tenure in office is 10 years. The highest paid CEO receives £3,260,000 whereas the lowest paid receives £10,625. The average CEO remuneration is £623,113. CEO duality, which measures whether a CEO also doubles as the board chairperson, indicates that only about 8% of CEOs also serve as board chairpersons. This shows that most boards have a two-tier structure. Again this largely represents compliance with the Cadbury Committee report of 1992 which recommends that the CEO and chairperson roles be separately performed.

About 17% of the observations are for firms with the REIT status. The fixed asset to total asset ratio is quite high on the average, approximately 75.79%. This lends credence to the assertion that real estate companies have a high proportion of fixed assets. Firm size, given by the natural logarithm of total assets, posts 6.83, 3.40, and 9.85 as the approximate mean, minimum, and maximum values respectively. Profitability is not so impressive with some firms reporting negative results, the lowest being -24.02%. The maximum (mean) profitability reported is 10.52% (3.59%). Volatility takes on an average value of about 0.70 whereas the non-debt tax shield shows little variability with a high of 2.69% and a low of 0%, indicating the disregard for depreciation expense by some of the firms. Growth opportunities are minimal, with a mean of 7.45%. However, a maximum of 60.95% and a minimum of 7.60% are also reported.

The leverage measure of total debt to total asset ratio shows a mean level of 40.30% and rather surprisingly a minimum ratio of 0%. The highest leverage level sits at around 89.93%. As can be seen in Figure 2, there is evidence in support of a normal distribution with no strong evidence of skewness.

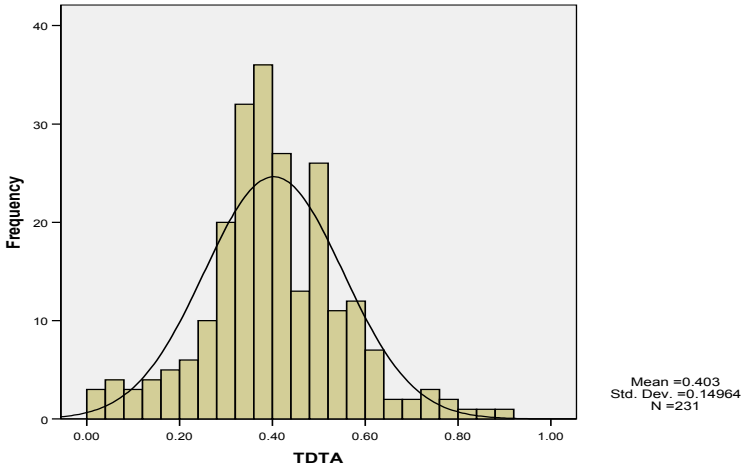

Figure 2. Histogram of the Total Debt to Total Asset Ratio

The robustness test leverage ratios used are: total debt to total capital (tdtc), long-term debt to total capital (ltdtc), and EBIT to interest expense (ebitint) [see Appendix II for histograms]. Both tdtc and ltdtc reveal negative equity concerns for a particular firm with 106.84% and 103.62% respectively as their maximum. They both report mean leverage levels under 45% and a minimum of 0%. An average ebitint of 1.43 times indicates that most firms are able to make interest payments on debt, though not so impressively. The lowest ebitint is -55.60 times which is rather alarming.

A box plot is drawn in Figure 3 to ascertain whether being a REIT or not affects a firm's leverage position. REITs ideally should have no incentive to issue debt when they pay out 90% of their income as dividends to shareholders, as the tax-deductibility benefits of debt would have been taken away. For this reason, REITs are expected to have lower leverage levels than Non-REITs. A dummy variable is used to establish REIT/Non-REIT status with a company assigned a value of 1 in the year of assuming REIT status and 0 otherwise. There are a total of 191 Non-REIT and 40 REIT observations. Figure 3 shows that the plots of both observations do not overlap considerably and also, there is very little difference between their median values of leverage. This seems to suggest that there is no significant variation between leverage levels of both REITs and Non-REITs (see also Appendix III). A possible reason for this is the fact that since the REIT regime for the UK was only introduced in 2007, firms may still be gradually adjusting their leverage positions to lower dimensions.

