

**THE EFFECT OF BOARD STRUCTURE ON BIDDER-
SHAREHOLDERS' WEALTH: FURTHER EVIDENCE FROM THE UK
BIDDING FIRMS**

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Abstract

In this study we provide evidence of cross-sectional dependence of bidder-shareholder wealth and target's board characteristics. More specifically we provide evidence that the percentage of non-executives, the board size, the stock holdings of executives, and the other directorships held by non-executives serving the target board are important in assessing the announcement of the bid, whereas in the bidder's board only the percentage of non-executive directors is important for bidder-shareholders. In addition to that we provide evidence that some of these relationships are not monotonic in nature. Finally, in this study it is documented that bidder-shareholder wealth is favoured in acquisitions where bidders have marginally more executive than non-executive directors in their boards and therefore the question arises as to whether "dependent" boards are more efficient than "independent" ones.

JEL Codes: G32, G34

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The Effect of Board Structure on Bidder-shareholders' Wealth: Further Evidence from the UK Bidding Firms

Corporate Governance is an issue that has seen a lot of public debate over the past few years. In the UK several committees have been set-up in order to deal with this issue producing several interesting reports, e.g. the Cadbury Report (1992), the Greenbury Report (1995), the Hampel Report (1998), and the Higgs Report (2003). The Cadbury committee, in 1992, reviewed the structure and responsibilities of boards of directors in the UK and has summarised their recommendations in a Code of Best Practice. In 1995 the Greenbury committee issued an accompanying code in order to set out best practice in determining and accounting for the remuneration of directors. Finally in 1998 the Hampel and in 2003 the Higg's reports commented on matters on which the committees took a different view from the previous committees, or which the Cadbury and Greenbury committees did not deal with at all. All four reports share a common view: the prime responsibility of the board of directors should be to determine the broad strategy of the company and to ensure its implementation. As Ezzamel and Watson (1997) put it: "The central legal responsibilities of the UK's 'unitary'¹ boards of directors are fairly clear, namely to manage the business collectively in accordance with its constitution for the benefit of its shareholders and to comply with the financial reporting and other disclosure requirements stipulated by company law". For UK companies then, the board of directors fulfils two main functions. It is responsible for protecting the interests of the shareholders, having at the same time the legal authority to formulate and implement business activities in a manner that complies with company law and other regulations.

Since corporate strategies of a firm are formulated and implemented by the board of directors it is probable that the characteristics of the board are directly associated with the outcome of its decision. One of the major corporate strategies that a firm might be involved in is the takeover of another company. Previous research supports the view that, because of its importance, bidder-shareholders react abnormally at the announcement of such an investment affecting share prices and therefore shareholder wealth. The motivation for this study is that board structure, of both bidder and target, might be important in explaining this abnormal behaviour at the announcement of a takeover. Several studies have tested this hypothesis, namely whether board structure is associated with the outcome of the takeover. The common practice is to test whether board characteristics of the bidder can explain changes in bidder-shareholder wealth (abnormal returns) or whether board characteristics of the target can explain changes in target-shareholder wealth (abnormal returns or bid premium) during

the takeover process. It is interesting however that the cross-reaction effect between boards and shareholders of the two companies involved in the takeover is often neglected. In this study we measure the bidder-shareholders' wealth effect of 185 UK tender offers, announced during the period 1990-1997, and we try to identify whether the board composition of bidding and targeted companies can explain this effect. The novelties of this study are the cross-sectional examination of the target's board characteristics (in addition to the bidder's board characteristics) on bidder-shareholder wealth during the announcement of the bid and also the questionability of the linear relationship, often suggested by researchers, between board characteristics and shareholder wealth. In this analysis we examine four major board characteristics for both bidders and targets: (1) the percentage of non-executive directors (board composition), (2) the size of the board, (3) the stock ownership of directors (ordinary shares), and (4) the number of other directorships held by non-executive directors in addition to the seat held in the bidding or targeted company board. The reason for investigating only these four characteristics is very simple: they are publicly available and easily accessible by shareholders. We provide evidence that, for bidder-shareholders, only the percentage of non-executives in the bidder's board is important in assessing the announcement of the bid, whereas in the target's board they also consider the board size, the executives' ownership, and other directorships held by non-executives. In addition to that we provide evidence that some of these characteristics are related to the bidder-shareholder wealth in a non-monotonic way. These results emphasise the importance that bidder-shareholders assign on the cross-sectional impact of their wealth with the target's board characteristics and therefore the importance of corporate governance structure during these events.

This paper is organised as follows: in section I we provide the theoretical framework along with the underlying hypotheses that are tested throughout the analysis. Descriptive statistics of the data and the methodological approach of calculating abnormal returns are provided in section II. Section III provides our empirical findings and finally, in section IV we present our conclusions.

I. Framework and Hypotheses

A. Abnormal Returns

A common way to test for the impact of board structure (or any other variable) on shareholders' wealth is to regress the abnormal or cumulative abnormal returns around the time period of interest on the various board characteristics (internalisation theory for mergers). Therefore it is important to know what effect (if there is any) an acquisition announcement has on bidder-shareholder

returns. Recent and earlier work for the UK takeovers has shown that on average the wealth effects of bidder-shareholders range from value-reduction to value-neutral during the acquisition period. Studies by Frank, Broyles, and Hecht (1977), Higson and Elliot (1993) and Limmack (1991) on UK domestic acquisitions show that shareholders of the acquiring companies gain zero or statistically insignificant positive abnormal returns during the announcement period. Studies from Firth (1980), Higson and Elliot (1993), and Sudarsanam, Holl, and Salami (1996) show that bidder-shareholders experience statistically significant negative abnormal returns ranging from -4.02 percent to -6.3 percent during the announcement of a takeover. On the other hand studies from Frank and Harris (1989), and Conn, Cosh, Guest, and Hughes (2001) show that bidder-shareholders experience significant gains of +2.4 and +1.22 percent respectively over the announcement period. Although the evidence is mixed as to its magnitude, there is enough evidence that bidder-shareholder wealth is affected by takeover announcements, which reinforces the need to identify the sources of this effect.

B. Board Characteristics

As already mentioned, in our analysis we consider four characteristics of the board which are easily accessible by any shareholder: the composition of the board (percentage of non-executives), the directors' stock ownership, the additional directorships held by non-executive directors, and board size.

