MANAGERIAL DISCRETION AND TAKEOVER PERFORMANCE

ESRC Centre for Business Research, University of Cambridge Working Paper No. 216

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September 2001

This Working Paper relates to the CBR Research Programme on Industrial Organisation, Competitive Strategy and Business Performance

Abstract
We investigate the relation between long run takeover performance and board share ownership in the acquiring company for a sample of 142 UK takeovers completed between 1985-95. We find evidence of a non-linear relationship both between board ownership and takeover profitability, and between board ownership and post-takeover share returns. We cast the analysis in a simultaneous equations framework using non-linear two-stage least squares, and find that our results are robust to this alternative specification. The results are therefore consistent with a managerial alignment / entrenchment trade-off.

Keywords: Corporate takeovers; board ownership; profitability; long run share returns

JEL Codes: G32, G34

Acknowledgements: We are grateful to Carl Chen, Robert Chirinko, Charlie Conn, Helmut Dietl, Dennis Mueller, Roberta Romano, Peter De Souza and to participants at a Corporate Governance Conference in Cambridge in 2001, and a seminar sponsored by DIW in Berlin in 2000, for helpful comments and discussions.

1. Introduction

This paper analyses the relationship between board ownership in acquiring companies and the long run financial performance of UK domestic takeovers. Takeovers are a field of research that has generated a large and controversial literature on both sides of the Atlantic (Jensen and Ruback, 1983; Hughes, 1993). One of the conundrums that this literature has produced is an apparent divergence between the impact of takeovers when measured using accounting data and when measured using stock market prices. On balance the evidence is not consistent with takeovers producing profitability improvements. This is inconsistent with the stock market studies, which report combined positive shareholder gains over the takeover announcement period (Caves, 1989). However, a number of event studies have reported negative abnormal stock returns following the completion of takeovers, which suggest that abnormal returns during the announcement period may overestimate future profit gains from takeover (Agrawal and Jaffe, 1999). This is consistent with the studies using accounting returns.

The neutral results for accounting performance and the long run negative share returns have led to a search for explanations for takeovers, which might be consistent with non-profit maximizing motives. Many acquiring companies are not run by the people who own them. When managers hold little equity in the firm and shareholders are too dispersed to enforce value maximization, corporate assets may be deployed to benefit managers rather than shareholders. Such managerial benefits can include pursuit of such non-value maximizing objectives as empire building and diversification through takeovers. According to Jensen and Meckling (1976), as management ownership rises, managers bear a larger share of these costs and are hence less likely to squander shareholder wealth through managerial takeovers. In addition, it has been argued that where countervailing shareholder power to discipline managers exists

in the form of off board institutional shareholdings, takeovers may be more value creating than when such power is absent (Cosh, Hughes and Singh, 1989: Cosh, Hughes, Lee and Singh, 1998). Fama and Jensen (1983) have pointed out that in the absence of other offsetting board holdings, management which owns a substantial fraction of the firm's equity may have enough voting power or influence to avoid the discipline of takeover[i]. With effective control, the entrenchment hypothesis predicts that even with substantial ownership of cash flow rights, managers have incentives to take actions that benefit themselves in other ways at the expense of other shareholders. For example, when managerial shareholdings consist of large undiversified positions, managers may favour lower risk projects even if they are negative net present value opportunities. In addition, because of their ownership position, managers can potentially expropriate wealth from minority shareholders[ii].

Board share ownership may therefore lead to performance which is either consistent or inconsistent with shareholder welfare maximizing behavior. Empirical studies for both the U.S. and U.K. have in fact found evidence of a non-monotonic relation between board ownership and company performance in general. Morck, Shleifer and Vishny (1988) find that the value of Tobin's Q at first increases with board share ownership, decreases and then increases again, whilst McConnell and Servaes (1991), and Hermalin and Weisbach (1991), find an inverted U-shaped relationship. For the U.K., Short and Keasey (1998) and Faccio and Lasfer (1999), find evidence broadly consistent with Morck, Shleifer and Vishny (1988). Their interpretation of these results is that once the conditions necessary for entrenchment are reached, further ownership bestows no further entrenchment. The convergence-of-interests effect, in contrast, operates throughout the whole range of ownership. Therefore once entrenchment is reached, further ownership will result in an increase in company performance.

As regards the impact of managerial ownership on takeover performance, previous studies have focused exclusively on the announcement period share returns of the merging firms. Taken as a whole, these studies suggest that bidder[iii] share returns increase linearly with board shareholdings (Lewellen et al. 1985; Loderer and Martin, 1997; Shinn, 1999). These studies therefore suggest that the detrimental effects of entrenched management observed with company performance in general do not apply in the case of corporate takeovers, although one study (Hubbard and Palia, 1997) does document evidence of a U-shaped relationship. Hubbard and Palia (1997) argue that at sufficiently high levels of managerial ownership, managers hold a large non-diversified financial portfolio in the firm. Such management will pay a premium for risk reducing acquisitions, even if the value of the acquiring firm decreases.

A limitation of the takeover event studies is the assumption that capital markets are sufficiently informationally efficient for announcement effects to accurately reflect long run effects. However, managerially motivated takeovers stand out as being more likely to result in misvaluation of takeover performance by the stock market at the time of announcement. Because of the relatively low value creation in managerial takeovers, bidder management may be motivated to present an overly optimistic forecast to stock market analysts. If so, and if the market cannot identify such bidders, their takeovers may be overvalued at announcement. Hence, one explanation for the discrepancy between the short run results of the event studies and the results of accounting studies may be managerial takeovers. Despite the importance of the discrepancy, as Caves (1989) points out, "there has been little effort to assess it or to relate it to hypotheses about the sources of efficiency or inefficiency in mergers"[iv]. In this paper we attempt to do this, by making a systematic analysis of board ownership in the acquiring firm with the long run profit and share return effects of takeovers. It is this examination of both accounting and share price methodologies over the long run, which primarily distinguishes

our study from previous studies examining the impact of board ownership on takeover performance.
Another important methodological issue, which we address, is the direction of causality between ownership and performance. While Morck et al. (1988) and McConnell and Servaes (1990) treat ownership structure as exogenous, Kole (1996) and Cho (1998) find evidence of a reversal of causality in the ownership – corporate value relation, suggesting that corporate value could be a determinant of ownership structure rather than vice versa. Loderer and Martin (1997) test the endogeneity of board ownership and bidder announcement returns. They find that the significant linear relation disappears in a simultaneous equations framework, and instead find a significantly positive effect of takeover performance on board ownership. The possibility here is that boards of acquiring companies purchase stock in anticipation of good takeover performance. Seyhun (1990) provides evidence of this, showing that boards buy more stock during the announcement period in relatively profitable takeovers.

We study the long run post-takeover performance of a sample of U.K. takeovers, which occurred between 1985-1995. Consistent with prior studies, sample takeovers have a neutral impact on profitability and a negative impact on long run share returns. This pattern is consistent with non-value maximizing motives for takeover. We find evidence of a non-linear relationship between board ownership and takeover profitability. At low levels of bidder board ownership, takeovers do not improve profitability and have a significantly negative impact on long run share returns. Bidders with higher levels of ownership carry out profitable takeovers. However, beyond a certain level of ownership, takeover profitability and long run share returns are significantly negative. Since it is not clear whether board ownership determines takeover performance or vice versa, we cast the analysis in a simultaneous equations framework using non-linear two-stage least squares. However, we find that the results are robust to this alternative specification. Overall, we

consider this evidence to support the view that board ownership provides managerial alignment with shareholders at low levels but results in managerial entrenchment at high levels. We investigate the characteristics of takeovers carried out by entrenched bidders and find that such takeovers involve relatively large targets, and result in a significant decline in profit margins and investment.

Section 2 describes the data and the methodology. Section 3 examines the relation between the post-takeover performance of takeovers and the management ownership of the bidder. Section 4 concludes.

2. Data and Methodology

2.1. Data

We examine a sample of 142 takeovers of U.K. public companies by U.K. public companies, completed between January 1985 and December 1995, with the end date chosen to enable us to examine 4 years of post-takeover performance. The sample is drawn from Guest (1999), which consists of a comprehensive sample of 140 hostile takeover bids matched by industry and year with 140 friendly takeover bids. A takeover is defined as occurring when the bidder owns less than 50% of the target shares before the takeover bid, and increases its ownership to at least 50% as a result of the bid. Consistent with previous studies, the sample excludes takeovers involving financial and property companies because they are subject to special accounting requirements, making them difficult to compare with other companies. To obtain a representative sample of takeovers for the purposes of this study, we delete hostile takeovers randomly from the original Guest sample until the proportions of hostile and friendly takeovers reflect the true population of all takeovers over the time period considered.

Information on managerial shareholdings was collected from the Hambro Company Guide. This database contains information on the ownership structure of the vast majority of UK listed stocks, and was available for each acquiring sample company, resulting in a final sample of 142 takeovers[v]. This is to be compared with the total of 740 U.K. takeovers by U.K. companies from 1985-95.

Certain characteristics of the final sample are shown in Table 1. Panel A shows that the sample of takeovers is more heavily concentrated in the 1980s than the 1990s, which is consistent with the overall pattern of takeover activity over these time periods (Guest, 1999). Panel B shows the size distribution of sample firms, relative to all firms listed on the U.K. stock market. Targets are distributed evenly across the different size deciles, whilst bidders are relatively large, with over 50% being concentrated in the largest two size deciles. This size distribution is very similar to that reported by Gregory (1997) for 1984-92, and suggests that our sample is representative of the overall population of takeovers. Panel D reports the size of targets relative to bidders prior to the takeover. The mean ratio is 0.28, indicating that our sample of takeovers represent significant investments for the bidders involved.

2.2. Methodology

2.2.1. Accounting study methodology

For the accounting study we examine the pre- and post-takeover profitability of bidders and targets, relative to control firms matched on industry and size. Barber and Lyon (1996) show that profitability can be determined by industry, or firm specific factors such as size. Sample firm profitability is therefore measured relative to control firms matched on size and industry, based on the methodology suggested by Barber and Lyon (1996)[vi]. The control firms are selected from firms listed on Datastream, which neither made, nor received a takeover offer for a public company during 1985-95.

The numerator of our profitability measure consists of operating profit plus other income and extraordinary items before interest paid and taxation. Other income is included to capture profits from joint ventures, which, if excluded, could cause an upward bias when what was previously associate income is consolidated in post-takeover operating profit. Extraordinary items are added to profits because in the U.K. over this period, acquirers could exclude integration costs from profit by classifying them as extraordinary items. The denominator of our profitability measure is the average of beginning- and ending-period book value of assets. Assets are defined as the book value of ordinary shareholders funds, long and short term borrowing, and preference stock. U.S. studies (see, e.g., Healy, Palepu and Ruback, 1992) employ the market rather than book value of assets as the denominator because the presence of goodwill and positive write-ups to fair values is likely to bias downwards accounting return on book asset measures. However, unlike their U.S. counterparts, over the time period of this study U.K. companies did not have to carry goodwill in the balance sheet and amortise it against income. Instead, they were able to immediately write off the goodwill against equity reserves in the balance sheet and so avoid diluting reported earnings with goodwill amortisation. This gives a result which, save for the

restatement of acquired assets at fair values, is substantially the same as pooling accounting. Consequently, U.K. companies have almost invariably chosen the write-off option, and unlike the U.S., write-ups to fair values have very infrequently been positive in the U.K. (Higson, 1998). Therefore, the downward bias observed in the U.S. does not appear to exist in the U.K. Furthermore, there is evidence that investors appear to lower their assessment of takeovers in the post-takeover period, causing a reduction in the market value of assets. Healy, Palepu and Ruback (1992) show that under these circumstances, using a market value denominator could lead to an increase in profitability post-merger, even if profits are held constant.

