Board share ownership and takeover performance

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Abstract

We investigate the relation between takeover performance and board share ownership in the acquiring company for a sample of 363 UK takeovers completed in the period 1985-96. In investigating this relationship we pay particular attention to the composition of board shareholdings as well as their size. Thus, in addition to the analysis of total board holdings, we analyse the separate impact of CEO shareholdings and of the pattern of non-executive and executive holdings within the board. In addition to our detailed examination of board holdings we assess the impact of non-board holdings. Our analysis controls for a number of non-shareholding constraints on discretionary director behaviour and for a variety of other influences on takeover outcomes including: the means of payment; acquirer size and market to book value; the relative size of the acquirer and the target; the nature of the bid in terms of hostility and industrial direction; and the pre-takeover performance of the acquiring company. We assess performance in terms of announcement returns, long run share returns and a portfolio of accounting measures. We find evidence that overall board ownership has a strong positive impact on long run share returns and a weak positive impact on operating performance. However, much stronger effects are found when the overall board measure is split into CEO, executive, and non-executive directors. We find strong evidence of a positive relation between takeover performance and CEO ownership, which holds for both long run returns and operating performance measures. This finding is robust to controlling for other factors that determine takeover performance and holds in a two stage least squares framework that controls for endogeneity effects. Shareholdings of other executive directors, non-executive directors, and non-board holdings are found to have no significant effect on takeover performance.

Keywords: takeovers, board ownership, CEO ownership, long run share returns, operating performance, endogeneity

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1. Introduction

When key decision making groups such as the board of directors hold little equity in the firm, takeovers may be undertaken to benefit these key individuals rather than shareholders. These pecuniary and non-pecuniary benefits can include salary status and power linked to empire building and corporate diversification through takeover. The pursuit of these benefits imposes costs on shareholders. According to Jensen and Meckling (1976), if boards have substantive shareholding, then these key decision makers will bear a larger share of these costs. Hence they will be less likely to squander shareholder wealth through takeovers designed to meet their own objectives. Thus board shareownership acts to align shareholder and directors incentives. 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 et al, 1989 and 1998) However, in the absence of such offsetting shareholdings, top management which owns a substantial fraction of the firm's equity may have enough voting power or influence to avoid the discipline of takeover or dismissal through shareholder voting (Fama and Jensen, 1983).[1] This leads to an entrenchment effect which offsets and may reverse the incentive alignment of board shareownership per se. The entrenchment hypothesis predicts that substantial ownership of equity gives discretion to top managers to pursue benefits in addition to equity based cash flow that may be at the expense of other shareholders. For example, when top managerial shareholdings consist of large undiversified positions, these managers may favour lower risk projects even if they are negative net present value opportunities. In addition, because of their ownership position, these managers can potentially expropriate wealth from minority shareholders.[2] Furthermore to the extent that top managers experience diminishing utility from higher and higher cash flow rights this incentive effect may level off and the pursuit of non-pecuniary and non-cash flow benefits rise in importance. The relationship

1 For example, Weston (1979) finds that no firm in which insiders control more than 30 percent 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.

between board share-ownership and takeover performance may, therefore be positive at first due to incentive alignment then decline in importance due to diminishing returns and at some point become negative as entrenchment effects set in.

In this paper we consider analysing the relationship between board ownership and takeover performance. We use both the short and long run post-takeover performance of a sample of 363 domestic UK takeovers, which occurred in the period 1985-96. Our principal focus is on the board of directors as the locus of key decision taking by top management and the impact of ownership by the board on takeover outcomes. We locate our analysis within the broader structure of the elements of the system of corporate governance and market constraints affecting directors' behaviour and take a disaggregated view of board shareholdings. Thus we pay particular attention to the composition of board shareholdings as well as their size, and analyse the separate impact of CEO shareholdings and of the pattern of non-executive and executive holdings within the board. This intra-board emphasis reflects a growing interest in the governance literature on the role of non-executive directors as monitors of executive decision taking. It is also in keeping with a more general interest in the governance and agency literature on board composition, conflicts of interest within corporate elites and the potential role of CEO power and hubris in driving corporate strategic decision taking (Allen 1981; Baysinger and Hoskisson, 1990; Hayward and Hambrick, 1997; Jensen and Zajac, 2004). In the same vein we investigate the impact that CEO dominance may have in affecting takeover outcomes where dominance is proxied by the ratio of CEO to other directors' remuneration, and the combination of CEO/Chairman roles. In our examination of board share ownership we include a separate analysis of share options which in principle have important incentive implications as well as providing, if exercised, an impact on share ownership patterns.

In addition to our detailed examination of board holdings, we also assess the impact of non-board holdings by financial institutions, as well as by corporations and persons. Our analysis controls for a variety of other constraints which may influence director behaviour arising from debt related lender power, and from the product market. We also control for

other influences on takeover outcomes including acquirer market to book value, the relative size of the acquirer and the target, the nature of the bid in terms of means of payment, hostility and industrial direction and the pre-takeover performance of the acquiring company. We assess performance in terms of announcement returns, long run share returns and a portfolio of accounting measures. The purpose of our share return measures is to identify acquiring company shareholder welfare effects. Hence we focus on the announcement returns for the acquiring firm alone before the takeover, and for the long run returns we analyse the newly combined firm. Our purpose in using accounting returns is primarily to provide an analysis of overall efficiency effects from a wider perspective and here we compare the post merger performance of the newly combined firm with the pre-merger performance of the target and acquiring company taken together.

We find, in keeping with previous recent studies that share returns to acquiring company shareholders and typically negative, and profit performance whilst sometimes positive is rarely significantly so. We show that within this overall negative impact, overall board ownership has a significantly positive impact on long run share returns, and a weak positive impact on operating performance. However, much stronger effects are found when the overall board measure is split into CEO, executive, and non-executive directors. We find strong evidence of a positive relation between CEO ownership and both the long run return and operating performance impact of takeover on acquiring firms. The positive effect declines as CEO ownership increases to high levels of about 20 percent. This finding holds in a two stage least squares framework that allows for endogeneity effects, between CEO ownership and takeover performance. This finding is robust to controlling for other factors that determine takeover performance and for other factors constraining board discretionary behaviour Shareholdings of other executive directors, non-executive directors, and non-board holdings are found to have no significant effect on takeover performance. These findings are consistent with the existence of discretion to pursue non-shareholder welfare maximisation takeovers, and with an incentive impact of CEO shareholdings which prevents it from occurring when substantial CEO holdings are present. This ‘corrective’ power appears to be subject to

diminishing returns. It is not however subverted by potential entrenchment effects at higher CEO shareholding levels.

The remainder of this paper is organised as follows. Section 2 sets out the development of the hypotheses tested in the paper, and provides a brief review of relevant empirical literature. Section 3 describes the data and the methodology. Section 4 examines the relation between takeover performance, the structure of board and non-board shareownership of the acquirer. Section 5 concludes.

2. Hypothesis development and literature review

Interest in the impact of board shareholdings on takeover performance has its roots in the longstanding debate about the impact on business performance as a whole of the separation of share-ownership from managerial control in the modern corporation (Berle and Means, 1932; Marris, 1964).

The basic elements of this argument in relation to overall decision making and performance are well-known and apply equally to takeover decisions as to other strategic investment activity. Most large companies are run by boards of directors who hold apparently insignificant proportions of their companies' equity. Where this is the case, and if directors have different objectives than shareholders, then as key decision-makers they may, if they have scope for discretionary behaviour, act in their own self-interests rather than those of shareholders per se. These self -interested objectives may be pecuniary, linked to salary or managerial perquisites, or non-pecuniary, such as the status, prestige or power that go with running large corporations.

The extent to which this self interested behaviour may be pursued is in principle, however, subject to a number of significant limitations. First, there may be limitations arising from conflicts of interest within the board itself. Directors may have quite different shareholding positions, and the power of the chief executive to pursue his or her own self-interest may be significantly greater than that of other directors because of their position of relative power within the board hierarchy (Allen, 1981; Baysinger and Hoskisson, 1990; Hayward and Hambrick, 1997; and Jensen and Zajac, 2004). Board process in terms of the regularity of

board meetings and the degree of information and consultation about decision-taking may therefore be important in determining the extent to which discretionary behaviour by one or more key-directors may be pursued.[3]

The board itself, whatever its degree of unanimity of objectives, is also subject in principle to several further potential constraints upon self-interested discretionary behaviour. These constraints may be so binding that non-shareholder maximising behaviour cannot be sustained. For example, competitive pressure in the product market may enforce profit maximisation or cost-minimising behaviour (Palmer, 1973). A similar constraint may arise from the operation of the market for the services of managers and directors themselves. If the market for managers bases the valuation of their services on the extent to which they maximise shareholder value then there will be an important constraint on non-shareholder wealth maximising policies if directors wish to transfer between corporations to maximise their utility and pecuniary benefits (Fama, 1980).

The property rights power of shareholders, and in particular large blockholders such as financial institutions, may also significantly constrain board members' discretion to pursue their own self-interest. Such constraining activity may occur through actions at shareholder meetings to vote down proposals to appoint or reappoint directors, as well as influence over the form and content of executive directors' contracts in an attempt to align their behaviour with those of shareholders. Large blockholders may also seek to appoint non-executive directors to monitor executive behaviour in the interests of shareholder welfare. Each of these actions has a bearing on the way in which the market for executives operates. Existing stockholders instead of exercising their 'voice' in these various ways may choose to 'exit' by selling their stock (Hirschman, 1970). This gives rise to a constraint on behaviour arising from the market for corporate control. Businesses which pursue non-shareholder welfare maximisation should have lower share-prices than would arise under a shareholder welfare aligned regime. Firms pursuing shareholder value maximising takeover policies may then be

3 For a compelling illustration of the impact of inadequate internal board governance processes see the case study of Tyco by Robert Monks in Monks and Minow (2004) pp. 501-523.

able to acquire such concerns at the lower price and subsequently raise market valuations by changing policy (Marris, 1964).

Decision-making may also be constrained by the presence of bank-debt or leverage. To the extent that directors of corporations incur restrictions on their activity through the existence of covenants associated with leverage, or have their actions constrained because of the level of leverage which they have attained then once again discretion to act in non-profit maximising ways may be inhibited.

Finally the power of these various constraints and the existence of divergences of interest between shareholders and directors may be dependent upon the regulatory and legal environment in which company behaviour occurs. This environment, including both hard and soft law elements, may affect both the rights and powers of different parties within the corporation and the relationship between the corporation and external stakeholders such as banks. The nature of this regulation may have a significant impact on the extent to which managers may pursue their own self-interest at the expense of corporate shareholders (La Porta et al, 2000).

An overview of these various elements in the system of constraints and incentives in which board of directors operate is shown in Diagram 1.

Insert Diagram 1 here

The various constraining factors on a board's competitive strategies, including their takeover activity, which we have reviewed, are shown in the shaded boxes. If these constraining factors bind then we would not expect to find any particular relation between board share ownership and performance since performance is in effect dictated by these constraints. Any particular pattern of board ownership across firms will be endogenously determined and reflect optimal adjustments to shareowner welfare requirements (Demsetz and Lehn, 1985). However to the extent that these various constraints do not bind directors to shareholder welfare maximising policies then variations in company takeover performance may be determined by variations in the shareownership of directors. The greater the extent to which the board of directors own shares the more will their strategic behaviour including

takeovers be aligned with the interests of other shareholders. As their share-ownership rises these key-decision-makers bear a larger share of the costs of non-shareholder value maximising behaviour. They are, ceteris paribus, less likely to squander shareholder wealth through takeovers designed to meet their own objectives. High-board share-ownership therefore will assist in aligning the incentives of directors with those of shareholders. We should expect corporations whose boards have higher-share-ownership to exhibit higher stockholder welfare returns from takeovers compared to those with low levels of board share-ownership. We might also expect however that this effect would lessen as the level of share-ownership rises because of familiar diminishing returns to income or wealth arguments. The incentive effects may therefore level off at some point.

This, moreover, may not be the end of the story. To the extent that directors gain utility from non-pecuniary benefits such as social status or prestige and to the extent that other pecuniary benefits not linked to cash-flow rights exist, for instance enhanced compensation due to corporate size per se, then the already diminishing incentive alignment effects arising from access to cash-flow rights may at some point be outweighed by pursuit of these other benefits. The ownership levels at which this occurs may in effect entrench the board in a dominant position because of the shares it controls. The board becomes relatively immune to the constraints arising from actions by other shareholders involving for instance the exercise of voting power in annual meetings or further actions which shareholders have open to them to discipline directors. Moreover the accrual of substantial equity stakes may itself alter the incentives facing directors and induce actions which may conflict with the interests of other shareholders. Thus when top-managerial shareholdings produce large and undiversified equity portfolios for directors compared to other shareholders these directors may favour lower risk projects even if they have lower net present value opportunities than higher risk opportunities which other relatively diversified shareholders may wish to pursue.

Given the level of constraints arising from the governance environment illustrated in Diagram 1 the arguments for alignment, diminishing returns and entrenchment suggest that the relationship between board share-ownership and takeover performance may consist of

different elements. At low levels of board ownership increases will have an initial positive and significant impact on the shareholder welfare outcomes of takeover. At higher levels these effects will taper off as diminishing returns occur. If entrenchment effects arise at yet higher ownership levels then a negative relationship between board shareownership and takeover performance will emerge.

There have been many attempts to isolate the impact of board shareownership on overall company performance. Until the mid 1980's the literature in this area was concerned with testing for differences between usually dichotomous groups of firms characterised as owner or manager controlled. Control status depended upon the proportion of shares owned by the board, with studies focussing on later periods requiring smaller and smaller proportions (ultimately 3-5 percent) held by the board to meet the owner control group threshold as the overall dispersion of shares increased. Most of these studies were concerned with testing specific predictions of the managerial theory of the firm that manager-controlled firms would have higher growth rates but lower and more volatile profit rates or return on shares than owner controlled firms (Marris, 1964). This particular profit/growth trade off was rarely supported by the data. Profit and share price performance differences alone proved equally elusive, although studies which corrected returns for risk, controlled for market power constraints and allowed for some disaggregation between board and non-board holdings produced more robust results. For the USA, Kamerschen (1968), Larner (1970), Sorensen (1974), Qualls (1976), Kania and McKean (1976), Zeitlin and Norich (1979), and Herman (1981) find insignificant shareholder performance differences between high board shareholder (owner controlled) and low board shareholder (manager controlled) groups. In contrast, Monsen, Chiu and Cooley (1968), Boudreaux (1973), Palmer (1973 and 1975), Stano (1975 and 1976), McEachern (1975 and 1978), and Bothwell (1980) do find superior shareholder welfare performance, Palmer (1973 and 1975) in particular shows the importance of market power in allowing managerial discretion and performance differences to emerge, whilst McEachern (1975 and 1978) foreshadowing arguments about entrenchment argues that non-board dominant blockholders will be more effective protectors of general shareholders'

interest than board based shareholders. For the UK, Radice (1971) following the same dichotomous methodology shows that significant board ownership is associated with superior shareholder performance whilst Holl (1975) using a much larger sample and controlling for market power finds insignificant differences.