B.1. Board Composition

Usually, corporate boards in the UK include some of the firm's top managers as well as directors from outside the firm. Therefore board in the UK is unitary in structure and has a mixture of executive (inside) and non-executive (outside) directors. Executive directors who are also employees (usually full-time) of the company provide the board with valuable information about the firm's activities. Non-executive directors on the other hand tend to be more involved in planning and policy-making. According to Cosh and Hughes (1997) non-executives are mainly drawn from the ranks of past or present Chief Executive Officers (CEOs) and other executives of other larger companies, or former executives of the company itself. They are usually employed for prestige (if they are well known), for their experience or contacts, or for their specialized knowledge, which may only be required occasionally. Furthermore, non-executives place a lot of emphasis on their reputation capital because their payment and employment in a company is positively related to their reputation [Fama (1980), Fama and Jensen (1983a)]. For these reasons non-executives rather than executives have more incentives to promote shareholder interests and to be more objective in evaluating the costs and benefits of an acquisition

decision [Milgrom and Roberts (1992), Cotter et al (1997)]. Therefore the more non-executive directors are on the board the higher the probability of a profitable rather than non-profitable acquisition since non-executive directors are more likely to take decisions consistent with shareholder wealth maximization. Recently, Young (2000) found that the appointment of additional non-executive directors by many UK firms has helped to improve board structure suggesting that UK boards are better equipped to monitor managers effectively. However, even non-executives may have incentives other than their reputation since opposing management may make them less attractive to other firms whose management is looking to avoid scrutiny and interference (Hermalin and Weisbach, 1991). On average the evidence suggests that non-executives promote shareholders' interests through increased monitoring and also that good managers prefer boards with more outsiders [Weisbach (1988), Rosenstein and Wyatt (1990), Byrd and Hickman (1992), Shivdasani (1993), Hermalin and Weisbach (1994), Brickley, Coles and Terry (1994), Cotter, Shivdasani and Zenner (1997)].

According to the Hampel report, (paragraph 12, Summary of Conclusions and Recommendations) non-executive directors, in order to be effective, need to make up at least one third of the membership of the board. Empirical evidence in the UK regarding the board structure and takeovers has been provided among others by O'Sullivan and Wong (1998) who find that board composition in the UK has no significant effect on the outcome of takeover bids. These findings contradict the findings of Constantinou et al (2003) who find a negative and significant relationship between non-executive dominated target boards and target shareholders' wealth at the announcement of takeover bids. Further research has questioned the monotonic behavior relationship assumed in studies that examine the relationship between board composition and firm performance. As the percentage of non-executive directors increases in the board the importance of executive directors is underrated, resulting in a loss of valuable information offered by them concerning the every day activity of the firm, which is then reflected in the decision of the firm. Byrd and Hickman (1992) find an insignificant positive relationship between the abnormal returns at the first announcement date and the fraction of independent non-executive directors serving the acquirer's board and provide evidence that those benefits do not accrue continuously as the proportion of independent directors increases.

To sum up, board composition has been the subject of an in-depth scrutiny and the evidence regarding its relationship with corporate performance and the carrying of more profitable acquisitions is still mixed. Evidence however is in favor that non-executive dominated boards are better in monitoring

management's actions and in favor of an optimal mixture of executive and non-executive directors on the board.

B.2. Stock Ownership

Stock ownership held by directors, is another characteristic related directly with managerial quality. As the stock ownership of managers increases, the interests of shareholders and managers coincide, which means that the agency problem [Jensen and Meckling (1976)] is reduced. Therefore the objectives of these two claimholders of the company converge and fewer acquisitions will be proposed for motives other than shareholder wealth maximisation. The findings of Lewellen et al (1985) and Lambert and Larcker (1987) come to support this alignment of interests; they find that management stock ownership is associated with positive acquisition announcement effects in the US. For UK companies, Weir (1997) finds that executive directors of acquired firms have significantly lower shareholdings and lower proportion of share options than those of non-acquired firms, which implies that those firms whose directors' interests are not aligned with their shareholders' through higher stockholdings become possible targets. A comparative analysis of key differences between the US and UK governance systems from Keasy and Short (1999) suggest that UK management become more entrenched at higher levels of ownership (less freedom to mount takeover defenses) than their US counterparts, suggesting a non-linear relationship between firm performance and managerial ownership. Stulz (1988) and Hermalin and Weisbach (1991) suggest a similar, non-linear relationship, for US firms as well. According to Stulz (1988) high levels of managerial stock ownership are harmful to shareholders since managers become insulated from some corporate governance mechanisms (e.g. market for corporate control). A study by Cosh et al (2001) on a large sample of UK companies suggests that this non-linear relationship appears in the long run as well, where at low levels of board ownership there is an alignment of interests with shareholders but at high levels managerial entrenchment. Stock ownership can also affect positively the successful outcome and the friendly nature of takeover bids [O'Sullivan and Wong, (1998)] and at the same time can decrease the probability of a takeover [Shivdasani, (1993)], suggesting that inefficient management with high stockholdings can affect the takeover process.

In contrast to these findings, Loderer and Martin (1997) examine this relation under simultaneous equations framework and find that managers who own stock at their company may be unable to affect corporate decisions and/or may be forced to promote the firm's performance because of increased competition and an effective market for corporate control. This result comes to support the findings of earlier studies that also suggest that firm performance and

management stock ownership are not related (Demsetz and Lehn, 1985, McConnell and Servaes, 1990, and Dennis and Denis, 1994).

Therefore there are several conflicting issues concerning the stock ownership of both executive and non-executive directors and firm performance, a reflection of managerial quality, which affects shareholders' behaviour: (a) stock ownership eliminates the agency problem and therefore it improves managerial quality, (b) stock ownership can result in an inefficient market for corporate control and deteriorates managerial quality and firm performance, and (c) stock ownership can influence the directors' independent judgement, especially for non-executive directors (who are a key issue on the UK corporate governance model) and therefore result in a deterioration of the managerial quality of the board and thus affect firm performance negatively, (d) stock ownership is not related with managerial quality and therefore with firm performance.

B.3. Other Directorships

Non-executives may serve more than one directorship at the same time, since they are not full-time employees of the company. Through additional directorships, non-executives create a portfolio of "rich" experience and knowledge, which might be helpful for the evaluation of a takeover decision. Fama and Jensen (1983) and Ricardo-Campbell (1983) argue that non-executive board members who hold multiple directorships have a greater incentive to monitor corporate decisions on behalf of all shareholders because these directors have made a significant investment in establishing their reputation as decision experts. While opposing a proposed acquisition may endanger their position in the bidder or target's board, the cost of supporting a harmful decision for shareholders could still be greater, because it would reduce the value of the director's reputation capital in the marketplace for decision experts. On the other hand, however, the more directorships a director holds, the less devoted to a specific board he/she is and therefore his/her contribution becomes less valuable. Therefore when non-executives hold a small number of extra directorships this increases the board's managerial quality, whereas when they hold a large number of extra directorships the board's managerial quality decreases.

Shivdasani (1993), for a sample of US companies, finds that additional directorships decrease the probability of a hostile takeover, a finding that supports the monitoring role of prestigious non-executives. To our knowledge there isn't much empirical work on the relationship between the additional directorships held by non-executive directors and the outcome of a takeover. Few studies we came across attempt to explore the sources of non-executive

directors. Bryant and Conyon (1998) for example find that CEOs in UK companies hold on average 0.35 non-executive directorships, a figure which is much lower than the 1.87 outside directorships held by CEOs in the US [Booth and Deli (1996)]. O'Sullivan (2000) studied the number of additional directorships held by 960 executives in UK quoted companies and finds that the managers that are less likely to have multiple directorships are mostly those who want to pursue their own objectives at their shareholders' expense whereas the more popular non-executives seem to be the well-established executives.