We focus our analysis on the three years before the takeover (years – 3 to – 1) and three years following the takeover (years 1 to 3)[vii]. We exclude year 0, the year of the takeover, from the analysis because in this year the two firms are consolidated for financial reporting purposes only from the takeover completion date[viii]. We truncate the distributions of firm profitability where it is more than two standard deviations outside the mean, to ensure that the results are not driven by a few large outliers.

2.2.2. Event study methodology

For the event study, we calculate buy and hold share returns for the announcement period and the post-takeover period relative to control firms matched on size and market-to-book value (MTBV), based on the methodology suggested by Barber and Lyon (1997)[ix]. The underlying parameter of interest in this study is the long-run performance of sample firms, and we therefore employ buy and hold returns rather than cumulative average returns (see e.g., Barber and Lyon, 1997). The cross sectional long-run returns of securities are better explained by size and market-to-book value than beta (Fama and French, 1992). The market-to-book value of bidders and targets differ from other firms (Hughes, 1993). Panel C in Table 1 shows the distribution of market-to-book ratios of bidders and targets, relative to all

firms listed on the U.K. stock market. Bidders tend to have medium to high market-to-book values, with 75% concentrated in the largest six deciles. Alternatively, targets have medium market-to-book values. We adopt the control firm approach because it avoids the skewness and rebalancing biases inherent in a reference portfolio approach, although it is nevertheless susceptible to the new listing bias described by Barber and Lyon (1997). We employ the natural logarithm of the buy and hold return to ensure that the share returns conform as closely as possible to a normal distribution.

2.3. Board share ownership

In this work we measure total executive and non-executive director shareholdings at the last accounting year-end prior to takeover. Table 2 reports summary descriptives on the board ownership and compensation of sample acquirers. The first column reports the percentage of ordinary shares owned either beneficially or non-beneficially by the board of the acquirer excluding options[x]. The mean combined stake of all board members is 8.9%. The median stake, however, is only 2.2%, suggesting that the distribution is skewed, which is confirmed by the skewness measure. Indeed, in 57 firms (40% of the sample), board holdings totalled to no more than 1% of outstanding equity, and in 40 of our firms (28% of the sample), total board members owned no more than 0.2% of the firm. Nonetheless, in 35% of our sample the board owned more than 5% of the firm, in 25% of the sample the board owned more than 10%, whilst in 15% the board owned more than 20%. The board ownership level in acquirers is very similar to that reported for previous U.K. studies, suggesting that our sample of bidders is representative. For example, Sudarsanam et al. (1996) report a mean ownership of 10%, for the period 1980-1990. However, these board ownership levels for bidders are notably lower than those for U.K. companies in general. Short and Keasey (1999) report average (median) levels of 12.5% (5.6%) between 1988 and 1992, whilst Faccio and Lester (1999) report

average (median) levels of 16.74% (7.95%) between 1996 and 1997. Additionally, the board ownership levels are much lower than those reported for US acquirers by Loderer and Martin, (1997), who report a mean of 14.6% and median of 9.0%.

Because the takeovers sampled span over one decade, the sterling amounts of the indicated items cannot of course be readily compared across the various events. Nonetheless, some sense of the general orders of magnitude of shareholding and compensation may be useful in establishing the context of the analysis. The median remuneration of the board of the acquirer, in the year preceding the takeover is £529,500. The median values of shares directly owned (excluding options) amount to £1,793,600[xi]. The mean share ownership values are much larger, owing to the presence in the sample of several very sizeable board holdings (five of which are in excess of £100 million). Therefore, the median shareholding values are some three and a half times the magnitude of median remuneration. Cosh and Hughes (1989, 1997) show that this represents a massive rise in the importance of management stock ownership since the early 1980s, but these figures are substantially smaller than those reported for the US (Loderer and Martin, 1997). It appears quite possible that despite the increase in share ownership, an increase in remuneration due to increased firm size via takeover, may outweigh any loss in the value of shares as found by several studies (Lambert et al. 1987).

Table 2 also shows the importance of stock options for the boards of acquiring companies. Options have become increasingly important in the UK over the time period of our study, and play a similar incentive role to shares. For the 119 companies for which we have information on board options, their median value is almost half the median value of shares held for the 142 sample companies. However, options total less than one fifth of ordinary shares when we consider their mean values.

As noted above, external shareholdings can play a potentially important role in constraining boards where agency problems exist. External shareholders are measured as those which own above 5% before 1989, and above 3% after 1989. For our sample of bidders, Table 2 shows that the median value of the largest external shareholding is 6.48%, compared to 2.2% for board ownership, indicating the importance of external shareholdings. We also report statistics on the sum of large external shareholders. The median value is 6.89%. This suggests that for the median sample company, the largest external shareholder is the only large external shareholder.

The correlation coefficients for the measures of board ownership, remuneration, external shareholdings, and company size are presented in Panel B of Table 2. The most consistent result to emerge from Panel B is the strong positive correlation between firm size and the value of board shares, options and remuneration. There is also a significantly negative correlation between the % holdings of shares and options with firm size. This suggests the need to control for firm size when examining the impact of board % holdings on takeover performance. However, we note that the % of ordinary board holdings is significantly positively correlated with the market value of these holdings, possibly suggesting that the % measure also accurately represents the incentive effects faced by bidder boards.

3. Board ownership and takeover performance

In this section, we evaluate the relation between board ownership and the impact of takeovers on performance. In Section 3.1 we consider the takeover performance of our sample firms as a whole in terms of both profitability and share returns. In section 3.2 we consider the relation between board ownership and takeover profitability, and in Section 3.3 we examine the relation between board ownership and takeover share price performance.

3.1 Takeover performance of sample firms

To examine the profit effects of takeover, we aggregate performance data of the bidder and target firms before the takeover to obtain the pro forma pre-takeover performance of the combined firms. Comparing the post-takeover performance of the bidder with this pre-takeover benchmark provides a measure of the change in performance. To control for size and industry, we calculate adjusted profit returns, which are differences between values for the combined firms and values for the weighted-average control firms. In the pre-takeover period the weights for the control firms are the relative asset size of bidders and targets estimated at the beginning of each year, whilst in the post-takeover period the weights of control firms are the relative asset sizes of bidders and targets in year –1, since target size is unavailable after takeover. The proper post-takeover benchmark must take account of any above average high or low pre-takeover performance, otherwise some of the difference between pre- and post-takeover performance could be due to mean reversions in profitability (Ravenscraft and Scherer, 1987; Cosh, Hughes, Lee and Singh, 1998). We adopt the methodology employed by Healy, Palepu and Ruback (1992), where the effect of takeover is measured as the intercept of a cross sectional regression of post-takeover adjusted profit returns on the corresponding pre-takeover adjusted returns as follows:

$$\text{PROFPOST} = \alpha + \beta\ \text{PROFPRE} + \varepsilon \qquad (1)$$

where PROFPOST is the median annual adjusted profit return on assets for the combined firm from the three post-takeover years and PROFPRE is the pre-takeover three year median for the same combined firm. Our measure of the effect of takeover on profit returns is the intercept α from Eq. (1). The slope coefficient β captures any systematic relationship in profit returns between the pre and post-takeover years so that β

PROFPRE measures the effect of the pre-takeover performance on post-takeover returns. The intercept is therefore independent of pre-takeover returns.

Table 3 reports the results from Eq. (1) for the sample of takeovers. The estimate of β is 0.32, indicating that adjusted pre-takeover profit returns tend to persist over time, but with substantial regression to the mean. The constant α is 2.01%, which is insignificantly different from zero. This indicates that there is not a significant improvement in the merged firms profitability in the post-takeover period[xii]. This finding is consistent with the majority of U.S. and U.K. studies for earlier time periods (Caves, 1989; Hughes, 1993).

To estimate the impact of the sample takeovers on share returns, we estimate buy and hold share returns over the announcement period and the four year period following the completion date, for both sample firms and size- and market-to-book control firms. Panel A of Table 4 shows that the mean announcement abnormal return earned by targets in takeovers is 24.63%, which is statistically significant at the one per cent level. The mean abnormal bidder return is 0.67% over the announcement period, which is statistically insignificant. To investigate whether the total gains to both bidder and target shareholders are positive, we examine the combined adjusted returns which are the weighted average adjusted returns for both bidder and target, with the weights being the relative market values at the start of the period. The combined announcement returns are a significantly positive 5.84%. The markets assessment of takeovers at announcement appears inconsistent with the neutral impact on profitability over three years.

Panel B of Table 4 shows that over the four-year period following the completion date, the mean abnormal return earned by bidders is –29.27%, which is statistically significant at the 1 per cent level. Panel C of Table 4 reports the buy and hold returns over both the announcement and post-takeover periods

to establish the overall returns to shareholders. Bidder shareholders experience abnormal returns of –28.4%, significant at the 1% level. The combined adjusted return over both time periods consists of the weighted average of the target announcement returns and the bidder overall returns. This is –13.13%, which is statistically significant, indicating that the negative post-takeover share returns significantly outweigh the positive announcement returns.

One possible explanation for the negative share returns is that the stock market reacts negatively to new information regarding the profitability of the takeover which only comes to light in the post-takeover period. To investigate this, we consider whether the post-takeover adjusted share returns are correlated with the profit effects of takeover, by estimating Eq. (1) including the post-takeover adjusted share returns as an independent variable. The coefficient for this variable is 0.04, and statistically significant at the 1% level.

In summary, the evidence presented in this section indicates that takeovers create significant value for target shareholders at announcement, whilst bidder shareholders neither gain nor lose. These announcement returns are inconsistent with the neutral profit effects of takeover. Over the long run post-takeover period, takeovers result in significantly negative returns. The evidence is consistent with takeovers being carried out for nonvalue maximizing motives (Jensen, 1986), and of bidder management presenting an overoptimistic picture of future prospects to the stock market at the time of the takeover, which the market at first accepts and then revises its opinion of.

3.2 Board ownership and takeover profit performance

3.21 Board ownership and takeover profitability: Single equation analysis

In this section we consider the relation between board ownership and takeover profitability. As a preliminary step, we examine takeover profitability for different levels of board shareholding. The results are shown in Table 5. Profitability is measured as the difference between the actual post-takeover profitability, and the expected post-takeover profitability, which is the pre-takeover level multiplied by 0.323, the value of β from Eq. (1). Hence our expected profit makes adjustment for regression to the mean in profitability. The data reveal two distinct break points, which occur at 3.5% and 19%. When board holdings are below 3.5% (LOW), takeover has a small insignificant impact on profits, whereas when board holdings are in between 3.5% and 19% (MEDIUM), takeover has a large positive statistically significant impact. However, when board holdings are greater than 19% (HIGH), takeover has a significantly negative impact on profitability. However, at very high levels of shareholding, performance starts to improve. The *t*-test for differences between LOW and MEDIUM, and between MEDIUM and HIGH are all statistically significant at the 5% level.