Later studies for both the UK and the USA have moved away from the dichotomous approach as more refined ownership data has become available, and attention has switched to testing for entrenchment-based non-linear effects. Empirical studies attempting to identify the impact of these effects in the US and UK have found evidence of a non-monotonic relation between board ownership and company performance. For the USA Morck et al., (1988) find that the value of Tobin's *Q* at first increases with board share ownership in the range 0 to 5 percent, decreases between 5 and 25 percent and then increases again above 25 percent. They argue that the entrenchment effect takes root once certain shareholding levels are reached and increases as shareholdings rise up to a further point beyond which no further entrenchment is necessary. Once the conditions necessary for entrenchment are reached, further ownership bestows no further entrenchment and no further adverse effects in terms of shareholder welfare. The convergence-of-interests effect it is argued, in contrast, operates throughout the whole range of ownership. Therefore once entrenchment is reached, further ownership will result in an increase in company performance.

McConnell and Servaes (1991 and 1995), and Hermalin and Weisbach (1991), find an inverted U-shaped relationship which is consistent with entrenchment but do not find a second turning point beyond which alignment effects reappear. The former, for instance, report positive effects between 0 and 40-50 percent and negative effects thereafter with no subsequent upturn. Kole (1995) argues that the difference between the first turning point in these results and those of Morck Shleifer and Vishny may be due to the exclusion of small companies from the latter's' sample. The inclusion of large numbers of smaller companies, he contends, raises the point up to which the positive effects of alignment persist because 'the positive relationship between Tobin's Q and managerial ownership is sustained at higher levels of ownership for small firms than it is for large firms.' (p.426, Kole, 1995)

In a further US study focussing on CEO ownership across a range of firm sizes, Griffith (1999) reports results similar to Morck Shleifer and Vishny in having two turning points. He shows that Tobin's Q rises with CEO ownership between 0 and 15 percent declines for values between 15 and 50 percent and rises again when the CEO has over 50 percent of the stock. He also reports that firm value is not related to management ownership when the roles of CEO and chairman are separated.

For the UK, Cubbin and Leech (1986) develop a continuous variable of shareholder power based on the size and location of shareholdings and the dispersion of remaining shares. In a sample of 43 large companies in the early 1970's they find no evidence of significant performance effects arising from board shareholder power. However, Short and Keasey (1999) use a random sample of 221 large UK companies for the period 1988-1992 and report similar results to Morck et al., (1988) linking board ownership to performance. They report higher turning points at around 12-15 percent and then 41 percent depending on the performance measure used. Although these are similar to the turning points in some of the other US studies they interpret this as showing that board entrenchment becomes effective at higher levels of ownership in the UK compared to the US and that the entrenchment effect dominates up to much higher share ownership levels. Faccio and Lasfer (1999) analyse a much larger UK sample of all UK non-financial listed companies in 1996 and find no relationship between firm value and board ownership in general, although they report that a non-linear relationship with two turning points exists for the sub-set of firms with high growth prospects (proxied by high P/E ratios). They speculate that their general lack of robust findings of any entrenchment effects of board ownership on firm value performance may reflect the effectiveness of external governance pressures in the UK. Finally Weir et al., (2002) analyse 311 companies from the 1996 *Times1000* list, and find evidence for an entrenchment effect in terms an inverted U shaped relationship between Tobin's Q and CEO shareownership. They do not report the estimated turning point in this relationship.

A number of studies have related ownership characteristics not to overall performance but to the takeover process as such. These include papers analysing the impact of board

ownership on the premiums paid in takeover bids, the method of takeover payment and post-acquisition executive job retention (Martin, 1996; Hayward and Hambrick, 1997; and Ghosh and Ruland, 1998), the link between ownership acquisition success and executive pay (Wright et al., 2002), and between ownership patterns and the likelihood of paying greenmail or excessive bid premia (Kosnik, 1987 and 1990). These provide mixed evidence in identifying significant ownership impacts. There are also some direct estimates of the impact of board ownership on takeover performance outcomes for the acquiring company shareholders. These have focussed on announcement effects, and relate only to the USA. Conn (1980) using a dichotomous approach finds no differences in merger pricing or share returns between owner and manager controlled groups. Lewellen et al., (1985), Loderer and Martin, (1998), and Shinn (1999), using a more continuous approach report a positive linear relationship between board ownership and announcement returns.[4] These latter three studies suggest that the detrimental effects of entrenched management observed with company performance in general do not apply in the case of corporate takeovers. Hubbard and Palia, (1995) however provide evidence of a U-shaped relationship. They 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.

In this paper in keeping with the existing literature on entrenchment and alignment we test the hypothesis that there will be a significant but non-linear relationship between board ownership and takeover performance. Existing theory gives little or no guidance as to the number or position of turning points in this relationship and the methods we employ to identify them in our sample are discussed in the next section.

We augment this basic hypothesis in a number of ways. First, it is clear from our review of the existing literature that the scope for entrenchment and the exercise of discretionary power to pursue non-shareholder welfare strategies may be imperfectly measured by focussing on

4 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.,

board ownership in aggregate and by focussing on board ownership alone. Aggregate board ownership is one component of the anatomy of corporate control and should be disaggregated and located in a wider range of factors which will condition its impact (Cosh and Hughes, 1987 and 1997; Deakin and Hughes, 1997; Vafeas, 1999; and Weir et al., 2002).

Where a substantial aggregate board holding is made up of several smaller holdings entrenchment requires coordination of action and a clear community of interests between the holders. This may weaken the power of the entrenchment effect, and at the same time strengthen the incentive effect because ownership is dispersed across more board members. Conversely where board ownership in aggregate is dominated by one or a few large holdings the entrenchment effect will be more likely to emerge and the incentive effect will be more muted because fewer directors are involved. We expect these effects to be strongest when boards are small and where substantial shareholding is combined with a dominant structural position such as holding the post of chief executive, and especially if this is combined with the chairmanship of the board, or is combined with other indicators of dominance such as a high ratio of CEO pay to the pay of the rest of the board (Hayward and Hambrick, 1997; Weir et al., 2002; Wright et al., 2002; and Jensen and Zajac, 2004).

We also distinguish between non-executive and executive directors shareholding. The former, in principle, play a key role in monitoring executive directors and are expected to have objectives aligned with shareholder interests. We would therefore expect entrenchment effects based on ownership to be weaker for this group compared to executive shareholdings and that their monitoring influence will be greater the larger proportion of board seats they occupy.

In terms of hypotheses linking board ownership to acquiring company performance these arguments lead us to predict negative effects on takeover performance in smaller boards and boards with a lower proportion of non-executive directors. We also predict stronger entrenchment effects for CEO holdings and for executive shareholdings than we predict for board ownership as a whole and for non-executive shareholdings and hence a greater

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likelihood of identifying a non-linear inverted U-shaped relationship between the former and takeover performance. We also expect a negative impact on takeover performance where the roles of CEO and Chairman are combined but that this effect will be weaker in the later years of our period of analysis when the impact of the Cadbury Code both reduced the extent to which the two roles were combined and required a transparent and specific public justification where they continued to be combined (Faccio and Lasfer, 1999). We predict a negative relationship between takeover performance and the ratio of CEO to average board pay.

The entrenchment effect on takeover performance of board holdings as a whole and of executive holdings within that will be conditioned by the presence of potentially countervailing non-board holdings. In a UK context this role is seen as residing primarily with financial institutions who dominate aggregate stock market holdings as well as the incidence of individual large off-board holdings in particular companies (Cosh et al., 1989 and 1998). We therefore hypothesize that takeover performance will be more closely aligned with shareholder interests where substantial off-board holdings by financial institutions exist.

Finally within the anatomy of corporate control we consider the extent of incentive share schemes in the form of stock options. These have increased dramatically in the bull markets of the 1990s and potentially increase the incentive alignment effects of share ownership since in principle the exercise of the option should yield gains conditional on meeting specified shareholder welfare creating activities. The extent to which this is the case clearly depends upon the design of the option contracts and the extent to which executives can manipulate them in their favour. Our hypothesis here is that takeover performance will be enhanced in the presence of CEO, executive and non-executive share options.

In addition to these considerations we control for the possible constraining effects of market power by including market structure variables, and for constraints arising from leverage by including a measure of corporate indebtedness for each of our sample firms. We assume that the impact of the constraining effects of the managerial labour market will not vary across our cross section of firms therefore we do not include separate proxies for this constraining variable. Since our takeovers occur over a period which saw substantial

regulatory changes especially in the soft law relating to CEOs and board process we include variables to reflect takeover relevant changes pre and post the implementation of the Cadbury Report on corporate governance.

3. Data and methodology

(i) Data

We examine a comprehensive sample of acquisitions by UK public companies of other UK public companies, completed between January 1985 and December 1996. The sample acquisitions are drawn from the Thomson Financial publication Acquisitions Monthly. We include takeovers for which both bidder and target accounting data is held on the Datastream Database for a minimum period of one year prior to and following takeover. Consistent with previous studies, we exclude takeovers involving financial and property companies because they are subject to special accounting requirements, making them difficult to compare with other companies. This results in a sample of 363 acquisitions.

Table 1 reports transaction characteristics for the sample acquisitions. The mean relative size of target companies to acquirer companies (in terms of market value) at the time of the acquisition is 51 percent, indicating that our sample of takeovers represent significant investments for the bidders involved. The mean market-to-book value of acquirers is 3.46. The mean bid premium offered (measured as the final offer price minus the price one month prior to announcement) is 27 percent. The majority (61 percent) of the acquisitions take place in the 1980s compared to the 1990s. A minority (35 percent) of sample acquisitions involve two firms in the same Datastream Industrial Classification Level four,[5] and are classified as related. A small minority (18 percent) of the sample acquisitions are rejected by target management and are thus defined as hostile in nature. In terms of the method of payment used, 12 percent involve the use of a pure cash offer, 27 percent involve the use of pure equity method, whilst the majority (62 percent) involve the use of a mixture of payment currencies.

Insert Table 1 here

Information on acquirer board shareholdings was collected from various sources, including the Hambro Company Guide, Crawford's Directory, Price Waterhouse Corporate Register, and individual company annual accounts. The Hambro Company Guide and Crawford's Directory report only the aggregate overall board ownership percentage of all board directors (the CEO, executives and non-executives). We use one of these two data sources for 185 of our sample acquisitions. The Corporate Register and individual company annual accounts on the other hand report a much richer data set including the number of shares and options owned by each director, and the classification of directors into CEO, executive and non-executive. This source of data is available for 178 of our sample acquirers. Therefore, we have a sample of 363 acquisitions for which we have an overall ownership figure for all board directors, including the CEO and non-executives, and a smaller subsample of 178 acquisitions for which we are able to estimate shareholding and option holdings for the CEO, executive directors, and non-executive directors separately.

Each of the above data sources reports the identity of shareholdings greater than five percent before 1989, and above three percent after 1989. This enables us to calculate non-board shareholdings for the sample of 363 acquirers, which we classify as either financial institutions, non-financial corporations, or private individuals. In this work we measure board and non-board shareholdings at the last accounting year-end prior to takeover.

With regard to other board related variables, board size, highest paid director, total board remuneration, and the proportion of non-executive directors are all taken from Datastream. The proportion of non-executive directors is only available for 349 of the sample acquisitions. Whether the CEO is also the Chairman is identifiable from each of the above sources except the Crawford's Directory and is available for 348 of the 363 sample acquisitions.

Table 2 reports summary descriptives on the above variables. The first row reports the total percentage of ordinary shares owned by the board.[6] The mean combined stake of all

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5 This classification is based on 38 different industrial classifications and is similar in detail to the two-digit UK Standard Industrial Classification.

6 We include both beneficial and non-beneficial shares here. For most boards, the number of non-beneficial shares owned is very small compared to beneficial holdings. The most common reason for

board members is 7.75 percent. The median stake, however, is only 1.59 percent, suggesting that the distribution is skewed. Indeed, in 155 firms (43 percent of the sample), board holdings totalled to no more than 1 percent of outstanding equity, and in 96 of our firms (27 percent of the sample), total board members owned no more than 0.2 percent of the firm. Nonetheless, in 34 percent of our sample the board owned more than 5 percent of the firm, in 23 percent of the sample the board owned more than ten percent whilst in 12 percent the board owned more than 20 percent. Board ownership levels for our acquirers are very similar to that reported for previous UK studies suggesting that our sample of bidders is representative. For example, Sudarsanam et al. (1996) report a mean ownership of ten percent for the period 1980-1990. However, these board ownership levels for bidders are notably lower than those for UK companies in general. Short and Keasey (1999) report average (median) levels of 12.5 percent (5.6 percent) between 1988 and 1992, whilst Faccio and Lester (1999) report average (median) levels of 16.74 percent (7.95 percent) between 1996 and 1997. This probably reflects the above average size of acquiring firms.

Insert Table 2 here

The median remuneration of the board of the acquirer, in the year preceding the takeover is £517,000. The median values of shares directly owned (excluding options) amount to £2,227,000.[7] The mean share ownership values are much larger, owing to the presence in the sample of several very sizeable board holdings (eleven of which are in excess of £100 million). Therefore, the median shareholding values are almost four times the magnitude of median remuneration. Cosh and Hughes (1987) and (1997) show that such figures represent a massive rise in the importance of board stock ownership since the early 1980s (although these figures are substantially smaller than those reported for the US (Loderer and Martin, 1998). It appears quite possible that despite the increase in share ownership, an increase in

non-beneficial holdings is 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.

7 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.

remuneration due to increased firm size via takeover, may still outweigh any loss in the value of shares as found by several studies (Lambert et al., 1987).

Table 2 reports external shareholdings according to their overall sum, and according to the largest external shareholder. Within these classifications, results are reported also for financial institutions, non-financial corporations, and personal holdings. The largest external shareholder holds on average 9.6 percent of the shares, whilst the sum of all external holdings is on average 16.55 percent. Financial institutions are clearly the most important type of external shareholders, with the median acquirer having a financial holding of 5.31 percent compared to zero in the case of corporate and personal shareholdings.

Table 2 also reports share ownership and share option information for the CEO, executive directors, non-executive directors for the reduced sample of 178 acquirers. Average CEO ownership is 1.83 percent compared to 2.91 percent for executive directors and 1.38 percent for non-executive directors. A similar picture emerges in terms of medians. Since the average board size is 8-9 directors, and the proportion of non-executives is 0.33, CEO ownership is clearly significantly greater than the average holding of executive and non-executive directors. Share options as a percentage of total shares in issue are on average 0.47 for CEOs, 0.79 for executives, and 0.03 for non-executives.

(ii) Methodology

(a) Profitability

For the profitability measure we compare the post-takeover profitability of acquirers with the pre-takeover weighted average profitability of acquirers and targets, relative to non-merging control firms. The weighted average performance data of the bidder and target firms is calculated over the three years before the takeover (years –3 to –1) to obtain the proforma pre-takeover performance of the combined firms. We then compare this pre-takeover benchmark with the three-year post-takeover performance (years +1 to +3) of the bidder to measure the change in performance caused by merger. The abnormal profit return is the difference between the value for the combined firms and the value for the weighted-average

control firms. The weights for the control firms are the relative book asset sizes of bidders and targets in year –1. Consistent with previous studies, we exclude year 0, the year of consolidation, from the analysis. This is because with acquisition accounting, the consolidated profit and loss account of the acquirer in year 0 will only show that proportion of the target's profits earned since the date of acquisition.[8] If acquirers die within the four post-takeover years then the year of death becomes the final year of analysis, for both the acquirer and the control firm.