B.4. Board Size

Another important characteristic related with managerial quality is the number of directors serving the board. Lipton and Lorsch (1992) suggest "the size of a board should be limited to a maximum of ten directors". They argue that boards of this size allow the directors to get to know each other, to participate fully in discussions and to reach a true consensus. The main idea behind their suggestion is that when a board consists of many directors not all of them can express their opinion and fully explain their arguments during the time provided in the meetings. Similarly Jensen (1993) stated that when boards get beyond seven or eight people they are less likely to function effectively and are easier for the CEO to control.

Furthermore Yermack (1996) states that: "reducing board size is a priority to improve troubled companies...small boards are more effective and provide stronger CEO performance incentives from compensation and the threat of dismissal" which come to support Kini et al (1995) finding that board size shrinks after successful tender offers for under-performing companies. Yermack (1996) supports that size and firm performance are associated with a convex shape relationship suggesting that the largest fraction of lost value occurs as boards grow from small to medium size. Therefore, the benefits of increased monitoring through larger boards are outweighed by problems associated with informational asymmetries between the CEO and the board, communication issues and decision making generally [Conyon and Peck, (1998)]. On the other hand, however, in larger boards there is more expertise stemming from the individual knowledge of each director and more opinions are shared and heard, providing a more comprehensive coverage of the issues associated with a strategy.

C. Hypotheses

Based on the aforementioned discussion we can conclude that the impact of bidder board characteristics on bidder-shareholder wealth accrues through managerial quality, which is tightly linked with firm performance. Any

characteristic that increases managerial quality (and therefore increases firm performance) should have a positive impact on shareholder wealth, whereas any characteristic that decreases managerial quality (and therefore decreases firm performance) should have a negative effect. However, as already explained, the relation should not be monotonic in nature. Therefore, the research hypothesis to be tested is:

Hypothesis 1: a concave quadratic relationship exists between bidder-shareholder wealth and its board's characteristics.

An interesting question however, often neglected by researchers, arises at this point. If we expect board characteristics to be associated with managerial quality and therefore with bidder-shareholder reaction, it is naïve to ignore the cross-sectional impact of the target's board characteristics on bidder-shareholder wealth. Since bidder-shareholders associate board characteristics of their company with managerial quality, and since the outcome of the bid does not depend solely on the bidder's board but also on the target's board, we would expect that the board structure of the targeting company is also linked in a non-monotonic way with bidder-shareholder wealth through managerial quality. The nature of the impact (convex or concave) however is not clear and therefore hypothesis 2 becomes:

Hypothesis 2: A non-monotonic relationship exists between target board characteristics and bidder-shareholder wealth.

II. Data, Methodology, and Descriptive Statistics

A. Sample and Data Description

The sample analysed in this study is a comprehensive list of UK firms engaged in domestic takeovers over the seven-year period of 1990-1997. The sample contains completed transactions, and the firms included in it are listed companies on the London Stock Exchange (LSE) and are included in the Datastream database.

The sample was obtained by searching the “*Acquisitions Monthly*” database, which reports mainly all domestic (UK) merger and acquisition transactions. The event date of each acquisition, according to “*Acquisitions Monthly*” is the date of the offer's initial public announcement. The method of payment, the industry which the companies belong into, the date of announcement, and the date of the completion of the bid were collected from “*Acquisitions Monthly*”. Names of Chief Executive and Non-Executive Officers (CEOs and CNEOs

respectively) for UK acquirers, before and after the bid, were obtained from “*The Official Stock Exchange Year Book*”. It has to be noted, however, that “*The Official Stock Exchange Year Book*” reports CEOs and CNEOs of each company at the end of each accounting year. In order to find the CEOs and CNEOs during the period before and after the bid announcement we used *EXTEL Data Base*, operated by Financial Times, in which all the changes on the board of directors of any company listed on the London Stock Exchange are reported. Data for directors’³ stock ownership, and the number of directorships held by each director were collected from the “*Price Waterhouse Corporate Register*”. The sample of acquiring firms used in this study consists of the complete universe of firms, which meet the following criteria:

1. The announcement day is reported in “*Acquisitions Monthly*”.
2. The acquirer is quoted on the London Stock Exchange for a minimum period of 320 trading days prior and 360 trading days after the takeover bid.
3. Daily share price data was available 320 trading days before the takeover bid and 40 trading days after the takeover bid.
4. There are no concurrent acquisitions for the same firm during the forty-day period prior and the forty-day period after the announcement day ($t=0$).
5. Both the acquirer and the target are UK public firms.
6. The acquirer or the target are not financial services or utility firms⁴.

Over the seven-year period that is covered from our analysis, we study 185 domestic acquisitions made by 162 different firms. These transactions are quite unevenly distributed across the years studied; the proportion of deals analysed during the years 90-94 range from an annual figure of 8 to 11 percent but in subsequent years, 95 –97, the sample deals account for 14 to 19 percent, which is attributed to the larger number of deals that took place from the mid 90s onwards.

B. Methodology: Estimation of Abnormal Stock Returns

Standard event study methodology has been adopted in this research. Abnormal returns for each acquirer have been calculated for 40 days before the announcement and for up to 40 days after the announcement of the bid. Although there is an ongoing debate about the benchmark used in order to calculate abnormal returns, in this study we use the market model (MM), which is widely used for short-term analysis.

According to Fama (1976), the market model is specified as:

$$R_{it} = a_i + b_i R_{mt} + e_{it} \quad (1)$$

where R_{it} is the rate or return of the i^{th} security at event day t^5 . The abnormal return of the i^{th} security at event day t is estimated as $AR_{it} = R_{it} - \hat{R}_{it}$, where $\hat{R}_{it} = \hat{\alpha}_i - \hat{\beta}_i R_{mt}$ and $\hat{\alpha}_i, \hat{\beta}_i$ are ordinary least square estimates of the market model parameters over the period $t = -360$ to $t = -60$ trading days relative to the announcement day⁶. The statistical significance of the average abnormal return (AAR) for a sample of N companies for the event day t and the cumulative average abnormal returns (CAAR) is assessed using standard event methodology techniques.

C. Descriptive Statistics

Panel A of table I gives a brief description of the sample and bid characteristics of the takeovers included in the sample. The average acquirer's size (market value of common stock), 60 days before the announcement date, is £1,223 million (with a median of £210 million). Acquired companies are much smaller in size with an average market value, 60 days before the announcement date, of £227 million (with a median of £33 million). These large differences between the mean and the median market value of equity imply that in our sample there are some bidders and some targets that are substantially larger than the average size bidder and target firm respectively. The average ratio of target size to bidder size is 0.19, with a median value of 0.25, which means that the majority of bidding firms are attempting to acquire firms of about a fifth of their own size. Finally, the bid premium, as reported in *Acquisitions Monthly*, averaged 1.23 one month before the announcement, and 1.40 one day before the announcement of the bid.⁷

As can be seen from Panel B of the same table, 17 percent (32 out of 185) of the bids were hostile but successful, a percentage smaller than the ones reported by previous studies. Franks and Mayer (1996) study a sample of 325 UK bids during 1985-86 and find 23% of the bids to be hostile, Cosh and Guest (2000) study a sample of 204 UK takeovers during 1985-96 and similarly find 23% of the cases to be hostile, and finally Schwert (2000) studies a sample of 2,346 takeovers during 1975-96 and finds 21% of the bids to be hostile. The difference in numbers can be attributed to the period investigated. 52 out of 185 were financed completely by a cash arrangement and 100 out of 185 were between companies within the same 2-digit SIC industry sector.

