Does Managerial Ownership Influence Corporate Value? Evidence from UK Corporation Tax Reform of 1984

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ABSTRACT

This paper integrates corporate governance and capital structure issues by testing whether and how managerial ownership influenced the responsiveness of firms to the corporation tax reforms of 1984 in the UK. The corporation tax reform of 1984 involved a significant change in tax - related capital structure variables which implied a significant adjustment of capital structures of the firm managed by the value- maximising managers. The paper uses OLS method (i.e. regression analysis) to test a non – linear relationship between managerial ownership and performance and then tests whether there is any relationship between managerial ownership and changes in capital structure variables as predicted by corporate finance theory.

The empirical res-ults support the non-linear (cubic) form of relationship between managerial ownership and performance. The results support the view that small firms are associated with high performance a nd vice v ersa.[1] The results also show that firms with high performance measures tend to have adjusted their debt-equity ratios downward during the tax reform period.

The results also support the argument that changes in the debt-equity ratio and investments due to the corporation tax reform of 1984 are both negatively correlated to managerial ownership.

INTRODUCTION

The relationship between corporation tax and the capital structure of a firm is well documented in the corporate finance literature. Modigliani and Miller (1963) show that in the presence of corporation tax a firm's value increases as debt is added to the capital structure. However, the extent to which this occurs is limited by other factors like bankruptcy and agency cost of debt (see for example Brealey, Myers and Marcus (2001). The increase in value according to Modigliani and Miller (1963) emanates from the corporate tax shields provided by interest payments. The argument suggests a positive relationship between debt (or interest payments) and firm value.

Other studies (see for example DeAngelo and Masulis (1980a) and Dammon and Senbet (1988)) show that the presence of other non-debt tax shields (especially those related to

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[1] This argument was derived from a study by Fama and French (1993)

investments) will mean that debt should be employed only to shield that part of taxable corporate profit not shielded by non-debt tax shields. These studies suggest the existence of an optimal capital structure, which depends on the trade-off between "substitution effect" and an "income effect" of non-debt tax shields. These studies collectively suggest that in an economy with corporation tax there is a relationship between corporation tax and both investment and debt levels. In all these cases, the value of a firm will increase only if managers follow a "particular course of action."

Some of the potential value-adding decisions may be less favoured by managers because they put pressure on them or because they affect the company's operations. To have a value-adding course of action is one thing but for managers to follow/adopt that course of action is another. To be more specific capital structure theory suggests that a change in corporation tax structure will lead to capital structure adjustments for the value-maximising firms. However, whether the relevant adjustments will be made or not depends on the corporate governance issue – the ownership structure of the firm! This argument arises because public firms are managed by people who do not own them and this brings about the possible conflict of interest (or agency problem) between managers and owners. Jensen and Meckling (1976) argue that managers deviate from shareholder wealth-maximisation by consuming perquisites when they do not have an ownership stake in the firm. In an argument which supports Jensen and Meckling (1976), Lasfer (1995) suggests that firms are expected to set their capital structures in such a way that the potential conflicts of interest between firms' stakeholders are minimised.

In explaining the possible source of value, Jensen (1986) points out that debt reduces the amount of free cash flows available to managers for consumption of perquisites by committing the firm to pay out cash, therefore creating an incentive to work harder and to make decisions that enhance firm value. This suggests the possibility of a positive relationship between debt and performance measure based on market value. Just as managers can use debt to signal their commitment to generate cash flows enough to pay off debt obligations, Leland and Pyle (1977) argue that managers use ownership stakes to signal to markets that they have projects of a high quality. The implication of Leland and Pyle (1977) is that there is a relationship between managerial ownership and firm value. Theoretically, the relationship can be linear or non-linear. The recent studies suggest a non-linear relationship between managerial ownership and a firm's performance (see for example Morck *et. al.* (1988), McConnell and Servaes(1990), Keasey and Short (1999), Hillier and McColgan (2002)). The argument is that at the lower level of managerial ownership the interests of shareholders are aligned with that of managers, resulting in an increase in performance (convergence effects). At the intermediate level, managers become entrenched and use company resources for their own benefit and this has a negative effect on the company's performance (entrenchment effect). At the highest level of managerial ownership, once again the interests of managers converge with that of shareholders and consequently firm performance increases. The empirical evidence, both in the US and UK, supports this argument although they differ in convergence and entrenchment levels of managerial ownership. In trying to integrate capital structure and corporate governance, this paper tests the following issues: The relation, if any, between debt usage and managerial ownership, the relationship between

performance and debt employed by a firm and the influence of managerial ownership on the responsiveness of managers to the change in corporation tax structure.

In this study we integrate the corporate governance and capital structure issues by testing, among other things, how managerial ownership influenced the responsiveness of firms to the corporation tax reform of 1984. In particular this study tests the documented non-linear relationship between managerial ownership and performance. It also tests the relationships between *capital structure* and *investments* versus *ownership structure* and *performance*. As the study is being conducted during major corporation tax reform, it tests both actual variables and the changes in variables during this period.

The empirical results support the non-linear (cubic) form of relationship between managerial ownership and performance. The estimated coefficients of managerial ownership, its square, and its cubic terms have expected signs and are all statistically significant. The estimated coefficients for the control variables included in a non-linear model used to test the relationship between managerial ownership and performance are particularly striking. The estimated coefficient of size variable is negative; it therefore supports the view that small firms are associated with high performance and vice versa (see for example Fama and French (1993)). The results also show that both growth opportunities and liquidity are positively related to performance, whereas firms with high performance measures tend to have relatively low debt-equity ratios.

The results also support the argument that changes in the debt-equity ratio due to the corporation tax reform of 1984 are negatively related to changes in managerial ownership. Furthermore, the results provide empirical evidence to show that the documented decline in investment in fixed assets due to corporation tax reform was related to managerial ownership. Specifically, the results show that changes in investment in fixed assets are negatively correlated with managerial ownership.

The rest of the paper is organised as follows. Section two provides a summary of relevant literature on the relationship between ownership structure, investment, financial leverage and corporate value. Data and variables are described in section three. Hypotheses and empirical methodology are outlined in section four. Section five presents empirical results and section six provides a summary and conclusion for the paper.

