Department of Accounting, Finance and Information Systems

Initial Losses, Corporate Governance and Earnings Management

Ph. D. Dissertation

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DECLARATION

I hereby declare that this submission is my own work and that no portion of the work referred to in this thesis is the same as any submission that I have previously made or am making for a degree, diploma, or similar qualification at any university or similar institution.

Date: ….………………………. Signature: ...……………………………………….

Print name: ……………………………………….

ABSTRACT

This thesis examines the relationship between initial loss events and the corporate governance and earnings management behaviour of these firms. This is done using four years of corporate governance information spanning the report of an initial loss for companies listed on the UK Stock Exchange. An industry- and size-matched control sample is used in a difference-in-difference analysis to isolate the impact of the initial loss event during the period.

It is reported that, in general, an initial loss motivates an improvement in corporate governance in those loss firms where a relative weakness existed prior to the loss and that these changes mainly occur before the initial loss is announced. Firms with stronger (i.e. better quality) corporate governance have less need to alter it in response to the loss.

It is also reported that initial loss firms use positive abnormal accruals in the year before the loss in an attempt to defer/avoid the loss — the weaker corporate governance the more likely is it that loss firms manage earnings in this manner. Abnormal accruals are also found to be predictive of an initial loss and when used as a conditioning variable, the quality of corporate governance is an important mitigating factor in this regard.

Once the loss is reported, loss firms unwind these abnormal accruals although no evidence of big-bath behaviour is found. The extent to which these abnormal accruals are subsequently unwound are also found to be a function of both the quality of corporate governance as well as the severity of the initial loss.

Chapter 1

Introduction

The separation of ownership from control leads to goal divergence between managers and shareholders. Originally outlined by Smith (1776), discussed by Berle and Means (1932) and laterally attributed to Jensen and Meckling (1976), agency theory explains how managers in the modern corporation can use accounting discretion to achieve their own interests to the detriment of the shareholders'. The classic agency perspective resulting from the separation of management and financing involves an inherent conflict. Managers have incentives to take actions to increase/avoid decreasing their own utility even if their actions reduce the returns on capital invested by the financiers. This problem manifests itself in numerous ways, including the sub-optimal allocation of capital, the consumption of perquisites by management as well as the manipulation of financial statements to achieve performance targets. The latter has been confirmed in studies (Burgstahler & Dichev, 1997; Degeorge, Patel & Zeckhauser, 1999; Dechow, Richardson & Tuna, 2003; Burgstahler & Eames, 2006; Myers, Myers & Skinner, 2007) which highlight discontinuities in the earnings distribution and in the earnings change distribution around zero (i.e. loss avoidance) and other metrics. Discontinuities are interpreted as evidence of earnings manipulation to meet or exceed targets. Although earnings management can also be beneficial to shareholders, it clearly benefits management while the firm bears the cost of conducting it. Therefore the optimal level of earnings management is higher for managers than for shareholders.

Shareholders use several mechanisms (internal and external) to monitor management in an effort to minimise the principal agent problem and to align the interests of management to their own. Together these mechanisms make up a firm's corporate governance structure. With the number and frequency of worldwide corporate scandals since the turn of the century, corporate governance has come into sharp focus and has emerged as one of the most significant research topics in the business discipline. Internal mechanisms include, *inter alia*, the structure of the board, the chair, gender diversity, ownership concentration; external mechanisms include government regulation, competition, debt covenants, the managerial labour market and the market for corporate control. Should any manager be tempted to manipulate financial information for personal reward, their ability to do so will be determined to some extent by the corporate governance structure in a company. Because shareholders have little control over the external mechanisms, it is the internal mechanisms that must be organised to achieve adequate protection from management misbehaviour.

The financial accounting system provides an important source of information to the corporate governance mechanisms that help alleviate the agency problem. A fundamental objective of corporate governance research in accounting is to provide evidence on the extent to which information provided by financial accounting systems mitigates agency problems. The use of accounting information in this manner can be either explicit or implicit. For instance, accounting measures are often used to directly assess management performance, while accounting measures also indirectly impact on other performance metrics such as share price. In addition to constituting an important input into the governance process, financial accounting information is itself a product of the governance process — produced by management in the knowledge that this information will be used as an input to the corporate governance process. In this context, corporate governance and accounting become intertwined. Sloan (2001) puts it succinctly:

> "The study of corporate governance is concerned with understanding the mechanisms that have evolved to mitigate incentive problems created by the separation of the management and financing of business units. Financial accounting provides financiers with the primary source of independently verified information about the performance of managers. Thus it is clear that corporate governance and financial accounting are inexorably linked."

The extant literature has evolved to address the role of financial accounting information contingent on the operation of specific governance mechanisms, and *vice versa* (Rechner & Dalton, 1991; Erhardt, Werbel & Sharader, 2003; Dechow, Sloan & Sweeney, 1996; Prencipe & Bar-Yosef, 2011). The evidence from these studies is mixed, largely due to the fact that the two (financial accounting and corporate governance) are endogenously determined. Careful experimental design is required to establish a clean causal relationship between the two (i.e. Bhagat & Black, 2002; Wintoki, Linck, & Netter, 2010). Using a troubled, crisis or otherwise significant event as a change agent is one way to ensure that causality can be argued in only one direction (McConnell, Servaes & Lins, 2008; Farber, 2005). Kosnik (1987) argues that the effectiveness of corporate governance mechanisms is better gauged when a firm is underperforming. That poorly governed companies are more likely to have adverse accounting outcomes is supported by the evidence. Studies by Dechow *et al.* (1996), Beasley (1996), Uzun, Szewczyk and Varma (2004), and Sharma (2004) show an association between fraud and weak governance and Peasnell, Pope and Young (2005) and Song and Windram (2004) who report a relationship between corporate governance and enforcement actions by the Financial Reporting Review Panel (FRRP) in the UK.

When a crisis occurs corporate governance is expected to change. While some research has been done relating to management changes in response to poor performance (Strahan, 1998; Livingston, 1997), there is a paucity of evidence pertaining to corporate governance changes at firm level in response to underperformance. The lack of research could be because nowadays corporate governance is viewed as inherently sticky and generally uniform in response to codes of governance best practice — a feature of corporate governance that is likely to obfuscate results (Beasley, Carcello, Hermanson & Neal, 2010). The little research that has been done pertains mainly to responses in firms' corporate governance to accounting shocks including financial fraud (Farber, 1995); earnings restatements (Srinivasan, 1995) and the disclosure of internal control material weaknesses (Johnstone, Li & Rupley, 2011).

This study is concerned with the reporting of an initial loss as a crisis situation and change agent[1]. Incurring a loss can be a significant negative event in the life of a firm. While it is possible even for firms reporting a profit to fail to achieve the required rate of return demanded by its shareholders, there is little doubt that loss firms are a special and unambiguous case of underperformance. Hayn (1995) posits that losses should not be treated in the same way as profits for valuation purposes because losses are likely to be considered temporary since shareholders will exercise their put option to liquidate the firm rather than continue to suffer losses. Collins, Pincus and Xie (1999) show that losses are not much help in predicting future

[1] For this study, an 'initial' loss is one preceded by two years of reported profit.

earnings and so the company's book value becomes much more important for the valuation of loss-making companies both as a proxy for future normal earnings and an indicator of liquidation value. Losses can occur for many reasons but all involve some exogenous shock to the firm's products and/or markets (examples include technological and/or regulatory changes). Therefore, the theoretical link between corporate governance and losses is not as clear as that between corporate governance and fraud situations. The result is that an initial loss is more likely to be exogenous (i.e. less dependent on corporate governance) than a fraud situation or enforcement action and so is worthy of further investigation.

A loss may be a transitory event but it may also be the beginning of the end of a company. Incurring a loss is indicative of a situation that requires remedial action and one which, potentially, may evolve to become a crisis. Even if losses are not expected to perpetuate, they are clearly indicative of a rate of return that is below that required by investors. When the initial loss is reported investors will attempt to assess whether the loss is a transitory blip or a symptom of the terminal decline of the company. The firm's management will generally attempt to signal that it is the former which is the case and that remedial action has been taken to return the firm to profitability. In other words, the signal of unambiguous underperformance provided by a loss will not be tolerated by investors over a prolonged period and needs to be addressed. This study predicts that firms which experience an initial loss will attempt to mitigate the adverse consequences of underperformance by improving their corporate governance in response to their underperformance.

One way of demonstrating to the market that the loss is not terminal is via disclosure and information management — for example, to signal to shareholders that the company is well governed. Accordingly, any firm that incurs or is about to incur a loss will attempt to signal that (notwithstanding the inherent stickiness and uniformity of corporate governance mentioned previously) its corporate governance is of a sufficiently high standard for the firm to continue as a going concern. The timing of any improvement in corporate governance is also of interest. There is evidence that firms can anticipate losses. A sample of loss firms was clearly unable to avoid incurring the loss, but it is likely that they will have anticipated the loss before it is announced. Therefore, in line with the disclosure and information management hypothesis, it is likely that improvements in corporate governance will begin before and possibly precede the reporting of the loss.

Firms in trouble are also more likely to have misstated earnings. In their study of the relationship between corporate governance and the declaration of internal control material weaknesses (ICMWs), Johnstone *et al.* (2011) also link losses to ICMWs but do not investigate losses further. However, not all initial loss companies will have misstated earnings or ICMWs and so it is worthwhile investigating if an initial loss can motivate a change in corporate governance (this is not the only motivation since underperformance will also impact on corporate governance changes).

There is also significant evidence that firms manage earnings to avoid reporting losses (Burgstahler & Dichev, 1997; Hansen, 2010). As stated above, a sample of loss firms clearly could not avoid incurring losses such that an analysis of the quality of earnings in the year before the loss can be used to directly test for evidence of earnings management. The unwinding of managed abnormal accruals is also of interest. There is evidence that firms take a ‘big bath’ to make the most of a bad situation by making things a little worse (Chai & Tung, 2002). In line with the big bath hypothesis, there is a possibility that some loss firms will use the loss to unwind more managed abnormal accruals than necessary to create a reserve for future years. A formal investigation of companies reporting initial losses (as opposed to avoiding or deferring them) would make a significant additional contribution to the existing literature on earnings management behaviour around the loss avoidance benchmark (Burgstahler & Dichev, 1997; Ayers, Jiang & Yeung, 2006; Ronen & Yaari, 2010; Dechow *et al.*, 2003; Hansen, 2010).

There is also evidence that the market’s interpretation of accounting earnings (losses in this case) is conditioned by other information available (e.g. Freeman, 1987; El-Gazzar, 1998; Donnelly & Lynch, 2002). Analyses of the average behaviour of corporate governance and earnings management around the initial loss event do not control for the richness of the information environment of the firm. For instance the stickiness and uniformity of a firm’s existing corporate governance mechanisms will likely impact on the degree to which corporate governance will change in response to any shock (Beasley *et al.*, 2010). Pre-existing corporate governance also potentially plays a conditioning role on the earnings management behaviour in response to the loss, especially the extent to which prior year abnormal accruals predict the subsequent loss. The relative severity of the loss event will also likely play a significant role on the behaviour of corporate governance and earnings management in response to the loss. The relative severity of shock events and the market's interpretation of the shock have been used as conditioning variables in other change studies (Hennes, Leone & Miller, 2008; Desai, Hogan & Wilkins, 2006; Srinivasan, 2005).

To answer all of these research questions, this study collects a sample of initial loss firms in the UK. The UK setting is important because its "comply or explain" approach differs from the mandatory compliance approach to governance in the US[2]. Specifically, because the London Stock Exchange allows its listed firms not to comply with the Combined Code (so long as they explain why they do not) it follows that firms are likely to exhibit more variation in their corporate governance. Because corporate governance is less prescriptive in the UK to begin with, this setting is likely to facilitate a comprehensive analysis of the interaction between financial information and corporate governance mechanisms, especially when this study is attempting to, *inter alia*, examine the change in corporate governance response around the reporting of losses. An industry- and size-matched control sample of non-loss firms is also collected against which to compare the corporate governance and earnings management behaviour of loss firms. This approach gives greater assurance that the study is not only capturing differences and changes due to underlying macro-factors but is properly attributing the impact of the loss event. For example there is evidence that firms pursue target corporate governance structures (Cicero, Wintoki & Yang, 2010) and that earnings management behaviour is influenced by, *inter alia*, industry

[2] "Comply or explain" requires firms to disclose whether (and to what extent) they comply with a particular corporate governance code and, if they do not (fully) comply, explain why they do not comply.

and firm size. The matched sample approach provides a series of controls to avoid attributing macro- and industry-induced changes in corporate governance and the behaviour of earnings management to the loss event.

This study contributes to the literature in at least six main ways. First of all, it fills the significant gap in the literature by intertwining the loss, corporate governance and earnings management literatures. The reporting of an initial loss should have implications for corporate governance and earnings management at those firms. Since the work of Hayn (1995) about the impact of losses on the significance of the results from panel studies, losses have been represented as a dummy explanatory variable in analyses that are otherwise concerned only with coefficients of non-loss firms (i.e. Vafeas, 2000, 2005) or otherwise shocked firms (i.e. Johnstone *et al.*, 2011). In other words the impact of losses is separated to avoid biasing the results but this impact is otherwise unexplored. Indeed, Kerstein and Rai (2007) exclude loss firms from their analysis altogether since earnings management has been found to be less important when earnings are negative (Degeorge *et al.,* 1999). Second, it adds to the corporate governance literature on the efficacy of corporate governance amalgamations rather than individual variables in corporate governance studies. Third, to the best of the author’s knowledge no study has formally directly tested the role of losses as a change agent for corporate governance. The timing of these changes also provides evidence of the ability of firms to anticipate the loss. Fourth, as a formal investigation of the earnings management behaviour of initial loss firms, it makes a significant additional contribution to the existing literature on earnings management behaviour around the zero benchmark (Burgstahler & Dichev, 1997;

Ayers *et al.*, 2006; Ronen & Yaari, 2008; Dechow *et al.*, 2003; Hansen, 2010). Fifth, by investigating the mitigating role of the *ex-ante* quality of corporate governance and/or the severity of the loss throughout this study, an additional contribution is to analyse the role of alternative information sources on the informativeness of accounting earnings (losses is in this case). Finally, it also reports evidence on the ability of positive abnormal accruals to predict losses and also investigates how this predictive ability is mitigated by corporate governance.

The research is organised as follows: Chapter 2 frames the research questions in the context of the relevant literature. It presents the origin of the separation between ownership and control, discusses the interaction between the corporate governance and accounting information that results from agency theory and introduces the endogeneity problem between the two. It explains the corporate governance response to crisis situations and establishes an initial loss as one such example. In particular, it establishes an initial loss as an unambiguous signal of underperformance that will not be allowed to continue by investors. Something will have to change and this chapter outlines the likely changes in corporate governance and earnings management as well as the mitigating role alternative sources of information will likely play on these relationships. Chapter 3 presents the methodology. It details the hypotheses to be examined arising from the gaps in the literature. It describes how the sample of initial loss firms is collected, how the control sample is matched and how the corporate governance, accounting, and market variables are constructed. It also details and explains the benefits of using the difference-in-difference methodology and the statistical tests used to answer the research questions in this study. Chapters

4, 5, and 6 are the empirical chapters. Specifically, Chapter 4 investigates the relationship between the initial loss event and corporate governance changes, the timing of these changes as well as the mitigating role a firms' existing corporate governance mechanisms have on the relationship. Chapter 5 examines the relationship between the initial loss event and abnormal accruals behaviour in response to the initial loss and tests for any evidence of big bath behaviour as well as the mitigating role the severity of the loss has on the change in abnormal accruals in response to the loss. The ability of abnormal accruals to predict a loss is also tested. Chapter 6 combines the analyses in Chapter 4 and 5 by testing the conditional impact of the quality of *ex-ante* corporate governance on the change in abnormal accruals. The combined impact of corporate governance quality and loss severity on the change in abnormal accruals as well as the mitigating role played by corporate governance on the ability of abnormal accruals to predict an initial loss are also tested. The conditional impact of the severity of the loss on corporate governance changes is also examined in Chapter 6. Finally, Chapter 7 summarises, concludes and also reports the limitations of the research and avenues for future developments.

Chapter 2

Literature Review

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2.1 Introduction

The separation of ownership from management has clear advantages but also gives rise to many challenges. Not least among these are the agency problems which arise when decision making authority is delegated to managers. Shareholders hold management accountable for the use of this power and, accordingly, require information regarding the performance of their firm in order to evaluate managers' decision making. Corporate governance is a set of control mechanisms that is specially designed to monitor and ratify managerial decisions on behalf of shareholders. In this context, corporate governance and accounting become intertwined. Academics study corporate governance, accounting and (given that the two are endogenously determined) the relationship and interaction between the two. The endogeneity problem can be solved with careful experimental design by monitoring the change in one around an "event" in the other. A general finding is that corporate governance improves in response to a troubled/significant accounting event (i.e. disclosure of financial fraud and earnings restatements). Another is that firms manage earnings to, *inter alia*, avoid reporting losses. The conditioning role played by corporate governance is also studied and the general finding (notwithstanding the endogeneity problem) is that there is an inverse relation between the quality of corporate governance and earnings management.

This chapter explores the extant literature that deals with these topics to identify research gaps, establish the parameters of this study, frame the resulting research questions, determine the analytical methods required to answer those questions and to fill the gaps in the literature. The chapter is structured as follows: Section 2.2 explains agency theory and issues related to the separation of ownership from control. Salient corporate governance characteristics and their impact in a variety of situations are discussed. The endogeneity problem inherent in studies relating corporate governance and performance is addressed. Section 2.3 examines corporate governance in crisis situations and explores the impact of conditioning variables on the results of these studies. Section 2.4 explains why losses are different from other examples of crisis from a valuation and signalling perspective and therefore worthy of particular examination as an obvious gap in the literature. Section 2.5 discusses the literature examining earnings management around benchmarks, especially the loss avoidance threshold, and investigates the research gap presented by the sample in this study. Section 2.6 details the overlap between the earnings management and corporate governance literatures with a particular focus on the role of governance amalgamations to maximise construct validity. Section 2.7 concludes by bringing together the significant research gaps in and between the loss, corporate governance and research literatures identified in the previous sections.

2.2 Corporate Governance and Agency Theory

Although it is argued that corporate governance research is characterised by the lack of a single unifying theory (which explains the diversity of research in the area to date, the questions asked, the models specified, how the variables are defined and measured, the estimators used and how the results are applied), the overwhelmingly dominant theoretical perspective applied in modern corporate governance studies is agency theory. This convincing theory, accredited to Jensen and Meckling (1976), was originally introduced by Adam Smith (1776) in *The Wealth of Nations*, where writing about joint stock companies he stated:

> "The directors of such companies . . . being the managers rather of other people's money than of their own, it cannot well be expected that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company." (Book 5, Chapter 1, Part 3, Art. 1)

The separation of ownership (shareholders) from control (management) provides the opportunity for managers (agents) to act in their own self-interest by maximising their own wealth and power at the expense of the owners (principals). Agency theory explains how the modern organisation can survive and prosper despite the different agendas of shareholders and management.

Shareholders have several mechanisms available to organise the structure of their company in a way that aligns the goals of management with their own; these mechanisms represent the firm's corporate governance structure. Although the distinction can be blurred, this study, like others (Gillan, 2006) distinguishes between external and internal governance characteristics and focuses on monitoring by shareholders and the corporate board as emblematic of the latter to help to frame the study, i.e. by internal corporate governance characteristics this study means the corporate governance structures and processes that are within the control of the firm's shareholders and its board of directors. Examples include the size of the board, the number of non-executives on the board, the number of independent directors on the board, the duality of the CEO/Chair roles, gender diversity, and the extent of insider and outsider ownership. The general view is that weak corporate governance confers private control benefits to insiders at the expense of outsiders (Leuz, Nanda & Wysocki, 2003).

The increased interest in, and the increased importance of, corporate governance best practice is perhaps no surprise in light of the international corporate scandals (Adelphia, Enron, Worldcom, Parmalat, HealthSouth, Tyco, Lehman, Anglo Irish Bank etc.) that dogged the end of the stock market boom and the credit crunch since the turn of the century. Regulators and governance advocates have argued that the absence of quality in financial reporting and the precipitous share price falls of these companies were due in large part to poor corporate governance. The Sarbanes-Oxley Act (2002) and the Combined Code (2003; 2006) were introduced in the US and UK, respectively, in direct response to these corporate scandals to strengthen corporate governance regulation and in an attempt to ensure the efficient operation of a corporation on the behalf of its stakeholders. These regulations primarily focus on the board of directors, their decision making ability, and their role in reviewing and evaluating the performance of management in running the firm.

2.2.1 Corporate Governance Characteristics

Since the seminal work of Fama and Jensen (1983) where they contended that boards play an important role in monitoring managerial actions, corporate governance research has increasingly focused on the importance of the corporate board.[3] Hermalin and Weisbach (1991) believe monitoring by the board of directors is one of several institutions that have developed in modern organisations to resolve the agency problem between top management and shareholders. A number of UK reports (The Cadbury Report, 1992; The Combined Code on Corporate Governance[4]) have focused attention on board structure because firms have the opportunity to influence and enhance them, whereas firms cannot influence the external market of corporate control directly. The fact that the corporate board will play an important role in this process and will vary in their incentives to monitor on behalf of shareholders is a central tenet of agency theory. John and Senbet's (1998) survey of the empirical literature concludes that board directors are a central corporate governance mechanism.

The corporate board is comprised of individuals drawn from top management and non-executive directors. The board of directors represents the shareholders' interest and it is the board's role to review and evaluate the performance of management in running the firm. The board is ultimately responsible for ensuring that shareholder wealth is maximized and agency problems are minimized. As such, the corporate board is the first line of defence against incompetent management (Schellenger & Wood, 2001).

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[3] Sloan (2001) and Bushman and Smith (2001) provide an extensive review of corporate governance and financial information.

[4] The Combined Code on Corporate Governance (2003) in the UK is derived from a review of the role and effectiveness of non-executive directors (Higgs, 2003) a review of audit committees (Smith, 2003). It supersedes and replaces the Combined Code issued by the Hampel Committee on Corporate Governance in June 1998.

One aspect of board composition that is a focus of academic research is whether directors are employees of the firm (affiliated, inside or executive directors) or outsiders (non-affiliated or non-executive directors, aka NEDs). Non-executive directors are seen as "professional referees", there to ensure that competition among insiders stimulates actions consistent with shareholder wealth maximisation (Fama, 1980). A higher number of outside members on the board increases the likelihood that the quality of financial information will be monitored more effectively (Fama & Jensen, 1983; Vafeas, 2000; 2005). Brickley, Coles and Terry (1994) demonstrate that the market reaction to the adoption of a poison pill is positive when non-executive directors form the majority of the board, but is significantly negative when non-executive directors are in the minority.

Director independence is another important attribute of the corporate board in the literature. Hermalin and Weisbach (1988) indicate that outside directors are particularly valuable in situations where the firm is troubled since, at such times, their independence enables them to assess objectively the performance of executives and make changes where appropriate. That the context in which governance operates is important can be seen in the extant literature where boards with greater representation of non-affiliated and independent directors provide beneficial monitoring and advisory functions to firm shareholders in circumstances that occur infrequently (Brickley & James, 1987; Byrd & Hickman, 1992; Hermalin & Weisbach, 1988; Weisbach 1988). Cotter, Shivdasani and Jenner (1997) report that target shareholder gains are about 20% higher in tender offers when the board has a majority of independent outside directors. Studies examining management buyouts (e.g. Lee, Rosenstein, Rangan & Davidson, 1992) and tender offers for bidders (e.g. Byrd & Hickman, 1992) have shown that shareholders benefit when the board is independent.

Another important aspect of the composition of the corporate board is whether the roles of CEO and Chairman are separated. It is posited that for the board to be effective, it is important to separate the roles of CEO and Chairman (Jensen, 1993). Agency theory argues that without the direction of an independent leader it is much more difficult for the board to perform its critical functions (Brickley *et al.*, 1994; Fama & Jensen, 1983; Worrell, Nemec & Davidson, 1997). For this reason, the Combined Code recommends that, in addition to the separation of the roles, that the Chairman should also be an independent NED in order to minimise the possible abuse of CEO power. For example, Goyal and Park (2002) find that the sensitivity of CEO turnover to performance is lower when the same individual is both CEO and chairman. Brickley, Coles and Jarrell (1997) argue that separating the roles of CEO and Chairman, also involves potential costs, insofar as, for some firms, CEO/Chair duality may be an efficient outcome. They argue that CEOs have specialized knowledge regarding the strategic challenges and opportunities facing the firm which is valuable to the role of Chair. Thus, they conclude, the separation of the CEO and Chairman titles necessitates the costly and generally incomplete transfer of critical information between the CEO and Chair. But the empirical evidence generally suggests that the bifurcation of the CEO and Chair roles is the better option.

The board's size also influences its ability to function effectively. Smaller boards have generally been considered more effective in decision-making. Alexander, Fennell and Halpern (1993) found that CEOs in organisations with large boards tend to use their power to entrench themselves whereas smaller, administratively focused, boards maintained their power by frequently replacing the CEO. John and Senbet (1998), Lipton and Lorsch (1992) and Jensen (1993) also suggest that large boards may be less effective than small boards at monitoring managerial activity. This argument is supported by Yermack (1996) and Vafeas (2000). This is due to the combination of communication difficulties (referred to as process costs by Jensen) and the possibility of some directors free-riding (referred to as coalition costs by Jensen) facilitating a CEO's dominance of the board (Eisenberg, Sundgren & Wells, 1998). To promote better decision-making, governance codes often specify that the board should not be too large. The Combined Code favours smaller boards stating, "the board should not be so large as to be unwieldy". However, very small boards can also be a problem. The Combined Code recommends that even small companies should have at least two independent non-executive directors. Clearly, one executive director is not sufficient so we may infer that boards of directors with less than four members are sub-optimal.

Although Li and Wearing (2003) observe that "the absence of gender issues is one of the noteworthy weaknesses in the corporate governance debate", the gender diversity of the corporate board has become a high profile issue in recent years. In the UK the updated Combined Code (2010) states that members should be appointed to boards with due regard to diversity, "including gender diversity". The recently completed Davies Report (2011) highlighted the current gender gap on UK boards but stopped short of recommending quotas. Norway, Spain and France have introduced gender quotas while the EU recently abandoned plans to introduce a quota system and is likely to recommend that where candidates are equally qualified, the underrepresented sex is favoured. Gender diversity at board level taps into a greater talent pool, increases creativity and innovation and can bring additional perspectives to board decision making i.e. resource dependence theory (Tricker, 1984). Adams and Ferreira (2009) argue that because they do not belong to the "old boys club", female directors more closely correspond to the concept of the independent director emphasized in theory. However, it is argued that increased gender diversity may also adversely affect decision making at board level if the appointment of women directors is motivated by societal pressure i.e. if women are appointed as "tokens" rather than for their intrinsic business skills (Carter, Simkins & Simpson, 2003). Thus, it is possible (as with non-executive and independent directors) that gender diversity improves monitoring only when additional board monitoring is necessary such that mandating gender quotas in the boardroom could harm already well-governed firms.

Ownership structure is another important aspect of corporate governance that has been investigated in the literature. Jensen (1993) contends that "many problems arise from the fact that neither managers nor non-manager board members typically own substantial fractions of their firm's equity" (p. 864); Fama and Jensen (1983) further propose that when there is diffusion in ownership, the potential for conflicts between the principal and the agent is greater. When insider ownership is high, management face less pressure to signal firm value to the capital markets and focus on long term value creation over short term earnings (Jensen, 1986; Klassen, 1997) such that it can be argued that opportunistic managerial behaviour decreases monotonically

(Mulgrew & Forker, 2006). Warfield, Wild and Wild (1995) provide evidence supporting agency theory when they find that the extent of shareholding by management is positively associated with the amount of information given about earnings[5]. On the other hand, it is argued that excessive management ownership can also be counter-productive because management could become entrenched. Stultz (1988) proposes that the likelihood of successful takeovers is reduced as management ownership increases, due to the high premium being asked by management who hold substantial shares. This contention is found in entrenchment theory (Weston, 1979; Morck, Shleifer & Vishny, 1986; McConnell & Servaes, 1990) where the relationship between inside ownership by officers and directors and firm value is not linear across all ownership levels and that, in certain situations, managerial ownership serves to entrench management allowing them to extract larger private benefits at the expense of outside investors.