The non-merging control firms are matched by industry and profitability. Studies have shown that future profitability can be determined by industry and prior profitability (e.g. Barber and Lyon, 1996), whilst previous studies have shown that acquirers differ from non-acquirers in these important respects. Hughes (1989) reports that acquirers tend to be above average performers in terms of profitability, whilst acquisitions tend to cluster in specific industries (for the US see Mitchell and Mulherin (1996) and Andrade and Stafford (2001), whilst for the UK see Powell and Yawson (2005)). This clustering is not random but located in industries that are undergoing fundamental shocks and since such shocks are likely to effect future industry profitability, acquirers should be matched to firms in the same industry. Another potentially important characteristic is size, since acquirers tend to be larger than average firms and size has been shown to have a positive impact on profitability. However, we do not also match on this further factor, since Barber and Lyon (pp. 385-386, 1996) show that matching on industry and profitability yields well specified tests when firms are large and have high profitability, and matching on a third characteristic means compromising on either the industry match or the profitability match. However, in robustness tests (Section 4 (iv) below) we do test for any biases introduced by not matching for size.

Examining the simple change in post-takeover performance relative to pre-takeover performance (the change model) is arguably superior to the regression model employed by previous studies (Healy et al., 1992; Manson et al., 2000) which involves regressing the post-

8 In separate tests, we included year 0 and therefore examined four years of post-acquisition data. The results using this alternative method were very similar to those for the entire sample and our

takeover abnormal profit rate for each acquisition on an equivalent pre-takeover abnormal profit rate as follows:

$$\text{ROA}_{post} = \alpha + \beta \text{ROA}_{pre} + \varepsilon \qquad (1)$$

Where ROA_{pre} is the median abnormal profit rate for the three pre-takeover years and ROA_{post} is the median abnormal profit rate for the three post-takeover years. The coefficient β allows for mean reversion in profitability and the intercept α is interpreted as an estimate of the average improvements in performance. By controlling for pre-takeover performance in this way, the mean amount of post-takeover performance left unexplained (i.e., the intercept α) is arguably attributable to the takeover. However, Ghosh (2001) and Powell and Stark (2005) argue that this regression based methodology may produce biased results where acquirers differ from control firms on characteristics that determine future profitability. In such cases, a simple change model is more appropriate. In what follows, to check the robustness of our results, we report results for the overall sample using the regression model also.

With regard to the specific measure of operating performance, we follow Powell and Stark (2005) and employ a portfolio of different measures to ensure that our results are not driven by well known accounting biases. Firstly, with regard to the numerator, we employ both an accrual and cash flow measure. The accrual measure is operating profit before amortization and depreciation, which is the performance measure used predominately in previous papers (see, e.g., Healy et al., 1992; Ghosh, 2001; and Linn and Switzer, 2001). We refer to this as a 'profit' measure. Although such measures are not affected by goodwill amortization, they are still likely to be distorted by the particular accounting policies adopted by the firm and can be easily manipulated (Erickson and Wang, 1999). Our second measure therefore uses operating cash flow, as in Powell and Stark (2005). In particular, we adjust pre-depreciation profit by

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conclusions unchanged.

subtracting increases in stocks, work-in-progress, and debtors and by adding increases in creditors. We refer to this as a 'cash flow' measure.

With regard to the denominator for our operating performance measure, we employ three measures; total assets, sales and a market value of assets approach. The use of book value of total assets as the deflator in takeover performance studies has several flaws (see Healy et al., 1992; Ghosh, 2001; and Manson and Stark, 2005). Many UK acquirers wrote down the fair value of the acquired assets from their pre-acquisition levels, causing an upward bias in post-takeover profitability (Chatterjee and Meeks, 1996). Because of these potential problems, we follow Ghosh (2001) and Powell and Stark (2005) and employ sales and the market value of assets as alternative deflators which do not suffer from these accounting biases. In summary therefore, we employ 6 different measures of operating performance; (1) profit divided by book assets, (2) profit divided by sales, (3) profit divided by market value of assets, (4) cash flow divided by book assets, (5) cash flow divided by sales, (6) cash flow divided by market value of assets.

(b) Event study methodology

We follow Brown and Warner's (1985) standard event study methodology to calculate cumulative abnormal returns for the 3-day period (-1, 1) around the announcement date (0). The abnormal returns are estimated using the market-adjusted model, where the benchmark return is the contemporaneous return on the Datastream UK equal weighted market index. The *t*-statistics are estimated using the cross-sectional variation of abnormal returns. Daily returns are available for 354 of the 363 sample acquisitions.

We estimate abnormal share returns for the 36-month post-takeover period as buy-and-hold abnormal returns, beginning the month following completion through the end of the 36-month period following the completion month or until the acquirer is delisted. 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 abnormal returns are estimated relative to the acquirer industry and

profitability matched control firms described in Section (3)*(ii)(a)* above. We adopt the control firm approach because it avoids the skewness and rebalancing biases inherent in a reference portfolio approach (see e.g., Barber and Lyon, 1997). The *t*-statistics are estimated using the cross-sectional variation of abnormal returns. As with the accounting rate of return methodology, where acquirers die within the 36 post-takeover months then the month of death is the final month of evaluation, for both the acquirer and the control firm. Long run returns are available for 359 of the 363 sample acquisitions.

4. Empirical results

In this section, we evaluate the relation between board ownership and the impact of takeovers on performance. In sub-section *(i)* we consider the takeover performance of our sample firms as a whole in terms of both profitability and share returns. In sub-section *(ii)* we consider the relation between board ownership and takeover performance. Sub-section (iii) considers the relation between CEO ownership, executive ownership, and non-executive ownership and takeover performance. Finally, the fourth and fifth sub-sections explore the robustness of our findings in a number of ways.

(i) Takeover performance of sample firms

Panel A of Table 3 reports the takeover performance for the entire sample of 363 acquirers. Column 2 of Panel A shows that the mean announcement abnormal return earned by all our sample acquirers is -1.13 percent, which is statistically significant from zero at the one per cent level. Therefore, over the three days surrounding the acquisition announcement, the stock market overall assessment is that the average acquisition will result in a small but significantly negative effect on acquirer value. This finding is consistent with two recent UK studies for our period which also report significantly negative abnormal announcement returns to acquirers (Sudarsanam and Mahate, 2003; and Conn et al., 2005).

Insert Table 3 here

Column 3 of Panel A in Table 3 reports the abnormal return over the 36-month post-acquisition period. The mean return is –16.26 percent which is significant at the one percent

level. This result is consistent with other long run studies of UK acquirers over this sample time period such as Gregory (1997), Sudarsanam and Mahate (2003) and Conn et al. (2005).

Columns 4-9 of Panel A in Table 3 report the difference between the abnormal post-takeover performance and the abnormal pre-takeover performance. The pattern here is very clear. The 'profit' measures report a significantly positive increase in operating performance, regardless of the denominator used. This ranges from 1.08 in the case of profit to book assets, to 1.65 in the case of profit to market value of assets. All of these three differences are statistically significant at the one percent level. In contrast, each of the cash flow measures is, although positive, smaller and statistically indistinguishable from zero. These results are consistent with those of Powell and Stark (2005) who employ a similar methodology over a similar period. Using cash flow measures they find no significant evidence of improvement, but using an accruals measure results in significant improvement in two of the four measures they consider.

For robustness, we also estimate Equation (1) for the six different measures. The results, not tabulated, are entirely consistent with the change model results described above. For the three profit measures, the intercept α which measures the impact of takeover on profitability, has a value ranging from 0.69 to 1.31 and is statistically significant for each regression. In contrast, for the cash flow measures, the intercept ranges from -0.10 to 0.41, statistically insignificant for each measure.

To summarize, our results show that takeovers result in significant share price losses over both the short and long run period surrounding the acquisition. The effect on operating performance ranges from mildly positive for the cash flow measures, to economically and statistically significant for the accrual operating performance measures. These results are consistent with prior UK studies over our sample period.

(ii) Board ownership and takeover performance

In this section we consider the relation between board ownership as a whole and takeover performance, in terms of firstly univariate and then multivariate analysis. The sample

employed is the entire sample of 363 acquisitions. Panel B of Table 3 reports takeover performance, in terms of announcement returns, long run returns, and the change in profitability, for different levels of board shareholding.

Column two reports announcement returns by board ownership level. There appears to be no discernible pattern in the returns to different board ownership bands. The returns are small and negative in most bands. Column Three reports long run returns by board ownership level. Returns are a significantly negative -15 percent for the 0-1 percent band. There is no evidence of an improvement in long run returns when ownership increases at low ownership levels. As ownership increases from 0-1 to 1-5 percent, the return decreases to -20 percent. As ownership increases further to 10-15 percent, returns decline further to -30 percent. However, in the range 15-20 percent, returns are large and positive for the sub-sample of 15 acquirers. As board holdings increase further beyond 20 percent, long run returns are negative but small and insignificant. There is therefore some evidence of an improvement in long run returns at medium levels of board ownership, and then some tailing off of that improvement at high levels.

Columns 4-9 report the change in profitability across the different board shareholding bands. Acquirers whose board ownership is in the range 0-1 percent experience small profitability changes, which are much lower than those experienced by acquirers with board ownership levels of between 1 and 5 percent. There is therefore evidence that at low levels of board ownership, increased board ownership has a positive effect on operating performance. Acquirers with board ownership levels between 5 and 15 percent experience lower returns than those with ownership levels between 1 and 5 percent. Acquirers with ownership levels between 15 and 20 percent experience on the whole positive increases in profitability. As ownership increases beyond 20 percent there is no clear pattern across the board ownership levels and the different performance measures. The pattern observed cannot be described as consistent with previous empirical patterns of board ownership and performance.

To examine the relationship between board ownership and takeover performance further, we carry out multiple regression analysis. To examine the precise nature of the relation

between board ownership and takeover profitability, we experimented 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 use a range of specifications similar to those used in previous studies.

We introduce additional independent variables into the regression. Firstly, we include the following external holding and board variables which were defined in Section 3 above; largest institutional shareholder (%), largest corporate shareholder (%), largest personal shareholder (%), proportion of non-executives, board size, CEO pay / average pay. We include a chairman-CEO dummy variable that is equal to one if the CEO is also the chairman, zero otherwise. We include a dummy variable that is equal to one if the CEO is also the chairman following the publication of the Cadbury Report in 1992, zero otherwise. We include a dummy variable that is equal to one for all acquisitions completed following the publication of the Cadbury Report in 1992, zero otherwise.

Secondly, we control for other factors that been advanced as important determinants of takeover performance, and possibly also associated with board ownership. Amihud and Lev (1981) show that diversifying takeovers are more likely when managerial shareholdings are high, whilst Morck et al., (1990) and Megginson et al., (2004), show that such takeovers are value destructive. We therefore include a dummy variable, 'related', which equals one if the bidder and target are in the same two digit Standard Industrial Classification (SIC), and zero otherwise. Hostile is a dummy variable which equals one if the takeover is hostile and zero if friendly. All-stock method of payment, is a dummy variable which equals one if the method of payment is a 100 percent equity bid, zero otherwise. Martin (1996) shows that acquirers with extremely low and high ownership acquirers are more likely to use equity as their method of payment. 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 the natural logarithm of acquirer size, measured as the market valuation of the acquirer at the end of the financial year prior to takeover. We also include the relative size of the transaction, measured as the transaction value divided by acquirer size. Rau and Vermaelen (1997) show that market-to-book value (MTBV) has a significantly negative effect on post-takeover long run share returns, whilst Cho (1998) shows that MTBV has a significantly positive effect on board ownership. We follow a similar procedure to Rau and Vermaelen (1998), by ranking our acquirers into five equal sized quintile according to their MTBV at the time of acquisition (where five is the highest quintile) and we include the quintile rank in the multiple regressions. The acquirer's leverage may be a constraining factor on management and we therefore include it, measured as the short and long term debt of the acquirer in year -1 divided by the short and long term debt plus the market value of equity of the acquirer in year -1. Industry concentration may play a similar constraining role to leverage and this is also included as a control variable. Industry 3-firm concentration ratios are available at the 3-digit level in 1998, whilst we have 2-digit industry definitions on acquirers. We therefore calculate the acquirer's industry concentration ratio as the weighted average of the 3-digit 3-firm concentration levels within the 2-digit SIC code of the acquirer, where the weights are total sales for each 3-digit industry. For the announcement and long run share return regressions, we include the abnormal pre-takeover share returns, which are the buy-and-hold returns measured relative to control firms over the 36 months prior to the announcement month. For the profitability regressions, we include the pre-takeover abnormal profitability of the acquirer and target firms, as described in Section 3.

For the first regression specification we test for a linear relationship between takeover performance and board ownership. The results are reported in Table 4. The coefficient on board ownership is positive for both the announcement returns but statistically insignificant. The coefficient for the long run returns is positive and statistically significant. For the profit measures, the coefficient is positive for every measure except cash flow over market value of assets. However, it is only statistically significant for the profit over asset measure, and in this

case only at the ten percent level. We therefore find strong evidence that board ownership is positively related to long run share returns, and weak evidence that it is positively related to operating performance.

Insert Table 4 here

We now consider the effect of the external ownership and board structure variables. The external shareholder coefficients are of indeterminate sign and are rarely significant. For example, in the case of the largest institutional shareholder, the coefficient is insignificantly positive for announcement returns, insignificantly positive for long run returns, negative for three of the operating performance measures, and positive for three of these measures, being significant (negative) only in the case of cash flow over assets. The combined chairman-CEO variable has a negative impact on announcement and long run returns, yet a positive effect on five of the size operating performance measures, none of which are statistically significant. The combined chairman-CEO and post-Cadbury interaction variable has a significantly negative effect on announcement returns, an insignificantly positive effect on long run returns, and an indeterminate and insignificant effect on operating performance. The post-Cadbury dummy has a positive effect on both announcement and long run returns (being marginally significant for the latter), and a positive effect on four of the operating performance measures (being marginally significant for the cash flow over assets measure). The proportion of non-executives variable is insignificantly negative for announcement and long run returns, yet positive for five of the six operating performance measures, marginally so for the profit over assets measure. The coefficient for board size is of indeterminate sign and statistically insignificant, as is the CEO pay over average pay measure. In summary, there is no evidence that any of these variables have a consistently significant effect on performance.

With regard to the control variables, the coefficient for related acquisitions is positive yet statistically insignificant for announcement and long run returns, and positive yet insignificant for four of the six operating performance measures. Hostile acquisitions have a positive effect on both long run returns and profit margin, but these impacts are not statistically significant.

All-stock acquirers experience significantly lower announcement and long run returns than other acquirers. However, there is no evidence of lower operating performance for such acquirers. This is perhaps consistent with the hypothesis that overvalued acquirers use stock as their method of payment. Relative size has a negative impact across each performance measure, and is statistically significant for announcement returns and profit over assets. Acquirer leverage has a significantly negative impact on long run returns and the cash flow over asset measure, but not the other operating performance measures. Industry concentration has no discernible effect overall. Pre-takeover share returns have a significantly negative effect on both announcement and long returns, whilst pre-takeover profitability has a significantly negative effect on post-takeover profitability. The effect of these control variables is similar in the other regression specifications that we consider below and therefore to conserve space, we do not tabulate their coefficients and their significance henceforth.