LITERATURE REVIEW

Many corporations are not run by the people who own them, i.e. they are run by managers who operate as agents on behalf of the owners. When managers hold little equity in the firm and shareholders are too dispersed to enforce value maximisation, corporate assets may be deployed to benefit managers rather than shareholders (Berle and Means (1932)).[2] Jensen and Meckling (1976) argue that the costs of deviation from value-maximization decline as managerial equity ownership rises. Jensen and Meckling emphasise that, as their stakes rise, managers pay a larger share of these costs and are less likely to squander corporate wealth. Jensen and Meckling (1976) propose "convergence of interest hypothesis" which hypothesizes that market value increases with managerial ownership.

Morck *et. al.* (1988) use a sample Fortune 500 companies to investigate the relationship between managerial ownership and market value of the firm as proxied by Tobin's Q. Using board ownership as a proxy for managerial ownership, the paper provides empirical results which show a non-linear relationship between managerial ownership and performance. Particularly they

[2] This remark was made and referenced in Jensen and Meckling (1976).

show that Tobin's Q rises as ownership increases from 0% to 5%, falls as ownership increases further from 5% to 25% and then continues to rise as ownership rises beyond 25%. The interpretation of Morck *et. al's.* (1988) findings is that at the level of managerial ownership between (0%-5%) and above 25% Tobin's Q increases, due to convergence of interest between managers and owners. At the intermediate levels (i.e. between 5%-25% inclusive) performance decreases as managerial ownership increases, reflecting the entrenchment effect.

McConnell and Servaes (1990) use a larger and more diverse sample to provide results which show a significant quadratic relation between managerial ownership and corporate value. Their study shows that as ownership increases the performance also increases until at the ownership level of 50% (in the 1976 sample) and 40% (in the 1986 sample). After these levels, firm value declines as the ownership increases. Their interpretation is that the increasing performance at the lower levels of managerial ownership is attributed initially to increased managerial incentives and that an entrenchment effect functions at higher levels of insider ownership (see also Hillier and McColgan (2002)).

Dahya *et. al.* (1998) analyse the relationship between firm performance and top executive change and the association between the composition of the company's shareholdings and market value of its share using UK data. Their results suggest that the ownership structure of a firm plays an important role in determining the effectiveness of internal managerial control mechanisms. Other striking findings of Dahya *et. al's.* (1998) paper are as follows: First, when the executive equity stake exceeds 1%, managers appear to become almost invulnerable to the pressures of internal control procedures. Second, the probability of forced departure is positively related to levels of institutional share ownership in the firm and negatively related to the existence of dual chief executive officers (CEO), the size of the firm and prior share performance.

Faccio and Lasfer (1999) investigate whether high managerial ownership entrenches managers through the creation of a board structure that is unlikely to monitor them. Using the UK data on managerial ownership and board structure, the study finds that, on average, managerial ownership in the UK is lower than that reported in the US. Furthermore, the empirical results support the entrenchment hypothesis through the management's control of the board. However, Faccio and Lasfer (1999) find that managerial ownership does not have an impact on firm value (see also Cho (1998)).

Short and Keasey (1999) extend the US-based literature to the UK to see whether the difference in governance systems in these two countries can show up in the levels at which management becomes entrenched. They also investigate the relationship between managerial ownership and performance by using both accounting-based and market-based measures of performance. Using the sample chosen from all UK firms quoted in the Official List of the London Stock Exchange for 1988-1992, their empirical results confirm that UK management becomes entrenched at higher levels of ownership than their US counterpart. Furthermore, the empirical results confirm the general finding of the US literature of a non-linear relationship between firm performance and managerial ownership.

Palia and Lichtenberg (1999) re-examine the relationship between managerial ownership and firm performance using productivity measurements. By assuming a Cobb-Douglas production function, the paper uses managerial ownership as an argument in estimating a firm's production function. Using a large sample of manufacturing firms, the paper provides empirical

evidence that the changes in managerial ownership are positively related to the changes in productivity. Palia and Lichtenberg (1999) also find higher sensitivity of changes in managerial ownership to changes in productivity for firms who experience greater than the median change in managerial ownership.

This study utilizes the documented literature to find out whether the response of managers to the changes in the corporation tax regime is related to managerial ownership. As mentioned in the introduction, capital structure theory suggests that corporation tax influences corporate value by affecting financial profitability of investments (see Damon and Senbet (1988) and DeAngelo and Masulis (1980) to mention only a few. Also the presence of corporation tax affects the value of corporations through the use of debt which reduces corporation tax liabilities/payments by reducing taxable profits.[3] In particular, the study focuses on the corporation tax reforms of 1984 in the UK in testing the documented non-linear relationship between firm performance and managerial ownership and the correlation between changes in capital structure and investment variables induced by reform and managerial ownership.

The next section describes the data and variables used to test the relationship mentioned above.

DESCRIPTION OF DATA AND VARIABLES

Data

The sample was chosen from UK firms quoted in the Official List of the London Stock Exchange for the period 1981-1987. The managerial and institutional ownership data were collected manually from London Stock Exchange Official Annual Yearbooks. The data on performance and other control variables were drawn from the online Datastream facility. Initially the managerial and institutional ownership data were collected for each year in the sample period (see the descriptive statistics of this basic sample in Table 1). The fact that this study focuses on the relationship between managerial ownership and other variables of interest around the tax reform period conditioned my sample size and timeframe. Consequently for a firm to be included in a sample it had to be quoted on the London Stock Exchange and have data on all variables of interest for all seven years covered in this study. We also restrict the sample to non-financial companies, which reduces the final sample to 348 firms. The descriptive statistics of the final sample are given in Table 2.

Variables

The measure of performance (PERF) used in this study was estimated by using the following formula:

$$PERF = \frac{MVE + Preferred\ shares + Debt}{Total\ Assets - Current\ Liabilities}$$

Where

MVE = the market value of equity (Datastream item "mv")

Debt = the book value of total debt (Datastream item 321),

Preferred shares = total preference shares (Datastream item number 306),

Total Assets = the total assets of the firm (Datastream item number 392), and

Current liabilities = the liabilities of the firm payable within one year (Datastream items number 389).