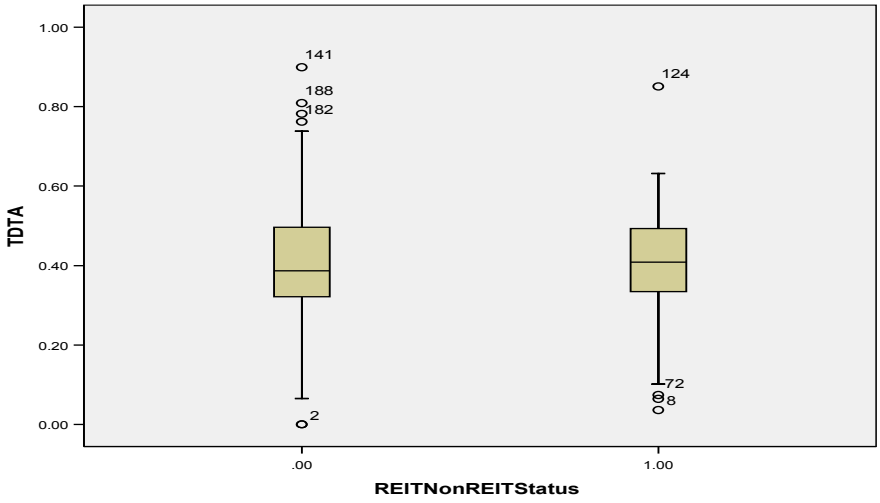

Figure 3. Box Plot of REITs/Non-REITs vs. Total Debt to Total Asset Ratio

Regression Analysis

To control for heteroscedasticity, a heteroscedasticity-corrected RE GLS regression is run as shown in Table 2. The table reports results whose standard errors are adjusted for the total number of clusters (firms), 26 in this case. This is in line with Petersen (2009) who points out that GLS standard errors are still too small, though the

degree of bias is smaller. Against this backdrop, he argues that it is necessary to estimate standard errors clustered by the firm even when using GLS except when the firm effect is permanent.

