Governance mandates, outside directors, and acquirer performance

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Abstract

We use hand-collected board data around the issuance of two distinct government-led board structure mandates in the U.K. to establish the effect of outside directors on acquirer performance. Increases in outside director representation are associated with better acquirer returns in deals involving listed targets, but not when the target is private. These results are consistent with greater outside director reputational exposure when publicity is high. While we do not advocate mandated board structures, our evidence suggests that the particular diktats we examine were associated with improved acquirer performance in public firm takeovers. We present corroborating evidence from the U.S. around a similar reform period.

JEL classification: G14; G34; G38

Keywords: Board Structures; Mergers; Corporate Governance

1. Introduction

It is well known that mergers and acquisitions (M&A) are plagued by substantial agency conflicts between shareholders and management. The representation of outside directors on the corporate board is one mechanism that might ameliorate agency concerns in M&A. Given that outside directors are independent from management, they should be *more* willing to face up to the CEO to safeguard shareholder interests during key business decisions such as M&A, which, if poorly conceived, could lower shareholder value, and tarnish outside directors reputation. The global trend toward outsider-dominated boards, over the past 20 years and beyond, which in large part has been driven by government policy, buttresses belief that more outside directors on the board will culminate in higher performance through better board decisions (Dahya and McConnell (2007); and Duchin, Matsusaka, and Ozbas (2010)).

In contrast to the positive stance adopted by policy-makers on independent boards, the results from studies that scrutinize the link between the fraction of outsiders on the board and acquirer performance does not unanimously support this view. For example, Byrd and Hickman (1992) document a positive relationship between the fraction of outsiders on the board and acquirer performance, while more recently Masulis, Wang, and Xie (2007) fail to report any such relationship, and Bauguess and Stegemoller (2008) find higher acquirer stock returns when insiders dominate the corporate board. In this paper we attempt to resolve this conflict by exploiting an institutional setting that allows us to improve upon research design, and by recognizing that outside directors may not be equally important in all types of deals.

A leading explanation for the conflicting findings is that firm-level governance, and board structures in particular, are endogenous (Coles, Lemmon, and Meschke (2012) and Wintoki, Linck, and Netter (2012)). One potential endogeneity concern in our context is an omitted variable that

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may be correlated with both better acquisition performance and higher outside director representation. For instance, a high-quality firm that is focused on shareholder value creation may initiate better deals and, at the same time, be a more desirable company for outside directors to associate with. Alternatively, endogeneity may arise due to reverse causality, whereby firms that are good acquirers are better able to attract outside directors. In both cases, absent an exogenous source of variation in board structure the correlation between the fraction of outside directors on the board and acquirer performance cannot be interpreted as entirely causal.[1]

A second potential explanation for the mixed results is that the effect, if any, of changing the representation of outside directors on board decisions and corporate performance may be different across deals. Fama (1980) and Fama and Jensen (1983) argue that the separation of executive decision making and control implies that outside directors have an incentive to perform their oversight duties, and not collude with managers to expropriate investors. Given a well-functioning market for outside directors, a failure to monitor will imply a loss in reputational capital for ineffective outside directors. Transplanting the above intuition to the M&A setting reveals a novel testable prediction pertaining to the effectiveness of outside directors in takeover situations, namely, acquisitions of public versus private targets. A loss to directors' reputational capital is likely to be more apparent in acquisitions of public targets, which garner greater scrutiny from the media than deals involving private targets.[2] Along these lines, Golubov, Petmezas, and Travlos (2012) show that investment bank reputation leads to higher acquirer returns in public deals only,

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[1] Of course, another justification for the ambiguous results could be that board composition simply does not matter, which flies in the face of regulatory moves around the world calling for more outside directors on corporate boards (Romano (2005)). This view is not as outlandish as it may seem, since the classic agency view that board independence positively impacts corporate performance has reported mixed findings; see Adams, Hermalin and Weisbach (2010) for a review.

[2] Our later analysis unambiguously confirms that public deals engender significantly greater publicity and scrutiny from the press.

consistent with greater advisor reputational exposure. Overall, reputational capital theory of board structure invites inspection of the effectiveness of outside directors *conditional* on the target firm listing status, with the key prediction being that outside directors should be more valuable to acquirers in the takeover of public targets.[3]

We test this prediction in the context of U.K. takeovers over two time periods when government-led mandates exogenously pushed British firms to elevate the representation of outside directors on their boards. Specifically, we study the link between board composition and performance of U.K. acquirers targeting public and private firms over 1989 through 1996, which is centered on the issuance of the Cadbury Report in December 1992. The key recommendations contained in the Cadbury Code were that corporate boards of U.K. listed firms comprise at least three outside directors, and the role of the chief executive and chairman be held by two separate individuals. Our second testing ground is a period surrounding the follow-up Higgs Report issued in 2003, mandating a further increase in outside director representation.

An additional advantage of using the U.K. takeover market in our study is the virtual absence of anti-takeover provisions in British firms (Black and Coffee (1994)). Consequently, greater emphasis is levelled at intra-firm governance arrangements such as the structure of the corporate board because firms cannot adopt anti-takeover provisions that insulate them from the discipline of the takeover market. In addition, there are no staggered board provisions that might entrench board members in the U.K. Therefore, the monitoring role of outside directors in publicly-traded U.K. firms can be more important than in their U.S. counterparts.[4]

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[3] A similar prediction on the conditioning effect of target firm listing status on the relationship between outside directors and acquirer performance can be derived from the literature on director information acquisition costs (Raheja (2005), Adams and Ferreira (2007), Harris and Raviv (2008), and Duchin, Matsusaka, and Ozbas (2010)). We discuss this alternative explanation in Section 5.

[4] Michael Jensen substantiates this belief in his comments that "in the U.K. there is an attitude amongst board members to take the monitoring and control function way more serious than U.S. directors do" Walkling (2010: p.5) and that

In the primary analysis, we estimate regressions in which the dependent variable is acquirer abnormal stock returns[5] and the key independent variables are the fraction of outsiders on the board or an indicator variable for overall Cadbury compliance with respect to the two key Cadbury Committee recommendations, controlling for various acquirer- and deal-specific characteristics. The results reveal that there is a positive correlation between Cadbury compliance and acquirer performance when the target is a public firm. Moreover, this result is driven by the fraction of outside directors on the board. In terms of economic magnitude, a one standard deviation increase in the fraction of outside directors on the board (0.18) is associated with 1.6 percentage points higher acquirer returns in public firm acquisitions.[6] This is a sizeable effect, considering that the average acquirer return in public firm takeovers is -0.7%. We also show that deal publicity, as measured by media attention, indeed explains part of the differential effect of outside director representation on acquirer returns between public and private firm acquisitions.

We find corroborating results when we isolate the exogenous component of the variation in board structure by instrumenting the fraction of outside directors with the post-Cadbury period. Additionally, a modified difference-in-differences analysis reveals that acquirer performance is higher for the set of firms that came into compliance with the new board standard and increased the number of outside directors on the board, or in those firms that always maintained a large representation of outsiders on the board. Finally, greater overall synergies, as opposed to

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"the function of a board member in the U.S. is basically to counsel and support the CEO. In the U.K., by contrast, there's a deep sense of obligation to exercise a control function, to hold management accountable" Walkling (2008: p.34).

[5] We will show that the results are robust to using operating performance improvements following acquisitions instead of acquirer announcement period returns.

[6] For a median board size of 7, such an increase in the fraction of outside directors is roughly equivalent to replacing one inside director with an outsider. Alternatively, this is equivalent to raising outside director representation from one third of board members to one half.

appropriating a larger share of the synergies, appears to be the source of improved acquirer performance.[7]

A plausible question that might be asked of our analysis is whether our finding is unique, or whether governance mandates that call for more outside directors, more generally, are associated with higher acquirer performance. Fortunately, the U.K. market allows us to perform such a test surrounding the issuance of the Higgs Report in 2003. Thus, we mimic all the aforementioned analyses conducted around the issuance of the Cadbury Report to a more recent 8-year time period centered on the issuance of the Higgs Report in 2003. We find that U.K. firms that met the Higgs criteria and reconfigured their corporate boards to comprise at least half of outside directors are also associated with higher acquirer returns when targeting publicly traded firms. However, the magnitude of the response appears to have dissipated over time, which is consistent with there being an optimal firm-specific fraction of outside directors on the board – with the initial reform significantly narrowing the sub-optimality gap, if any, and subsequent reforms having less of an impact.

A natural question that arises from our analysis is which of the research design innovations allows us to register a positive effect of outside directors on acquirer performance, and whether our results are expected to hold outside of the U.K. setting. To that end, we repeat our analysis on the U.S. takeover market over a period surrounding a similar board structure reform in the form of the NYSE and NASDAQ listing requirements in response to the issuance of the Sarbanes-Oxley Act of 2002. The results from this analysis of U.S. acquisitions corroborate our key findings for

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[7] To the extent that the provisions of the Cadbury Report applied to all listed firms, the boards of listed target firms should also be increasing the fraction of outsiders on their boards. This should work *against* finding improvements in acquirer performance, because a better functioning target firm's board should be extracting higher prices from acquirers, negating any benefits from improved acquirer boards. We discuss this issue further in Section 5.

U.K. takeovers and confirm the importance of conditioning the effect of outside director representation on target firm listing status.

We are not among the forerunners to scrutinize changes in corporate performance and governance arrangements in response to government regulation. That privilege goes to Kole and Lehn (1997, 1999) who study the impact of airline deregulation on equity ownership and CEO compensation. Other more recent studies include Dahya, McConnell, and Travlos (2002), Coles and Hoi (2003), Dahya and McConnell (2007), Duchin, Matsusaka, and Ozbas (2010), and Ahern and Dittmar (2012). However, a novel feature of our study is that the U.K. has witnessed the publication of *multiple* government-led mandates coercing firms to add outsiders to their boards. This provides a unique opportunity to gauge if market forces alone are sufficient to propel companies to *naturally* gravitate to their optimal fraction of outside directors on the board, or whether constant calls from government-led regulation are needed.[8]

The M&A studies most closely related to ours are Byrd and Hickman (1992), Masulis, Wang, and Xie (2007), and Bauguess and Stegemoller (2008) on corporate governance mechanisms and acquirer performance. Byrd and Hickman (1992), Masulis, Wang, and Xie (2007), and Bauguess and Stegemoller (2008) study the effects of board independence on acquirer returns and report a positive, an insignificant, and a negative relationship, respectively. We reconcile these findings by exploiting government-led board structure mandates to identify the effect of outside directors on acquirer performance and show that it is conditional upon target firm listing status. Our identification strategy here is similar to that in Dahya and McConnell (2007) and Duchin, Matsusaka, and Ozbas (2010) who analyze changes in board composition and

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[8] That is not to say that, ex-ante, we expect government mandates calling for more outside directors to be effective.

corporate performance surrounding corporate governance reforms in the U.K. and U.S., respectively.

The rest of the paper is organized as follows. Section 2 discusses the relevant literature. Section 3 presents the data, methodology, and describes the variables. We present our main results and analysis in Section 4. We discuss alternative explanations in Section 5, and conduct further tests in Section 6. Finally, Section 7 concludes the paper.

2. Prior studies

2.1. Board structure and firm performance

The literature on the relationship between board composition and corporate performance is vast, thus we focus only on the studies that are most closely related to our work. The reader can refer to Bhagat and Black (2002), Gillette, Noe, and Rebello (2003), and Adams, Hermalin, and Weisbach (2010) for excellent surveys on corporate boards and performance. A major take-away from this expanding literature is that board composition does appear to be correlated with performance in the fulfilment of certain discrete board tasks, while the answer is not as clear with respect to overall corporate performance, with the latter being mainly attributed to the endogenous nature of board structure and heterogeneous treatment effects.

As noted by Bhagat and Black (1999), prior research on the relation between board composition and corporate performance generally appears to show that board composition does influence the manner in which corporate boards accomplish discrete tasks, including hiring and firing of the CEO (Weisbach (1988); Borokhovich, Parrino, and Trapani (1996); Dahya, McConnell, and Travlos (2002); Dahya and McConnell (2005)), adoption and usage of anti-takeover provisions (Brickley, Coles, and Terry (1994)), and responding to hostile takeovers (Byrd

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and Hickman (1992); Shivdasani (1993); Kini, Kracaw, and Mian (2004); Cotter, Shivdasani, and Zenner (1997)).