To examine the precise nature of the relation between board ownership and takeover profitability, we experiment with different econometric specifications. Whereas the alignment of interests hypothesis predicts that larger stakes should be associated with better takeover performance, the prediction of the entrenchment hypothesis is much less clear-cut, suggesting that company performance can be adversely affected for some range of high ownership stakes. Since theory provides relatively little guidance as to what this relationship should be, we follow the approach of Morck, Shleifer and Vishny (1988) of using the specification that best fits the data. Specifically, we estimate a cubic polynomial regression. In previous drafts of this paper, we

used dummy variables and piecewise coefficients. However, the results with the cubic polynomial are stronger in the sense of having lower R^2, suggesting that the data prefer this particular parameterisation.

The regressions we run are the following:

$$PROFDIFF = f(PROFPRE, BDSH, BDSH^2, BDSH^3) \quad (2)$$

$$PROFDIFF = f(PROFPRE, BDSH, BDSH^2, BDSH^3, LARGE, MOOD, PAYMENT, HORIZ, MTBV, SIZE, INDUSTRY) \quad (3)$$

Where PROFDIFF is the difference between the post- and pre-takeover adjusted profitability, and PROFPRE is as defined above. BDSH is the board shareholding. In Eq. (3), we introduce additional independent variables into the regression to determine whether our results are sensitive to the inclusion of other factors that have been advanced as both important determinants of takeover performance, and associated with board ownership. This analysis addresses the concern that any correlation between takeover performance and board ownership is a spurious result of a correlation between these two variables and a third omitted variable (Himmelberg et al. 1999). LARGE is defined as the fraction of stock owned by non-board shareholders with more than 3% ownership in the company in the year preceding the takeover[xiii]. It is argued that large concentration of shares amongst outside owners facilitates the monitoring of the non-value maximizing actions of managers, decreasing the likelihood that management will carry out takeovers which decrease firm value (Cosh, Hughes, Lee and Singh, 1989). MOOD is a dummy variable which equals one if the takeover is hostile and zero if friendly. Morck, Shleifer and Vishny (1989) argue that managerial takeovers are more likely to be friendly,

and consistent with this, Guest (1999) shows that hostile takeovers have a significantly positive impact on profitability whilst friendly takeovers have a neutral impact. PAYMENT is a dummy variable which equals one if the method of payment includes a 100% cash alternative, zero otherwise. Martin (1996) shows that acquirers with relatively high ownership levels are significantly more likely to use cash as their method of payment, whereas low and extremely high ownership acquirers are more likely to use equity. Since cash bids have generally been shown in the literature to be associated with good takeover performance (Loughran and Vijh, 1997) the significantly positive impact of medium ownership may not hold once we control for the method of payment. Amihud and Lev (1981) show that diversifying takeovers are more likely when managerial shareholdings are high, whilst Morck et al. (1990) show that such takeovers are value destructive. We therefore include a dummy variable, HORIZ, which equals one if the bidder and target are in the same two digit Standard Industrial Classification (SIC), and zero otherwise. Rau and Vermaelen (1997) show that MTBV has a significantly negative effect on takeover performance, whilst Cho (1998) shows that MTBV has a significantly positive effect on board ownership. We therefore include MTBV as a control variable. The use of percentage measures to measure incentive effects is problematic when firms differ in size, since a small percentage holding in a large firm may still be large enough in monetary terms to have huge incentive effects. We therefore include SIZE, which measures the natural logarithm of the market valuation of the acquirer at the end of the financial year prior to takeover. Previous studies have shown that there are important industry effects in terms of both board ownership and takeover performance. We therefore include a dummy variable INDUSTRY, that equals one for each 2 digit SIC of the acquiring company, zero otherwise, if there are more than two sample takeovers within that particular industrial classification.

The coefficients on board ownership and takeover performance are shown in Table 6 and are presented graphically in Figure 2. The coefficient for board ownership is a significantly positive 1.19, the coefficient for board ownership squared is a significantly negative –7.60. The coefficient for the cube of board ownership is a significantly positive 7.68. These coefficients suggest that for each 1% increase in ownership between 0% and 5%, the effect of takeover on profit rises by an average 1%. This suggests that at low levels of ownership, there is a noticeable reduction in agency costs resulting from increasing board ownership. For each increase in ownership from 5% to 10%, takeover performance increases but at a slower rate. For each 1% increase in ownership from 10% to 25%, takeover performance declines by 0.5%. This suggests that the takeover impact of bidders with 20% ownership is approximately equal to that of bidders with less than 1% ownership. As ownership rises beyond 20% we detect further declines in takeover performance. This deterioration reaches a minimum at 50% ownership at which point takeover performance starts to improve. However, it is only at very high levels of ownership (65%) that takeovers once again have a positive impact on profitability.

The results[xiv] are consistent with the studies of general company performance such as Morck et al. (1988) and Faccio and Lasfer (1999). However, they are not consistent with the majority of event studies which suggest a linear relation between board ownership and bidder announcement share returns. One way to interpret our results is that of Morck et al. (1988), who suggest that the initial rise in takeover performance as ownership rises might reflect managers greater incentives to maximize value as their stakes rise. Beyond the 10% ownership level, however, increases in managerial ownership may be associated with conditions conducive to the entrenchment of incumbent management. Throughout this range, the incentive effect can still be operative; it is just dominated by the entrenchment effect. As board ownership reaches the neighbourhood of 50%,

managements with even higher board ownership might not be significantly more entrenched than those with 50% ownership. The increase in takeover performance at the very highest ownership levels then might reflect a pure convergence of interests effect.

As regards the control variables, LARGE has an insignificantly positive effect suggesting that the presence of large external shareholders in the acquiring company is not associated with significantly better takeover performance. This is inconsistent with the evidence of Cosh et al. (1989) for an earlier time period in the U.K. The MOOD coefficient is positive although statistically insignificant, as is the PAYMENT coefficient. HORIZ has no significant effect on takeover performance. This is to be contrasted with previous studies such as Morck et al. (1990), who find a negative effect of diversifying takeovers. MTBV has a significantly positive effect on takeover profitability. This is consistent with the results of Lang et al. (1990), but inconsistent with the evidence of Rau and Vermaelen (1998). SIZE has an insignificantly positive effect.

3.22 Board ownership and takeover profitability: Simultaneous equations analysis

In this section, we explore the possibility that causation runs not only from board shareholding to performance but also in the opposite direction. Whilst Morck et al. (1988) and McConnell and Servaes (1990) treat ownership structure as exogenous, Kole (1996) and Cho (1998) find evidence of a reversal of causality in the ownership – corporate value relation, suggesting that corporate value could be a determinant of ownership structure rather than vice versa. In the context of this study, the possibility exists that at low levels of ownership, boards purchase stock in anticipation of good takeover performance, whilst the negative relation at higher levels of ownership may be the result of greater ownership being necessary to justify and push through deals the market disapproves of (Loderer and Martin, 1997).

Loderer and Martin (1997) use OLS to find a significant linear relation between board ownership and bidder announcement returns. However, this relation disappears once reverse causality is taken into account using a system of simultaneous equations, and the authors instead find a significantly positive linear effect of takeover performance *on* board ownership. However, it is not just board shareholdings which may be determined by takeover performance. Off board shareholdings may also be determined by expected takeover performance. For example, institutional investors may select firms which are expected to carry out profit increasing takeovers. Similarly, if the stock market can anticipate in advance which firms are likely to carry out profitable takeovers, high MTBV may be associated profitable takeovers.

Therefore, previous studies suggest that ownership structure and takeover performance may be endogenously determined. If this were true, the coefficient estimates in Table 6 could be biased and inconsistent, and subject to an identification problem. To address the potential endogeneity effect, we estimate a simultaneous equations system of ownership structure, MTBV, large off board shareholdings and takeover performance using the non-linear two-stage least squares (2SLS) method. The non-linear 2SLS methodology is appropriate when the endogenous variables are nonlinearly related, as in our model where board ownership is a non-linear determinant of takeover performance. The nonlinear estimation technique is discussed in Greene (1997). Specifically, we estimate the following simultaneous equations system:

$$\text{PROFDIFF} = f\,(\text{PROFPRE, BDSH, LARGE, MOOD, PAYMENT, HORIZ, MTBV, SIZE, INDUSTRY}) \quad (4)$$

$$\text{MTBV} = f\,(\text{PROFDIFF, BDSH, LARGE, SIZE, INDUSTRY, INVEST}) \quad (5)$$

BDSH = *f* (PROFDIFF, LARGE, MTBV, SIZE, INDUSTRY, LIQUID, SALESBOOK) (6)

LARGE = *f* (PROFDIFF, BDSH, MTBV, SIZE, INDUSTRY, STDEV, VAR) (7)

The 2SLS systems are estimated by first obtaining the first stage estimates of the endogenous variables, PROFDIFF, MTBV, BDSH and LARGE. This is done by including all the exogenous variables, their squared and cubed values, and their cross products as instruments (Kelejian, 1971; Chen and Steiner, 1999). The estimates of the endogenous variables are then used directly as independent variables to obtain the second stage estimates, in equations 4-7.

The justification and definition of the new variables in Equations 4-7 is as follows:

INVEST is the rate of capital expenditure to total assets for the bidder. Jensen and Meckling (1976) argue that investment has a positive effect on corporate value, and evidence for this is found by McConnell and Muscarella (1985).

LIQUID measures the current assets to current liabilities ratio of the acquirer in the year prior to takeover. As suggested by Jensen (1986), the higher is a firm's free cash flow, all else being equal, the higher is the desired level of managerial ownership. Consistent with prior studies, we use liquidity as a proxy for free cash flow, which is itself unobservable (Schwert, 2000).

SALESBOOK measures the sales to total assets ratio of the acquirer in the year prior to takeover. To the extent that investments in fixed capital are observable and more easily monitored, firms with a greater concentration of fixed or "hard" capital in their inputs will generally have a lower optimal level of managerial ownership (Himmelberg et al. 1999). Following

Himmelberg et al. (1999) we use the firms sales to book ratio as a measure of the relative importance of hard capital in the firm's technology.

STDEV and VAR measure the standard deviation and variance of the bidder's stock over the 36 months prior to the announcement month, relative to the FTSE 500. These two variables have been proposed by Demsetz and Lehn (1985) as proxies for "control potential". The rationale they offer is as follows: Stock price volatility makes it more difficult for atomistic shareholders to monitor managers' decisions. Unmonitored managers indulge in self serving behavior, which depresses stock prices. But lower stock prices create incentives for outsiders to assemble blocks of shares, enforce shareholder friendly decisions, and capture a share of the associated stock price revaluation. Thus the greater the stock price volatility, the larger the holdings of outside monitors. Demsetz and Lehn (1985) contend that this relation is concave. If this is so, STDEV should have a positive coefficient and VAR a negative one[xv].