Table 2. Random Effects GLS Regression with Standard Errors Adjusted for 26 Clusters

```
Random-effects GLS regression                   Number of obs      =       231
Group variable: id                              Number of groups   =        26

R-sq:  within  = 0.1345                         Obs per group: min =         6
       between = 0.0138                                        avg =       8.9
       overall = 0.0012                                        max =        10

Random effects u_i ~ Gaussian                   Wald chi2(11)      =     51.34
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

                                    (Std. Err. adjusted for 26 clusters in id)
------------------------------------------------------------------------------
             |               Robust
        tdta |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |  -.0126578   .0067788    -1.87   0.062    -.025944    .0006285
       bindp |    .029881   .0983532     0.30   0.761    -.1628877   .2226497
     ceodual |   .0225275   .0632102     0.36   0.722    -.1013621   .1464172
   lnceotenu |   .0018506   .0108184     0.17   0.864    -.0193531   .0230543
   lnceoremu |  -.0370121   .0163841    -2.26   0.024    -.0691243  -.0048999
        tang |   .0451617   .0727644     0.62   0.535    -.0974539   .1877773
        size |   .0342133   .0166171     2.06   0.040     .0016445   .0667822
        prof |  -.3114183   .3653278    -0.85   0.394    -1.027448   .4046111
        volt |   .0153893   .0065403     2.35   0.019     .0025706    .028208
   ndtaxshld |   10.11693   2.548288     3.97   0.000     5.122374   15.11148
        grth |  -.1723307   .2377908    -0.72   0.469    -.638392    .2937307
       _cons |   .6854678   .2113037     3.24   0.001     .2713201   1.099616
-------------+----------------------------------------------------------------
     sigma_u |  .10511727
     sigma_e |  .09541174
         rho |  .54828648   (fraction of variance due to u_i)
------------------------------------------------------------------------------
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Two of the five corporate governance indicators, namely board size and CEO remuneration report statistically significant and negative relationships with leverage. The results confirm the hypotheses. Board size is significant at the 10% (0.062) level when standard errors are adjusted by the number of clusters. CEO remuneration is however significant at the 5% level. The finding for board size corroborates Berger et al. (1997) who find that a larger board size leads to strong pressure in the board room to pursue lower leverage as a way of enhancing firm performance. Also, the result for CEO remuneration confirms Harris and Raviv (1988) and Stulz (1988) who report that managers with good fixed compensation have a tendency to adopt lower leverage as way of avoiding the financial risk of debt so as to maintain their jobs and attractive compensation.

Firm size, volatility, and non-debt tax shield are the only statistically significant control variables. There is a positive relationship between firm size and leverage, suggesting that larger firms are more diversified and less prone to bankruptcy risk (Titman and Wessels, 1988) and have easier access to capital markets and borrow at reasonable rates (Ferri and Jones, 1979). It is rather surprising that volatility is positively related to leverage, given that the more volatile a firm's earnings, the more the risk associated with using leverage, implying a reduction in the leverage employed. The direct relationship between non-debt tax shield and leverage suggests that firms with heavy investments in tangible assets and consequently high levels of depreciation and tax credits tend to have a higher leverage (Bradley et al., 1984).