As for overall corporate performance, Baysinger and Butler (1985), Hermalin and Weisbach (1991), Agrawal and Knoeber (2001), and Bhagat and Black (2002) fail to document any relationship between the composition of corporate boards and firm value. Bhagat and Black (2002) note an up-tick in outside directors in firms that experience poor performance.[9] The overarching conclusion from this line of inquiry is that board composition is endogenous (Hermalin and Weisbach (1998); Gillette, Noe, and Rebello (2003); Harris and Raviv (2008); Coles, Lemmon, and Meschke (2012); and Wintoki, Linck, and Netter (2012)).

Studies by Lehn, Patro, and Zhao (2009), Coles, Daniel, and Naveen (2008), Boone et al. (2007), and Linck, Netter, and Yang (2008), report that board composition depends upon certain firm characteristics that support the monitoring and advising roles of the board, such as firm complexity, growth opportunities, private benefits and CEO influence. For example, Lehn, Patro, and Zhao (2009) find inside director representation on the board is negatively related to firm size and growth opportunities. Boone et al. (2007) report that board independence increases with firm complexity, and decreases with CEO influence, as measured by tenure and equity ownership in the firm. Coles, Daniel, and Naveen (2008) find Tobin's Q is positively correlated to the fraction of insiders in complex firms with high R&D budgets, and that firm value increases with the representation of outside directors in large firms and in firms with high leverage. The key takeaway from these studies is that the firm's characteristics appear to push firms toward board structures that meet the firm's monitoring and advisory needs. The empirical evidence cited above is

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[9] Klein (1998) examines the connection between board sub-committee composition and corporate performance and finds that certain sub-committees benefit from the presence of inside, as well as outside directors.

consistent with the theory of board structures advanced by Hermalin and Weisbach (1998), Raheja (2005), Adams and Ferreira (2007), and Harris and Raviv (2008), among others.

Finally, several studies attempt to provide cleaner causal estimates of the effect of outside directors on firm value and performance by taking advantage of improved research designs. Nguyen and Nielsen (2010) study a sample of sudden director deaths and show that firms suddenly losing outside directors experience negative market reaction. Interestingly, using a director fixed effects specification, the authors find that independence has incremental value, i.e. firms in which a director held an outside board member role suffer greater declines in value than firms in which the same director was an insider. In another innovative study, Gillette, Noe, and Rebello (2003) recreate a boardroom-type situation in a controlled experiment, and find that outsider-controlled boards are more likely to adopt institutionally-preferred policies, consistent with the classic agency view.

2.2. Governance mandates as exogenous shocks to board structure

Duchin, Matsusaka, and Ozbas (2010) provide further insight on the connection between the firm's information environment, board composition, and corporate performance. Specifically, they argue that the correlation between corporate performance and the fraction of outside directors on the board should be conditional on the firm's information environment: outside directors are better monitors, but they do not have all the information available to insiders, limiting their effectiveness.[10] The authors use the passage of the Sarbanes-Oxley Act of (2002) as an exogenous shock to board composition to identify the effect. They find that a greater fraction of outside

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[10] The reader can refer to Section 2.3 in Duchin, Matsusaka, and Ozbas (2010) for a simple model providing these empirical predictions.

directors on the corporate board improves the performance of firms when outsiders face a low cost of becoming informed, and hurts the performance of firms when such costs are high.

In many ways, Duchin, Matsusaka, and Ozbas (2010) go beyond Dahya and McConnell (2007) who analyze changes in performance around the adoption of the Cadbury recommendations in the U.K. The latter authors show that firms adopting the Cadbury recommendations exhibit a significant increase in operating performance and a significant positive abnormal return of 0.44% to announcements of outside director appointments. It would appear that government-led mandates in the U.K. and U.S. that propelled firms to greater outside director representation on corporate boards were generally value enhancing (and at least in the U.S., conditional on information acquisition costs to outside directors).

2.3. Board structure and acquirer returns

While studies on board composition and corporate performance have used government-led exogenous changes in board composition to alleviate endogeneity concerns, the same is not true of prior work that scrutinizes board composition and acquirer performance. This might account for the ambiguous results reported in the small number of studies on this topic. For example, Byrd and Hickman (1992) study a sample of 128 US tender offers and find that bidders with independent boards are associated with higher announcement returns. Consistent with this result, Paul (2007) finds that U.S. acquirers with independent boards are less likely to complete acquisitions received poorly by the market, and are more likely to unwind such deals if completed. Masulis, Wang, and Xie (2007), on the other hand, scrutinize acquisitions of both listed and unlisted targets in their analysis of anti-takeover provisions (ATPs) and acquirer returns, and report an insignificant

association between acquirer board independence and announcement returns.[11] And to complete the picture, Bauguess and Stegemoller (2008) focus on a sample of S&P 500 acquirers and show that acquirer returns increase with the level of *inside* directors on the board.

3. Sample, data and methodology

Our sample comprises all completed domestic mergers and acquisitions by U.K. public firms extracted from the Thomson Financial Mergers and Acquisitions Database (SDC) over 1989 through 1996 and 2000 through 2007. As noted at the onset, these two time frames are centered on the issuance of the Cadbury Report in 1992 and the Higgs Report in 2003. An initial trawl of the database identified 6,931 acquisitions over both time frames. Of these, 1,253 were eliminated due to missing deal value and a further 1,408 due to missing method of payment information. Another 461 observations were dropped as they represented non-majority stake acquisitions, leaving 3,809. Of the remaining deals, the requisite stock price data around the merger announcement date from *Datastream* is available for 2,858 transactions. And, finally, smaller deals, below £1 million or those that represented less than 1% of the acquirer's market value, were also excluded. In the aggregate, the final sample includes 2,292 U.K. mergers and acquisitions, of which 925 enter the analysis over 1989 through 1996 and 1,367 that enter the analysis over 2000 through 2007.

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[11] It could be argued that antitakeover provisions render board-level governance less relevant, which might explain the insignificant results on the correlation between board independence and corporate performance. The absence of anti-takeover provisions in U.K. firms allows a cleaner test on the correlation between board composition and acquisition performance.

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3.1. Acquisition sample statistics

Table 1 presents acquirer and deal descriptive statistics for sample firms over 1989 to 1996 around the issuance of the Cadbury Report in Panel A (Columns 1-3). Sample deals are then sorted by target listing status into 134 public (in Columns 4-6) and 791 private target firms (in Columns 7-9). For each sample acquirer we take market value of equity, book value of assets, total long-term debt, earnings before depreciation, interest, and taxes, and industry affiliation from *Datastream*. Analysts following, annual earnings forecasts, and realized earnings are taken from I/B/E/S. We use *Datastream* to extract daily stock returns from two years before to one year after the merger announcement date for each sample firm. Deal-specific information such as deal value, acquirer hostility, payment method, target industry relatedness, and tender offer status are collated from SDC. All pound sterling (£) figures are inflation-adjusted to the price level of 2012 using the U.K. GDP deflator from the Office of National Statistics (ONS).

In Panel A of Table 1, the acquiring firm's mean (median) market value one month prior to the merger announcement is £235.61 million (£81.20 million) and the mean market-to-book ratio for this set of firms is 2.84 in the month prior to the merger announcement. We also report run-up as the acquiring firm's buy-and-hold stock return less the FTSE All-Share Index taken over 200 days before to 2 days before the merger announcement date. The mean (median) run-up for sample acquirers is 10% (4%) over 1989 through 1996. Prior literature has shown that bidder size (Moeller, Schlingemann, and Stulz (2004)), acquirer run-up (Rosen (2006)), and the market-to-book ratio (Dong et al. (2006)) are negatively related to acquirer returns so we include these variables in our multivariate analysis.

Following the method described in Moeller et al. (2007), we estimate a mean acquirer idiosyncratic volatility *(Sigma)* of 0.02 by taking the standard deviation of the acquiring firm's

excess return over a 200-day period (from 205 days to 6 days before the merger announcement). The mean (median) leverage ratio of 0.17 for sample firms is computed by taking acquirer total long-term debt scaled by total assets for the fiscal year ending prior to the announcement. In line with prior work, we control for both idiosyncratic volatility and leverage in the multivariate analyses. Moeller et al. (2007) find a negative coefficient on sigma in deals financed purely by stock. With respect to leverage, Myers and Majluf (1984) argue that financial slack can be beneficial in a world of asymmetric information, while Maloney et al. (1993) show that leverage limits managerial discretion by committing the firm to regular interest and principal payments.

The mean (median) deal value of £33.32 million (£7.48 million) in Panel A is the total consideration paid as reported by SDC. Using this number in the numerator and acquirer market value of equity one month prior to the acquisition announcement date in the denominator, we also measure relative size between the acquirer and target firm. The mean (median) relative size of the deal over this 8-year period is 0.31 (0.09). Closer scrutiny on this statistic reveals that median relative size of the deal is three times larger when the target firm is public than when it is private. Fuller, Netter, and Stegemoller (2002) report that the effect of relative size on bidder returns for a sample of 3,135 U.S. acquisitions over 1990 through 2000 is negative in public deals but positive in private transactions.

Jensen and Ruback (1983) report that tender offers are associated with higher announcement period gains. Panel A in Table 1 shows that tender offers comprise only 13% of all deals and 74% of those involving publicly traded target firms. We identify 1% of deals as "hostile" or "unsolicited" as reported by SDC. The evidence on merger hostility is mixed with Servaes (1991) documenting lower acquirer returns in hostile takeovers and Schwert (2000) unable to confirm this result. Following Travlos (1987) and Masulis et al. (2007), we also partition acquirers by the form

of payment offered to the target, into *all-cash offers* and *stock* offers (either partially or fully financed with stock).[12] Approximately, one quarter of the sample acquirers in Panel A use all cash, while the remaining firms include some form of stock as their mode of payment to the target firm. While Travlos (1987) shows that bidder returns are generally lower when stock is used as a method of payment in public firm acquisitions, Chang (1998) demonstrates that stock deals targeting private companies are associated with higher announcement period stock returns.

There is also disagreement regarding the value of diversification. Earlier papers by Lang and Stulz (1994) and Berger and Ofek (1995) report a diversification discount, while later studies suggest that this discount may be a product of the method (Campa and Kedia (2002)) or the data (Villalonga (2004)) used to assess diversification and value. For completeness, we designate diversifying deals as those in which the 2-digit SIC code of the acquiring firm is different from that of the target firm. Of the 925 sample deals in Panel A, 564 are classified as diversifying.

We now turn our attention to the governance data for acquirers over the 8-year period centered on the issuance of the Cadbury Report in 1992.

[Please Insert Table 1 about Here]

3.2. Cadbury Report and corporate governance data

The Cadbury Committee was appointed by the Conservative Government of the U.K. in May 1991 with a mandate to broadly address the financial aspects of corporate governance. The Committee issued its report, the cornerstone of which was The Code of Best Practice, in December 1992. The key recommendations in the Code pertaining to board composition is that publicly

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[12] Combining stock and partial stock deals into one category is even more relevant in the U.K. setting, given an institutional quirk. That is, M&A regulation in the U.K. contained in the City Takeover Code requires that all stock offers must provide a cash alternative, which renders all-stock financed acquisitions as essentially mixed cash and stock deals.

traded firms have at least three outside directors on the corporate board and the positions of Chief Executive Officer (CEO) and Chairman of the Board (COB) are to be held by two different individuals. While the Code contains recommendations of improvements to other aspects of governance, the key focus clearly is on improving the boards of listed firms to enhance oversight and accountability (as well as the role of auditors with respect to financial reporting). The opening section of the Cadbury report ("The Setting for the Report") states:

The Committee's recommendations are focused on the control and reporting functions of boards, and on the role of auditors. This reflects the Committee's purpose, which was to review those aspects of corporate governance specifically related to financial reporting and accountability. Our proposals do, however, seek to contribute positively to the promotion of good corporate governance as a whole.

Other salient recommendations of the Code were: (i) full disclosure of the remuneration of the chairman and the highest paid director; (ii) shareholder approval of executive director contracts longer than three years; (iii) executive director remuneration to be set by a board committee composed primarily of outsiders; and (iv) establishment of an audit committee, comprised mainly of outside directors, to report on the effectiveness of the company's system of internal control. It is not clear how these other changes could directly lead to improved acquisition performance, other than though general increases in board independence and oversight.