Balotti and Elson (2000) and Jensen and Meckling (1976) suggest that equity ownership by outside directors is also important for the effective monitoring. Jensen (1993) contends that "encouraging outside board members to hold substantial equity interests would provide a better incentive" (p. 864) for them to monitor management. Empirical evidence of the impact of outsider director ownership is given by Farrell and Whidbee's (2000) sample of forced CEO turnovers, in which directors are more effective monitors if they are independent and aligned with owners through equity.

[5] Although, confusingly, Warfield *et al.* (1995) label shareholdings by management as the sum of the shareholdings of both insiders and outsiders.

The concentration of outside ownership is also important (Demsetz & Lehn, 1985). The convergence of interest hypothesis and the efficient monitoring hypotheses predict that outside block holders will actively monitor the firm's management (Shleifer & Vishny, 1986; Pound, 1988; Huddart, 1993; Maug, 1998; Noe, 2002; McConnell & Servaes, 1990; Admati, Pfleiderer & Zechner, 1994; Pagano & Röell, 1998). These studies argue that if large blocks of equity are held by a few large shareholders, then agency costs may be reduced. This is because large shareholders are expected to have greater incentives to monitor management as their wealth is tied to the firm's financial performance.

2.2.2 The Endogeneity Problem

The previous section highlighted the effectiveness of various characteristics of the internal governance structure in a variety of situations. The conflict between principals and agents can include a motivation for management to sustain an information advantage over owners and to obfuscate the true financial performance of the company in its financial report. Should any manager be tempted to manipulate financial information for personal reward or to disguise performance for any other reason, their ability to do so will be determined, to some extent, by the standard of the company's corporate governance structures. Therefore a natural extension of prior research is to address the quality of a firm's performance contingent on the operation of specific corporate governance mechanisms.

While the literature linking corporate governance and accounting based performance measures is extensive (Pearce & Zahra, 1991; Rechner & Dalton, 1991; Carter *et al.*, 2003; Erhardt *et al.*, 2003; Bøhren & Strøm, 2005), the consensus view is that much of the literature concerning the relationship between the two is riven with endogeneity, i.e. does corporate governance influence firm performance or does firm performance influence corporate governance? For instance, in their study of whether corporate governance influences firm performance (i.e. the stock market reaction to the announcement of female additions to the boards of Fortune 500 companies), Farrell and Hersch (2005) note that if women are scarce commodities at board level, they may choose to serve on the boards of better performing firms such that performance may influence governance, i.e. the two variables are endogenously defined. Notwithstanding that the endogeneity problem in the corporate governance literature is a real and serious one (Brown, Beekes & Verhoeven, 2011), most studies merely mention the possibility of endogeneity[6].

The results from research that examines the influence of corporate governance on firm performance while specifically considering the endogeneity of the relationship are mixed. For instance, there is no conclusive evidence that a more independent board leads to better firm performance (Bhagat and Black, 2002; Dahya and McConnell, 2007; Bhagat and Bolton, 2008; Fu and Yu, 2010). Wintoki *et al.* (2010) show that board structure is dynamically endogenous, with current board structure

[6] Brown *et al.* (2011) comment that any study that unreasonably ignores the possibility of endogeneity while making a causal argument that (say) better corporate governance leads to better firm performance is, at the very least, incomplete. They also note that editors of leading journals now expect corporate governance researchers to identify and to formally address any suspected endogeneity problems inherent in their research questions.

strongly related to past performance but (controlling for simultaneity) find no causal relationship between board structure and current firm performance. In a simultaneous equation framework, Dahya, Dimitrov and McConnell (2008) report that the positive association between firm performance and board composition runs in one direction only: from board independence to firm performance, arguing that a dominant shareholder can increase firm value by appointing an independent board.

Baliga, Moyer and Rao (1996) find evidence that the market is indifferent to the firm's CEO/Chair duality status, i.e. there is no significant cumulative average excess return around the announcement day, while Carapeto, Lasfer and Machera (2005) report that positive (negative) abnormal accruals greet the decision to separate (combine) the roles in the UK. The evidence suggests that firms endogenously choose their leadership structure as part of broader firm characteristics and ownership structure decisions (Bhagat & Black, 2002; Chen, Lin & Yi, 2008; Iyengar & Zampelli, 2009).

Accounting for the possibility of endogeneity, there also appears to be no causal relationship between insider ownership and firm performance (Demsetz & Lehn, 1985; Loderer & Martin, 1997; Cho, 1998; Demsetz & Villalonga, 2001; Bhagat & Black, 2002; Coles, Lemon & Meschke, 2007; McConnell *et al.*, 2008). Indeed, Loderer and Martin (1997) find that when the endogeneity problem is taken into consideration, a previously observed positive causal relationship between governance (insider ownership) and performance reverses, i.e. that it is the improved firm performance that affects insider ownership rather than vice versa. Demsetz and Villalonga (2001) and Coles *et al.* (2007) report similar results. Avoiding the endogeneity problem altogether, McConnell *et al.* (2008) measure changes in firm performance around the announcement of purchases of shares by insiders and report a significant abnormal return consistent with a causal interpretation of the impact of governance (insider ownership) on firm performance.

The research shows that outside block holders are also important with institutional investors being more likely to play a governance role (Khan, 2006). Brickley, Lease and Smith (1988) report institutional shareholders vote more actively on anti-takeover amendments than other shareholders and more actively oppose proposals that seem harmful to shareholders. Chen, Harford and Li (2007) find that concentrated holdings by long-term institutions are related to better post-merger firm performance and that their presence makes the withdrawal of bad bids more likely. Klein and Zur (2009), Boyson and Mooradian (2007), Brav, Jiang, Partnoy and Thomas (2008) and Greenwood and Schor (2009) all argue for the effectiveness of the monitoring role played by hedge funds. Bethel, Liebeskind and Opler (1998) find that the performance of a firm improves following an acquisition of a block of shares by an activist investor, i.e. activism appears to pay off.

2.3 Corporate Governance in Crisis Situations

Kosnik (1987) argues that the effectiveness of corporate governance mechanisms is better gauged when a firm is facing a crisis such that a firm's non-adherence to best or common corporate governance practice is likely to come in to sharper focus when the firm is in trouble. The logic is that the crisis event destabilizes the corporate governance equilibrium which provides an impetus to change (improve) corporate governance mechanisms as firms dynamically learn and move toward their optimal governance structure (Larcker, Richardson and Tuna, 2007).

This study is primarily focused on the influence of extreme firm underperformance (the reporting on an initial loss) on corporate governance, i.e. the change in corporate governance in response to the reporting of the initial loss. A problem for governance change studies like this one is that the board of the average firm is not revamped very frequently meaning that corporate governance is inherently sticky. It is also worth noting that even though corporate governance changes are discretionary, they typically are taken against a backdrop of best practice recommended by governance codes. Cicero *et al.* (2010) present evidence that US firms pursue target board structures. Therefore, for established firms, the board's structure and membership can be sticky around uniform levels (Beasley *et al.*, 2010). Notwithstanding the potential of this stickiness to dampen the corporate governance changes under investigation, it is likely that the corporate governance equilibrium at shocked firms with a lower standard of *ex-ante* corporate governance i) is more likely to destabilise, and ii) that these firms will be further away from their optimal corporate governance to begin with and so will have more room to exhibit change in response to the shock.

It is also not obvious that every revelation of trouble should be followed by governance changes — firms inclined to change their corporate governance mechanisms will do so having due regard for the cost of such changes (Agrawal, Jaffe & Karpoff, 1999). The authors investigate the relationship between fraud detection and subsequent director turnover and fail to find one. They argue that it can be extremely costly for a firm to design and implement an internal control mechanism to replace a board member which might explain why, even when a governance change might be warranted, it might not happen (i.e. help explain why governance is sticky). Fich and Shivdasani (2007) also find no association between the revelation of fraud and board of director turnover. There is evidence that when firms are in *financial* stress corporate governance changes (improves) in response. For instance, Farber (2005) examines how corporate governance changes in response to an investigation by the SEC (and so is focused on *financial* rather than general fraud), to test whether the shock event precipitates a change in a range of corporate governance metrics. Farber (2005) finds that prior to the announcement of the SEC investigation, fraud firms exhibited weakness in the proportion of outside directors on the board and that at the end of the test period fraud firms were indistinguishable from a matched control sample in this variable. This indicates that in response to a shock event, fraud firms wish to report their financial information more credibly and improve their governance mechanisms in attempt to do so. Srinivasan (2005) finds that outside directors experience substantial turnover on the boards of firms that restate earnings. Gilson (1989) finds that director turnover in firms that are also financially distressed exceeds turnover in non-distressed entities almost by a factor of three. Johnstone *et al.* (2011) examine changes in corporate governance that stem from the revelation of internal control material weaknesses (ICMW). It is one of the provisions of the Sarbanes-Oxley Act that firms and their auditors must report on the presence of ICMWs. Johnstone *et al.* (2011) document a positive association between the disclosure of ICMWs and the subsequent turnover of members of the boards of directors. Of particular relevance to the current study is that one of their control variables (the reporting of a loss) is positively associated with the incidence of ICMWs.

A potential reason for the lack of findings by Agrawal *et al.* (1999) and Fich and Shivdasani (2007) is that not all shock events are the same, i.e. some are worse than others and the degree to which the shock is relatively bad or good can have a conditioning impact on the results. The difference in the significance of the results for general fraud studies (e.g. Fich & Shivdasani, 2007) versus *financial* fraud studies (e.g. Farber, 2005) is an example. Given the discussion about the influence of corporate governance in the previous section, the relative quality of governance prior to the shock could be used to determine, albeit indirectly, the severity of the shock (and so, useful in that role as a conditioning variable).

Alternatively it may be possible in some circumstances to determine the severity of the shock directly. For instance, accounting restatements occur due to errors; some may be designed to mislead users of financial statements, others not — Hennes *et al.* (2008) show that the negative market response to restatements of error is significantly lower than to restatements of irregularity. In other words the severity of the shock has a conditioning impact on the market's response to that shock: the more severe the shock, the bigger the market decline. Another example of the conditioning impact of the severity of the shock is whether the company voluntarily acknowledges its error and prompts a restatement or whether it is the auditor which flags the problem (Desai *et al.*, 2006). The former is viewed as less severe because, although late, the admission is made voluntarily; Desai *et al.* (2006) document that auditor-prompted restatements are associated with the most negative announcement-period returns. Another method would be to rank the shock (restatements in this case) by size to determine whether it is relatively good (small restatement) or bad (large restatement); Srinivasan (2005) finds evidence that the likelihood of director turnover is linked to the severity of the misstatement.

Both Hennes *et al.* (2008) and Desai *et al.* (2006) reference the market's response to shock events such that it can be extrapolated that the market's interpretation of the shock is itself useful to assess the relative severity of the shock (and so, useful in that role as a conditioning variable). If the shock is accompanied by a large decline in firm value, then it may benefit the firm to affect a change in corporate governance (Jarrell and Peltzman, 1985). In such circumstances, it may be optimal to effect a visible corporate governance change to restore investors' faith in the firm and try to recover the firm's reputation.

2.4 An Initial Loss as a *Potential* Crisis Situation

What constitutes a crisis, troubled or shocked situation is an open question. The literature previously discussed includes earnings restatements, investigations of fraud, SEC investigations (financial fraud), and the reporting of ICMWs as valid examples. What the literature has not considered to date is *potential* crisis situations of which reporting an initial loss (i.e. a loss following years of consecutive profits) is an example. An initial loss is obviously not as egregious an example of a crisis situation as those mentioned above, and so are encountered much more often than such extremes. As such, the prevalence of initial losses, their role as potential (as opposed to immediately obvious) crisis situations and the more nuanced response that this potential will precipitate for initial loss firms represents an obvious gaps in the literature.

A large body of research demonstrates that accounting numbers and, in particular, earnings have information content. Yet, earnings appear to explain only a small fraction of the total variation in returns as measured by the earnings response coefficient (ERC) (Bernard, 1989; Lev, 1989). An explanation for the observed weak return-earnings relation is that the earnings contain transitory components that are either value-irrelevant or should have only a limited valuation impact (see Givoly & Hayn, 1993; Ramesh & Thiagarajan, 1993; Ramakrishnan & Thomas, 1998). Hayn (1995) posits that losses should not be treated in the same way as profits for valuation purposes because losses are likely to be considered temporary since shareholders can liquidate the firm rather than continue to suffer losses whereas firms perpetuating in profits pose no such problems. Indeed, Hayn (1995) finds that excluding loss cases results in almost a tripling of both the one-year earnings-response coefficient and the explanatory power of annual earnings with respect to contemporaneous returns. In contrast, when only loss cases are considered, the magnitude of the reported losses does not appear to be correlated at all with contemporaneous price movements. Similarly, as part of their study, Kothari and Zimmerman (1995) demonstrate the non-linearity in the return-earnings relation by excluding observations dominated by transitory earnings components (i.e. loss cases) from their sample; having done so, the average ERC nearly doubled.

While Hayn (1995) reports no relation between earnings and contemporaneous price movements for loss firms, Jan and Ou (1995) report the most puzzling results at extreme negative earnings — a reliably negative price-earnings relation for loss firms implying that the more negative a firm's earnings, the higher is its share price. Collins *et al.* (1999) investigate this negative coefficient on earnings in the simple earnings capitalization model for loss firms. They argue that the reason for this puzzling result is that the simple earnings capitalization model is mis-specified for loss firms, i.e. the observed negative price-earnings relationship at extreme negative earnings is caused by the omission of the book value of equity as an explanatory variable. Collins *et al.* (1999) find that when the simple earnings capitalisation model is augmented with book value of equity, any observed statistically significant negative earnings coefficient for loss firms becomes either reliably positive or not significantly different from zero in each year of their sample, i.e. the misspecification of the simple earnings capitalisation model due to the omission of book value causes a negative bias on the earnings coefficient for loss firms. Hayn (1995) argues that book value represents the abandonment option — if losses are allowed to perpetuate the shareholders of the company will exercise their put option to liquidate the firm at book value.

In addition to their implications for valuation detailed above, an initial loss also introduces the prospect of financial distress such that an initial loss has the *potential* to lead to crisis and ultimately, failure. That is, unlike the disclosure of financial fraud of earnings manipulation, not all losses are inherently and equally bad news. A firm reporting a small loss is unlikely to be managing earnings (i.e. it is likely the firm could have avoided or deferred the loss by managing earnings upward but chose not to do so) — but reporting an initial loss can represent a significant crossroads because losses cannot be allowed to perpetuate. The initial loss will either be transitory and the firm will return to profitability (i.e. and so in hindsight the initial loss represented a modest crisis situation), or be permanent and the firm will fail (the ultimate crisis situation beyond which changes are unobservable). In other words, once again, the conditioning impact of the severity of the crisis needs to be considered, and especially so for losses given their more subtle role as a *potential* crisis situation.

Even if losses are not expected to perpetuate, they are indicative of a rate of return that is clearly below that required by investors. The signal of unambiguous underperformance provided by losses will not be tolerated by investors over a prolonged period and requires to be addressed at the outset, i.e. at the initial loss. The inference is that due to, *inter alia*, the valuation implication of losses and the *potential* crisis that their reporting implies, firms do not strategically target an initial loss as a desirable reporting event. Indeed, the evidence in the next section regarding earnings management around the zero benchmark suggests that the opposite is the case. Simply put, an initial loss event is a shock (perhaps modest, perhaps critical but unequivocally troubled relative to matched firms continuing in profits) which cannot perpetuate and so something has to change. Given the focus of this study, the changes at issue are those relating to corporate governance and earnings management behaviour.

2.5 Losses and Earnings Management

Regulators and investors are increasingly concerned about firms managing earnings to meet benchmarks (Niemeier, 2001; Turner, 2001). These concerns make earnings management around earnings benchmarks (the loss avoidance benchmark being the primary focus of this study) both an interesting and important area of research.

Hayn (1995) first introduced the concept of analysing the pooled, cross-sectional distribution of reported earnings around undesirable outcomes to test for earnings management behaviour where earnings management is assessed using accounting-based methods to estimate abnormal accruals. The approach hypothesizes that corporate managers have incentives to avoid, *inter alia*, reporting losses (see Ronen & Yaari, 2010 for an in depth discussion) and relies exclusively on observing discontinuities in the distribution of reported earnings around this (zero) threshold to detect earnings management (Degeorge *et al.*, 1999). The initial explanation is based on the conjecture that unmanaged earnings should have a normal distribution such that unusually low frequencies of small losses and unusually high frequencies of small positive income imply that firms are, on average, managing earnings to avoid reporting a loss (Burgstahler & Dichev, 1997; Holland & Ramsay, 2003). Similar results were reported in Yang and Mulcahy (2013) for Chinese firms.

Ayers *et al.* (2006) find that forward looking discretionary accruals are higher for firms just above the loss-avoidance benchmark than for firms just below. Using an alternative test period, Dechow *et al.* (2003) test the same relationship but do not find any significant difference. Hansen (2010) finds that the lack of evidence in Dechow *et al.* (2003) is due to the impact of alternative benchmark goals (earnings improvement and/or analyst forecast) and finds that after controlling for the alternative benchmarks, firms with small profits have significantly higher abnormal accruals. A number of studies provide both direct and indirect evidence that managers engage in income increasing behaviour to avoid losses (Bhattacharya, Black, Christensen & Larson, 2003; Ayers *et al.*, 2006; Beaver, McNichols & Nelson, 2007; Dechow *et al.*, 2003; Durtschi & Easton, 2005). On the other hand, Leuz *et al.* (2003) posit that while managers have incentives to avoid reporting losses of any magnitude, they often have limited discretion and may not be able to report profits in the presence of large losses and so argue that small losses, on the other hand, are more likely to be driven by managers' accounting discretion. To date there has been no direct examination of earnings quality of loss firms in the year before the *initial* loss event (i.e. when the avoided loss, which the firm ultimately only succeeded in deferring, becomes unavoidable) — this represents another gap in the literature that this study attempts to fill. Following on from the results from the discontinuity studies it is likely that firms reporting an initial loss will display evidence of managing earnings upward (via elevated accruals) in the year prior to the loss such that these abnormal accruals might be used to predict the likelihood of a loss. Using abnormal accruals in predictive loss avoidance/reporting models in this manner to directly test the results implied by discontinuity studies represents another gap in the literature.

The literature is also silent on the change in abnormal accruals (from whatever pre-period level) induced by the reporting of the initial loss. It is likely that some initial loss firms (i.e. the loss acceptors) will exhibit no change in abnormal accruals because, by making the decision to report a loss in a timely fashion (i.e. they have not attempted to avoid or to defer it), these firms are less likely to be managing earnings in the first place. Other initial loss firms may change abnormal accruals behaviour in response to the initial loss (i.e. to unwind those accruals arising from their ultimately vain attempt to avoid the loss), and some others still may change abnormal accruals significantly as part of a 'big bath', i.e. will make the most of a bad situation by making things a little worse (Chai & Tung, 2002). In other words the exacerbating impact of the severity of the loss event needs to be considered. A big bath is defined as "the attempt to increase reported earnings in subsequent periods by charging items that may have a negative future impact to expenses in the current period, further worsening current period business results in an accounting period in which results are bad" (Itoh 2007, p.207). A big bath may be taken, for example, "during the periods of organizational stress or reorganization" or when "a firm must report a loss" (Scott, 2009, p.405). For this study the hypothesis predicts income-decreasing earnings management in the loss year in excess of that required to just unwind the higher prior year accruals built up in an ultimately unsuccessful attempt to avoid the loss. Regardless of the prevalence of firms using earnings management to lower reported profit for various reasons (i.e. Degeorge *et al.*, 1999; Healy, 1985; Gaver, Gaver &

Austin, 1995; and Holthausen, Larcker & Sloan, 1995), the literature implies that loss acceptors are the exception such that an analysis of changes in abnormal accruals in response to an initial loss event to test this hypothesis is warranted to fill the research gap.

2.6 Corporate Governance and Earnings Management

As discussed in section 2.2, a fundamental objective of governance research in accounting is to provide evidence on the extent to which information provided by financial accounting systems mitigate agency problems arising from the separation of ownership from control. Notwithstanding the endogeneity problem sometimes embedded in such studies, it is argued that (to the extent that weaker corporate governance structures yield greater information asymmetry between shareholders and the firm and accounting information is useful in removing this asymmetry) the quality of the earnings at well governed firms should be higher, i.e. earnings management should be lower than at those that are poorly governed.

Peasnell *et al.* (2005) find that that percentage of NEDs on the boards of UK firms mitigates income increasing earnings management; Klein (2002) finds a similar negative relation between board independence and abnormal accruals in the US and Liu and Lu (2007) and Lo, Wong and Firth (2010) suggest that independent boards decrease earnings management of Chinese companies. Dechow *et al.* (1996) find that firms subject to SEC's enforcement actions for earnings manipulation are more likely to have boards of directors dominated by insiders, implying that the two are related.

If CEO/Chair duality impedes effective monitoring then it would be associated with greater use of discretionary accruals. Indeed, Dechow *et al.* (1996) provide evidence that firms engaging in earnings management are more likely to have a CEO who is also the Chair as do Sarkar, Sarkar and Sen (2008) in their study of Indian firms. Prencipe and Bar-Yosef (2011) indicate that a dual CEO/Chair increases the size of abnormal accruals and that the positive relation between CEO duality and earnings management is worse when the dual CEO/Chair is also a member of a controlling family (Prencipe & Bar-Yosef, 2011) or the founder of the company (Mulgrew & Forker, 2006).

Bernig and Frick (2010) contend that small boards enhance monitoring such that they are also associated with lower levels of earnings management. Xie, Davidson and DaDalt (2003) also find a negative relation between the level of abnormal accruals and board size which is consistent with the results from Larcker *et al.* (2007) which show a negative association between absolute accruals and board size. Dimitropoulos and Asteriou (2010) find no evidence of board size affecting earnings quality among Greek firms. Krishnan and Parsons (2006) find that earnings quality is positively associated with gender diversity in senior management. Bernig and Frick (2010) also find that female board members contribute to good governance inducing less earnings management.

Warfield *et al.* (1995) find that discretionary accounting accruals, are systematically (inversely) related to managerial ownership. Similarly, Klein (2002) finds that earnings management is negatively related to CEO ownership. Gul, Chen and Tsui

(2003) find similar evidence that accruals are used to opportunistically manage earnings in Australia when managerial ownership is low. Sánchez-Ballesta and García-Meca (2007) find that there is less earnings management (and earnings are more informative) at low levels of insider ownership. Evidence from Jiraporn and DaDalt (2009) and Wang (2006) show an inverse relationship between insider ownership and earnings management at founding-family-controlled firms because these do not face the same pressures to meet targets as other firms. On the other hand, Rajgopal, Venkatachalam and Jiambalvo (2002) show no significant relation between discretionary accruals and managerial ownership in their US study. Similarly, Cornett, McNutt and Tehranian (2009), Cheng and Warfield (2005), Bergstresser and Philippon (2006) and Houmes and Skantz (2010) provide evidence that the use of discretionary accruals to manipulate reported earnings is more pronounced at firms where the CEO's potential total compensation is more closely tied to the value of share and option holdings (i.e. discretionary accruals are positively related to managerial ownership).

Dechow *et al.* (1996) find that the existence of substantial outside block holders leads to closer scrutiny of management and this implies lesser opportunity for accruals management and earnings manipulation. Rajgopal *et al.* (2002) also shows that the absolute value of discretionary accruals declines with institutional ownership since institutional owners are better informed than individual investors and this reduces the perceived benefit of managing accruals. Chung, Firth and Kim (2002) report similar results. Charitou, Lambertides and Trigeorgis (2007) find that new managers of financially distressed US firms are less likely to use income-decreasing earnings management to 'take a bath' where the firm has institutional investors. Kim and Yi (2006) and Sarkar *et al.* (2008) find evidence of greater earnings management in firms with a controlling shareholder in their studies of Korea and India, respectively. Yeo, Tan, Ho and Chen (2002) find that when external unrelated blockholding is high, regardless of the level of managerial ownership, the results indicate fewer opportunities for earnings management.

2.6.1 Corporate Governance Amalgamations

The various individual governance variables detailed so far are manifestations of the underlying structure of corporate governance. Some are substitutes and others are complements. Using various corporate governance variables individually will not capture how they combine to form the overall corporate governance architecture of a company. The use of several individual governance variables may also lead to the problem of multicollinearity when estimating empirical models. Larcker *et al.* (2007) argue that there is not a well-developed theory for selecting the relevant governance characteristics to include in an empirical study. For this reason several studies use governance indices (i.e. scores constructed from individual governance variables) rather than the individual governance variables themselves as a summary of a firm's governance structure (Gompers, Ishii & Metriick, 2003; Sivaramakrishnan & Yu, 2008; Bebchuk & Cohen, 2005; Klapper & Love, 2004; Brown & Caylor, 2006; Shen & Chih, 2007; DeFond, Hann & Hu, 2005; Carcello, Hollingsworth, Klein & Neal, 2006; Duh, Lee & Lin, 2009).

In an earnings management study, Carcello *et al.* (2006) use an index of governance quality developed by DeFond *et al.* (2005) to provide evidence of a significantly negative relationship between strong governance and absolute abnormal accruals. Shen and Chih (2007) use an amalgamation corporate governance characteristics (which including director independence and dual CEO/Chair) and find a negative relationship between corporate governance and earnings management. Sivaramakrishnan and Yu (2008) use the governance index developed by Gompers *et al.* (2003) to investigate, *inter alia*, whether accrual quality is affected by governance. Their results suggest that firms with adequate governance have higher quality earnings and accruals than firms with weak governance. Duh *et al.* (2009) use an equal weighted simple governance amalgamation of six governance attributes (including board size, independent directors, an indicator variable of inside ownership, institutional investors' shareholding and foreign institutional investors' shareholding), and conclude that governance restrains earnings management using the reversal of impairment losses. Pergola and Joseph (2011) use a governance index similar to Brown and Caylor (2006) in their study of the relationship between board equity ownership and corporate governance on earnings quality.

However, it can be argued that the use of a single indicator (or a simple index made up from single indicators) for a complex construct like corporate governance does not accurately reflect the underlying governance structure and, as a highly subjective construct, is associated with considerable measurement error (i.e., low reliability). Another approach is to use exploratory factor analysis to construct objective general governance variables to provide insights into the underlying structure of corporate governance. Factors are underlying constructs, not directly measured, that are influenced by responses on measured variables. Larker *et al.* (2007) use a factor analysis to develop measures for the dimensions of corporate governance. They find that both the absolute level of abnormal accruals and the likelihood of having an earnings restatement are positively related to 'insider power', an amalgamation which reflects the percentage of the board comprised of insiders; voting rights favouring insiders; and the percentage of the firm owned by executives as a group and by the top executive.

2.7 Summary and Conclusions

This chapter outlines the extant literature that deals with loss reporting, corporate governance, and earnings management and explores the absence of a synthesizing literature between and among these areas resulting in significant research gaps to be tested.

It starts with a focus on the principal agent problem arising from the separation of ownership and control. The conflict can include a motivation for management to sustain an information advantage over owners and to obfuscate the true financial performance of the company in its financial report. Shareholders have several mechanisms available to organise the structure of their company in a way that aligns the goals of management with their own and so constrain earnings management; these mechanisms represent the firm's corporate governance structure. Most governance studies use individual governance variables or simple governance constructs to represent corporate governance. The literature on the efficacy of broader corporate governance amalgamations is less developed. A specific feature and contribution of this study is its utilisation of corporate governance amalgamations constructed from observable governance outcomes to capture underlying governance mechanisms.

There is a plethora of evidence that well-structured governance mechanisms are associated with better decision making and lower earnings management. Another observation from the extant literature that examines the relationship between corporate governance and accounting numbers is that the causality may not be in one direction only. One of the best ways to formally address the endogeneity problem is to avoid it altogether by constructing the research model such that one of the variables is exogenous and so the causality can only be argued in one direction. Using an exogenous shock as a trigger or causal event is an example.

There is evidence that financial fraud and earnings restatements induce improvements in corporate governance. Despite the evidence that loss firms are 'different' (and so require supplemented valuation models) and that a reported loss represents a clear and unambiguous signal of underperformance, losses (and initial losses, in particular) have not been explored as a change agent. It is a primary contention of this study that the reporting of an initial loss represents an example of a *potential* crisis situation that is likely to have significant implications for, *inter alia*, the corporate governance and earnings management behaviour around the initial loss event. This unique *potential* status is either ignored entirely or accommodated but otherwise unexplored in studies where the focus in on 'normal' profitable firms. Despite the prevalence of losses and the breadth of both the corporate governance and earnings management literatures, the intersection of these literatures is almost totally unexplored.