Robustness Test Results

Three alternative leverage ratios (total debt to total capital; long-term debt to total capital; EBIT to interest expense), are used to ascertain whether the relationship between the corporate governance variables and leverage is the same regardless of the leverage indicator used.

The total debt to total capital ratio measure indicates that only board size is significantly and inversely related to leverage (1% level). Firm size, volatility, and non-debt tax shield are the only control variables which are significant in the two scenarios.

The long-term debt to total capital measure reveals a significantly negative relationship with board size (1% level) and CEO remuneration (5% level). Firm size, profitability, volatility, and non-debt tax shield are the only significant controls, again exhibiting positive relationships with leverage. The positive relationship between profitability and leverage is a finding supported by the trade-off theory but in disagreement with the pecking order theory where highly profitable firms will first utilize retained earnings therefore suggesting lower external financing needs.

When the natural logarithm of EBIT to interest expense is used, board independence is the only corporate governance variable which exhibits a negatively significant relationship with leverage. It is however at the 10% level (0.052). This finding is in line with Wen et al. (2002) who support the view that a greater proportion of outside directors is associated with strict monitoring of managers to pursue lower debt targets. Profitability shows a positive and significant relationship with leverage. Non-debt tax shield reveals a significantly inverse

relationship with leverage, a result supported by DeAngelo and Masulis (1980) who argue that tax deductions for depreciation and investment tax credits are substitutes for the interest tax shield benefits of debt financing.

5. Conclusion

This paper examines the relationship between key corporate governance indicators and capital structure (leverage) decisions of UK listed real estate companies. The hypotheses show that board size, a two-tier board structure (CEO duality), CEO tenure and CEO remuneration are all negatively correlated with leverage whereas the proportion of non-executive directors (board independence) is positively related to leverage.

Employing the total debt to total asset ratio as the leverage measure of choice, it is discovered that board size and CEO remuneration have a significantly negative relationship with leverage. These results are consistent with Berger et al. (1997) who discover that larger boards are associated with enormous pressure in the board room to pursue lower leverage targets as a performance enhancement measure and with Harris and Raviv (1988) and Stulz (1988) who show that CEOs that enjoy good remuneration have a tendency to use lower leverage as way of avoiding the financial risk of debt and also as a way of maintaining their jobs and attractive compensation.

Three alternative leverage ratios: total debt to total capital, long-term debt to total capital, and the natural logarithm of EBIT to interest expense are used to check robustness of results. Using the total debt to total capital ratio, only board size posts a significant relationship with leverage, and a negative one at that. For the long-term debt to total capital ratio, board size and CEO remuneration both exhibit a significant and inverse relationship with the leverage. However, the natural log of EBIT to interest measure yields a significantly positive relationship with board independence.