It is evident from the subsequently observed changes in board structure, that board oversight and CEO/Chairman separation were, indeed, the most revolutionary changes. Dahya, McConnell and Travlos (2002) report that the representation of outsiders on the corporate board increased from an average of 35% from four years before (1989-1992) to an average of 46% over four years after (1993-1996) the issuance of the Report in December 1992. The authors also report that the

number of firms splitting the combined CEO/COB position increased by 33.2% (from 63.5% to 84.6%). The mass adoption of the Cadbury mandate represented an exogenous shock that perturbed U.K. corporate board structures over a relatively short time frame assuaging endogeneity concerns. Therefore, we are reasonably convinced that our results (if any) can be attributed to the increased role of outside directors.

For each sample acquirer in the Cadbury Report period we manually collect data on board composition from company annual reports stored at the London Business School Library, Manchester Business School Library, and the British Library. This process reveals data on 744 acquirers, which comprises 80.43% of sample firms over 1989 through 1996 (further scrutiny of all 925 firms reveals no discerning sample selection bias between those acquirers with and without governance data).

Panel A in Table 1 also reports data on board size, the number and fraction of outside directors on the board, and whether the posts of chairman and CEO were combined. A quick inspection of these data reveals a mean board size of seven members of which roughly one third comprise outside directors. The board composition variable of primary interest is the number (and fraction) of outside directors on the board. The Cadbury Code recommended that U.K. corporations maintain at least three outside directors on the board. Thus, we scrutinize the number of outsiders in each firm at the deal announcement to reveal 396 acquirers that complied with this requirement (hereafter, *Outsider Compliance*) and the remaining 348 acquirers did not. The board structure variable of secondary interest is *CEO/Chair Split*. We define *CEO/Chair Split* as an indicator variable that takes the value of 0 if the posts of CEO and COB are combined and 1 when held by two individuals. In our sample, 517 deals involved acquirers that were compliant with this recommendation and the remaining 195 deals involved acquirers that combined the posts of CEO

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and COB. In subsequent analyses, we define overall *Cadbury compliance* if both requirements of the Code are satisfied. This definition yields 318 Cadbury compliant firms, and 426 non-compliant firms.

Table 2 shows acquirer compliance with the two key recommendations of the Cadbury Report over the sample period. The percentage of acquirers meeting the minimum standards increases steadily over time (see also Figure 1). For example, over 1989 through 1992, almost 42% of acquirers had at least 3 outside directors on their corporate boards (Column 4 in Panel A). From 1993 through 1996, the compliance rate increased to 63% – a staggering 50 per cent increase.[13] Columns 4 and 6 in Panel A of Table 2 report the rates of Cadbury compliance and outside director compliance by our sample acquirers. These results mimic those on the general increase in the fraction of outsiders. For example, compliance with the two key recommendations of the Cadbury Report increases from 29% to 54% from before to after publication of the Cadbury Report (see Column 6 in Panel A). Much of this increase is driven by outsider compliance (see column 4 in Panel A). Splitting the acquirers by target firm listing status does not seem to make a difference in the rate of outsiders or overall compliance with Cadbury.

<div align="center">[Please Insert Table 2 and Figure 1 about Here]</div>

3.3. Higgs Report and corporate governance data

The issuance of the Cadbury Report in 1992 spurred what can best be described as corporate governance mania. Since 1992, over 25 countries have issued numerous corporate governance

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[13] This percentage is in line with Dahya and McConnell (2007) who contend that this "sea-change" in board structures in response to the Cadbury mandate is unlikely to be endogenous. Furthermore, the authors show that the issuance of the Cadbury Report had an influence on board structures beyond that explained by the usual determinants of board composition over a relatively short time frame, further easing endogeneity concerns.

reports calling for increased representation of outside directors on corporate boards (including the Sarbanes-Oxley requirements in 2002 which paved the way for the NYSE and NASDAQ to require listed firms to appoint a majority independent board of directors). The U.K. contributed to this move by issuing the Higgs Report in 2003 to further strengthen the representation of outside directors on U.K. corporate boards.

The Higgs Committee was chaired by Sir Derek Higgs, under a Labour Party led-government, and was appointed to review the role and effectiveness of outside directors in U.K. quoted companies. The recommendations of the Higgs Committee were issued in January 2003. A key feature of the report required that outside directors make up at least 50% of the board in U.K. publicly traded companies. The remainder of the Higgs Report is devoted to further issues on the role and effectiveness of outside directors, including recommendations to: (i) improve independence of outside directors; (ii) appoint a senior independent director; and (iii) establish procedures for hiring, training, and remunerating outside directors. Once again, it is evident that the focus of the report is on improved board oversight, with a particular focus on the role of outside directors in board oversight.

In line with the Cadbury guidelines, the Higgs recommendations were not statutory demands. Nonetheless, the recommendations of the Committee were embodied by the London Stock Exchange listing requirements and formed the cornerstone of the Combined Code (on corporate governance for U.K. firms), introducing additional variation in board independence. The guidelines on board composition put forth in the Higgs Report were not as revolutionary as those proposed by the Cadbury Committee, but they did coerce U.K. firms to *modestly* raise the fraction of outside directors on their corporate boards.

We employ the same governance variables we scrutinized around the issuance of the Cadbury Report, though this time the data are collected over 2000 through 2007. Board data for this period are partly available from *Boardex*, but this covers only 50% of our M&A sample. We therefore complement the dataset with additional hand-picked board structure information from companies' annual reports and are able to bring the coverage to 72% of the M&A data. Panel B in Table 2 reports a 2.78 percentage point (or 5.87%) increase in the fraction of outside directors on acquirer boards from 47.32% to 50.10%. Much of this increase is confined to the small set of acquirers that target public firms. For this set, the increase was around 8 percentage points (or 17.36%) from the 4-year period before to after issuance of the Higgs mandate. See also Figure 1 for the graphical illustration of the evolution of board structure during this period (though note that the yearly data are somewhat distorting the overall trend due to the composition of firms making acquisitions in any given year). In the next section, we describe acquisition performance measurement.

3.4. Acquirer returns

The method that we employ to estimate acquisition announcement returns follows Fuller et al. (2002) who estimate abnormal returns using a modified market model. The model employs the following return generating process: $AR_{i,t} = R_{i,t} - R_{m,t}$, where $AR_{i,t}$ is the abnormal stock return of acquirer i for deal announcement day t, $R_{i,t}$ is the observed stock return of acquirer i for the deal announcement day t, and $R_{m,t}$ is the FTSE All-Share Index return for day t (proxying for the market return). We then cumulate abnormal returns over the event window (-1, +1), where 0 is the announcement day in line with Moeller et al. (2004).[14] Brown and Warner (1980) show that

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[14] We also estimate cumulative abnormal returns using longer event windows (-2, +2) and (-5, +5) and find qualitatively similar results.

abnormal return estimation does not improve by adjusting returns for risk over short event windows, nonetheless we do experiment with market-model-adjusted abnormal returns and find similar results.

4. Results and analysis

4.1 Univariate results

Before proceeding with our analysis, we examine deal activity levels and deal characteristics of compliant and non-compliant acquirers (results unreported). We find that compliant and non-compliant exhibit similar levels of acquisitiveness (just under two deals, on average, during the Cadbury period, and just over two deals, on average, during the Higgs period). In terms of deal types (public targets, hostility, tender offers, industry relatedness, stock deals), we find no significant differences between compliant and non-compliant acquirers with the exception of lighter use of stock deals by compliant acquirers during the Higgs period. This suggests that changes in deal activity or deal types are unlikely to explain differences in acquirer returns between compliant and non-compliant acquirers (if any). Nevertheless, we control for these characteristics in the regression analysis below.

We begin our analysis by comparing compliant and non-compliant acquirer returns in univariate analysis. To reiterate, our key prediction is that the fraction of outside directors is positively related to acquisition performance, and that this effect is stronger in public deals. We also expect the results to be stronger over the Cadbury relative to the Higgs period given greater variation in board structures to the initial reform (see Figure 1). Table 3 presents the results of the univariate tests.

We first focus on the Cadbury period results (in Panel A of Table 3). There is no difference in acquirer returns between compliant and non-compliant acquirers over 1989 through 1996.

However, when we partition this set into public and private acquisitions, an interesting pattern emerges. In the sub-sample of public acquisitions, Cadbury-compliant acquirers are associated with a 1.82% higher stock price response than non-compliant acquirers. Similarly, acquirers with at least three outside directors outperform those with less than three by 1.71%. Both differences in announcement period returns are statistically significant at the 0.10 level or less. Furthermore, the difference in returns between compliant and non-compliant acquirers in public deals relative to matched differences in private company acquisitions reported in the last row of Panel A are statistically significant at the 0.05 level or less. Turning to Panel B, we observe a similar trend in acquisition CARs over 2000 through 2007, albeit muted in statistical significance. For example, acquirers complying with the minimum outside director representation requirement of the Higgs report outperform those not in compliance with this provision by 1.50% when the target is public, and the difference between this estimate and the corresponding difference for takeovers involving private targets is 1.74%. Although the magnitude of the coefficients is large, none of the differences during the Higgs period reported in Panel B are statistically significant at conventional levels.

We interpret this latter finding as being consistent with the existence of an optimal (firm-level) board composition, and the Cadbury reform propelling the firms closer to that optimum, leaving less room for further improvement. To elaborate on this point, assume that before the issuance of the Cadbury Report a large fraction of acquirers were operating below some optimal representation of outside directors on the board. An exogenous push arising from the publication of the Cadbury Report increased the fraction of outsiders on the board, which resulted in better acquisition decisions and higher net acquirer performance. Given that an initial push to add outsiders narrows the *sub-optimality* gap, continued intervention for even more outside directors,

such as that from the Higgs reform, may eventually tip the balance of the board beyond the optimum for some firms, resulting in worse acquisitions decisions and performance. In other words, successive government mandates calling for more outside directors may be less effective than earlier ones when considered in the aggregate.[15]

Thus far, the evidence appears to support the view that greater outside director representation in U.K. acquirers is associated with better performance in deals involving public targets, and this effect is most visible around the issuance of the Cadbury Report. Of course, univariate tests do not consider other determinants of acquirer returns so our next step remedies this shortcoming.

[Please insert Table 3 about here]

4.2 Regression results

Table 4 reports results of cross-sectional regressions of acquirer CARs on Cadbury and Higgs Report compliance. In Panel A, the data span 8 years centered on publication of the Cadbury Report in 1992, while in Panel B the data span 8 years surrounding issuance of the Higgs Report in 2003. The regression models in Panel A are mimicked in Panel B. Of the 667 observations in Panel A, 18% involved public targets; while in Panel B, the sample of public targets was only 10%. The control variables in these regressions are motivated by prior literature and include target firm listing status (*Public Target*), the method of payment *(Stock Deals)*, attitude (*Hostile Deals*), acquisition technique (*Tender Offer*), relative size of the deal (*Relative Size*), target industry relatedness (*Diversifying Deals),* acquirer run up (*Run-Up),* acquirer size (*Market Value (Ln)*),

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[15] Of course, an alternative explanation is that the Higgs reform caused a smaller perturbation to board structures in comparison to the *significant* upheaval in response to the publication of the Cadbury Report.

acquirer valuation (*Market-to-Book Ratio*), acquirer leverage (*Leverage*), acquirer idiosyncratic stock return volatility (*Sigma*), and a set of industry dummies based on acquirer 2-digit SIC code.

In both Panels, specifications (1) and (2) use *Compliance* as the main governance variable and specifications (3) and (4) use *Outside Directors* as a continuous measure of the fraction of outsiders on the board. The key result to emerge from an inspection of the regressions in Columns 1 and 2 of Panel A is that acquirer compliance does not explain acquirer returns when considered in isolation. However, when this variable is interacted with the *Public Target* indicator then the resulting coefficient is positive and statistically significant at the 0.05 level or less. That is, compliant acquirers exhibit higher returns only in the acquisition of public targets. To further probe the source of the valuation gain, we switch attention to the fraction of outsiders on the board in Columns 3 and 4 and find that this variable is positive and significant at the 0.05 level or less. This result is again driven by the sub-set of public firm acquisitions as the interaction of *Outside Directors* with *Public Target* in Specification (4) is positive and significant at the 0.01 level in Column 4. In real terms, the magnitude of the coefficient estimates implies that a one standard deviation increase in the fraction of outside directors (0.18) on the board is associated with a 1.6 percentage points higher acquirer returns in public firm takeovers (compared to an average acquirer return of -0.7% in public firm acquisitions).[16] To put this into perspective, such an increase in the fraction of outsiders amounts to replacing one inside director with an outsider on a board comprising seven members (median board size), or raising the fraction of outside members on the board from one third to a half.