The second specification allows for an inverted U-shape relationship between board ownership and takeover performance by including board ownership and board ownership squared. The results, reported in Table 5, show no evidence to support this specification. The coefficients for board ownership and board ownership squared are not significant in any of the regressions.

Insert Table 5 here

The third specification we employ is a piecewise linear regression as used in Morck et al. (1988), Martin (1996) and Ghosh and Ruland (1998). The break-points for the ownership are 0 to 5 percent, 5 to 25 percent and greater than 25 percent, consistent with the above studies. The results are reported in Table 6. The coefficient for the 0-5 percent variable is large and positive across each performance measure. It is statistically significant for three of the operating performance measures, but not the share return regressions. This is evidence therefore that at initially low levels of board ownership, some improvement in takeover performance is associated with higher board ownership. The coefficient for the 5-25 percent ownership spline variable is positive in all but one case, and statistically insignificant in every case. This coefficient is notably lower than that for the 0-5 percent variable, suggesting that

there is a diminished ownership effect over the higher range. However, since the effect is positive there is no evidence of an entrenchment effect and therefore this finding is inconsistent with the entrenchment effect evidenced over this ownership range in previous studies. The coefficient for the >25 percent ownership spline variable is similar in direction, magnitude and statistical significance to the 5-25 percent range, in this being significant in the case of long run share returns and the profit over assets measure.

Insert Table 6 here

Our results on the impact of board ownership on takeover performance may be summarised as follows: We have found no significant relationship between announcement returns and board ownership. With regard to long run share returns, we have found a significantly positive relationship with board ownership, which appears much larger at low levels of board ownership. With regard to operating performance, there is overall a weak positive relationship. However, within particular ownership bands, there is evidence of significant positive effects on operating performance. Again, as with share returns, these effects appear much larger at low levels of ownership. Although the effects of board ownership at high levels are smaller than at low levels, they are never negative and we therefore find no evidence of entrenchment effects. The results here appear to be more consistent with a diminishing returns to wealth argument.

(iii) CEO ownership and takeover performance

In this section we examine the subsample of 178 acquisitions for which we have ownership and option data on CEO, executive directors, and non-executive directors. Panel A of Table 7 reports overall performance for this subsample, which is very similar to that for the full sample (of 363 acquisitions). Announcement returns are a significantly negative -1.82 percent, long run returns are a negative -10.51 percent, each of the profit measures is significantly positive whilst the cash flows are positive but smaller, and in two cases statistically insignificant.

Insert Table 7 here

Panel B of Table 7 reports takeover performance by CEO ownership bands. A reasonably clear pattern is apparent. Acquirers with CEO ownership between 0 and 1 percent experience takeover performance effects close to the average results for the subsample. Acquirers with CEO ownership levels between 1 and 5 percent experience similar or worse performance effects also. Thus, there does not appear to be a positive linear relationship at these lower ownership levels. However, acquirers with CEO ownership levels between 5 and 10 percent, perform much better, in terms of long run returns and most operating measures, than the lower CEO ownership acquirers. The number of acquirers with CEO ownership beyond 10 percent is small, but performance appears to be similar on the whole to the 5-10 percent range.

Before going on to check the effect of CEO ownership further, we check that the effect of board ownership on takeover performance for this subsample is similar to that for the full sample. We find evidence that it is. Examining firstly whether there is a linear relation between board ownership and takeover performance for this subsample, we find that the coefficient on board ownership for long run share returns is positive and of a similar magnitude to that for the full sample, although only statistically significant at the 14 percent level, whilst only one of the operating performance measures (cash flow over assets) is significantly positive, at the 10 percent level. Examining secondly the squared polynomial model, examining all performance measures, only the coefficient for the cash flow over market value measure is statistically significant (positive). Similarly, in the piecewise linear model, nearly all variables are positive, only one coefficient (0-5 percent for cash flow over market values) is statistically significant, whilst the coefficient for the 0-5 percent variable is larger than the other two coefficients in all cases. In short, for this reduced subsample, just as for the full sample, the only impact of note is the significant linear relationship between board ownership and long run returns.[9, 10]

9 The results are available from the authors on request.

10 We also examine the differences between the two samples in terms of control variables. The only significant differences we find (at the 5 percent level) are that for the 178 sample relative to the 185

We now run the same functional form regressions as we did for the total board ownership effect in Tables 4 through 6. We model CEO ownership, executive ownership and non-executive ownership separately using the same functional forms. The other new variables in these regressions are CEO options, executive options, and non-executive options, all of which are expressed as a proportion of total shares in issue and are modelled in a linear way.

Table 8 tests whether CEO ownership, executive ownership, or non-executive ownership have a linear effect on takeover performance. The coefficient for CEO ownership is positive and statistically significant for long run share returns and for five of the six operating performance measures. We therefore find strong evidence that CEO ownership has a positive impact on takeover performance. The coefficient for executive ownership is insignificantly positive for announcement and long run share returns, negative for the operating performance measures, significantly so in the case of cash flow over market values. The coefficient for non-executive ownership is insignificantly positive for announcement returns, insignificantly negative for long run share returns, and positive for five of the operating performance measures, significantly so in the case of cash flow over market values. We therefore find little evidence that either executive or non-executive ownership have a consistent significant effect on performance. As regards the effect of options on takeover performance, CEO options have an insignificant effect on all measures of takeover performance. The effect is negative for announcement returns, positive for long run returns and varies across the different operating performance measures. Similarly, non-executive option ownership has an insignificant and indeterminate effect on takeover performance. However, executive options have a negative effect on every performance measure, significantly so in the case of announcement returns, long run returns, and two of the six operating measures.

Insert Table 8 here

Table 9 tests whether there is an inverted U shaped relation between CEO ownership, executive ownership, or non-executive ownership and takeover performance. We include the

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excluded acquisitions, the CEO is more likely to also be the Chairman, the proportion of non-executives is higher, acquirer size is higher, and concentration levels are higher.

squared measure for each of these variables. The coefficient for CEO ownership is again positive and statistically significant for the long run returns and for four of the six operating performance measures, suggesting that initially at relatively low levels of CEO ownership, higher ownership is correlated with higher performance. The coefficient for CEO ownership squared is significantly negative for long run returns and significantly negative for three of the operating performance measures. In the case of executive and non-executive ownership we find no strong evidence of an inverted U-shaped effect. For the CEO relation, the turning point suggested by the coefficients is roughly 20 percent for long run share returns, and 24 percent on average for the operating performance measures. However, we have only one observation for which CEO ownership is greater than 20 percent. Therefore it is important to note that we find no evidence that a negative effect of ownership occurs at a certain point, but rather that there is a diminishing positive effect up to the highest level of ownership that exists in our sample.

Insert Table 9 here

Table 10 includes piecewise linear variables for three different ownership ranges; 0-5 percent, 5-25 percent, and greater than 25 percent. These variables are included for CEO ownership, executive director ownership, and non-executive director ownership. Starting with CEO ownership, the coefficients for the 0-5 percent range are large and positive but not statistically significant for any of the performance measures. However, the coefficient for the 5-25 percent range is positive for the long run return and all profitability measures, and significant for all but one of these measures. It therefore appears that the robust positive linear impact occurs through the 5-25 percent range and not the 0-5 range. Consistent with the overall board regressions, the magnitude of the 5-25 percent coefficient is lower than for the 0-5 percent coefficient, suggesting that the effect is much larger over this range than at higher levels. The coefficient for the >25 percent range is inconsistent in terms of sign. None of the coefficients for the executive ownership ranges are consistent in sign or significant at the five percent level. A similar picture emerges for the non-executive ownership effects.

Insert Table 10 here

To summarize, we find strong evidence of a positive relation between takeover performance and CEO ownership, which holds for both long run returns and operating performance measures. We find that the relation is largest at low levels of CEO ownership, and becomes lower, although positive and statistically significant, at medium levels of ownership. We find no evidence for our sample that at some point more ownership has a negative effect and therefore no evidence of entrenchment. The declining positive effect of CEO ownership could be due to an entrenchment effect which becomes negative at some out of sample ownership point, but could equally be due to a diminishing marginal utility of wealth effect which reaches a certain point and then remains stable.

(iv) Robustness tests

We carry out several further tests to check the robustness of our key findings. As pointed out above, our control firms are not matched on size, but size may be related to future profitability in a way that is not picked up by controlling for prior profitability. We find that our acquirers are indeed significantly larger on average than their control firms. To check whether our results are robust to this size difference, we restrict the analysis to a subsample of acquirers that happen to be similar in size to their control firms. This gives us a subsample of 162 acquirers and control firms, which would be the precise control firms selected if we followed the procedure of Powell and Stark (2005). We recalculate our key operating performance results using this sample of 162 acquirers. Firstly, we re-estimate the change in profitability measures in Panel A of Table 3 for the 162 acquirers. We find very similar results indeed to those for the full sample. Secondly, we re-estimate the operating performance regressions in Tables 8-11 which reduces the subsample from 162 to 73. The re-estimated results for these 73 acquirers show that the direction, magnitude and significance of the coefficients for CEO ownership are very similar to that for all 178 acquirers and we are therefore confident that our key results are not biased by the fact that our matching procedure does not match for size.[11]

11 The tabulated results are available from the authors on request.

Another robustness test concerns our sample selection procedure which does not exclude multiple acquisitions by the same acquirer. However, some previous studies (i.e., Manson et al., 1994; and Manson et al., 2000) select merging firms that are not contaminated by other significant acquisitions in the two years surrounding the acquisition. To test the robustness of our results, we exclude confounding acquisitions in a similar way to that used by Manson et al. (2000). Firstly, we exclude sample acquisitions if they are preceded or followed by a significant acquisition (relative size > one third) within three calendar years either side of the acquisition year. This resulted in forty acquisitions being excluded from the sample of 363 and nine acquisitions being excluded from the reduced sample of 178 acquisitions.[12] The overall takeover performance effects for this subsample of 323 acquisitions are very similar indeed to that for the full sample, and the results for the sample of 169 acquisitions are very similar indeed to the results for the sample of 178 acquisitions.

In the above analysis we used a 3 day window (-1 to +1) for the announcement period analysis. One possible reason that we do not find an association between announcement period returns and board ownership may be linked to the definition of the announcement period. Prior studies find that the market often reacts to the merger announcement before the announcement day indicating possible news leakage or the market anticipating mergers. As a check on this, we employed an alternative announcement period which covers the monthly period starting at the start of the announcement calendar month and ending at the end of the announcement calendar month. We then recalculated all the regressions in Tables 4-6 and 8-10, but found that neither the board nor CEO ownership variables were statistically significant in any of these regressions.

Finally, we conducted several diagnostic tests on the regression results. The size of the correlations among the independent variables is in the small to moderate range (0.01–0.75), but this level of multicollinearity could however inflate standard errors and result in less-

12 There are advantages and disadvantages to each approach. One advantage to an uncontaminated sample is that it focuses on a single event for each acquirer. The disadvantage is that frequent acquirers are more likely to be excluded by this method, and their performance may be different from other acquirers (see for example, Conn et al., 2004).

efficient (although unbiased) parameter estimates (Greene, 1997). To further assess this possibility, we conducted a variance inflation factor calculation. These factor values ranged between 1.00 and 3.30 and thus indicated that multicollinearity was not a problem. For the Cronbach's Alpha test, the average inter-item covariance for the 22 explanatory variables was 0.041 and the scale reliability coefficient was 0.4572, again indicating that multicollinearity was not a problem. We also recalculated all the regressions in Tables 4-6, and 8-10 using robust regression techniques rather than OLS. The overall effect on coefficient significance levels was neutral, with some *t*-statistics becoming less significant and others becoming more significant.[13] Overall, our key findings are unchanged using this alternative regression technique.

(v) CEO ownership and takeover performance: Two stage least squares analysis

One interpretation (Morck et al., 1988) of our results is that the improvements in takeover performance associated with initially higher CEO ownership rises may reflect greater incentives for CEOs to maximize value as their stakes rise. However, an alternative interpretation is that causation runs not only from CEO shareholding to performance but also in the opposite direction. Kole (1996) and Cho (1998) find evidence of a reversal of causality in the ownership – performance relation, suggesting that performance 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, CEOs purchase stock in anticipation of good takeover performance. [14] Therefore, previous studies suggest that ownership structure and takeover

13 For example, in Table 8, the coefficient for CEO ownership becomes significant at the 5 percent level (rather than 10), the profit over assets measure is no longer significant, whilst the cash flow over sales measure becomes significant at the 10 percent level rather than the 5 percent level.

14 Loderer and Martin (1998) test the endogeneity of board ownership and bidder announcement returns. Using ordinary least squares regression, they find a significant positive linear relation but this disappears in a simultaneous equations framework, which instead reveals a significantly positive effect of takeover performance on board ownership. Seyhun (1990) provides further evidence of this, showing that boards buy more stock during the announcement period in relatively profitable takeovers.

performance may be endogenously determined. If this were true, the coefficient estimates for CEO ownership could be biased and inconsistent, and subject to an identification problem.

There are a number of reasons for expecting that this endogeneity effect will not be very important, and for believing that some previous studies have overestimated its impact. (Zhou; 2000). First year to year ownership changes are typically small relative to cross sectional variation across companies. Fixed effect panel approaches to endogeneity (e.g. Himmelberg et al; 1999) effectively remove the cross section effects and minimise the chances of identifying long-term incentive effects. Secondly studies such as ours, which measure ownership in the year before takeover should remove short term pre-takeover share purchase effects. Nevertheless to address the potential endogeneity effect, we repeated our analysis using the two-stage least squares (2SLS) method. In the first stage we model CEO ownership as an endogenous variable, and in the second stage the estimate of this endogenous variable is then used directly as an independent variable in the regressions above in Tables 8-10. In other words, we firstly obtain an estimate of CEO ownership, and then use this estimate to model takeover performance. The instrumental variables for the first stage CEO ownership regression include all the explanatory variables in Table 8 (except CEO ownership) as well as share price standard deviation, share price variance, liquidity, sales-to-book value and industry dummy variables. The justification and definition of these new instrumental variables are as follows:

Share price standard deviation and share price variance have been proposed by Demsetz and Lehn (1985) as proxies for "control potential". The rationale they offer is that share price volatility makes it difficult for small shareholders to monitor managers, and unmonitored managers indulge in self serving behaviour which depresses share prices. The lower share prices create incentives for outsiders to assemble blocks of shares, enforce shareholder friendly decisions, and realize a capital gain on their shares. Therefore the greater the stock price volatility, the larger the holdings of outside monitors. Loderer and Martin (1997) extend this argument by arguing that greater volatilities create stronger incentives for outsiders not just to assemble large holdings but also to take over management responsibilities. The relation

is expected to be concave because positive effects are only expected until control is achieved. Hence share price standard deviation should have a positive coefficient and share price variance a negative one on managerial ownership (but numerically not large enough to offset that of the standard deviation). Share price standard deviation and share price variance are measured as the monthly standard deviation and variance of the bidders stock over the 36 months prior to the announcement month, relative to the FTSE 500.

As suggested by Jensen (1986), the higher 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)), measured as the acquirers current assets divided by current liabilities in year -1, 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 sales to book ratio, as a measure of the relative importance of hard capital in the firm's technology. This is measured as the acquirers total sales divided by total assets in year -1, the year prior to takeover.