Table I. *Sample and bid characteristics of the 185 UK sample takeovers during the period 90-97*

Panel A of this table describes the general characteristics and Panel B the deal characteristics of the 185 UK sample takeovers during the period 1990 – 1997. Data regarding the deals have been obtained from *Acquisitions Monthly*. Data regarding board characteristics were collected from the Price Waterhouse Corporate Register. Data was obtained from the bi-annual volumes for the years Sept 1989 to Sept 1994 and from the quarterly volumes for the years 1995 onwards. Financial services and utility firms have been excluded from our analysis.

Panel A: General characteristics

Variable	Mean	Median	St. Dev.
Market Value of Bidder Common Stock (£millions) ^a	1223	210	2460
Market Value of Target Common Stock (£millions) ^a	227	33	573
Ratio of Target to Bidder Bid Premium ^b	0.19	0.25	0.53
One Month Before Announcement	1.23	1.21	0.18
One Day Before Announcement	1.40	1.40	0.23

Panel B: Deal characteristics^c

Variable	Number
<i>Hostility</i>	
Hostile Successful Bids	32
Non-Hostile Successful Bids	153
<i>Method of Payment</i>	
Cash Offers ^d	52
Other ^e	133
<i>Related and Unrelated Transaction</i>	
Same Operations ^f	100
Different Operations	85
<i>Total Number of Bids</i>	<i>185</i>

^a The market value of bidder and target common stock is measured 60 days before the announcement as that reported in *acquisitions monthly*.

^b The bid premium is collected from *Acquisitions Monthly* and is calculated as follows:

Bid Premium one month before the announcement = (Bid Price per Share/Share Price of the Target one Month before Announcement)

Bid Premium one day before the announcement = (Bid Price per Share/Share Price of the Target one Day before Announcement)

^c All the information in the table was obtained by *Acquisitions Monthly Year Report*, issued at the end of each year.

^d The merger was financed completely by a cash arrangement.

^e Includes any combination of shares exchange, issue of debt, or cash.

^f Number of mergers in which bidder and target have the same 4-digit SIC code.

Table II summarises the board characteristics of the 185-bidding firms before the announcement day. The average acquiring-firm's board has 9 of whom 56% are classified as executives and 44% as non-executives. According to Conyon and Perk (1998) the UK board size has on average 8.57 members, which is very close to the number we report as well. In concurrence with Dahya, McConnell and Travlos (2002) our results suggest that the percentage of non-executive directors for the UK bidding firms has increased significantly after the release of the Cadbury Report. Board sizes however did not change significantly. Executive directors held, on average, 6% of their firm's common stock, whereas the average stock ownership of non-executive directors was only 1.74%. For both types of directors, the mean ownership stake exceeds the median, indicating that the distribution of stock ownership is skewed to the right. These figures are similar to those reported by Cosh et al (2000) for a UK sample of acquirers and Lewellen et al (1985) for a US sample of firms. The statistics of Table II also reveal that during the process of the takeover non-executive directors held, on average, 1.55 extra seats each in other boards. This number is smaller than the 2.4 extra seats reported by Cosh and Hughes (1997) for their sample of UK giant companies in 1996 but very close to average number of all the directors.

As it concerns acquired firms (only 174 target companies were eligible for inclusion in our analysis) boards are on average smaller than those of the bidders by two seats (see Table II) but still very close to the number proposed by Conyon and Perk (1998) about the average UK board size. The board size of acquired firms, however, did not change significantly after the release of the Cadbury committee as suggested by Dahya, McConnell and Travlos (2002). The percentage of non-executives, however, increased significantly from 35 percent to 45 percent after the release of the Cadbury committee. The overall percentage of non-executive directors in targets' boards throughout the whole period is 44 percent. Executive directors, as in the case of bidders, hold on average a higher percentage of stocks than non-executives (6% and 2% respectively) with an overall of 8 percent, which is one percentage point higher than that of bidders. Finally non-executive directors of the target firm hold on average 1 extra seat in other boards which is smaller, as it was expected, from the one reported by Cosh and Hughes (1997).

Table II. *Acquiring and acquired firms' board characteristics*

This table describes the board characteristics of the acquiring and the acquired firms for the 185 UK sample takeovers during the period 1990 – 1997. Data regarding the deals have been obtained from Acquisitions Monthly. Data regarding board characteristics were collected from the Price Waterhouse Corporate Register. Data was obtained from the bi-annual volumes for the years Sept 1989 to Sept 1994 and from the quarterly volumes for the years 1995 onwards. Financial services and utility firms have been excluded from our analysis.

Characteristics	Acquiring companies			Acquired companies		
	Mean	Median	St. Dev.	Mean	Median	St. Dev.
<i>Board Size</i>						
Number of directors	8.78	8.00	3.86	6.69	6.00	2.36
Number of directors before Cadbury report	8.50	8.00	3.11	6.57	6.00	2.31
Number of directors after Cadbury report	8.85	8.00	4.01	6.72	6.00	2.38
<i>Non executive Directors</i>						
Non-executive directors	44%	43%	19%	44%	42%	22%
Non-executives before Cadbury report	35%	33%	17%	32%	33%	23%
Non-executives after Cadbury report	45%	44%	19%	47%	42%	21%
<i>Directors' stock ownership</i>						
Directors' total stock ownership	7%	1%	13%	8%	1%	4%
Executives' stock ownership ^a	6%	1%	12%	6%	1%	13%
Non-executives' stock ownership ^b	1%	1%	4%	2%	1%	7%
Other Directorships held by non-executives	1.55	1.50	1.12	1.41	1.20	1.32

^a Executive directors' stock ownership is the percentage of common stock held by all executive directors.

^b Non-executive directors' stock ownership is the percentage of common stock held by all non-executive directors.

III. Empirical Analysis

A. Overall Sample

Average Abnormal Returns for bidding companies obtained from forty days prior to forty days after the announcement of the bid are presented in Table III together with the cumulative abnormal returns for several periods.

Table III.

Panel A: Daily average abnormal returns (AAR) and z-values for the bidding firms involved in 185 domestic (UK) acquisitions from forty days before to forty days after the initial announcement day ($t=0$)

Panel B: Cumulative average abnormal returns (CAARs) for several time-windows for the bidding firms involved in 185 domestic (UK) acquisitions.