The results are reported in Table 7. The first column reports the effect of the different variables on takeover profitability. The board ownership coefficients are of very similar magnitude in the 2SLS analysis to those in the single equation analysis. Each coefficient is of similar magnitude and is statistically significant at the 5% level. These results suggest that the cubic polynomial relation between board ownership and takeover performance is the result of ownership affecting performance rather than vice versa. As in the single equation analysis, the coefficient for LARGE is positive but statistically insignificant, confirming that off board holdings are not a significant determinant of takeover performance. Once again, the coefficients for PAYMENT and MTBV are significantly positive. Therefore, the positive relation between MTBV and takeover performance does not appear to be the result of high valuations being attached to firms that are likely to carry out profitable takeovers. We carry out the Hausman specification test to determine whether OLS or 2SLS

is the correct specification for takeover performance. This test rejects the hypothesis that there is no simultaneity at the five per cent level (chi square -4.24).

The second column reports the results of Eq. (5). In this case, the board ownership coefficients are of different signs and are not statistically significant. We conclude that there is no significant impact of board ownership on MTBV in a simultaneous equations framework, consistent with Loderer and Martin (1997), and Cho (1998). There is also no evidence that off board holdings have a significant impact on MTBV. The coefficient for SIZE is positive and statistically significant. It appears that board ownership is more important in determining the performance of takeovers than in determining firm performance in general.

The third column in Table 7 reports the results of Eq. (6). We find no evidence that takeover performance has a significant effect on board ownership. The effect of takeover performance on board ownership is insignificantly negative. Since it is possible that there are different effects depending on the level of board ownership, we carry out this regression for different ranges of ownership. However, we still we find no evidence of a significant effect of takeover performance on board ownership. Similarly, the effect of MTBV on board ownership is insignificant, a result that also holds across different board ownership ranges. We find a significantly negative effect of off board ownership (LARGE) on board ownership, suggesting a substitutability effect. The coefficient for SIZE is significantly negative, suggesting that board ownership is lower as the size of the company increases.

The fourth column in Table 7 reports the results of Eq. (7). We find no evidence that either takeover profitability or MTBV have a significant effect on off board holdings. However, we find strong evidence that off board holdings are determined by board shareholdings. The coefficient for BDSH is significantly

negative. There is therefore strong evidence of a two-way relationship between board holdings and off board holdings. Finally, off board shareholdings are significantly smaller in larger acquirers.

The results strongly suggest that the relation between board ownership and takeover performance is the result of board shareholdings leading to takeover performance rather than vice versa. We find strong evidence that board ownership effects takeover performance, and no evidence that takeover performance affects board ownership. We now consider whether the stock market anticipates the non-linear relation during the announcement period of the takeover, and if not whether, it is reflected in long run post-takeover share returns.

3.3 Board ownership and post-takeover share price performance

This section considers the effect of board ownership on the shareholder wealth of the bidder and target firms. As in section 3.1, we estimate buy and hold share returns over the announcement period and the four year period following the completion date, for both sample firms and size- and market-to-book control firms.

Table 8 reports the abnormal share returns for the different bands of shareholding. Considering first the announcement returns, there is little evidence that board ownership has a significant impact on target returns. Target abnormal returns are large and positive for most shareholding levels. For the three subsamples, low, medium, and high, there are no significant differences. A similar picture emerges in terms of bidder returns. There is some evidence that bidder returns are higher for the medium subsample. However, the *t*-tests for the differences between the low, medium and high categories are not significant. Similarly, the combined announcement returns are

positive and statistically significant for each type of bidder. There is no evidence from the announcement share returns of bidders and targets of a non-linear relation between takeover performance and board ownership. The market's assessment of takeovers carried out by bidders with board holdings in the 3.5 to 19% ranges appears consistent with the subsequent improvement in profitability. However, the positive announcement period share returns in low and high board takeovers appear at odds with the subsequent profit effects reported above.

We examine the post-takeover share returns to see whether the share returns are more consistent with the profit effects when measured over the long run. Table 8 shows that over the four-year period following the completion date, the mean adjusted return earned by acquirers with low ownership stakes is – 33.673%, which is statistically significant at the 1% level. Similarly, acquirers whose boards own more than 19% experience significantly negative post-takeover share returns of – 76.070%. In contrast, the mean adjusted return earned by acquirers with ownership stakes less than 19% but greater than 3.5% is an insignificantly positive 13%. The difference between medium and low board acquirers is statistically significant at the 1% level, as is the difference between medium and high bidders. The overall returns to bidders and the overall returns to the combined companies are very similar to the post-takeover returns.

To examine in more detail the relation between board ownership and share returns, we estimate equations very similar in specification to those in section 3.2. In particular, we estimate the following two equations:

$$\text{SRETURN} = f(\text{BDSH}, \text{BDSH}^2, \text{BDSH}^3) \qquad (8)$$

SRETURN = f (BDSH, BDSH ^{2}, BDSH ^{3}, LARGE, MOOD, PAYMENT, HORIZ, MTBV, SIZE, INDUSTRY) (9)

Where SRETURN is the abnormal share return for the specified time period.

Table 9 reports the results of this regression for the bidder, target and combined firm for the various time periods. We find no evidence of a significant cubic relation between board ownership and announcement returns for bidders, targets or combined returns. We experimented with a variety of linear and non-linear specifications for announcement returns but found no significant relation. We did find a linear relation between combined returns and board ownership, however the coefficient is only significant at 13%. Our study thus differs from previous U.S. event studies but is consistent with that of Firth (1980) in finding an insignificant positive linear relation for the announcement period.

Table 9 also reports the results of Eqs (8) and (9) for the post-takeover returns. A very different picture emerges from these regression. There is now strong evidence of a cubic polynomial relationship between share returns and board ownership. The coefficients for BDSH, BDSH^2, BDSH^3 are all statistically significant at the 5% level. We find almost identical results when the dependent variable is the overall bidder or overall combined firm returns, and hence do not report these regressions. We therefore find strong evidence of a relation between share returns and board ownership, but this evidence is only evident over the long run. It appears that the impact of low and high ownership bidders is only recognized over the long run following the takeover.

Once again, as with profitability, we test for reverse causality between the long run share returns and board ownership. In order to do this we carry out simultaneous equations analysis for

the post-takeover share returns using very similar equations to those in Section 3.22. The regressions are the following;

SRETURN = *f* (BDSH, LARGE, MOOD, PAYMENT, HORIZ, MTBV, SIZE, INDUSTRY) (10)

MTBV = *f* (BDSH, LARGE, SIZE, INDUSTRY, INVEST) (11)

BDSH = *f* (SRETURN, LARGE, MTBV, SIZE, INDUSTRY, LIQUID, SALESBOOK) (12)

LARGE = *f* (SRETURN, BDSH, MTBV, SIZE, INDUSTRY, STDEV, VAR) (13)

The results for Eq. (10) in Table 10 show that the only significant coefficients in post-takeover returns are $BDSH^2$ and $BDSH^3$. BDSH is of a similar magnitude but is now only significant at the 15% level. We find almost identical results in terms of bidder overall returns and combined overall returns and hence do not report these regressions. The results of Eq. (12) show no evidence that the post-takeover share returns are a significant determinant of board ownership. The results would appear to confirm that it is higher board ownership which determines long run share returns rather than vice versa. From Eq. (11) we find that once again, in a simultaneous equations framework, board ownership does not have a significant effect on MTBV. This finding is consistent with previous studies (Loderer and Martin, 1997; Cho, 1998).

In summary, the evidence indicates that regardless of the size of board shareholding, takeovers create significant value for target shareholders at announcement whilst bidder shareholders neither gain nor lose. There is no evidence of a non-linear relation between board ownership and share returns over the announcement period, as observed for takeover profitability. Therefore the significantly positive announcement returns in low and high ownership takeovers appear somewhat at odds with the

subsequent profit effects. However, there is strong evidence of a cubic polynomial relation between long run post-takeover abnormal share returns and board ownership. The takeovers carried out by bidders with low and high board ownership result in significantly negative long run returns whilst takeovers carried out by bidders with medium board ownership do not. This long run share return evidence is very consistent with the profit effects which suggests nonvalue maximising motives for takeover (Jensen, 1986) at low and high levels of board ownership, which are only recognised over the long term post-takeover period by the stock market. The evidence suggests that low and high ownership acquirers do not improve performance through takeover, but that the stock market does not recognise this during the announcement period.

3.4 What are the characteristics of takeovers carried out by entrenched bidders?

The most robust result of the analysis thus far is the decline in takeover performance brought about by board ownership levels exceeding 10%. We have seen that at board levels greater than 19%, takeovers experience significantly negative post-takeover profit and share returns, despite experiencing significantly high announcement share returns. In this section, we examine how this subsample of takeovers carried out by entrenched bidders differs from the other takeovers in terms of both pre- and post-takeover characteristics. The objective is to try and establish why entrenched boards carry out takeovers that destroy shareholder wealth, and in particular whether they benefit themselves from such takeovers.

3.41 The pre-bid characteristics of entrenched takeovers

Table 11 reports the pre-takeover characteristics of acquiring and acquired companies, and transaction characteristics for the takeovers involving entrenched and non-entrenched bidders. In Section 1, we suggested why entrenched boards may take

actions that benefit themselves at the expense of other shareholders. Perhaps the most relevant of these motives in the context of takeovers is risk diversification. For example, when managerial shareholdings consist of large undiversified positions, managers may favour takeovers which reduce firm specific risk even if they are negative net present value opportunities. The proportion of horizontal takeovers carried out by non-entrenched bidders is 0.31, whilst the proportion carried out by entrenched bidders is 0.39[xvi]. This finding contrasts with that of Amihud and Lev (1981) who find that as managers own more equity, they will be more likely to diversify due to their greater need for risk reduction. An alternative measure of diversification is the covariance of equity returns between the bidding and target firms. We calculate the 66 month covariance prior to 6 months before the announcement month. Table 11 shows that the average covariance for entrenched takeovers is 0.36 whilst that for non-entrenched takeovers is 0.28, whilst the difference between the two variables is not statistically significant. This finding contrasts with that of May (1995), who finds that CEO shareholding is significantly positively correlated with the covariance of bidder and target pre-takeover share returns. We conclude that there is little evidence that takeovers carried out by entrenched boards are motivated by the desire to reduce risk.

We find that entrenched bidders are significantly smaller than non-entrenched bidders. The average non-entrenched bidder is in the 8th largest stock market size decile, whilst the average entrenched bidder is in the 6th largest decile. The size of targets is very similar for both entrenched and non-entrenched bidders, being on average in the 5th largest size decile. Therefore entrenched bidders are taking over companies which are very close in size to themselves, whereas non-entrenched bidders take over targets which are significantly smaller than they are. We find that the relative size of targets is 1.1 for entrenched bidders, and 0.28 for non-entrenched bidders. The difference between the two samples is statistically significant at the 1% level. Therefore

the takeovers carried out by entrenched boards are much more important takeovers for the bidder than those carried out by non-entrenched boards[xvii]. The evidence suggests that entrenched boards are more ambitious in the mergers they attempt.