[Please insert Table 4 about here]

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[16] The 1.6 percentage points increase in acquirer returns in response to a one standard deviation change in the fraction of outsiders is computed as the sum of the coefficients on *Outside Directors* and *Outside Directors X Public Target*, multiplied by the standard deviation of *Outside Directors* ((0.0098+0.0794)*0.18=1.61).

Panel B of Table 4 repeats the analysis using data surrounding issuance of the Higgs Report. The results over this more recent time frame are generally consistent with those over the early Cadbury period. Only the fraction of outsiders interacted with the public target dummy is positive and significant at 0.05 level (in Column 4) and the magnitude of this coefficient is slightly higher than that reported in Column 4 of Panel A over the Cadbury time frame; nevertheless, the level of statistical significance is lower. One can only conjecture that the power of the tests is reduced over the Higgs time period. Recall from Figure 1 and Table 3 that the fraction of outside directors on the acquirers' boards increased very slightly in response to the Higgs reform, whereas a dramatic increase in outsiders is observed following the issuance of the Cadbury Report.

The evidence presented above that compliant acquirers and acquirers with outsider-dominated boards make better acquisition decisions in public firm takeovers is consistent with the literature on outside directors' reputational exposure. We now examine whether an empirical proxy for outside directors' reputational exposure can, indeed, explain some of the differential effect.[17]

Given that reputational exposure is hard to measure directly, we use media publicity surrounding each takeover transaction as a gauge. Our belief is that greater deal publicity will elevate investors' interests surrounding the actions of the board of directors and impact their reputation and standing in the labor market for corporate directorships. To assess deal publicity, we count the number of times the deal is cited in the media as reported in Lexis-Nexis over a 6 month period starting one month before and ending five months after the deal announcement date. The deal is considered cited when the acquirer's and the target firm's name is mentioned in the

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[17] Having shown that the effect of compliance on acquirer performance is in large part explained by the increase in the fraction of outside directors, we now focus on the latter variable here on in. Perhaps a more direct motivation for this move is that the theories on reputational exposure relate directly to outside directors (and not to compliance). In unreported analysis we confirm that our main results are robust to including controls for *Split CEO/COB* and its interaction with *Public Target*.

same news item. We use the decile ranking instead of the raw variable in order to maximize the signal-to-noise ratio of the proxy.

Table 5 reports the statistics on our proxy for reputational exposure. As before, Panel A reports results over the Cadbury period and Panel B over the Higgs period. A cursory examination of the numbers reported in this table reveals that acquisitions of publicly-traded target firms engender a greater level of publicity than private ones (the decile rank for public firm acquisitions is roughly twice that of private firm deals). If indeed media publicity is a good proxy for outsiders' reputation capital then these data suggests that their reputation will face greater exposure in the acquisition of public targets. Though not reported in a table, we also experiment with transaction size as an alternative measure of publicity and the results are equally robust.[18]

[Please insert Table 5 about here]

We now examine the differential effect of outside director representation on acquirer returns by target listing in the multivariate setting. To that end, we augment specification (4) of Table 4 with an interaction term of the fraction of outsiders and deal publicity. The results on the interaction terms are presented in Table 6.[19] For comparison purposes, specifications (1) and (3) repeats the results from specification (4) in Table 4. Consistent with our prediction on reputational

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[18] Yet another proxy that could possibly be used to assess outside directors reputational exposure is the number of board seats held by each outsider in the period before the acquisition. Harford (2003) reports that outside directors in poorly performing firms that reject takeover bids are punished in the ensuing years by fewer board seats in other firms, while those supporting such takeover bids are not vilified. Studies by Fich (2005) and Fich and Shivdasani (2007) arrive at a similar conclusion when examining director appointments and events of financial fraud. Interestingly, in a follow-up study, Harford and Schonlau (2013) show that future board seats held by the CEO are correlated with CEO experience rather than acquisition performance. It appears that the connection between acquisition performance and reputation consequences, as measured by the number of future board seats held by executives is unclear. A cursory inspection of our data reveals a small and insignificant correlation between acquisition performance and outside director board seats in other firms.

[19] We do not include the main effects of deal publicity in these specifications. Doing so causes the variance inflation factors (VIFs) on the interaction terms to jump above 10. There is no a priori reason to believe that deal publicity has a direct effect on acquirer announcement returns.

exposure, the interaction term in specification (2) is positive and significant (at the 0.10 level). That is, outside directors appear to be more effective when deal publicity is high – or more simply, when their reputation exposure is greatest. A similar argument is outlined in Golubov, Petmezas, and Travlos (2012) in their analysis of the impact of investment bank reputation on acquirer returns. Nevertheless, the inclusion of this interaction term only slightly reduces the magnitude of the coefficient on the key variable *Outside Directors × Public Target* (in Column 2).   An inspection of the data over the Higgs period confirms the results. The *Outside Directors × Public Target* interaction variable is positive and significant, the deal publicity interaction is significant at the 0.01 level.

In sum, we conclude that outside directors are associated with better announcement stock price performance when acquiring public targets. This effect appears to be above and beyond of what can be explained by our proxy on reputational exposure of outside directors. Furthermore, the effect of more outsiders on acquirer performance is statistically stronger over the period centered on the publication of the Cadbury Report in 1992 and somewhat less pronounced over the more recent period surrounding issuance of the Higgs Report in 2003.

[Please insert Table 6 about here]

Finally, in Table 7, we switch out acquirer returns for a measure of long-term operating performance improvements. Specifically, we use the change in industry-adjusted return on assets (Δ *IAROA*) as the dependent variable. We measure this variable as the difference between acquirer's industry-adjusted return on assets (EBITDA/Total Assets) three years following the deal and acquirer's industry-adjusted return on assets one year prior to the deal.[20] These results are

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[20] Specifically, Δ IAROA = $(ROA_{t+3} - \text{Industry } ROA_{t+3}) - (ROA_{t-1} - \text{Industry } ROA_{t-1})$. Industry ROA is the median return on asset of the Level 3 Datastream industry group to which the acquirer belongs. The resultant variable is winsorized at the 5% level due to multiple outliers.

presented in Table 7. The estimation results reveal that a higher fraction of outsiders on the acquirer's board is associated with better post-deal operating performance improvements for acquirers when the target firms are public. The interaction term *Outside Directors × Public Target* is statistically significant at the 0.05 level for the Cadbury period and at the 0.10 level for the Higgs period. In terms of economic magnitude, the estimated coefficients suggest that a one standard deviation increase in the fraction of outsiders on the board is associated with a 0.025 percentage point higher operating performance improvement during the Cadbury period, and a 0.027 percentage point higher *ΔIAROA* during the Higgs period.[21] Once again, these magnitudes are sizeable considering that the mean (median) *ΔIAROA* is -0.043 (-0.023) and -0.016 (-0.014) in the Cadbury and Higgs periods, respectively.

We have also experimented with the Gormley and Matsa (2014) approach whereby raw (unadjusted) operating performance improvements were used as the dependent variable and the regressions included year and industry fixed effects. This alternative specification produced qualitatively similar results (the *Outside Directors × Public Target* interaction is positive with a *p*-value of 0.11 over the Cadbury period and 0.08 for the Higgs period). We choose to favor the results reported in Table 7 as opposed to the aforementioned alternative specification, because inclusion of year fixed effects in the alternative approach eliminates time-series variation in board structure – which is where our identification is coming from.[22]

[Please insert Table 7 about here]

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[21] These magnitudes are worked out as the sum of the coefficients on *Outside Directors* and *Outside Directors X Public Target*, multiplied by the standard deviation of *Outside Directors:* (-0.0180+0.1589)*0.18=0.025 for the Cadbury period, and (-0.0403+0.2506)*0.13=0.027 for the Higgs period.

[22] One solution could be to drop year fixed effects to preserve time-series variation in board structure. However, this also means dropping a control for possible time trends in ROA. Industry-adjusting the dependent variable achieves both ends.

5. Alternative explanations

Our key finding is that outside directors have a differential effect on acquirer performance depending upon target firm listing status: positive in public firm acquisitions and insignificant in private firm deals. Our results above partially attribute this to greater reputational exposure of outside directors in public firm takeovers. In this section we discuss several alternative explanations.

5.1. Director information acquisition costs

The prediction of a differential effect of outside directors on acquirer performance in public and private deals can also be explained by directors' information acquisition costs. Theoretical models in Raheja (2005), Adams and Ferreira (2007), and Harris and Raviv (2008) show that the effectiveness of outsiders in advising and monitoring management (e.g., evaluating the CEO or approving a project) depends on the firm's information environment. Specifically, outside directors' interests are aligned with those of the shareholders, but they do not possess all the information available to insiders whom they are advising and monitoring. Hence, when outside directors' cost of becoming informed is high, their effectiveness as advisors and monitors is low, and vice-versa. Duchin, Matsusaka, and Ozbas (2010) show empirically that the value of outside directors depends on the cost that outsiders incur in acquiring firm-specific information. They report that an increase in outside director representation in response to the Sarbanes-Oxley Act of 2002 resulted in higher performance in firms characterized by low information acquisition costs for directors, but hurt the performance of firms with high information acquisition costs for directors.

Given that information on publicly-traded target firms is readily available in filings, analysts' reports and other sources, outside directors on the acquirer's board will, all else equal, incur less cost in gathering information on public targets than on private targets in order to evaluate the merits of the transaction.[23] Acquirer's outside directors will have little option but to rely on information provided by senior management and/or use more informal (and potentially less reliable non-public) channels to gather information on private targets. Borrowing from Duchin, Matsusaka, and Ozbas (2010) and prior theoretical work, it is plausible to assume that outside directors' information acquisition costs are greater in acquisitions involving private targets. Therefore, the differential effect of outside directors between public and private firm acquisitions that remains unexplained by director reputational exposure could be attributed to differences in information acquisition costs.

5.2. Governance improvements in the target

To the extent that the provisions of the Cadbury Report and the Higgs Report applied to all listed firms, the boards of listed target firms might also have increased the fraction of outsiders on their boards. As a result, public targets complying with the reforms might also be judged to be better governed. Ideally, we would like to control for the impact of such an effect, if any, in our tests. Unfortunately, public targets tend to be small firms lacking board data in our sources. However, we argue that governance improvements on the target side should work *against* finding improvements in acquirer performance.

To the extent that takeover gains represent corrections of inefficiencies at the target firm, a well-run target offers fewer opportunity for such gains. Lang, Stulz, and Walkling (1989) and

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[23] The acquisition setting also closely matches the setup in the theoretical work of Raheja (2005) and Harris and Raviv (2008), in which the board evaluates an investment project.

Servaes (1991) present early empirical evidence of this idea using Tobin's Q as a proxy for how well the firms are run. Recent studies confirm these results using more direct governance measures. Wang and Xie (2009) show that, as the gap in governance quality between the bidder and the target closes, acquirer returns decrease. Fich, Harford, and Tran (2015) use the fraction of institutional ownership with high portfolio weights in the target firm as a measure of target firm governance and show that better governed targets are associated with higher target returns and lower bidder returns. Moeller (2005) uses a variety of governance characteristics to show that better oversight at the target firm is associated with higher tarter returns (premiums) and lower bidder returns.

Finally, to the extent that better governed targets should have higher valuations (Dahya and McConnell (2007) find positive valuation effects and operating performance improvements in response to increases in outside director representation), we can control for target firm market-to-book as an indirect proxy of how well-run the firm is. In unreported analysis we find that our results continue to hold, with the coefficient estimates increasing in magnitude slightly. This is consistent with the argument presented above that the inability to control for target firm governance quality is likely working against our findings.

