

# **Executive Turnover in UK Firms: the impact of Cadbury**

by

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### Abstract

*This study examines the determinants of non-routine CEO departure in a comprehensive sample of UK listed firms between 1990 and 1995. It looks at whether the Cadbury Report, published in December 1992 has had an impact on the agency problem of managerial entrenchment. I find a strong negative relationship between firm performance and the probability of non-routine CEO departure, with evidence that the disciplinary process has become more efficient in the post-Cadbury regime. In addition, I find weak evidence that the insulatory effect of CEO stock ownership diminishes in power in the later regime. Whilst dividing the roles of CEO and chairman reduces the entrenchment of the CEO, the number of non-executive directors has no impact on the probability of his dismissal following poor firm performance.*

JEL Classification: G3

Keywords: Corporate governance; managerial entrenchment; board structure

## **1. Introduction**

This study examines the determinants of forced CEO departure in UK All Share firms. The study period is centred on the implementation date of the Cadbury Code (30 June 1993) and 2110 firm years are employed in the analysis. Specifically, I investigate whether the introduction of the Cadbury reforms is associated with a change in the determinants of non-routine CEO departure in UK listed firms. This enables us to draw conclusions about whether the reforms caused a reduction in the power of managers to resist replacement – managerial entrenchment.

At the extreme, allowing inefficient managers to maintain their control over corporate resources in competitive product markets will result in control of those resources being reallocated via the bankruptcy process. However, this may not be the most efficient way of transferring control from weak managers to strong managers; the discount at which assets are traded in such situations may mean that the residual claimants (ie the equity holders) receive nothing. Such risks increase the rate of return required by shareholders (Manne 1965). The presence of an active takeover market reduces these risks and leads to investors demanding lower rates of return. The market for corporate control therefore provides a more efficient way of reallocating control of corporate resources. However, even this has been criticised as a ‘discipline of last resort’, the argument being that managers should be subject to labour market discipline, simply being replaced by better quality managers if they fail to meet shareholder expectations (Fama 1980). Aware that they face such discipline, managers have incentives to ‘entrench’ themselves, making themselves more costly to displace. Jensen and Ruback (1983) argue that the resistance to replacement exhibited by poor managers may be the costliest of all agency problems.

In December 1992, the UK Committee on the Financial Aspects of Corporate Governance (the Cadbury Committee) published their final report. In it, they called for improvements in the structure of UK boards, particularly in limiting the power of the chief executive officer (CEO). Two recommendations, which reflected perceived best practice, and which have since been widely adopted, are the separation of the roles of CEO and chairman of the board, and keeping a minimum of three non-executive directors on the board. Around the same time, the Institutional Shareholders Committee issued a document encouraging its members to take a more proactive interest in the governance of their investee firms, urging them to use the power of their votes largely to back management, so that the threat of the withdrawal of support would carry some weight with management.

This study looks for evidence that the Cadbury board structure reforms and the concomitant increase in emphasis on institutional monitoring has reduced managerial entrenchment. If the Cadbury reforms have reduced the power of UK top managers such that it is now easier to dismiss them for poor performance, then UK firms may find that external finance is available to them at more competitive rates (Shleifer and Vishny 1997). Increased monitoring by institutions will decrease the risk of other providers of finance at no extra cost. A reduction in managerial entrenchment may therefore reduce firms' cost of capital, increasing their competitiveness, and is therefore desirable to shareholders.

There are many US studies which provide evidence of a significant negative relationship between firm performance and top executive departure; there are fewer such studies using UK data. This paper extends the work conducted on UK firms by using a more comprehensive dataset than earlier studies. The other major contribution of this study is that it examines the relationship between CEO departure, firm

performance and corporate governance measures across different regulatory time periods (pre- and post-Cadbury), and provides evidence that Cadbury has served to reduce managerial entrenchment, by strengthening the association between firm performance and CEO survival, although, even before Cadbury, there was a strong association between firm performance and CEO departure. Evidence that the Cadbury reforms have affected managerial entrenchment, provides implications for future governance reform policy.

The paper is structured as follows. Section 2 provides a review of relevant literature while section 3 develops the hypotheses to be tested; section 4 describes the sample and data and defines some terms used in the study; section 5 discusses the results of univariate tests comparing non-routine CEO departure firms with no departure firms; section 6 discusses the regression results; and section 7 summarises and concludes.

## **2. Literature Review**

### *2.1 The association between firm performance and non-routine top executive departure*

Extant literature provides consistent evidence of a negative association between non-routine top executive departures and poor firm performance.

Coughlan and Schmidt (1985) examine whether the probability of changes in top management is conditional on stock price performance. Controlling for routine retirements by eliminating CEOs aged 64 or over, they find performance year cumulative abnormal stock returns to be negatively and significantly related to the probability of CEO departure; this relationship is insignificant in the older group.

Warner, Watts and Wruck (1988) also explore the association between firms' stock returns and subsequent top management changes. They construct a sample of non-

routine departure firms by reading press articles surrounding top management changes and eliminating departures due to takeovers, death, illness, management succession and retirement. They find a strong negative relation between non-routine top executive departure and final year of office market-adjusted stock returns. Ranking firms by annual stock returns into deciles and observing turnover rates, they find that, although in both the full sample and the forced departure sub-sample, firms in the bottom decile are much more likely to experience turnover than firms in the top decile, the turnover frequencies do not decline monotonically. The actual turnover rate of 6% for firms in the lowest performance decile of the forced departure group implies that management turnover is not highly sensitive to stock returns.

Weisbach (1988) argues that the probability of a bad CEO being fired is impounded in the firm's stock price. Low prior period CARs may reflect the market's belief that it will be difficult to displace entrenched managers, so two firms with equal performance but different levels of entrenchment may have different prior year stock returns. He therefore includes an accounting based measure in his analysis, as accounting earnings do not reflect the market's anticipation of CEO departure. His performance measure is industry-adjusted return on assets. His results indicate that boards use accounting performance measures more than stock returns when deciding whether to dismiss a CEO; also that it can take up to two years for such action to be taken. Denis and Denis (1995) find significantly negative CARs for 250 days prior to the announcement of a forced resignation. They also find that CEO departure firms' changes in ROA are significantly lower than the industry median for years  $-3$  to  $-1$ , where departure occurs in Year 0.