Entrenched bidders are less likely than non-entrenched bidders to make cash bids, however the difference is not statistically significant. Similarly, there is no difference in the proportion of hostile bids made by entrenched and non-entrenched bidders. The average value of board holdings for entrenched bidders is £100m, which is significantly greater than that for non-entrenched bidders. We find no evidence that entrenched boards pay themselves more than non-entrenched boards, consistent with the evidence of Holderness and Sheehan (1989) and Denis and Denis (1994). We find that neither the proportion nor the value of board options are higher for entrenched bidders than non-entrenched bidders. We also investigate whether other target characteristics such as profitability, growth and leverage differ between entrenched and non-entrenched takeovers. However (results not reported), we find no evidence to suggest that this is the case.

3.42 The post-bid characteristics of entrenched takeovers

We investigate the post-takeover operating and investment characteristics of entrenched bidders, in an attempt to shed light on the nature of their underperformance. The results are reported in Table 12. The operating profit return can be decomposed into the profit margin and asset turnover. The effect of entrenched takeovers on the profit margin is significantly negative, whilst the effect on asset turnover is negative but statistically insignificant. This suggests that the reason for the deterioration in profit is an increase in costs per unit of sales rather than a decrease in sales. This is reinforced by the sales growth results which show no significant deterioration for entrenched bidders. Leverage significantly increases for both entrenched and non-entrenched bidders and the difference between the two is not

statistically significant. We find a significant reduction in capital expenditures by entrenched bidders. This reduction is significantly lower than that experienced by non-entrenched bidders. Consistent with this, we find that asset growth declines significantly in entrenched takeovers but not in non-entrenched takeovers. However, the difference between the two types of takeover is not statistically significant.

In a further test of the diversification hypothesis, we compare the variance of the combined firms stock returns after the takeover with the variance of the bidders stock return prior to takeover. We do this with and without controlling for general stock market movements. However we find that in both entrenched and non-entrenched takeovers, variance actually increases rather than decreases following takeover.

Summing up, we find no evidence that entrenched bidders carry out takeovers for risk diversification motives. We find that entrenched bidders are significantly smaller than non-entrenched bidders, yet takeover targets are of similar size for both types of bidder. Consequently, the relative size of targets is significantly larger for entrenched bidders. The nature of the underperformance is relatively clear; entrenched takeovers result in a significant reduction in capital expenditures, and a significant deterioration in profit margins. We conclude that although there is strong evidence that entrenched bidder shareholders lose out in takeovers, it is by no means obvious from the above evidence that entrenched management expropriate shareholder wealth at the benefit of themselves.

4. Conclusion

This paper examines the impact of board share ownership in the acquiring company on takeover performance. Evidence comes from a sample of 142 takeovers between U.K. public industrial firms completed in the period 1985 to 1995. We find that these takeovers have a neutral impact on profitability, a result which is

consistent with the previous literature for both the U.K. and the U.S. Despite the impact on profitability, these takeovers result in significant overall wealth gains during the announcement period. However, this initial wealth gain is offset by the post-takeover negative share returns experienced by the bidder.

We find strong evidence of a cubic polynomial relation between board ownership and long run takeover performance. At board ownership levels around zero, takeover results in a neutral profit impact and significantly negative long run share returns. As board ownership rises from 0% to 10%, the performance of takeovers increases, indicating that managers' interests are converging with those of shareholders. Once levels of ownership of 10% are reached, further ownership has a negative impact on takeover performance, indicating that managerial entrenchment starts to take place. Takeovers carried out by boards with ownership levels between 3.5% and 19% result in significant increases in profitability. However, takeovers carried out by acquirers whose boards hold more than 19% of equity result in a significant decline in profits, and significantly negative post-takeover share returns. Takeover performance declines until board ownership is as high as 50%, at which point it starts to improve again.

Other studies have shown that the relation between board ownership and company performance could go in either direction. However, we find strong evidence that ownership effects takeover performance and not vice versa. Using non-linear two stage least regression techniques, we find that our results are robust. The findings on long run takeover performance are thus to be contrasted with those for Tobin's *Q,* which as this and other studies have demonstrated, do not hold in a simultaneous equations framework.

We find no evidence that entrenched bidders carry out takeovers for risk diversification motives. We find that entrenched bidders are significantly smaller than non-entrenched bidders, yet

takeover targets are of similar size for both types of bidder. Consequently, the relative size of targets is significantly larger for entrenched bidders. Compared to non-entrenched bidders, entrenched takeovers result in a significant deterioration in profit margins and a significant reduction in capital expenditures.

Our results suggest that takeovers carried out by boards with a small or very large stake in the firm may be a manifestation of managerial failure, and should be viewed with some degree of scepticism by shareholders. Such scepticism was not evident for the takeovers examined here, since announcement returns were significantly positive on average. In hindsight, these announcement returns appear overoptimistic, a conclusion reinforced by the significantly negative share returns which followed. It appears that the discrepancy between the accounting and event studies of takeover is closely linked to managerial board ownership, consistent with the argument that managerial takeovers are more likely to be overvalued at announcement by the stock market.

Notes

[1] For example, Weston (1979) finds that no firm in which insiders control more than 30% of the shares has ever been acquired through a hostile takeover.

[2] Holderness and Sheehan (1989) cite examples such as excessive compensation, consumption of perquisites, borrowing from the firm at below market interest rates, and paying differential dividends.

[3] There is also evidence that as acquiring board holdings increase, a lower premium is paid for the target (Slutsky and Caves, 1991), and that overall gains to both bidder and target are higher (You *et al*., 1986).

[4] A related argument is that of Rau and Vermaelen (1998), who provide evidence that the negative post-takeover share returns are the result of hubris (as measured by book-to-market value) on the part of bidders.

[5] The Hambro Guide does not provide information on board share options. We were able to gather information on options for 119 of the 142 acquirers using company accounts and the Price Waterhouse Corporate Register.

[6] To select the control firms, we firstly match each sample firm to all non-merging firms in the same Datastream industrial classification (equivalent to a two-digit SIC code). To match on size, we select the potential control firm with the book value of assets closest to sample firms' asset size in the year prior to takeover.

[7] The results are qualitatively unchanged when we extend the analysis to 4 years.

[8] This occurs under the acquisition accounting method, which nearly all bidders used over the time period of our study (Higson, 1998).

[9] To select the control firms we firstly divided all U.K. stocks listed on Datastream into 50 equal sized portfolios based on their market values at the beginning of each calendar year. We then match each sample firm with the firm from its size portfolio which has the closest market-to-book value. This procedure is repeated for each calendar year pre- and post-takeover.

[10] For most boards, the number of non-beneficial shares owned was very small compared to beneficial holdings. The most common reason for non-beneficial holdings was family holdings. Even if the board members do not exercise direct voting power of such shares, it would seem likely that they would be voted as they suggested, and so we attribute them to the board.

[11] We estimate the value of board shares (and options) by multiplying their number by the bidder share price at the end of the last accounting year prior to takeover.

[12] We conduct specification tests for Eq. (1) to assess whether the residuals are homoskedastic. We cannot reject the hypothesis that the residuals are homoskedastic at the 1% level.

[13] 5% prior to 1989.

[14] We conduct further tests to determine the robustness of our results. We also re-estimate our results using various different measures of profitability, such as trading profit to book, and trading profit to sales. The results are materially unchanged. These results suggest that the relation between takeover performance and board ownership is not a

spurious result of the way in which performance is measured. We also carry out the analysis including share options as well as board ownership. The results for the reduced sample of 119 companies are qualitatively unchanged.

15 We carried out separate analysis using pre-takeover profit of the bidder and target separately, excluding PROFPRE, and treating the pre-takeover profit of the bidder as endogenous. The results are qualitatively unchanged.

16 We check this result using Datastream Industry classifications rather than SIC. The results are qualitatively unchanged.

17 However, the entrenched takeovers are not particularly important for the bidder's industry. The horizontal entrenched takeovers account for 9.3% (median 3.7%) of industry output, measured by total market value of public companies in the DS industry.

FIGURES AND TABLES

Table 1 Descriptive statistics for sample takeovers completed between January 1985 and December 1995

Panel A reports the distribution by year of sample takeovers made by U.K. public firms for U.K. public firms. The takeovers are those in which the bidder and target are covered by the Datastream database. Panel B reports the distribution of size decile rankings of bidder and targets. Size deciles are computed at the end of the calendar year prior to the year of announcement for all U.K. listed firms. Decile 1 is the smallest. Panel C reports the distribution of market-to-book decile rankings, where market-to-book deciles are similarly computed at the end of year prior to the announcement year for all U.K. listed firms. Panel D reports the sizes of targets relative to bidders at the end of the month prior to the month of announcement.

Panel A: Distribution of takeover years

Years	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
Number	17	24	21	21	11	6	18	3	5	7	9	142
Percent of total	12.0	16.9	14.8	14.8	7.7	4.2	12.7	2.1	3.5	4.9	6.3	100.0

Panel B: Size deciles of bidder and target prior to the year of takeover

Size decile	Bidders	Targets
1-2 smallest	8 (5.63%)	17 (11.97%)
3-4	11 (7.75%)	33 (23.24%)
5-6	14 (9.86%)	31 (21.83%)
7-8	35 (24.65%)	31 (21.83%)
9-10	74 (52.11%)	30 (21.13%)
Total	142	142
Average [a] (median)	1631.57 (473.67)	295.74 (69.56)

Panel C: Market-to-book deciles of bidder and target prior to the year of takeover

Market-to-book decile	Bidders	Targets
1-2 smallest	11 (7.75%)	22 (15.49%)
3-4	21 (14.79%)	26 (18.31%)
5-6	32 (22.54%)	32 (22.54%)
7-8	43 (30.28%)	44 (30.99%)
9-10	35 (24.65%)	18 (12.68%)
Total	142	142
Average (median)	2.675 (1.735)	1.790 (2.505)

Panel D: Sizes of targets relative to bidders prior to the announcement month of the takeover

Mean	0.284
Maximum	5.902
Minimum	0.001
Median	0.186

[a] The market capitalization values of the targets are in millions of sterling, deflated using the FTSE All Share Index with 1998 as the base year.

Table 2 Descriptive statistics on board ownership, compensation and external ownership of acquiring sample companies

Panel A reports descriptive statistics for measures of board share ownership, remuneration, options, and external shareholdings for the 142 sample companies. The data on option holdings refers to a smaller subsample of 119 companies. Panel B reports the correlation coefficients between these measures.