Also, the research surprisingly reveals that there is no marked difference between leverage levels for both REITs and Non-REITs. This is more pronounced when the total debt to total capital and long-term debt to total capital ratio measures of leverage are employed (see Appendix V). This finding possibly suggests that since the UK REIT regime is in its 'infancy' compared to more established REIT markets like the US and Australia and as such, it may take some more time for the leverage levels to be adjusted downwards to reflect the REIT feature and associated benefits.

Overall, this study highlights board size and CEO remuneration as key corporate governance variables that influence leverage decisions of UK listed real estate companies. This paper also makes a notable contribution to the empirical literature by hand-collecting a new corporate governance database for UK real estate companies. This could serve as a valuable input for devising a corporate governance index for the UK listed real estate industry.

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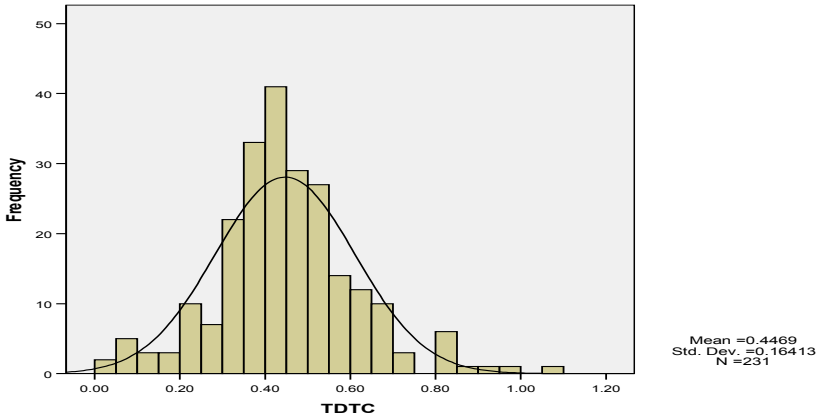
Appendix

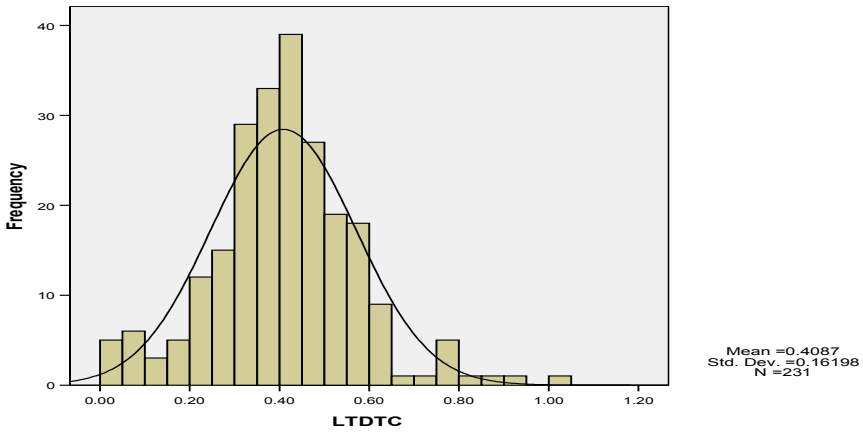
I: Average Figures of Hand-Collected Corporate Governance Characteristics

Company	Years	Board Size	Non-Executive Directors	CEO Tenure (yrs.)	CEO Remuneration (£)	CEO Duality (1 if CEO is board chair, 0 otherwise)
Big Yellow	2001 - 2009	8	3	7	242,664	1
British Land	2000 - 2009	11	5	17	1,138,385	0 (2000-2004) 1 (2005-2009)
Derwent London	2000 - 2008	10	4	20	771,667	1
Great Portland	2000 - 2009	9	5	4.5	646,400	1
Hammerson	2003 - 2009	11	6	7	622,571	1
Liberty International	2000 - 2009	14	8	12.5	611,194	1
Land Securities	2000 - 2009	11	6	4	874,500	1
Mucklow	2003 - 2009	6	3	4.3	235,857	1
Primary Health	2002 - 2009	7	5	9.4	14,464	1
Shaftesbury	2002 - 2009	8	4	19.5	652,375	1
SEGRO	2000 - 2009	11	7	4.3	674,800	1
Workspace	2000 - 2009	8	4	5.5	396,790	1
McKay Securities	2001 - 2009	8	5	12.3	290,192	1
Warner Estate	2003 - 2009	7	4	13	409,714	0
Daejan Holdings	2003 - 2009	3	1	30	579,143	0
Minerva	2000 - 2009	6	3	4.9	638,700	1
Quintain Estates	2002 - 2009	10	5	13.5	913,875	1
Helical Bar	2000 - 2009	8	4	18.5	1,745,100	1
CLS Holdings	2000 - 2009	8	5	2.8	431,200	1
St. Modwen Prop.	2000 - 2009	9	6	11.5	585,000	1
Grainger	2001 - 2009	9	6	9.2	645,556	1
Development Sec.	2000 - 2009	8	5	10.5	603,500	1
Unite Group	2001 - 2009	7	4	9	541,826	1
Capital & Regional	2000 - 2009	11	5	4.6	511,000	1
London & Associated Prop.	2000 - 2008	7	3	8	490,000	1
Safeland	2004 - 2009	6	2	18.5	495,667	1

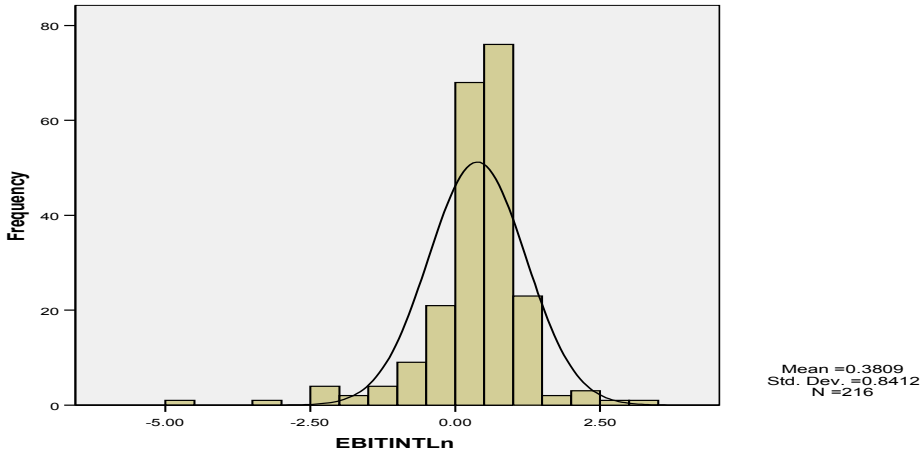
II: Histograms of Alternative Leverage Measures



Total Debt to Total Capital Ratio

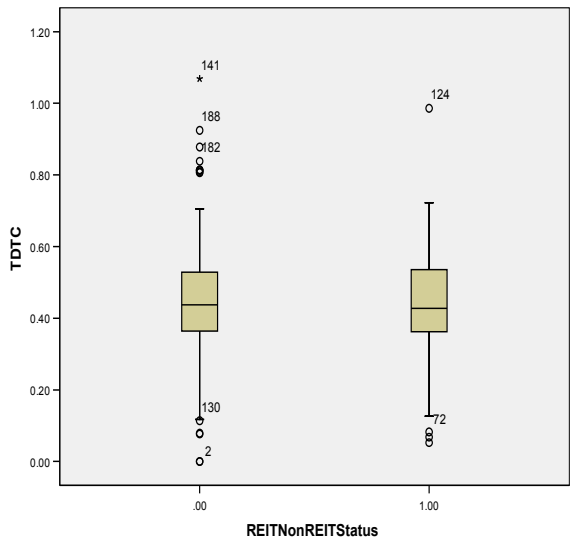


Long-term Debt to Total Capital Ratio

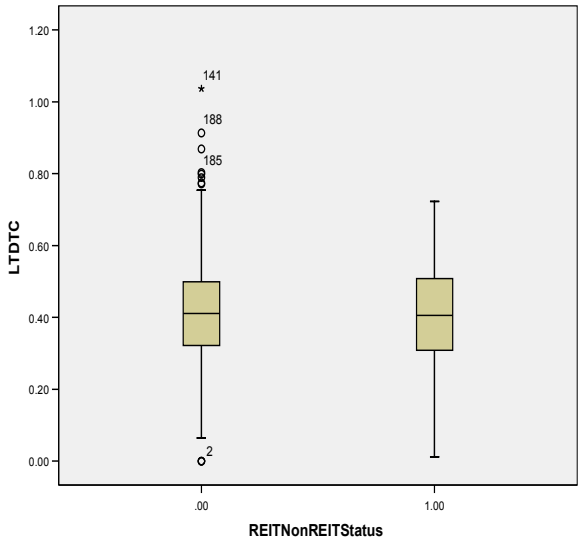


EBIT to Interest Expense Ratio

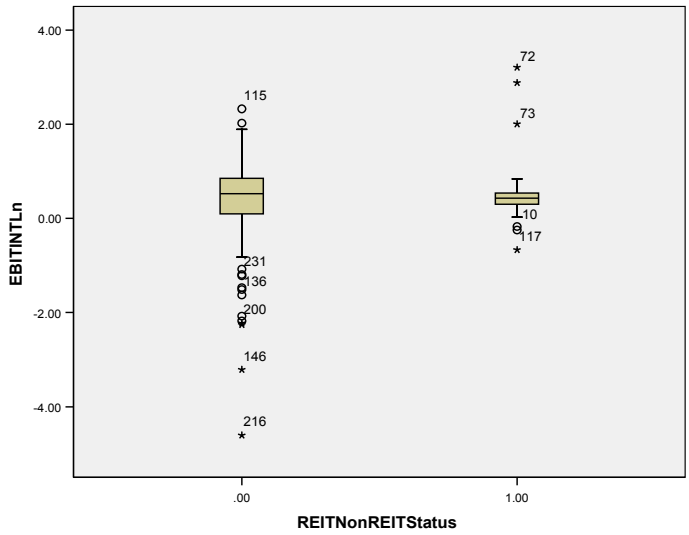
III: Box Plots of REITs/Non-REITs vs. Other Leverage Measures



REIT/Non-REIT Status vs. Total Debt to Total Capital Ratio



REIT/Non-REIT vs. Long-term Debt to Total Capital Ratio



REIT/Non-REIT Status vs. Natural Logarithm of EBIT to Interest Ratio

IV: Results of Hausman Specification Test

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	.	Difference	S.E.
bsize	-.0166085	-.0126578	-.0039508	.0028438
bindp	-.0449709	.029881	-.0748519	.0288311
ceodual	-.0145758	.0225275	-.0371033	.0380341
lnceotenu	.0002154	.0018506	-.0016352	.0024448
lnceoremu	-.037877	-.0370121	-.0008649	.0098566
tang	.1010562	.0451617	.0558944	.0142249
size	.0315464	.0342133	-.0026669	.0150011
prof	-.4134612	-.3114183	-.102043	.0156429
volt	.0297761	.0153893	.0143867	.0053015
ndtaxshld	16.65579	10.11693	6.538865	2.381371
grth	-.169843	-.1723307	.0024876	.01911

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 15.46
Prob>chi2 = 0.1624
(V_b-V_B is not positive definite)

V: Regression Results of Alternative Leverage Measures