In the UK, Dahya, Lonie and Power (1998) find prior year abnormal stock returns to be negatively associated with non-routine top executive departure, where top

executive is defined as CEO or chairman. However, this study uses a sample of CEO departures drawn from the Extel news service database. There is some recent evidence (Dedman and Lin, 2000) that firms who do not officially release CEO departure news (such that it would be reported by Extel) vary significantly from official announcers with respect to prior market performance. This suggests a bias may exist in this sample. Also, Dahya et al (1998) adopt a matched sampling approach in their multivariate tests. One of the fundamental requirements of such an approach is that of controlling for important factors. The control sample of Dahya et al (1998) is significantly larger (about 3 times the size) than the experimental sample. As size is a significant factor in so many studies of firm behaviour, failure to control for this may seriously bias their results.

## *2.2 The association between ownership structure and non-routine top executive departure*

Ownership structure may affect the association between firm performance and the probability of top executive dismissal. The higher the ownership stake of the manager, the more difficult he is to dismiss due to his voting power and the negative signal he could send to the market by dumping his stock. Salancik and Pfeffer (1980), find that CEO tenure is positively related to the firm being owner managed, ie the manager owns at least 4% of the firm's common stock. However, Weisbach (1988) finds that CEO ownership has no significant effect on the probability of his losing his job. Denis, Denis and Sarin (1997) show a substantial drop in the rate of non-routine top executive departures for managerial ownership levels in excess of 10% of equity. Their regression analysis reveals that top executive turnover is negatively related to firm performance where the executive owns less than 1% of the firm's common stock, but that this relationship becomes insignificant at higher levels of managerial

ownership. In the UK, Dahya et al (1998) find that non-routine executive turnover is much more common in firms where top executive ownership is less than 1% than in firms with larger managerial stakes. In fact, they find no incidence of forced top executive departure where the manager's stake exceeds 10% of equity. This conflicts with the finding of Gilson (1989), who examines CEO turnover in a sample of poorly performing US firms. In 6% of cases, the departing manager held more than 10% of the firm's common stock, suggesting that stock ownership does not insulate managers of US firms when performance is sufficiently poor.

Gilson (1989) also finds leverage to be positively related to CEO departure in poorly performing firms. This may be due to the power of debtholders in times of financial crisis. As a condition of continued support for the firm, debtholders may demand the replacement of the top manager.

Economies of scale in monitoring, coupled with the negative impact of large scale sales of stock, render institutional blockholders more powerful than small investors in terms of their influence on investee firms (Black and Coffee 1994). Denis et al (1997) find the presence of an institution holding an equity stake of more than 5%, positively affects the probability of top executive turnover, although the level of institutional ownership is not significant. In the UK, Dahya et al (1998) find that the level of institutional ownership *negatively* influences the probability of a forced top executive departure. This apparent conflict may be due in part to their control sample comprising much larger firms than their departure sample, and institutional investors gravitating towards larger firms.



### *2.3 The association between board structure and non-routine top executive departure*

The two main aspects of board structure considered in existing empirical research are the combination of non-executives and executives which makes up the board, and whether the roles of CEO and chairman are combined. Outside directors are subject to different incentives and disciplinary mechanisms than those of inside directors. The risk to their valuable reputations motivates them to act as effective monitors of the executive directors (Fama and Jensen 1983). Combining the roles of CEO and chairman was seen as an overallocation of power to a single individual by the Cadbury Committee (1992), and the high proportion of firms which have complied with the recommendation to divide these roles is evidence that there is some cost to the firm of maintaining a combined CEO/chairman (Dedman 2000). It may therefore be predicted that dividing the roles at the top of the firm and employing sufficient non-executive directors will reduce the power of the top executive, and strengthen the observed negative relationship between firm performance and the probability of top executive departure.

Salancik and Pfeffer (1980) fail to find a significant association between CEO tenure and the proportion of inside directors on the board. However, Weisbach (1988) finds that an outsider dominated board (where outside directors make up at least 60% of the board) has a significant positive impact on the probability of a CEO losing his job. He also finds that the stake of the top two officers is negatively related to the proportion of outside directors on the board, as is the stake of the whole board. The results regarding the impact of board structure in Denis et al (1997) are consistent with the earlier findings of Weisbach, although weaker with respect to the influence of outside directors on top executive departure.

Dahya et al (1998) find that, after controlling for ownership characteristics, performance and firm size, combining the roles of CEO and chairman has a negative impact on the probability of top executive non-routine departure in the UK. However, the proportion of non-executives on the board has no significant effect.

#### *2.4 Summary*

Evidence from both the UK and US indicates that good firm performance is positively associated with the continuance of top management. In the presence of poor firm performance there is evidence that corporate governance measures, such as board and ownership structure, can increase the likelihood of top management departure.

### **3. Hypothesis Development**

This section uses evidence from prior (mainly US-based) literature to develop hypotheses to be tested on a UK sample spanning two regulatory time periods. The hypotheses (a) relate to general effects, while the hypotheses (b) look for structural changes in observed relationships in the post-Cadbury time period.

Prior US research has consistently shown a negative relationship between firm performance and the probability of CEO departure. There is evidence that both stock price-based and accounting-based measures are significantly related to the chance of a CEO losing his job. There is also evidence that it can take up to two years for the disciplinary process to remove the CEO (Coughlan and Schmidt 1985, Warner et al 1988, Weisbach 1988).

*H1a: The incidence of non-routine CEO departure will be negatively related to the prior performance of the firm.*

If the reforms initiated by the Cadbury Code have taken away some of the insulation from removal previously enjoyed by managers, then we might expect to see a

structural change in the relationship between firm performance and CEO departure, between the two time periods (pre- and post-Cadbury). Specifically, we might expect to see any observed relationship becoming stronger in the post-Cadbury time period.

*H1b: The negative relationship between non-routine CEO departure and prior firm performance will be stronger post-Cadbury.*

Previous authors have examined the effect of the firm's ownership structure on the probability of the manager of a poorly performing firm being replaced. The relationship between firm performance and non-routine CEO departure has been found to be positively influenced by the presence of institutional blockholders (Denis et al 1997) and by the ratio of debt to equity (Gilson 1989), and negatively affected by the ownership levels of the CEO (Denis et al 1997, Dahya et al 1998). These findings lead to the following testable hypotheses:

*H2a: The incidence of non-routine CEO departure will be positively associated with institutional ownership and gearing, and negatively associated with levels of CEO ownership.*

I also test whether the Cadbury reforms have encouraged institutions and debtholders to lobby for the removal of managers of under-performing firms to the extent that these managers are no longer protected by having high levels of stock ownership.

*H2b: Post-Cadbury, there will be a stronger positive association between non-routine CEO departure and institutional ownership and gearing levels, and a less negative relationship between the probability of non-routine CEO departure and CEO ownership.*

The final set of hypotheses examine the association between CEO departure and the structure of the firm's board.