6. Further tests

6.1. Isolating exogenous variation in board structure and identifying sources of gains

While we argue that the variation in board structure over periods surrounding issuance of the Cadbury and Higgs Reports contains an exogenous component, we have yet to isolate this. To that end, we identify exogenous variation in board structure by instrumenting the fraction of outside directors on the board with a post-reform period (post-Cadbury or post-Higgs) indicator. An increase in outside director representation in response to the reforms (see Figure 1 and Table 2) would imply that our time-indicator is a strong predictor of the fraction of outsiders on the

board, which satisfies the instrument validity criterion. At the same time, there is no reason to believe that acquirer returns would be affected by the reforms – other than through their effect on governance – which satisfies the exclusion restriction.[24] Panel A of Table 8 presents the results on the two-stage least squares instrumental variable estimation. From here on, our discussion focuses on the public firm acquisitions, as this is where we found that outside directors matter most.

The results of the first stage regressions indicate that post-reform periods are indeed associated with significantly higher outside director representation on the boards of U.K. acquirers. The coefficient is significant at the 0.01 level over the Cadbury period, and at the 0.10 level during the Higgs period. The F-test for the excluded instrument in the first stage is above the cut-off value of 10 (the case of one endogenous variable and one instrument, see Staiger and Stock (1997)) for the Cadbury period, but not for the Higgs period. This provides credibility on the validity of the post-reform indicator as our instrument for the fraction of outsiders during the Cadbury period, and again confirms that the magnitude of the shock is smaller for the follow-up reform. The second stage results largely confirm our earlier findings where we show that (exogenously) higher levels of outside director representation are associated with higher acquirer returns when acquiring public firms over the Cadbury period with a coefficient that is significant at the 0.01 level. The same coefficient during the Higgs period is also positive and similar in magnitude, but is not significant at conventional significance levels. As noted earlier, this could be a manifestation of a smaller incremental change in corporate boards in response to the Higgs mandate (see Figure 1 and Table 2) and a weak instrument problem as a result. Alternatively, a subdued response might also be

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[24] If there were fundamental changes in the investment opportunity set that affected takeover profitability (and thereby acquirer returns) between the pre- and post-Cadbury and pre- and post-Higgs periods, then the exclusion restriction would be violated. However, we are not aware of any obvious differences between the periods.

attributed to the first reform largely eliminating any sub-optimality in outside director representation, such that the subsequent intervention was less effective.

We also attempt to establish the source of improvements in acquirer performance. Conceptually, better acquirer performance could stem from identifying better merger partners (combinations yielding greater overall synergies due to better target firm selection and post-merger integration) or from paying less (getting a greater share of the synergies to accrue to the bidder). To shed light on this question, we repeat the two-stage least squares analysis for two additional outcome variables: combined firm gains (*CCAR*) and bidder's share of synergies (*BSOS*). This is in the spirit of Golubov, Petmezas and Travlos (2012), who use these variables to study the source of value improvement brought about by top-tier financial advisors. *CCAR* is the combined firm CAR or synergy, defined as the weighted-average 3-day CARs of the bidder and the target firm with market value of equity 2 days prior to the acquisition announcement as the weights. *BSOS* is bidder's share of synergies, defined as bidder dollar-denominated gain divided by dollar-denominated synergy gain when the latter is positive, and (1 − bidder dollar-denominated gain) divided by dollar-denominated synergy gain when the latter is negative.[25] Note that these tests require that we have data on target firm announcement returns, so the sample size declines further.[26]

Panel B of Table 8 presents the results of the two-stage least squares instrumental variable analysis for *CCAR* and *BSOS*. We report only the coefficients of interest for brevity. We find that, during the Cadbury period, the fraction of outside directors on the bidder's board is associated

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[25] Bidder dollar-denominated gain is the product of bidder CAR and its market value of equity 2 days prior to the acquisition announcement, and dollar-denominated synergy gain is the product of combined firm CAR and the combined market value of equity of the bidder and the target firm 2 days prior to the acquisition announcement.

[26] This reduction in sample size can also explain the weaker *F*-tests for excluded instrument validity in Panel B.

with higher overall synergy gains (*CCAR*). We do not find a significant coefficient on the variable capturing bidder's share of synergies (*BSOS*). This suggests that the source of improved acquirer performance lies in more synergistic deals (better target firm selection and/or expectations of more successful integration) rather in paying less in order to appropriate a greater share of synergies. We do not find significant results for either *CCAR* or *BSOS* for the Higgs period, which is consistent with the above results on acquirer CAR.

[Please insert Table 8 about here]

In an ideal setting, we would want to distinguish between the time-series and cross-sectional components of variation in board structure and implement a difference-in-differences (diff-in-diff) analysis. Given that M&A deals are one-off events, we only observe acquirer returns and their board structure at the time of the acquisition. As a result, our data are a pooled cross-section and not a panel per se, making the classical diff-in-diff approach infeasible. A crude way around this hurdle would be to examine the *same* firms making acquisitions both before and after the reforms. Unfortunately, we have virtually no repeat acquirers in the public firm acquisitions subsample (which is where we find that outsiders matter) to conduct any such meaningful tests.

Nevertheless, we can implement a variant of the diff-in-diff approach on our pooled cross-sectional data and compare acquirer performance over the two time frames, 1989 through 1996, and 1999 through 2007, while distinguishing between firms that were affected by the reform (did not comply with the minimum number of outside directors requirement before but complied afterwards) from those that were unaffected (were already in compliance before, or chose not to comply afterwards). If increasing the fraction of outsiders on the acquirer's board were truly beneficial in acquisitions of publicly traded target firms, we would observe improvements in acquirer performance from the pre-reform period to the post-reform period in the subset of affected

firms, but no such improvement in the subset of unaffected acquirers. However, we urge caution in inferring too much from this analysis given that we are not comparing the same firms over the two time periods, and our sub-samples are much smaller in comparison to those used in prior studies that have used the diff-in-diff approach. As noted above, the firms in the affected and unaffected sets before and after the reform are not necessarily the same, so the difference (or lack thereof) could be driven by unobserved firm heterogeneity; this is equivalent to not having firm fixed effects in the standard diff-in-diff set up. Also, note that the small number of public deals makes it difficult under the diff-in-diff approach to record statistical significance. With these caveats in mind, we perform the modified diff-in-diff tests on acquirer CAR, synergy gains, and bidder's share of synergies with results reported in Table 9.

In Panel A, we find that acquirer CARs for the unaffected acquirers increase from -1.15% in the pre-Cadbury period to 0.69% in the post-Cadbury period. The difference is 1.84%, which is not significant at the 0.10 level or less. Turning to the affected acquirers, we find that the returns increase from -2.74% in the pre-Cadbury period to 1.25% in the post-Cadbury period. The difference is 3.99% and statistically significant at the 0.01 level or less. The "modified" diff-in-diff estimate is 2.15% with a p-value of 0.26. Turning to synergy gains (*CCAR*), we observe that the combined firm gains decline for the unaffected category and increase for the affected set of acquirers, producing a diff-in-diff estimate of 6.29%, significant at the 5% level. Bidder's share of synergies (*BSOS*) follows the same pattern, but the resultant diff-in-diff estimate is not statistically significant at conventional levels. These findings for the Cadbury period corroborate the results of the above instrumental variables analysis, namely that the affected acquirers improved acquirer returns, and did so through more synergistic deals rather than paying less and appropriating a greater share of synergies.

Panel B presents the results for the Higgs period. Acquirer CARs increase by 3.39% from -3.64% to -0.25% (p-value of 0.08) for the affected firms, but only by 1.67% from -2.77% to -1.11% (p-value of 0.58) for the unaffected set. The "modified" diff-in-diff here is only marginally lower at 1.72%, though with a p-value of 0.59. The results on synergy gains (*CCAR*) and bidder's share of synergies (*BSOS*) are noisy and not statistically significant at conventional levels. Overall, the magnitude of the coefficients and their economic significance in our variant on the diff-in-diff approach is large, however the statistical significance does reduce, which, once again, could be an artefact of a much smaller shock to board structure induced by the second reform.

[Please insert Table 9 about here]

Overall, the findings from this study show that acquirers with outsider-dominated boards make better acquisition decisions when the target is a publicly traded company. A proxy for outside directors' reputation capital explains away only part of the differential impact of outside directors on acquirer returns in public versus private deals. Of course, we cannot rule out the possibility that target firm listing status itself is simply a better measure of outside director reputational exposure (or information costs faced by outside directors). More synergistic deals (better target firm selection), rather than appropriating a greater share of synergies, appears to be the mechanism behind the improvement in acquirer returns. This conclusion corroborates our earlier results on post-deal operating performance improvements that suggest real cash flow gains. In general, our findings accord well with Dahya and McConnell (2007) who report a significant uptick in overall operating performance of firms coming into compliance with the Cadbury mandate.

6.2. External validity and sources of differences in results

Our analysis so far raises two related questions. The first concerns the external validity of our results, i.e., whether the effects we document hold in settings other than in the U.K. And second, which of the innovations in our research design (i.e., focus on a period of exogenous change, absence of antitakeover provisions in the U.K., or conditioning the effect on target firm listing status) accounts for our ability to register a positive association between outside director representation on the board and acquirer performance.

To address these two questions, we conduct an out-of-sample test by re-estimating our baseline result on the U.S. takeover market over a period that witnessed a similar board structure reform, namely, the introduction of minimum board independence requirements to the NYSE and NASDAQ listing rules following the enactment of the Sarbanes-Oxley Act of 2002. Specifically, both exchanges decreed that listed firms should maintain a majority of outside directors on their boards. The variation in board structure introduced by this promulgation was used by Duchin, Matsusaka, and Ozbas (2010) in their study of the effect of information acquisition costs for outside directors and their monitoring of corporate performance.

We employ a similar sample selection procedure that we outlined for U.K. takeovers around the issuance of the Cadbury and Higgs reports but this time switching to the U.S. takeover market over an 8-year period surrounding the year of the Sarbanes-Oxley Act (1998-2005). Board data come from *RiskMetrics*. A quick inspection of these data reveals that the fraction of outside directors on the boards of U.S. acquirers increased by 14 percentage points (from 58% in 1998 to 72% in 2005), or by almost a quarter. We estimate the same cross-sectional multivariate regressions as in our U.K. analysis. Table 10 presents the estimation results of our analysis.

In Column (1) of this table, we report results of the baseline regression of acquirer CARs on outside director representation interacted with target firm listing status. The size, sign and significance on the aforementioned coefficient (0.0806, significant at the 1% level) unambiguously corroborates our U.K. finding that the effect of outside directors on acquirer performance is conditional on target firm listing status. In column (2) we augment the specification with the *BCF Index*, which is an index of key antitakeover provisions devised by Bebchuk, Cohen, and Ferrell (2009), as well as its interaction with outside directors. Neither of these terms is statistically significant, while the coefficient on the *Outside Directors X Public Target* interaction is still significant, now at the 0.05 level, suggesting that it is the differential effect of outside directors in public versus private acquisitions – and not the absence of antitakeover provisions – that accounts for our ability to register a positive association between outside director representation and acquirer performance in the U.K. context.

[Please insert Table 10 about here]

Overall, these results indicate that, in the U.S. too, outside directors exhibit a positive effect on acquirer performance when the target is public. This analysis might also be able to reconcile the seemingly mixed results reported in earlier works. Let us explain. Byrd and Hickman (1992) document a positive effect of board independence on acquirer performance for a sample of tender offers, which, by definition includes only public firm deals. While, Masulis, Wang, and Xie (2007) and Bauguess and Stegemoller (2008) report insignificant and negative effects, respectively, of board independence on acquirer returns using samples of both listed and unlisted targets, without considering an interaction effect. Indeed, our study shows that the positive effect of outside director representation on the board on acquirer performance is confined to the public firm takeover deals.

7. Conclusion

In this study, we set out to re-examine the relationship between board structure and acquirer performance. Our motivation is driven by conflicting findings in prior studies. We begin by presenting the case that the U.K. takeover market can be used as a laboratory to circumvent a number of issues that have plagued prior work, while the effect of outside directors may be different across deal types.

First, the composition of U.S. corporate boards during the 1980's and 1990's has seen little variation, while U.K. boards have witnessed a *doubling* in the fraction of outside directors on the board over a relatively short time period surrounding the issuance of the Cadbury Report in 1992 (and a more modest response to the publication of the Higgs Report in 2003). Second, board structure variation is generally endogenous, but government-led reforms such as the Cadbury Report and the Higgs Report *naturally* perturb board composition. And third, we condition our analysis on target firm listing status – public vis-à-vis private.