[3] In most economies, interest expense is a deductible item for corporation tax purposes. It thus reduces taxable profit and consequently corporation tax liability. This increases cash flows and corporate value

The literature on performance describes the relationship between performance and a set of variables. Thus, in order to make this study comparable to other related studies, we used regression analysis and the following variables were included in a regression model.

Size (SIZE)

It is argued in the literature that size has a potential impact on performance. For example, Short and Keasey (1999) argue that larger firms may find it easier to generate funds using both internal and external sources due to the reduced financing constraints. Furthermore, Short and Keasey (1999) show that the economies of scale that accompany size enable firms to create entry barriers and so they are able to enjoy the associated beneficial effects on performance. The variable, SIZE, is measured as the natural logarithm of a firm's total assets. According to Short and Keasey (1999), size is positively related to performance. However, in general, the sign of the relationship between performance and size should depend on how well a firm's management can make worthwhile decisions and be able to increase firm value relative to capital employed.

Growth (GR)

Growth of the firm is linked to performance and financial structure (see Short and Keasey (1999)). As a firm grows, it needs more financing and this has an impact on the firm's capital structure. Since markets respond to good news about the company positively, a good financing arrangement leads to an increase not only in a firm's total assets but also in its market value. The growth variable is estimated as an average annual growth on Net Total assets. Consequently, a positive relationship between market-based performance measure and growth is expected.

Research and Development (RD)

A company that spends on RD is likely to discover potential profitable projects and consequently experience growth, not only in its assets but also in its market value. The variable RD is therefore expected to capture any possible increase in market value due to RD spending. The variable RD is estimated as a ratio of expenditure on RD to total assets. A positive relationship between performance and RD expenditure is expected.

Liquidity (LIQ)

Liquidity is estimated as the ratio of total cash and cash equivalent to total current liabilities. Cash is considered to be a non-earning asset and therefore holding a lot of cash relative to current cash needs may send a bad signal to the markets, resulting in a possible decline in market value. On the other hand, cash and cash equivalent may be a signal of good financial health and a possible positive effect on market value. A priori, it is difficult to ascertain the direction of the relationship. However, more cash and cash equivalent is generally good news to the company and therefore a positive relationship between liquidity and performance is expected.

Debt-equity Ratio (DE)

Debt-equity ratio is estimated as the ratio of total loan capital to market value of equity and it controls the possible impact of debt holders (or lenders) on performance. It is argued that

lenders can exert a significant influence on managers' operational behaviour and consequently on performance (see for example Short and Keasey (1999)). Furthermore, debt maybe used by managers to signal their intention to attain a certain level of performance that will enable them to pay off any debt obligation. Thus, debt may be used to resolve the conflict between managers and shareholders through a reduction in consumption of perquisites and hence it should increase the value of the firm's equity. However, during the period covered in this study, a decrease in the debt-equity ratio is expected, since debt has become less attractive due to a reduction in the statutory corporate tax rate. Furthermore, the expected decline in investments after the 1984 corporation tax reform brings in the possibility of a decrease in debt (and therefore the debt-equity ratio) if it is assumed that debt is only issued to finance profitable investments. A negative coefficient is therefore expected.

EMPIRICAL METHODOLOGY AND HYPOTHESES

The primary objective is to test whether managerial ownership contributes to performance through making decisions which are likely to increase the market value of the firm. In other words, the study aims to test whether the responsiveness of a management team to the release of pertinent information depends on the proportion of the company's equity that they hold.

To be able to give empirical evidence, the paper first tests the convergence and entrenchment theories documented in the literature (see for example Morck et al (1988), McConnell and Servaes (1995), Short and Keasey (1999), to mention only a few). In this respect OLS regression is employed to test the cubic form of the relationship between performance and managerial ownership. The model tested is given as follows:

$$Perf = a + b_1 DO + b_2 DOSQ + b_3 DOCUB + b_4 SIZE + b_5 GR + b_6 RD + b_7 LIQ + b_8 DE + \ell \quad (1)$$

DO stands for directors' ownership (or simply managerial ownership). DOSQ and DOCUB stand for quadratic and cubic term of DO respectively. Other variables are as defined in section 3.2. As explained in the literature the model assumes that, at relatively lower levels of managerial ownership, managers' interests converge with those of shareholders (hence a positive coefficient of DO). On the other hand, at intermediate levels managers become entrenched (hence a negative coefficient of DOSQ), whereas at very high levels of managerial ownership managers behave almost as shareholders and a convergence of interests re-emerge (hence a positive coefficient of DOCUB).

Assuming that markets are informationally efficient, and that firms employ market-based performance measures, the performance of a firm should reflect the market's correct interpretation of the quality of decision(s) made by managers. Under that assumption, good decisions by managers will lead to good firm performance and vice versa. Thus, if managers' interests converge with those of shareholders, managers are expected to react to pertinent information in a way that enhances value. This study focuses on the information contained in the UK corporation tax reform of 1984. Thus,

given the theoretical arguments on the impact that corporation tax reforms had on the firm, the following broad relationships are hypothesised.[4]

First, managerial ownership is negatively related to changes in investment in fixed assets. Recall that the corporation tax reform of 1984 involved, among other things, a reduction of statutory corporate tax rate and abolition of first-year and initial capital allowances. Thus, investment in fixed assets, which used to have a positive net present value due to capital allowance, is likely to be unattractive after the reform and therefore a decrease in investment in fixed assets[5] is expected. Thus, a negative correlation between managerial ownership and the changes in investment in fixed assets in the period after the reform is expected.

Secondly, managerial ownership is negatively related to the changes in the debt-equity ratio due to the corporation tax reform. Other things remaining constant, the corporation tax reform of 1984 reduced the attractiveness of debt by reducing the statutory corporate tax rate from 52% to 35%. Although first-year and initial capital allowances were also abolished (which increases to importance of interest payments as a tax shield), the effect of reducing the tax rate is expected to dominate in the long term because the first-year allowance applies only to new investment in assets. Thus, the coefficient of DE in model 1 is expected to be negative.

[4] For more details of the impact of the corporation tax reform of 1984 see Edward (1984), Devereux (1988), and Moon and Hodges (1989).

[5] In fact the government argument for reform was that there are lot of investments which do not produce satisfactory cash flows but they become viable only because there existed capital allowances. These investments are likely to be dropped if capital allowances are abolished.