*H3a: The probability of non-routine CEO turnover will be positively associated with the proportion of non-executive directors on the board and negatively associated with the CEO also holding the title of Chairman of the board.*

The Cadbury Code emphasised the role of non-executive directors and called for an end to the practice of CEOs having ‘unfettered power’. We might therefore expect to observe non-executives having more power post-Cadbury; we may also witness a reduction in the insulation enjoyed by joint CEO/chairmen.

*H3b: Post-Cadbury, there will be a stronger positive relation between CEO departure and the proportion of non-executives on the board, and a more negative association between CEO departure and the CEO also holding the title of Chairman of the board.*

These hypotheses are tested on samples of firms as described in the next section.

## **4. Sample and Data**

### *4.1 The Sample*

The sample is based on FT All Share firms which appear in the Index in April of each year from 1990 to 1995. To be included in the sample each firm must have board structure data available in the Corporate Registers for the year of inclusion in the Index and the subsequent year; share price performance data must be available in Datastream; and accounting data must be available from the Global Vantage database. The basic sample therefore comprises 2110 firm years.

### *4.2 Identifying CEO Departures*

The name of the top executive (CEO or MD where there is no named CEO) is taken from the Stock Exchange Yearbook (SEYB) for the accounting year of inclusion in

the All Share Index (Year 0) plus the following year. A change is deemed to have occurred where the title holder has changed between Year 0 and Year 1. However, the SEYB reports the board as it stands at the report date, which may be two or three months later than the firm year end. In order to classify the change events in the correct year, the dates of changes are checked using Extel and the Financial Times (FT). Where a change occurs, Year 0 is the last full accounting year of service of the outgoing CEO.<sup>1</sup>

#### 4.3 *Definition of Non-routine Departure*

In this study we are interested in the effect of the Cadbury reforms on the propensity of boards to force out poorly performing top executives. Departures due to retirement, death or illness, normal succession, CEO's leaving to take up another post, and the firm splitting the roles of CEO and chairman are interesting in their own right, but are not the issue here. In order to screen out such departures, press reports (from the FT) regarding the departure are studied and each departure is subsequently classified as being due to retirement; resignation; new job (where the CEO leaves to take up a similar position elsewhere); death or illness; dismissal; succession (where the CEO becomes chairman or vice-chairman); split (where the CEO was also chairman but divided the roles and kept the chairman position); or remains unclassified because no news articles are available. The non-routine departure (NRD) sub-sample consists of departures due to dismissal or resignation.<sup>2</sup> This classification system is more comprehensive than those generally employed in prior studies and should therefore result in a less noisy measure of forced CEO departure.

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<sup>1</sup> For ease, I now refer to the top executive in this study as the CEO, whether he is the CEO or the MD.

<sup>2</sup> Unreported t-tests on the means of the dismissal and the resignation sub-samples reveal no significant differences between these sets.

#### 4.4 *Firm Performance Measures*

Consistent with Warner et al (1988), stock price performance is measured as the firm's annual share return to the accounting year end, Year 0, minus the return on the All Share Index for the same 12 month period (MadjRet). A lag of this is also used (MadjRet1), ie the market-adjusted return in the previous year, Year -1. This measure of stock price performance abstracts from general market movements and can be thought of as an approximation of the firm's risk-adjusted return (on the assumption that the firm's beta is one).

Accounting performance (ROA) is measured as the firms earnings before extraordinary activities for accounting year end 0, deflated by the book value of total assets at the same date. An industry relative measure of accounting performance is also used (RelROA). This is ROA *less* the ROA for the median firm in the same 2-digit SIC classification from the whole population of firms on the Global Vantage (GV) database. This is comparable to the accounting based performance measure employed by Weisbach (1988). This measure may be thought of as the firm's risk-adjusted accounting return.

#### 4.5 *Board and Ownership Structure*

In addition, the effects of board and ownership structure on the likelihood of CEO departure, are examined. I use the dummy variable ('Split') which is coded one if the CEO is not also the chairman, and also include the proportion of non-executive directors on the board ('Propnex') both measured as at accounting year end, Year 0.

The proportion of equity held by institutional blockholders (with stakes of at least 3%) is used as a measure of institutional ownership ('Propinst'). The ratio of debt to

debt and equity, as at Year End 0 is also included in the tests as a measure of firms' gearing ('Lev').

This information is collected from the Hemington Scott Corporate Registers. Lack of data availability further reduces the sample here, but firms in the reduced sample do not differ significantly with regard to size and performance to firms in the larger sample, so sample bias problems are assumed to be minor.

#### *4.6 Definition of Post-Cadbury*

In order to ascertain whether the Cadbury Report has had any observable effect on managerial entrenchment, the sample is partitioned into pre-Cadbury and post-Cadbury firm years. Departures (or lack of them) from firms in this study occur within 12 months of the accounting year end, Year 0. Firms with accounting year ends prior to 1<sup>st</sup> July 1992 will therefore experience any departure before the implementation date of 30 June 1993. Firms with accounting year ends prior to 1<sup>st</sup> July 1992 are therefore classified as pre-Cadbury; those with later year ends are categorised as post-Cadbury.

#### *4.7 Description of Sample Firms*

Table 1 describes the sample. It shows that much of the data is non-normally distributed. Skewness is non-zero and most of the data is leptokurtic in distribution. The size variable, initially measured as the book value of firms' total assets, is log-transformed and the distribution of the transformed variable approaches normal. This is the base sample which will be employed in the analysis.

***Table 1 about here***

## 5. Univariate Analysis

This section contains descriptive analyses of various sub-samples of the base dataset described in the previous section.

### 5.1 *Departure Rates Pre- and post-Cadbury*

Table 2 examines the rates of CEO departures across sample firms in each time period under study. Panel A compares the rates of total CEO departures. Prior to Cadbury, the turnover rate was 11.4%, which does not differ significantly (in chi-squared tests) from the rate of 11.8% in post-Cadbury firms.

Panel B breaks down the departures in each period by reason. A chi-squared test conducted on this panel yields insignificant results, indicating that reasons for CEO departures are not dependent upon the time period in which they occurred. Testing the individual rows of Panel B also yields insignificant chi-squared statistics except in the case of the new job category. This may be evidence of changes in the managerial labour market, but the sample size is too small for sound inferences to be drawn.

Panel C gives the proportion of each period's CEO change firms which experience a non-routine departure. These proportions (36.4% pre-Cadbury and 34.1% post-Cadbury) do not differ significantly in chi-squared tests.

Table 2 demonstrates that there has been no significant change in rates of CEO departures, or forced CEO departures, between the two regulatory regimes. Any impact on managerial entrenchment made by the Cadbury Code is not observable at such a simple level.