Armed with these improvements in research design, we document a positive relationship between acquirer returns and the representation of outside directors on the corporate board when targeting publicly traded firms. This general result is consistent with greater outside director reputational exposure brought about by deal publicity. It might also support the view that outside director effectiveness is conditional on the cost of information acquisition – which is prohibitive when targeting private firms. More synergistic deals, rather than appropriating a greater share of synergies, appears to be the source of improved acquirer returns.

We also show that the improvement in acquirer returns in response to the Cadbury reforms was stronger than that observed over the Higgs reform period, which is consistent with there being an optimal (firm-specific) board structure trade-off. Overall, while we do not advocate mandated

board structures, our findings would suggest that the particular mandates we scrutinize were associated with better performance in U.K. acquirers targeting publicly traded firms. Evidence from the U.S. takeover market surrounding a similar reform period corroborates this conclusion.

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Figure 1. Board Structure Dynamics around the Cadbury Report (1992) and the Higgs Report (2003)
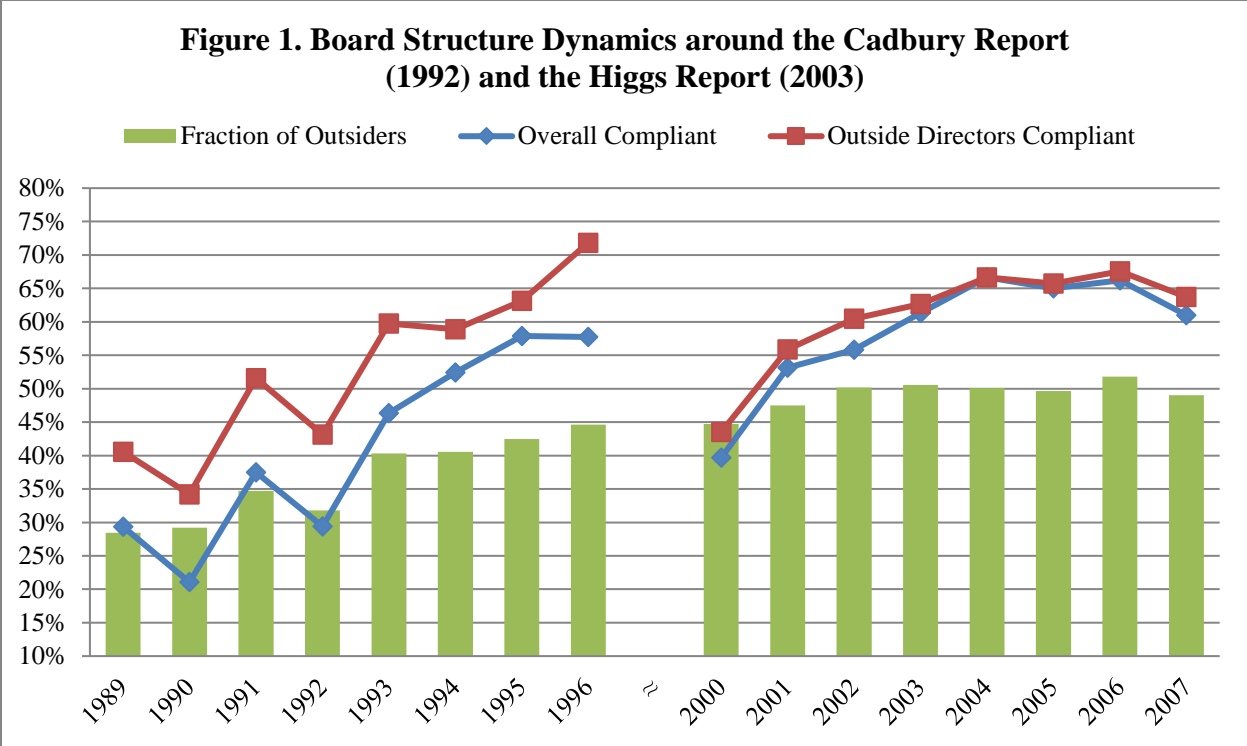
Figure 1 presents the evolution of board structures over the periods surrounding the issuance of the Cadbury Report (1989-1996) and the Higgs Report (2000-2007). The bars show the average fraction of outside directors on the boards of acquirer sample firms. The red (squares) line reports the percentage of acquirers in compliance with the minimum representation of outside directors as stipulated by each mandate (at least three outside directors for the Cadbury and at least a half for the Higgs mandate). The blue (diamonds) line reports the percentage of acquirers in compliance with both board key recommendations (i.e., the minimum representation of outsiders on the board as described in the line above, and a separation of the combined positions of CEO and Chairman of the board). Note that the blue and red lines are not directly comparable across the two periods as the outside director compliance requirement changes.

Table 1
Descriptive Statistics

Table 1 presents descriptive statistics for deal and firm-specific characteristics for the full sample and subsets of public and private deals. The sample of U.K. domestic acquisitions is from Thomson Financial SDC M&A Database (SDC) and covers the period from January 1989 to December 1996 over the Cadbury period (Panel A) and from January 2000 to December 2007 over the Higgs period (Panel B). *MV* is the acquiring firm's market capitalisation in £ million one month prior to the acquisition announcement. *BV* is the acquiring firm's book value of equity in £ million for the fiscal year end prior to the announcement. *MTB* is the acquirer's market-to-book value and is calculated as the firm's market value one month prior to the acquisition announcement divided by the book value of equity. *Run-Up* is acquirer buy-and-hold market-adjusted return measured from 200 days to 2 days prior to the announcement date. *Sigma* is the idiosyncratic volatility of the acquirer stock return measured from 205 days to 6 days prior to the acquisition announcement. *Leverage* is measured as acquirer total debt over total assets for the fiscal year ending prior to the announcement obtained from Datastream. *Analysts Following* is the number of analysts following the acquirer. *Deal Value* is the transaction value in £ million as reported by SDC. *Relative Size* is computed as the deal value divided by the acquirer *MV* one month prior to the acquisition announcement. *Diversifying Deals* is a dummy that takes the value of 1 if the 2-digit SIC code of the acquirer is different from that of the target and 0 otherwise. *Tender Offers* variable is a dummy taking a value of 1 if the transaction is a tender offer and 0 otherwise. *Hostile deals* is a dichotomous variable taking the value of 1 if a deal is reported as "hostile" by SDC, and 0 otherwise. *Stock Deals* represent either fully or partially stock-financed transactions. *Board Size* is the total number of directors on the acquirer's board. *Outside Directors* is the number of outside directors on the acquirer's board. *Outside Directors %* is the fraction of outside directors on the acquirer's board. *Split CEO/COB* is a dummy taking the value of 1 when the acquirer splits the roles of CEO and Chairman of the Board, 0 otherwise. Transaction data is from SDC. Stock prices and accounting data are taken from Datastream. Analyst forecast data come from I/B/E/S. Board data is from annual reports and BoardEx. N denotes the number of observations. All £ values are inflation-adjusted to the price level of 2012 using the U.K. GDP deflator from the Office for National Statistics.

Panel A: Cadbury Report	Full Sample			Public Targets			Private Targets		
	Mean	**Median**	**N**	**Mean**	**Median**	**N**	**Mean**	**Median**	**N**
Acquirer Characteristics									
MV (£m)	235.61	81.20	925	587.12	159.06	134	176.07	73.48	791
BV (£m)	115.81	24.75	828	334.80	49.43	127	76.13	23.40	701
MTB	2.84	2.15	878	2.50	1.79	131	2.90	2.20	747
Run-Up	0.10	0.04	888	0.13	0.06	129	0.09	0.04	759
Sigma	0.02	0.01	886	0.02	0.01	128	0.02	0.01	758
Leverage	0.17	0.14	813	0.17	0.13	123	0.17	0.14	690
Analysts Following	3.64	2.00	892	5.66	3.50	126	3.31	2.00	766
Deal Characteristics									
Deal Value (£m)	33.32	7.48	925	145.77	29.34	134	14.27	6.03	791
Relative Size	0.31	0.09	925	0.58	0.28	134	0.27	0.08	791
Diversifying Deals (%)	0.61	-	925	0.63	-	134	0.60	-	791
Tender Offers (%)	0.13	-	925	0.74	-	134	0.03	-	791
Hostile Deals (%)	0.01	-	925	0.10	-	134	0.00	-	791
Stock Deals (%)	0.74	-	925	0.80	-	134	0.74	-	791
Board Characteristics									
Board Size	7.03	7.00	744	7.75	7.00	116	6.90	7.00	628
Outside Directors	2.60	3.00	744	2.62	3.00	116	2.60	3.00	628
Outside Directors (%)	0.37	0.40	744	0.32	0.33	116	0.37	0.40	628
Split CEO/COB	0.73	1.00	712	0.74	1.00	108	0.72	1.00	604

Panel B: Higgs Report	Full Sample			Public Targets			Private Targets		
	Mean	**Median**	**N**	**Mean**	**Median**	**N**	**Mean**	**Median**	**N**
Acquirer Characteristics									
MV (£m)	537.34	75.44	1,367	3,171.16	182.16	131	258.19	71.35	1,236
BV (£m)	164.48	25.46	1,296	799.43	55.60	127	95.50	23.39	1,169
MTB	2.41	1.82	1,346	2.09	1.43	129	2.44	1.85	1,217
Run-Up	0.27	0.06	1,247	0.27	0.02	124	0.27	0.06	1,123
Sigma	0.03	0.02	1,245	0.02	0.02	124	0.03	0.02	1,121
Leverage	0.18	0.13	1,305	0.18	0.14	127	0.18	0.13	1,178
Analysts Following	2.99	1.00	1,299	5.52	3.00	127	2.71	1.00	1,172
Deal Characteristics									
Deal Value (£m)	97.89	7.81	1,367	804.83	71.47	131	22.96	6.93	1,236
Relative Size	0.52	0.11	1,367	0.70	0.42	131	0.50	0.09	1,236
Diversifying Deals (%)	0.44	-	1,367	0.39	-	131	0.45	-	1,236
Tender Offers (%)	0.08	-	1,367	0.79	-	131	0.00	-	1,236
Hostile Deals (%)	0.00	-	1,367	0.03	-	131	0.00	-	1,236
Stock Deals (%)	0.47	-	1,367	0.61	-	131	0.46	-	1,236
Board Characteristics									
Board Size	6.82	7.00	984	7.48	7.00	100	6.75	7.00	884
Outside Directors	3.37	3.00	984	3.80	3.00	100	3.32	3.00	884
Board Independence (%)	0.49	0.50	984	0.49	0.55	100	0.49	0.50	884
Split CEO/COB	0.93	1.00	984	0.91	1.00	100	0.94	1.00	884

Table 2
Acquirer Compliance with the Cadbury Report (1992) and the Higgs Report (2003)

Table 2 presents statistics on acquirer compliance with the Cadbury and Higgs Reports recommendations. Panel A covers the period surrounding the issuance of the Cadbury Report (1989-1996) and Panel B is over the period centered on the issuance of the Higgs Report (2000-2007). Column "Fraction of outsiders" presents the average percentage of outsiders on the board. Column "Outsider Compliant Firms" satisfy the minimum number of outside directors requirement of the respective report. Column "Overall Compliant Firms" presents the percentage of acquirers satisfying both the minimum number of outside directors requirement of the respective report and split the roles of CEO and Chairman. Stars indicate statistically significant differences from the pre- to the post-reform periods (*** 1% level, ** 5% level, * 10% level). N denotes the number of observations.