EMPIRICAL RESULTS

Relationship Between Managerial Ownership and Performance

As mentioned earlier, initial empirical work tests the relationship between performance and managerial ownership. The test is implemented by running OLS regressions for each of the seven years covered in this study to test model 1 as described in section 4. However, to save space, only the results for two years, 1982 and 1986 are presented here. Table 3 presents the results for the basic model (model 1) for both years. Panel A shows the results for 1982 and Panel B shows results for 1986.

The results support the non-linear relationship between managerial ownership (DO) and performance (perf). More specifically, the estimated coefficient of DO is positive and significant at 5% for 1982 (p-value = 3.4%) as expected, suggesting a convergence of interests at the lower level of managerial ownership. The estimated coefficient of DOSQ is negative (and statistically significant for 1982) whereas that of DOCUB is positive (and statistically significant at 10%) as the theory suggests. These results suggest that managers become entrenched at intermediate levels of equity ownership and may divert firms' resources towards satisfying their own needs (hence decline in performance). On the other hand, as the equity ownership by managers increases to higher levels, managers' interests tend to converge with those of external shareholders and managers focus on maximising the firm's value (which leads to an increase in performance).

Table 4 presents the results for the model similar to model 1 in all respects except that the dependent variable for regression on 1982 data is calculated as the average of performance before the reform (i.e. 1981-1983). The dependent variable used for 1986 regression is calculated as average after reform (i.e. 1985-1987). The results as presented in Table 4 show that the statistical significance of estimated

coefficients of DO, DOSQ, DOCUB increases when the averages are used instead of the actual data for a particular year (compare column 5 of Table 3 with column 5 of Table 4). Particularly, the estimated coefficients of DO, DOSQ, and DOCUB are statistically significant at 5% level. In addition to supporting the cubic form of the relationship between performance and managerial ownership, these results suggest that probably an average performance measure should be used in investigating the relationship between performance and its documented influencers.

The level of ownership at which convergence of interests or entrenchment occurs is not very clear from this study because the graph is not smooth. However, by using the final sample and cross-sectional analysis, there is evidence of a positive relationship between managerial ownership and performance up to managerial ownership levels of 11%, then a notable negative relationship up to managerial ownership levels of 30%. The relationship at a level of ownership above 30% is not well defined graphically but performance generally increases with an increase in managerial ownership.

Using the basic sample data, average performance increases with average managerial ownership until the 17.7% managerial ownership level. It then it declines up to 20.2% and finally it increases slightly at the managerial ownership level above 20.2%. On the other hand, the observed relationship between institutional ownership and performance over the period covered by this study (i.e. time series analysis) mirrors the reported relationship between ownership and performance. That is, the performance increases with equity ownership at relatively lower levels of ownership, decreases at intermediate levels of ownership and then increases at higher levels of equity ownership. Average performance increases with average institutional ownership until the latter reaches 43%, it then decreases until the 45% level of institutional ownership and finally increases as institutional ownership increases above 45%. The results support the functional form of the relationship between performance and managerial ownership as suggested by Morck *et. al.* (1988) and Short and Keasey (1999). Thus, management move from alignment, to entrenchment, and to alignment as their equity ownership in the firms they manage increases.

Relationship Between Performance and the Debt-equity Ratio

As mentioned previously, the objective of this study is to relate the performance of a company (as measured by Tobin's Q) with the managerial action taken in response to the release of pertinent information. Knowing the theoretical prediction of the impact of the corporation tax reform of 1984 on capital structure variables (i.e. the debt-equity ratio), the idea is to test whether the decreases in the debt-equity ratio following that reform are related to managerial ownership. Agency theory suggests the inverse relationship between managerial ownership and changes in debt-equity ratios. The rationale for that relationship is that the higher the managerial ownership, the greater is the chance that there are associated the decreases in the debt-equity ratios. However, the extent of decrease in debt-equity ratio due to corporation tax reform should, in principle, reflect the extent to which corporation tax reform distorted the optimal debt-equity ratio. Thus, even if managers' interests are aligned with those of external shareholders there will be only minor adjustment if only minor distortion occurred.

The empirical results are given in Tables 3, 4 and 5. The 9th row in each panel of Tables 3 and 4 shows the coefficients of the debt-equity ratio (DE) estimated by using model 1 shown previously. All estimated coefficients are negative as expected and are statistically significant (see the last column in each panel). Note that the results on DE ratio given in Tables 3 and 4 are more robust because the relationship between performance and the debt-equity ratio is

analysed together with other variables that are considered to be important determinants of performance. On the other hand, the results given in Table 5 are obtained after analysing the relationship between performance and each variable individually. Columns 2 and 3 (last row in each panel) of Table 5 show the correlation coefficients and corresponding p-values for the debt-equity ratio and performance measure.

During the period covered in this study (i.e. 1981-1987) there is a negative relationship between the debt-equity ratio and performance measures. Assuming at this time that managers work in the best interests of shareholders, a good decision on any relevant area of the company should lead to improved market-based performance. In this study, on average, the corporation tax reform of 1984 made debt unattractive and therefore the decision to reduce debt in a company's capital structure should be associated with an increase in market-based performance measures. A significantly negative correlation coefficient between DE and Perf (-0.171, p-value =0.001) reported in panel A of Table 5 implies that the decline in debt-equity ratios induced by the reform was associated with an increase in performance. Assuming that a decrease in the debt-equity ratio resulted from a deliberate action by managers, a negative correlation between DE and perf provides empirical evidence to support the argument that, on average, managers whose interests are aligned with those of shareholders respond to information in a way that increases performance.

It should be noted that a general conclusion as the one made above needs analysis of more variables that are related to performance and managerial ownership. However, as mentioned above, a decrease in the debt-equity ratio following the corporation tax reform of 1984 is associated with an increase in performance. The relationship between performance and change in debt confirms the hypothesised relationship. Again a change (or simply a decrease) in the debt-equity ratio due to reform is associated with higher performance. The reported correlation coefficient is –0.141 and is statistically significant at any conventional level of significance (p-value = 0.009).