	Ordinary shares as % of ordinary capital	Market value of shares (£000)	Board pay (£000)	Market value of shares / board pay	Option holdings as % of ordinary capital	Market value of options (£000)	Sum of external holdings (%)	Largest external holding (%)	Size of company (£000)
Panel A: Descriptive statistics									
Median	2.02	1793.6	529.5	3.4	0.64	1161.6	6.89	6.48	144412
Mean	8.86	14791.3	835.6	22.5	1.01	2404.0	11.73	7.59	616594
Standard deviation	14.89	48346.5	1126.4	55.9	1.21	5409.3	14.34	9.05	1402505
Minimum	0.00	0.0	29.0	0.0	0.00	0.0	0.00	0.00	301.0
Maximum	69.80	352019.8	11409.0	479.7	8.76	52607.5	77.80	60.00	11745046
Skewness	2.40	5.4	6.4	5.1	3.09	7.4	1.81	2.22	4.9
Panel B: Pearson correlation coefficients									
Market value of shares (£000)	0.20 [b]								
Board pay (£000)	-0.16 [c]	0.25 [a]							
Market value of shares / board pay	0.52 [a]	0.59 [a]	-0.06						
Options as % of ordinary capital	0.13	-0.04	-0.21 [b]	0.23 [b]					
Market value of options (£000)	-0.08	0.37 [a]	0.79 [a]	0.20 [b]	0.02				
Sum of external holdings (%)	0.02	-0.02	-0.12	0.01	0.18 [b]	-0.12			
Largest external holding (%)	0.02	0.01	-0.08	0.01	0.12	-0.09	0.90 [a]		
Size of company (£000)	-0.19 [b]	0.27 [a]	0.88 [a]	-0.03	-0.26 [a]	0.74 [a]	-0.22 [a]	-0.19 [b]	

[a, b, c] Significantly different from zero at the 1%, 5% and 10% levels respectively, using a two tailed test

Table 3 The post-takeover profit returns of sample takeovers

This table reports the effect of the takeover on adjusted profit returns, computed with reference to non-merging industry- and size-matched control firms. Profit is measured as operating profit plus other income and extraordinary items, divided by the average of beginning- and ending-period book value of assets. Pre-takeover returns for the combined firm are weighted averages of bidder and target returns, with the weights being the relative asset values of the two firms. PROFPOST is the median adjusted profit for the three-year post-takeover period, PROFPRE is the median adjusted profit for the three-year pre-takeover period. *t*-statistics are in parentheses.

PROFPOST	=	2.01%	+	0.323 PROFPRE
		(1.525)		(3.696) [a]

Adjusted $R^2 = 0.0824$ *F*-statistic = 13.66 [a] *N* = 142

[a] Significantly different from zero at the 1% level , using a two tailed test

Table 4 The announcement and post-takeover share returns of sample takeovers

This table reports the mean of the natural logarithm of buy and hold share returns for bidders, targets and control firms for the announcement and post-takeover periods. The announcement period lasts from the beginning of the announcement month to the end of the month of completion. The post-takeover period lasts from the end of the month of completion to 4 years afterwards. The abnormal share returns are computed with reference to control firms matched on size and market-to-book value. The combined abnormal return is the weighted average return of the bidder and target abnormal returns, with the weights being the relative market values of the two firms. Parametric significance levels for tests in difference in means are based on the *t*-test (*t*-statistics are in parentheses).

	Sample firms	**Control firms**	**Abnormal returns**
Panel A: Announcement period			
Bidder	4.298	3.647	0.672
			(0.519)
Target	27.853	3.222	24.631 [a]
			(11.317)
Combined			5.844 [a]
			(5.100)
Panel B: Post-takeover period			
Bidder	-8.279	20.994	-29.273 [a]
			(-3.102)
Panel C: Announcement and post-takeover period			
Bidder	-3.953	24.442	-28.395 [a]
			(-2.925)
Combined			-13.129 [c]
			(-1.810)

[a, c] Significantly different from zero at the 1% and 10% levels respectively, using a two tailed test

Table 5 The relation between board ownership in the acquiring firm and takeover profitability

This table shows the mean effect of takeover on profitability in different bands of board shareholdings. The figures are the difference in post- and pre-takeover adjusted profit returns, after adjusting for expected regression to the mean in profitability as described in the text. Profit returns are adjusted, with reference to non-merging industry- and size-matched control firms. Profit is measured as operating profit plus other income and extraordinary items, divided by the average of beginning- and ending-period book value of assets. Pre-takeover returns for the combined firm are weighted averages of bidder and target returns, with the weights being the relative asset values of the two firms.

Board shareholding (%)	**No**	**Difference between post- and pre-bid profitability**
0 to 1	55	1.245
1 to 5	35	4.020
5 to 10	15	4.755
10 to 15	7	13.625
15 to 20	9	9.516
20 to 25	5	-6.181
25 to 30	4	-7.901
30 to 35	2	3.224
35 to 40	0	-
40 to 45	2	-17.084
45 to 50	1	-38.075
50 to 55	3	-8.714
55 to 60	0	-
60 to 65	1	-2.646
65 to 70	3	-3.822
LOW (0 to 3.5)	86	2.106 (1.438)
MEDIUM (3.5 to 19)	33	8.540 [b] (3.204)
HIGH (19 to 70)	23	-7.390 [b] (3.634)
LOW vs. MEDIUM	119	-6.433 [b] (3.050)
LOW vs. HIGH	109	9.500 [a] (3.351)
HIGH vs. MEDIUM	56	-15.930 [a] (4.893)

[a, b] Significantly different from zero at the 1% and 5% levels respectively, using a two tailed *t*-test

Table 6 The relation between board ownership in the acquiring firm and takeover profitability: Single equation analysis

Ordinary least squares regression analysis of profitability difference due to takeover, on board ownership, external ownership, and other firm and transaction characteristics. The adjusted profit returns are computed with reference to non-merging industry- and size-matched control firms. Profit is measured as operating profit plus other income and extraordinary items, divided by the average of beginning- and ending-period book value of assets. Pre-takeover returns for the combined firm are weighted averages of bidder and target returns, with the weights being the relative asset values of the two firms. The dependent variable in each regression is PROFDIFF, the difference between the median adjusted profit for the three-year post-takeover period, and the median adjusted profit for the three-year pre-takeover period (PROFPRE). BDSH is the percentage of shares held by the board of the acquirer. LARGE is the percentage of shares held by off board large shareholders. MOOD is a dummy variable which equals one if the takeover is hostile, zero if friendly. PAYMENT is a dummy variable, which equals one if the method of payment includes a 100% cash alternative. HORIZ is a dummy variable, which equals one if the takeover is horizontal, defined as being in the same 2-digit SIC. MTBV is the market-to-book value of the bidder at the last accounting year prior to takeover. SIZE is the natural logarithm of market valuation of the bidder at the last accounting year prior to takeover. Where indicated, a dummy variable (INDUSTRY) is included for each 2 digit SIC industry. *t*-statistics are in parentheses.

Independent variables	**Dependent variable**	
	PROFDIFF	**PROFDIFF**
Intercept	0.022	0.077
	(1.016)	(0.430)
PROFPRE	-0.646 [a]	-0.616 [a]
	(-6.376)	(-5.559)
BDSH	1.190 [b]	1.479 [b]
	(2.026)	(2.206)
$BDSH^2$	-7.060 [b]	-7.968 [b]
	(-2.622)	(-2.640)
$BDSH^3$	7.683 [b]	8.385 [b]
	(2.619)	(2.584)
LARGE		0.141
		(1.038)
MOOD		0.071
		(1.459)
PAYMENT		0.056
		(1.576)
HORIZ		0.038
		(0.966)
MTBV		0.010 [c]
		(1.877)
SIZE		-0.005
		(-0.418)
INDUSTRY	No	Yes
Adjusted R^2	0.2567	0.2860
F-statistic	13.82	2.71
p-value	(0.0000)	(0.0001)
N	142	142

[a, b, c] Significantly different from zero at the 1%, 5% and 10% levels respectively, using a two tailed test

Figure 1 The relation between board ownership in the acquiring firm and takeover profitability

This figure shows the relation between takeover profitability (PROFDIFF) and board ownership (BDSH) implied by the first regression in Table 6

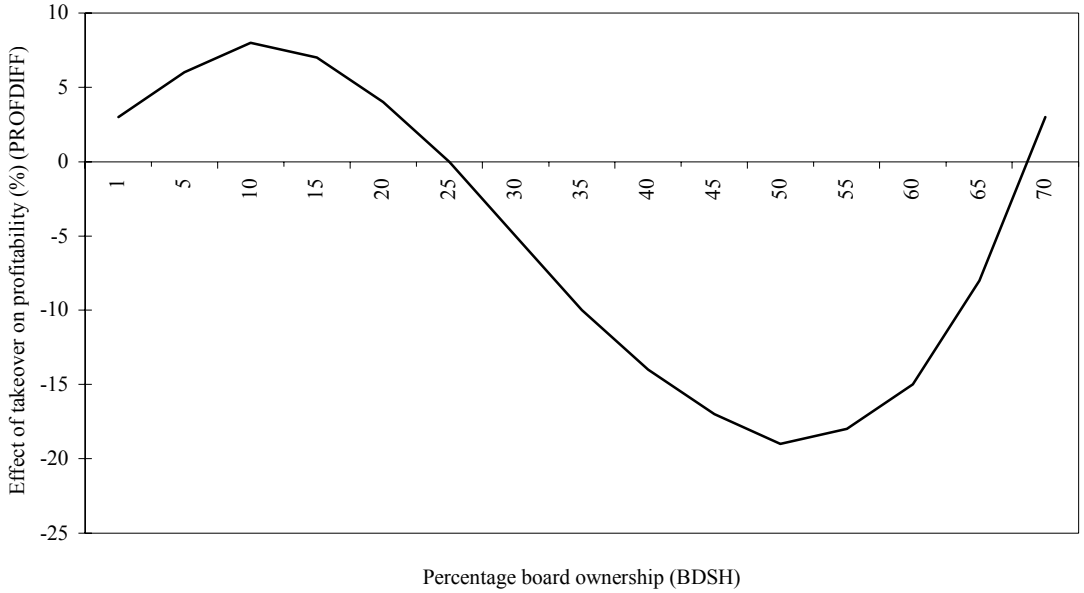

Table 7 Simultaneous equation analysis of takeover profitability, MTBV, board ownership and external ownership, using the non linear two stage least squares method

PROFDIFF is the difference between the median adjusted profit for the three-year post-takeover period, and the median adjusted profit for the three-year pre-takeover period (PROFPRE). BDSH is the percentage of shares held by the board of the acquirer. LARGE is the percentage of shares held by off board large shareholders. MOOD is a dummy variable which equals one if the takeover is hostile, zero if friendly. PAYMENT is a dummy variable which equals one if the method of payment includes a 100% cash alternative. HORIZ is a dummy variable which equals one if the takeover is horizontal, defined as being in the same 2-digit SIC. MTBV is the market-to-book value of the bidder at the last accounting year prior to takeover. SIZE is the natural logarithm of market valuation of the bidder at the last accounting year prior to takeover. INVEST is the rate of capital expenditure to total assets for the bidder. LIQUID is the ratio of current assets to current liabilities for the bidder. SALESBOOK is the bidders sales to total asset ratio. STDEV and VAR measure the standard deviation and variance of the bidders stock over the 36 months prior to the announcement month, relative to the FTSE 500. Where indicated, a dummy variable (INDUSTRY) is included for each 2 digit SIC industry. *t*-statistics are in parentheses.