Panel A: Cadbury Report	Fraction of Outsiders	Outsider Compliant Firms	Overall Compliant Firms	N
All Acquirers				
1989-1992	30.33%	41.62%	29.04%	334
1993-1996	41.85%***	62.68%***	53.9%***	410
Public Targets				
1989-1992	26.02%	42.42%	36.36%	66
1993-1996	40.69%***	62.00%**	56.00%**	50
Private Targets				
1989-1992	31.39%	41.42%	27.24%	268
1993-1996	42.01%***	62.78%***	53.61%***	360
Panel B: Higgs Report				
All Acquirers				
2000-2003	47.32%	54.09%	50.87%	403
2004-2007	50.10%***	65.75%***	64.37%**	581
Public Targets				
2000-2003	45.69%	53.85%	51.92%	52
2004-2007	53.61%**	77.08%**	75.00%**	48
Private Targets				
2000-2003	47.57%	54.13%	50.71%	351
2004-2007	49.78%**	64.73%***	63.41%***	533

Table 3
Acquirer Returns by Compliance with the Cadbury Report (1992) and the Higgs Report (2003)

Table 3 presents univariate comparisons of acquirer CARs by compliance with the key recommendations of the Cadbury and the Higgs Reports. Acquirer CAR is the cumulative market-adjusted abnormal return of the acquiring firm over the 3-day window surrounding the acquisition announcement, with FTSE All-Share Index as the benchmark. Compliant acquirers satisfy both the minimum number of outside directors requirement of the respective report and split the roles of CEO and Chairman. Outside directors compliant acquirers satisfy the minimum number of outside directors requirement of the respective report. N denotes the number of observations. Significance tests are two-tailed.

		Compliance (≥3 outsiders and separate CEO/COB)		Outsiders (≥3 outsiders)	
Panel A: Cadbury Report		CAR [N]	*p-val*	CAR [N]	*p-val*
Compliant					
	(1): All	0.64% [318]	*0.004*	0.67% [396]	*0.001*
	(2): Public Target	0.28% [52]	*0.671*	0.11% [59]	*0.860*
	(3): Private Target	0.71% [266]	*0.003*	0.77% [337]	*0.000*
Non-compliant					
	(4): All	0.38% [426]	*0.067*	0.29% [348]	*0.210*
	(5): Public Target	-1.55% [64]	*0.025*	-1.60% [57]	*0.031*
	(6): Private Target	0.72% [362]	*0.001*	0.66% [291]	*0.005*
Difference by Compliance					
	(7): (1)-(4)	0.26%	*0.386*	0.38%	*0.210*
	(8): (2)-(5)	1.82%	*0.058*	1.71%	*0.075*
	(9): (3)-(6)	0.00%	*0.990*	0.11%	*0.725*
Difference in Differences by Target Type					
	(10): (8)-(9)	1.83%	*0.028*	1.60%	*0.053*

		Compliance (≥50% outsiders and separate CEO/COB)		Outsiders (≥50% outsiders)	
Panel B: Higgs Report		CAR [N]	*p-val*	CAR [N]	*p-val*
Compliant					
	(1): All	1.45% [579]	*0.000*	1.36% [600]	*0.000*
	(2): Public Target	-1.27% [63]	*0.174*	-1.34% [65]	*0.144*
	(3): Private Target	1.78% [516]	*0.000*	1.69% [535]	*0.000*
Non-compliant					
	(4): All	1.36% [405]	*0.000*	1.49% [384]	*0.000*
	(5): Public Target	-2.86% [37]	*0.045*	-2.84% [35]	*0.057*
	(6): Private Target	1.79% [368]	*0.000*	1.93% [349]	*0.000*
Difference by Compliance					
	(7): (1)-(4)	0.09%	*0.845*	-0.13%	*0.778*
	(8): (2)-(5)	1.59%	*0.324*	1.50%	*0.356*
	(9): (3)-(6)	0.00%	*0.992*	-0.23%	*0.614*
Difference in Differences by Target Type					
	(10): (8)-(9)	1.59%	*0.287*	1.74%	*0.251*

Table 4

Table 4
Cross Sectional Regressions of Acquirer Returns - Full Sample

The table presents the results of cross-sectional regression analysis of acquirer CARs on the overall compliance with the reform and the fraction of outside directors, controlling for acquirer- and deal-specific characteristics. Panel A is for the period surrounding the Cadbury Report (1989-1996), Panel B is for the period surrounding the Higgs Report (2000-2007). The dependent variable is acquirer CAR which is the cumulative market-adjusted abnormal return of the acquiring firm over the 3-day window surrounding the acquisition announcement, with FTSE All-Share Index as the benchmark. *Compliance* is a dichotomous variable taking the value of 1 if the acquiring firm complies with the minimum number of outside directors requirement of the respective report and splits the roles of CEO and Chairman, and 0 otherwise. *Outside Directors* is the proportion of outside directors on the board. All other explanatory variables are defined in Table 1. Industry fixed effects are based on 2-digit SIC code of the acquirer. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. White's heteroskedasticity-robust *t*-statistics are reported in parentheses.

Panel A: Cadbury Report	(1)	(2)	(3)	(4)
Constant	0.0208**	0.0276***	0.0164	0.0285***
	(2.07)	(2.93)	(1.57)	(2.61)
Compliance	0.0046	0.0006		
	(1.16)	(0.13)		
Compliance X Public Target		0.0272**		
		(2.48)		
Outside Directors			0.0284***	0.0128
			(2.64)	(1.13)
Outside Directors X Public Target				0.0855***
				(2.69)
Public Target	-0.0067	-0.0158*	-0.0037	-0.0289***
	(-0.89)	(-1.96)	(-0.50)	(-2.59)
Stock Deals	0.0032	0.0028	0.0030	0.0021
	(0.95)	(0.81)	(0.88)	(0.62)
Hostile	0.0137	0.0128	0.0148	0.0169
	(0.62)	(0.58)	(0.70)	(0.88)
Tender Offer	-0.0045	-0.0068	-0.0065	-0.0100
	(-0.59)	(-0.89)	(-0.87)	(-1.38)
Relative Size	-0.0047***	-0.0048***	-0.0047***	-0.0046***
	(-4.31)	(-4.42)	(-4.36)	(-4.27)
Diversifying Deals	-0.0065*	-0.0060	-0.0067*	-0.0058
	(-1.73)	(-1.62)	(-1.80)	(-1.57)
Run-Up				
	0.0100	0.0103	0.0088	0.0079
	(1.57)	(1.60)	(1.41)	(1.30)
Market Value (Ln)	-0.0009	-0.0014	-0.0008	-0.0013
	(-0.65)	(-1.02)	(-0.61)	(-0.96)
Market-to-Book Ratio	-0.0000	-0.0000	-0.0000	-0.0000
	(-0.60)	(-0.74)	(-0.52)	(-0.69)
Leverage	-0.0539***	-0.0558***	-0.0575***	-0.0591***
	(-3.46)	(-3.59)	(-3.70)	(-3.85)
Sigma	0.5185*	0.4756*	0.5330*	0.5360*
	(1.79)	(1.65)	(1.84)	(1.89)
Industry FEs	YES	YES	YES	YES
Observations	667	667	667	667
Adjusted R2	0.0592	0.0717	0.0706	0.0897

Panel B: Higgs Report	(1)	(2)	(3)	(4)
Constant	0.0119	0.0138	0.0059	0.0130
	(0.76)	(0.87)	(0.35)	(0.75)
Compliance	0.0008	-0.0004		
	(0.16)	(-0.08)		
Compliance X Public Target		0.0144		
		(0.73)		
Outside Directors			0.0178	0.0040
			(0.89)	(0.18)
Outside Directors X Public Target				0.0875*
				(1.94)
Public Target	-0.0261	-0.0370*	-0.0260	-0.0715***
	(-1.60)	(-1.73)	(-1.61)	(-2.66)
Stock Deals	-0.0014	-0.0014	-0.0010	-0.0010
	(-0.25)	(-0.25)	(-0.17)	(-0.18)
Hostile	-0.0010	-0.0030	-0.0024	-0.0096
	(-0.04)	(-0.13)	(-0.10)	(-0.36)
Tender Offer	-0.0024	0.0001	-0.0020	0.0017
	(-0.13)	(0.00)	(-0.11)	(0.10)
Relative Size	-0.0022*	-0.0022*	-0.0022*	-0.0022*
	(-1.71)	(-1.70)	(-1.65)	(-1.69)
Diversifying Deals	0.0001	0.0000	0.0002	-0.0000
	(0.02)	(0.01)	(0.04)	(-0.01)
Run-Up				
	0.0030	0.0032	0.0031	0.0034
	(0.54)	(0.57)	(0.57)	(0.61)
Market Value (Ln)	-0.0075***	-0.0076***	-0.0078***	-0.0080***
	(-3.91)	(-3.95)	(-3.99)	(-4.10)
Market-to-Book Ratio	0.0000	0.0000	0.0000	0.0000
	(1.16)	(1.20)	(1.32)	(1.35)
Leverage	0.0649***	0.0648***	0.0641***	0.0650***
	(2.71)	(2.70)	(2.69)	(2.73)
Sigma	-0.0373	-0.0280	-0.0452	-0.0195
	(-0.10)	(-0.08)	(-0.13)	(-0.05)
Industry FEs	YES	YES	YES	YES
Observations	919	919	919	919
Adjusted R2	0.0413	0.0410	0.0422	0.0445

Table 5

Outside Directors' Reputation Exposure: Deal Publicity

The table presents the statistics a proxy for outside directors' reputational exposure (deal publicity) during the Cadbury and the Higgs periods (Panels A and B, respectively). Deal publicity is defined as the decile rank of the number of times the deal is cited in the media in the 6 month period starting one month before and ending five months after the deal announcement (from Lexis-Nexis). The deal is considered cited when the acquirer's name and the target's name are mentioned in the same article. % Outsiders is the fraction of outside directors on the board. Panel

Panel A: Cadbury Report		Deal Publicity	% Outsiders
All Acquirers			
	1989-1992	3.85	30.33%
	1993-1996	5.79	41.85%
Public Targets			
	1989-1992	6.42	26.02%
	1993-1996	8.94	40.69%
Private Targets			
	1989-1992	3.21	31.39%
	1993-1996	5.35	42.01%
Panel B: Higgs Report			
All Acquirers			
	2000-2003	4.29	47.32%
	2004-2007	6.02	50.10%
Public Targets			
	2000-2003	8.90	45.69%
	2004-2007	9.79	53.61%
Private Targets			
	2000-2003	3.61	47.57%
	2004-2007	5.68	49.78%

Table 6

Cross Sectional Regressions of Acquirer Returns with Publicity Proxy

The table presents the results of cross-sectional regression analysis of acquirer CARs on the fraction of outside directors, controlling for acquirer- and deal-specific characteristics and conditioning the effect of outside directors on deal publicity. The latter variable is defined in Table 5. The first two columns are for the period surrounding the Cadbury Report (1989-1996), the second two columns are for the period surrounding the Higgs Report (2000-2007). The dependent variable is acquirer CAR which is the cumulative market-adjusted abnormal return of the acquiring firm over the 3-day window surrounding the acquisition announcement, with FTSE All-Share Index as the benchmark. *Outside Directors* is the proportion of outside directors on the board. All other explanatory variables are defined in Table 1. Industry fixed effects are based on 2-digit SIC code of the acquirer. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. White's heteroskedasticity-robust *t*-statistics are reported in parentheses.