Panel C, last row of columns 2 and 3 of Table 5 reports the correlation coefficient and corresponding p-value between the changes in performance and the changes in debt-equity ratios. As the previously discussed results show, the reported correlation is negative but is statistically insignificant (correlation = -0.065, p-value = 0.231). Since managers may take a number of courses of action at the same time, the changes in debt-equity ratios may well be the result of other aspects not related to the reform. Thus, the insignificance of the above correlation coefficient may be explained by the fact that only a portion of the change in performance is associated with a change in debt-equity ratios induced by the reforms.

The Relationship Between Managerial Ownership and the Debt-equity Ratio

The relationship between managerial ownership and the debt-equity ratio depends on the dominant theory between convergence theory and entrenchment theory. The working assumption here is that the capital structure decision (i.e. whether to adjust the debt-equity ratio or not) depends on the documented relationship between managerial ownership and performance. At the level of managerial ownership where managers are entrenched, a change in the debt-equity ratio might not benefit managers and therefore a decline in performance is a possibility. On the other hand, if managers' interests are aligned to those of shareholders, a change in the debt equity ratio should necessarily lead to higher performance because the adjustment should be towards an optimal level.

In this study, managers who operate in the best interests of shareholders are expected, on average, to take decisions that will lead to a decrease in the debt equity ratio. A priori, the sign of the relationship will depend on the

dominant managerial ownership level. At "entrenchment levels" any sign is a possibility since the adjustments to the debt-equity ratio are aimed at benefiting managers and not shareholders. Furthermore, it should be noted that a particular decision could benefit both managers and external shareholders. On the other hand, at "convergence levels," corporate finance suggests a negative relationship. Thus, responsible managers should adjust their debt-equity ratio downwards. The empirical results given in Table 5 (Row 3 of Panel A) show the significant negative correlation between the debt-equity ratio (DE) and managerial ownership (DIR) (correlation coefficient = -0.108, p-value = 0.045). Thus, on average, the firms with higher managerial ownership have lower debt-equity ratios and vice versa.

The correlation between managerial ownership and a change in the debt-equity ratio following corporation tax reforms is positive and significant (correlation = 0.108, p-value = 0.046). This result should be interpreted with caution. The result suggests that high managerial ownership is associated with large changes in the debt-equity ratio. This might not always be the case because even if we assume that managers' interests are aligned with those of shareholders at a higher level, the reduction in debt-equity ratios required to restore the optimal level does not necessarily need to be large. In an extreme situation the "no change" or an increase in the debt-equity ratio might be a possibility. Thus, although corporation tax reform is expected to have a negative impact on the debt-equity ratio, the reported positive correlation does not necessarily deviate from expectations. A management team whose interests are aligned with those of shareholders at low levels of equity ownership may need only a small adjustment to their debt-equity ratio to attain the optimal level, hence resulting in a positive correlation.

Changes in managerial ownership are negatively correlated with the changes in debt-equity ratios, although the correlation coefficient is not statistically significant. Given that there is a significant decrease in debt-equity ratios due to the reform, a negative correlation is consistent with the view that the increase in equity ownership by managers increases the alignment of managers' interests with those of other shareholders. However, whether the changes in managerial ownership will bring about a corresponding change in performance depends on the level of managerial ownership before the change. For example, if the managers' interests converge with those of shareholders at managerial ownership ranging from 0% to 18%, the change in managerial equity ownership from 10% to somewhere below 18% is not likely to bring about a corresponding change in performance. The reason is that, at such ownership levels (i.e. 10%), managers behave more like external shareholders and they are expected to do their best to maximise company value.

The Relationship Between Managerial Ownership and Investments

Managerial ownership is related to investments in that, if managers operate in the best interests of the company, then they will engage in an investment programme that will maximise the value of shareholders' equity. Corporate governance theory suggests that there exist levels of managerial ownership at which managers' interests converge with those of owners and other levels at which managers become entrenched. The empirical studies in both the UK and US provide evidence in favour of the theory, although they differ in convergence and entrenchment levels.[6] As in any other decision, managers whose interests are aligned with those of shareholders are expected to act on investment-related information in a way that maximises the company's value.

The information used in this study relates to a change in corporate tax structure. The reduction or abolition of first-year and initial capital allowances, as deductible items for corporation tax purposes, meant that some investment in assets mostly affected by the reform will prove to be relatively unattractive and possibly have negative net present values. As a consequence, there is likely to be a reduction in the aggregate level of investments.

Since having more assets in a company is not a bad thing for self-centred managers, the decrease in assets is likely to be related to managerial ownership. Specifically, the changes in investment in assets due to reform are likely to be related to managerial ownership. Devereux, *et. al.* (1993) analysed the impact of capital allowance on investments in the UK and showed that there was a significant decrease in investments after the reform (see also Edward (1984), Devereux (1988) and Moon and Hodges (1989)).

In this study we first test whether there is a decrease in investment in assets (both total and fixed) and then test whether and how the changes in investment in assets are related to managerial ownership. Table 5 provides the empirical results to support the argument that reform led to decreases in debt-equity ratios and investment in fixed assets. Initially the test is conducted to analyse a general relationship between managerial ownership and investments. The results are summarised in panel A, last two columns, row 3 of Table 5. The results show that there is a negative significant correlation between managerial ownership and investment in both total assets and fixed assets. The respective correlation coefficients of –0.297 and –0.271 are all highly significant (i.e. p-value is equal to zero in both cases). Thus, higher managerial ownership is associated with lower investment (in both total assets and fixed assets) and vice versa. On its own the negative correlation between managerial ownership and investments does not make much economic sense. Why should a low percentage of equity ownership by managers be associated with a large investment in assets? Even if managers work in the best interests of shareholders, any asset acquired should meet certain evaluation criteria and therefore the amount of assets should be independent of managerial ownership. Thus, investments should be related to performance to be economically meaningful. The correlation between investments and performance is negative and significant (see Table 5, panel A, column 4 and 5, last row). Since total assets can be used to proxy size, the relation may be attributed to the size effect. Most literature in asset pricing shows that small firms tend to out-perform large firms (see for example Fama-French (1993, 1998)). Thus, the negative correlation between managerial ownership and investment in assets (total and fixed) emanate from the relationship between assets and performance, in that managerial ownership is positively correlated to performance. The correlation between managerial ownership and the changes in investment in assets is negative and significant as expected.