An initial loss represents a significant crossroads for any firm. The firm will either return to profitability or fail but one thing is for sure, shareholders will not allow losses to perpetuate and so something has to change. This study contends that the initial loss is likely to cause a firm's corporate governance mechanisms to come into sharper focus and, notwithstanding that the inherent stickiness and uniformity could potentially confound the results, induce governance to unstick (improve). There is no literature that specifically deals with initial losses as a *potential* crisis situation in this manner and so the analysis in this study is unique in that regard.

This study also contributes to the extant literature that attempts to explain whether the kink in the distribution of earnings (i.e. Burgastahler & Dichev, 1997) provides evidence of earnings management (Ayers *et al.*, 2006; Beaver *et al.*, 2007; Dechow *et al.*, 2003; Durtschi & Easton, 2005). The loss avoidance benchmark is an example of once such kink in the distribution. However, none of these studies examine the impact of initial losses that occur rather than are deferred/avoided (via earnings management) or exaggerated (via big baths). That is, no study investigates an initial loss as a shock event around which to examine earnings management behaviour. Prior year abnormal accruals can be examined for evidence of earnings management and the response can be tested for evidence of big bath behaviour. This research, with its industry- and size-matched sample deals with this research gap.

In addition, because losses, as *potential* crisis situations, are not universally egregious, the extent of any changes in response to the initial loss is likely to depend on other information contained in the loss, i.e. the firm's *ex-ante* governance structure and/or the severity of the loss itself. The conditioning of corporate governance and earnings management changes in response to the initial loss on corporate governance quality and/or the severity of the loss represents an additional contribution to the extant research. The mitigating role played by corporate governance on the ability of prior year abnormal accruals to predict a loss is an additional layer of complexity that this study will examine to further synthesise the loss, governance and earnings management literatures.

In short, there are significant research gaps in the corporate governance, earnings management and loss literatures which this study examines for the first time. The literature review outlines several areas for study that will be formally detailed in Chapter 3 and tested in the empirical Chapters 4, 5 and 6. The way the models in this study are set up, the research questions in each empirical chapter will be tackled taking full account of the endogeneity problem. The analyses in the chapters to follow are also sure to compare the results for loss firms to those of a closely matched control (profit) sample in order to properly test the impact of the reporting of the initial loss event on corporate governance and earnings management behaviour in response to the event. In this study corporate governance variables are constructed using exploratory factor analysis to maximise construct reliability and to minimise measurement error. The quality of corporate governance and the severity of loss are also used throughout as conditioning variables to more closely analyse and test the interaction between the synthesised corporate governance, earnings management and loss literatures.

Chapter 3

Methodology

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3.1 Introduction

The objective of this chapter is, with reference to the gaps in the loss, corporate governance and earnings management literatures identified in Chapter 2, to outline the research framework for the empirical analyses to be used in Chapters 4, 5 and 6. This chapter builds on the line of questioning which concluded Chapter 2 to develop the hypotheses used in the empirical chapters 4, 5 and 6 of this study, describes the data collection process, details the variable construction processes for both the corporate governance and earnings management measures used in this study before discussing the significant methodological issues pertaining to the empirical analysis of the data.

This chapter is organised as follows: Section 3.2 details the hypotheses used to test the research questions analysed in this thesis. Section 3.3 summarises the estimation models, in general form, used to test the hypotheses. Section 3.4 describes the data collection process for the loss and (matched) control samples and compares the samples for equivalence. Section 3.5 explains the information collected from the annual reports of the loss and control samples, describes the variable construction process and briefly analyses the corporate governance variables used in this study. Section 3.6 describes and briefly analyses the other (accounting and market) variables used throughout the remainder of this study. Section 3.7 details the main econometric method and the statistical tests used to test the significance of various coefficients. Section 3.8 summarises and concludes.

3.2 Hypothesis Development

Even though this thesis synthesises a number of research areas and includes a number of empirical analyses, the research objective is a cohesive one. The fundamental objective is to analyse the impact of the reporting of an initial loss on the choices of loss firms in a variety of circumstances. Cognisant that endogeneity can cause problems in applied corporate governance studies such this (Brown *et al.*, 2011; Larker & Rusticus, 2010), the experimental method used throughout this study is carefully designed to properly and fully examine the causal relationship under investigation (Gerety & Lehn, 1997). To isolate the impact of the reporting of an initial loss event on the choices made by loss firms, a matched (control) sample of non-loss firms is also collected — the criteria for the selection of the control sample is included later in this chapter. This matched sample acts as a comparator against which the pre- and post-period corporate governance and earnings quality of initial loss firms and the changes therein can be compared. More comprehensively, the matched sample facilitates a difference-in-difference research design which specifically isolates the impact of the loss event on the choices of initial loss firms conditional on the impact of other information (*ex-ante* corporate governance quality and the severity of loss are used in this study).

Chapter 4 investigates whether the reporting of an initial loss induces corporate governance to change (corporate governance, largely, being the result of a managerial choice). It addresses this question by examining the relationship between whether or not a company reports an initial loss and the change in corporate governance in response to that loss. This thesis uses several corporate governance variables and amalgamations throughout the study, the details and construction of which are included later in this chapter. Corporate governance levels at various stages before and after the initial loss event are compared to assess the impact of the initial loss event and, in a multivariate difference-in-difference analysis, the changes in these corporate governance measures during the test period are analysed and compared to an industry- and size-matched control sample to isolate the impact of the initial loss event on corporate governance. It was noted in Section 2.1 of the previous chapter that latent uniformity in corporate governance resulting from the promulgation of governance best practice codes (the Combined Code in this instance) as well as the inherent stickiness of corporate governance biases against finding significant results. In other words, if significant results are found for the average initial loss firm then they are doubly welcome. Chapter 4 also examines the impact of other information sources on any changes in corporate governance. Specifically, Chapter 4 tests whether the quality of corporate governance at initial loss firms has an impact on the extent of any corporate governance changes in response to the initial loss. To avoid the prospect of endogeneity, it is the *pre-period* quality of corporate governance that is used to condition the model.

The hypotheses tested in Chapter 4 then in null form are:

H4.1: there is no association between the reporting of an initial loss and changes in corporate governance.

H4.2: corporate governance quality in the prior year has no effect on the association between the reporting of an initial loss and changes in corporate governance.

The empirical analysis in chapter 5 investigates whether the reporting of an initial loss impacts on the earnings management behaviour (as represented by changes in abnormal accruals) in response to the initial loss event. The extent of earnings management behaviour in the year before the loss (to avoid/defer the loss) and the tendency unwind those accruals to the extent that some firms may also exhibit big bath behaviour in the year of the loss are of particular interest. Conscious that an initial loss represents a *potential* rather than an immediately obvious crisis situation like fraud (i.e. Farber, 2005) or an earnings restatement (i.e. Srinivasan, 2005), Chapter 5 also examines whether the severity of the reported initial loss (i.e. Hennes *et al.*, 2004; Desai *et al.*, 2006; Srinivasan, 2005) has a conditioning impact on the earnings management behaviour before and in response to the loss. Finally, bearing in mind the evidence from distribution studies examined in section 2.4 of the previous chapter (i.e. Degeorge *et al.*, 1999; Burgstahler & Dichev, 1997; Holland & Ramsay, 2003; Yang & Mulcahy, 2013), Chapter 5 also analyses the ability of abnormal accruals to predict a loss. The hypotheses tested in Chapter 5 in null form then are:

H5.1: there is no association between the reporting of an initial loss and changes in abnormal accruals.

H5.2: the severity of the loss has no impact on the association between the reporting of a loss and changes in abnormal accruals.

H5.3: abnormal accruals are not useful in predicting the reporting of an initial loss.

Chapter 6 combines elements of the analyses in Chapters 4 and 5 by examining the mitigating role corporate governance plays on the earnings management behaviour (abnormal accruals) at initial loss firms. The reasoning is that low quality corporate governance confers private control benefits to insiders at the expense of outsiders (Leuz *et al.*, 2003). The extraction of these private control benefits motivates insiders to engage in earnings management to obfuscate their actions such that there in inverse relation between corporate governance and earnings management. For completeness, the conditioning role played by the severity of the initial loss on any changes in corporate governance in response to the reporting of the initial loss is also examined. Chapter 6 also includes an analysis of the *combined* moderating effect of corporate governance quality and the severity of loss on earnings management at initial loss firms. Finally, Chapter 6 builds on the analysis in Chapter 5 on the ability of abnormal accruals to predict a loss examining the mediating role played by corporate governance in such situations. The hypotheses tested in Chapter 6 then are:

H6.1: corporate governance has no effect on the association between the reporting of an initial loss and changes in abnormal accruals.

H6.2: the severity of the initial loss has no effect on the association between the reporting of an initial loss and changes in corporate governance.

H6.3: corporate governance and the severity of the initial loss have, *in combination*, no effect on the association between the reporting of an initial loss and changes in abnormal accruals.

H6.4: corporate governance has no effect on the association between prior year signed abnormal accruals and loss avoidance.

In sum the empirical chapters in this thesis synthesise the loss, corporate governance and earnings management accruals literature to comprehensively test the impact of initial losses on the corporate governance and earnings management decisions made by initial loss firms. The following section outlines, in general form, the estimation equations used to test these hypotheses.

3.3 Estimation Equations

Having outlined the research objective, research questions and hypotheses, this section presents and prepares estimation models for the analyses in chapters 4, 5 and 6. The equations are presented in a summarized manner such that the corporate governance variables used in this study are, for the time being, represented by the generic governance indicator, *GOV*.

The multivariate estimation equations in Chapter 4 derive from the following general form difference-in-difference equation used to test H4.1:

$$\Delta GOV = f(D_{LOSS\,t}, \Delta Controls)$$

where

$$D_{LOSS\,t} = \begin{cases} 1 & \quad for\ loss\ sample \\ 0 & \quad for\ control\ sample \end{cases}$$

and ΔGOV represents the change in corporate governance and $\Delta Controls$ represents the change in appropriate control variables during the test period.

Given the lack of evidence regarding benchmark control variables to use for governance changes, return is included as a compound independent $\Delta Control$ variable in the model to provide context for the loss event across the test period. That is, the initial loss event is but one (albeit salient) piece of information about the loss firm from a potentially much richer information environment about the company. A company's market return is therefore a variable that provides information regarding the market's interpretation of all information about each firm (loss or control) such that particularly good/bad returns will reflect particularly good/bad information about that firm (the calculations of the return variable are detailed in Section 3.6.2 of this chapter). Insofar as the market correctly prices this information for both loss and control firms from the same industry (i.e. the information is accurately reflected in returns) then the return variable controls for any/all confounding events from changes in the broader macro and regulatory environment.

Constructed thus, with minor adaptation, the model also facilitates the conditioning of the $D_{LOSS\,t}$ variable by the quality of *ex-ante* corporate governance (H4.2) and by the severity of the initial loss (H6.2). A further analysis to test H4.2 conditions the loss event on prior period corporate governance quality to test whether all loss firms have the same corporate governance response to the initial loss event or whether *ex-ante* corporate governance itself has a mitigating role to play on any changes.

The multivariate analyses in Chapter 5 examine two connected but different research questions. The first examines the difference in the changes in abnormal accruals across the test period between the loss and control firms in response to the initial loss. The estimation models used to test the changes in abnormal accruals during the test period derive from the following general form difference-in-difference equation (H5.1):

$$\Delta AB\_ACCR = f(D_{LOSS\,t}, \Delta Controls)$$

which examines the impact of the loss event on changes in abnormal accruals around the initial loss versus a matched control sample. Constructed thus, with minor adaptation, the model also facilitates the conditioning of the $D_{LOSS\,t}$ variable by the severity of the initial loss (H5.2) and by the quality of *ex-ante* corporate governance (H6.1).

The second analysis examines the ability of prior year abnormal accruals to predict the reporting of an initial loss. The estimation model for this final hypothesis (H5.3) is derived from the general form logit equation:

$$p(D_{LOSS\,t} = 1) = f(AB\_ACCR, Controls)$$

The analysis in Chapter 6 combines the elements of the analyses in the previous two chapters. Hypotheses 6.1 and 6.2 are analysed using the previously mentioned adaptations of the general form equations used in Chapters 5 and 4, respectively, where the model in Chapter 5 is conditioned by *ex-ante* governance quality to test H 6.1 and the model in Chapter 4 is conditioned by the quality of the initial loss to test H6.2. A combination analysis of the *joint* mitigating impact of corporate governance quality and the quality of the loss on the change in abnormal accruals (H6.3) is also conducted. The estimation models used to test the changes in abnormal accruals during the test period derive from the following general form equation:

$$\Delta AB\_ACCR = f(D_{LOSS\,t}, GOV, \Delta Controls)$$

The estimation model for the final hypothesis in Chapter 6 (H6.4) is derived from the general form logit equation:

$$p(D_{LOSS\,t} = 1) = f(AB\_ACCR, GOV, Controls)$$

3.4 Data Collection and the Samples

To test the hypotheses developed in section 3.2 using the general form estimation models outlined in section 3.3, two separate but matched data samples — an initial loss sample and a closely matched control (non-loss) sample — are collected for the empirical analyses in this study.

3.4.1 The Initial Loss Sample

All of those companies which reported a loss in the years 2004, 2005 and 2006 are potential candidates for inclusion in the initial loss sample. The analysis is restricted to firms reporting a loss up to 2006 to allow for a two year test period after the reporting of a loss in which to examine governance changes, i.e. up to the end of 2008. In the empirical analyses contained in this study, all the non-failed companies were taken from the DATASTREAM "live" list of quoted UK industrials firms; the DATASTREAM code for this list is UKQI. To avoid survivorship bias this study also includes the failed companies taken from the DATASTREAM "dead" list; the DATASTREAM code for this list is DEADUK. This yields a total of 730, 826 and 841 candidates for each of 2004, 2005 and 2006, respectively, and these are referred to as loss firms. However, this study is only concerned with *initial* loss events. To separate initial losses from the total loss sample collected above, it is necessary to define what separates an initial loss from a general loss. For the purpose of this study an initial loss is one with at least two prior years of reported profit; this helps to isolate the impact of the initial loss as a change agent by avoiding any lagging impact of previous losses a firm may have reported. It is this two years of reported profit before the loss event that allows this study to define the initial loss event as a "shock".

The analysis in this thesis is concerned with, *inter alia*, corporate governance, so it is also important that all candidate companies be subject to the Combined Code on Corporate Governance[7]. Therefore all foreign companies whose primary stock exchange listing is abroad are excluded, with the exception of Irish firms because Ireland has adopted the Combined Code. Banks, investment trusts, property companies and other financial institutions (i.e. all those companies with an industry classification benchmark (ICB) code of 8000) are also eliminated from the sample because these firms have specialised accounting measurement methods. Corporate governance information was not available from 45 firms; typically this meant that annual reports were not available from any source. All of these restrictions: no foreign firms whose primary listing is abroad, no financial firms, that a loss event be preceded by two profitable years, and that corporate governance information is available results in a total 40, 50 and 48 initial loss firms for 2004, 2005 and 2006, respectively (see Table 3.1), for a total loss sample of 138 companies. In the two years following the reporting of a loss, 36 of these companies were acquired, liquidated or delisted resulting in the perusal of the 500 annual reports for corporate governance information for the loss panel.

[7] The most recent update was published in June 2010 and is now called the UK Corporate Governance Code

Table 3.1 Selection of the Initial Loss Sample

Number of firms reporting a loss between 2004 and 2006		2,397
Less:		
Non-conforming loss firms*	2,142	
Duplicate firms	26	
Financial firms	10	
Firms with a foreign primary listing	36	
Firms with insufficient data/Other	45	
Final Sample		138

* Non-conforming loss firms are those loss firms which did not report profits in each of the two years before the initial loss event.

Table 3.2 indicates that initial loss firms are widely distributed among industry classification, with some clustering in business support services, software, heavy construction and publishing.

Table 3.2 Distribution of Initial Loss Sample by Industry Classification Benchmark (ICB) Codes

ICB Industry Code	ICB Subsector Code	Industry Description	Number of Firms	ICB Industry Code	ICB Subsector Code	Industry Description	Number of Firms
2000	2713	Aerospace	1	1000	1773	Diamonds & Gemstones	1
5000	5751	Airlines	1	2000	2727	Diversified Industrials	1
5000	5371	Apparel Retailers	2	3000	3722	Durable Household Products	1
3000	3355	Auto Parts	2	2000	2733	Electrical Equipment	3
4000	4573	Biotechnology	2	2000	2737	Electronic Equipment	3
5000	5553	Broadcast & Entertainment	3	9000	9574	Electronic Office Equipment	1
2000	2353	Building Materials & Fixtures	3	1	533	Exploration & Production	4
2000	2791	Business Support Services	16	3000	3573	Farming & Fishing	1
2000	2793	Business Train & Employment	3	6000	6535	Fixed Line Telecom.	1
3000	3763	Clothing & Accessory	3	3000	3577	Food Products	2
9000	9533	Computer Services	5	5000	5337	Food Retail,Wholesale	2
7000	7535	Consumer Electricity	1	3000	3726	Furnishings	2
2000	2723	Containers & Package	2	5000	5752	Gambling	3
2000	2717	Defense	1	7000	7573	Gas Distribution	1

(Continued)

Table 3.2 ***Continued***

ICB Industry Code	ICB Subsector Code	Industry Description	Number of Firms	ICB Industry Code	ICB Subsector Code	Industry Description	Number of Firms
1000	1775	General Mining	1	4000	4577	Pharmaceuticals	1
1000	1777	Gold Mining	2	5000	5557	Publishing	6
4000	4533	Healthcare Providers	1	3000	3745	Recreational Products	2
2000	2357	Heavy Construction	6	5000	5755	Recreational Services	2
3000	3728	Home Construction	1	5000	5757	Restaurants & Bars	2
5000	5375	Home Improvement Retail	1	9000	9576	Semiconductors	1
2000	2757	Industrial Machinery	4	9000	9537	Software	8
2000	2797	Industrial Suppliers	1	5000	5377	Specialised Consumer Services	1
5000	5555	Media Agencies	2	1000	1357	Specialty Chemicals	1
4000	4535	Medical Equipment	1	5000	5379	Specialty Retailers	5
4000	4537	Medical Supplies	1	9000	9578	Telecom. Equipment	5
1	573	Oil Equipment & Services	2	3000	3747	Toys	3
1000	1737	Paper	2	2000	2777	Transport Services	2
3000	3767	Personal Products	2	5000	5759	Travel & Tourism	1

3.4.2 The Control Sample

Prior research and the current study show some clustering by industry among loss firms. Dechow *et al.* (1996) and Farber (2005) find a similar industry clustering among fraud firms. Therefore, an examination of corporate governance and earnings management behaviour around the reporting of an initial loss has the potential to reveal characteristic behaviour that is associated with changes at industry level rather than with the reporting of the initial loss. To control for this possibility and to account for any general underlying changes across all industries during the period under study, a matched sample of control (i.e. profit) firms for 2004, 2005 and 2006 is also collected to test changes in corporate governance following the reporting of a loss. A control company is defined as any company reporting a profit for three consecutive years ending in the year in question (2004, 2005 or 2006) which also reports a profit (or is acquired, liquidated or delisted) in the two years following the event year.

The matching of the control companies to each of the 138 loss firms is a two stage process. The first stage is that the control firms are sorted by industry classification benchmark (ICB) subsector code (DATASTREAM: FTAG5) and the initial loss firms are first matched to the appropriate subsector group. The second stage involves selecting the control firm from the subsector group with a market value closest to that of the initial loss firm. Market value is calculated as at the calendar year end when the initial loss firm was selected. In some situations there is no control firm with the same subsector code as the loss firm. In these situations the matching criterion is relaxed to the broader industry code (DATASTREAM: FTAG2) where, as before, the control firm with the closest market value is chosen. If it is discovered that a control company was unsuitable (typically because an annual report(s) are not available from any source) then the matching process is repeated and the next most suitable control firm is selected as a replacement. In the two years following the event year 28 of the control companies were acquired, liquidated or delisted resulting in 532 annual reports being perused.

The distribution of control firms and their industry classifications is included in Table 3.3 with, by design, clustering in the same industries (business support services, software, heavy construction and publishing) as for the initial loss sample.

Table 3.3 Distribution of Control Sample by Industry Classification Benchmark (ICB) Codes

ICB Industry Code	ICB Subsector Code	Industry Description	Number of Firms	ICB Industry Code	ICB Subsector Code	Industry Description	Number of Firms
2000	2713	Aerospace	1	1000	1773	Diamonds & Gemstones	0
5000	5751	Airlines	1	2000	2727	Diversified Industrials	2
5000	5371	Apparel Retailers	2	3000	3722	Durable Household Products	1
3000	3355	Auto Parts	2	2000	2733	Electrical Equipment	3
4000	4573	Biotechnology	3	2000	2737	Electronic Equipment	3
5000	5553	Broadcast & Entertainment	2	9000	9574	Electronic Office Equipment	1
2000	2353	Building Materials & Fixtures	3	1	533	Exploration & Production	4
2000	2791	Business Support Services	15	3000	3573	Farming & Fishing	1
2000	2793	Business Train & Employment	3	6000	6535	Fixed Line Telecom.	2
3000	3763	Clothing & Accessory	3	3000	3577	Food Products	3
9000	9533	Computer Services	6	5000	5337	Food Retail,Wholesale	2
7000	7535	Consumer Electricity	2	3000	3726	Furnishings	3
2000	2723	Containers & Package	2	5000	5752	Gambling	3
2000	2717	Defense	0	7000	7573	Gas Distribution	0

(Continued)

Table 3.3 Continued

ICB Industry Code	ICB Subsector Code	Industry Description	Number of Firms	ICB Industry Code	ICB Subsector Code	Industry Description	Number of Firms
1000	1775	General Mining	2	4000	4577	Pharmaceuticals	1
1000	1777	Gold Mining	2	5000	5557	Publishing	6
4000	4533	Healthcare Providers	1	3000	3745	Recreational Products	0
2000	2357	Heavy Construction	5	5000	5755	Recreational Services	2
3000	3728	Home Construction	1	5000	5757	Restaurants & Bars	3
5000	5375	Home Improvement Retail	1	9000	9576	Semiconductors	1
2000	2757	Industrial Machinery	5	9000	9537	Software	9
2000	2797	Industrial Suppliers	2	5000	5377	Specialised Consumer Services	1
5000	5555	Media Agencies	3	1000	1357	Specialty Chemicals	3
4000	4535	Medical Equipment	1	5000	5379	Specialty Retailers	5
4000	4537	Medical Supplies	1	9000	9578	Telecom. Equipment	2
1	573	Oil Equipment & Services	2	3000	3747	Toys	2
1000	1737	Paper	0	2000	2777	Transport Services	2
3000	3767	Personal Products	1	5000	5759	Travel & Tourism	1

3.4.3 Tests of Sample Equivalence

Table 3.4 indicates that the null hypothesis that the means of the on the ICB subsector code and ICB industry codes for initial loss and control firms are equal to each other cannot be rejected. Thus the industry matching of the loss and control sample has been successful. Specifically, the *t*-statistics for the comparison of means test for the ICB subsector and industry codes are 0.21 and 0.00, respectively, indicating near perfect matching in the case of ICB subsector code and perfect matching in the case of industry level code (given that the industry level code is much broader than the subsector code, this is not surprising). Because ICB code was prioritised over market value as a selection criterion to control for the possibility that changes in corporate governance are associated with industry rather than the loss shock, no *a priori* restriction on the size of the difference in market values between the loss and control firms is made. The result is that even though a matched pair of firms will have identical ICB codes, the difference in market values between the pair could be significant even though the control company with the closest market value was selected[8]. The results outlined in the final row of Table 2 indicate that the market values of the initial loss and control samples are not significantly different from each other.

[8] For instance, the largest market value difference between a matched pair is -£25.2 billion for Morrison Supermarkets plc. (the initial loss firm) and Tesco plc. (the control firm). This difference is significantly greater than Morrison's market value of £6.8 billion at the end of 2006 (the year of the initial loss) reflecting Tesco's significantly greater market value of £32.0 billion on the same date.

Table 3.4 **Matching Statistics for Initial Loss and Control Samples**

Variable	**Initial Loss Firm Mean (in millions)**	**Control Firm Mean (in millions)**	***t*-statistic**	**Initial Loss Firm Median (in millions)**	**Control Firm Median (in millions)**	***p*-value**
Subsector Code	4,497.0	4,491.0	0.21	3,745.0	3,727.0	0.49
Industry Code	3,876.0	3,876.0	0.00	3,000.0	3,000.0	1.00
Market Value	364.7	380.8	-0.32	39.4	57.4	0.20
Market Value*	431.2	696.3	-1.33	41.4	60.1	0.10

Initial loss firms are matched with control firms on the basis of year, IBC code and market value.
The *t*-statistic is for the difference between the means of the matched pairs. The *p*-value is for the Wilcoxon signed-rank test.
The asterisk (*) denotes the unwinsorised market value.

Table 3.4 shows the difference in market values (i.e. the asterisked values) between the loss and control samples indicating that the majority of the differences are clustered around zero (as expected) with a few (mainly negative) outliers impacting on the distribution.

This study attempts to neutralise the impact of the extreme market values in this context (as well as later in the study for other market based variables) by winsorising the data, a strategy that takes the non-missing values of a variable and generates a new identical variable except that the highest and lowest values are replaced by the next value counting inwards from the extremes (Tukey, 1962; Barnett & Lewis, 1994). For instance, if correcting for outliers greater than three standard deviations from both sides of the mean, winsorising would see all data below the 1st percentile set to the 1st percentile, and data above the 1st percentile set to the 1st percentile. As a result, winsorised estimators are usually more robust to outliers than their more standard forms. This study specifies throughout that the fraction of observations to be modified in each tail is 1%, i.e. +/- three standard deviations from the mean. The unasterisked values for market value in Table 3.5 show the difference in winsorised market values between the initial loss and control samples indicating that the majority of the differences are unaffected and remain clustered around zero (as expected) with the extreme outliers now having a smaller impact on the distribution. A *t*-statistic of -0.32 indicating no difference in the means of both samples, i.e. we cannot reject the null hypothesis of mean equivalence between the initial loss and control samples.

In addition to the comparison of means test previously applied, this study also tests the equality of the matched pairs using the Wilcoxon signed-rank test. This tests whether a sample median differs significantly from a hypothesised value; in this case the null hypothesis is that both distributions are the same. The sign rank test can be used to test for differences in median between the initial loss and control populations. Because the Wilcoxon signed-ranks test does not require assumptions to be made about the form of the distribution (unlike the difference in means test), it is considered a robust test of equivalence. Table 3.4 includes the *p*-values for the Wilcoxon signed-rank test. The ICB industry level code *p*-value indicates the same perfect matching demonstrated previously, i.e. $p = 1.00$. This study also cannot reject the null hypothesis of median equivalence for the ICB subsector, winsorised market value and market value where the *p*-values are 0.49, 0.20 and 0.10, respectively.

3.5 Corporate Governance Variables

In combination, the initial loss and control samples result in 276 firms being selected for the empirical analysis in this study resulting in the perusal of 1,032 annual reports from which from which approximately 14,000 items of corporate governance data are collected by hand.

It is important to note that because of the lag between the financial year end and the reporting of results, the corporate governance information contained in the annual report often needs to be adjusted to align with the fiscal year end. This adjustment is important to ensure that companies anticipating the reporting of the initial loss event are not allowed to adjust their corporate governance between the financial year end and the date the initial loss is reported; to allow them to do so would, *a priori*, dampen the impact on the causal relationship being tested in some of the hypotheses in this study. Thus, insofar as is possible, the corporate governance data collected for each firm reflects the corporate governance in place at the financial year end.

One of the most important pieces of governance information culled from these annual reports is the number of non-executive directors and the number of independent non-executive directors on the board. The distinction between non-executive directors and independent directors is an important one; for various reasons, not all non-executive directors are independent. In most cases companies will differentiate between those non-executives which are independent and those which are not in their annual reports with reference to the recommendation of the Higgs Report contained in the Combined Code on Corporate Governance, (2003).