Since CEO ownership may be industry dependent, we include dummy variables for the acquirers industry, measured as the Datastream level four industry classification (equivalent in detail to the 2 digit Standard Industrial Classification).

We re-estimate the results in Tables 8 to 10 using the two stage method. The results for Table 8 are reported in Table 11. The CEO ownership coefficients are of similar magnitude in the 2SLS analysis as they are in the OLS analysis. The coefficient for long run returns is positive and statistically significant, as are four of the six operating performance measures. The results strongly suggest that the positive relation between CEO ownership and takeover performance is the result of CEO shareholdings leading to takeover performance rather than vice versa.

Insert Table 11 here

Although not tabulated to conserve space, two stage least squares applications to Tables 9 and 10 give very similar results to the OLS results. In the case of Table 9, the CEO ownership coefficient is positive and statistically significant in the long run return regression and five of the six operating performance measure regressions, whilst the squared CEO ownership measure is significantly negative in two of the operating performance measure regressions. Similarly, in the case of Table 10, the 0 to 5 ownership band coefficient is significantly positive for two of the six operating performance measures, whilst the 5 to 25 band coefficient is significantly positive for the long run return regression and five of the six operating performance regressions.

In summary, our two stage least squares approach yields results that are very similar indeed to the earlier OLS results. Our overall conclusion from this analysis therefore is that the positive effect of CEO ownership on takeover performance is the result of CEO shareholdings leading to takeover performance rather than CEOs buying shares in anticipation of good takeover performance.

5. Conclusions

This paper examines the impact of board share ownership in the acquiring company on takeover performance, measured in terms of announcement period share returns, post-takeover share returns, and changes in operating performance. Evidence comes from a sample of 363 takeovers between UK public firms completed in the period 1985 to 1996. We find that these takeovers have a positive but not always significant impact on profitability, and a negative impact on short and long run returns. These results are consistent with previous studies for the UK over our sample time period.

Our first set of tests examined the impact of overall board ownership on takeover performance. We experiment with various functional forms. We find no evidence of a relation between board ownership and announcement period share returns. We find strong evidence of a positive linear relation between board ownership and long run share returns, and weak evidence of a positive linear relation between board ownership and operating performance. We find no evidence of negative entrenchment effects although we do find that the effect of

board ownership is more acute at low (less than five percent) levels of holdings, and some evidence of diminishing effects at higher levels of ownership.

Our second set of tests examines the impact of CEO ownership, executive director ownership, and non-executive ownership on takeover performance. These tests are carried out on a reduced sample of 178 acquisitions. We find strong evidence of positive relation between CEO ownership and takeover performance, which holds for both long run returns and operating performance measures. Again as with board ownership, we find no evidence of negative entrenchment effects although we do find that the effect of CEO ownership is more acute at low levels of holdings, and some evidence of diminishing effects at higher levels of ownership. Shareholdings of other executive directors and non-executive directors are found to have no significant effect on takeover performance.

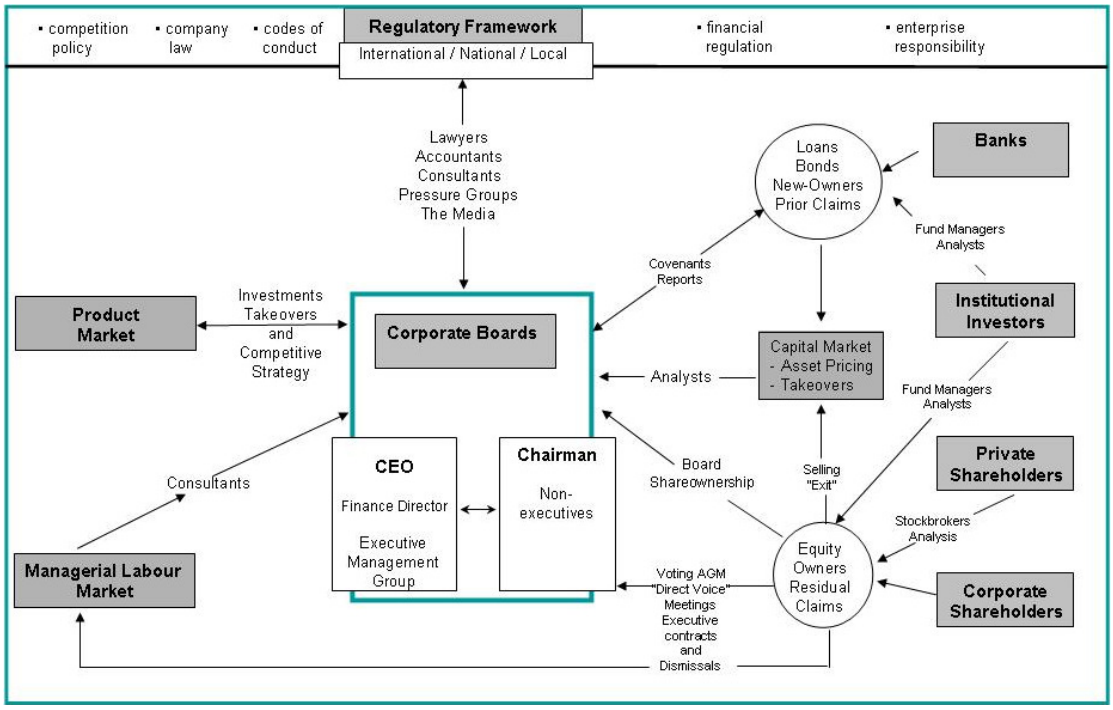
Our findings are robust to controlling for other factors that determine takeover performance and allow for factors potentially constraining board discretion. Our key findings with regard to the other factors are as follows: We find no evidence that external shareholdings have a significant effect on takeover performance, or that other board characteristics such as board size, proportion of non-executives, or whether the CEO is also the chairman has a significant impact on takeover performance. We find no evidence that either CEO, executive or non-executive director options have a significant effect on performance.

There are different interpretations of our key finding that CEOs with higher ownership stakes carry out better takeovers. One interpretation is that at medium levels of ownership, CEO interests converge more closely with those of shareholders. However, an alternative interpretation is that at low levels of ownership, CEOs purchase stock in anticipation of good takeover performance. To distinguish between these two alternative explanations, we carry out two stage least squares regressions but find that the two stage least squares approach yields results that are very similar indeed to the earlier OLS results. Our overall conclusion from this analysis therefore is that the positive effect of CEO ownership on takeover performance is the result of higher CEO shareholdings leading to improved takeover

performance rather than CEOs buying shares in anticipation of good takeover performance. In conclusion, our key finding is that acquirers whose CEOs own a larger proportion of equity, as a result carry out acquisitions which perform significantly better in terms of both long run returns and operating performance, and that these impacts are stronger at lower levels of board ownership reflecting diminishing returns to alignment at higher ownership levels. We find no evidence of entrenchment effects within the levels of board shareownership manifested by our sample companies.

Diagram 1

Board Shareownership and Corporate Governance: An Overview



Source: Adapted from Deakin and Hughes (1997)

Table 1

Sample Statistics

	Mean	*Median*
Transaction Size (£ Sterling Millions)	172.42	27.00
Acquirer Size (£ Sterling Millions)	765.55	167.18
Relative Size (Transaction Size / Acquirer Size)	0.5102	0.2290
Market-to-book Value of Acquirer	3.46	1.90
Bid Premium	27.00	23.50
	% of Acquisitions	
Time Period		
1985-89	60.61	
1990-96	39.39	
Related Acquisitions	34.99	
Hostile Acquisitions	18.18	
Method of Payment		
All Cash	12.12	
All Stock	26.72	
Mixed	61.16	

Notes:
This table reports summary statistics for a sample of 363 domestic acquisitions made by UK public firms for UK public firms between January 1985 and December 1996. Transaction Size is the value of the acquisition measured in millions of pound Sterling. Acquirer Size is the market value of the acquirer at the end of the month prior to the acquisition announcement month, measured in millions of pound Sterling. Relative Size is Transaction Size divided by Acquirer Size. The Market-to-book Value of Acquirer is the market value of the acquirer divided by the net book value of the acquirer, measured at the end of the month prior to the acquisition announcement month. Bid Premium is measured as the final offer price minus the price one month prior to announcement. Time Period is defined according to when the acquisition is completed. Related Acquisitions are defined as those in which the acquirer and target share the same Datastream Industrial Classification Level four. Hostile Acquisitions are defined as those in which the initial offer is rejected by target management. Method of Payment is defined according to whether the offer is a pure 100% cash offer (All Cash), a pure 100% stock offer (All Stock), or some alternative payment method (Mixed).

Table 2

Descriptive Statistics on Acquirer Ownership Structure and other Board Characteristics

	N	*Mean*	*Median*
Board			
Ownership (%)	363	7.75	1.59
Ownership Value (£000)	363	17,055.11	2,227.95
Pay (£000)	363	858.77	517.00
Average Pay (£000)	363	89.66	66.00
Highest Paid Director (£000)	361	181.85	119.00
Highest Paid Director (£000) / Average Pay	361	2.07	1.92
Board Size	363	8.58	8
Proportion of Non-executives	349	0.3347	0.3333
Chairman-CEO	348	0.2385	0
External Ownership			
Largest External Shareholder (%)	363	9.59	6.85
Largest Institutional Shareholder (%)	363	6.83	5.31
Largest Corporate Shareholder (%)	363	3.25	0.00
Largest Personal Shareholder (%)	363	0.89	0.00
Sum of External Shareholders (%)	363	16.55	10.55
Sum of Institutional Shareholders (%)	363	11.44	5.45
Sum of Corporate Shareholders (%)	363	3.72	0.00
Sum of Personal Shareholders (%)	363	1.32	0.00
CEO			
Ownership (%)	178	1.83	0.08
Ownership Value (£000)	178	2,584.66	289.76
Options (%)	178	0.47	0.13
Option Value (£000)	178	966.30	532.63
Executive Directors			
Ownership (%)	178	2.91	0.23
Ownership Value (£000)	178	4,513.31	539.82
Options (%)	178	0.79	0.33
Option Value (£000)	178	2,652.50	1,215.70
Non-executive Directors			
Ownership (%)	178	1.38	0.06
Ownership Value (£000)	178	6,153.65	109.79
Options (%)	178	0.03	0.00
Option Value (£000)	178	106.87	0.00

Notes:

This table reports descriptive statistics on board ownership, remuneration, board characteristics and external ownership for the sample of 363 acquirers. Board Total refers to the entire board of all executive and non-executive directors, including the CEO. Ownership Value is Ownership (%) multiplied by the market value of the company. Pay refers to salary, plus pensions and bonuses. Average Pay is board total remuneration divided by board size. Highest Paid Director is calculated as the highest paid director's salary. External Ownership refers to non-board shareholdings which are in excess of 5% prior to 1989 and 3% following 1989. Sum of External Shareholders refers to the total ownership of such shareholders. Largest External Shareholder refers to the largest such shareholder. Institutional shareholders are defined as financial institutions, corporate shareholders are non-financial companies, and personal shareholders are private individuals. Board Size is the total number of directors on the board. Proportion of Non-executives is the number of non-executive directors on the board divided by the board size. Chairman-CEO is a dummy variable that is set equal to one if the Chairman is also the CEO, zero otherwise. Executive Directors refers to all executive directors minus the CEO. Ownership (%) is the number of beneficial and non-beneficial shares divided by the total number of shares in issue. Options (%) refers to the number of incentive shares divided by the total number of shares in issue. Option Value is Options (%) multiplied by the market value of the company.

Table 3

The Effect of Acquirer Board Ownership on Takeover Performance: Univariate Results

Sample	*Performance Measures*							
	Announcement Share Returns	*Long Run Share Returns*	*Change in Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Panel A: All Acquirers								
	-1.13 [a]	-16.26 [a]	1.08 [a]	1.37 [a]	1.65 [a]	0.39	0.35	0.96
	(-3.86, 353)	(-3.26, 358)	(3.23, 363)	(4.39, 338)	(3.91, 313)	(0.81, 332)	(0.82, 331)	(1.40, 280)
Panel B: Acquirers by Board Ownership (%)								
0-1	-0.80 [b]	-15.27 [c]	0.67	1.06 [b]	0.79	-1.64	-0.03	0.17
	-(2.02, 152)	-(1.93, 154)	(1.43, 157)	(2.36, 143)	(1.26, 140)	-(1.56, 138)	-(0.06, 137)	(0.17, 120)
1-5	-1.05 [c]	-20.51 [b]	1.83 [a]	1.83 [a]	2.74 [a]	3.20 [a]	2.38 [b]	4.99 [a]
	-(1.75, 83)	-(2.27, 84)	(2.64, 84)	(3.16, 77)	(3.15, 68)	(2.86, 76)	(2.52, 76)	(3.81, 62)
5-10	-1.83 [c]	-29.38 [c]	0.29	0.57	2.05 [c]	-1.97	-1.77	-1.58
	-(1.83, 38)	-(1.65, 39)	(0.21, 38)	(0.44, 37)	(1.91, 35)	-(1.48, 37)	-(1.40, 37)	-(0.92, 32)
10-15	-2.86 [b]	-29.01	0.24	0.97	4.15 [b]	0.05	-0.71	3.40
	-(2.19, 24)	-(1.52, 24)	(0.21, 24)	(0.84, 24)	(2.10, 20)	(0.02, 24)	-(0.36, 24)	(1.19, 20)
15-20	-0.31	25.10	3.89 [a]	3.14 [b]	1.85	3.39	1.79	-1.60
	-(0.16, 15)	(1.24, 15)	(2.82, 15)	(1.99, 15)	(0.79, 14)	(1.44, 15)	(0.74, 15)	-(0.36, 14)
20-30	-1.22	-11.03	0.09	0.94	1.44	-2.15	-1.72	-4.43
	-(0.99, 15)	-(0.36, 15)	(0.06, 15)	(0.55, 15)	(1.24, 12)	-(0.46, 15)	-(0.64, 15)	-(1.22, 11)
30-50	-2.24	-6.49	1.55	2.41 [c]	0.07	4.04	0.73	2.14
	-(1.44, 17)	-(0.31, 18)	(0.84, 18)	(1.77, 18)	(0.07, 15)	(1.52, 18)	(0.34, 18)	(0.71, 15)
>50	0.64	-1.66	2.58	2.36	2.41	0.04	1.00	-6.68
	(0.27, 10)	-(0.09, 10)	(1.21, 11)	(1.55, 9)	(0.49, 9)	(0.01, 9)	(0.33, 9)	-(1.28, 6)

Notes:

Panel A reports takeover performance for all acquirers, Panel B reports takeover performance by the acquirer's board ownership. Announcement Share Returns are the mean cumulative abnormal share return (CAR) for acquirers calculated from day -1 to day +1 (where day 0 is the announcement day), relative to the Market Index. Long Run Share Returns are the mean buy-and-hold abnormal returns (BHAR) for acquirers over the 36-month period following the completion month, relative to non-merging control firms matched on industry and pre-acquisition profitability. Change in Profitability is measured as the difference between the median operating profitability of the acquirer in years +1 to +3 and the weighted average operating profitability of the acquirer and target firm over years -3 to -1, with the weights being the asset values of the acquirer and target firms in year –1. This is measured relative to non-merging control firms matched on industry and pre-acquisition profitability, which are weighted according to the asset values of the acquirer and target firms in year –1. Six different measures of change in profitability are reported. Profit/Assets is operating profit before depreciation divided by total assets. Profit/Sales is operating profit before depreciation divided by total sales. Profit/MV is operating profit before depreciation divided by market value of equity and book value of long and short term debt. Cash Flow/Assets is operating profit before depreciation adjusted for short term accruals divided by total assets. Cash Flow/Sales is operating profit before depreciation adjusted for short term accruals divided by total sales. Cash Flow/MV is operating profit before depreciation adjusted for short term accruals divided by market value of equity and book value of long and short term debt. Board Ownership (%) is the number of beneficial and non-beneficial shares owned by the entire board of all executive and non-executive directors, including the CEO, divided by the total number of shares in issue. Figures in parentheses are *t*-statistics and sample size respectively. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