	DEPENDENT VARIABLE			
	PROFDIFF	**MTBV**	**BD**	**LARGE**
Intercept	0.089	-1.012	0.732 [a]	0.545 [a]
	(0.419)	(-0.423)	(5.823)	(3.051)
PROFPRE	-0.593 [a]			
	(-5.253)			
BDSH	1.810 [c]	-5.632		-0.244 [c]
	(1.906)	(-0.544)		(-1.852)
BDSH [2]	-9.866 [b]	6.799		
	(-2.302)	(0.141)		
BDSH [3]	10.347 [b]	4.884		
	(2.215)	(0.091)		
LARGE	0.225	-1.334	-0.386 [b]	
	(1.042)	(-0.549)	(-2.396)	
MOOD	0.070			
	(1.447)			
PAYMENT	0.060 [c]			
	(1.702)			
HORIZ	0.058			
	(1.413)			
MTBV	0.031 [b]		0.001	-0.014
	(2.037)		(0.102)	(-1.213)
SIZE	-0.011	0.275 [c]	-0.043 [a]	-0.025 [b]
	(-0.782)	(1.770)	(-4.895)	(-2.320)
PROFDIFF		1.412	-0.082	0.006
		(1.143)	(-1.026)	(0.070)
INVEST		1.365		
		(0.493)		
LIQUID			-0.033	
			(-1.407)	
SALESBOOK			-0.014	
			(-1.382)	
STDEV				-0.020
				(-1.457)
VAR				0.001 [b]

				(2.135)
INDUSTRY	Yes	Yes	Yes	Yes
F-statistic	2.73	1.28	3.10	1.88
p-value	(0.0001)	(0.1822)	(0.0000)	(0.0104)
Adjusted R^2	0.3177	0.0667	0.2734	0.1038
N	142	142	142	142

[a, b, c] Significantly different from zero at the 1%, 5% and 10% levels respectively, using a two tailed test

Table 8 The relation between board ownership in the acquiring firm and takeover share returns

This table reports the mean of the abnormal buy and hold share returns for bidders, targets and combined firm for the announcement and post-takeover periods. The announcement period lasts from the beginning of the announcement month to the end of the month of completion. The post-takeover period lasts from the end of the month of completion to 4 years afterwards. The adjusted share returns are computed with reference to control firms matched on size and market-to-book value. The combined adjusted return is the weighted average return of the bidder and target adjusted returns, with the weights being the relative market values of the two firms. Standard errors are in parentheses.

Board shareholding (%)	**No**	**Announcement period share returns**			**Post-takeover period share returns**	**Announcement and post-takeover period abnormal share returns**	
		AG	AD	AGAD	AG	AG	AGAD
0 to 1	55	-0.578	25.551	3.498	-33.327	-33.904	-22.525
1 to 5	35	1.324	29.507	8.017	-16.663	-15.339	-7.231
5 to 10	15	5.247	16.653	6.759	-4.423	0.824	8.624
10 to 15	7	-8.064	29.500	1.042	-56.355	-64.419	-32.212
15 to 20	9	4.683	7.600	9.538	42.035	46.718	36.964
20 to 25	5	-9.409	14.541	-6.245	-51.817	-50.862	-42.130
25 to 30	4	9.147	27.477	12.992	-29.702	-20.556	-1.811
30 to 35	2	-5.440	37.161	22.109	-330.213	-335.654	-62.981
40 to 45	2	10.110	11.726	9.526	-102.017	-91.907	-54.059
45 to 50	1	-23.669	11.024	-9.839	-157.781	-181.450	-104.720
50 to 55	3	16.287	33.077	20.667	-124.207	-107.920	-47.186
60 to 65	1	2.172	46.111	16.255	10.486	12.658	23.381
65 to 70	3	-1.979	35.340	6.288	38.299	36.320	32.191
LOW (0 to 3.5)	86	-0.471	26.925 [a]	4.477 [a]	-33.673 [a]	-34.145 [a]	-22.105 [b]
		(1.582)	(2.604)	(1.358)	(11.125)	(11.511)	(9.838)
MEDIUM (3.5 to 19)	33	3.441	20.017 [a]	7.848 [a]	13.392	16.833	19.866
		(2.650)	(5.352)	(2.606)	(18.939)	(19.880)	(13.933)
HIGH (19 to 70)	23	0.976	22.673 [a]	8.076 [b]	-76.070 [a]	-71.787 [b]	-26.906 [c]
		(3.858)	(5.220)	(3.211)	(28.099)	(27.683)	(13.570)
LOW vs. MEDIUM	119	-3.913	6.909	-3.371	-47.06 [a]	-50.978 [b]	-41.971 [b]
		(3.036)	(5.348)	(2.721)	(21.45)	(22.286)	(18.084)
LOW vs. HIGH	109	-1.448	4.252	-3.599	42.397	-37.642	-4.800
		(3.648)	(5.712)	(3.104)	(26.146)	(26.430)	(20.307)
HIGH vs. MEDIUM	56	-2.465	2.657	0.228	-89.462 [a]	-88.62 [b]	-46.77 [b]
		(4.519)	(7.756)	(4.114)	(32.601)	(33.12)	(20.18)

[a, b, c] Significantly different from zero at the 1%, 5% and 10% levels respectively, using a two tailed *t*-test

Table 9 The relation between board ownership in the acquiring firm and takeover share returns: single equation analysis

Ordinary least squares regression analysis of takeover abnormal share returns, on board ownership, external ownership, and other firm and transaction characteristics. Abnormal mean buy and hold share returns are calculated for bidders and targets for the announcement and post-takeover periods. The announcement period lasts from the beginning of the announcement month to the end of the month of completion. The post-takeover period lasts from the end of the month of completion to 4 years afterwards. The adjusted share returns are computed with reference to control firms matched on size and market-to-book value. The combined adjusted return is the weighted average return of the bidder and target adjusted returns, with the weights being the relative market values of the two firms. BDSH is the percentage of shares held by the board of the acquirer. LARGE is the percentage of shares held by off board large shareholders. MOOD is a dummy variable which equals one if the takeover is hostile, zero if friendly. PAYMENT is a dummy variable which equals one if the method of payment includes a 100% cash alternative. HORIZ is a dummy variable which equals one if the takeover is horizontal, defined as being in the same 2-digit SIC. MTBV is the market-to-book value of the bidder at the last accounting year prior to takeover. SIZE is the natural logarithm of market valuation of the bidder at the last accounting year prior to takeover. Where indicated, a dummy variable (INDUSTRY) is included for each 2 digit SIC industry. *t*-statistics are in parentheses.

Independent variables	**Dependent variables**							
	Announcement period abnormal share returns						Post-takeover period abnormal share returns	
	AG	AG	AD	AD	AGAD	AGAD	AG	AG
Intercept	0.004	0.006	0.278 [a]	0.129	0.050 [a]	0.129	-0.337 [a]	-2.454 [b]
	(0.206)	(0.039)	(9.305)	(0.532)	(3.180)	(0.936)	(-2.667)	(-2.360)
BDSH	-0.119	0.030	-1.351	-1.238	-0.089	-0.158	7.269 [b]	9.180 [b]
	(-0.232)	(0.050)	(-1.638)	(-1.354)	(-0.203)	(-0.305)	(2.074)	(2.328)
BDSH ^{2}	1.127	0.717	4.681	4.776	1.263	1.692	-45.124 [a]	-46.829 [a]
	(0.485)	(0.269)	(1.237)	(1.160)	(0.631)	(0.723)	(-2.820)	(-2.657)
BDSH ^{3}	-1.412	-1.393	-3.735	-4.438	-1.537	-2.265	52.744 [a]	50.883 [a]
	(-0.560)	(-0.486)	(-0.907)	(-1.004)	(-0.706)	(-0.901)	(3.031)	(2.696)
LARGE		-0.126		0.176		-0.028		-0.086
		(-1.054)		(0.951)		(-0.266)		(-0.110)
MOOD		0.002		0.120 [c]		0.036		0.147
		(0.049)		(1.816)		(0.960)		(0.520)
PAYMENT		-0.015		-0.036		-0.035		0.236
		(-0.477)		(-0.737)		(-1.279)		(1.140)
HORIZ		0.057 [c]		0.019		0.055 [c]		-0.067
		(1.695)		(0.361)		(1.857)		(-0.299)
MTBV		0.003		0.005		0.004		0.008
		(0.660)		(0.750)		(0.911)		(0.271)
SIZE		-0.002		-0.001		-0.007		0.092
		(-0.218)		(-0.031)		(-0.764)		(1.275)
INDUSTRY	No	Yes	No	Yes	No	Yes	No	Yes
Adjusted R ^{2}	-0.0162	-0.0633	0.0082	0.1014	-0.0010	-0.0481	0.0530	0.1287
F-statistic	0.25	0.74	1.39	1.50	0.96	0.80	3.61	1.65
p-value	(0.860)	(0.837)	(0.249)	(0.065)	(0.416)	(0.765)	(0.015)	(0.031)
N	142	142	142	142	142	142	142	142

[a, b, c] Significantly different from zero at the 1%, 5% and 10% levels respectively, using a two tailed test

Table 10 Simultaneous equation analysis of post-takeover long run share returns, MTBV, board ownership and external ownership, using the non linear two stage least squares method

SRETURN is the mean of the abnormal buy and hold share returns for bidders for the post-takeover period. The post-takeover period lasts from the end of the month of completion to 4 years afterwards. The abnormal share returns are computed with reference to control firms matched on size and market-to-book value. LARGE is the percentage of shares held by off board large shareholders. MOOD is a dummy variable which equals one if the takeover is hostile, zero if friendly. PAYMENT is a dummy variable which equals one if the method of payment includes a 100% cash alternative. HORIZ is a dummy variable which equals one if the takeover is horizontal, defined as being in the same 2-digit SIC. MTBV is the market-to-book value of the bidder at the last accounting year prior to takeover. SIZE is the natural logarithm of market valuation of the bidder at the last accounting year prior to takeover. INVEST is the rate of capital expenditure to total assets for the bidder. LIQUID is the ratio of current assets to current liabilities for the bidder. SALESBOOK is the bidders sales to total asset ratio. STDEV and VAR measure the standard deviation and variance of the bidders stock over the 36 months prior to the announcement month, relative to the FTSE 500. Where indicated, a dummy variable (INDUSTRY) is included for each 2 digit SIC industry. *t*-statistics are in parentheses.

	DEPENDENT VARIABLE			
	SRETURN	MTBV	BD	LARGE
Intercept	-2.360 [c]	-3.100	0.701 [a]	0.619 [a]
	(-1.728)	(-1.157)	(4.861)	(3.342)
BDSH	9.084	9.160		-0.218
	(1.367)	(0.734)		(-1.457)
BDSH ^{2}	-48.933 [c]	-58.686		
	(-1.692)	(-1.048)		
BDSH ^{3}	53.424 [c]	68.448		
	(1.764)	(1.147)		
LARGE	-0.022	0.859	-0.347 [b]	
	(-0.016)	(0.329)	(-2.052)	
MOOD	0.095			
	(0.999)			
PAYMENT	0.144			
	(0.490)			
HORIZ	0.211			
	(0.979)			
MTBV	-0.025		-0.001	-0.007
	(-0.316)		(-0.121)	(-0.603)
SIZE	-0.108	0.385 [b]	-0.041 [a]	-0.029 [a]
	(-0.445)	(2.287)	(-4.297)	(-2.627)
SRETURN		-0.261	-0.002	0.029
		(-0.698)	(-0.072)	(1.194)
INVEST		2.131		
		(0.745)		
LIQUID			-0.033	
			(-1.372)	
SALESBOOK			-0.015	
			(-1.448)	
STDEV				-0.022
				(-1.601)
VAR				0.001 [b]
				(2.308)
INDUSTRY	Yes	Yes	Yes	Yes
F-statistic	1.50	1.16	2.98	1.84
p-value	(0.0646)	(0.2889)	(0.0000)	(0.0148)
Adjusted R^2	0.1152	0.0165	0.2798	0.1172
N	142	142	142	142

a, b, c Significantly different from zero at the 1%, 5% and 10% levels respectively, using a two tailed test.