According to the Combined Code (2003), a director is not independent if the director

1. Has been an employee of the company or group within the last five years;
2. has, or has had within the last three years, a material business relationship with the company either directly, or as a partner, shareholder, director or senior employee of a body that has such a relationship with the company;
3. has received or receives additional remuneration from the company apart from a director's fee, participates in the company's share option or a performance-related pay scheme, or is a member of the company's pension scheme;

4. has close family ties with any of the company's advisers, directors or senior employees;
5. holds cross-directorships or has significant links with other directors through involvement in other companies or bodies;
6. represents a significant shareholder; or
7. has served on the board for more than nine years from the date of first election

Even so, many companies use the latitude allowed by the Combined Code (section A.3.1 p.6) "the board should identify in the annual report each non-executive director it considers to be independent", to deem certain non-executives as independent even though, per the definition of the Combined Code (and as is often stated elsewhere in the company's annual report), they clearly are not. Where there is disagreement between the number of independent non-executive directors described in the annual report and those that would qualify as independent if the conditions of the Code were applied, this study is careful to apply the conditions of the Code where possible to identify "true" independence.

Information about the chairman is also collected from the annual reports. Whether the chair is a nonexecutive director is a variable often considered in governance studies and this study also collects this information. In addition to the non-executive status of the chair, and with reference to the previous discussion about the difference between non-executive and independent directors, this study also collects information about the independence of the chair. The conditions of the Combined Code state (section A.2.2. p.5) "The Chairman should on appointment meet the independence criteria", but thereafter the test of independence is not appropriate in relation to the Chairman. Despite the rider that the Chair should not, after appointment, be considered independent, this study also collects information about the independence of the Chairman to get a better overall picture of the quality of this governance variable. In addition, as a further measure of the quality of the chair this study also collects information about whether the chair has ever been an executive of the company. This is a more strenuous test than the five year test recommended by the Combined Code [see 1.) above] that will provide a better overall picture of the quality of the chair. Information about the number of female board members is also collected from the annual statements to measure gender diversity.

Next, this study collects ownership data from the annual report. Information about the number of shares beneficially owned by all the directors is collected as well as the number of shares held by the top director (where top is defined by the quantity of shares beneficially held, i.e. not necessarily the CEO or Chair). Information about outside ownership by professional shareholders (defined as non-insider non-individual holders of blocks greater than 3%) and other outside shareholders (i.e. non-inside shareholders other than professional shareholders holding blocks of greater than 3%) is also collected. Specifically information about the total number of shares held by professionals in blocks greater than 3%, the number of shares held by the top professional investor (where top is defined by the number of shares held, i.e. not necessarily the best known or largest pension fund manager), the number of professional shareholders and the total number of shares held by non-professional outside shareholders is collected. Table 3.5 details the complete list of corporate governance information culled from these annual reports.

Table 3.5 Corporate Governance Information Collected

Description
The size of the board
The number of non-executive directors on the board
The number of independent non-executive directors on the board
Whether the Chair is a non-executive
Whether the Chair is an independent non-executive
Whether the Chair was ever an executive
The number of female directors on the board
The number of shares held beneficially by all directors
The number of shares held beneficially by the largest shareholding director
The number of shares held by professional shareholders in blocks > 3%
The number of shares held by the largest professional shareholder
The number of professional shareholders owning shares
The number of shares held non-professional shareholders in blocks > 3%

The corporate governance information detailed in Table 3.5 is then used to generate corporate governance variables. Combining the corporate governance information about the number of non-executive and independent directors with the information collected about the size of the board, two measures of non-executive director related board quality are constructed;

1. The proportion of the board comprised of non-executive directors (% NEDs)
2. The proportion of the board comprised of independent non-executive directors (% INDs)

Combining the governance information about the chairman this study also constructs three governance measures focused on the chairman;

1. Is the chairman a non-executive director? (NED Chair)
2. Is the chairman an independent non-executive director? (IND Chair)

These measures are dummy variables having a value of 1 if true and otherwise having a value of 0. Whether the chair was never an executive (Chair Never Exec.) is also used to construct an additional chair related variable; this is a dummy variable having a value of 1 if true and otherwise having a value of 0.

By combining the information regarding board size (BSize) and the independence of the Chair (IND Chair) this study also calculates the proportion of the board, excluding the chairman, comprised of independent non-executive directors (% IND Excl. Chair).

Combining the corporate governance information regarding the number of female directors with the information collected about the size of the board, the proportion of the board comprised of female directors (% Fem) is constructed.

Ownership variables are constructed from the ownership information collected from the annual reports. The percentage of the company beneficially owned by the board of directors (% Tot. Dir. Own.) is calculated by dividing the number of common shares collectively owned by this group by the number of common shares outstanding at financial year end. Similarly, the percentage of the company owned by the top director (% Top Dir. Own.) is calculated by dividing the number of common shares collectively owned by the top director (by number of shares owned) by the number of common shares outstanding at financial year end.

Outside ownership variables are also calculated. The percentage of the company owned by professional investors (% Tot. Prof. Own.) is calculated by dividing the number of common shares collectively owned by professional shareholders (institutions) in amounts of at least 3% by the number of common shares outstanding at financial year end. Similarly, the percentage of the company owned by the top professional shareholder (% Top Prof. Own.) is calculated by dividing the number of common shares collectively owned by the top professional investor (where top is defined by the number of shares owned) by the number of common shares outstanding at financial year end. The percentage of the company owned by block holders (% Tot. Block Own.) is calculated by dividing the number of common shares collectively owned by all non-insiders (i.e. including professional shareholders) owning block of shares of at least 3% by the number of common shares outstanding at financial year end. Sometimes the number of shares in the company owned by these groups (professionals and block holders) at exactly year end is not disclosed in the annual reports. In these situations the number of shares held by these groups at a date between year end and the publication of the annual report is disclosed and this study relies on this information instead. The complete list of individual corporate governance variables included in this study, then, are included in Table 3.6.

Table 3.6 Corporate Governance Variables

Variable	**Description**
BSize	The size of the board.
% NEDs	The proportion of non-executive directors on the board.
% INDs	The proportion of truly independent non-executive directors on the board.
NED Chair	Whether the Chairman is a non-executive; takes the value of 1 if true, otherwise 0.
IND Chair	Whether the Chairman is an independent non-executive; takes the value of 1 if true, otherwise 0.
Chair Never Exec.	Whether the Chairman was ever a company executive; takes the value of 1 if true, otherwise 0.
% IND Excl. Chair	The proportion of the board, excluding the Chairman, comprising of independent non-executive directors.
% Fem.	The proportion of female directors on the board.
% Tot. Dir. Own.	The proportion of shares held beneficially by all directors.
% Top Dir. Own.	The proportion of shares held beneficially by the top director (by number of shares owned).
% Tot. Prof. Own.	The proportion of shares held by all professional investors in amounts > 3%.
% Top Prof. Own.	The proportion of shares held by the top professional investor (by number of shares owned).
# Prof. Own.	The number of professional investors owning shares.
% Tot. Block Own.	The proportion of shares held by all outside shareholders in amounts > 3%.

3.5.1 Analysis of Corporate Governance Variables

This section analyses and discusses the distributions of the 14 individual corporate governance variables included in this study. This involves estimating the mean, median, maximum, minimum, standard deviation, skewness and kurtosis of each variable as well as a test of normality of each variable. Table 3.7 includes a summary of all 14 individual governance variables at the aggregate level (i.e. combining the loss and control samples). The Shapiro-Wilk test is a test of normality where the null hypothesis is that the variable is normally distributed. The *p*-values in Table 3.7 under this heading are the confidence level at which you can reject the null hypothesis that the governance variables are normally distributed; in this case all of the *p*-values for all of the governance variables are 0.00 indicating none are normally distributed for all alpha levels.

Table 3.7 Descriptive Statistics of Corporate Governance Variables for the Combined Sample, All Years

Variable	Obs	Mean	St. Dev	Median	Min.	Max.	Skewness	Kurtosis	Shapiro-Wilk
BSize	1,002	6.663	2.306	6.000	1.000	15.000	0.859	4.078	0.000
% NEDs	1,002	0.490	0.161	0.500	0.000	0.900	-0.415	3.339	0.000
% INDs	1,002	0.350	0.193	0.333	0.000	0.833	-0.151	2.364	0.000
% IND Excl. Chair	1,002	0.341	0.201	0.333	0.000	0.800	-0.209	2.145	0.000
NED Chair	1,002	0.642	0.480	1.000	0.000	1.000	-0.594	1.353	
IND Chair	1,002	0.396	0.489	0.000	0.000	1.000	0.427	1.182	
Chair Never Exec.	1,002	0.562	0.496	1.000	0.000	1.000	-0.252	1.063	
% Fem.	1,002	0.055	0.090	0.000	0.000	0.500	1.662	5.632	0.000
% Tot. Dir. Own.	1,002	0.150	0.194	0.065	0.000	0.945	1.595	4.852	0.000
% Top. Dir. Own.	1,002	0.110	0.157	0.043	0.000	0.935	2.135	7.879	0.000
% Tot. Prof. Own.	1,002	0.310	0.199	0.296	0.000	0.947	0.324	2.492	0.000
% Top. Prof. Own.	1,002	0.135	0.113	0.110	0.000	0.890	2.451	12.465	0.000
# Prof. Own.	1,002	4.063	2.630	4.000	0.000	14.000	0.518	2.939	0.000
% Tot. Block Own.	1,002	0.371	0.196	0.374	0.000	0.947	0.080	2.582	0.000

Variable definitions are included in Table 3.6

One of the immediate observations is that, on average, boards are of a reasonably small size with a mean of 6.66 and a reasonable spread of observations with a standard deviation of 2.31; the coefficient of variation is therefore 0.35.

Another observation from the data is the centralisation of the % NEDs distribution around 50.0%. Section B.1.2 of the Combined Code reads ". . . at least half the board, excluding the chairman, should comprise non-executive directors determined by the board to be independent." This indicates that, in line with the coverage that this corporate governance indicator has received in the literature, firms are conscious of the requirements of the Combined Code that non-executives should make up the majority of the board. This is consistent with the evidence from Dahya, McConnell and Travlos (2002) who found that post the adoption of the Cadbury Code, the proportion of outside directors rose to 47% from 26% prior to the adoption. In other words there is evidence of movement in corporate governance characteristics prompted by regulatory recommendations (Beasley *et al.*, 2010; and Brown *et al.*, 2011).

While companies seem to be, on average, compliant with the first part of section B.1.2 of the Combined Code quoted above, the additional requirement that the non-executives also be independent is not as universally observed. Based on the evidence from Table 3.7, the centralisation observed in the % NEDs variable is absent for the % IND Excl. Chair variable. Indeed it is noted that, due to the way this study rigorously applies the Combined Code's independence criteria to directors, more than

150 firm years from a total sample of 1,001 firm years had no independent director whatsoever on the board.

The interpretation of the NED Chair, IND Chair and Chair Never Exec. variables is also interesting. The Combined Code is very clear in its prescriptive advice regarding the duality of the Chair ". . . the roles of chairman and chief executive should not be exercised by the same individual." In light of this statement, the statistics for are interesting. What is observed is that 64.2% of firms in the combined sample had a non-executive director as chair meaning that 35.8% of firms had a dual chair and chief executive (there were no co-chairs in any firm year) in contravention of the recommendations of the Combined Code. These values are significantly lower than the levels observed by Peasnell *et al.* (2005) who found CEO duality in 76% of their sample between 1993 and 1996. Once again it looks like there is evidence of movement in corporate governance characteristics prompted by regulatory recommendations. In light of the high percentage of firm years without a dual CEO/Chair in this study, and the non-findings for duality in previous studies (i.e. Brickley *et al.*, 1997; Xie *et al.*, 2003; Benkel, Mather & Ramsay, 2006), there is a need to measure the effectiveness of the Chairman in a better way. Although the Combined Code doesn't make any recommendations regarding the need for the chair to also be independent, whether or not this is the case will have implications for the quality of the board generally and the Chair in particular. In that regard, only 39.6% of firm years had an independent director as chair. Also 56.2% of firm years had a chair who had never been an executive of the firm meaning that in 43.8% of cases the chair was/is the chief executive (there were no instances where the chair was/is an executive other than the CEO). Ned Chair, IND Chair and Chair Never Exec. are all binary variables and so, by construction, tests of skewness, kurtosis and normality are not valid.

The statistics for the % Fem. variable are also interesting. This study finds that on average 5.5% of directors are Female; the standard deviation is 9.02% yielding a coefficient of variation of 1.63. While the Combined Code for the sample period under investigation makes no specific recommendations regarding gender balance it does state that appointments to the board should be made ". . . against objective criteria and with due regard for the benefits of diversity on the board, including gender". In the context of this recommendation and the requirements by some countries that a certain percentage of directors be Female (i.e. Norway's 40% rule and Spain's 50% target by 2015) the mean seems low, especially when compared to a 2007 UK average of 15.2% reported by Heidrick and Struggles (2007) — although the blue chip focus (FTSE 100) and the small number of UK firms (n = 50) of their sample is noted. Also of note is that in excess of 650 companies (more than half the sample) had no female representation whatsoever on the board and the maximum value is 50% indicating that no board has a majority of female directors.

Director ownership statistics also make interesting reading. The % Tot. Dir. Own. variable has a mean, median and maximum of 15.00%, 6.54% and 94.51%, respectively indicating a highly positively skewed distribution; σ^3 is 1.595. Of particular interest to this study is that the mean value of 15.00% is greater than the 12.00% figure identified by Short and Keasey (1999) as the inflection point where management ownership moves from aligning the interests of shareholders and management to entrenching management; this is pertinent later in this chapter where general governance constructs are calculated from the variables detailed in Table 3.6.

The % Tot. Prof. Own. variable has a median of 29.62% which, when combined with the mean of 31.03% results in a moderately skewed distribution (σ^3 = 0.32) despite the large number of 0.0% observations from the fact that in excess of 100 companies had no professional owners whatsoever. The mean, median and maximum values for % Top Prof. Own. are 13.49%, 10.96% and 88.99% resulting in a highly positively skewed distribution (σ^3 = 2.45). The # Prof. Own. variable has a mean approximately equal to its median with values of 4.06 and 4.00, respectively, resulting in a largely symmetrical distribution (albeit truncated at 0.00). The % Tot. Blk. Own. variable, i.e. the percentage of shares owned by all outside directors including professional investors, has a mean of 37.13% and a median of 37.37% indicating a lack of skewness confirmed by σ^3 = 0.08.

3.5.2 Corporate Governance Constructs

The variables outlined in Table 3.6 combine to form the overall corporate governance architecture of a company. Some are substitutes and others are complements. Using all these variables individually can be associated with considerable measurement error (i.e., low reliability) and will not capture how they combine to form the overall corporate governance architecture of a company. The use of several individual governance variables may also lead to the problem of multicollinearity when estimating empirical models. As discussed in Section 2.6.1 of Chapter 2, corporate governance research has moved to considering amalgamations that condense the information contained in a large number of individual corporate governance items in to a single (yet seemingly informative) measure. The widely used G-Index (Gompers *et al.*, 2003) as well as the Gov-Score (i.e. Brown & Caylor, 2006) and other normalised summations of corporate governance characteristics (Bertrand & Murllainathan, 2001) are examples. Other corporate governance research simply relies on outside firms to produce proprietary governance indices — the Corporate Governance Quotient from ISS, the Accounting and Governance Risk index from Audit Integrity, the CG rating from Governance Metrics International and the Corporate Governance Score from Standard & Poors are examples. Notwithstanding the proliferation of all-encompassing corporate governance indices, Brown and Caylor (2006) and Bebchuk, Cohen, and Ferrell (2009) find that parsimonious indices are more effective. Indeed, Bebchuk and Hamdani (2009) point out that firms have different ways of mitigating agency problems and that these are not conveniently summarised by a single number (Brown *et al.*, 2011).

There is no universally accepted theory that explains how individual governance mechanisms combine to form the overall governance of a company. Therefore, like Larcker *et al.* (2007), we use an exploratory factor analysis to combine the variables in Table 3.6 into general corporate governance constructs. This approach is used because, rather than just summing corporate governance variables to achieve parsimony, it provides insights into the underlying structure of corporate governance. Exploratory factor analysis is used in situations where the dimensionality of data and its structural composition are not well known. It is a statistical method used to describe variability among observed variables in terms of a potentially lower number of unobserved variables called factors. Factors are conceptualised as underlying real world underlying constructs or commonalities, not directly measured, that are influenced by responses on measured variables. In other words it is possible, for example, that variations in several observed governance variables mainly reflect the variations in a reduced number of unobserved variables **(**Bushman, Piotroski & Smith, 2004). The reduced number of unobserved variables can be estimated as factor scores calculated from the observed individual variables. This study uses factor analysis to distil the fourteen observed corporate governance variables from Table 3.6 to a reduced number of underlying latent corporate governance constructs. The sample used for the factor analysis is the combined initial loss and control sample.

Before this study decides what methodology to use to combine variables into general constructs, it is important to verify that the matrix of corporate governance variables is factorable. A matrix is factorable if it includes several sizeable correlations; a rule of thumb is that, except in the most exploratory sense, if there are no correlations in excess of 0.30 then there is probably nothing to factor analyse. The matrix of pairwise correlations includes many medium to large correlations (34 correlations from a possible 120 correlations in excess of 0.30). The generally low correlations between BSize and % Fem. and the other individual governance variables in the correlation matrix (see Table 3.8) indicates that these variables should be excluded prior to the exploratory analysis. This does not mean that these variables are not relevant corporate governance variables in their own right, just that they do not combine meaningfully with other individual governance variables to form general corporate governance constructs.

Table 3.8 **Pearson (Spearman) Correlations are Presented in the Lower (Upper) Diagonal**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BSize (1)	---	0.277	0.281	0.265	0.195	0.110	0.148	0.225	-0.267	-0.250	0.066	0.135	0.071	-0.076
		(.000)	(.000)	(.000)	(.000)	(.001)	(.000)	(.000)	(.000)	(.000)	(0.037)	(.000)	(0.026)	(0.578)
% NEDs (2)	0.299	---	0.580	0.527	0.468	0.290	0.370	0.121	-0.395	-0.405	0.217	0.229	0.162	0.118
	(.000)		(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
% INDs (3)	0.257	0.594	---	0.890	0.298	0.518	0.328	0.230	-0.533	-0.558	0.264	0.343	0.145	0.174
	(.000)	(.000)		(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
% IND Excl. Chair (4)	0.263	0.540	0.893	---	0.033	0.113	0.022	0.196	-0.443	-0.465	0.231	0.293	0.131	0.136
	(.000)	(.000)	(.000)		(0.300)	(.000)	(0.488)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
NED Chair (5)	0.159	0.460	0.302	0.037	---	0.599	0.838	0.109	-0.307	-0.312	0.108	0.147	0.092	0.092
	(.000)	(.000)	(.000)	(0.246)		(.000)	(.000)	(.001)	(.000)	(.000)	(.001)	(.000)	(0.004)	(.004)
IND Chair (6)	0.087	0.277	0.523	0.115	0.599	---	0.710	0.155	-0.363	-0.381	0.137	0.188	0.062	0.130
	(0.006)	(.000)	(.000)	(.000)	(.000)		(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(0.050)	(.000)
Chair Never Exec. (7)	0.116	0.360	0.330	0.024	0.838	0.710	---	0.125	-0.332	-0.338	0.114	0.165	0.066	0.083
	(.000)	(.000)	(.000)	(0.458)	(.000)	(.000)		(.000)	(.000)	(.000)	(.000)	(.000)	(0.036)	(.009)
% FEM. (8)	0.144	0.118	0.223	0.194	0.112	0.152	0.125	---	-0.111	-0.118	0.039	0.038	0.028	0.021
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)		(.001)	(.000)	(0.218)	(0.236)	(0.371)	(.503)
% Top Dir. Own. (9)	-0.173	-0.321	-0.389	-0.331	-0.255	-0.252	-0.236	-0.018	---	0.981	-0.397	-0.336	-0.334	-0.326
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(0.571)		(.000)	(.000)	(.000)	(.000)	(.000)
% Tot. Dir Own. (10)	-0.174	-0.356	-0.454	-0.394	-0.269	-0.281	-0.259	-0.023	0.933	---	-0.415	-0.352	-0.350	-0.348
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(0.460)	(.000)		(.000)	(.000)	(.000)	(.000)
% Tot. Prof. Own. (11)	0.033	0.216	0.245	0.220	0.093	0.124	0.101	0.084	-0.437	-0.480	---	0.770	0.767	0.843
	(0.296)	(.000)	(.000)	(.000)	(.000)	(.000)	(0.002)	(0.008)	(.000)	(.000)		(.000)	(.000)	(.000)
# Prof. Own. (12)	0.100	0.231	0.328	0.286	0.142	0.189	0.160	0.034	-0.396	-0.432	0.742	---	0.337	0.598
	(0.002)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(0.283)	(.000)	(.000)	(.000)		(.000)	(.000)
% Top Prof. Own. (13)	0.000	0.115	0.053	0.050	0.034	0.018	0.014	0.100	-0.299	-0.331	0.692	0.121	---	0.6669
	(0.991)	(0.000)	(0.091)	(0.111)	(0.278)	(0.561)	(0.663)	(0.002)	(.000)	(.000)	(.000)	(.000)		(.000)
% Tot. Block Own. (14)	-0.047	0.114	0.155	0.126	0.080	0.108	0.064	0.070	-0.439	-0.476	0.849	0.594	0.618	---
	(0.140)	(.000)	(.000)	(.000)	(0.011)	(0.001)	(0.042)	(0.026)	(.000)	(.000)	(.000)	(.000)	(.000)	

Variable definitions are included in Table 3.6

High bivaraite correlations among the remaining variables are however, not ironclad proof that the correlation matrix contains factors. It is possible that correlations are between only two variables and do not reflect underlying processes that are simultaneously affecting several variables. For this reason it is helpful to examine the matrix of partial correlations (see Table 3.9) where the pairwise correlations from Table 3.8 are adjusted for effects of other remaining variables. If there are factors present, the high bivariate correlations should become low partial correlations. The matrix of partial correlations confirms that several of the variables which have high pairwise correlations with each other have significantly lower partial correlations. For example, the pairwise correlation between % NEDs and % INDs is 0.594 whereas when the impact of all the other variables in the matrix is accounted for, the partial correlation between these two variables drops to 0.113.

The Kaiser-Meyer-Olkin (KMO) test can also be used to assess the factorability of the data. The KMO test is a measure of overall sampling adequacy which tests whether the partial correlations among variables are small. KMO takes values between 0 and 1, with values less than 0.5 meaning that overall the variables have too little in common to warrant a factor analysis. The overall KMO value for the corporate governance variables in this study is 0.625 indicating moderate factorability.

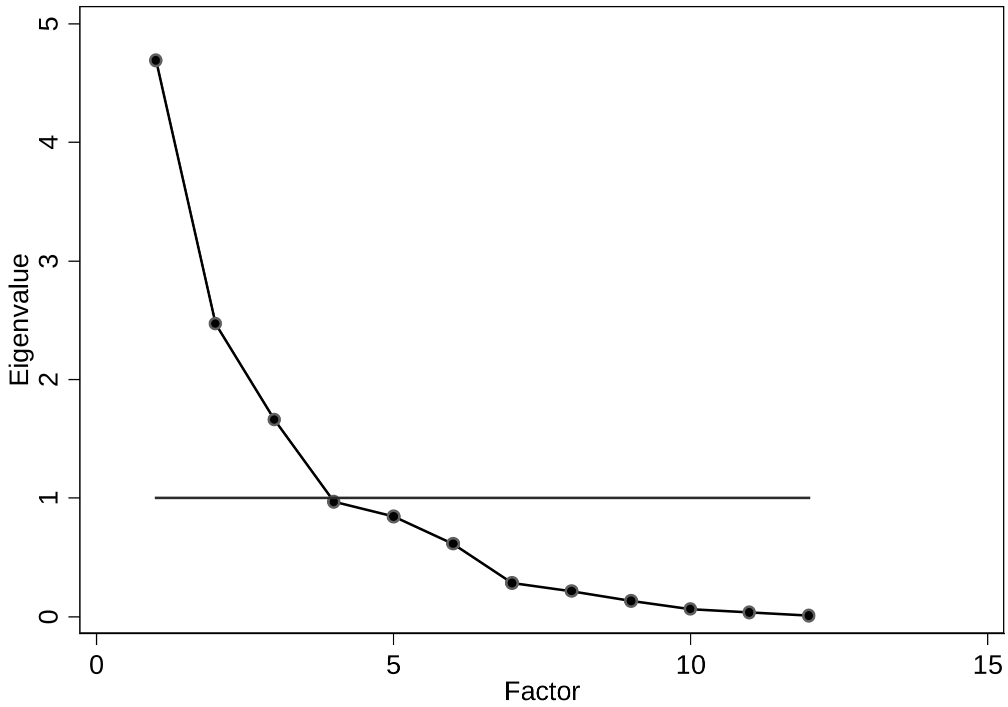
Table 3.9 **Partial Correlations**

	1	2	3	4	5	6	7	8	9	10	11	12
% NEDs (1)	---											
% INDs (2)	0.113	---										
	(.000)											
% IND Excl. Chair (3)	0.015	0.971	---									
	(.635)	(.000)										
NED Chair (4)	0.349	0.065	-0.106	---								
	(.000)	(.040)	(.001)									
IND Chair (5)	-0.129	0.885	-0.848	-0.048	---							
	(.000)	(.000)	(.000)	(0.133)								
Chair Never Exec. (6)	-0.024	-0.033	0.013	0.688	0.247	---						
	(0.458)	(.307)	(.679)	(.000)	(.000)							
% Top Dir. Own. (7)	-0.021	0.005	0.021	-0.036	0.002	0.042	---					
	(.501)	(.887)	(.52)	(0.252)	(.953)	(.184)						
% Tot. Dir Own. (8)	-0.001	0.004	-0.055	0.009	-0.023	-0.058	0.898	---				
	(.988)	(.910)	(.086)	(.777)	0.479	(.070)	(.000)					
% Tot Prof. Own. (9)	0.059	0.020	-0.010	-0.097	-0.033	0.077	-0.006	0.061	---			
	(.063)	(.529)	(.766)	(.002)	(.305)	(.015)	(.855)	(0.057)				
# Prof. Own. (10)	-0.011	0.006	0.003	0.049	0.011	-0.023	0.008	-0.084	0.839	---		
	(..732)	(.848)	(.936)	(.124)	(.738)	(.471)	(.811)	(0.008)	(.000)			
% Top Prof. Own. (11)	0.026	-0.008	-0.007	0.050	0.009	-0.048	0.024	-0.099	0.813	-0.812	---	
	(.407)	(.800)	(.828)	(.120)	(.790)	(.131)	(.445)	(0.002)	(.000)	(.000)		
% Tot. Block Own. (12)	-0.112	-0.022	0.000	0.090	0.040	-0.108	0.002	-0.099	0.466	-0.092	-0.045	---
	(.000)	(.486)	(.993)	(.004)	(.206)	(.001)	(0.947)	(0.002)	(.000)	(.000)	(0.155)	

Variable definitions are included in Table 3.6

As a general rule it is recommended that all factors with an eigenvalue greater than 1.0 should be kept because it indicates the factor explains more of the variance than any of the individual governance variables does on its own. That is, drop any component that accounts for less variance than does a single variable. Keeping all factors with eigenvalues greater than 1.0 results in the retention of three factors that together retain 73.5% of the total variance in the original data. This is represented as a screeplot (Figure 3.1) with eigenvalues on the *y*-axis and the factor number on the *x*-axis. The plot provides a visual aid for deciding at what point including additional factors no longer increases the amount of variance accounted for by a nontrivial amount. In this case three appears to be the optimal number of factors.

Figure 3.1 Screeplot of Eigenvalues



Beekes, Hong and Owen (2010) note that correlations among the variables to which factor analysis is applied are unbiased provided all of the variables are continuous. Kolenikov and Angeles (2004) propose a discrete factor analysis which involves modifying the correlation matrix to take account of the nature of the underlying variables. Beekes *et al.* (2010) employ a discrete factor analysis on 17 governance variables collected from different sources and identify 7 underlying governance constructs. When these components are used in a fashion comparable to Larcker *et al.* (2007), they do not obtain the same results. The inclusion of binary and count variables in the Chair and Ownership constructs in this study is therefore problematic. For this reason, this study also employs a discrete factor analysis. The results (not included here) are the same.