Table 4

OLS Regressions of Takeover Performance on Acquirer Board Ownership: Linear Model

Independent Variables	*Dependent Variable*							
	Announcement Share Returns	*Long Run Share Returns*	*Post-takeover Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Intercept	0.01	-0.41	0.01	-0.01	-0.02	0.08 [b]	-0.02	0.01
	(0.62)	-(1.27)	(0.47)	-(0.37)	-(1.03)	(2.27)	-(0.66)	(0.31)
Board Ownership (%)	0.03	1.06 [b]	0.05 [c]	0.03	0.03	0.06	0.02	-0.02
	(0.98)	(2.32)	(1.70)	(1.07)	(0.97)	(1.29)	(0.61)	-(0.44)
Largest Institutional Shareholder (%)	-0.01	0.52	-0.03	-0.05	0.01	-0.31 [a]	0.02	0.06
	-(0.19)	(0.90)	-(0.88)	-(1.37)	(0.19)	-(5.27)	(0.50)	(0.94)
Largest Corporate Shareholder (%)	0.01	0.48	-0.06	0.03	-0.10 [b]	-0.08	0.02	-0.06
	(0.32)	(0.84)	-(1.60)	(0.76)	-(2.56)	-(1.31)	(0.41)	-(0.93)
Largest Personal Shareholder (%)	-0.15	0.23	-0.10	-0.03	0.10	-0.16	0.08	0.08
	-(1.44)	(0.13)	-(0.90)	-(0.30)	(0.80)	-(0.86)	(0.53)	(0.42)
Chairman-CEO	-0.01	-0.20	-0.01	0.00	0.01	0.01	0.01	0.02
	-(1.56)	-(1.43)	-(0.57)	(0.13)	(1.12)	(1.00)	(0.64)	(1.48)
Chairman-CEO 1993-1996	-0.04 [b]	0.53	0.00	0.01	-0.04	-0.02	0.00	-0.04
	-(1.99)	(1.62)	(0.21)	(0.65)	-(1.62)	-(0.64)	(0.06)	-(1.14)
Post-Cadbury	0.01	0.28 [c]	-0.00	-0.01	0.02	0.03 [c]	0.00	0.02
	(0.67)	(1.86)	-(0.31)	-(0.49)	(1.33)	(1.83)	(0.21)	(1.19)
Proportion of Non-executives	-0.00	-0.09	0.03 [c]	0.02	0.02	0.05	-0.01	0.02
	-(0.12)	-(0.30)	(1.70)	(0.87)	(0.87)	(1.45)	-(0.27)	(0.64)
Board Size	-0.00	0.02	0.00	0.00	-0.00	0.00	0.00	-0.00
	-(1.16)	(1.28)	-(0.22)	-(0.22)	-(0.60)	(0.67)	(0.21)	-(0.47)
CEO Pay / Average Pay	0.00	-0.04	0.00	0.01 [c]	0.00	-0.00	0.00	0.00
	(0.51)	-(0.57)	(0.27)	(1.74)	(0.21)	-(0.49)	(0.24)	(0.62)
Related	0.00	0.03	0.00	0.01	-0.01	0.00	0.01	-0.03 [c]
	(0.11)	(0.24)	(0.00)	(1.16)	-(0.78)	(0.18)	(0.49)	-(2.30)
Hostile	-0.00	0.17	-0.00	0.02	-0.01	-0.02	0.01	-0.01
	-(0.30)	(1.18)	-(0.12)	(1.58)	-(1.36)	-(1.49)	(1.13)	-(0.81)
All Stock	-0.01 [c]	-0.26 [b]	-0.01	-0.00	0.02 [b]	0.00	0.00	0.02
	-(1.81)	-(2.05)	-(1.05)	-(0.46)	(1.97)	(0.33)	(0.33)	(1.62)
Acquirer Size	0.00	0.05	0.00	0.00	0.00	-0.00	0.01	0.01
	(0.48)	(1.02)	-(0.14)	(0.31)	(0.97)	-(0.54)	(1.59)	(1.09)
Relative Size	-0.02 [c]	-0.03	-0.02 [c]	-0.01	-0.02	-0.01	-0.02	-0.02
	-(1.85)	-(0.19)	-(1.80)	-(0.84)	-(1.64)	-(0.37)	-(1.63)	-(0.97)
Acquirer Market-to-book Quintile	-0.00	-0.03	0.00	0.00	0.00	-0.00 [c]	-0.00	-0.01 [b]
	-(0.97)	-(1.19)	(0.63)	(0.11)	-(0.11)	-(1.91)	-(1.41)	-(2.37)
Acquirer Leverage	0.02	-0.79 [c]	0.01	0.03	0.05 [c]	-0.18 [a]	0.04	0.01
	(0.86)	-(1.84)	(0.44)	(1.21)	(1.68)	-(3.81)	(1.16)	(0.21)
Industry Concentration	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00
	-(0.15)	(0.59)	(0.61)	-(0.90)	(1.60)	-(1.15)	-(0.26)	-(0.60)
Pre-takeover Share Returns	0.00 [c]	-0.08 [a]						
	(1.90)	-(2.97)						
Pre-takeover Profitability			0.50 [a]	0.83 [a]	0.52 [a]	0.23 [a]	0.58 [a]	0.39 [a]
			(6.81)	(16.64)	(9.98)	(3.05)	(10.47)	(6.17)
Adjusted R^2	0.0245	0.0629	0.1156	0.5121	0.2921	0.1736	0.3082	0.1417
F-statistic	1.42	2.13 [b]	3.22 [a]	17.57 [a]	7.17 [a]	4.25 [a]	7.87 [a]	3.20 [a]
Number	315	321	323	300	284	294	293	253

Notes:

This table reports the results of OLS regressions where takeover performance is the dependent variable and the explanatory variables include the acquiring firm board ownership, external ownership, board characteristics and other control variables. The share return measures are as defined in Table 3. Post-takeover profitability is the median operating profitability of the acquirer in years +1 to +3 relative to control firms. The measures of profitability are as described in Table 3. Board ownership is the number of beneficial and non-beneficial shares owned by the entire board of all executive and non-executive directors, including the CEO, divided by the total number of shares in issue. Largest Institutional Shareholder (%) refers to the largest external shareholding held by a financial institution. Largest Corporate Shareholder (%) refers to the largest external shareholding held by another firm that is not a financial institution. Largest Personal Shareholder (%) refers to the largest external shareholding held by a private individual. Chairman-CEO is a dummy variable that is set equal to one if the Chairman is also the CEO, zero otherwise. Chairman-CEO 1993-1996 is a dummy variable that is set equal to one if the Chairman is also the CEO, and the year

of completion is 1993 or afterwards, zero otherwise. Post-Cadbury is a dummy variable that is set equal to one if the year of completion is 1993 or afterwards, zero otherwise. Proportion of Non-executives is the number of non-executive directors on the board divided by the board size. Board Size is the total number of directors on the board. CEO Pay / Average Pay is the highest paid director's salary divided by the board total remuneration divided by board size. Pay refers to salary, plus pensions and bonuses. Related is a dummy variable, which equals one if the bidder and target share the same primary industrial classification, as measured by Datastream Industrial Classification Level four. Hostile is a dummy variable equal to one if the acquisition is hostile, zero if friendly. Stock is a dummy variable which equals one if the method of payment is an all stock offer, zero otherwise. Acquirer Size is the market value of the acquirer at the end of the month prior to the acquisition announcement month, measured in millions of pound Sterling. Relative Size is transaction size divided by acquirer size, where transaction size is the value of the acquisition measured in millions of pound Sterling. Acquirer Market-to-book Quintile is calculated by ranking all Datastream firms by market-to-book ratio at the beginning of each year and taking five groups of equal size in terms of number. Acquirers in quintile one have the lowest market-to-book ratio. Acquirer Leverage is the short and long term debt of the acquirer in year -1 divided by the short and long term debt plus the market value of equity of the acquirer in year -1. Industry Concentration is the weighted average of the 3-digit 3-firm concentration levels within the 2-digit SIC code of the acquirer, where the weights are total sales for each 3-digit industry. Pre-takeover Share Returns are the mean buy-and-hold abnormal returns (BHAR) for acquirers over the 36-month period preceding the announcement month, relative to control firms. Pre-takeover Profitability is the median operating profitability of the acquirer in years -1 to -3 relative to control firms. Figures in parentheses are *t*-statistics. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

Table 5

OLS Regressions of Takeover Performance on Acquirer Board Ownership: Squared Polynomial Model

Independent Variables	*Dependent Variable*							
	Announcement Share Returns	*Long Run Share Returns*	*Post-takeover Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Intercept	0.01	-0.42	0.01	-0.01	-0.03	0.08 [b]	-0.02	0.01
	(0.59)	-(1.21)	(0.25)	-(0.65)	-(1.16)	(2.26)	-(0.57)	(0.35)
Board Ownership (%)	0.03	1.13	0.09	0.10	0.09	0.01	0.01	-0.04
	(0.32)	(0.85)	(1.10)	(1.23)	(0.89)	(0.10)	(0.07)	-(0.32)
Board Ownership (%) Squared	0.00	-0.13	-0.08	-0.14	-0.10	0.09	0.03	0.04
	(0.03)	-(0.05)	-(0.55)	-(0.91)	-(0.59)	(0.39)	(0.16)	(0.16)
Largest Institutional Shareholder (%)	-0.01	0.52	-0.03	-0.05	0.01	-0.31 [a]	0.02	0.06
	-(0.19)	(0.90)	-(0.85)	-(1.33)	(0.21)	-(5.28)	(0.49)	(0.93)
Largest Corporate Shareholder (%)	0.01	0.48	-0.06	0.03	-0.10 [a]	-0.08	0.02	-0.06
	(0.32)	(0.83)	-(1.62)	(0.72)	-(2.57)	-(1.28)	(0.42)	-(0.91)
Largest Personal Shareholder (%)	-0.15	0.22	-0.11	-0.05	0.09	-0.15	0.08	0.08
	-(1.42)	(0.12)	-(0.96)	-(0.41)	(0.72)	-(0.81)	(0.54)	(0.44)
Chairman-CEO	-0.01	-0.20	-0.01	0.00	0.01	0.01	0.01	0.02
	-(1.56)	-(1.43)	-(0.57)	(0.12)	(1.11)	(1.00)	(0.64)	(1.47)
Chairman-CEO 1993-1996	-0.04 [b]	0.52	0.00	0.01	-0.04 [c]	-0.02	0.00	-0.04
	-(1.97)	(1.61)	(0.16)	(0.55)	-(1.66)	-(0.60)	(0.08)	-(1.10)
Post-Cadbury	0.01	0.28 [c]	-0.00	-0.01	0.01	0.03 [c]	0.00	0.02
	(0.67)	(1.85)	-(0.35)	-(0.56)	(1.30)	(1.85)	(0.22)	(1.19)
Proportion of Non-executives	-0.00	-0.09	0.04 [c]	0.02	0.02	0.04	-0.01	0.02
	-(0.13)	-(0.28)	(1.78)	(1.04)	(0.96)	(1.33)	-(0.30)	(0.60)
Board Size	-0.00	0.02	0.00	0.00	-0.00	0.00	0.00	-0.00
	-(1.15)	(1.27)	-(0.25)	-(0.25)	-(0.62)	(0.68)	(0.22)	-(0.47)
CEO Pay / Average Pay	0.00	-0.04	0.00	0.01 [c]	0.00	-0.00	0.00	0.00
	(0.51)	-(0.57)	(0.29)	(1.76)	(0.22)	-(0.50)	(0.24)	(0.62)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.0212	0.0598	0.1135	0.5118	0.2903	0.1710	0.3057	0.1382
F-statistic	1.34	2.02 [b]	3.07 [a]	16.72 [a]	6.81 [a]	4.03 [a]	7.45 [a]	3.03 [a]
Number	315	321	323	300	284	294	293	253

Notes:

This table reports the results of OLS regressions where takeover performance is the dependent variable and the explanatory variables include the acquiring firm board ownership, board ownership squared, external ownership, board characteristics and other control variables. The takeover performance measures are as defined in Table 3. Board ownership, external ownership, and board characteristics are as described in Table 4. The control variables include all those in Table 4 (Related, Hostile, Stock, Acquirer Size, Relative Size, Acquirer Market-to-book Quintile, Acquirer Leverage, Industry Concentration, Pre-takeover Share Returns, Pre-takeover Profitability) and are as defined in Table 4. Figures in parentheses are *t*-statistics. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

Table 6

OLS Regressions of Takeover Performance on Acquirer Board Ownership: Piecewise Linear Model

Independent Variables	*Dependent Variable*							
	Announcement Share Returns	*Long Run Share Returns*	*Post-takeover Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Intercept	0.01	-0.52	0.00	-0.01	-0.04	0.07 [b]	-0.03	-0.01
	(0.37)	-(1.45)	-(0.01)	-(0.41)	-(1.51)	(2.03)	-(0.99)	-(0.28)
Board Ownership (%) if = 0-5%	0.24	4.33	0.37	0.14	0.82 [b]	0.57	0.83 [c]	1.82 [a]
	(0.70)	(0.76)	(1.02)	(0.36)	(2.01)	(0.91)	(1.66)	(2.75)
Board Ownership (%) if = 5-25%	0.03	1.73	0.10	0.03	0.06	0.01	0.03	-0.06
	(0.49)	(1.51)	(1.42)	(0.47)	(0.71)	(0.05)	(0.29)	-(0.50)
Board Ownership (%) if >25%	0.03	1.09 [b]	0.05 [c]	0.03	0.05	0.08	0.04	0.03
	(1.10)	(2.29)	(1.76)	(1.10)	(1.43)	(1.56)	(1.06)	(0.49)
Largest Institutional Shareholder (%)	-0.00	0.58	-0.03	-0.05	0.02	-0.31 [a]	0.03	0.08
	-(0.11)	(0.99)	-(0.72)	-(1.32)	(0.44)	-(5.17)	(0.65)	(1.18)
Largest Corporate Shareholder (%)	0.01	0.51	-0.05	0.03	-0.10 [b]	-0.07	0.03	-0.04
	(0.38)	(0.88)	-(1.51)	(0.78)	-(2.39)	-(1.22)	(0.56)	-(0.71)
Largest Personal Shareholder (%)	-0.15	0.18	-0.12	-0.03	0.11	-0.14	0.09	0.12
	-(1.41)	(0.10)	-(0.93)	-(0.28)	(0.83)	-(0.76)	(0.63)	(0.63)
Chairman-CEO	-0.01	-0.21	-0.01	0.00	0.01	0.01	0.01	0.02
	-(1.60)	-(1.47)	-(0.65)	(0.11)	(0.95)	(0.94)	(0.50)	(1.29)
Chairman-CEO 1993-1996	-0.04 [b]	0.51	0.00	0.01	-0.04	-0.02	0.00	-0.04
	-(1.96)	(1.55)	(0.14)	(0.63)	-(1.56)	-(0.59)	(0.02)	-(1.17)
Post-Cadbury	0.01	0.27 [c]	-0.00	-0.01	0.01	0.03 [c]	0.00	0.02
	(0.66)	(1.83)	-(0.35)	-(0.48)	(1.30)	(1.93)	(0.35)	(1.46)
Proportion of Non-executives	-0.00	-0.07	0.04 [c]	0.02	0.02	0.04	-0.01	0.02
	-(0.11)	-(0.22)	(1.79)	(0.87)	(0.95)	(1.34)	-(0.30)	(0.58)
Board Size	-0.00	0.02	0.00	0.00	-0.00	0.00	0.00	-0.00
	-(1.14)	(1.27)	-(0.22)	-(0.20)	-(0.51)	(0.70)	(0.27)	-(0.45)
CEO Pay / Average Pay	0.00	-0.04	0.00	0.01 [c]	0.00	-0.00	0.00	0.00
	(0.43)	-(0.60)	(0.18)	(1.67)	-(0.08)	-(0.64)	-(0.02)	(0.22)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.0193	0.0583	0.1128	0.5087	0.2974	0.1723	0.3110	0.1729
F-statistic	1.30	1.95 [c]	2.96 [a]	15.79 [a]	6.72 [a]	3.91 [a]	7.30 [a]	3.52 [a]
Number	315	321	323	300	284	294	293	253