*Table 2 about here*



## 5.2 *A Comparison of Non-routine Departure Firms with No-departure and Other Departure-type Firms*

Table 3 compares the non-routine departure firms to firms with no departure for each time period. Departures due to dismissal or resignation are classified as non-routine departures (NRD).

Apart from pre-Cadbury median lagged industry-adjusted return on assets, firms in the NRD sub-sample suffer the worst performance of the three groups, whatever the performance measure employed, in both time periods. This suggests that poorly performing firms are more likely to replace their top manager than well performing firms.

In both time periods, the NRD firms are more likely to divide the roles of CEO and chairman of the board. This is consistent with the results in Dahya et al (1988) who found that combining the roles negatively influenced the probability of CEO departure for reasons other than departure. (Note that the sample in Dahya et al (1988) comprised pre-Cadbury firms only.)

The number and proportion of non-executive directors appears to be very similar across sub-groups in both time periods.

In terms of outside ownership, post-Cadbury NRD firms have the highest mean and median proportion of their equity held by institutional blockholders (stakes  $\geq 3\%$ ). Post-Cadbury NRD firms also have the highest gearing ratio of the three groups. This suggests that large blockholders and debtholders may have been playing a more proactive governance role since 1993.

CEO ownership levels are at their lowest in the NRD group both pre- and post-Cadbury. This supports prior UK work which suggests stock ownership is a

managerial entrenchment device (Dahya et al, 1998). However, average CEO ownership levels amongst NRD CEOs are higher post-Cadbury, which may indicate a reduction in the protection from dismissal offered to CEOs by share ownership. In order to both control for the non-normal distribution of the CEO ownership variable, and to replicate earlier work, I introduce two dummy variables into Table 3. The first, OwnDum, is an indicator variable, taking the value of one if the CEO owns at least 4% of the firm's equity. This is the threshold employed by Salancik and Pfeffer (1980). The second, OwnDum2 is also an indicator variable, but takes the value of one if the CEO owns at least 1% of the firm's equity. This is the ownership limit used by Dahya et al (1998). In both time periods, the NRD category has the lowest proportion of CEOs reaching these two ownership thresholds. However, there is a noticeable reduction in the proportion of NRD firms whose CEOs surpass these limits in the post-Cadbury period. This implies that there is, in fact, an *increase* in the entrenchment capability of CEO ownership in the later time period.

Tenure is shorter for NRD CEOs in both time periods. This supports the contention that, given enough time in office, CEOs are able to insulate themselves from dismissal, perhaps in ways which are difficult to observe (eg in the recruitment of sympathetic board members – see Shivdasani and Yermack, 1999). Alternatively, it may simply illustrate how firms observe the performance of CEOs for the first few years in office, and how some CEOs fail to survive this test.

Age is highest in the 'other departure' sub-group. This is as would be expected, given that this group includes CEOs who are retiring or succeeding to the position of chairman.

Finally, size does not appear to vary widely across sub-groups, failing to support earlier work by Denis et al (1997) in the US and Dayha et al (1998) in the UK. I

attribute the apparent inconsistencies firstly to differences between the two countries, and to the methodology employed by Dahya et al. (As mentioned earlier, they fail to match their control and experimental samples by firm size, which is often correlated to other variables in accounting research.)

***Table 3 about here***

**5.3 *Departure Rates and Firm Performance***

In Table 4 the sample firms are divided into deciles according to their market adjusted annual stock returns for Years 0 and -1. Although the table shows that the probability of non-routine departure does not increase monotonically as performance decreases (this is what Warner 1988 also found), some interesting patterns emerge. Prior to Cadbury, 72% of non-routine departures were from the bottom half of performers by market adjusted stock returns for Year 0 (the last full year the CEO was in office); post-Cadbury this had risen to 89%. Pre-Cadbury 74% of departures were in the lowest half of performers as measured by penultimate CEO year (Year -1) stock returns; post-Cadbury this had dropped to 62%. This may indicate that the labour market has increased the speed at which it disciplines poorly performing CEOs.

***Table 4 about here***

**5.4 *Departure Rates and Firm Ownership***

Prior literature suggests that the relationship between firm performance and top executive dismissal may be influenced by the ownership structure of the firm. Salancik and Pfeffer (1980) find that the average tenure of CEOs who own at least 4% of the firm's common stock is much longer than that of CEOs with lower levels of ownership (16 years in owner managed firms versus 5.41 years in externally controlled firms and 4.89 years in management controlled firms). Dahya et al (1998)

find a forced departure rate of 4.3% for firms whose CEO owns less than 1% of equity; 0.3% for firms whose CEO owns 1%-5% of equity; and 0.9% where the CEO owns between 5% and 10% of stock. They find no incidence of forced departure where the CEO owns more than 10% of stock.

Table 5 replicates Salancik and Pfeffer's (1980) firm control types and finds that in the UK, as in the US, the tenure of CEOs in owner-managed firms is much longer than the tenure of managers in externally-controlled or manager-controlled firms. Although this relation holds in both time periods, the average tenure of CEOs of owner-managed firms has fallen by 8.5% post-Cadbury.

*Table 5 about here*

Table 6 partitions the sample according to the CEO ownership classifications used by Dahya et al (1998). For CEO ownership levels of less than 1% our forced departure rates are similar, at over 4%. However, I find higher non-routine turnover rates for CEO ownership of 1%-5%, with a large (though statistically insignificant) increase in the rate (from 2.02% to 4.6%) in the post-Cadbury regime. For CEO ownership levels in excess of 5%, there are no forced departures in our pre-Cadbury sample, although post-Cadbury 1.41% of firms experienced non-routine top executive departure in this ownership category. Like Dahya et al (1998), I find no forced CEO departures where that executive owns 10% or more of the firm's stock. Rates of top executive turnover partitioned with respect to top executive ownership stakes imply that CEO ownership insulates managers from dismissal, although there is an apparent reduction in this protection post-Cadbury. However, it must be noted that neither Dahya et al nor Table 6 allow for firm performance in this analysis. Both sets of results would also be explained by a positive relationship between CEO ownership and firm performance.

*Table 6 about here*

5.5 *Summary*

The univariate tests in this section provide useful indicators of associations between firm performance, governance variables, regulatory regime and non-routine CEO departures in UK All Share firms in the first half of the 1990s.

Firstly, there is no apparent change in the rate of CEO departure between the two regimes. The reasons for departure are also generally independent of the time period in which they occur.

Non-routine departure (NRD) firms suffer worse accounting and stock market performance than both no-departure firms and other departure type firms. This holds true for both Year 0 and Year –1 performance in each time period. However, tests in this section also indicate that, in the post-Cadbury regime, Year 0 performance is more strongly related to non-routine departure, consistent with an acceleration in the disciplinary process between the two time periods.