Panel A		
Event Day	AAR (%)	z-value
-40	0.13	1.29
-20	-0.31	-0.75
-10	-0.27	-3.81**
-9	0.11	0.60
-8	-0.10	-0.96
-7	0.19	0.24
-6	-0.045	-2.33*
-5	0.23	1.51
-4	-0.02	-0.52
-3	-0.12	-1.74
-2	0.04	-0.64
-1	-0.19	-2.57**
0	-1.1036	-14.95**
+1	-0.24	-3.17**
+2	-0.13	-1.45
+3	0.02	0.44
+4	-0.01	-0.14
+5	-0.08	-0.61
+6	0.06	0.84
+7	0.18	1.61
+8	-0.23	-0.51
+9	-0.05	-1.16
+10	0.07	-0.85
+20	-0.12	-0.78
+40	-0.25	-2.82**

Panel B					
Time Interval	CAARs	z-value	Time Interval	CAARs	z-value
(-40,0)	-0.46	-4.43**	(0,1)	-1.35	-10.44**
(-20,0)	-1.05	-6.86**	(0,10)	-0.153	-5.75**
(-10,0)	-1.31	-7.27*	(0,20)	-1.43	-4.53**
(-1,0)	-1.29	-10.12**	(0,40)	-1.32	-3.14**
(-1,1)	-1.54	-9.26**	(-40,40)	-0.67	-3.44**

* Significant at the 0.05

** Significant at the 0.01

As shown in Panel A of Table III, announcements of domestic takeovers are associated with statistically significant negative abnormal returns reaching an average level of -1.10 percent ($Z=-14.95$) on the announcement day. Results also report a negative abnormal return one day before ($t=-1$) and one day after ($t=+1$) the announcement of -0.19 percent and -0.24 percent respectively. The significantly negative abnormal return the day before the announcement suggests leakage of information, which is valued by the market negatively, whereas the significantly negative abnormal return for the day after suggests that the market needs more than one day to digest the event. Significantly negative average abnormal returns are also reported ten and six days before the announcement day of the order of -0.27 and -0.04 percent respectively (z-values are -3.81 and -2.33 respectively). The significance of these abnormal returns reinforces the view that the market somehow anticipated the bid since all companies with concurrent events were removed from our sample. The big difference at the level of the average abnormal returns between the pre-bid period and the announcement day suggests that although there were rumours in the market during the pre-bid period these were evaluated moderately by the market because the ultimate bid details (i.e. terms of the bid) could not be known with certainty.

Panel B of Table III shows the cumulative abnormal returns for several periods commencing forty days before to forty days after the announcement day ($t=0$). *CAARs* measure the returns for an equally weighted portfolio consisting of bidding companies' shares bought at the beginning of the event-window and held until the end. As can be seen in panel B of Table III, *CAARs* are negative and statistically significant for all the event-windows calculated before and after the announcement which is an implication that acquirers do not perform well either shortly before or shortly after the takeover. The evaluation, however, of the long-run impact of acquisitions on bidder-shareholder wealth (before and after), which is beyond the scope of this work, should be based on improved methods for testing and calculating long-run abnormal returns [Lyon, Barber, and Tsai (1999), and Mitchell and Stafford (2000)].

B. Cross-Sectional Analysis

B.1. Motivation

In order to obtain a better insight of the impact of board characteristics on the changes in bidder-shareholder wealth, during the announcement of a takeover, a cross-sectional analysis will follow. Several studies examine the issue of the determinants of the abnormal returns among which are the studies from Asquith, Bruner, and Mullins (1983), Travlos (1983), Kaufman (1988), Servaes(1991), Eckbo and Thorburn(2000), and Kiyamaz and Mukherjee (2000). The main findings from these studies is that the size of the target relative to the

bidder, the method of payment and the hostility of the bid are some of the most important variables explaining the wealth effects of a takeover. Variables are grouped into three broad categories: variables concerning board characteristics of the bidder and target, variables concerning the bid characteristics, and variables concerning firm characteristics. The last two are the control variables. In both models estimated in this section we use *CAARs* for days (-1,1) as our dependent variable, since only for this period *CAARs* are statistically significant in all three days consecutively. Results are presented in Table IV (Appendix 1 provides a delineate analysis of how each variable used in this section is defined and/or measured).

B.2. Group One: Board Characteristics of Bidders and Targets

Percentage of Non-Executive Directors: This variable measures the percentage of non-executive directors in the board. For the bidding company we denote this variable as *PNEB* and for the target company as *PNET*. As already explained, non-executive directors are likely to be more objective in evaluating the costs and benefits of a proposed acquisition than executive directors since they are perceived to be independent. It is hypothesised however that there should be an optimum level of independent directors in the board beyond which executive directors are underrated, resulting in a loss of valuable information offered by them which leads to a loss of managerial quality. The coefficient estimate for *PNEB* is positive as expected but statistically significant only at 10% in model 1 whereas in model 2 coefficient estimates become statistically significant at 5%. Model 2 suggests that the optimum level of non-executives is 48 percent and therefore our results are consistent with hypothesis 1. For low levels of *PNEB* the market reacts positively rewarding the existence of non-executives in the board. The market reacts more favourably as the percentage of non-executives increases but after a certain level (over 48%) it reacts negatively to the announcement of bids from such boards. Although this finding reinforces the view of the Hampel committee which suggests that “...it is difficult for them (non-executives) to be effective if they make up less than one third of the board”⁸, it also suggests that there should be an upper limit as to how many non-executives should serve the board.

Coefficient estimate for *PNET* is positive but statistically insignificant in model 1 whereas in model 2 *PNET* and its square term become statistically significant suggesting a U-shape relationship with *CAARs* and therefore hypothesis 2 is supported. Estimated coefficients suggest that for low levels of non-executive directors in the target’s board bidder-shareholders react unfavourably at the announcement of the acquisition, whereas as the percentage increases over 48% (according to model 2) the announcement of the bid seems to be good news. If

we accept the view that bidder-shareholders associate managerial quality with the percentage of non-executive directors then a possible explanation might be that they expect that managerial quality at the target's board will be higher for certain levels of *PNET* and therefore it is more likely that target directors will negotiate the bid in such a way as to absorb most of the benefits created through the acquisition. As *PNET* increases beyond 48 percent managerial quality decreases and therefore most of the benefits of the acquisition will be left to the bidder.

Stock Ownership: This is the proportion of the total ordinary share capital issued by the company and held by executive (*EOSB*) and/or non-executive (*NEOSB*) directors for the bidder as well as executive (*EOST*) and/or non-executive (*NEOST*) directors for the target. Not all coefficient estimates have the expected sign and only *EOST*, in model 1, is statistically significant. Neither hypothesis 1 nor hypothesis 2 is supported from our results. Instead we provide evidence of a positive linear relationship between bidder-shareholder wealth and the stock ownership of the executive directors in the target's board. A possible explanation for our result is given by O'Sullivan and Wong, (1998), who state that companies where executive directors own a significant proportion of equity are less likely to contest a takeover bid, because in targets where management possess a significant proportion of equity, bidders obtain their approval before they launch a bid.

Other Directorships Held by Non-Executives: This is the average number of extra directorships held by non-executive directors of the bidding company (*OTHB*) or the target company (*OTHT*) in addition to the seat held on the bidding or targeting company's board respectively. The estimated coefficient for *OTHB* in model 1 is insignificantly positive whereas the coefficient estimate for *OTHT* is significantly negative. In model 2, the coefficient estimate for *OTHB*² has the expected negative sign but is statistically insignificant whereas the coefficient estimate for *OTHT*² is negative and statistically significant at 10% level. Although insignificant our results for *OTHB* support the proposed non-linear relationship of hypothesis 1. Coefficient estimates in models 1 and 2 do not support hypothesis 2, but rather support a significant negative linear relationship between bidder-shareholders wealth and *OTHT*. This result reinforces the view that extra directorships in the target board increase the company's managerial quality and therefore it is more likely that target-shareholders will absorb most of the benefits that might be created through the acquisition.