Notes:

This table reports the results of OLS regressions where takeover performance is the dependent variable and the explanatory variables include the acquiring firm board ownership, external ownership, board characteristics and other control variables. The takeover performance measures are as defined in Table 3. Board ownership, external ownership, and board characteristics are as described in Table 4. Board Ownership (%) if = 0-5%, is a variable that takes on the value of board ownership if that ownership is between 0 and 5%, and is set to zero otherwise. Board Ownership (%) if = 5-25%, is a variable that takes on the value of board ownership if that ownership is between 5 and 25%, and is set to zero otherwise. Board Ownership (%) if >25%, is a variable that takes on the value of board ownership if that ownership is greater than 25%, and is set to zero otherwise. The control variables include all those in Table 4 (Related, Hostile, Stock, Acquirer Size, Relative Size, Acquirer Market-to-book Quintile, Acquirer Leverage, Industry Concentration, Pre-takeover Share Returns, Pre-takeover Profitability) and are as defined in Table 4. Figures in parentheses are *t*-statistics. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

Table 7

The Effect of Acquirer CEO Ownership on Takeover Performance: Univariate Results

Sample	*Performance Measures*							
	Announcement Share Returns	*Long Run Share Returns*	*Change in Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Panel A: All Acquirers								
	-1.82 [a]	-10.51	1.10 [b]	1.30 [a]	2.37 [a]	0.29	0.24	1.50 [c]
	-(4.88, 173)	-(1.53, 177)	(2.37, 177)	(3.20, 165)	(4.20, 152)	(0.37, 162)	(0.43, 162)	(1.75, 140)
Panel B: Acquirers by CEO Ownership (%)								
0-1	-1.39 [a]	-13.58 [c]	0.91 [c]	0.91 [c]	2.25 [a]	-0.26	0.30	1.68 [c]
	-(3.25, 127)	-(1.76, 129)	(1.67, 129)	(1.89, 119)	(3.55, 112)	-(0.32, 117)	(0.54, 117)	(1.78, 102)
1-5	-2.51 [b]	-35.91 [c]	0.84	1.64	2.23	-1.88	-2.54	-0.99
	-(2.28, 25)	-(1.88, 26)	(0.54, 26)	(1.38, 24)	(1.28, 23)	-(0.91, 23)	-(1.28, 23)	-(0.48, 21)
5-10	-4.53 [a]	51.88 [b]	2.61 [a]	3.69 [a]	2.07	5.49	2.90	-1.80
	-(4.12, 15)	(2.17, 15)	(2.76, 15)	(2.97, 15)	(1.21, 10)	(1.45, 15)	(1.28, 15)	-(0.68, 10)
>10	-1.32	4.60	2.31	1.69	4.76	4.72	2.39	9.96
	-(0.77, 7)	(0.12, 8)	(1.22, 8)	(1.40, 8)	(1.51, 8)	(1.12, 8)	(0.68, 8)	(1.62, 8)

Notes

This Table reports takeover performance by CEO ownership for a reduced sample of 178 acquisitions for which data is available on CEO ownership and options, other executive ownership and options, non-executive share ownership and options. Panel A reports takeover performance for all 178 acquirers, Panel B reports takeover performance by the acquirer's CEO ownership. The takeover performance measures are as defined in Table 3. CEO Ownership (%) is the number of beneficial and non-beneficial shares owned by the CEO, divided by the total number of shares in issue. Figures in parentheses are *t*-statistics and sample size respectively. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

Table 8

OLS regressions of Takeover Performance on Acquirer CEO, Executive and Non-executive Ownership: Linear Model

Independent Variables	*Dependent Variable*							
	Announcement Share Returns	*Long Run Share Returns*	*Post-takeover Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Intercept	0.04	-0.08	-0.01	-0.06 [c]	0.03	-0.02	-0.04	0.00
	(1.51)	-(0.15)	-(0.16)	-(1.73)	(0.66)	-(0.37)	-(1.01)	(0.01)
CEO Ownership (%)	-0.05	3.76 [c]	0.36 [a]	0.16	0.24 [c]	0.63 [a]	0.32 [b]	0.61 [a]
	-(0.46)	(1.94)	(2.73)	(1.35)	(1.66)	(3.30)	(2.18)	(3.01)
Executive Ownership (%)	0.01	0.91	-0.12	-0.02	-0.08	-0.11	-0.06	-0.32 [b]
	(0.14)	(0.78)	-(1.40)	-(0.21)	-(0.72)	-(0.92)	-(0.61)	-(2.08)
Non-executive Ownership (%)	0.15	-3.28	-0.09	0.13	0.20	0.23	0.45 [b]	0.11
	(1.02)	-(1.20)	-(0.49)	(0.72)	(0.99)	(0.81)	(2.12)	(0.38)
CEO Options (%)	-0.44	7.64	0.03	-0.10	-0.02	0.59	1.33 [b]	0.58
	-(0.95)	(0.90)	(0.05)	-(0.18)	-(0.03)	(0.69)	(2.03)	(0.66)
Executive Options (%)	-0.51 [b]	-7.58 [c]	-0.32	-0.22	-0.61 [b]	-0.60	-0.85 [a]	-0.62
	-(2.22)	-(1.81)	-(1.10)	-(0.85)	-(2.00)	-(1.43)	-(2.66)	-(1.50)
Non-executive Options (%)	2.44	73.35	1.60	5.14	-0.44	-5.90	-1.03	-7.38
	(0.70)	(1.14)	(0.36)	(1.28)	-(0.08)	-(0.92)	-(0.21)	-(0.99)
Largest Institutional Shareholder (%)	-0.12 [c]	-0.09	0.11	0.13	-0.06	0.04	-0.07	-0.02
	-(1.94)	-(0.08)	(1.33)	(1.66)	-(0.69)	(0.28)	-(0.70)	-(0.12)
Largest Corporate Shareholder (%)	-0.01	0.01	-0.05	0.01	-0.06	-0.08	0.04	-0.10
	-(0.14)	(0.01)	-(0.95)	(0.29)	-(1.09)	-(1.11)	(0.62)	-(1.27)
Largest Personal Shareholder (%)	-0.28	8.91 [b]	0.58 [b]	0.22	-0.19	0.36	0.09	-0.38
	-(1.26)	(2.19)	(2.07)	(0.84)	-(0.63)	(0.85)	(0.29)	-(0.87)
Chairman-CEO	-0.01	0.00	-0.01	0.01	0.01	0.01	0.02	0.02
	-(0.61)	(0.01)	-(0.73)	(0.88)	(0.29)	(0.27)	(1.40)	(0.83)
Chairman-CEO 1993-1996	-0.03 [c]	0.20	0.00	-0.01	-0.04	-0.05	-0.03	-0.05
	-(1.67)	(0.55)	(0.10)	-(0.29)	-(1.31)	-(1.23)	-(1.02)	-(1.36)
Post-Cadbury	0.02 [c]	0.43 [b]	-0.01	-0.00	0.03 [c]	0.03	0.02	0.04 [c]
	(1.85)	(2.41)	-(0.92)	-(0.26)	(1.73)	(1.55)	(1.53)	(1.72)
Proportion of Non-executives	-0.03	-0.93 [c]	-0.04	-0.04	-0.07 [c]	-0.03	-0.03	-0.02
	-(1.03)	-(1.85)	-(1.10)	-(1.09)	-(1.75)	-(0.58)	-(0.78)	-(0.33)
Board Size	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
	(0.20)	(1.02)	(0.14)	(0.48)	-(0.13)	(0.81)	(1.35)	(0.12)
CEO Pay / Average Pay	0.00	0.10	0.01	0.01	0.00	0.01	-0.01	0.00
	(0.73)	(1.19)	(1.00)	(1.33)	(0.61)	(0.58)	-(0.90)	(0.47)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.1174	0.1441	0.2169	0.5531	0.2496	0.0754	0.3979	0.0963
F-statistic	1.91 [c]	2.18 [b]	2.94 [a]	9.09 [a]	3.06 [a]	1.52	5.24 [a]	1.61
Number	164	168	168	157	149	154	154	137

Notes:

This table reports the results of OLS regressions for the reduced sample of 178 acquisitions where takeover performance is the dependent variable and the explanatory variables include the acquiring firm CEO ownership, CEO options, executive ownership, executive options, non-executive ownership, non-executive options, external ownership, board characteristics and other control variables. The takeover performance measures are as defined in Table 3. CEO Ownership (%) is the number of beneficial and non-beneficial shares owned by the CEO, divided by the total number of shares in issue. Executive Ownership (%) is the number of beneficial and non-beneficial shares owned by all executive directors except the CEO, divided by the total number of shares in issue. Non-executive Ownership (%) is the number of beneficial and non-beneficial shares owned by all non-executive directors, divided by the total number of shares in issue. CEO Options (%) is the number of incentive shares owned by the CEO, divided by the total number of shares in issue. Executive Options (%) is the number of incentive shares owned by all executive directors except the CEO, divided by the total number of shares in issue. Non-executive Options (%) is the number of incentive shares owned by all non-executive directors, divided by the total number of shares in issue. External ownership and board characteristics are as described in Table 4. The control variables include all those in Table 4 (Related, Hostile, Stock, Acquirer Size, Relative Size, Acquirer Market-to-book Quintile, Acquirer Leverage, Industry Concentration, Pre-takeover Share Returns, Pre-takeover Profitability) and are as defined in Table 4. Figures in parentheses are *t*-statistics. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

Table 9

OLS regressions of Takeover Performance on Acquirer CEO Ownership, Executive Ownership and Non-executive Ownership: Squared Polynomial Model

Independent Variables	*Dependent Variable*							
	Announcement Share Returns	*Long Run Share Returns*	*Post-takeover Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Intercept	0.04	-0.33	-0.01	-0.09 [b]	0.01	-0.04	-0.09 [c]	-0.03
	(1.42)	-(0.59)	-(0.16)	-(2.43)	(0.27)	-(0.68)	-(1.92)	-(0.46)
CEO Ownership (%)	-0.06	9.15 [b]	0.18	0.70 [a]	0.47	0.75 [c]	0.97 [a]	1.38 [a]
	-(0.28)	(2.33)	(0.66)	(2.76)	(1.59)	(1.85)	(3.14)	(3.35)
CEO Ownership (%) Squared	0.07	-23.84	0.78	-2.33 [b]	-0.82	-0.61	-2.87 [b]	-3.49 [b]
	(0.08)	-(1.59)	(0.74)	-(2.43)	-(0.72)	-(0.39)	-(2.44)	-(2.19)
Executive Ownership (%)	0.06	0.93	0.11	0.02	0.20	0.25	0.10	-0.59
	(0.33)	(0.27)	(0.43)	(0.09)	(0.60)	(0.70)	(0.37)	-(1.34)
Executive Ownership (%) Squared	-0.18	0.69	-0.68	-0.04	-0.97	-1.03	-0.36	1.16
	-(0.35)	(0.07)	-(1.00)	-(0.07)	-(0.90)	-(1.07)	-(0.50)	(0.79)
Non-executive Ownership (%)	-0.19	-3.44	-0.21	0.10	-0.27	-0.26	0.48	0.49
	-(0.59)	-(0.59)	-(0.50)	(0.25)	-(0.64)	-(0.43)	(1.09)	(0.84)
Non-executive Ownership (%) Squared	2.10	1.80	0.60	0.24	3.04	2.99	-0.20	-2.36
	(1.20)	(0.06)	(0.27)	(0.12)	(1.29)	(0.91)	-(0.08)	-(0.73)
CEO Options (%)	-0.47	8.30	-0.04	-0.02	-0.09	0.48	1.38 [b]	0.78
	-(1.01)	(0.97)	-(0.06)	-(0.03)	-(0.14)	(0.56)	(2.13)	(0.89)
Executive Options (%)	-0.47 [b]	-8.30 [c]	-0.29	-0.30	-0.58 [c]	-0.57	-0.95 [a]	-0.81 [c]
	-(2.00)	-(1.95)	-(0.97)	-(1.12)	-(1.87)	-(1.32)	-(2.96)	-(1.92)
Non-executive Options (%)	2.50	63.44	1.34	4.23	-1.33	-6.59	-2.52	-9.11
	(0.71)	(0.98)	(0.29)	(1.06)	-(0.24)	-(1.02)	-(0.52)	-(1.21)
Largest Institutional Shareholder (%)	-0.12 [c]	-0.04	0.11	0.14 [c]	-0.05	0.05	-0.05	-0.02
	-(1.94)	-(0.03)	(1.37)	(1.77)	-(0.54)	(0.36)	-(0.47)	-(0.12)
Largest Corporate Shareholder (%)	-0.01	-0.11	-0.05	0.00	-0.07	-0.09	0.02	-0.10
	-(0.12)	-(0.15)	-(0.90)	(0.04)	-(1.21)	-(1.18)	(0.28)	-(1.42)
Largest Personal Shareholder (%)	-0.32	8.50 [b]	0.54 [c]	0.18	-0.33	0.21	0.03	-0.34
	-(1.42)	(2.05)	(1.86)	(0.69)	-(1.04)	(0.49)	(0.08)	-(0.74)
Chairman-CEO	-0.01	-0.02	-0.01	0.01	0.01	0.01	0.02	0.02
	-(0.61)	-(0.08)	-(0.55)	(0.78)	(0.29)	(0.38)	(1.34)	(0.77)
Chairman-CEO 1993-1996	-0.03 [c]	0.15	0.00	-0.02	-0.04	-0.05	-0.04	-0.06
	-(1.65)	(0.40)	(0.07)	-(0.63)	-(1.50)	-(1.36)	-(1.40)	-(1.61)
Post-Cadbury	0.02 [c]	0.41 [b]	-0.01	-0.01	0.03 [c]	0.03	0.02	0.03
	(1.91)	(2.24)	-(0.74)	-(0.50)	(1.77)	(1.61)	(1.28)	(1.58)
Proportion of Non-executives	-0.03	-0.70	-0.04	-0.01	-0.05	-0.01	0.01	0.01
	-(0.90)	-(1.31)	-(1.01)	-(0.25)	-(1.24)	-(0.16)	(0.12)	(0.17)
Board Size	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
	(0.23)	(0.97)	(0.16)	(0.45)	-(0.13)	(0.82)	(1.32)	-(0.01)
CEO Pay / Average Pay	0.00	0.08	0.01	0.01	0.00	0.00	-0.01	0.00
	(0.70)	(0.96)	(1.14)	(0.98)	(0.39)	(0.51)	-(1.12)	(0.16)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.1080	0.1416	0.2077	0.5635	0.2504	0.0701	0.4156	0.1129
F-statistic	1.74 [c]	2.03 [b]	2.63 [a]	8.51 [a]	2.84 [a]	1.43	5.06 [a]	1.65 [c]
Number	164	168	168	157	149	154	154	137