Whilst there is some evidence to suggest that combining the roles of CEO and chairman of the board may serve to entrench the top manager, there is no indication that non-executive directors affect the likelihood of non-routine CEO departure.

Descriptive analysis points to there being a positive association between the proportion of a firm's equity held by institutional blockholders and non-routine departure; NRD firms are also more highly geared than other firms in the sample.

Replications of tests by Salancik and Pfeffer (1980) and Dahya et al (1998) generate results consistent with these authors, in that non-routine top executive turnover occurs at a much lower frequency where CEO share ownership is high. However, I extend

their results by showing that the insulatory effect of managerial share ownership appears to have diminished post-Cadbury.

The following section uses multivariate analysis to examine the hypotheses generated in section 3.

## **6. The Determinants of Non-routine Top Executive Departures**

This section reports the results of multivariate tests on the sample firms, examining the effects of firm performance, ownership structure and board structure on the probability of non-routine, or forced, CEO departure. The tests employed are logit and ordinary least squares regression. The dependent variable used in the logit analysis is non-routine departure (NRD), the sum of resignations and dismissals. Non-NRD firms are no-departure firms plus firms whose CEOs leave for other reasons, these being retirement, succession, splitting the roles of CEO and chairman, getting a new job, death or illness, or those firms whose departures I was unable to classify. The dependent variable employed in the OLS tests is CEO tenure, measured as the difference in years between the accounting year end of the last full year the CEO held office (Year End 0) and the date he was appointed to the position. Data availability restricts the sample size to 1685 firms when tenure is the dependent variable.

### *6.1 The Association Between Firm Performance and Non-routine Top Executive Departure*

This sub-section provides tests of the following hypotheses:

*H1a: The incidence of non-routine CEO departure will be negatively related to the performance of the firm.*

*H1b: The negative relationship between non-routine CEO departure and firm performance will be stronger post-Cadbury.*

Table 7 reports the results of logit regressions which examine the association between the probability of a forced CEO departure and final (Year 0) and prior to final year (Year -1) firm performance. The results of Model 1a support the findings of the univariate tests, and indicate that non-routine chief executive departure is negatively related to final and penultimate year market adjusted stock returns, although this association is only significant for the accounting year immediately prior to the departure (Year 0). Model 1b provides more detail, and suggests that, whilst penultimate year stock market performance was significantly associated with non-routine CEO turnover prior to Cadbury, a significant negative shift in the relationship renders it insignificant post-Cadbury. Model 1b also contains evidence that the significant negative association between Year 0 share returns and CEO departure which existed prior to Cadbury, has become even stronger since Cadbury (see the significant negative coefficient on the interaction term  $MadjRet*PostCad$ ). This evidence suggests that, in the UK prior to Cadbury, it could take up to two years for a poorly performing manager to be fully disciplined by the labour market, a finding consistent with earlier US work (eg see Coughlan and Schmidt 1985, Warner et al 1988). However, it appears that, post-Cadbury, the disciplinary process is working faster, with CEOs more likely to lose their jobs following only one year of stock market underperformance by their firms.

Models 2a and 2b show a negative, though generally insignificant, association between the firm's accounting performance and the likelihood of the CEO resigning or being fired. Model 2b suggest that, pre-Cadbury, penultimate year ROA may have played a role in boards' retain/dismiss decisions, but this association is no longer significant in the later time period.

Models 3a and 3b indicate that firms use industry-adjusted accounting performance measures when deciding whether to retain their CEOs. This is consistent with results obtained in the US by Weisbach (1988), although it is Year 0 RelROA which is significant in the UK. (It is lagged change in industry adjusted earnings which Weisbach finds significant.)

Table 7 therefore informs us that it is final year market adjusted share returns and final year industry-adjusted accounting returns which are most strongly associated with non-routine CEO departures in the UK. This supports hypothesis H1a. Furthermore, in support of hypothesis H1b, there is evidence that the disciplinary process has been operating more quickly in the later regime.

## *6.2 The Association between Ownership Structure, Board structure and Non-routine CEO Departure*

This section looks for evidence to support the following hypotheses:

*H2a: The incidence of non-routine CEO departure will be positively associated with institutional ownership and gearing, and negatively associated with levels of CEO ownership.*

*H2b: Post-Cadbury, there will be a stronger positive association between non-routine CEO departure and institutional ownership and gearing levels, and a less negative relationship between the probability of non-routine CEO departure and CEO ownership.*

*H3a: The probability of non-routine CEO turnover will be positively associated with the proportion of non-executive directors on the board and negatively associated with the CEO also holding the title of Chairman of the board.*



H3b: Post-Cadbury, there will be a stronger positive relation between CEO departure and the proportion of non-executives on the board, and a more negative association between CEO departure and the CEO also holding the title of Chairman of the board.

The results of the tests are reported in Table 8. The performance variable used is industry-adjusted return on assets. This is to control for possible share price effects of the market anticipating a CEO departure. To control for the non-normal distribution of CEO ownership, a dummy variable (OwnDum2) is employed which takes the value of one if the CEO owns at least 1% of the firm's issued equity.<sup>3</sup> This variable was chosen to test the findings of earlier work, which has shown that managerial entrenchment occurs at very low levels of stock ownership (Denis et al 1997, Dahya et al 1998).

Model 1a provides evidence that the amount of equity held by institutional blockholders has a significant positive association with the probability of non-routine CEO departure. The sign on the gearing term is positive, as predicted by H3a, but is not significant. The indicator variable, OwnDum2, is negative and highly significant, suggesting that, even at low levels of managerial ownership, CEOs are able to reduce the chance of them being forced to leave. Model 1b fails to provide any substantive support for H1b. Although there is some indication that there has been a positive shift in the influence of institutional investors post-Cadbury, the coefficient on the interaction term is insignificant. The signs on the interaction terms measuring changes in the effects of gearing and CEO ownership are both opposite to the predictions of H3b, although the coefficients are not statistically significant.

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<sup>3</sup> The results remain qualitatively unchanged if stock market performance variables are used instead of accounting returns. Also, the results are robust to substituting a dummy variable (OwnDum), which is coded one if the CEO owns at least 4% of equity, for OwnDum2.

Models 2a and 2b test hypotheses 3a and 3b respectively. Little support is found for these hypotheses using this dataset. Model 2a provides no evidence of a positive association between the proportion of non-executive directors on the board and the likelihood of non-routine CEO turnover. Repeating the tests using a dummy variable coded one if the board comprises at least 60% non-executives also fails to yield significant results. I am therefore unable to find evidence in a UK dataset to support the US findings of Weisbach (1988)<sup>4</sup>. The coefficient on the CEO/chairman split variable is positive and significant in Model 2b, suggesting that dividing the roles at the top of the firm reduces managerial entrenchment and providing support for similar findings in the UK by Dahya et al (1998).