```
Fixed-effects (within) regression               Number of obs      =       231
Group variable: id                              Number of groups   =        26

R-sq:  within  = 0.1749                         Obs per group: min =         6
       between = 0.0649                                        avg =       8.9
       overall = 0.0039                                        max =        10

                                                F(10,25)           =     11.90
corr(u_i, Xb)  = -0.6295                        Prob > F           =    0.0000

                                    (Std. Err. adjusted for 26 clusters in id)
------------------------------------------------------------------------------
             |               Robust
        tdtc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |   -.021203   .0063438    -3.34   0.003    -.0342684   -.0081376
       bindp |  -.0562862   .1105431    -0.51   0.615    -.2839539    .1713815
     ceodual |  -.0150507   .0264825    -0.57   0.575    -.0695924    .0394911
   lnceotenu |  -.0063436   .0106008    -0.60   0.555    -.0281763    .0154892
   lnceoremu |   -.033783   .0206758    -1.63   0.115    -.0763656    .0087997
        tang |    .086917   .0922342     0.94   0.355     -.103043    .2768769
        size |   .0532118   .0246597     2.16   0.041     .0024243    .1039994
        prof |  -.5493805   .4030994    -1.36   0.185    -1.379579    .2808182
        volt |   .0368412   .0119506     3.08   0.005     .0122284    .0614539
   ndtaxshld |   20.17911   5.395911     3.74   0.001     9.066027    31.2922
        grth |  -.1399728   .2357717    -0.59   0.558    -.6255536    .345608
       _cons |   .6800963   .2681553     2.54   0.018     .1278202    1.232372
-------------+----------------------------------------------------------------
     sigma_u |  .17979523
     sigma_e |    .102251
         rho |  .75561296   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