Board Size: This is the number of the bidders' board members (*BSB*) and targets' board members (*BST*) respectively. As can be seen in Table IV, coefficient estimates for both *BSB* and *BST* are statistically insignificant in model 1 whereas in model 2 they become statistically significant for *BST*. Although insignificant, coefficient estimates for *BSB* (model 2) support the proposed non-linear relationship. The board size of the target, however, seems to be more important for bidder-shareholders than the board size of their own company since coefficient estimates are statistically significant in both models. Coefficient estimates for *BST* in model 2 are statistically significant suggesting an inverse U shape relation between *CAARs* and *BST* and therefore hypothesis 2 is supported. The optimum level of directors in the target's board is 7, which is equal to the average number of directors serving target companies included in our sample. A possible explanation for this might be the fact that larger boards are less effective [Yrmack, (1996)] because the benefits from increased monitoring through larger boards are outweighed by problems associated with informational asymmetries [Conyon and Peck, (1998)] and therefore the possibility of the management of the company being problematic is higher. Under these circumstances bidder-shareholders react unfavourably to big, and probably, troublesome management teams.

B.3. Group Two: Characteristics of the Bid

Ratio of Target to Bidder (RTB): This variable measures the relative size of the target to the bidder and it is the ratio of the market value of the target company to the market value of the bidding company. When a bidder is relatively large in comparison with the target then the bidding company is more flexible with the bid price in the sense that it might offer a higher bid price to the target even if it isn't worth it. On the other hand when a target is relatively large in comparison with the bidder, there is not much flexibility for high bid premiums and it is more likely that the bid will proxy the real value of the target. In addition to that the higher the relative size of the target to the bidder, the more important is the acquisition for the bidder and therefore both shareholders and analysts will scrutinise the bid in much more detail revealing any unnecessary bid premium. Therefore a positive relationship between the relative size of the two companies and the bidder-shareholder gain should exist. Franks and Harris (1989) use *RTB* as an explanatory variable for targets' shareholders wealth but they provide negative but statistically insignificant evidence for the relationship of the two variables. As can be seen in Table IV, the *RTB* coefficient is positive and statistically significant. This result suggests that the bigger the relative size of target is to that of the bidder, the higher the gains from the acquisition are, which is in accord with our expectations.

Hostile Bid (HOST): this is a dummy variable for hostile bids. It takes the value of 1 when the bid is hostile, and 0 otherwise. This is a control variable and tests whether acquirers who take no approval from the target's board of directors about their bid tend to decrease their shareholders' gains. Therefore the impact of *HOST* on shareholder gains should be negative, since resistance of the bid implies an increase of the bid price that is paid to the target until the acquiring company obtains no excess returns or in the worst situation failure of the acquisition. In our case, however, we would expect no significant impact on bidder-shareholder wealth since it is unlikely that the target's board will oppose or consent to the bid from the first day of the announcement or the day after. As can be seen in Table IV, however, both models return negative and statistically significant coefficients for the *HOST* variable. A hostile takeover therefore decreases shareholder wealth by about 2.2% (average of the two models).

Operations of the Bidder and Target (OPER): this is a dummy variable (control variable), which takes the value of 1 if the two companies, bidder and target, have the same operations and 0 otherwise. Mergers of two companies with the same operations would give higher returns because of the operational synergies that arise and lead to higher monopolistic power in the market for the new company. Furthermore, according to financial theory, diversification at the corporate level is redundant because in perfect capital markets investors can directly derive the gains of such diversification by holding a diversified portfolio. Although the coefficient estimates for *OPER* in both models are statistically insignificant, they have the expected impact on *CAARs*.

Bid Settlement (BIDSET): this is also a dummy variable (control variable), which takes the value of 1 if the bid was financed entirely by cash and 0 otherwise. Earlier studies of Frank and Harris (1986b) and Frank, Harris, and Mayers (1988) have shown that the method of financing an acquisition also influences its outcome. Information and agency models can explain the difference in the share returns between cash-financed and equity-financed acquisitions. According to Myers and Majluf (1984) information asymmetries about the value of targets discourage acquisitions, whereas information asymmetry about the value of the bidder encourages the use of cash finance. Therefore if acquirers are better informed about the value of their own equity and mis-valuations are revealed only after the acquisition, the acquirer has an incentive to use cash during the periods of under-valuations. Thus the use of equity conveys "bad news" and therefore decreases in share returns, whereas the use of cash conveys "good news" and therefore increases in share returns. Evidence from Franks, Harris, and Mayer's work (1988) suggests that neither cash nor equity acquisitions displayed significant abnormal returns to bidder

shareholders in the month of an acquisition. In this study the means of payment were discriminated into entirely cash-financed acquisitions and non-entirely cash-financed acquisitions (e.g. all equity, equity and cash, bonds, etc.). Estimated coefficient of *BIDSET*, although insignificant, suggests a positive impact on *CAAR* in both models as expected, which means that cash-financed acquisitions have a positive impact on the shareholders' wealth.

B.4. Group Three: Characteristics of the Firm

Total Sales: This variable measures the total sales of the bidder (*TSB*). It is used as a proxy measure for the size of the company since according to Fama and French (1993) size is related to profitability. As they mention, recessions may depress prolonged earnings for small firms. In a similar line of thought Cosh, Hughes, Lee and Singh (1989) find that size is the most persistently successful discriminator between the living and the dead, and size and share return as the most successful between the latter and their killers. Size along with firm growth are also related to executive remuneration and board changes. According to Cosh and Hughes (1997) size reduces the probability of the CEO being sacked. As can be seen in Table IV, the *TSB* variable has very little impact on shareholder wealth but is positive and statistically significant in model 2 in line to our expectations.

Market to Book Value (MTBV): Market to Book Value is the fraction of the market value 60 days before the announcement to the most recently publicly available book value of the bidder. High levels of *MTBV* might be the cause of two effects: high growth and under-investment. According to our estimations presented in Table IV, *MTBV* has a very small, negative impact on shareholder wealth, which is around -0.03% (average of two models). A possible explanation is that bidders with high levels of *MTBV* extrapolate their past performance (Rau and Vermaelen, 1998).

Capital Gearing⁹ (CGB): Bidders with high levels of capital gearing experience an increase in their shareholders' wealth by almost 0.2% (average of two models). This increase is statistically significant in the second model. The result obtained is not in accord with the one expected since bidders with high levels of capital gearing are more likely to pay by means other than cash, e.g. share exchange. As already explained, the use of means other than cash conveys bad news to the market and therefore a decrease to the bidder-shareholder wealth. A possible explanation for this result might be that shareholders of bidders with high leverage react positively because they believe that the ability of their company to serve its debt improves after the acquisition and at the same time their debt capacity may improve.