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<sup>4</sup> Although it should be noted that Weisbach (1988) screened out ‘grey’ directors.

## **7. Summary and Conclusions**

This paper has examined a sample of 2110 All Share firm years for an association between CEO departure, firm performance and board and ownership structure. It has also looked for changes in observed relationships since Cadbury.

The rate of non-routine CEO departure in this sample is very low, at around 4%, though there is considerable variation between firms in different performance categories. Other univariate tests included in section 5 strongly indicate that non-routine CEO departure is negatively associated with firm performance and also with the equity ownership of the CEO. They also suggest that there may have been some shift in the influence of these variables between the two time periods, with the extra weight put on Year 0 stock market performance post-Cadbury pointing to a decrease in the time taken to discipline poorly-performing managers. The insulatory effect of share ownership appears to have diminished in the later regime. There is therefore evidence that managerial entrenchment has been reduced by the Cadbury Committee.

Multivariate analysis conducted in section 6 supports the findings of a strong negative association between firm performance and forced CEO departure. There is evidence of some strengthening in this relationship post-Cadbury, and also that firms with poor stock market performance are relieving their top managers of their posts more quickly in the later time period.

Ownership structure seems to influence CEO survival probabilities, with the proportion of equity held by institutional blockholders positively affecting the probability of forced departure. However, there is little to suggest that this type of owner have become more powerful as monitors post-Cadbury.

CEO ownership has a powerful negative impact on the likelihood of forced CEO departure. Various measures of CEO ownership are employed. Whilst they are all significant, I choose to report the results using OwnDum2, a dummy variable coded one if the CEO owns just 1% or more of the firm's stock. This supports the findings of earlier work which has found evidence of managerial entrenchment at surprisingly low levels of CEO equity ownership. Multivariate tests fail to confirm earlier evidence that the entrenchment power of share ownership has diminished post-Cadbury. The proportion of non-executives on the board has no significant influence on the incidence of CEO departure, but dividing the roles of CEO and chairman positively affects the chances of non-routine CEO departure, as predicted. However, there is no significant change in the board structure variables across time periods, implying that the Cadbury Code has failed to reduce the power of the CEO over the board.

It seems that there is a stronger association between firm performance and CEO survival in the post-Cadbury time period. However, there is little evidence that individual governance mechanisms have brought about this change.

Consistent with prior studies, the paper finds a strong association between the probability of non-routine CEO departure in Year 1 and stock market performance in Year 0 and Year -1 in the early sample. However, I find evidence that the process of labour market discipline has increased in speed since Cadbury, as only final year (Year 0) stock market performance is significant in the later sample. Although firms experiencing a non-routine CEO departure have significantly lower industry adjusted accounting returns than firms with no departure, accounting measures of performance are not significantly related to CEO departure in the regression analysis. However,

Year –1 accounting performance has a positive and significant impact on CEO tenure as at Year 0.

The UK sample is similar to the US sample of Salancik and Pfeffer (1980) in that CEOs of owner managed firms enjoy significantly longer periods in office than managers of other control type firms. However, further analysis reveals that, whilst ownership of at least 4% of the firm's stock significantly positively affects tenure pre-Cadbury, there is no significant association between the two post-Cadbury. Although non-routine departure rates decline as levels of CEO ownership increase, no significant association is found between CEO ownership and forced CEO departure in either time period in the logit analysis.

The univariate tables show that post-Cadbury, levels of institutional ownership and gearing are significantly higher in non-routine departure firms than in no departure firms. However, in the later regression analysis, these variables fail to reach significant levels.

This study therefore provides evidence that managers of firms which underperform the stock market are more likely to face labour market discipline (ie to lose their jobs) than managers of firms which perform well. It also suggests that the Cadbury reforms have served to reduce managerial entrenchment, by reducing the insulatory effect of managerial stock ownership and increasing the power of the board. Additionally, there is weak evidence that external owners reduce the likelihood of poorly performing managers remaining in post.

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**Table 1**  
Performance, ownership and board structure characteristics of sample firms.  
Sample contains 938 pre-Cadbury and 1172 post-Cadbury firm years.

	25 <sup>th</sup> percentile	Median (Mean)	75 <sup>th</sup> percentile	Skewness	Kurtosis
<i>Performance characteristics</i>					
Current year market adjusted stock returns (MadjRet)	-0.19	0.00 (0.04)*	0.22	3.12	28.99
Prior year market adjusted stock returns (MadjRet1)	-0.18	-0.00 (0.05)*	0.213	5.53	71.36
Current year industry adjusted return on assets (Rel ROA)	-0.02	0.01 (0.01)*	0.03	-2.54	24.82
Prior year industry adjusted return on assets (RelROA1)	-0.01	0.01 (0.01)*	0.04	-5.46	85.69
Unadjusted ROA	0.04	0.07 (0.06)*	0.09	-2.32	21.85
Unadjusted lagged ROA (ROA1)	0.04	0.07 (0.07)*	0.1	-2.78	27.55
<i>Ownership structure characteristics</i>					
CEO ownership (%)	0.01	0.09 (2.4)	0.87	5.57	38.94
% of equity held by institutional blockholders (>3% stake)	11.8	21.33 (23.81)	33.59	0.78	0.36
Gearing ratio	3.9	16.45 (19.33)	29.78	1.95	10.98
<i>Board structure characteristics</i>					
CEO/ chairman roles divided		77.27%			
Number of non-executives	2	3 (3.32)	4	0.80	1.83
Proportion of non-executives	0.29	0.4 (0.39)	0.5	-0.33	0.1
<i>Other characteristics</i>					
Firm size (BV of total assets in £m)	87.81	211.18 (833.05)	666.7	7.68	81.47
Firm size (log of BV of total assets)	4.48	5.35 (5.56)	6.50	0.54	-0.25
CEO tenure	1.92	4.33 (5.97)	7.75	2.18	6.07
CEO age	46.5	50.95 (51.15)	55.24	0.23	0.05

\* T statistic significant at 1% level – we can therefore reject the null hypothesis that mean = 0.

**Table 2**

Incidence of top executive departure by time period.

Panel A displays the total proportion of departures; Panel B classifies identified departures. Sample consists of 2110 firm years.