References

Agrawal, A., Jaffe, J., 1999. The post merger performance puzzle, Wharton School working paper.

Amihud, Y., Lev, B., 1981. Risk reduction as a managerial motive for conglomerate mergers, *Bell Journal of Economics* 12, 605- 617.

Barber, B., Lyon, D., 1996. Detecting abnormal operating performance: The empirical power and specification of test statistics, *Journal of Financial Economics* 41, 359-399.

Barber, B., Lyon, D., 1997. Detecting long run abnormal stock returns: The empirical power and specification of test statistics, *Journal of Financial Economics* 43, 341-372.

Caves, R., 1989. Mergers, takeover and economic efficiency: Foresight vs. hindsight, *International Journal of Industrial Economics* 7, 151-174.

Chen, C., Steiner, T., 1999. Managerial ownership and agency conflicts. A nonlinear simultaneous equation analysis of managerial ownership, risk taking, debt policy, and dividend policy, *The Financial Review* 34, 119-136.

Cho, M. 1998. Ownership structure, investment, and the corporate value: an empirical analysis, *Journal of Financial Economics* 47, 103-121.

Cosh, A., Hughes, A., 1987. The anatomy of corporate control: Directors, shareholders and executive remuneration in giant US and UK corporations, *Cambridge Journal of Economics* 11, 285-313.

Cosh, A., Hughes, A., 1997. The changing anatomy of corporate control and the market for executives in the United Kingdom, *Journal of Law and Society* 24, 104-123.

Cosh, A., Hughes, A., Lee, K., Singh, A., 1989. Institutional investment, mergers and the market for corporate control, *International Journal of Industrial Economics*, 73-100.

Cosh, A., Hughes, A., Lee, K., Singh, A., 1998. Takeovers, institutional investment and the persistence of profits, in Begg, I., Henry, S. (eds.) *Applied Economics and Public Policy*, Cambridge University Press.

Demsetz, H., Lehn, K., 1985. The structure of corporate ownership: Causes and consequences, *Journal of Political Economy* 93, 1155-1177.

Denis, D., Denis, D., 1994. Majority owner-managers and organizational efficiency, *Journal of Corporate Finance* 1, 91-118.

Faccio, M., Lasfer, M., 1999. Managerial ownership, board structure and firm value: The U.K. evidence, City University Working Paper.

Fama, E., French, K., 1992. The cross section of expected returns, *Journal of Finance* 47, 427-66.

Fama, E., Jensen, M., 1983. Separation of ownership and control, *Journal of Law and Economics* 26, 301-325.

Firth, M., 1980. Takeovers, shareholder returns and the theory of the firm, *Quarterly Journal of Economics*, 235-260.

Greene, W., 1997. *Econometric Analysis*, Prentice Hall, New Jersey.

Gregory, A., 1997. An examination of the long run performance of UK acquiring firms, *Journal of Business Finance and Accounting* 24, 971-1002.

Guest, P., 1999. Lovers, Friends and Enemies: The determinants and effects of UK takeover bids, 1985-95, Unpublished Ph.D. dissertation. Cambridge University.

Healy, P., Palepu, K., Ruback, R., 1992. Does corporate performance improve after mergers? *Journal of Financial Economics* 31, 135-175.

Hermalin, B., Weisbach, M., 1991. The effects of board composition and direct incentives on firm performance, *Financial Management*, 101-112.

Himmelberg, C., Hubbard, G., Palia, D., 1999. Understanding the determinants of managerial ownership and the link between ownership and performance, *Journal of Financial Economics* 53, 353-384.

Higson, C., 1998. Goodwill, *British Accounting Review* 30, 141-158.

Hubbard, R., Palia, D., 1995. Benefits of control, managerial ownership, and the stock returns of acquiring firms, *Rand Journal of Economics*, 26, 782-792.

Hughes, A., 1993. Mergers and economic performance in the UK: A survey of the empirical evidence 1950-90, in Bishop, M., Kay, J (eds.), *European Mergers and Merger Policy*, Oxford University Press.

Jensen, M., Meckling, W., 1976. Theory of the firm: Managerial behavior, agency costs, and ownership structure, *Journal of Financial Economics* 3, 305-360.

Jensen, M., Ruback, R., 1983. The market for corporate control: The scientific evidence, *Journal of Financial Economics*, 5-50.

Kelejian, H., 1971. Two-stage least squares and econometric systems linear in parameters but nonlinear in the endogenous variables, *Journal of the American Statistical Association* 66, 373-374.

Kole, S. 1996. Managerial ownership and firm performance: Incentives or rewards? *Advances in Financial Economics* 2, 119-149.

Kroll, M., Wright, P., Toombs, L., Leavell, H., 1997. Form of control: A critical determinant of acquisition performance and CEO rewards, *Strategic Management Journal* 18, 85-96.

Faccio, M., Lasfer, M., 1999. Managerial ownership, board structure and firm value: The UK evidence, Working paper City University Business School.

Holderness, C., Sheen, D., 1989. The role of majority shareholders in publicly held corporations, *Journal of Financial Economics* 20, 317-346.

Lambert, R., Larcker, D., 1987. Executive compensation effects of large corporate acquisitions, *Journal of Accounting and Public Policy* 6, 231-243.

Lewellen, W., Loderer, C., Rosenfeld, A., 1985. Merger decisions and executive stock ownership in acquiring firms, *Journal of Accounting and Economics* 7, 209-231.

Loderer, C., Martin, K., 1998. Executive stock ownership and performance: Tracking faint changes, *Journal of Financial Economics* 45, 223-255.

Loughran, T., Vijh, A., 1997. Do long term shareholders benefit from corporate acquisitions? *Journal of Finance* 5, 1765-1790.

May, D., 1995. Do managerial motives influence firm risk reduction strategies? *Journal of Finance* 4, 1291-1308.

Martin, K., 1996. The method of payment in corporate acquisitions, investment opportunities, and management ownership, *Journal of Finance*, 1227-1246.

McConnell, J., Muscarella, C., 1985. Corporate capital expenditure decisions and the market value of the firm, *Journal of Financial Economics* 14, 399-422.

McConnell, J., Servaes, H., 1991. Additional evidence on equity ownership and corporate value, *Journal of Financial Economics*, 27, 595-612.

Morck, R., Shleifer, A., Vishny, R., 1988. Management ownership and market valuation: An empirical analysis, *Journal of Financial Economics* 20, 293-315.

Morck, R., Shleifer, A., Vishny, R., 1990. Do managerial objectives drive bad acquisitions? *Journal of Finance*, 31-48.

Rau, P., Vermaelen, T., 1998. Glamour, value and the post-acquisition performance of acquiring firms, *Journal of Financial Economics* 49, 223-253.

Ravenscraft, D., Scherer, M., 1987. Mergers, selloffs, and economic efficiency, Brookings Institution, Washington DC.

Schwert, W., 2000. Hostility in takeovers: In the eyes of the beholder? *Journal of Finance.*

Seyhun, H., 1990. Do bidder managers knowingly pay too much for target firms? *Journal of Business* 63, 439-464.

Shinn, E., 1999. Returns to acquiring firms: The role of managerial ownership, managerial wealth, and outside owners, *Journal of Economics and Finance* 23, 78-89.

Short, H., Keasey, K., 1999. Managerial ownership and the performance of firms: Evidence from the UK, *Journal of Corporate Finance* 5, 79-101.

Slutsky, A., Caves, R., 1991. Synergy, agency, and the determinants of premia paid in mergers, *Journal of Industrial Economics* 39, 277-96.

Sudarsanam, S., Holl, P., Salami, A., 1996. Shareholder wealth gains in mergers: Effect of synergy and ownership structure, *Journal of Business Finance and Accounting* 23, 673-698.

You, V., Caves, R., Smith, M., Henry, J. 1986. Mergers and bidders wealth: Managerial and strategic factors. in (eds.) Thomas, L., *The Economics of Strategic Planning: Essays in Honor of Joel Dean*, Lexington, Mass.

[i] For example, Weston (1979) finds that no firm in which insiders control more than 30% of the shares has ever been acquired through a hostile takeover.

[ii] Holderness and Sheehan (1989) cite examples such as excessive compensation, consumption of perquisites, borrowing from the firm at below market interest rates, and paying differential dividends.

[iii] There is also evidence that as acquiring board holdings increase, a lower premium is paid for the target (Slutsky and Caves, 1991), and that overall gains to both bidder and target are higher (You *et al*., 1986).

[iv] A related argument is that of Rau and Vermaelen (1998), who provide evidence that the negative post-takeover share returns are the result of hubris (as measured by book-to-market value) on the part of bidders.

[v] The Hambro Guide does not provide information on board share options. We were able to gather information on options for 119 of the 142 acquirers using company accounts and the Price Waterhouse Corporate Register.

[vi] To select the control firms, we firstly match each sample firm to all non-merging firms in the same Datastream industrial classification (equivalent to a two-digit SIC code). To match on size, we select the potential control firm with the book value of assets closest to sample firms' asset size in the year prior to takeover.

[vii] The results are qualitatively unchanged when we extend the analysis to 4 years.

[viii] This occurs under the acquisition accounting method, which nearly all bidders used over the time period of our study (Higson, 1998).

[ix] To select the control firms we firstly divided all U.K. stocks listed on Datastream into 50 equal sized portfolios based on their market values at the beginning of each calendar year. We then match each sample firm with the firm from its size portfolio which has the closest market-to-book value. This procedure is repeated for each calendar year pre- and post-takeover.

[x] For most boards, the number of non-beneficial shares owned was very small compared to beneficial holdings. The most common reason for non-beneficial holdings was family holdings. Even if the board members do not exercise direct voting power of such shares, it would seem likely that they would be voted as they suggested, and so we attribute them to the board.

[xi] We estimate the value of board shares (and options) by multiplying their number by the bidder share price at the end of the last accounting year prior to takeover.

[xii] We conduct specification tests for Eq. (1) to assess whether the residuals are homoskedastic. We cannot reject the hypothesis that the residuals are homoskedastic at the 1% level.

[xiii] 5% prior to 1989.

[xiv] We conduct further tests to determine the robustness of our results. We also re-estimate our results using various different measures of profitability, such as trading profit to book, and trading profit to sales. The results are materially unchanged. These results suggest that the relation between takeover performance and board ownership is not a spurious result of the way in which performance is measured. We also carry out the analysis including share options as well as board ownership. The results for the reduced sample of 119 companies are qualitatively unchanged.

[xv] We carried out separate analysis using pre-takeover profit of the bidder and target separately, excluding PROFPRE, and treating the pre-takeover profit of the bidder as endogenous. The results are qualitatively unchanged.

[xvi] We check this result using Datastream Industry classifications rather than SIC. The results are qualitatively unchanged.

[xvii] However, the entrenched takeovers are not particularly important for the bidders industry. The horizontal entrenched takeovers account for 9.3% (median 3.7%) of industry output, measured by total market value of public companies in the DS industry.