The correlation coefficient between managerial ownership and change in total assets (fixed assets) is –0.111 (-0.117), with p-value = 0.041 (0.031). The results, shown in panel B, last row of the last four columns of Table 5, show that the decrease in investment in assets is associated with a decrease in shareholder wealth, consequently affecting overall performance (see a significant positive correlation coefficient between performance and

[6] For details on entrenchment and convergence levels in the US see Mork et al (1988) and MCConnell and Servaes (1990); the corresponding reference in the UK are Faccio-Lasfer (1999) and Keasey-Short (1999).

change in investment in assets). The observed cross-sectional relationship between managerial ownership, investment and performance partly supports the findings by Cho (1998); that is, generally investment in fixed assets is related to performance and indirectly to managerial ownership.

SUMMARY AND CONCLUSION

In this paper, corporate governance theory is integrated with corporate finance to test (initially) the documented relationship between managerial ownership and performance. We then tested whether the expected changes in capital structure and investment due to the corporation tax reform of 1984 were related to managerial ownership in a manner predicted by both corporate finance and corporate governance theories. Theoretical and empirical studies on corporate governance propose a non-linear relationship between managerial ownership and performance of the firm. Thus, this study tests the cubic form of the above-mentioned relationship; that is, it tests whether management moves from alignment, to entrenchment, and then to alignment as their equity ownership in a firm increases.

The empirical results support the cubic form of the relationship between managerial ownership and performance as suggested by Morck *et. al.* (1988), McConnell and Servaes (1990) and by Short and Keasey (1999). Given the empirical evidence on the presence of alignment and entrenchment effects, and that the entrenchment occurs only in small range of ownership, we test whether the changes in capital structure and investments due to the reform of 1984 observed in the firms are related to managerial ownership.

Corporate finance theory suggests that corporation tax is one of the fundamental determinants of leverage and to a large extent determines the attractiveness of investments (especially in fixed assets). The deductibility of interest payments and capital allowances for corporation tax purposes and the availability of non-debt tax shields suggest the existence of optimal capital structure (see for example DeAngelo and Masulis (1980a) and Dammon and Senbet (1988)). Furthermore, the deductibility of capital allowance for some assets reduces the effective price of those assets (capital allowance is deducted at year zero of investment) and therefore increases their attractiveness.

The corporation tax reform studied in this paper involves, among other things, the reduction of the statutory corporation tax rate from 52% to 35% and the abolition of the first-year allowance on plant and machinery and the initial capital allowance on industrial buildings, which used to be 100% and 75% respectively.

The implications of such reform, among others, are as follows: First, debt will become relatively unattractive and consequently a decline in the debt-equity ratio is expected. Second, the effective cost of some assets will increase (relatively) and investment in such assets is likely to decline. Such a decrease in investment is expected because some of the projects that used to have positive NPV before the reform (and therefore accepted and implemented) may turn out to be unattractive. Although a change in investments is expected, the direction and significance of such a change depend on the availability of profitable opportunities and the magnitude of NPV for such assets before the reform. That is, if companies on average have profitable opportunities (projects with relatively large NPV) the NPV of such projects may remain positive, even after the reform, and therefore, other things remaining constant, there may be an increase (or no change) in investment after the reform.

The empirical results show that managerial ownership is negatively related to a change in the debt-equity ratio. The interpretation of that finding is that firms with higher levels of managerial ownership experienced only small

adjustments to their debt-equity ratios and vice versa. This is just a coincidence because the adjustment to debt-equity ratio should normally reflect the distortion made by the reform. Thus, a firm that experienced a larger distortion is expected to make a relatively large adjustment to the its capital structure.

Concerning the impact of reform on investments, the results show the expected negative significant relationship between managerial ownership and the change in investment in fixed assets. Also the results show that performance is positively correlated with changes in investment in fixed assets. Thus, the relationship between performance and managerial ownership may be considered to emanate from deliberate investment decisions by managers. In other words it can be argued that the relationship between performance and managerial ownership depends on the way managers reacted to pertinent information, which in turn depends on whether managers operate in the best interests of shareholders (convergence theory) or whether they operate the company to fulfil their own self-centred desires (entrenchment theory).

Table 1: *The Descriptive Statistics for Managerial and Institutional Ownership for 1981-1987-Basic Sample*

	1981	1982	1983	1984	1985	1986	1987
Panel A: Managerial Ownership(%)							
Mean	24.7	20.2	17.1	17.4	17.3	19.6	17.7
Median	24.0	0.0	0.0	0.0	0.0	13.2	11.3
Stdev	24.3	23.8	23.2	23.2	22.2	22.5	20.9
Min	0.0	0.0	0.0	0	0.0	0.0	0.0
Max	85	85	90.0	90	86.0	87.2	86.0
N	535	945	1087	1261	1027	658	656
Panel B: Institutional Ownership(%)							
Mean	45.6	44.1	45.1	43.4	43.6	37.9	38.5
Median	41.2	36.6	38.5	31.6	33.9	29.9	29.9
Stdev	22.6	24.6	25.8	26.5	26.7	21.5	23.6
Min	7.2	7.1	5.6	6.4	7.3	7.2	9.9
Max	99.6	99.9	99.9	99.9	99.9	99.9	99.9
N	176	339	354	439	431	299	321

Notes:

Data on managerial and institutional ownership represent the proportions of equity shares held by individuals who manage the firm and other companies. Data were collected manually from London Stock Exchange Official annual yearbooks for all seven years. A company is included in the calculation of the above descriptive statistics if it has data on either managerial ownership or institutional ownership for at least one year. The descriptive statistics were obtained by using Minitab.

The following table shows some descriptive statistics for three (3) key variables used in this paper. The description and estimation of other variables are as given in section 3.2. A company was included in the final sample if it has data for all variables for all seven years. The final sample, whose descriptive statistics are reported in this table, consists of 348 companies.