	Pre-Cadbury <i>n=938</i>	Post-Cadbury <i>n=1172</i>
<b>A. Percentage (number) of firms experiencing top executive departure</b>	11.41% (107)	11.77% (138)
<b>B. Percentage (number) of all departures due to:</b>		
Dismissal	13.08% (14)	15.94% (22)
Resignation	23.37% (25)	18.12% (25)
Retirement	7.48% (8)	13.04% (18)
CEO gets a new job	1.87% (2)	6.52% (9)
CEO/chairman split	28.97% (31)	23.19% (32)
Death/illness	5.61% (6)	2.9% (4)
Succession	13.08% (14)	13.77% (19)
Unclassified	6.54% (7)	6.52% (9)
Total	100% (107)	100% (138)
<b>C. Percentage (number) of CEO change firms experiencing non-routine top executive departure</b>	36.44% (39)	34.06% (47)

**Table 3**  
Summary Statistics of Firm Characteristics Grouped According to CEO Departure Cla

		Pre-Cadbury			
		Dismissals + Resignations (NRD)	No Departures	Other Departures	Disi Resign
		N=39	N=831	N=68	
ROA	Mean	0.043	0.074	0.059	
	Median	0.049	0.073	0.059	
	Std Dev	0.073	0.048	0.048	
ROA1	Mean	0.04	0.074	0.056	
	Median	0.051	0.072	0.058	
	Std Dev	0.078	0.047	0.042	
RelROA	Mean	-0.017	0.013	-0.001	
	Median	-0.015	0.009	0	
	Std Dev	0.067	0.045	0.042	
RelROA1	Mean	0.002	0.014	0.002	
	Median	0.002	0.013	0	
	Std Dev	0.04	0.071	0.035	
Madjret	Mean	-0.202	-0.002	-0.049	
	Median	-0.198	-0.038	-0.037	
	Std Dev	0.375	0.43	0.286	
Madjret1	Mean	-0.19	-0.034	-0.053	
	Median	-0.196	-0.048	-0.06	
	Std Dev	0.236	0.282	0.216	
Nexecs	Mean	3.235	3.276	3.081	
	Median	3	3	3	
	Std Dev	2.389	1.977	1.602	
Propnex	Mean	33.97%	37.04%	34.31%	4
	Median	32.29%	37.5%	34.52%	4
	Std Dev	0.164	0.168	0.132	
Propinst	Mean	25.69%	24.21%	23.22%	2
	Median	20.51%	22.1%	19.98%	2
	Std Dev	15.369	14.713	12.647	1

Lev	Mean	20.72%	18.891%	22.804%	22
	Median	16.12%	15.653%	19.67%	22
	Std Dev	18.904	17.274	16.844	22
CEOwn	Mean	0.47%	2.48%	2.08%	0
	Median	0.04%	0.1%	0.04%	0
	Std Dev	1.091	7.557	3.946	0
Split	Mean	84.62%	71.66%	47.06%	8
OwnDum	Mean	23.08%	47.05%	27.94%	1
OwnDum2	Mean	30.77%	59.69%	38.24%	1
Tenure (years)	Mean	4.428	5.883	8.135	·
	Median	2.878	4.082	5.504	·
	Std Dev	4.45	6.136	8.869	·
Age (years)	Mean	50.691	50.466	56.005	4
	Median	52.227	50	56.452	5
	Std Dev	5.527	6.682	6.844	·
Log Assets	Mean	5.895	5.563	5.982	·
	Median	5.82	5.264	5.812	·
	Std Dev	1.374	1.359	1.25	·

ROA = earnings before interest and tax, divided by the book value of assets

ROA1 = previous year ROA

RelROA = firm ROA minus the ROA of the median firm in the same 2 digit SIC class for that year

RelROA1 = previous year RelROA

MadjRet = firm's annual stock return, to the accounting year end, minus the return on the FT All Share Index for the

MadjRet1 = previous year MadjRet

Split = a dummy variable coded 1 if the firm divides the roles of CEO and chairman of the board

Nexecs = the number of non-executive directors on the board

Propnex = the number of non-executive directors divided by the total number of directors on the board

Propinst = the sum of all stakes of at least 3% held by institutional investors

Lev = the firm's total debt, divided by total debt plus equity

CEOwn = the number of shares held by the CEO, divided by the number of shares in issue

Tenure = the length of time, in years, the CEO has held his position at the top of the firm

Age = the CEO's age, in years, as at the accounting year end

Log Assets = the natural log of the total book value of the firm's assets, as at the year end.

**Table 4**

Non-routine departure rates for sample firms partitioned by whether departure occurs pre- or post-Cadbury and divided into deciles by stock market performance. Numbers in parentheses are absolute numbers of non-routine CEO departures for all firms in that decile and time period.

Decile	Pre-Cadbury non-routine CEO departure rate Performance measure = MadjRet <i>n</i> =938		Post-Cadbury non-routine CEO departure rate Performance measure = MadRet <i>n</i> =1172		Pre-Cadbury non-routine CEO departure rate Performance measure = MadjRet1 <i>n</i> =938		Post-Cadbury non-routine CEO departure rate Performance measure = MadRet1 <i>n</i> =1172	
1	9.67%	(9)	15.38%	(18)	9.68%	(9)	3.42%	(4)
2	6.38%	(6)	5.17%	(6)	10.64%	(10)	6.84%	(8)
3	8.51%	(8)	6.78%	(8)	3.19%	(3)	5.13%	(6)
4	3.23%	(3)	4.27%	(5)	1.08%	(1)	5.13%	(6)
5	2.15%	(2)	4.27%	(5)	6.45%	(6)	4.24%	(5)
6	2.15%	(2)	1.0%	(1)	3.16%	(3)	4.24%	(5)
7	3.19%	(3)	1.7%	(2)	3.19%	(3)	1.71%	(2)
8	2.13%	(2)	1.7%	(2)	1.06%	(1)	1.71%	(2)
9	2.13%	(2)	0	(0)	2.15%	(2)	1.71%	(2)
10	2.13%	(2)	0	(0)	1.05%	(1)	5.93%	(7)
Totals	4.16%	(39)	4.01%	(47)	4.16%	(39)	4.01%	(47)

MadjRet is the firm's market adjusted stock return for the last full accounting year that the CEO held office.

MadjRet1 is the one year lag of MadjRet.

Decile 1 contains the worst performing firms; decile 10 the best.