Notes:

This table reports the results of OLS regressions for the reduced sample of 178 acquisitions where takeover performance is the dependent variable and the explanatory variables include the acquiring firm CEO ownership, CEO ownership squared, CEO options, executive ownership, executive ownership squared, executive options, non-executive ownership, non-executive ownership squared, non-executive options, external ownership, board characteristics and other control variables. The takeover performance measures are as defined in Table 3. CEO ownership (%), executive ownership (%), non-executive ownership (%), CEO options (%), executive options (%), non-executive options (%) are as defined in Table 8. External ownership and board characteristics are as described in Table 4. The control variables include all those in Table 4 (Related, Hostile, Stock, Acquirer Size, Relative Size, Acquirer Market-to-book Quintile, Acquirer Leverage, Industry Concentration, Pre-takeover Share Returns, Pre-takeover Profitability) and are as defined in Table 4. Figures in parentheses are *t*-statistics. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

Table 10

OLS regressions of Takeover Performance on Acquirer CEO Ownership, Executive Ownership and Non-executive Ownership: Piecewise linear Model

Independent Variables	*Dependent Variable*							
	Announcement Share Returns	*Long Run Share Returns*	*Post-takeover Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Intercept	0.04	-0.10	-0.01	-0.09 [b]	0.01	-0.05	-0.10 [b]	-0.05
	(1.20)	-(0.17)	-(0.29)	-(2.19)	(0.13)	-(0.75)	-(2.01)	-(0.74)
CEO Ownership (%) if = 0-5%	0.08	6.51	0.50	0.76	0.95 [c]	1.31	0.85	0.95
	(0.20)	(0.87)	(0.96)	(1.47)	(1.67)	(1.55)	(1.34)	(1.11)
CEO Ownership (%) if = 5-25%	-0.02	5.44 [b]	0.28 [c]	0.34 [b]	0.34 [b]	0.68 [a]	0.61 [a]	0.89 [a]
	-(0.17)	(2.33)	(1.77)	(2.35)	(1.97)	(2.93)	(3.57)	(3.68)
CEO Ownership (%) if >25%	-0.08	1.81	0.54 [a]	-0.12	0.10	0.62 [b]	-0.08	-0.01
	-(0.46)	(0.61)	(2.58)	-(0.67)	(0.42)	(2.06)	-(0.38)	-(0.03)
Executive Ownership (%) if = 0-5%	-0.14	-14.86 [c]	-0.10	-0.26	-0.47	-0.25	-0.67	0.64
	-(0.31)	-(1.87)	-(0.18)	-(0.49)	-(0.72)	-(0.30)	-(1.09)	(0.70)
Executive Ownership (%) if = 5-25%	0.03	0.97	-0.00	-0.01	-0.05	0.13	0.22	-0.25
	(0.28)	(0.47)	-(0.02)	-(0.10)	-(0.27)	(0.64)	(1.47)	-(1.11)
Executive Ownership (%) if >25%	0.01	0.77	-0.17 [c]	0.02	-0.07	-0.17	-0.09	-0.14
	(0.08)	(0.59)	-(1.77)	(0.28)	-(0.50)	-(1.30)	-(0.87)	-(0.79)
Non-executive Ownership (%) if = 0-5%	0.18	1.26	0.30	0.41	0.53	0.22	1.11	0.44
	(0.32)	(0.13)	(0.42)	(0.59)	(0.72)	(0.20)	(1.38)	(0.41)
Non-executive Ownership (%) if = 5-25%	0.17	-2.32	-0.11	0.15	0.24	0.27	0.53 [b]	0.09
	(1.08)	-(0.83)	-(0.56)	(0.85)	(1.16)	(0.93)	(2.52)	(0.30)
CEO Options (%)	-0.41	10.65	0.08	0.04	0.08	0.66	1.50 [b]	0.53
	-(0.84)	(1.23)	(0.13)	(0.08)	(0.12)	(0.74)	(2.30)	(0.60)
Executive Options (%)	-0.53 [b]	-8.87 [b]	-0.34	-0.32	-0.71 [b]	-0.68	-1.03	-0.68
	-(2.22)	-(2.08)	-(1.15)	-(1.17)	-(2.27)	-(1.57)	-(3.25)	-(1.60)
Non-executive Options (%)	2.30	68.00	1.07	4.52	-1.69	-6.31	-2.53	-8.49
	(0.64)	(1.05)	(0.23)	(1.11)	-(0.30)	-(0.97)	-(0.53)	-(1.12)
Largest Institutional Shareholder (%)	-0.12 [c]	-0.17	0.12	0.15 [c]	-0.05	0.07	-0.03	0.01
	-(1.81)	-(0.15)	(1.44)	(1.81)	-(0.49)	(0.53)	-(0.26)	(0.05)
Largest Corporate Shareholder (%)	-0.01	0.03	-0.04	0.01	-0.06	-0.08	0.03	-0.11
	-(0.14)	(0.04)	-(0.80)	(0.18)	-(1.02)	-(1.09)	(0.45)	-(1.53)
Largest Personal Shareholder (%)	-0.29	8.82 [b]	0.59 [b]	0.16	-0.26	0.33	-0.02	-0.62
	-(1.26)	(2.14)	(2.04)	(0.59)	-(0.81)	(0.77)	-(0.06)	-(1.39)
Chairman-CEO	-0.01	0.00	-0.01	0.01	0.01	0.01	0.03 [c]	0.02
	-(0.62)	(0.01)	-(0.69)	(0.80)	(0.29)	(0.33)	(1.66)	(0.94)
Chairman-CEO 1993-1996	-0.03	0.17	0.00	-0.01	-0.04	-0.05	-0.04	-0.06
	-(1.63)	(0.48)	(0.14)	-(0.38)	-(1.28)	-(1.40)	-(1.48)	-(1.53)
Post-Cadbury	0.02 [c]	0.41 [b]	-0.01	-0.01	0.02	0.03	0.02	0.03
	(1.73)	(2.24)	-(0.85)	-(0.62)	(1.52)	(1.46)	(1.15)	(1.58)
Proportion of Non-executives	-0.03	-0.90 [c]	-0.04	-0.02	-0.06	-0.02	0.01	0.03
	-(0.89)	-(1.70)	-(1.10)	-(0.44)	-(1.37)	-(0.34)	(0.17)	(0.53)
Board Size	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
	(0.21)	(0.98)	(0.28)	(0.44)	-(0.03)	(0.84)	(1.20)	-(0.08)
CEO Pay / Average Pay	0.00	0.10	0.01	0.01	0.00	0.00	-0.01	0.00
	(0.67)	(1.22)	(0.97)	(0.99)	(0.29)	(0.49)	-(1.00)	(0.10)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.0869	0.1475	0.2027	0.5543	0.2343	0.0588	0.4389	0.1181
F-statistic	1.54	2.00 [b]	2.47 [b]	7.73 [a]	2.57 [a]	1.33	5.15 [a]	1.63
Number	164	168	168	157	149	154	154	137

Notes: This table reports the results of OLS regressions for the reduced sample of 178 acquisitions where takeover performance is the dependent variable and the explanatory variables include the acquiring firm CEO ownership, CEO options, executive ownership, executive options, non-executive ownership, non-executive options, external ownership, board characteristics and other control variables. The takeover performance measures are as defined in Table 3. CEO ownership (%), executive ownership (%), non-executive ownership (%), CEO options (%), executive options (%), non-executive options (%) are as defined in Table 8. Ownership (%) if = 0-5%, is a variable that takes on the value of ownership if that ownership is between 0 and 5%, and is set to zero otherwise. Ownership (%) if = 5-25%, is a variable that takes on the value of ownership if that ownership is between 5 and 25%, and is set to zero otherwise. Ownership (%) if >25%, is a variable that takes on the value of ownership if that ownership is greater than 25%, and is set to zero otherwise. External ownership and board characteristics are as described in Table 4. The control variables include all those in Table 4 (Related, Hostile, Stock, Acquirer Size, Relative Size, Acquirer Market-to-book Quintile, Acquirer Leverage, Industry Concentration, Pre-takeover Share Returns, Pre-takeover Profitability) and

are as defined in Table 4. Figures in parentheses are *t*-statistics. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

Table 11

Two Stage Least Squares Regressions of Takeover Performance on Acquirer CEO, Executive and Non-executive Ownership: Linear Model

Independent Variables	*Dependent Variable*							
	Announcement Share Returns	*Long Run Share Returns*	*Post-takeover Profitability*					
			Profit/ Assets	Profit/ Sales	Profit/ MV	Cash Flow/ Assets	Cash Flow/ Sales	Cash Flow/ MV
Intercept	0.04	-0.09	-0.01	-0.06 [c]	0.02	-0.02	-0.04	0.03
	(1.38)	-(0.16)	-(0.25)	-(1.79)	(0.49)	-(0.40)	-(0.96)	(0.75)
CEO Ownership (%)	0.08	6.23 [c]	0.50 [b]	0.24	0.39 [c]	0.69 [b]	0.27	0.44 [c]
	(0.45)	(1.92)	(2.26)	(1.25)	(1.66)	(2.29)	(1.15)	(1.70)
Executive Ownership (%)	-0.01	0.40	-0.15	-0.04	-0.11	-0.13	-0.04	-0.17
	-(0.09)	(0.30)	-(1.57)	-(0.42)	-(0.81)	-(0.95)	-(0.41)	-(1.16)
Non-executive Ownership (%)	0.19	-3.41	-0.11	0.13	0.08	0.23	0.45 [b]	0.03
	(1.25)	-(1.19)	-(0.55)	(0.75)	(0.40)	(0.82)	(2.10)	(0.12)
CEO Options (%)	-0.31	9.36	0.16	-0.03	0.31	0.64	1.29 [c]	0.27
	-(0.65)	(1.04)	(0.26)	-(0.06)	(0.49)	(0.73)	(1.93)	(0.39)
Executive Options (%)	-0.52 [b]	-7.77 [c]	-0.33	-0.24	-0.62 [b]	-0.61	-0.85 [a]	-0.51
	-(2.28)	-(1.82)	-(1.13)	-(0.89)	-(2.08)	-(1.44)	-(2.63)	-(1.60)
Non-executive Options (%)	2.24	65.47	1.18	5.01	-0.38	-5.99	-0.94	-0.07
	(0.65)	(1.00)	(0.26)	(1.24)	-(0.07)	-(0.93)	-(0.19)	-(0.01)
Largest Institutional Shareholder (%)	-0.17 [a]	-0.18	0.12	0.13 [c]	-0.06	0.04	-0.07	-0.06
	-(2.53)	-(0.14)	(1.30)	(1.67)	-(0.58)	(0.28)	-(0.70)	-(0.58)
Largest Corporate Shareholder (%)	0.00	0.07	-0.05	0.01	-0.05	-0.08	0.04	-0.04
	-(0.01)	(0.09)	-(0.89)	(0.31)	-(1.02)	-(1.10)	(0.61)	-(0.68)
Largest Personal Shareholder (%)	-0.35	9.52 [b]	0.63 [b]	0.22	-0.13	0.36	0.09	-0.07
	-(1.56)	(2.24)	(2.11)	(0.85)	-(0.41)	(0.85)	(0.28)	-(0.20)
Chairman-CEO	-0.01	-0.06	-0.01	0.01	0.00	0.00	0.03	0.00
	-(0.98)	-(0.25)	-(0.88)	(0.73)	(0.13)	(0.20)	(1.43)	(0.19)
Chairman-CEO 1993-1996	-0.03	0.31	0.01	-0.01	-0.02	-0.05	-0.03	-0.03
	-(1.23)	(0.82)	(0.21)	-(0.27)	-(0.78)	-(1.22)	-(1.02)	-(1.11)
Post-Cadbury	0.02	0.40 [b]	-0.01	-0.00	0.03 [c]	0.03	0.02	0.04 [b]
	(1.58)	(2.12)	-(0.97)	-(0.30)	(1.88)	(1.53)	(1.54)	(2.45)
Proportion of Non-executives	-0.03	-0.87 [c]	-0.04	-0.04	-0.05	-0.03	-0.03	-0.05
	-(0.91)	-(1.66)	-(1.02)	-(1.11)	-(1.25)	-(0.60)	-(0.76)	-(1.04)
Board Size	0.00	0.03	0.00	0.00	-0.00	0.00	0.00	-0.00
	(0.66)	(0.88)	(0.11)	(0.54)	-(0.23)	(0.83)	(1.31)	-(0.55)
CEO Pay / Average Pay	0.00	0.09	0.01	0.01	0.00	0.01	-0.01	-0.00
	(0.63)	(1.11)	(0.97)	(1.33)	(0.28)	(0.58)	-(0.91)	-(0.17)
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	2.04 [b]	2.12 [b]	2.70 [a]	9.06 [a]	2.34 [b]	1.29	5.09 [a]	1.34
Adjusted r-squared	0.1294	0.1318	0.2046	0.5516	0.178	0.0746	0.3973	0.048
Root MSE	0.0457	0.8683	0.0605	0.0543	0.0595	0.0846	0.0647	0.0634
Number	160	164	164	158	145	155	155	138

Notes:

This table reports the results of two stage least squares regressions for the reduced sample of 178 acquisitions where takeover performance is the dependent variable and the explanatory variables include the acquiring firm CEO ownership, CEO options, executive ownership, executive options, non-executive ownership, non-executive options, external ownership, board characteristics and other control variables. The instrumental variables for the first stage CEO ownership regression include all the explanatory variables in Table 8 (except CEO ownership) as well as share price standard deviation, share price variance, liquidity, sales-to-book value and industry dummy variables. The estimation of CEO ownership is then used in the second stage regressions which are reported in the Table. The takeover performance measures are as defined in Table 3. Executive ownership (%), non-executive ownership (%), CEO options (%), executive options (%), non-executive options (%) are as defined in Table 8. External ownership and board characteristics are as described in Table 4. The control variables include all those in Table 4 (Related, Hostile, Stock, Acquirer Size, Relative Size, Acquirer Market-to-book Quintile, Acquirer Leverage, Industry Concentration, Pre-takeover Share Returns, Pre-takeover Profitability) and are as defined in Table 4. Figures in parentheses are *t*-statistics. [a, b,] and [c] indicate statistical significance at the 1, 5 and 10 percent levels respectively, using a two tailed *t*-test.

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