Table 2: *Descriptive Statistics for Variables for the Period 1981-1987- Final Sample*

Year	Parameter	DIR	DE ratio	Perf
1981	Mean	0.065	0.304	0.990
	Stdev[a]	0.165	0.510	0.808
	Min[b]	0.000	0.000	0.069
	Max[c]	0.789	3.928	6.212
1982	Mean	0.065	0.343	0.977
	Stdev[a]	0.159	0.630	0.842
	Min[b]	0.000	0.000	0.063
	Max[c]	0.750	5.680	7.419
1983	Mean	0.062	0.340	1.181
	Stdev[a]	0.154	0.794	1.078
	Min[b]	0.000	0.000	0.058
	Max[c]	0.750	6.731	8.914
1984	Mean	0.056	0.323	1.144
	Stdev[a]	0.139	1.077	0.866
	Min[b]	0.000	0.000	0.042
	Max[c]	0.600	18.311	6.748
1985.	Mean	0.054	0.267	1.279
	Stdev[a]	0.136	0.674	0.916
	Min[b]	0.000	0.000	0.047
	Max[c]	0.600	9.632	8.045
1986	Mean	0.051	0.175	1.652
	Stdev[a]	0.135	0.331	1.263
	Min[b]	0.000	0.000	0.049
	Max[c]	0.836	3.651	12.214
1987	Mean	0.047	0.114	2.365
	Stdev[a]	0.125	0.232	2.166
	Min[b]	0.000	0.000	0.062
	Max[c]	0.836	2.590	28.134

a The word stands for standard deviation
b The word stands for minimum value
c The word stands for maximum value

The estimated coefficients of the model estimated to test the relationship between performance measures and managerial ownership. The estimated model is given below:

$$Perf = a + b_1 DO + b_2 DOSQ + b_3 DOCUB + b_4 SIZE + b_5 GR + b_6 RD + b_7 LIQ + b_8 DE + \ell$$

The variables are as defined in section 3. The first column shows the name of the variables where the name "intercept" stands for "a" in the above model. The second column presents the values of estimated coefficients whereas the third column shows the standard errors in estimating the coefficients. The column titled "T-Statistics" shows the t-values estimated to test the hypothesis that estimated coefficient is zero against the alternative hypothesis that the coefficient is different from zero. The last column shows the empirical p-values estimated to test the significance of estimated coefficients. Panel A shows the results for the model estimated by using 1982 data, whereas panel B shows the results for the model estimated using 1986 data.

Table 3: *The Estimated Coefficients of the Model estimated to Test the Relationship Between Performance and Its Determinants Using Actual Annual Data*

Panel A: Coefficients estimated by using 1982 data				
Variable	Est. coeff.	SE(Mean)	T-statistics	P-value
Intercept	1.214	0.354	3.430	0.001
DO	8.268	3.879	2.130	0.034
DOSQ	-33.800	16.080	-2.100	0.036
DOCUB	30.410	16.090	1.890	0.060
SIZE	-0.031	0.031	-0.980	0.326
GR	0.415	0.189	2.190	0.029
RD	1.991	2.911	0.680	0.494
LIQ	0.500	0.180	2.780	0.006
DE	-0.079	0.051	-1.570	0.118
R-squared	7.30%			
F-statistic	3.30			
Panel B: Coefficients estimated by using 1986 data				
Variable	Est. coeff.	SE(Mean)	T-statistics	P-value
Intercept	2.226	0.635	3.51	0.001
DO	3.038	4.653	0.65	0.514
DOSQ	-11.880	18.690	-0.64	0.525
DOCUB	7.470	17.800	0.42	0.675
SIZE	-0.048	0.054	-0.89	0.377
GR	0.426	0.175	2.43	0.015
RD	-5.457	9.884	-0.55	0.581
LIQ	0.087	0.121	0.71	0.475
DE	-0.373	0.167	-2.23	0.026
R-squared	4.60%			
F-statistic	2.05			

The estimated coefficients of the model estimated to test the relationship between performance measures and managerial ownership. The estimated model is given below:

$$\overline{Perf} = a + b_1 DO + b_2 DOSQ + b_3 DOCUB + b_4 SIZE + b_5 GR + b_6 RD + b_7 LIQ + b_8 DE + \ell$$

The dependent variable for the results shown in panel A is the average value of "Perf1" for the period 1981-1983; whereas the dependent variable for the results shown in panel B is the average value of "Perf1" for the period 1985-1987. Other variables are as defined previously. The first column shows the name of the variables where the name "intercept" stands for "a" in the above model. The second column presents the values of estimated coefficients whereas the third column shows the standard errors in estimating the coefficients. The column titled "T-Statistics" shows the t-values estimated to test the hypothesis that estimated coefficient is zero against the alternative hypothesis that the coefficient is different from zero. The last column shows the empirical p-values estimated to test the significance of estimated coefficients. Panel A shows the results for the model estimated by using 1982 data, whereas panel B shows the results for the model estimated using 1986 data.

Table 4: *The Estimated Coefficients of the Model Estimated to Test the Relationship Between Performance and Its Determinants Using Average Annual Data*

Panel A: Coefficients estimated by using 1982 data				
Variable	Est. coeff.	SE(Mean)	T-statistics	P-value
Intercept	1.277	0.361	3.540	0.000
DO	8.775	3.955	2.220	0.027
DOSQ	-35.990	16.400	-2.200	0.029
DOCUB	32.390	16.410	1.970	0.049
SIZE	-0.029	0.032	-0.920	0.358
GR	0.473	0.193	2.450	0.015
RD	2.437	2.968	0.820	0.412
LIQ	0.484	0.184	2.630	0.009
DE	-0.099	0.052	-1.930	0.055
R-squared	8.20%			
F-statistic	3.70			
Panel B: Coefficients estimated by using 1986 data				
Variable	Est. coeff.	SE(Mean)	T-statistics	P-value
Intercept	3.343	0.635	5.270	0.000
DO	1.551	4.650	0.330	0.739
DOSQ	-7.540	18.680	-0.400	0.687
DOCUB	3.920	17.790	0.220	0.826
SIZE	-0.130	0.054	-2.410	0.017
GR	0.205	0.176	1.170	0.244
RD	-4.478	9.877	-0.450	0.651
LIQ	0.070	0.121	0.580	0.563
DE	-0.339	0.167	-2.040	0.043
R-squared	4.60%			
F-statistic	2.01			

The managerial ownership variable represents the percentage of equity shares owned by managers (DIR). Capital structure (DE) is represented by the debt-equity ratio, Investment is proxied by total assets (INV-TA) and fixed assets (INV-FA). Panel A shows the relationship (correlation coefficients) of the variables using 1982 data. The choice of 1982 is arbitrary; any other year before the corporation tax reforms of 1984 (i.e. 1981-1983) can be used and the results are similar in that the same conclusion can be reached. Panel B shows the correlation coefficients of variables versus changes in variables following tax reforms. The change, denoted by a symbol Δ before the variable, is calculated by subtracting the average of the variables before reforms (i.e. 1981-1983) from the average of variables after reforms (i.e. 1985-1987). Panel C shows the correlation coefficients of changes in variables. The columns labelled "corr" and "p-value" show the correlation coefficients and the measure of the significance of estimated coefficients (p-values[7]) respectively.