The reduced three factor solution for this study is then rotated using an oblique (promax) rotation that allows the retained factors to be correlated in order to enhance interpretability of the pattern matrix. After the initial factor analysis, the variables that are unrelated to others in the set are identified; a variable with a low squared multiple correlation with all other variables and low correlations (or "loading") with all important factors is an outlier among the variables. The squared multiple correlations and the correlations between the variables presented in Table 3.10 indicate that, having already excluded BSize and % Fem., none of the remaining variables are outliers.

Table 3.10 Squared Multiple Correlations (SMC)

Variable	SMC
% NEDs	0.5085
% INDs	0.9771
% IND Ex. Chair	0.9687
NED Chair	0.7460
IND Chair	0.8965
Chair Never Exec.	0.7743
% Tot. Dir. Own.	0.8729
% Top Dir. Own.	0.8884
% Tot. Prof. Own.	0.9372
# Prof. Own.	0.8569
% Top Prof. Own.	0.8297
% Tot. Block Own.	0.7451

Variable definitions are included in Table 3.6

The results for the rotated pattern matrix used to represent the underlying dimensions of corporate governance are presented in Panel A of Table 3.11. To interpret the factors, it is necessary to determine which indicators have a substantive association with each factor. The literature indicates an arbitrary salience criterion of ±0.30 (Grice and Harris, 1998) although a lower cut-off can be acceptable for an early exploratory analysis. This minimum factor loading for a variable in this thesis is ±0.50 in absolute value — a relatively high salience criterion. The resulting variables that are associated with each factor are summarized in Panel B of Table 3.11. As it happens, the three factors are made up from combinations of corporate governance indicators that one might expect *ex-ante* to be highly correlated. That is, all the variables relating to ownership load on the first factor, all the variables relating to the board load on the second factor and all the variables relating to the chair load on the third factor.

With the exception of % Top Dir. Own. and % Tot. Dir. Own. which also load relatively highly on the second factor (but not as high as the first), the factor loadings have a relatively simple structure. That is, as can be seen from Panel A of Table 3.11, each variable loads well on only one factor and most loadings are either very high or very low which results in the factor analysis producing a very interpretable solution.

3.5.3 Board Chair and Ownership

Since corporate governance is a complex general construct, the results from the factor analysis are encouraging and make it easy to assign a general name based on the characteristics of the indicators loading on each factor. For example, as is done is Panel B of Table 3.11, it is easy to name the first factor “Ownership”, the second “Board” and the third “Chair”.

Table 3.11 Principal Component Factor Analysis

Panel A: Rotated Factor Loadings

Variable	Factor 1	Factor 2	Factor 3
% NEDs	-0.045	0.641	0.244
% INDs	-0.078	0.923	0.108
% IND Ex. Chair	-0.079	1.056	-0.294
NED Chair	-0.021	-0.089	0.949
IND Chair	-0.025	0.051	0.818
Chair Never Exec.	-0.027	-0.121	0.990
% Tot. Dir. Own.	-0.526	-0.331	-0.118
% Top Dir. Own.	-0.543	-0.378	-0.119
% Tot. Prof. Own.	0.962	-0.036	-0.050
# Prof. Own.	0.630	0.179	0.008
% Top Prof. Own.	0.799	-0.220	-0.051
% Tot. Block Own.	0.955	-0.139	-0.037

Panel B: Named Factors

Factor	Loading
Ownership	
% Tot. Dir. Own.	-0.526
% Top Dir. Own.	-0.543
% Tot. Prof. Own.	0.630
# Prof. Own.	0.799
% Top Prof. Own.	0.955
% Block Own.	0.962
Board	
% NEDs	0.641
% INDs	0.923
% IND Excl. Chair	1.056
Chair	
NED Chair	0.949
IND Chair	0.818
Chair Never Exec.	0.990

Variable definitions are included in Table 3.6

Next we have to calculate the factor scores. The literature indicates that a unit loading methodology where those factor loadings exceeding the arbitrary salience criterion are unit-weighted (standardised to *z*-scores if measured on different scales) in accordance with the sign of the structure coefficients may actually be preferable to exact factor scores in certain circumstances (Grice, 2001; Grice & Harris, 1998). Indeed Grice (2001) suggests that unit-weighted factor scores are preferable to exact factor scores when the structure of the factor loadings is simple and the loadings not highly variable as is the case here. Because of the mixture of binary, count and continuous scales among the individual variables and due to the heterogeneous variance this causes, this study uses a variation of the unit-weighted method where the weight is divided by the number of indicators (i.e. averaged) instead of each indicator having a unitary weight (Larcker *et al.*, 2007). The result is that because the factors are constructed from standardised indicators, the mean of each of the corporate governance constructs is equal to zero.

The construction of the Board and Chair governance constructs is straightforward using this methodology. Each is made up of indicators with only positive loadings and so each is computed as the average equal-weighted sum of its standardized indicators: Board is calculated as the sum of the standardised % NEDs, % INDs and % IND Excl. Chair divided by three; Chair is calculated as the sum of the standardised NED Chair, IND Chair and Chair Never Exec. divided by three. Because the indicators relating to Ownership exhibit a combination of positive and negative loadings, its construction is more difficult. To compute factor scores for Ownership we must take the negative sign on two of the structure coefficients into consideration, i.e. the substitutability across the components. Specifically, % Tot. Dir. Own. and % Top Dir. Own. load negatively such that the Ownership construct is calculated as the sum of the standardized % Tot. Prof. Own., % Top Prof. Own., # Prof. Own. and % Tot Block Own. less the sum of standardized % Tot. Dir. Own. and % Top Dir. Own. divided by six.

The negative weightings on the inside ownership variables in this study are in line with the entrenchment hypothesis in the governance literature where the relationship between inside ownership by officers and directors and good corporate governance is not linear across all ownership levels — Short and Keasey (1999) indicate that the lower limit is 12.0% for the U.K. This study is also a U.K. study and, per Table 3.7, the mean director ownership percentage (% Tot. Dir. Own.) for companies in this study is 15.0% indicating that at this average ownership level the interests of inside and outside owners are at odds.

This study notes that this combination of ownership information is at odds with the construction of the ownership variable in Warfield *et al.* (1995). In their study they combine the ownership of officers, directors and beneficial owners to create their constructed ownership variable. Their positive weighting of all the individual elements of this ownership construct differs from the negative weightings on the % Tot. Dir. Own. and % Top Dir. Own. variables detailed here. Warfield *et al.* (1995) also construct an alternative ownership variable which takes only the ownership of officers and directors into consideration to distinguish between direct and indirect managerial control thereby accounting for the impact of outside ownership by simply ignoring it.

There is evidence of construct reliability (or the inverse of measurement error) based on the computation of Cronbach coefficient alphas for indicators associated with each governance construct (see Table 3.12). For the multi-item scores, standardised coefficient alphas (mean = 0.870) all exceed the minimum reliability levels suggested by Nunnally (1967).

Table 3.12 Cronbach Alphas

Variable	Sign	Alpha
% NEDs	+	0.943
% INDs	+	0.701
% IND Ex. Chair	+	0.745
Board		***0.862***
NED Chair	+	0.830
IND Chair	+	0.912
Chair Never Exec.	+	0.750
Chair		***0.883***
% Tot. Dir. Own.	-	0.843
% Top Dir. Own.	-	0.851
% Tot. Prof. Own.	+	0.826
# Prof. Own.	+	0.812
% Top Prof. Own.	+	0.862
% Tot. Block Own.	+	0.873
Ownership		***0.868***

Variable definitions are included in Table 3.6

Also of note is that none of the confidence intervals for correlations among the three corporate governance constructs include unity at conventional levels of statistical significance (see Table 3.13). While many of these correlations between factors are statistically significant at conventional levels, the absolute value for most of these bivariate correlations is small in magnitude. These results suggest that our governance constructs are statistically distinct and exhibit construct validity. The negative relationship between Ownership and both Board and Chair can be interpreted as the entrenchment effect of director ownership dominating the Ownership factor. That is, in the entrenchment range director ownership is negatively related to other board quality measures — in this case Board and Chair.

Table 3.13 Correlation of Corporate Governance Constructs

	1	2	3
Board (1)	--	0.365	-0.305
		(0.000)	(0.000)
Chair (2)	0.360	--	-0.204
	(0.000)		(0.000)
Ownership (3)	-0.307	-0.197	--
	(0.000)	(0.000)	

Board, Chair and Ownership are corporate governance amalgamations, the construction of which is according to a principal components analysis the workings of which are included in Table 3.11.

Because this study is concerned with comparing corporate governance from the initial loss and control samples it is important that the methodology used to construct the underlying governance amalgamations described above is appropriate for both samples separately (the preceding analysis was performed on the combined initial loss and control samples). Although minor differences are to be expected, the underlying structure of both populations needs to be the statistically the same if the inferences from using the corporate governance constructs are to be credible. Catell's salient similarity index (*s*) (Catell, 1957; Cattell & Baggaley, 1960) can be used to compare two solutions' patterns of loadings (see Table 3.14) to establish whether or not this is the case. To perform this analysis each of the loadings for each of the variables for the initial loss and control samples is classified as positively salient (this study uses a salience criteria > 0.30), negatively salient (< -0.30) or neither (hyperplane). A third order square matrix of the frequency counts is constructed to compare the initial loss and control samples (see Table 3.14). Counts in the main diagonal (i.e. those with matrix references *[11]*, *[22]* and *[33]*) — especially *[11]* and *[33]* — indicate similarity of structure. Counts off the main diagonal — especially *[13]* or lower left *[31]* — indicate dissimilarity.

Table 3.14 Third Order Square Matrix of Salience

	Initial Loss Sample		
Control Sample	**Positive Salient**	**Hyperplane**	**Negative Salient**
Positive Salient	10 *[11]*	0 *[12]*	0 *[13]*
Hyperplane	1 *[21]*	20 *[22]*	2 *[23]*
Negative Salient	0 *[31]*	1 *[32]*	2 *[33]*

Loadings from performing the factor analysis on each of the initial loss and control samples are determined as positive salient (> 0.30), negative salient (< -0.30) or hyperplane (neither). [] are cell references within the third order square matrix.

The following formulae (using cell references from the third order square matrix above) are the used to calculate Catell's salient similarity index (*s*) and a hyperplane count (*h*)

$$s = \frac{[11] + [33] - [13] - [31]}{[11] + [33] + [13] + [31] + 0.5([12] + [21] + [23] + [32])}$$

$$h = \frac{[12] + [21] + [20] + [23] + [32]}{[11] + [12] + [13] + [21] + [22] + [23] + [31] + [32] + [33]}$$

Using the numbers from this study these formulae become

$$s = \frac{10 + 2 - 0 - 0}{10 + 2 + 0 + 0 + 0.5(0 + 1 + 2 + 1)} = 0.86$$

$$h = \frac{0 + 1 + 20 + 2 + 1}{10 + 0 + 0 + 1 + 20 + 2 + 0 + 1 + 2} = 0.66$$

Thus the salience criterion of ±0.30 results in an *s* value of 0.86 and a hyperplane count of 66%. Using a hyperplane count of 60% for 10 variables (even though this study has a hyperplane count of 66% and 12 governance variables, the probability tables are only available for hyperplane counts and variables in multiples of 10) the *s* value in this study exceeds the critical value (0.67) at the .002 significance level, i.e. the factors for the initial loss and control samples are reliably similar[9].

[9] The probability tables are available in pages 717–718 of Tabachnick and Fidell (1989).

3.5.4 Diversity

It is noted in Section 3.5.1 that % Fem. did not load on any of the factors in the analysis such that this variable can be treated as a significant corporate governance variable in its own right. As a proxy for gender diversity this study uses the % Fem. variable to calculate a measure that takes into account both the number of gender categories (two) and the evenness of the distribution of board members among them. These two attributes of diversity referred to, respectively, as variety and balance, may be combined into dual concept measures of diversity (Stirling, 1998). These measures are widely used across a range of scientific fields, including ecology, genetics, linguistics, communications and cultural studies, and economics (Harrison and Klein, 2007). Similar to Campbell and Minguez-Vera (2008), this study utilises the Blau (1977) index as a primary proxy for gender diversity (Diversity) measured as

$$Diversity = 1 - \sum_{i=1}^{n} P_i^2 = 1 - \left[P_f^2 + P_m^2\right]$$

where P_i is the percentage of board members in each category [two, female (*f*) and male (*m*)] and *n* is the total number of board members. A version of this index was originally proposed by Simpson (1949) as a measure of species diversity in an ecosystem and it is also known as Herfindahl's (1950) index and Hirschman's (1964) index when applied to the measurement of industrial concentration. Values of the Blau index for gender diversity range from 0 to a maximum of 0.5, which occurs when the board comprises an equal number of men and women. That is, when the board is evenly split among women and men such that the percentage females (P_f) and males (P_m) both equal 50% then

$$Diversity = 1 - [0.5^2 + 0.5^2] = 0.5$$

3.5.5 Descriptive Statistics

The corporate governance variables for this study, then, include BSize (which, like % Fem., did not load on any of the factors in the factor analysis such that this variable is analysed as is) as well as Diversity and the general corporate governance constructs Board, Chair and Ownership detailed previously.

A detailed breakdown of the main corporate governance variables by year for each year of this study is included in Table 9.1 in the Appendix. As evidenced in Panel A of Table 9.1, because Board, Chair and Ownership are weighted combinations of standardized variables, the mean governance score for the combined loss and control sample for each of these variables is, by construction, equal to zero. These aggregate scores for the governance constructs should have considerably less measurement error than any individual governance indicator and this reduction in measurement error should substantially improve the econometric properties of these constructs. The result is that, with zero means, calculating the coefficient of variation is meaningless. Also, because the Chair variable is constructed from three individual binary variables, its distribution is non-continuous and so defies standard analysis of its higher moments.

Of particular note are the apparent dissimilarities between the initial loss and control samples at (t – 1), the year before the initial loss, and the subsequent improvement in most of the variables for the initial loss sample from that point.[10] A detailed univariate analysis of whether the mean and median values of the initial loss and control samples are equivalent is included in Chapter 4 when the changes in the various corporate governance variables are calculated and considered.

3.6 Other Variables

This section details the construction of and analyses the non-governance variables used throughout this study. These include the proxies for earnings management (abnormal accruals) and market-based measures of firm size and stock market return.

3.6.1 Accounting Variables

Depending on the hypothesis being tested, this study uses a number of accounting and market based variables as dependent and independent control

[10] It is noted that because the corporate governance levels in any year of the test period are constructed versus the overall sample period mean, it is possible that for both the initial loss and control sample any particular variable could have below/above mean values.

variables in various regressions in Chapters 4, 5 and 6. The accounting information used in this study is downloaded from DATASTREAM.

Measures of abnormal accruals are typically used as surrogates for earnings management (Frankel, Johnson & Nelson, 2002; Klein, 2002; Myers, Myers, & Omer, 2003). Accruals refer to the recognition of revenue or expenses at the time they are earned or incurred, regardless of when the money is received or paid out. Accruals are defined as the difference between earnings and cash flow and, as such, they have the desirable trait of giving a summary measure of the firms accounting choice — c*eteris paribus*, firms with larger accruals are assumed to have lower-quality earnings than firms with smaller accruals. In earnings management research, accruals are usually further broken up into discretionary (unexpected) accruals and non-discretionary (expected) accruals:

Total Accruals = Earnings – Cash flow from operations = Expected accruals + Unexpected accruals

Measurement of accruals typically focuses on the unexpected (also called abnormal) component of the accruals which assume that managers primarily rely on their discretion over certain accounting accruals as a means of manipulating earnings (Jones, 1991). This is because the flexibility afforded through accrual accounting makes the accrual component of earnings less reliable than the cash flow component and therefore a potentially useful measure for examining the quality of financial reports. That is, normal accruals are economically determined, whereas abnormal accruals are determined by management and are therefore used as the proxy of earnings management.

Because they cannot be observed directly from financial statements, abnormal accruals are estimated as the difference between the actual observed accruals and an *a priori* estimation of what those accruals should have been. Therefore, the prediction ability of the models is vital to the accuracy of the abnormal accruals measure. The literature attempts to identify abnormal accruals based on the relation between total accruals and hypothesized explanatory variables. To estimate abnormal accruals, total accruals are regressed on variables that are proxies for normal accruals. Most of the models estimate a firm's normal accruals from the firm's past accruals levels during periods when no systematic earnings management is assumed (Jones, 1991). Abnormal accruals are thus the unexplained components (i.e., the residuals from the estimated expectations models) of total accruals.

The aggregate accruals literature began with Healy (1985), who devised the first and simplest model. The Healy model defines estimated discretionary accruals for firm *i* in period *t* as total accruals scaled by lagged total assets:

$$DAC_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}}$$

where $DAC_{i,t}$ is discretionary accruals for firm *i* in period *t*, $TA_{i,t}$ and $A_{i,t-1}$ are total accruals and total assets in period *t* and *t - 1* for firm *i*.

The Healy model assumes that expected normal accruals for the period are zero and hence that any non-zero value for total accruals is attributable to managerial discretion. However, this assumption is likely to prove highly restrictive given that the level of working capital accruals will fluctuate in response to economic conditions (Kaplan, 1985). Subsequently, DeAngelo (1986) assumes that, for a steady-state firm, normal accruals in period *t* equal normal accruals in the previous period. Thus, the change in total accruals is used as measure of management's discretion over earnings. The DeAngelo model is more specifically as follows:

$$DAC_{i,t} = \frac{\left(TA_{i,t} - TA_{i,t-1}\right)}{A_{i,t-1}}$$

However, the steady-state assumption is not applied to most of the firms, and the normal accruals are not stationary across different business circumstances. To address these problems Friedlan (1994) proposes a modified model as a means of controlling for non-stationarity in the non-discretionary accrual component, assuming that normal accruals to be constantly proportional to operating activity as measured by sales. Although this model does not set high requirements on data availability, it lets non-discretionary accruals fluctuate between periods due to changes in circumstances. The Modified DeAngelo Model produces the discretionary accruals by the following equation:

$$DAC_{i,t} = \frac{TA_{i,t}}{S_{i,t}} - \frac{TA_{i,t-1}}{S_{i,t-1}}$$

where $S_{i,t}$ and $S_{i,t-1}$ are sales revenue in period *t* and *t-1* for firm *i*, and all other variables are as previously determined.

The most widely used models for separating expected and discretionary accruals in studies of aggregate accruals are the Jones (1991) and modified Jones (Dechow, Sloan & Sweeney, 1995) models. The tests of these models were implemented with sufficient time-series data to estimate firm specific coefficients, which were then used to estimate abnormal accruals for a particular year. The Jones model is a time-series model that regresses total accruals on the level of property, plant and equipment (PPE), and changes in sales. The regression provides coefficients which are then used to estimate abnormal accruals as the unexplained (i.e. the residual) components of total accruals. The Jones model is as follows:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_{0,\mathrm{i}}\frac{1}{A_{i,t-1}} + \beta_{1,\mathrm{i}}\frac{\Delta Sales_{i,t}}{A_{i,t-1}} + \beta_{2,\mathrm{i}}\frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

where $\Delta REV_{i,t}$ is the change in revenues from year *t-1* to year *t* for firm *i*; $PPE_{i,t}$ is gross property, plant, and equipment in year *t* for firm *i*; $\varepsilon_{i,t}$ is the error term in year *t* for firm *i*; and all other variables are as previously determined.

The estimated coefficients from the Jones Model are then combined with data from the test period to generate the discretionary accruals, i.e.:

$$DAC_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \left[\hat{\beta}_{0,\mathrm{i}}\frac{1}{A_{i,t-1}} + \hat{\beta}_{1,i}\frac{\Delta Sales_{i,t}}{A_{i,t-1}} + \hat{\beta}_{2,i}\frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}\right]$$

Dechow *et al.* (1995) argue that because credit sales could also be a source of earnings management through inflated receivables, the first parameter should be corrected with the change in receivables. Thus, they modify the Jones model by adjusting the changes in the revenues by subtracting the corresponding change in receivables. This modified Jones model assumes that the change in revenues less the change in accounts receivable is free from managerial discretion (i.e., credit sales are assumed to be abnormal) and that capital intensity drives normal accruals. Dechow *et al.* (1995) provide evidence that the modified Jones model is more powerful than the original model at detecting cases of revenue manipulation. The modified Jones model for discretionary accruals is:

$$DAC_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \left[\widehat{\beta}_{0,i}\frac{1}{A_{i,t-1}} + \widehat{\beta}_{1,i}\frac{\left(\Delta Sales_{i,t} - \Delta REC_{i,t}\right)}{A_{i,t-1}} + \widehat{\beta}_{2,i}\frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}\right]$$

where $\Delta REC_{i,t}$ is change in sales receivables between period *t* and *t-1* for firm *i*, and all other variables are as previously determined.

Despite the widespread use of accruals models (and especially the Jones model) as a proxy for earnings management (McNichols, 2000), the validity and reliability of these discretionary proxies for correctly distinguishing abnormal accruals from normal accruals have been criticized. Dechow *et al.* (1995) find that all of the accruals models outlined above generate tests of low power for earnings management of economically plausible magnitudes (e.g. one to five per cent of total assets) and all models are poorly specified when they are applied to samples of firm-years experiencing extreme financial performance. McNichols (2000, 2002) states that aggregate accrual models that do not consider long-term earnings growth are potentially mis-specified and can result in misleading inferences about earnings management behaviour. For instance, investment in inventory and other assets is likely to accompany growth phases of the firm's life cycle — observing an increase in inventory in this circumstance is not necessarily due to opportunistic managerial behaviour — but, the modified Jones model classifies such increases as abnormal.

With these limitations in mind, Larcker *et al.* (2007) advance the accruals research by including proxies for growth and current performance in the accruals estimation process. They include the book-to-market ratio (BM) as a proxy for expected growth (they expect and find large positive accruals for growing firms). They also include current operating cash flows to account for previous research findings that unexpected accruals are more likely to be mis-specified for firms with extreme levels of performance (Dechow *et al.*, 1995; Young, 1999). Larcker *et al.* (2007) also use a cross-sectional as opposed to a time series version of the modified Jones model. Both approaches have their limitations — the time series approach assumes temporal stationarity of parameter estimates, whereas the cross-sectional approach assumes homogeneity across firms in the same industry (Bartov, Gul & Tsui, 2001; DeFond & Subramanyam, 1998). However, the cross sectional approach has less restrictive data requirements. The Larcker *et al.* (2007) model is then:

$$DAC = TA - \left[\hat{\beta}_0 + \hat{\beta}_1(\Delta Sales - \Delta REC) + \hat{\beta}_2 PPE + \hat{\beta}_3 BM + \hat{\beta}_4 CFO + \varepsilon\right]$$

where all of the variables are, as before, scaled by total assets. This model is similar to that employed in Dechow *et al.* (2003). They show that this model i) has far greater explanatory power than the cross-sectional modified Jones (1991) model, ii) identifies unexpected accruals that are less persistent than other components of earnings, iii) identifies unexpected accruals that detect earnings manipulation identified in SEC enforcement actions, and iv) identifies unexpected accruals that are associated with lower future earnings and lower future stock returns. However, despite these improvements they acknowledge that attempts to decompose total accruals are still subject to the limitations of model misspecification. Indeed, the inclusion of both *BM* and *CFO* is not without issue. It is likely that incentives to manage earnings vary in response to growth opportunities and current operating performance. Specifically, market expectations of future growth can place greater pressure on management to engage in earnings management (Dechow & Skinner, 2000). In addition, current performance can create incentives to engage in earnings management such that including these additional variables may be controlling for some of the variation in total accruals that Larcker *et al.* (2007) are seeking to identify. However, a cross-sectional Jones-type model is not practical for the calculation of abnormal accruals for poorly performing companies (Reynolds & Francis, 2000).

Consistent with Dechow, Kothari and Watts (1998), DeFond and Park (2001) develop a proxy for abnormal accruals that uses the firm's prior year accruals (rather than a longer time series inherent in Jones-type models) when calculating the expectation. Specifically, their proxy measures the difference between realised working capital and a proxy for the market's expectations of the level of working capital needed to support current sales, i.e. expected accruals are based on a firm's prior year ratio of current accruals to sales. The intuition is that this difference is the proportion of working capital accruals that are expected to reverse against future earnings, i.e. are unlikely to be sustained. This model is not a random walk model where this year's current accruals are expected to equal last years. Rather, accruals are assumed to be linearly related over time with sales that can be used to predict current period accruals for a given level of sales. The DeFond and Park (2001) model is then:

$$AWCA_t = WC_t - \left[\frac{WC_{t-1}}{S_{t-1}} * S_t\right]$$

where $AWCA_t$ is the abnormal working capital accruals in year *t*; WC_t is the reported non-cash working capital in year *t*; S_t is the sales in year *t*; $\frac{WC_{t-1}}{S_{t-1}}$ = the working capital to sales ratio in year *t*-1.

Francis and Wang (2008) develop this model further to include the prior year's ratio of depreciation expense to gross property, plant and equipment such that their model becomes:

$$AWCA_t = \left(WC_t - \left[\frac{WC_{t-1}}{S_{t-1}} * \mathrm{S_t}\right]\right) - \left(PPE_t - \left[\frac{Depn_{t-1}}{PPE_{t-1}} * \mathrm{PPE_t}\right]\right)$$

where PPE_t = is the gross property, plant and equipment year *t*; $\frac{Depn_{t-1}}{PPE_{t-1}}$ = the depreciation expense ratio in year *t*-1.

It is a central contention of this study that an initial loss represents an unambiguous signal of underperformance. Reynolds and Francis (2000) contend that the models presented heretofore may not be suitable for poorly performing companies. In addition, due to the limited history of many of the firms in the sample being analysed in this study, there is not enough time data to reliably estimate abnormal accruals using time series methods. For these reasons the most suitable methods to estimate abnormal accruals is to use modified versions of those developed by DeFond and Park (2001) and Francis and Wang (2008).

Because this chapter is primarily concerned with *changes* in abnormal accruals, the modification used in this study is in the choice of the year when the ratio for the 'normal' level of accruals and the scaling variables are determined. The 'normal' ratio and scaling variable which occurred two years before the loss year, i.e. (t – 2) is selected and these are then used to calculate abnormal accruals in each year thereafter across in the test period. The reason the ratio and scaling variable are set in this manner is because this study is concerned with the unwinding of abnormal accruals. If the previous year's ratio and scaling variable were used to calculate the level of abnormal accruals in each year of the test period (per the traditional DeFond and Park model) this would overestimate (i.e. introduce a negative bias into) the change in the abnormal accruals variable in the loss year.

For this study abnormal accruals in the year before the loss (t – 1) are calculated as[11]

$$AB\_ACCR_{t-1} = \frac{WC_{t-1} - \left(\frac{WC_{t-2}}{S_{t-2}} * S_{t-1}\right)}{TA_{t-2}}$$

the abnormal accruals in the loss year, t, are calculated as

$$AB\_ACCR_{t} = \frac{WC_{t} - \left(\frac{WC_{t-2}}{S_{t-2}} * S_{t}\right)}{TA_{t-2}}$$

[11] An alternative but similarly adjusted model specification developed by Francis and Wang (2008) is also used for the remainder of the thesis to test the robustness of the results related to abnormal accruals.

and the abnormal accruals in the year the loss firm returns to profitability, (*t* + 1)/(*t* + 2)

$$AB\_ACCR_{t+1/t+2} = \frac{WC_{t+1/t+2} - \left(\frac{WC_{t-2}}{S_{t-2}} * \ S_{t+1/t+2}\right)}{TA_{t-2}}$$

where WC_t is the reported non-cash working capital in year t;S_t is the sales in year t; $\frac{WC_{t-2}}{S_{t-2}}$ is the working capital to sales ratio set in year *t* – 2, and TA_{t-2} is the total assets (i.e. scaling variable) set in year *t* – 2.

In the extant research there is little consensus as to whether the focus should be on raw (or signed) measure of abnormal accruals or their absolute value (Larcker *et al.*, 2007). If the earnings management around the initial loss event is expected to be nondirectional such that loss firms can be expected to engage in income-increasing *and* income-decreasing behaviour, the research design should focus on deviations from a normal level of total accruals (Klein, 2002). However, if it is assumed that initial loss firms, insofar as they display earnings management behaviour different from the control sample, are expected to attempt to avoid/defer the loss in the year before the loss then the relationship between the two is assumed to be directional and the appropriate metric is the raw (signed) value and the research design should focus on signed measures of abnormal accruals (Francis and Wang, 2008). Using signed accruals also presents the possibility of capturing big bath behaviour on the part of loss firms in response to the loss, i.e. unwinding accruals by so much that abnormal accruals in the loss year are negative; analysing unsigned accruals would miss this behaviour. This study makes an assumption that the relationship between losses and earnings management is directional and so, for the remainder of this study, examines directional values for abnormal accruals.