[For Total Debt to Total Capital Ratio]

```
Fixed-effects (within) regression               Number of obs      =       231
Group variable: id                              Number of groups   =        26

R-sq:  within  = 0.2423                         Obs per group: min =         6
       between = 0.0001                                        avg =       8.9
       overall = 0.0122                                        max =        10

                                                F(10,25)           =     13.77
corr(u_i, Xb)  = -0.6306                        Prob > F           =    0.0000

                                    (Std. Err. adjusted for 26 clusters in id)
------------------------------------------------------------------------------
             |               Robust
        ltdtc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |  -.0237228   .0053872    -4.40   0.000     -.034818   -.0126277
       bindp |  -.1177861   .1097422    -1.07   0.293    -.3438044    .1082322
     ceodual |  -.0087528   .0225045    -0.39   0.701    -.0551017    .0375961
   lnceotenu |  -.0066364   .0089506    -0.74   0.465    -.0250705    .0117978
   lnceoremu |  -.0560392   .0236643    -2.37   0.026    -.1047766   -.0073017
        tang |  -.0062765   .0711643    -0.09   0.930    -.1528422    .1402891
        size |   .1266475   .0222257     5.70   0.000     .0808728    .1724221
        prof |    .614802   .3108979     1.98   0.059    -.0255042    1.255108
        volt |   .0300389   .0116469     2.58   0.016     .0060518    .0540261
   ndtaxshld |   22.64741   4.251144     5.33   0.000     13.89201     31.4028
        grth |   .0611206   .2257531     0.27   0.789    -.4038265    .5260677
       _cons |   .4964226   .2792623     1.78   0.088    -.0787289    1.071574
-------------+----------------------------------------------------------------
     sigma_u |  .17884545
     sigma_e |  .09534325
         rho |  .77869489   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

[For Long-term Debt to Total Capital Ratio]


```
Fixed-effects (within) regression               Number of obs      =       216
Group variable: id                              Number of groups   =        26

R-sq:  within  = 0.3901                         Obs per group: min =         2
       between = 0.3225                                        avg =       8.3
       overall = 0.2913                                        max =        10

                                                F(10,25)           =     68.84
corr(u_i, Xb)  = -0.4702                        Prob > F           =    0.0000

                                    (Std. Err. adjusted for 26 clusters in id)
------------------------------------------------------------------------------
             |               Robust
  ebitint_ln |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       bsize |   .0516204   .0379526     1.36   0.186    -.0265446    .1297853
       bindp |  -1.241565   .6078216    -2.04   0.052    -2.493397    .0102669
     ceodual |  -.0634128    .184122    -0.34   0.733    -.4426191    .3157935
   lnceotenu |  -.0339326   .0665236    -0.51   0.614    -.1709406    .1030753
   lnceoremu |   .0248091    .118238     0.21   0.836    -.2187067    .2683249
        tang |   .4038052   .2774864     1.46   0.158    -.1676886    .9752991
        size |   .3073834   .2101752     1.46   0.156    -.1254805    .7402473
        prof |   26.69111   6.271385     4.26   0.000     13.77495    39.60727
        volt |  -.0445265   .0676829    -0.66   0.517     -.183922    .0948691
   ndtaxshld |  -47.22886   26.55983    -1.78   0.088    -101.9299    7.472134
        grth |   1.370331   .9411286     1.46   0.158    -.5679599    3.308621
       _cons |  -3.19258    1.358217    -2.35   0.027    -5.989881   -.3952794
-------------+----------------------------------------------------------------
     sigma_u |   .6323897
     sigma_e |   .5333411
         rho |  .58435795   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

[For Natural Log of EBIT to Interest Ratio]