Table 5: *The Relationship Between Managerial Ownership, Capital Structure, Investments and Performance*

Panel A: Correlation coefficients: Actual Variables						
Variable	DE		INV-TA		INV-FA	
	Corr	P-value	Corr	P-value	Corr	P-value
DIR	-0.108	0.045	-0.297	0.000	-0.271	0.000
PERF	-0.171	0.001	-0.218	0.000	-0.055	0.304
Panel B: Correlation coefficients: Actual variables Vs change in variables						
Variable	Δ(DE)		Δ(INV-TA)		Δ(INV-FA)	
	Corr	P-value	Corr	P-value	Corr	P-value
DIR	0.108	0.046	-0.111	0.041	-0.117	0.031
PERF	-0.141	0.009	0.203	0.000	0.249	0.000
Panel C: Correlation coefficients: Changes in variables						
Variable	Δ(DE)		Δ(INV-TA)		Δ(INV-FA)	
	Corr	P-value	Corr	P-value	Corr	P-value
Δ(DIR)	-0.081	0.136	0.033	0.543	0.050	0.357
Δ(PERF)	-0.065	0.231	0.100	0.065	0.018	0.744

[7] Thus, the p-value is calculated to test the hypothesis that estimated coefficient is zero against the alternative hypothesis that the coefficient is not equal to zero.

Figure 1(a):The relationship between Managerial Ownership & Performance

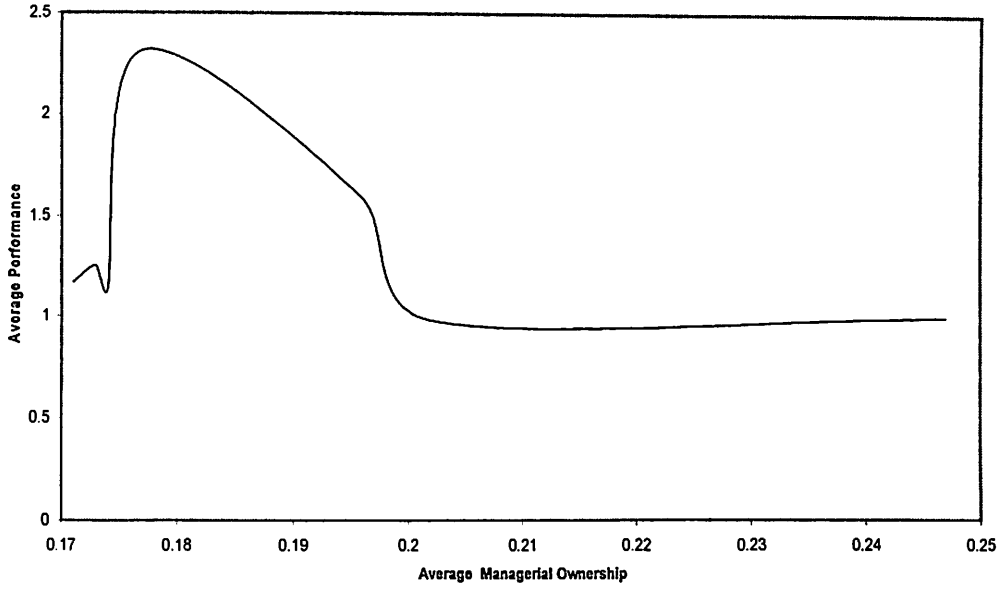
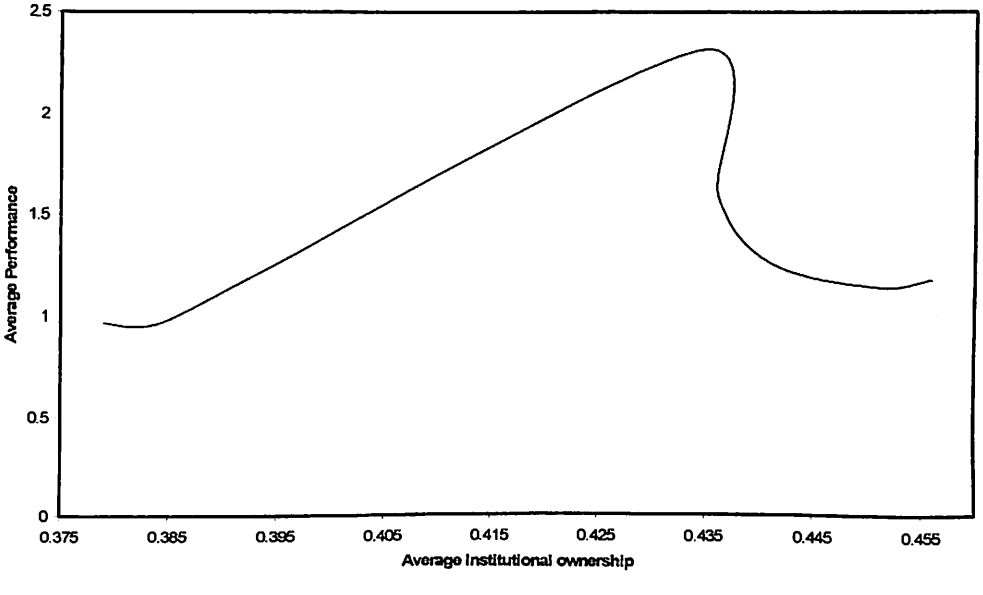


Figure 1(b):The relationship between Institutional ownership & Performance



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