Other variables included as control variables in the empirical chapters of this study include cash flow from operations (CFO) deflated by lagged total assets, leverage (LEV) calculated as total assets divided by total liabilities, and growth (*GROWTH)* calculated as the book value of equity divided by the market value of equity, i.e. the book-to-market ratio.

3.6.2 Market Variables

The market based information used in this study is downloaded from DATASTREAM. A market based variable included as a control variable in this study is the log of market value (LMV) which is included to control for the potential effects of firm size. Another market based variable included as a control variable in this study is return. The appropriate construction of return measures is a matter of conjecture in the extent literature. For instance, Kothari and Sloan (1992) and El Shamy and Kayed (2005) align the end of the return window with the fiscal year in their study. However the fiscal year end is, of course, not when earnings are announced and published and so it is argued that price (and hence the returns derived from them) do not have an opportunity to fully respond to the accounting numbers. To avoid this look-ahead bias, a contemporaneous analysis requires that the return interval corresponds with the earnings disclosure dates rather than the fiscal year end.

For this reason Easton, Harris and Ohlson (1992), Jan and Ou (1995) and Collins *et al.* (1999) all include a three month period after the end of the fiscal year before collecting pricing information to ensure that companies in their sample will have reported (because of quarterly reporting requirements in the US all companies will typically have reported within three months of the fiscal year end) and that share prices have the opportunity to fully reflect the information content contained in the accounting numbers.

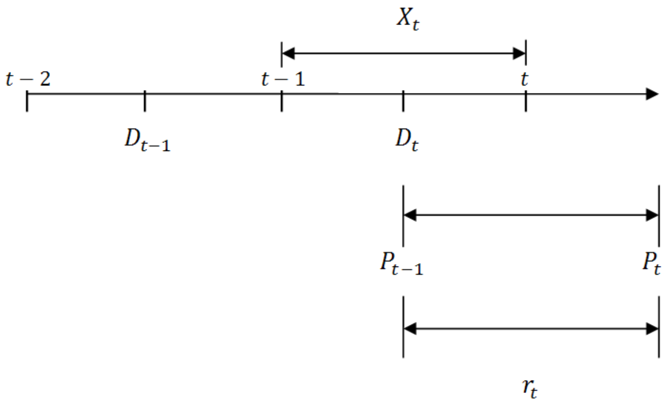
Another issue in the extant literature is whether or not to include dividends in the estimation of the price and return measures; corporate finance theory is clear that dividends are often a significant contributor to total shareholder returns and should be included in price and measures of return for completeness. For instance Jan and Ou (1995) use ex-dividend share price in their earnings capitalisation model to test for differences between the earnings response coefficient between loss and control firms as do El Shamy and Kayed (2005). Collins *et al.* (1999), meanwhile use a cum-dividend share price to test their earnings and book value model.

This study is careful to ensure that the calculation of return is as comprehensive as possible, in line with corporate finance theory. For this reason, because companies report every six-months in the U.K. (versus three months in the U.S.) and therefore have a longer period over which to report earnings, this study allows a six month window after fiscal year end before collecting cum-dividend price information (rather than just raw prices). These cum dividend prices are then used to calculate twelve month measure of return around the fiscal year. Specifically, the twelve month return interval used in this study includes a six month window after the end of fiscal year end t (plus six months before the year-end) to ensure that companies in our sample will have reported the earnings X_t generated during the period (t – 1) to t. The twelve month return measure also includes the forward twelve month dividend yield, D_t, for the twelve month period beginning six months prior to the financial year end are used to calculate the return measure, r_t (see Figure 3.2, Panel A).

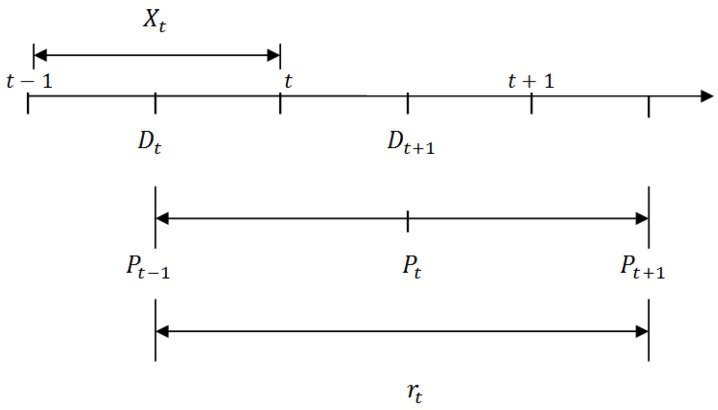
This study also uses two twenty four month return intervals. The first, a contemporaneous measure, includes an eighteen month window after the end of fiscal year end t (plus six months before the event). The forward twelve month dividend yield, D_t, for the twelve month period beginning six months prior to the fiscal year end and the forward twelve month dividend yield, D_{t+1}, for the twelve month period beginning six months after the financial year end also included are used to calculate the return measure, r_t (see Figure 3.2, Panel B). The second, an anticipatory measure, is similar except with a six month window after the end of fiscal year end t (plus eighteen months before the event) (see Figure 3.2, Panel C).

Figure 3.2 The Construction of Return Variables

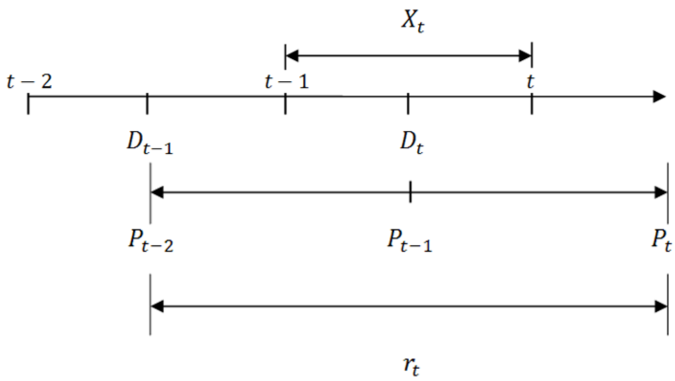
Panel A: 12-month Return



Panel B: Contemporaneous 24-month Return



Panel C: Anticipatory 24-month Return



This study follows Kothari and Sloan (1992) in assuming that any interim dividends are reinvested back into the firm (unlike Easton *et al.* (1992) who assume that these interim dividends are reinvested at the risk free rate). This reinvestment assumption means that D_t must also be adjusted to account for any capital gain/loss in the second twelve month period. Also, because the information on dividend yield collected in this study are annual yields and the 24-month measures are comprehensive, D_{t+1} must also be adjusted to starting price P_{t-1} from P_t. The return measure for any twenty-four month period, *t*, is calculated as:

$$r_t = \left[\frac{P_{t+1} - P_{t-1}}{P_{t-1}}\right] + [D_t * \ (1 + Capital\ Gain_{t+1})] + \left[D_{t+1} * \left(\frac{P_t}{P_{t-1}}\right)\right]$$

where

$$Capital\ Gain_{t+1} = \left[\frac{P_{t+1} - P_t}{P_t}\right]$$

and D_t and D_{t+1} are the twelve month forward dividend yields.

3.6.3 Descriptive Statistics

The non-governance variables for this study, then, include abnormal accruals (*AB_ACCR*), the log of the market value of equity (*LMV*), cash flow from operations (*CFO*), leverage (*LEV*), growth (*GROWTH*) and Return. All of these variables are winsorised at the 1% level to minimise the impact of outliers. Table 9.2 in the Appendix includes detailed descriptive statistics for these winsorised variables —

with the exception of Return which, as a change (in price) variable is detailed and analysed in Chapter 4. It should be noted that the organisation of Table 9.2 is slightly different from Table 9.1 insofar as the post-periods (*t* + 1) and (*t* + 2) are combined into a single post-period (*t* + 1)/(*t* + 2). This is because in Chapter 5 the primary concern is with changes in abnormal accruals and so, to ensure that a firm has had the opportunity to change its accruals behaviour and that such changes are not contaminated with intervening losses, it is the return to profit year and not the passage of time which determines the post-period. Therefore, whether the post-period is (*t* + 1) or (*t* + 2) for each initial loss firm and its matched control firm depends on whether or not the loss firm returns to profitability in year (*t* + 1) or (*t* + 2) after the initial loss event. For initial loss firms that are subsequently liquidated or acquired in (*t* + 2) — none are liquidated or acquired in (*t* + 1) — the default post period is (*t* + 1). Panel A of Table 9.2 then includes a combined panel made up from the pre-period (*t* – 1), the loss year (*t*), and the post-period (*t* + 1)/(*t* + 2) for the loss, control and combined samples. Panels B, C and D of Table 9.2 include non-corporate governance statistics for the loss and control samples for each of the years (*t* – 1), *t*, and (*t* + 1)/(*t* + 2), respectively.

Of particular note are the apparent dissimilarities between the initial loss and control samples at (*t* – 1), the year before the initial loss, and the apparent subsequent unwinding of abnormal accruals. Detailed univariate and multivariate analyses of whether the mean and median values of these variables are equivalent for the initial loss and control samples are included in Chapter 5 when the changes in the various non-corporate governance variables are calculated and considered.

3.7 Econometric Methods

This section explains the primary econometric technique used in this study, i.e. the differences-in-differences method, to test for, *inter alia*, differences in changes in governance and abnormal accruals between the loss and control samples in response to the initial loss event.

3.7.1 The Difference-in-Differences Method

In the context of the analysis of experimental data, the simple comparison of the mean of the outcome in treatment and control groups (i.e. the differences estimator) is justified on the grounds that randomization guarantees that both groups should not have any systematic differences in any other pre-test variable. This idea of trying to mimic an experiment suggests trying to find equivalents of test and control groups in which everything apart from the variable of interest (or other things that can be controlled for) are assumed to be the same. But this is often a very difficult claim to make because it is rarely possible to do so perfectly. In such a case, any observed differences between test and control groups may be the result of some other omitted factors — this is one of the biggest criticisms of studies that examine pre- and post-period effects and draw conclusions accordingly.

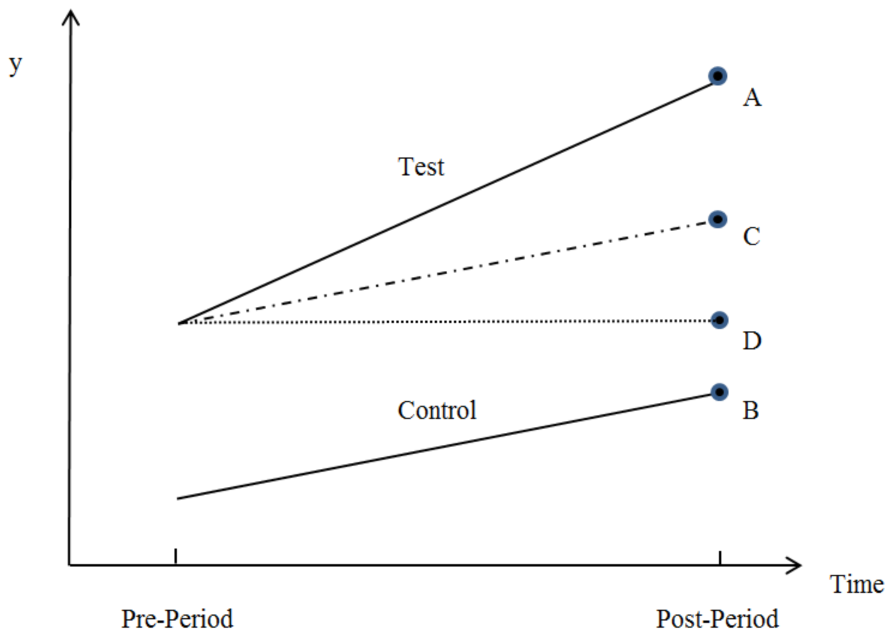
An alternative way to explain how the double differencing identifies the impact of an event is to start from the change observed over time among the beneficiaries (i.e. those who are impacted by the event). This difference cannot be interpreted as the impact of the event because many other factors and processes unfolding over time (besides the event) might have caused the observed change, i.e. it could be the result of omitted variables. For instance, in an international study of the pre- and post-period impact of IFRS, Daske, Hail, Leuz and Verdi (2008) urge caution as regards attributing their findings to IFRS adoption because several EU countries also changed their enforcement and governance regimes at the same time. In that study the absence of a matched sample of control firms not implementing IFRS standards (because such a control sample did not exist, i.e. firms could either voluntarily or mandatorily implement the standards; not to do so was not a choice) is the cause of the problem. Marra, Mazzola and Prencipe (2011) experience similar problems in a study of IFRS adoption by Italian firms. The authors are reduced to down-playing the impact of confounding concurrent events by pointing to the stability of the legal and governance environment during their study. Other studies explain that focusing on one country reduces the need to control for confounding effects from country-specific factors unrelated to the change event (i.e. Barth, Landsman & Lang, 2007). A study by Johnstone *et al.* (2011) on the impact of the disclosure of internal control material weaknesses has a similar problem due to the difficulty in defining precisely what the control sample should be and what firms it should include.

Even if one cannot make the assumption that the test and control groups are the same in every respect (apart from the event being tested for) — for researchers in the social sciences, including business, this is an illegitimate assumption — one might be able to make the assumption that, in the absence of the event, the unobserved differences between test and control groups are the same over time. One way to take these natural dynamics into account is to compute the change over time among the non-beneficiaries during the same period such that these non-beneficiaries act as a control group against which the impact of the event among the beneficiaries can be tested, i.e. subtracting the change observed over time among non-beneficiaries from that observed among beneficiaries produces an estimate of the impact of the event. In this case data on test and control groups before the event can be used to estimate the normal difference between the test and control groups which can then be compared with the difference after the event. Obviously the existence of a control sample is necessary to properly implement this methodology, something that was not available to Daske *et al.* (2008) and Marra *et al.* (2011).

For instance, define μ_{it} to be the mean of the outcome in group *i* at time *t*. Define *i* = 0 for the control group and *i* = 1 for the test group. Define *t* = 0 to be the pre-period and *t* = 1 to be the post-period (though only the test group experiences the event). The difference estimator simply uses the difference in means between test and control groups in the post-period $(\mu_{11} - \mu_{10})$ as the estimate of the impact of the event. However, as discussed above, this assumes that the test and control groups have no other differences apart from the impact of the event, a very strong and largely unjustifiable assumption with non-experimental data. A weaker assumption (and a more appropriate one for real world data) is that any differences in the change in means between the test and control groups is the result of the event i.e. that $(\mu_{11} - \mu_{01}) - (\mu_{10} - \mu_{00})$ is an estimate of the impact of the event — this is the differences-in-differences (DID) estimator.

Figure 3.3 shows that if the estimate of $(\mu_{11} - \mu_{10})$ from the test sample is used then one would estimate the treatment effect as the distance AD — this estimate being based on the assumption that all underlying trends are irrelevant. In contrast the DID estimator will take the normal difference between the test and control group as the distance CB and estimate the impact of the event as the distance AC. The validity of this analysis is based on the assumption that the underlying trend is not irrelevant but is the same for both the test and control groups.

Figure 3.3 Explaining Differences-in-Differences Estimation



Since the work by Ashenfelter and Card (1985), the use of DID methods has become very widespread. The simplest set up is one where outcomes are observed for two groups, test and control, for two time periods. One of the groups, test, is exposed to an event (beneficiaries) in the second period but not in the first period. The second group is not exposed to the event (non-beneficiaries) during either period. In the case where the same units within a group are observed in each time period, the average gain in the second (control) group is subtracted from the average gain in the first (test) group. This removes biases in second period comparisons between the test and control group that could be the result from permanent differences between those groups, as well as biases from comparisons over time in the test group that could be the result of trends. If sample average data is available for beneficiaries and non-beneficiaries for at least two time periods, the difference-in-differences method produces estimates of impacts that are in principle more plausible than those based on simple differences.

Individual-level panel data where information on the same units is available in both the pre- and post- periods is a powerful tool for estimating the impact of an event. In the simplest case there are two time periods, 0 and 1, where

	Control	**Test**
Year 0	a	b
Year 1	c	d

and a binary program indicator, D_{it}, which is unity if unit *i* experiences the event (i.e. Test) at time *t* and zero otherwise (i.e. Control). A simple, effective model then is

$$y_{it} = \alpha + \beta T_{\mathrm{t}} + \gamma f_i + \delta D_{it} + u_{it}, \quad t = 0, 1 \tag{3.1}$$

where T is a time dummy variable such that T = 1 if t = 1 and zero otherwise, f_i is an observed effect, and u_{it} are the idiosyncratic errors. The coefficients α, β, γ and δ can be explained as follows:

Coefficient	Calculation
α	a
β	c – a
γ	b – a
δ	(d – b) – (c – a)

where α then is the baseline average from the control group, β represents the time trend in the control group, γ represents the differences between the test and control sample in year 0, and the coefficient δ, then, is the difference in the changes over time, i.e. represents the impact of the event. Assuming that both the test and control groups experience the same natural dynamics equally over time, then the impact of macro-level variables have been controlled for such that the true impact of the event can be measured.

Because information on the same units (firms) is available in both the pre- and post-periods, a simple estimation procedure is to first difference equation 3.1 to remove f_i:

$$(y_{i1} - y_{i0}) = \beta + \delta(D_{i1} - D_{i0}) + (u_{i1} - u_{i0})$$

or

$$\Delta y_i = \beta + \delta \Delta D_i + \Delta u_i \tag{3.2}$$

If $E(\Delta D_i \Delta u_i) = 0$, that is, the occurrence of the event is uncorrelated with changes in the idiosyncratic errors, then OLS applied to equation 3.2 is consistent such that the ordinary least squares estimator

$$\hat{\delta} = \Delta\overline{y}_{test} - \Delta\overline{y}_{control}$$

which is the difference-in-differences estimate where the means of the same units are differenced over time and

$$\hat{\beta} = \Delta\overline{y}_{control}$$

such that

$$\hat{\beta} + \hat{\delta} = \Delta\overline{y}_{test}$$

Expressing the differences-in-differences model in the form of equation 3.2 instead of 3.1 also has the simplicity that other variables supposed to impact on the system can be included easily as follows:

$$\Delta y_i = \beta + \delta\Delta D_i + \theta_j \Delta Controls_i + \Delta u_i \qquad 3.3$$

It is the DID model in equation 3.3 which is used in the empirical chapters (4, 5 and 6) of this thesis to test for the impact of a initial loss event on the beneficiaries of that event, i.e. to test the difference in the changes in managerial choices between the initial loss and control firms. For this reason, an appreciation of the econometric merit of the model, its robustness, as well as the assumptions underlying the model are essential if the significance of the results in the empirical chapters to follow are to be fully appreciated.

On the practical side, the need for pre-event outcome data often represents an insurmountable obstacle for DID. This is most often due to a lack of planning in data collection; this is not a problem for this study as all of the information regarding losses is readily available. Conceptually, the simplicity of the DID method comes at a price. As discussed, the crucial identifying assumption in using DID in this study is that the counterfactual trend is the same for the initial loss and control samples. Referencing Figure 3.3, if, for example, the underlying trend was greater in the test group then AC overestimates the change in the test group. Although it is a fundamental assumption of DID that this is the case, this identifying assumption can never be tested. Notwithstanding this drawback, the equivalence of natural dynamics is a better assumption than ignoring their impact altogether and is one that is suitable for the sample collected in this study.

In making explicit the trade-off between data and assumptions (neither of which causes problems for this study) the DID method is an excellent research tool for non-experimental methods. In that regard the DID method is a research method that closely approximates the experimental method of the natural sciences and is therefore an extremely robust and useful experimental model for social science researchers.

3.7.2 Conditioning Terms

As detailed in Section 3.2, this study includes several hypotheses to test the impact of the initial loss event on managerial choices, i.e. changes in corporate governance and abnormal accruals. While the DID model is ideally suited to test the average impact of the initial loss, an additional convincing analysis is available by further refining the definition of test and control groups. This study also includes these types of more nuanced analyses that test the impact of the initial loss event conditioned other variables, i.e. the quality of corporate governance and/or the severity of the loss. With some modifications, equation 3.3 can be amended to include the impact of conditioning interactions to test a variety of additional hypotheses.

For instance, in the general from, assuming the conditioning variable has two states, a 'low' state, *p* and a 'high' state, *q*, equation 3.3. then becomes:

$$\Delta y_i = \beta + \delta_1 \Delta D_i * p + \delta_2 \Delta D_i * q + \theta_j \Delta Controls_i + \Delta u_i \qquad 3.4$$

where ΔD_i is a binary program indicator which is unity if firm *i* experiences the event (i.e. test) and zero otherwise (i.e. control). As constructed, coefficients δ_1 and δ_2 then compare the 'low' and 'high' (*p* and *q*) conditioned test sub-samples, respectively, to the entire control sample such that

$$\hat{\delta}_1 = \Delta\overline{y}_{test\ low\ state\ sub-sample} - \Delta\overline{y}_{entire\ control\ sample}$$

and

$$\hat{\delta}_2 = \Delta\overline{y}_{test\ high\ state\ sub-sample} - \Delta\overline{y}_{entire\ control\ sample}$$

3.7.3 Endogeneity

Endogeneity arises when a variable that affects both the outcome and explanatory variables is not included in the regression model or when the outcome and explanatory variables are simultaneously determined (i.e., simultaneous causality). Endogeneity is such a prevalent problem in corporate governance research that editors of leading journals now expect researchers to identify and address any suspect endogeneity problems inherent in the research question (Brown *et al.*, 2011). It follows that any study that unreasonably ignores the possibility of endogeneity while making a causal argument regarding the impact of corporate governance, is at the very least incomplete. In the absence of a valid method to deal with the problem, Larcker and Rusticus (2010) explain that the researcher should report how big the endogeneity problem has to be in order to change the OLS results.

Given that it is losses and corporate governance that are at issue in Chapter 4 of this study, if the endogeneity between losses and corporate governance is caused by unobserved heterogeneity (a time invariant '*Z*' variable related to both losses and governance) then a first difference model will fix the problem such that the time variant unobservable variable(s) is/are cancelled out such that any relation that remains cannot be attributable to endogeneity that arises from such an effect. Therefore, by happenstance, the difference-in-difference analysis solves this endogeneity problem in its construction, i.e. the difference-in-differences methodology deals with the omitted variables problem, regardless of whether or not those variables are correlated.

If the endogeneity is caused by simultaneous causality then the explanatory variables influence the outcome variable at the same time as the outcome variable influences the explanatory variable. Again, the difference in difference approach solves this problem at source. That is, given that the reporting of an initial loss is potentially a manifestation of agency costs, the expectation is that corporate governance will likely change (and most likely improve) in response to (and potentially in anticipation of) the announcement of the loss. It does not make sense to argue the contrary — that an improvement in corporate governance causes the initial loss. If corporate governance is inherently sticky such that governance variables are, in the main, not revamped that often (Brown *et al.*, 2011) and the loss is shown to unstick governance (causing it to change) then the causation is in one direction only, i.e. endogeneity between the initial loss event and the change in corporate governance variables is not a problem. That said, however, using the quality of corporate governance as a conditioning explanatory variable in the equation potentially introduces another source of endogeneity. To solve this potential problem the corporate governance conditioning variables used in this study are those at time (t – 1), not time t. While it can be argued that the change in corporate governance after time (t – 1) influences the corporate governance level at time t, it cannot be argued that the change in corporate governance after time (t – 1) influences the corporate governance level at time (t – 1) and so a potential endogeneity problem is solved by lagging the governance conditioning variables. However, it can be argued that because corporate governance at time (t – 1) influences both the change in corporate governance thereafter (i.e. worse governed firms have more room to improve) and can influence (via endogenously related poor management) corporate performance (the loss in this case), then endogeneity is still a potential problem. However, losses are more likely to be primarily caused by exogenous factors that are not related to corporate governance levels at time (t – 1). The equivalence of *ex-ante* corporate governance between the initial loss and control firms (detailed in Chapter 4) will also indicate whether this more subtle endogeneity is an issue for this study.

Similarly Chapter 5 is concerned with, *inter alia*, initial losses and abnormal accruals. There is a potential endogeneity problem if, as well as the loss causing changes in the abnormal accruals behaviour of loss firms (in anticipation of the loss), the change in abnormal accruals can be argued to cause the loss. This would be true if the abnormal accruals behaviour of firms was continuous across all net income ranges (profit and loss). The literature is clear that firms manage earnings upward to achieve earnings targets of which positive profits (i.e. loss avoidance) is one example (Burgstaler & Dichev, 1997; Degeorge *et al.*, 1999; Brown & Caylor, 2005). Given that this study is concerned with the change in abnormal accruals behaviour in response to (and potentially in anticipation of) the loss, the expectation is that positive abnormal accruals will unwind (decrease) once the loss occurs. Again, it does not make sense to argue the contrary — that a decrease in abnormal accruals causes the initial loss. That is, if the loss is shown to change abnormal accruals behaviour then the causation is in one direction only. Because neither of the conditioning variables used to describe the severity of the loss in chapter 5 can be argued to cause any observed change in abnormal accruals then it cannot be argued that these variables introduce endogeneity into the models used.

In short, as the models are constructed, endogeneity is not a major problem for this study.

3.7.4 Wald Tests

Social scientists often compare sets of coefficients in multiple models where comparisons among groups are desirable. A widely used test for comparing whether the coefficients in two linear regressions on different data sets are equal is the Chow test (Chow, 1960). In econometrics, the Chow test is most commonly used in time series, i.e. it is the standard *F*-test for testing the equality of two sets of coefficients in linear regression models across time. In econometrics Chow tests are a special a form of *F*-test that check the stability of regression coefficients over two or more sub samples of the data. Chow tests are often used in time series analysis to test for the presence of a structural break. This is normally done by running a regression for the whole sample then running the same regression for subsamples and comparing the sums of squared residuals (SSRs). An *F*-test for the constraint that the two sets of coefficients are equal can be computed from the SSRs

Testing the simultaneous significance of all the regressions coefficients is all very well but social science researchers will often want to test and compare the specific properties of individual variables. For this type of analysis there are various techniques available including Wald, Likelihood Ratio (LR) and the Lagrange Multiplier (LM) tests. Whereas Engle (1983) showed that all three are asymptotically equivalent, the Wald test differs from the LR and the LM tests in at least two important aspects. First, Wald's test explicitly expresses the hypothesis to be tested as a functional restriction of the parameters of the model under examination, and this is sometimes a desirable property. For example, a parameter in one group may be expressed as three times as large as (or equal to, or any other function, of) the same parameter in another group — for a single parameter the Wald statistic is just the square of the *t*-statistic. Second, the Wald test only requires the unrestricted model represented by an alternative hypothesis to be estimated, i.e. it only requires estimating one model; in comparison (and similar to the Chow test discussed above) the LM test requires the restricted model to be estimated, and the LR test requires both the restricted and the unrestricted models to be estimated, thus requiring two paths of computation. In the social sciences researchers often prefer to present results separately for the social groups being analysed (the unrestricted model), thereby making the Wald test a natural choice.

The Wald test works by testing the null hypothesis that a set of parameters is equal to some value, i.e. how far the estimated parameters are from zero (or any other value under the null hypothesis) in standard errors, similar to the hypothesis tests typically printed in regression output. The difference is that the Wald test can be used to test multiple parameters simultaneously, while the tests typically printed in regression output only test one parameter at a time.

Wald tests are used in this study to test the significance of combinations of coefficients as well as to the equivalence of coefficients. Specifically, Wald test are used to test the following hypotheses:

1. (in equation 3.3) that $\beta + \delta = 0$, i.e. if the test sample coefficient is significant where β is the control sample coefficient and δ is the difference between the test and control sample coefficients.
2. (in question 3.4) that $\beta + \delta_1 = 0$ and $\beta + \delta_2 = 0$, i.e. if the coefficients of the 'low' and 'high' loss sub-samples are significant
3. (in question 3.4) that $\delta_1 = \delta_2$, i.e. if the difference between the entire control sample and the 'low' and 'high' test sub-samples is the same

3.8 Summary and Conclusions

This chapter provides a number of important descriptions and discussions which are essential to the subsequent empirical chapters of this study. It outlines the research framework, introduces the research objective, specifies the research questions and hypotheses, reports the data collection process, details the variable construction process and briefly describes the variables used and adapted in later chapters. It also provides a discussion of econometric issues in relation to main modelling technique employed in this thesis as well as the diagnostic tests used to test the post-estimation coefficients.