	Cadbury Report		Higgs Report	
Constant	0.0285***	0.0320***	0.0130	0.0223
	(2.61)	(2.90)	(0.75)	(1.24)
Outside Directors	0.0128	-0.0020	0.0040	-0.0310
	(1.13)	(-0.14)	(0.18)	(-1.22)
Outside Directors X Public Target	0.0855***	0.0773**	0.0875*	0.0716
	(2.69)	(2.45)	(1.94)	(1.59)
Outside Directors X Publicity		0.0030*		0.0058***
		(1.90)		(2.82)
Public Target	-0.0289***	-0.0279**	-0.0715***	-0.0729***
	(-2.59)	(-2.52)	(-2.66)	(-2.73)
Stock Deals	0.0021	0.0017	-0.0010	-0.0023
	(0.62)	(0.48)	(-0.18)	(-0.40)
Hostile	0.0169	0.0153	-0.0096	-0.0156
	(0.88)	(0.79)	(-0.36)	(-0.58)
Tender Offer	-0.0100	-0.0111	0.0017	-0.0002
	(-1.38)	(-1.54)	(0.10)	(-0.01)
Relative Size	-0.0046***	-0.0050***	-0.0022*	-0.0030**
	(-4.27)	(-4.67)	(-1.69)	(-2.13)
Diversifying Deals	-0.0058	-0.0060	-0.0000	-0.0005
	(-1.57)	(-1.62)	(-0.01)	(-0.11)
Run-Up	0.0079	0.0078	0.0034	0.0029
	(1.30)	(1.27)	(0.61)	(0.52)
Market Value (Ln)	-0.0013	-0.0019	-0.0080***	-0.0084***
	(-0.96)	(-1.42)	(-4.10)	(-4.25)
Market-to-Book Ratio	-0.0000	-0.0000	0.0000	0.0000*
	(-0.69)	(-0.65)	(1.35)	(1.94)
Leverage	-0.0591***	-0.0611***	0.0650***	0.0630***
	(-3.85)	(-3.97)	(2.73)	(2.63)
Sigma	0.5360*	0.5201*	-0.0195	0.0587
	(1.89)	(1.83)	(-0.05)	(0.16)
Industry FEs	YES	YES	YES	YES
Observations	667	667	919	919
Adjusted R2	0.0897	0.0944	0.0445	0.0545

Table 7

Cross-Sectional Regressions of Operating Performance Improvements

The table presents the results of cross-sectional regression analysis of acquirer operating performance improvements on the fraction of outside directors, controlling for acquirer- and deal-specific characteristics. Column 1 is for the period surrounding the Cadbury Report (1989-1996), Column 2 is for the period surrounding the Higgs Report (2000-2007). The dependent variable is acquirer operating performance improvement (ΔIAROA), defined as acquirer's industry-adjusted return on assets (IAROA) in year 3 following the acquisition minus acquirer's IAROA one year prior to the acquisition (winsorized at the 5% level). Datastream Level 3 sector classification is used for industry adjustment. *Outside Directors* is the proportion of outside directors on the board. All other explanatory variables are defined in Table 1. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. White's heteroskedasticity-robust *t*-statistics are reported in parentheses.

	Cadbury Report	Higgs Report
Constant	-0.0499*	0.0122
	(-1.92)	(0.41)
Outside Directors	-0.0180	-0.0403
	(-0.64)	(-0.91)
Outside Directors X Public Target	0.1589**	0.2506*
	(2.04)	(1.92)
Public Target	-0.0610**	-0.1024
	(-2.03)	(-1.50)
Stock Deals	-0.0016	-0.0167
	(-0.16)	(-1.31)
Hostile	-0.0036	-0.1409
	(-0.06)	(-1.24)
Tender Offer	-0.0033	-0.0098
	(-0.17)	(-0.40)
Relative Size	0.0011	0.0088**
	(0.17)	(2.36)
Diversifying Deals	0.0000	0.0200*
	(0.00)	(1.80)
Run-Up	0.0095	0.0038
	(0.61)	(0.35)
Market Value (Ln)	-0.0008	-0.0094**
	(-0.20)	(-2.50)
Market-to-Book Ratio	0.0003***	0.0001***
	(8.50)	(2.62)
Leverage	0.0296	0.1245***
	(0.88)	(4.40)
Sigma	2.4926***	-1.1995
	(4.12)	(-1.56)
Observations	552	694
Adjusted R2	0.0670	0.0472

Table 8
Instrumenting Outside Director Representation with Post-Reform Periods

Panel A of the table presents the results of two-stage least squares instrumental variables estimation of acquirer CARs on the fraction of outside directors, controlling for acquirer- and deal-specific characteristics. The dependent variable in the first stage regression, *Outside Directors*, is the fraction of outside directors on the board. We instrument *Outside Directors* with the *Post-Reform* period indicator, taking the value one for observations taking place after 1992 during the Cadbury period or after 2003 during the Higgs period, and zero otherwise. The dependent variable in the second stage regressions is acquirer CAR which is the cumulative market-adjusted abnormal return of the acquiring firm over the 3-day window surrounding the acquisition announcement, with FTSE All-Share Index as the benchmark. All other explanatory variables are defined in Table 1. Panel B repeats the two-stage least squares analysis for two additional dependent variables (only coefficients of interest are reported). *CCAR* is the 3-day combined firm CAR (synergy gain), calculated as the weighted average of acquirer and target CAR with market value two days prior to the announcement as weights. *BSOS* is bidder share of synergies, computed as bidder dollar-denominated gain divided by dollar-denominated synergy gain when latter is positive, and (1 − bidder dollar-denominated gain) divided by dollar-denominated synergy gain when the latter is negative. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. White's heteroskedasticity-robust *t*-statistics are reported in parentheses. *F*-test for the excluded instrument in the first stage is also reported.

Panel A: CAR	Cadbury Period		Higgs Period	
	First Stage	**CAR**	**First Stage**	**CAR**
Constant	-0.0085	-0.0274	0.3651***	0.0252
	(-0.10)	(-1.10)	(3.53)	(0.27)
Post-Reform	0.1357***		0.0782*	
	(3.79)		(1.89)	
Outside Directors		0.2522***		0.1801
		(3.02)		(0.95)
Stock Deals	0.0719**	-0.0207	-0.0189	-0.0436***
	(2.02)	(-1.39)	(-0.54)	(-3.10)
Hostile	0.0206	0.0183	0.1335	-0.0043
	(0.39)	(0.90)	(1.38)	(-0.10)
Tender Offer	0.0987**	-0.0383**	-0.0048	-0.0111
	(2.50)	(-2.51)	(-0.10)	(-0.69)
Relative Size	-0.0017	-0.0127*	0.0062	-0.0046**
	(-0.09)	(-1.78)	(0.97)	(-2.28)
Diversifying Deals	-0.0872**	0.0157	0.0196	0.0012
	(-2.45)	(1.36)	(0.56)	(0.09)
Run-Up	0.0480	0.0007	-0.0158	0.0367**
	(1.08)	(0.04)	(-0.97)	(2.46)
Market Value (Ln)	0.0332***	-0.0032	0.0230***	-0.0074
	(3.17)	(-0.69)	(2.69)	(-1.51)
Market-to-Book Ratio	0.0010	0.0002	-0.0000	0.0002***
	(1.17)	(0.71)	(-0.32)	(2.99)
Leverage	0.1069	-0.0850*	-0.0781	0.0432
	(0.96)	(-1.84)	(-0.70)	(0.98)
Sigma	1.0094	0.6202	-1.0446	-3.1700***
	(0.43)	(1.10)	(-0.57)	(-2.79)
F-test for excluded instrument	14.37		3.59	
Observations	104	104	94	94
Adjusted R2	0.2991	0.1670	0.0874	0.1467

Panel B: CCAR and BSOS	Cadbury Period			Higgs Period		
	Outside Directors	CCAR	BSOS	Outside Directors	CCAR	BSOS
Post-Reform	0.1126**			0.0838*		
	(2.34)			(1.99)		
Outside Directors		0.2862**	6.4606		0.1333	4.1368
		(2.22)	(0.49)		(0.66)	(0.28)
F-test for excluded instrument	5.49			3.97		
Observations	62	62	62	89	89	89
Adjusted R2	0.3615	0.1510	0.0642	0.1100	0.0863	-0.0059

Table 9
Modified Difference-in-Differences Test

The table presents a variant of the difference-in-differences test of acquirer CAR, combined firm CAR (CCAR), and bidder share of synergies (BSOS) in public deals for the affected and unaffected sets of acquirers before and after the reform. Acquirer CAR is the cumulative market-adjusted abnormal return of the acquiring firm over the 3-day window surrounding the acquisition announcement, with FTSE All-Share Index as the benchmark. *CCAR* is the 3-day combined firm CAR (synergy gain), calculated as the weighted average of acquirer and target CAR with market value two days prior to the announcement as weights. *BSOS* is bidder share of synergies, computed as bidder dollar-denominated gain divided by dollar-denominated synergy gain when latter is positive, and (1 – bidder dollar-denominated gain) divided by dollar-denominated synergy gain when the latter is negative. The *affected* set of acquirers consists of firms not satisfying the minimum number of outside directors' requirement of the respective report in the pre-reform period and of firms satisfying it in the post-reform period. The *unaffected* set consists of acquirers already in compliance with the minimum number of outside directors' requirement of the respective report in the pre-reform period and of acquirers not complying with it in the post-reform period. N denotes the number of observations. Significance tests are two-tailed.

Panel A: Cadbury	CAR [N]	*p-val*	CCAR [N]	*p-val*	BSOS [N]	*p-val*
Unaffected						
(1): Pre	-1.15% [28]	*0.073*	3.39% [18]	*0.007*	-1.20 [18]	*N/A*
(2): Post	0.69% [19]	*0.579*	1.30% [10]	*0.273*	-3.36 [10]	*N/A*
(3): Diff (2)-(1)	1.84%	*0.148*	-2.09%	*0.232*	-2.16	*0.184*
Affected						
(4): Pre	-2.74% [38]	*0.002*	1.45% [23]	*0.358*	-3.69 [23]	*N/A*
(5): Post	1.25% [31]	*0.226*	5.65% [18]	*0.003*	-1.49 [18]	*N/A*
(6): Diff (5)-(4)	3.99%	*0.003*	4.20%	*0.072*	2.19	*0.523*
(7): Diff-in-Diff (6)-(3)	2.15%	*0.259*	6.29%	*0.026*	4.35	*0.233*

Panel B: Higgs	CAR [N]	*p-val*	CCAR [N]	*p-val*	BSOS [N]	*p-val*
Unaffected						
(1): Pre	-2.77% [28]	*0.125*	0.12% [24]	*0.922*	-2.96 [24]	*N/A*
(2): Post	-1.11% [11]	*0.515*	4.74% [11]	*0.110*	-0.82 [11]	*N/A*
(3): Diff (2)-(1)	1.67%	*0.581*	-4.86%	*0.070*	2.14	*0.502*
Affected						
(4): Pre	-3.64% [24]	*0.078*	2.56% [22]	*0.213*	-0.70 [22]	*N/A*
(5): Post	-0.25% [37]	*0.773*	2.48% [37]	*0.021*	-1.47 [37]	*N/A*
(6): Diff (5)-(4)	3.39%	*0.080*	0.08%	*0.968*	-0.77	*0.610*
(7): Diff-in-Diff (6)-(3)	1.72%	*0.592*	-4.94%	*0.182*	-2.90	*0.242*

Table 10
The U.S. Takeover Market Surrounding Sarbanes-Oxley Act (2005) and Subsequent Listing Requirements

The table presents the results of cross-sectional regression analysis of acquirer CARs on the fraction of outside directors, controlling for acquirer- and deal-specific characteristics. The sample covers U.S. domestic acquisitions of public and private targets during the 8-year period centered on the passage of the Sarbanes-Oxley Act (1998-2005) for which governance data are available from RiskMetrics. The dependent variable is acquirer CAR, which is the cumulative market-adjusted abnormal return of the acquiring firm over the 3-day window surrounding the acquisition announcement, with CRSP value-weighted index as the benchmark. *Outside Directors* is the proportion of outside directors on the board. *BCF Index* is the index of antitakeover provisions created by Bebchuk, Cohen and Ferrell (2009). All other explanatory variables are defined in Table 1. Industry fixed effects are based on 2-digit SIC code of the acquirer. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. White's heteroskedasticity-robust *t*-statistics are reported in parentheses.

	(1)	(2)
Constant	0.0813***	0.0736***
	(4.05)	(2.88)
Outside Directors	-0.0563***	-0.0401
	(-3.10)	(-1.44)
Outside Directors X Public Target	0.0873***	0.0550**
	(3.71)	(2.27)
Public Target	-0.0861***	-0.0600***
	(-5.17)	(-3.41)
Outside Directors X BCF Index		-0.0017
		(-0.25)
BCF Index		0.0013
		(0.14)
Stock Deals	-0.0037	-0.0073*
	(-0.87)	(-1.67)
Hostile	0.0029	0.0025
	(0.17)	(0.15)
Tender Offer	0.0131	0.0135*
	(1.51)	(1.81)
Relative Size	-0.0264***	-0.0191**
	(-2.93)	(-2.03)
Diversifying deals	0.0003	-0.0026
	(0.05)	(-0.54)
Run-Up	0.0041	0.0021
	(1.25)	(0.42)
Market Value (Ln)	-0.0052***	-0.0048***
	(-3.14)	(-2.86)
Market-to-Book Ratio	0.0004*	0.0004
	(1.83)	(1.34)
Leverage	0.0154	0.0224
	(1.14)	(1.57)
Sigma	-0.3255	-0.4633*
	(-1.34)	(-1.93)
Industry FEs	YES	YES
Observations	1,523	1,250
Adjusted R2	0.0643	0.0604