**Table 5**  
CEO Tenure by Firm Control Type

Control types are based on classifications used by Salancik and Pfeffer (1980). Sample is 1685 All Share firms for which tenure data is available

Control Type	Time period	Number of firms	Mean Tenure (years)	Median Tenure (years)
Owner managed – manager owns at least 4% of equity	Pre-Cad	59	12.23	11.6
	Post-Cad	67	11.19	9
Externally controlled – at least 4% of equity is held by institutional blockholders	Pre-Cad	418	6.1	4.42
	Post-Cad	768	5.84	4.51
Management controlled – neither the CEO nor any institution owns 4% of stock	Pre-Cad	252	5.03	3.51
	Post-Cad	204	5.77	4.17

**Table 6**  
CEO Departure Rates by Levels of CEO Ownership  
Ownership levels are based on classifications used in Dahya et al (1998)  
Sample is 2110 All Share firms

	CEO ownership < 1%		CEO ownership 1%-5%		CEO ownership >5%		CEO ownership >10%	
	Pre-Cad n=766	Post-Cad n=1014	Pre-Cad n=99	Post-Cad n=87	Pre-Cad n=73	Post-Cad n=71	Pre-Cad n=43	Post-Cad n=46
Total departure rate	12.27%	11.54%	7.07%	14.94%*	8.22%	11.27%	6.98%	8.7%
Forced departure rate	4.83%	4.14%	2.02%	4.6%	0	1.41%	0	0

\* indicates that the rates of departure between pre- and post-Cadbury sub-samples are different at 10% level of significance (chi-squared tests)

**Table 7**

Tests of the association between non-routine top executive departure (NRD) and firm performance  
(*P*-value of Wald chi-squared statistic in parentheses)

Model 1a:	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} =$	$a + b.\text{Madjret} + c.\text{Madjret1}$				
Model 1b:	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} =$	$a + b.\text{Madjret} + c.\text{Madjret*PostCad} + d.\text{Madjret1} + f.\text{Madjret1*PostCad} + g.\text{PostCad}$				
Model 2a:	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} =$	$a + b.\text{ROA} + c.\text{ROA1}$				
Model 2b:	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} =$	$a + b.\text{ROA} + c.\text{ROA*PostCad} + d.\text{ROA1} + f.\text{ROA1*PostCad} + g.\text{PostCad}$				
Model 3a	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} =$	$a + b.\text{RelROA} + c.\text{RelROA1}$				
Model 3b	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} =$	$a + b.\text{RelROA} + c.\text{RelROA*PostCad} + d.\text{RelROA1} + f.\text{RelROA1*PostCad} + g.\text{PostCad}$				

  

Variable	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b
Intercept	<b>-3.4454</b> (0.0001)	<b>-3.5758</b> (0.0001)	<b>-2.8749</b> (0.0001)	<b>-2.4198</b> (0.0001)	<b>-3.25</b> (0.0001)	<b>-3.1231</b> (0.0001)
Madjret	<b>-2.6144</b> (0.0001)	<b>-1.6132</b> (0.0023)				
Madjret*PostCad		<b>-1.8795</b> (0.0099)				
Madjret1	-0.4381 (0.1717)	<b>-2.3011</b> (0.0006)				
MadjRet1*PostCad		<b>2.3333</b> (0.0012)				
ROA			-0.9240 (0.8015)	-3.6706 (0.4692)		
ROA*PostCad				3.7342 (0.6049)		
ROA1			-4.8140 (0.1657)	<b>-8.6465</b> (0.0964)		
ROA1*PostCad				3.5316 (0.6171)		
RelROA					<b>-6.8907</b> (0.0001)	<b>-12.6398</b> (0.0008)
RelROA*PostCad						6.0239 (0.1304)
RelROA1					3.6632 (0.1259)	1.4922 (0.7552)
RelROA1*PostCad						3.3696 (0.545)
PostCad		0.0097 (0.9746)		<b>-0.5562</b> (0.0356)		-0.2139 (0.4251)
p-value of -2 Log L Score	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
% Correctly Classified	72.9%	75.2%	64.3%	64.4%	61.9%	63.9%
Number of NRD firms	86	86	86	86	73	73
Number of non-NRD firms	2024	2024	2024	2024	1679	1697

**Table 8**

Tests of the association between non-routine top executive departure (CEO tenure), firm performance and ownership structure  
(*P-value of Wald Chi-square statistic in parentheses*)

Model 1a:	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} = a + b.\text{RelROA} + c.\text{RelROA1} + d.\text{Propinst} + f.\text{Lev} + g.\text{OwnDum2}$
Model 1b:	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} = a + b.\text{RelROA} + c.\text{RelROA1} + d.\text{Propinst} + f.\text{Propinst*PostCad} + g.\text{Lev} + h.\text{Lev*PostCad} + i.\text{OwnDum2} + j.\text{OwnDum2*PostCad} + k.\text{PostCad}$
Model 2a:	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} = a + b.\text{RelROA} + c.\text{RelROA1} + d.\text{Propnex} + f.\text{Split}$
Model 2b:	$\ln\{P(\text{NRD})/1-P(\text{NRD})\} = a + b.\text{RelROA} + c.\text{RelROA1} + d.\text{Propnex} + f.\text{Propnex*PostCad} + g.\text{Split} + h.\text{Split*PostCad} + i.\text{PostCad}$

Variable	Model 1a	Model 1b	Model 2a	Model 2b
Intercept	<b>-3.4127</b> <b>(0.0001)</b>	<b>-3.2763</b> <b>(0.0001)</b>	<b>-3.5216</b> <b>(0.0001)</b>	<b>-3.6741</b> <b>(0.0001)</b>
RelROA	<b>-6.7646</b> <b>(0.0001)</b>	<b>-7.0352</b> <b>(0.0001)</b>	<b>-7.0637</b> <b>(0.0001)</b>	<b>-7.4752</b> <b>(0.0001)</b>
RelROA1	4.3445 (0.1269)	4.4057 (0.1253)	2.9502 (0.2639)	3.0601 (0.2568)
Propinst	<b>0.0203</b> <b>(0.0185)</b>	0.0124 (0.4013)		
Propinst*PostCad		0.0119 (0.5107)		
Lev	0.0055 (0.4498)	0.0110 (0.3817)		
Lev*PostCad		-0.0084 (0.5823)		
OwnDum2	<b>-1.1583</b> <b>(0.0001)</b>	<b>-0.9974</b> <b>(0.0362)</b>		
OwnDum2*PostCad		-0.2749 (0.6586)		
Propnex			-0.5693 (0.5168)	-0.7980 (0.5317)
Propnex*PostCad				0.7308 (0.6776)
Split			0.5078 (0.1967)	<b>1.0776</b> <b>(0.0870)</b>
Split*PostCad				-0.9745 (0.2267)
PostCad		-0.2192 (0.7585)		0.1423 (0.8808)
p-value of -2 Log L Score/ F-statistic	0.0001	0.0001	0.0001	0.0001
% Correctly Classified	70.2%	70.3%	64.6%	64.9%
Number of NRD firms	58	58	58	58
Number of non-NRD firms	1361	1361	1469	1469
n	1419	1419	1527	1527