In particular, this chapter discusses selection of the initial loss sample and, because this is a comparison study, a matched control sample. The only difference is that the control firms do not report a loss during the test period. Corporate governance information is manually collected from the annual reports of these initial loss and control samples for each year of the test period. This information is then constructed into variables, and amalgamations where appropriate, to maximise the quality of the information. Factor analysis is used to identify commonalities, or factors, underlying the measures of corporate governance. These factors are unobservable but manifest themselves through these observable outcomes such the three governance amalgamations used in this study (Board, Chair and Ownership) can be constructed. The construction of the other governance variables in this study (Diversity and Board Size) is also explained.

The methods used for the estimation of earnings management are also explained. Accounting and market data are downloaded from Datastream/Worldscope. Following from the literature review in Chapter 2, a modified version of the DeFond and Park (2001) measure for calculating abnormal accruals is selected as the primary proxy for earnings management because this is the most appropriate for the samples selected and characteristics of this study. The Francis and Wang (2008) model is also explained as it is used for tests of robustness in the empirical chapters of this study.

The chapter also explains how the difference-in-difference (DID) model used throughout this study. The implications that the use of this econometric method has for the general robustness of the results in this study, and the endogeneity problem in particular, are explained. The chapter also includes an explanation of how the DID model can be interacted with conditioning variables to further analyse the impact of the initial loss event in order to test the more nuanced hypotheses in this study. The chapter also explains the Wald test and the usefulness of this test for testing the linear hypotheses after estimation (i.e. to test the significance and equivalence of post estimation coefficients).

The next three chapters will present and discuss the empirical findings for the hypotheses developed in section 3.2 using from the estimation models outlined and variables constructed in this chapter.

Chapter 4

Initial Losses and Corporate Governance

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4.1 Introduction

The literature analysed in Section 2.3 of Chapter 2 detailed that, notwithstanding its inherent stickiness and uniformity, corporate governance changes in response to shocks or crisis situations. Using the sample detailed previously in Chapter 3, this chapter extends this literature by using the argument developed in section 2.4 of Chapter 2 to analyse the impact of an initial loss on corporate governance. Specifically, this chapter isolates initial loss firms trading on the London Stock Exchange which reported an initial loss in the period 2004–2006 to investigate whether the initial loss event induces any change in corporate governance over a sample period versus a control sample. In line with the arguments pertaining to the conditioning variables outlined throughout Chapter 2, this chapter also utilises the quality of corporate governance in this regard to test for the exacerbating/mitigating impact of *ex-ante* bad/good corporate governance for governance changes at initial loss firms.

The chapter is organised as follows: section 4.2 explains the construction of the corporate governance change variables used in this study. Section 4.3 provides some univariate statistics pertaining to the levels and changes in these corporate governance change variables for the initial loss and control firm samples. Section 4.4 presents evidence from a DID analysis on the average impact of the reporting of the initial loss on corporate governance changes at initial loss firms. Section 4.5 presents evidence from a DID analysis on the mitigating impact of the quality of *ex-ante* corporate governance on this relationship in response to the initial loss. Section 4.6 summarises and concludes.

4.2 Corporate Governance Changes

This section analyses corporate governance *changes* around the initial loss event. Chapter 3 explained that the data collected for this study includes corporate governance metrics for both the initial loss and control firms for each year from the year preceding the initial loss to the second year after the occurrence of the initial loss.

A fundamental prediction of this chapter is that an initial loss is an exogenous event that motivates a firm to undertake change. Change may be necessary since if initial losses perpetuate the firm will fail. We predict that firms have sufficient knowledge about their performance to anticipate the reporting of an initial loss. Accordingly this study predicts that the initial loss will motivate changes that appear to predate the initial loss itself. For this reason, the collection of corporate governance metrics in the year prior to the initial loss event is particularly important. Given their intimate knowledge of the firm, management, the board and significant shareholders are well placed to anticipate an initial loss. A distinct possibility is that much of any changes in corporate governance could already have occurred by the time the company actually reports the initial loss. Obviously some corporate governance metrics lend themselves to quicker changes than others so it is difficult, *a priori*, to predict the specifics of the pace of change. Unless this look ahead bias is accounted for, this study could miss real corporate governance changes because the model is misspecified, i.e. if corporate governance changes between (t – 1) and t then it is argued that it is the corporate governance in place at (t – 1) which is associated with the initial loss in year t rather than that in place at time t. Tracking corporate governance changes only after time t risks missing a significant part of the relationship that this study is specifically looking to investigate. It is for this reason that this study is careful to collect corporate governance data for the year preceding the initial loss, thereby facilitating the construction of change variables from this starting point. Modelling corporate governance variables with accounting outcomes (i.e. initial losses in this case) can give rise to endogeneity if one believes that corporate governance influences the initial loss at the same time that the initial loss influences governance, i.e. simultaneous causality. However, as discussed in Section 3.7.1 of Chapter 3, the way the DID estimation models are constructed in this thesis mitigates this particular endogeneity problem.

The expectation is that initial loss firms will have greater changes (improvements) in Board, Chair and Diversity than will their corresponding control firms over the same period.

Ownership also likely plays a key monitoring role but it is difficult to predict changes relating to block and professional shareholders around the initial loss event because Ownership can possibly change for valuation and portfolio rebalancing reasons as well as in response to the initial loss. In addition, it is also difficult to predict the changes in management and director ownership variables around the initial loss event given that there could be a turnover in management and directors following (or in anticipation of) the initial loss event which would impact on the ownership information listed on annual reports. Complications for the interpretation of the Ownership variable are further compounded in this study as a result of the different signs on the insider and outsider ownership variables used to construct Ownership in Section 3.5.3 of Chapter 3. These opposite signs make any interpretation of whether changes in Ownership are due to insiders exploiting their information advantage and/or outsiders reacting to (non-earnings) published information is difficult to establish. That said, however, as discussed in Chapter 3, the mean director ownership percentage (%Tot. Dir. Own.) for initial loss firms in this study is 15.0% — well within the management entrenchment range for UK data (Short and Keasey, 1999). In such a context increased management ownership can only be seen as detrimental to good corporate governance. Therefore, this study predicts that Ownership should also improve (increase) since an increase in professional ownership and a decrease in management ownership would be considered an improvement when management is, on average, already relatively high. This study, also separately analyses the total professional ownership variable (% Tot. Prof. Own.) and total director ownership variable (% Tot. Dir. Own.) for completeness.

It is not really possible to determine whether an increase or decrease in board size can be considered an improvement since it is not possible to be categorical about the optimum size of a board. Changes from board sizes that are significantly above or below the mean (median) toward the mean (median) could both be viewed as positive, making changes in this variable more difficult to interpret. Thus all we can predict of BSize is that it is likely to change around the time of the initial loss.

The hypothesis to perform the analysis in this Chapter, stated in the null form, is:

H4.1: there is no association between the reporting of an initial loss and changes in corporate governance.

4.3 Univariate Analysis of Corporate Governance: Levels and Changes

Table 9.1 in the Appendix provis detailed descriptive statistics of corporate governance variables in each of the four years beginning in year (t – 1). However, the primary objective of this Chapter is to test for *changes* in corporate governance resulting from the initial loss event. To this end the detailed corporate governance levels information contained in Table 9.1 in the Appendix is used to estimate the changes in the corporate governance variables during the test periods.

Table 4.1, Panels A, B, C and D outline the direction and magnitude of changes in the corporate governance variables for the initial loss and control firms from time (t – 1) to the end of each of the next three years finishing at time (t + 2) for panels A, B and C, respectively, and from time t to (t + 1) for Panel D.

The method used to calculate the corporate governance changes in Table 4.1 is illustrated in Figure 4.1; Δ1 is the change in corporate governance from year (t – 1) to year t (i.e. corresponding to the twelve month period the initial loss is 'earned' and in anticipation of the reporting of the initial loss event) in Panel A, Δ2 is the change in corporate governance from year (t – 1) to year (t + 1) in Panel B, Δ3 is the change in corporate governance from year (t – 1) to year (t + 2) in Panel C and Δ4 is the change in corporate governance from year t to year (t + 1) in Panel D.

Figure 4.1 How Corporate Governance Changes are Calculated

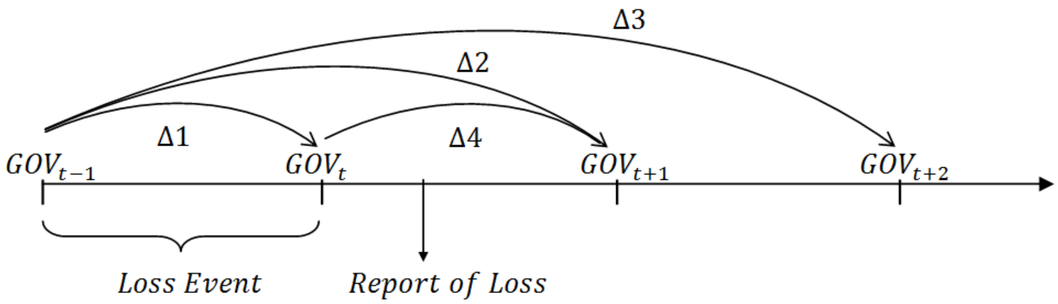

Table 4.1 also includes tests to compare the mean and median corporate governance levels between the initial loss and control firms in each period as well as the mean and median corporate governance changes between the initial loss and control firms for each of the four test periods outlined above in Panels A, B, C and D respectively.

Table 4.1 Univariate tests of Preperiod and Postperiod Differences and Difference-in-Differences in Corporate Governance Levels and Changes Between the Initial Loss and Control Samples

Test Period Δ1

Panel A	**Initial Loss Firms**				**Control Firms**				***p*-value of testing preperiod differences**	***p*-value of testing postperiod differecnes**	***p*-value of testing DIDs**
	n = 138	**n = 138**	**n = 138**		**n = 138**	**n = 138**	**n = 138**				
	Preperiod	**Postperiod**	**Change**	**Sig. of Change**	**Preperiod**	**Postperiod**	**Change**	**Sig. of Change**	**col. (1) minus (5)**	**col. (2) minus (6)**	**col. (3) minus (7)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**
	Mean (Median) [st. dev]	**Mean (Median) [st. dev]**	**Mean (Median) [st. dev]**	**Two-tailed *p*-values: *t*-test Signrank**	**Mean (Median) [st. dev]**	**Mean (Median) [st. dev]**	**Mean (Median) [st. dev]**	**Two-tailed *p*-values: *t*-test Signrank**	**Two-tailed *p*-values: *t*-test Signrank**	**Two-tailed *p*-values: *t*-test Signrank**	**Two-tailed *p*-values: *t*-test Signrank**
Board	-0.037	0.051	0.090	0.03	-0.063	-0.078	-0.015	0.70	0.78	0.19	0.07
	(-0.067)	(0.089)	(0.000)	0.04	(0.080)	(-0.067)	(0.000)	0.66	0.57	0.17	0.07
	[0.777]	[0.837]	[0.495]		[0.853]	[0.860]	[0.468]				
Chair	0.060	0.064	0.010	0.77	-0.108	-0.078	0.030	0.29	0.12	0.21	0.68
	(0.273)	(0.273)	(0.000)	0.10	('0.273)	(0.272)	(0.000)	0.20	0.12	0.15	0.75
	[0.891]	[0.901]	[0.413]		[0.903]	[0.904]	[0.328]				
Diversity	0.091	0.108	0.019	<0.01	0.071	0.080	0.009	0.16	0.21	0.06	0.20
	(0.000)	(0.000)	(0.000)	<0.01	(0.000)	(0.000)	(0.000)	0.19	0.24	0.09	0.19
	[0.142]	[0.150]	[0.150]		[0.118]	[0.123]	[0.073]				
Ownership	-0.033	0.114	0.154	<0.01	-0.189	-0.110	0.079	<0.01	0.09	0.02	0.04
	(-0.001)	(0.221)	(0.091)	<0.01	(-0.178)	(-0.092)	(0.044)	<0.01	0.07	0.02	0.04
	[0.758]	[0.791]	[0.346]		[0.785]	[0.768]	[0.232]				
BSize	6.725	6.708	-0.036	0.70	6.623	6.630	0.007	0.93	0.68	0.76	0.73
	(6.000)	(6.000)	(0.000)	0.50	(6.000)	(6.000)	(0.000)	0.82	0.19	0.41	0.94
	[2.177]	[2.122]	[1.127]		[2.594]	[2.494]	[1.001]				
%Tot.Prof.Own.	0.294	0.337	0.045	<0.01	0.266	0.284	0.018	<0.01	0.23	0.03	0.02
	(0.282)	(0.333)	(0.022)	<0.01	(0.241)	(0.282)	(0.002)	<0.01	0.19	0.04	0.05
	[0.192]	[0.207]	[0.120]		[0.193]	[0.193]	[0.075]				
%Tot.Dir.Own.	0.142	0.127	-0.015	<0.01	0.185	0.170	-0.015	<0.01	0.06	0.08	0.96
	(0.054)	(0.048)	(-0.001)	<0.01	(0.102)	(0.084)	(-0.001)	<0.01	0.04	0.03	0.91
	[0.189]	[0.184]	[0.048]		[0.210]	[0.206]	[0.040]				

(Continued)

Table 4.1 Continued **Test Period Δ2**

Panel B	Initial Loss Firms				Control Firms				p-value of testing Preperiod differences col. (1) minus (5)	p-value of testing Postperiod differecnes col. (2) minus (6)	p-value of testing DIDs col. (3) minus (7)
	n = 138 Preperiod (1) Mean (Median) [st. dev]	n = 114 Postperiod (2) Mean (Median) [st. dev]	n = 114 Change (3) Mean (Median) [st. dev]	Sig. of Change (4) Two-tailed *p*-values: *t*-test Signrank	n = 138 Preperiod (5) Mean (Median) [st. dev]	n = 124 Postperiod (6) Mean (Median) [st. dev]	n = 124 Change (7) Mean (Median) [st. dev]	Sig. of Change (8) Two-tailed *p*-values: *t*-test Signrank	(9) Two-tailed *p*-values: *t*-test Signrank	(10) Two-tailed *p*-values: *t*-test Signrank	(11) Two-tailed *p*-values: *t*-test Signrank
Board	-0.037	0.115	0.178	<0.01	-0.063	-0.054	0.031	0.54	0.78	0.22	0.17
	(-0.067)	(0.200)	(0.038)	<0.01	(0.080)	(-0.102)	(0.000)	0.12	0.57	0.10	0.13
	[0.777]	[0.967]	[0.714]		[0.853]	[0.908]	[0.567]				
Chair	0.060	0.171	0.120	0.09	-0.108	-0.113	0.033	0.46	0.12	<0.01	0.41
	(0.273)	(0.614)	(0.000)	0.05	('0.273)	(0.273)	(0.000)	0.48	0.12	<0.01	0.38
	[0.891]	[0.900]	[0.744]		[0.903]	[0.893]	[0.498]				
Diversity	0.091	0.104	0.019	0.07	0.071	0.076	0.005	0.49	0.21	0.02	0.31
	(0.000)	(0.000)	(0.000)	0.03	(0.000)	(0.000)	(0.000)	0.78	0.24	0.03	0.31
	[0.142]	[0.150]	[0.110]		[0.118]	[0.127]	[0.084]				
Ownership	-0.033	0.161	0.209	<0.01	-0.189	-0.070	0.167	<0.01	0.09	0.03	0.58
	(-0.001)	(0.262)	(0.185)	<0.01	(-0.178)	(0.019)	(0.107)	<0.01	0.07	0.02	0.68
	[0.758]	[0.762]	[0.480]		[0.785]	[0.761]	[0.409]				
BSize	6.725	6.632	-0.246	0.07	6.623	6.653	-0.113	0.31	0.68	0.69	0.67
	(6.000)	(7.000)	(0.000)	0.10	(6.000)	(6.000)	(0.000)	0.47	0.19	0.29	0.93
	[2.177]	[1.979]	[1.449]		[2.594]	[2.541]	[1.238]				
%Tot.Prof.Own.	0.294	0.348	0.061	<0.01	0.266	0.298	0.042	<0.01	0.23	0.06	0.36
	(0.282)	(0.341)	(0.037)	<0.01	(0.241)	(0.294)	(0.026)	<0.01	0.19	0.08	0.54
	[0.192]	[0.209]	[0.160]		[0.193]	[0.187]	[0.138]				
%Tot.Dir.Own.	0.142	0.118	-0.019	0.01	0.185	0.173	-0.024	<0.01	0.06	0.03	0.41
	(0.054)	(0.030)	(-0.002)	<0.01	(0.102)	(0.089)	(-0.007)	<0.01	0.04	0.01	0.22
	[0.189]	[0.169]	[0.076]		[0.210]	[0.205]	[0.050]				

(Continued)

Table 4.1 Continued **Test Period Δ3**

Panel C	Initial Loss Firms				Control Firms				*p*-value of testing Preperiod differences	*p*-value of testing Postperiod differecnes	*p*-value of testing DIDs
	n = 138	n = 102	n = 102		n = 138	n = 110	n = 110				
	Preperiod	Postperiod	Change	Sig. of Change	Preperiod	Postperiod	Change	Sig. of Change	col. (1) minus (5)	col. (2) minus (6)	col. (3) minus (7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Mean (Median) [st. dev]	Mean (Median) [st. dev]	Mean (Median) [st. dev]	Two-tailed *p*-values: *t*-test Signrank	Mean (Median) [st. dev]	Mean (Median) [st. dev]	Mean (Median) [st. dev]	Two-tailed *p*-values: *t*-test Signrank	Two-tailed *p*-values: *t*-test Signrank	Two-tailed *p*-values: *t*-test Signrank	Two-tailed *p*-values: *t*-test Signrank
Board	-0.037	0.109	0.157	0.05	-0.063	-0.000	0.107	0.05	0.78	0.61	0.96
	(-0.067)	(0.164)	(0.095)	<0.01	(0.080)	(-0.003)	(0.000)	0.05	0.57	0.46	0.71
	[0.777]	[0.978]	[0.787]		[0.853]	[0.940]	[0.555]				
Chair	0.060	0.085	0.013	0.87	-0.108	0.050	0.099	0.08	0.12	0.08	0.17
	(0.273)	(0.273)	(0.000)	0.71	('0.273)	(0.273)	(0.000)	0.18	0.12	0.07	0.21
	[0.891]	[0.912]	[0.831]		[0.903]	[0.880]	[0.590]				
Diversity	0.091	0.102	0.014	0.26	0.071	0.075	0.007	0.42	0.21	0.04	0.99
	(0.000)	(0.000)	(0.000)	0.07	(0.000)	(0.000)	(0.000)	0.65	0.24	0.06	0.87
	[0.142]	[0.150]	[0.129]		[0.118]	[0.125]	[0.097]				
Ownership	-0.033	0.260	0.299	<0.01	-0.189	-0.055	0.197	<0.01	0.09	<0.01	0.21
	(-0.001)	(0.398)	(0.226)	<0.01	(-0.178)	(0.055)	(0.155)	<0.01	0.07	<0.01	0.37
	[0.758]	[0.722]	[0.579]		[0.785]	[0.768]	[0.437]				
BSize	6.725	6.431	-0.353	0.03	6.623	6.882	-0.009	0.94	0.68	0.12	0.13
	(6.000)	(6.000)	(0.000)	0.07	(6.000)	(7.000)	(0.000)	0.68	0.19	0.29	0.13
	[2.177]	[1.932]	[1.639]		[2.594]	[2.452]	[1.303]				
%Tot.Prof.Own.	0.294	0.376	0.091	<0.01	0.266	0.302	0.055	<0.01	0.23	0.01	0.15
	(0.282)	(0.385)	(0.071)	<0.01	(0.241)	(0.293)	(0.037)	<0.01	0.19	0.02	0.26
	[0.192]	[0.208]	[0.178]		[0.193]	[0.189]	[0.142]				
%Tot.Dir.Own.	0.142	0.106	-0.024	0.02	0.185	0.170	-0.028	<0.01	0.06	<0.01	0.93
	(0.054)	(0.018)	(-0.003)	<0.01	(0.102)	(0.068)	(-0.009)	<0.01	0.04	<0.02	0.40
	[0.189]	[0.160]	[0.106]		[0.210]	[0.209]	[0.064]				

(Continued)

Table 4.1 Continued — **Test Period Δ4**

Panel D	Initial Loss Firms				Control Firms				p-value of testing Preperiod differences	p-value of testing Postperiod differecnes	p-value of testing DIDs
	n = 138	n = 114	n = 114		n = 138	n = 124	n = 124				
	Preperiod	Postperiod	Change	Sig. of Change	Preperiod	Postperiod	Change	Sig. of Change	col. (1) minus (5)	col. (2) minus (6)	col. (3) minus (7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Mean (Median) [st. dev]	Mean (Median) [st. dev]	Mean (Median) [st. dev]	Two-tailed p-values: t-test Signrank	Mean (Median) [st. dev]	Mean (Median) [st. dev]	Mean (Median) [st. dev]	Two-tailed p-values: t-test Signrank	Two-tailed p-values: t-test Signrank	Two-tailed p-values: t-test Signrank	Two-tailed p-values: t-test Signrank
Board	0.051	0.115	0.045	0.38	-0.078	-0.054	0.025	0.53	0.19	0.22	0.95
	(0.089)	(0.200)	(0.000)	0.33	(-0.067)	(-0.102)	(0.000)	0.66	0.17	0.10	0.68
	[0.837]	[0.967]	[0.550]		[0.860]	[0.908]	[0.444]				
Chair	0.064	0.171	0.119	0.05	-0.078	-0.113	-0.000	0.99	0.21	<0.01	0.10
	(0.273)	(0.614)	(0.000)	0.06	(0.272)	(0.273)	(0.000)	0.99	0.15	<0.01	0.26
	[0.901]	[0.900]	[0.655]		[0.904]	[0.893]	[0.398]				
Diversity	0.108	0.104	0.001	0.90	0.080	0.076	-0.010	0.12	0.06	0.02	0.44
	(0.000)	(0.000)	(0.000)	0.29	(0.000)	(0.000)	(0.000)	0.78	0.09	0.03	0.51
	[0.150]	[0.150]	[0.080]		[0.123]	[0.127]	[0.069]				
Ownership	0.114	0.161	0.059	0.15	-0.110	-0.070	0.097	<0.01	0.02	0.03	0.55
	(0.221)	(0.262)	(0.042)	0.04	(-0.092)	(0.019)	(0.027)	<0.01	0.02	0.02	0.66
	[0.791]	[0.762]	[0.438]		[0.768]	[0.761]	[0.338]				
BSize	6.708	6.632	-0.289	0.01	6.630	6.653	-0.113	0.18	0.76	0.69	0.46
	(6.000)	(7.000)	(0.000)	0.01	(6.000)	(6.000)	(0.000)	0.15	0.41	0.29	0.48
	[2.122]	[1.979]	[1.232]		[2.494]	[2.541]	[0.930]				
%Tot.Prof.Own.	0.337	0.348	-0.006	0.32	0.284	0.298	0.029	<0.01	0.03	0.06	0.61
	(0.333)	(0.341)	(-0.000)	<0.01	(0.282)	(0.294)	(0.006)	<0.01	0.04	0.08	0.75
	[0.207]	[0.209]	[0.063]		[0.193]	[0.187]	[0.122]				
%Tot.Dir.Own.	0.127	0.118	0.016	0.24	0.170	0.173	-0.008	0.01	0.08	0.03	0.72
	(0.048)	(0.030)	(0.009)	0.05	(0.084)	(0.089)	(-0.000)	<0.01	0.03	0.01	0.15
	[0.184]	[0.169]	[0.148]		[0.206]	[0.205]	[0.033]				

This table provides some summary statistics and includes univariate tests of significance for the corporate governance variables for the initial loss and control samples for time periods from time t-1 to t + 2, as well as tests of the difference in the Pre- and Post-period values between the initial loss and control samples and tests of the difference-in-difference (DID) between the initial loss and control samples for the test periods Δ1, Δ2, Δ3 and Δ4 in panels A, B, C and D, respectively. Time t includes panel data from years 2004, 2005 and 2006. The collection and matching of the initial loss and control samples is detailed in Chapter 3. The decrease in the number of firms (initial loss and control) across time is due to firms liquidating or being acquired. The corporate governance variables Board, Chair, Diversity, Ownership and BSize as well as %Tot.Prof.Own. and %Tot. Dir.Own. are as constructed, discussed and winsorized in Chapter 3.

Table 4.1, Panel A includes the corporate governance levels in each of (t – 1) and t as well as the corporate governance changes during this one year test period (Δ1) and the difference in these changes between the initial loss and control samples. These results indicate (Column 4) that initial loss firms improve the underlying quality of corporate governance of their Board, Diversity and Ownership in the year preceding the initial loss event, i.e. in the fiscal year before the initial loss is reported. Looking at % Tot. Prof. Own. and % Tot. Dir. Own., the improvement in Ownership is driven by outside, professional owners buying the shares in the year before the initial loss at the same time that inside director owners are selling. However, these results need to be interpreted carefully because there is a similar improvement in Ownership (with p <0.01/<0.01 for the mean/median) in the control sample (Column 8) which is also due to the same significant increase and decrease in % Tot. Prof. Own. and % Tot. Dir. Own., respectively, exhibited in the initial loss sample. The p-values in Columns 9 and 10 measure the differences between the initial loss and control samples at the start and end of the one year time period, respectively. These results (Column 9) show that, with the exception of Ownership (p = 0.09/0.07 for the mean/median), there is no statistical difference between the starting values between the initial loss and control samples. The difference in the starting period between the initial loss and control samples is a result of directors (% Tot. Dir. Own.) of initial loss firms owning a lower proportion of the shares in their companies versus the control sample. At the end of the period, the results (Column 10) show that there is a statistically significant difference between the initial loss and control samples in the two corporate governance variables Diversity (p = 0.06/0.09 for the mean/median) and Ownership (p = 0.02/0.02 for the mean/median). The Ownership values are driven by higher ownership by professional shareholders (% Tot. Prof. Own.) (p = 0.03/0.04 for the mean/median) and lower ownership by director shareholders (% Tot. Dir. Own.) (p = 0.08/0.03 for the mean/median) for the initial loss versus control sample. Column 11 displays the difference in the changes between the initial loss and control samples exhibited in the period. These results are significant for Board and Ownership (p = 0.07/0.07 and 0.04/0.04 for the means/medians for Board and Ownership, respectively). The Ownership values are driven by a significantly larger increase in the percentage of professional shareholders on the registers of initial loss firms versus control firms during the test period.

Table 4.1, Panel B includes the corporate governance levels in each of (t – 1) and (t + 1) as well as the corporate governance changes during this two year test period (Δ2) and the difference in these changes between the initial loss and control samples. The results indicate (Column 4) that initial loss firms improve the underlying quality of corporate governance for all of the corporate governance variables in this period, i.e. the mean/median p-values for Board (<0.01/<0.01), Chair (0.09/0.05), Diversity (0.07/0.03), Ownership (<0.01/<0.01), and Size (0.07/0.10) are all significant. Looking at % Tot. Prof. Own. and % Tot. Dir. Own., the improvement in Ownership is again driven by outside, professional owners buying the shares in the year before the initial loss at the same time that inside director owners are selling. However, similar to the results in Panel A, these results need to be interpreted carefully because there is a similar improvement in Ownership (with p = <0.01/<0.01 for the mean/median) in the control sample (Column 8) which is also due to a similar significant increase and decrease in % Tot. Prof. Own. and % Tot. Dir. Own., respectively, exhibited in the initial loss sample. At the end of the two year period, the results (Column 10) shows that there is a statistically significant difference between the initial loss and control samples for the Chair (p = <0.01/<0.01 for the mean/median), Diversity (p = 0.02/0.03 for the mean/median) and Ownership (p = 0.03/0.02 for the mean/median) and Board but only for the median value (p = 0.10). The Ownership values are driven by higher % Tot. Prof. Own. (p = 0.06/0.08 for the mean/median) and lower % Tot. Dir. Own. (p = 0.03/0.01 for the mean/median) for the initial loss versus control sample. Column 11 displays the difference in the changes between the initial loss and control samples exhibited over the two year test period ($\Delta 2$); these results are not significant for any variable.