Table IV. *Cross-sectional regression results*

This table presents the cross-sectional regression results for the 185 UK sample takeovers during the period 1990 – 1997 based on the following model:

$$CAAR_{(-1,1)} = f(\text{Bidder's and targets' board characteristics, bid characteristics, firm characteristics})$$

We present the results for two models; in model 1 we use only the levels of the dependent variables, whereas in model 2 we use the square term for each of our explanatory variables. Data regarding the deals have been obtained from Acquisitions Monthly. Data regarding board characteristics were collected from the Price Waterhouse Corporate Register. Data was obtained from the bi-annual volumes for the years Sept 1989 to Sept 1994 and from the quarterly volumes for the years 1995 onwards. Financial services and utility firms have been excluded from our analysis. (In parentheses we provide the p-values for the significance of the estimated coefficients).

<i>Variables</i>	<i>Model 1</i>		<i>Model 2</i>	
<i>Constant term (C)</i>	-0.089	(0.01)**	-0.242	(0.00)***
<i>A. Board Characteristics</i>				
<i>A1. Acquirer</i>				
<i>Board Size –Number- (BSB)</i>	0.003	(0.18)	0.012	(0.11)
<i>Board Size –Square Number- (BSB²)</i>			-0.001	(0.12)
<i>% Non Executives (PNEB)</i>	0.072	(0.09)*	0.341	(0.03)**
<i>% Non Executives –square- (PNEB²)</i>			-0.358	(0.05)*
<i>Executives % Stock Ownership (EOSB)</i>	0.043	(0.32)	0.186	(0.16)
<i>Executives % Stock Ownership –square- (EOSB²)</i>			-0.253	(0.18)
<i>Non Executives % Stock Ownership (NEOSB)</i>	-0.066	(0.44)	0.258	(0.20)
<i>Non Executives % Stock Ownership –square- (NEOSB²)</i>			-0.762	(0.17)
<i>Other Directorships (OTHB)</i>	0.005	(0.25)	0.016	(0.25)
<i>Other Directorships –square- (OTHB²)</i>			-0.002	(0.38)
<i>A2. Target</i>				
<i>Board Size –Number- (BST)</i>	-0.001	(0.57)	0.019	(0.02)**
<i>Board Size –Square Number (BST²)</i>			-0.001	(0.00)***
<i>% Non Executives (PNET)</i>	0.031	(0.24)	-0.130	(0.09)*
<i>% Non Executives –square- (PNET²)</i>			0.136	(0.06)*
<i>Executives % Stock Ownership (EOST)</i>	0.063	(0.05)*	0.087	(0.43)
<i>Executives % Stock Ownership –square- (EOST²)</i>			-0.059	(0.73)
<i>Non Executives % Stock Ownership (NEOST)</i>	0.005	(0.90)	0.021	(0.89)
<i>Non Executives % Stock Ownership –square- (NEOST²)</i>			-0.031	(0.90)
<i>Other Directorships (OTHT)</i>	-0.013	(0.02)**	0.012	(0.29)
<i>Other Directorships –square- (OTHT²)</i>			-0.005	(0.06)*

B. Bid Characteristics				
<i>Ratio of Target Market Value to Bidder Market Value (RTB)</i>	0.031	(0.08)*	0.034	(0.04)**
<i>Bid Settlement [Dummy = 1 if bid is financed entirely by cash- (BIDSET)]</i>	0.008	(0.56)	0.014	(0.18)
<i>Operations [Dummy = 1 if the two companies have the same operations- (OPER)]</i>	0.010	(0.45)	0.019	(0.18)
<i>Hostile -Dummy Variable, equals 1 if bid is hostile- (HOST)</i>	-0.022	(0.08)*	-0.023	(0.10)
C. Firm Characteristics				
<i>Capital Gearing (CG)</i>	0.001	(0.41)	0.003	(0.02)**
<i>Market to Book Value (MTBV)</i>	-0.001	(0.38)	-0.001	(0.50)
<i>Total Sales (TSB)</i>	0.001	(0.30)	0.001	(0.08)*
Diagnostic Tests				
<i>Number of Observations</i>		174		174
<i>R-square</i>		0.29		0.44
<i>R-square (Adjusted)</i>		0.16		0.26
<i>F-statistic (probability)</i>	2.29	(0.00)***	2.49	(0.00)***

, **, * Significant at the 10%, 5% and 1% level respectively.*

IV. Conclusions

In this study we investigate whether board characteristics of both bidder and target are important in explaining bidder-shareholder wealth changes around the announcement of a takeover. The major advancement of this study was to examine whether there is a cross-relationship among bidder-shareholder wealth and the characteristics of the target-board as well as to examine the non-linearity of this relationship. Controlling for other relevant factors we provide evidence that certain board characteristics of both bidder and target are important and non-linearly related to bidder-shareholder wealth as hypothesised but more importantly we provide evidence that bidder-shareholders wealth depends more on target's board characteristics rather than on their own company's board.

More specifically, as already explained: 1) the percentage of non-executive directors (concave quadratic relationship), 2) the number of directors (convex quadratic relationship), 3) the number of extra seats held by non-executives (negative linear relationship), and 4) the stock ownership of the executive directors (positive linear relationship) serving the target's board are the characteristics found to be statistically significant in explaining changes in bidder-shareholder wealth during the three day-period around the announcement (-1,1). From the bidder's board only the percentage of non-executive directors (convex quadratic relationship) serving on the board is found to be statistically significant.

In addition to the above, our results indicate that the announcement of an acquisition in the UK was followed by statistically significant negative abnormal returns. Statistically negative abnormal returns were also reported ten, six, and one day(s) before the announcement of the acquisition, suggesting leakage of information before the formal announcement of the event. Although beyond the scope of this work, the market seems not to be efficient, at least in its strong form.

Control variables like the bid settlement and the operations of bidder and target do not seem to be important in explaining abnormal returns during the three-day event period of the announcement of a takeover in the UK during the period 1990-1997. Hostility of the bid (contrary to what is expected) and the relative size of the target to bidder, however, seem to be important in explaining the reaction of bidder-shareholders during the announcement of the takeover.

Two conclusions can be drawn from this work. Firstly, the fact that the target's board characteristics are more important for bidder-shareholders. This is a rational conclusion that shouldn't be neglected by researchers and market analysts. The fact that bidder-shareholders do not consider stock ownership, board size, and other directorships held by non-executives important in evaluating the announcement of the bid does not imply that these are not important or that they are not correlated with managerial quality. What it implies though is that if bidder-shareholders hold shares of their company at the time of the announcement (excluding those who hold shares for speculation reasons) it means that they approve the quality of the management team according to their individual standards (assuming that managerial quality is related with firm performance) and therefore are happy with the characteristics of the bid. However, they need an indicator of managerial quality that relates to the instant decisions of the board, like the decision for a corporate combination, and this indicator seems to be the percentage of non-executive directors. On the other hand bidder-shareholders are not very well acquainted with the managerial qualities of the target and therefore they evaluate almost every possible information they can about the target's board in order to decide about their reaction. It has to be remembered, however, that although the target's board characteristics have a clear effect on bidder-shareholder's wealth, the relationships supported by our sample are not homogeneous in nature (possible reasons are discussed in the previous section).

Secondly, our results do not support the view that independent boards are more likely to create benefits for their shareholders during the acquisition process. This conclusion is reinforced by the fact that the optimum level of non-

executives for both bidder and target firms is 48 percent, which is a grey area and one cannot say with certainty whether dependent or independent boards are more efficient. Our results suggest that both executive and non-executive directors are very important in a company's board and should hold an equal number of seats. In absolute terms, however, executives should be marginally more. This result stresses the need for more research on whether "dependent" boards are more efficient than "independent" ones, at least in the UK. Any inference on executives and non-executive directors, however, must be treated with some caution. Most of the UK corporations, according to Cosh and Hughes (1997) are mainly dominated by executives and the majority of non-executives that form half of the board are in fact not independent ("drawn from the ranks of past or present CEOs and executives of other larger companies, or former executives of the company itself").

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Appendix - Variable definitions

The sample used in this study includes 185 tender offers during the period 1990 – 1997. Companies for which data was not available for board, deal or firm characteristics have been excluded from the sample. Moreover, companies where either the bidder or the target was a foreign firm were eliminated from the sample. The sample includes only UK public companies.

A. Board characteristics

All data related with board characteristics was collected from the ‘Price Waterhouse Corporate Register’. Data was obtained from the bi-annual volumes for the years from September 1989 to September 1994 and from the quarterly volumes for the years 1995 onwards.

A1. Percentage of Non-executives (PNEB, PNET)

This variable measures the proportion of non-executive (outside) directors represented on the board. The ‘Price Waterhouse Corporate Register’ lists separately the names of executive and non-executive directors. This variable is constructed by adding the number of non-executives divided by the total number of directors on the board (executives and non executives). The squared terms, $PNEB^2$ and $PNET^2$, are also included to examine non-linearities in the relation under consideration.

A2. Other directorships (OTHB, OTHT)

This variable measures the average number of additional directorships held by non-executive directors. For every acquisition we find the names of the non-executive directors of both the acquirer and the acquired companies on the ‘Price Waterhouse Corporate Register’ (on the volume that is closest to the announcement date). We then use the "Directors and Officers" section of the ‘Price Waterhouse Corporate Register’ that lists the directorships of each director, and we find how many additional directorships are held by the non-executive directors. Finally to obtain the average number of additional directorships we add the additional directorships of all non-executives in a particular board divided by the total number of non-executive directors. The squared terms, $OTHB^2$ and $OTHT^2$ are also included to examine non-linearities in the relation under consideration.

A3. Executives % stock ownership (EOSB, EOST)

This variable measures the percentage of the total number of ordinary shares held by executive (inside) directors. To construct this variable for every acquisition we find the acquiring company on the ‘Price Waterhouse Corporate Register’ (on the volume that is closest to the announcement date) and we add the ordinary shares held by executives divided by the total number of issued

ordinary shares. The square terms, $EOSB^2$ and $EOST^2$, are also included in the model to capture non-linearities in the CAR-ownership relation.

A4. Non-executives % stock ownership (NEOSB, NEOST)

This variable measures the percentage of the total number of ordinary shares held by non executive (outside) directors. To construct this variable for every acquisition we find the acquiring company on the ‘Price Waterhouse Corporate Register’ (on the volume that is closest to the announcement date) and we add the ordinary shares held by non-executives divided by the total number of issued ordinary shares. The square terms, $NEOSB^2$ and $NEOST^2$, are also included in the model to capture non-linearities in the CAR-ownership relation.

A5. Board size

This variable measures the total number of directors in the board (log-transformed). For every acquisition we find the acquiring company on the ‘Price Waterhouse Corporate Register’ (on the volume that is closest to the announcement date) and we add all executives and non-executives to obtain the total number of directors on the board.

B. Bid characteristics

All data related with bid characteristics was collected from the ‘Acquisitions Monthly’.

B1. Bid settlement (BIDSET)

This is a dummy variable equal to 1 if the bid settlement is entirely made in cash and 0 otherwise. ‘Acquisitions Monthly’ includes a synopsis for every acquisition that describes the general terms of the deal. These terms include the exchange ratio, the price paid for every target share acquired as well as the medium of payment. We consider cash financed acquisitions, those acquisitions in which the acquirer has paid only cash for the acquisition and no shares were issued for this purpose.

B2. Same operations (OPER)

This is a dummy variable equal to 1 when the acquirer and the target are in the same industry and 0 otherwise. ‘Acquisitions Monthly’ describes the type of their operations separately for the target and the bidder (this industry classification is based on the US 92 sic classification). Based on this description we define an acquisition as a related acquisition if both the bidder and the target have similar industry classification, otherwise the deal is classified as unrelated.

B3. Hostile bid (HOST)

This is a dummy variable equal to 1 when the bid is hostile and 0 otherwise. A bid is defined as hostile when the initial reaction of the target’s board is to recommend their shareholders to reject the offer. We consider a bid ‘hostile’ if ‘Acquisitions Monthly’ reports that the target firm has resisted the offer. A bid is considered as non-hostile or ‘friendly’ if it is reported in the ‘Acquisitions

Monthly' that the target's board has accepted the offer. If the bid was hostile, but at last was completed, it is considered as 'hostile successful'.

B3. Ratio of target-to-bidder market value (RTB)

This variable is measured as the ratio of the target's market value of equity to the bidder's at the announcement date. Data was collected from Datastream using program code 900B and accounting item MV.

C. Firm characteristics

Data for share returns and accounting items was collected from Datastream.

C1. Firm size (TSB)

We approximate firm size by the logarithm of bidder's total sales at the end of the year preceding the event year. Data was collected from Datastream using program code 900B and mnemonic 104.

C2. Market to book value of equity (MTBV)

This variable is measured as the market value of equity 60 days before the bid announcement day divided by the book value of equity of the acquirer at the end of the year preceding the event year. It proxies the growth opportunities of the bidding firm and the quality of its management. Data was collected from Datastream using program code 900B and accounting item MTBV.

C3. Capital gearing (in book values) (CG)

This variable is defined as total loans (total debt) divided by the sum of equity capital plus reserves minus total intangibles at the end of the year preceding the event year. Data was collected from Datastream using program code 900B and mnemonic 731.

Notes

- ¹ It has a mixture of executive and non-executive directors only.
- ² For takeovers see: Morck, Shleifer and Vishny (1989), Martin and McConnell (1991); Ikenberry and Lakonishok (1993); for board composition see: Grossman and Hart (1980), Manne (1965), Jensen (1988).
- ³ The term “Directors” refers to both executive and non-executive directors.
- ⁴ Utility and financial services firms are heavily regulated and therefore this might introduce biases in our analysis.
- ⁵ The share return is derived from the Datastream Return Index (Datatype “RI”)
- ⁶ In order to detect any biases introduced in the analysis because of a shift in the values of the market model parameters after the event, we have estimated α and β for the period $t=+60$ to $t=+360$ and no statistically significant shift has been observed.
- ⁷ The bid premium is collected from *Acquisitions Monthly* and is calculated as follows:
Bid Premium one month before the announcement = (Bid Price per Share/Share Price of the Target one Month before Announcement)
Bid Premium one day before the announcement = (Bid Price per Share/Share Price of the Target one Day before Announcement)
- ⁸ Hampel Report, Paragraph 3.14 (II Board Composition, A Balance), 1995.
- ⁹ $CGB = \text{Total Loans (Debts)} / (\text{Equity Capital} + \text{Reserves} - \text{Total Intangibles})$