Table 4.1, Panel C includes the corporate governance levels in each of (t – 1) and (t + 2) as well as the corporate governance changes during this three year test period ($\Delta 3$) and the difference in these changes between the initial loss and control samples. The results indicate (Column 4) that, for the initial loss sample, the underlying quality of corporate governance improves for all of the corporate governance variables with the exception of Chair over this period. The mean/median p-values for Board (0.05/<0.01), Diversity (0.26/0.07), Ownership (<0.01/<0.01), and Size (0.03/0.07) are all significant for the median. Similar to Panels A and B, the improvement in Ownership is driven by a significant increase in % Tot. Prof. Own. and a significant decrease in % Tot. Dir. Own. Only Ownership with p = <0.01/<0.01 for the mean/median exhibits the same significant change for the control sample (Column 8) as the same increase in % Tot. Prof. Own. and decrease in % Tot. Dir. Own. observed for the initial loss samples are present in the control sample. At the end of the two year period, the results (Column 10) shows that there is a statistically significant difference between the initial loss and control samples for the Chair (p = 0.08/0.07 for the mean/median), Diversity (p = 0.04/0.06 for the mean/median) and Ownership (p = <0.01/<0.01 for the mean/median). The difference for the Ownership variable is driven by the fact that % Tot. Prof. Own. and % Tot. Dir. Own. are significantly higher and lower, respectively, in the initial loss sample versus the control sample at the end of the period. However, the results from Column 11 indicate that the difference in the changes between the initial loss and control samples over the three year test period Δ3 are not significant for any variable.

Table 4.1, Panel D includes the corporate governance levels in each of t and (t + 1) as well as the corporate governance changes during this one year test period (Δ4) and the difference in these changes between the initial loss and control samples. The results indicate (Column 4) that, for the initial loss sample, the underlying quality of corporate governance improves for Chair and BSize over this period; the mean/median p-values for Chair (0.05/0.06) and BSize (0.01/0.01). There is also a significant increase in Ownership, but this is significant for the median only (p = 0.04) driven by an increase in % Tot. Prof. Own. (median p < 0.01) and a decrease in % Tot. Dir. Own. (median p = 0.05). Ownership also increases significantly for the control sample where with p-values both < 0.01, both the mean and median are significant. The significance of the ownership variable is driven by an increase in % Tot. Prof. Own. (<0.01/<0.01) during the period. At the start of the period, the results

(Column 9) indicate that there is a statistically significant difference between the initial loss and control samples for the Diversity and Ownership variables with mean/median *p*-values of 0.06/0.09 and 0.02/0.02 for these variables, respectively. The significance in the Ownership variable is driven by the fact that % Tot. Prof. Own. is higher and % Tot. Dir. Own. is lower for the initial loss sample versus the control sample at the start of the period. At the end of the period the results show that there is a statistically significant difference between the initial loss and control samples for the Chair (p <0.01 for both the mean and median), Diversity (p = 0.02/0.03 for the mean/median) and Ownership (p = 0.03/0.02 for the mean/median) — there is also a significant difference for Board at the end of the period but only for the median (p = 0.10). The difference for the Ownership variable is again driven by the fact that % Tot. Prof. Own. and % Tot. Dir. Own. are significantly higher and lower, respectively, in the initial loss sample versus the control sample at the end of the period with *p*-values of 0.06/0.08 and 0.03/0.01 for the mean/median for each of these variables, respectively. However, the results from Column 11 indicate that with the exception of Chair with a *p*-value = 0.10 for the mean, the difference in the changes between the initial loss and control samples for the Δ4 test period are not significant for any variable.

In sum, this study finds that at the beginning of the year prior to the initial loss event (Column 9 of Panels A, B and C), with the exception of Ownership related variables, there is no obvious discernible difference in the corporate governance variables between initial loss and control firms. It is noted that at time (t – 1) the Ownership variables are, per the entrenchment hypothesis, "worse" for the control sample. In other words, the related endogeneity problem raised in section 3.7.3 of Chapter 3 is also not a problem for this study, i.e. if corporate governance for the initial loss sample at time (t – 1) is at least equivalent to that for the control sample, then it cannot be argued that the state of corporate governance at time (t – 1) caused the initial loss. Thus initial losses are exogenous to the standard of corporate governance at time (t – 1).

This study surmises from the univariate analysis that the initial loss event *does* appear to be a catalyst for an improvement in corporate governance for initial loss firms (Column 4 of Panels A, B and C). It is also evident that much of this improvement occurs in anticipation of the initial loss event for Board and Ownership (i.e. $\Delta 1$ in Figure 4.1 and Column 4 of Panel A) confirming the decision to collect corporate governance information in the year before the initial loss event to capture these anticipatory changes. For all variables, any corporate governance change in the initial loss versus the control sample precipitated by the initial loss event seems to be complete by the end of period (t + 1). The results of the univariate tests regarding any difference in corporate governance changes between the initial loss and control samples are less compelling — only the Board and Ownership difference-in-differences (Column 11) in Panel A are significant — such that a more thorough multivariate analysis is required to formally test any causal relationship between the initial loss event and corporate governance changes. Based on the significance of the results for the initial loss sample in Panels A and B of Table 4.1, this study will use the test periods from (t – 1) to t and (t – 1) to (t + 1) for the multivariate analyses to follow.

4.4 The Average Effect of an Initial Loss Event on Corporate Governance

Having identified the likely timing of changes around the initial loss event for the various corporate governance variables in the previous section to select the test periods as (t – 1) to t and (t – 1) to (t + 1), this section purports to formally test the preliminary observations from the univariate analysis in the context of the return environment in which the initial loss event occurred.

The inclusion of return as an independent variable in the model is to provide a context for the initial loss event. That is, the initial loss event is but one (albeit salient) piece of information about the initial loss firm from a potentially much richer information environment about the company. The return variable acts as a compound control variable providing information regarding the market's interpretation of information about firms such that particularly good/bad returns will reflect particularly good/bad information. Descriptive statistics of the 12- and contemporaneous 24-month returns are included in Table 4.2.

Table 4.2 Descriptive Statistics of Return

Panel A: 12-Month Return from Period (*t* - 1) to *t*

	Obs.	Mean	Std. Dev.	Median	Min	Max	Skewness	Kurtosis	Normality
Initial Loss	138	0.038	0.449	0.026	-0.840	1.887	0.956	5.685	0.000
Control	138	0.225	0.375	0.189	-0.686	1.692	0.922	4.997	0.000
Combined	276	0.132	0.423	0.114	-0.840	1.887	0.775	5.160	0.000

Panel B: 24-Month Contemporaneous Return from Period (*t* - 1) to (*t* + 1)

	Obs.	Mean	Std. Dev.	Median	Min	Max	Skewness	Kurtosis	Normality
Initial Loss	114	0.169	0.719	0.038	-0.931	3.537	1.318	6.494	0.000
Control	124	0.476	0.754	0.339	-0.866	3.537	1.768	7.782	0.000
Combined	238	0.329	0.752	0.220	-0.931	3.537	1.499	7.145	0.000

The 12-month return in this study is calculated from 6-months before the financial year end to 6-months after as follows:

$$r_t = \left[\frac{P_t - P_{t-1}}{P_{t-1}}\right] + D_{t-1}$$

where P is the price and D is the twelve month forward dividend yield. The 24-month is calculated from 6-months before the event to 18-months after the event. The 24-month return assumes that any interim dividends are reinvested back into the firm which means that D_t must also be adjusted to account for any capital gain/loss in the second twelve month period. Also, because the information on dividend yield collected in this study are annual yields and our comprehensive return calculation is a twenty four month measure, then D_{t+1} must also be adjusted to starting price P_{t-1} from P_t. Our comprehensive measure of return is then:

$$r_t = \left[\frac{P_{t+1} - P_{t-1}}{P_{t-1}}\right] + [D_t * (1 + Capital\ Gain_{t+1})] + \left[D_{t+1} * \left(\frac{P_t}{P_{t-1}}\right)\right]$$

where

$$Capital\ Gain_{t+1} = \left[\frac{P_{t+1} - P_t}{P_t}\right]$$

A perusal of the results in Table 4.2 where the 12-month Return for the initial loss sample has a mean and median of 3.8% and 2.6%, respectively, and a range from -84.0% to 188.7% and the 12-month Return for the control sample has a mean and median of 22.5% and 18.9%, respectively, with a range from -68.6% to 169.2%, shows the difference in Return between the two samples and indicates that the initial loss event is meaningful in economic terms. Formal tests of the differences in means and medians confirms these indications — the results (not tabulated) of a comparison of means test and sign rank test are all significant with $p < 0.01$. The descriptive statistics for the 24-month contemporaneous return initial loss and control samples, though larger, are broadly similar to those of the 12-month return and the significance of the tests of difference are both similarly significant with $p < 0.01$.

The multivariate analysis in this section attempts to isolate the influence the initial loss from other variables insofar as the compound information content from those other variables is priced correctly by the market (i.e. is reflected in returns) for both initial loss and control firms and so allows a more comprehensive analysis of corporate governance changes than that performed in the univariate analysis. If the results from the analysis in this section corroborate the tentative results from the preliminary univariate analysis in section 4.3, then we can specifically attribute any difference in observed corporate governance changes between the initial loss and control samples to the initial loss event rather than to any other variables from the broader information environment (controlled for by the matched sample).

To test H4.1, the impact of the initial loss event, this study therefore focuses on the difference in corporate governance changes between the initial loss and control firms for the test-periods Δ1 and Δ2 from Figure 4.1 in a model of linear regression,

$$\Delta GOV = \beta + \delta D_{Loss\ t} + \theta Return + \varepsilon \qquad 4.1$$

where

$$D_{Loss\ t} = \begin{cases} 1 & for\ loss\ sample \\ 0 & for\ control\ sample \end{cases}$$

and GOV represents separately each of the individual corporate governance variables Board, Chair, Diversity, Ownership and BSize such that ΔGOV represents the change in corporate governance during the test period and $Return$ is the return over the test period representing the pricing of all other variables that might influence corporate governance changes over the period in addition to the initial loss event. Constructed thus, the intercept, β, reflects the underlying change in corporate governance for the control sample and δ represents the difference in the change in corporate governance between the initial loss and control samples such that $(\beta + \delta)$ represents the change in corporate governance for initial loss firms during the test period.

4.4.1 Empirical Results

The results of this analysis for the test periods Δ1 and Δ2 are included in Panels A and B, respectively, of Table 4.3. Consistent with prior corporate governance research on the impact of shocks on corporate governance changes (Young, 2000; Farber, 2005), the initial loss event is shown to precipitate an improvement in corporate governance. That is, the results of the two tailed test of significance included at the end of Panel A of Table 4.3 (i.e. a Wald test) that $Intercept + D_{LOSS\,t} = 0$ is rejected in for Board, Diversity and Ownership with p-values of 0.03, < 0.01 and < 0.01, respectively. These results show that for these variables, corporate governance increases quickly in anticipation of the reporting of the initial loss. The results over the longer time period included in Panel B of Table 4.3 are even more compelling. That hypothesis that $Intercept + D_{LOSS\,t} = 0$ is rejected in each of the five corporate governance specifications with p-values < 0.01 for the Board and Ownership specifications and p = 0.03, 0.05 and 0.04 for the Chair, Diversity and BSize specifications, respectively.

Table 4.3 **Testing the Average Effect of an Inital Loss Event on Corporate Governance**

$$\Delta\ Gov = \beta + \delta D_{LOSS\ t} + \theta Return + \varepsilon$$

Panel A Test Period Δ1

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	-0.025	0.052	0.009	0.104	-0.007
	(-0.56)	(1.54)	(1.33)	(3.93)***	(-0.07)
$\boldsymbol{D_{LOSS\ t}}$	**0.113**	**-0.037**	**0.010**	**0.054**	**-0.032**
	(1.90)*	**(-0.82)**	**(1.19)**	**(1.51)**	**(-0.24)**
Return	0.041	-0.010	0.002	-0.114	0.064
	(0.58)	(-1.83)*	(0.15)	(-2.67)***	(0.41)
n	276	238	238	238	238
R^2	1.3%	1.0%	1.0%	4.0%	1.0%
Two-Tailed *p*-values for Tests of Significance of Loss Firms					
$Intercept + D_{LOSS\ t} = 0$	0.03	0.64	<0.01	<0.01	0.66

Panel B Test Period Δ2

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	0.016	0.054	0.003	0.205	-0.152
	(0.25)	(0.86)	(0.29)	(4.68)***	(-1.14)
$\boldsymbol{D_{LOSS\ t}}$	**0.157**	**0.074**	**0.015**	**0.017**	**-0.107**
	(1.84)*	**(0.88)**	**(1.17)**	**(0.30)**	**(-0.60)**
Return	0.031	-0.043	0.0025	-0.079	0.082
	(0.55)	(-0.78)	(0.60)	(-2.03)**	(0.69)
n	238	238	238	238	238
R^2	1.4%	1.0%	1.0%	1.9%	1.0%
Two-Tailed *p*-values for Tests of Significance of Loss Firms					
$Intercept + D_{LOSS\ t} = 0$	<0.01	0.03	0.05	<0.01	0.04

Table 4.3 Continued

This table reports the results of testing the effect of an initial loss on corporate governance. The test (loss sample) consists of 119 firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of 119 firms matched for industry and market value which reported a profit in each of year *t* - 2 to *t* + 2. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively.

Variable Definitions:

Δ *Gov* = the change in governance during the test period (i.e. Δ1 or Δ2). The method by which the governance variables are calculated is detailed in Chapter 3.

$D_{LOSS\,t}$ = a dummy variable equal to one for firms that report a loss, and zero otherwise.

Return = the stock market return over the test period calculated for test period Δ1 as:

$$r_t = \left[\frac{P_t - P_{t-1}}{P_{t-1}}\right] + D_t$$

where D_t is the twelve month forward dividend yield and for test period Δ2 as:

$$r_t = \left[\frac{P_{t+1} - P_{t-1}}{P_{t-1}}\right] + [D_t * (1 + Capital\ Gain_{t+1})] + \left[D_{t+1} * \left(\frac{P_t}{P_{t-1}}\right)\right]$$

where

$$Capital\ Gain_{t+1} = \left[\frac{P_{t+1} - P_t}{P_t}\right]$$

and D_t and D_{t+1} are the twelve month forward dividend yields.

However, notwithstanding the significance of these results for the initial loss sample, it is the significance of the difference of these results from the control sample that is the focus of this study. In that regard (and the reason the difference in differences analysis was constructed as it is in equation 4.1) the coefficient of interest in this study is $D_{LOSS\,t}$, the difference in the corporate governance changes between the initial loss and control samples. The results in Panels A and B of Table 4.3 indicate that, on average, for only the Board specification do initial loss firms exhibit any incremental change (improvement) in corporate governance over and above the control sample and then at only the 10% level. The significant intercept values in the

Ownership specification in Panels A and B with mean (t-stat) equal to 0.113 (t = 1.90) and 0.205 (t = 4.68), respectively, indicate the control sample is, on average, also improving Ownership during the test-periods. The improving Ownership for the control sample was previously determined in Panels A and B of Table 4.3 to be a function of professional holders (% Tot. Prof. Own.) buying and director shareholders (% Tot. Dir. Own.) selling during the test periods. A separate analysis of % Tot. Prof. Own. and % Tot. Dir. Own. is included in section 4.5.4.

Overall, the absence of compellingly strong results from the univariate analysis in Table 4.1 are reaffirmed in Table 4.3. This study is unable to conclusively reject H4.1.

4.5 A Further Examination of the Effect of an Initial Loss Event on Corporate Governance

The preceding analyses (both the univariate and multivariate analyses) test the *average* effect of an initial loss event on corporate governance. That is, there is an assumption that whatever the association between the initial loss event and corporate governance changes that this association is the same for all initial loss firms. This might not be a valid assumption if initial loss firms with different characteristics could be reasonably expected to induce a different corporate governance response to the initial loss event. There is evidence that the market's interpretation of accounting earnings or losses is always conditioned on other non-accounting information available (e.g. Freeman, 1987; El-Gazzar, 1998). It is also likely that a firm which can claim to have good standard of corporate governance when the loss is imminent will not perceive a need to alter it because of its poor performance. The literature analysed in Chapter 2 affirms that the severity of the shock can have a conditioning role to play on the relationship being tested. Accordingly we extend the previous analysis to take account of other information available to investors — the standard of the firm's corporate governance in the year before the loss.

This study utilizes the pre-period corporate governance as a conditioning variable to examine whether the corporate governance response to an initial loss event is the same for initial loss firms with high pre-period corporate governance as for initial loss firms with low pre-period governance. This is similar to the conditioning of board changes in Young (2000) where the pre- and post-impact of Cadbury was at issue. The expectation for this study is that initial loss firms with high quality pre-period corporate governance have less to fear from any analysis of their corporate governance that an initial loss event might induce, and so have less cause to make improvements. That is, their corporate governance is already appropriate; no changes are necessary and none are made in anticipation of or in response to the initial loss. The opposite could be postulated for those initial loss firms with low quality pre-period corporate governance where the initial loss event might induce an analysis of their corporate governance which might not be favourable causing the equilibrium to unstick and governance to improve. That is, their corporate governance is not appropriate; changes are necessary and are made in anticipation of or in response to the initial loss.

The hypothesis to perform this analysis, stated in the null form, is:

H4.2: *ex-ante* corporate governance quality has no effect on the association between the reporting of an initial loss and corporate governance changes.

4.5.1 Corporate Governance Conditioning Variables

To perform these analysis in this section, the five corporate governance variables already constructed and described in Chapter 3 of this study (i.e. Board, Chair, Diversity, Ownership and BSize) are grouped into high and low categories at time (t – 1) based on their mean values. The selection of (t – 1) is important to avoid the endogeneity problem; it cannot be argued that the change in corporate governance after (t – 1) influences the corporate governance level at (t – 1). The lagging of variables in this manner avoids the simultaneous causation problem discussed previously in this chapter and in Chapter 4.

Given that when calculating the Board, Chair and Ownership in Chapter 3 these variables are constructed such that their means = 0, the separation of these variables is straight forward. The variables are separated as follows:

(1) A high quality Board group with a value of 1 if Board > 0 in time (t – 1), otherwise 0, and a low quality Board group with a value of 1 if Board < 0 in time (t – 1), otherwise 0

(2) A high quality Chair group with a value of 1 if Chair > 0 in time (t – 1), otherwise 0 and a low quality Chair group with a value of 1 if Chair < 0 in time (t – 1), otherwise 0

(3) A high quality Ownership group with a value of 1 if Ownership > 0 in time (t – 1), otherwise 0 and a low quality Ownership group with a value of 1 if Ownership < 0 in time (t – 1), otherwise 0.

As a result of the same construction process that resulted in the zero means for these variables, their standard deviations are also close to 1. As a result, the separation of Board, Chair and Ownership by their means results in high and low quality board groups in time (t – 1) that are almost identical to those if the variables had been separated based on medians (results not reported here). Similarly, because of the number of firms with Diversity equal to zero and the fact that BSize can only be a whole number, splitting these variables based on their means results in the same groups as if they were split based on their respective medians, 0 and 6. The interpretation of the partitioned BSize variable is, however, slightly different to the other variables, i.e. the partitioning decision for this variable is whether a board is smaller/larger than the mean rather than worse quality/better quality than the mean. Therefore these two corporate governance variables are separated as follows:

(4) A high quality Diversity group with a value of 1 if Diversity ≥ 0 in time (t – 1), otherwise 0, and a low quality Diversity group with a value of 1 if Diversity = 0 in time (t – 1), otherwise 0, and

(5) A high BSize group with a value of 1 if BSize > 6 in time (t – 1), otherwise 0, and a low BSize group with a value of 1 if BSize ≤ 6 in time (t – 1), otherwise 0.

The distribution of these corporate governance subgroups, divided based on pre-period governance, is detailed in Table 4.4 where it is evident that there is a good spread across the high and low categories for all of the variables such that each of the high and low groups have sufficient sample size. These observed values for the various conditioning corporate governance variables can be tested for independence between the two categories (initial loss and control) and the two groups (low corporate governance and high corporate governance) by two-way Chi-Square test. The calculated values (χ^2_{calc}) are 0.014, 1.769, 0.274, 2.109 and 0.059 for Board, Chair, Diversity, Ownership and BSize, respectively. When compared with the critical values (χ^2_{crit}) at the 1% level with 1 degree of freedom (i.e. 6.635) it is evident that there is no significant difference in corporate governance between the initial loss and control categories, i.e. ($\chi^2_{calc} < \chi^2_{crit}$) and so the null hypothesis that the two distributions are the same is verified.

The results of this test are not trivial. They, once again, reaffirm the findings from Table 4.1 regarding the equivalence of pre-period corporate governance for the initial loss and control firms, i.e. that initial losses are exogenous to the standard of corporate governance at time (t – 1) and reinforces the suitability of pre-period corporate governance as a valid conditioning variable in this study.

Table 4.4 Distributions of the Initial Loss and Control Firms by Corporate Governance Characteristics: Partitioned Based on the Pre-Period Mean Values

Corporate Governance Characteristic		Low Governance	High Governance	Total
Board	No. Loss Firms	71	67	138
		(71)	(68)	
	No. Control Firms	70	68	138
		(71)	(68)	
	Total	141	135	276
		χ^2 =	0.0145	
Chair	No. Loss Firms	57	81	138
		(63)	(76)	
	No. Control Firms	68	70	138
		(63)	(76)	
	Total	125	151	276
		χ^2 =	1.769	
Diversity	No. Loss Firms	94	44	138
		(96)	(42)	
	No. Control Firms	98	40	138
		(96)	(42)	
	Total	192	84	276
		χ^2 =	0.274	
Ownership	No. Loss Firms	70	68	138
		(76)	(62)	
	No. Control Firms	82	56	138
		(76)	(62)	
	Total	152	124	276
		χ^2 =	2.109	
Size	No. Loss Firms	76	62	138
		(77)	(61)	
	No. Control Firms	78	60	138
		(77)	(61)	
	Total	154	122	276
		χ^2 =	0.059	

(Continued)

Table 4.4 Continued

This table shows the results from partitioning the loss and control firms into groups based on the pre-period corporate governance quality. The sample is partitioned based upon pre-period mean values which for the already normalised Board, Chair and Ownership variables is 0, and for Diversity and Size corresponds to the median values which are 0 and 6, respectively.

The formula for calculating the Chi-Square test is:

$$\chi^2 = \Sigma \left[\frac{(F_O - F_e)^2}{F_e}\right]$$

where F_o is the observed value and F_e is the expected value in each case. The expected value for each case is calculated as (row total * column total)/total. The number of degrees of freedom for the two-way Chi-Square is 1.

4.5.2 Empirical Results

This section employs the same difference-in-difference research design over the sample test period as in section 4.4 to examine hypothesis 4.2.

To test the mitigating impact of pre-period corporate governance quality on the association between the reporting of an initial loss event and corporate governance changes versus the control sample, this study estimates the following equation which is equation 3.4 modified for the variables used in this study as follows:

$$\Delta GOV = \beta + \delta_1 D_{LOSS\,t} * D_{LOWGOV\,t-1} + \delta_2 D_{LOSS\,t} * D_{HIGHGOV\,t-1} + \theta Return + \varepsilon \quad (4.2)$$

where the variables are as previously explained. Constructed thus, the intercept reflects the underlying change in corporate governance during the test period for the entire control sample — a valid comparator given the equivalence of the samples demonstrated in Tables 4.1 and 4.4. $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ reflects the difference in the differences in corporate governance across the test period between initial loss firms with low quality *ex-ante* corporate governance quality and the entire control sample and $D_{LOSS\,t} * D_{HIGHGOV\,t-1}$ reflects the difference in the differences in corporate governance across the test period between initial loss firms with high quality *ex-ante* corporate governance quality and the entire control sample.

The results of estimating equation 4.2 for the test periods Δ1 and Δ2 are included in Panels A and B, respectively, of Table 4.5. Tests conducted for the high and low quality corporate governance initial loss sub-samples included at the end of Panels A and B of Table 4.4, i.e. testing whether that $Intercept + D_{LOSS\,t} * D_{LOWGOV\,t-1} = 0$ and $Intercept + D_{LOSS\,t} * D_{HIGHGOV\,t-1} = 0$, indicate that the coefficients for the $D_{LOWGOV\,t-1}$ subsample are all significant with most coefficients significant at the < 0.01 level. In other words initial loss firms with low quality *ex-ante* corporate governance increase their corporate governance quality during the test period in anticipation of and in response to the initial loss event. The absence of similar universally significant results for the $D_{HIGHGOV\,t-1}$ initial loss subsample is noteworthy. That is, initial loss firms with high quality *ex-ante* corporate governance mostly do not change their corporate governance during the test period in anticipation of and in response to the initial loss event, i.e. governance does not unstick.

Table 4.5 **Testing the Effect of an Initial Loss Event on Corporate Governance Conditioned by Corporate Governance Characteristics**

$$\Delta\ Gov = \beta + \delta_1 D_{LOSS\ t} * D_{LOWGOV\ t-1} + \delta_2 D_{LOSS\ t} * D_{HIGHGOV\ t-1} + \theta Return + \varepsilon$$

Panel A **Test Period Δ1**

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	-0.026	0.053	0.009	0.105	-0.005
	(-0.59)	(1.57)	(1.34)	(3.97)***	(-0.06)
$\boldsymbol{D_{LOSS\ t} * D_{LOWGOV\ t-1}}$	**0.183**	**0.050**	**0.014**	**0.092**	**0.202**
	(2.56)**	**(0.85)**	**(1.44)**	**(2.14)****	**(1.32)**
$D_{LOSS\ t} * D_{HIGHGOV\ t-1}$	0.040	-0.101	0.003	0.013	-0.319
	(0.55)	(-1.91)*	(0.27)	(0.30)	(-1.94)*
Return	0.046	-0.103	0.001	-0.117	0.056
	(0.66)	(1.91)*	(0.14)	(-2.75)***	(0.36)
n	276	276	276	276	276
R^2	2.4%	3.3%	1.0%	5.0%	3.0%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t} * D_{LOWGOV\ t-1} + Intercept = 0$					
	<0.01	0.04	<0.01	<0.01	0.02
$D_{LOSS\ t} * D_{HIGHGOV\ t-1} + Intercept = 0$					
	0.81	0.25	0.27	<0.01	0.11
$D_{LOSS\ t} * D_{LOWGOV\ t-1} = D_{LOSS\ t} * D_{HIGHGOV\ t-1}$					
	0.08	0.02	0.42	0.10	<0.01

(Continued)

Table 4.5 Continued

Panel B Test Period Δ2

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	0.016	0.059	0.003	0.206	-0.146
	(0.25)	(1.01)	(0.37)	(4.81)***	(-1.16)
$\boldsymbol{D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1}}$	**0.217**	**0.446**	**0.033**	**0.150**	**0.512**
	(2.13)**	**(4.38)*****	**(2.39)****	**(2.16)****	**(2.50)****
$D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1}$	0.087	-0.194	-0.0287	-0.122	-0.757
	(0.82)	(-2.13)**	(-1.44)	(-1.73)*	(-3.64)***
Return	0.032	-0.055	0.004	-0.082	0.069
	(0.57)	(-1.06)	(0.43)	(-2.14)**	(0.61)
n	238	238	238	238	238
R^2	1.9%	12.8%	4.5%	6.5%	11.2%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} + Intercept = 0$					
	<0.01	<0.01	<0.01	<0.01	<0.01
$D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1} + Intercept = 0$					
	0.25	0.06	0.15	0.15	<0.01
$D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1}$					
	0.28	<0.01	<0.01	<0.01	0.03

This table reports the results of testing the effect of a loss on corporate governance. The test (loss sample) consists of 119 firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of 119 firms matched for industry and market value which reported a profit in each of year *t* - 2 to *t* + 2. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively.

(Continued)

Table 4.5 Continued

Variable Definitions:

Δ *Gov* =	the change in governance during the test period (i.e. Δ1 or Δ2). The method by which the governance variables are calculated is detailed in Chapter 3.
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss, and zero otherwise.
$D_{LOWGOV\,t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value below the mean in the year before the loss, and zero otherwise
$D_{HIGHGOV\,t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value above the mean in the year before the loss, and zero otherwise.
Return =	the stock market return over the test period calculated for test period Δ1 as:

$$r_t = \left[\frac{P_t - P_{t-1}}{P_{t-1}}\right] + D_t$$

where D_t is the twelve month forward dividend yield and for test period Δ2 as:

$$r_t = \left[\frac{P_{t+1} - P_{t-1}}{P_{t-1}}\right] + [D_t * \ (1 + Capital\ Gain_{t+1})] + \left[D_{t+1} * \left(\frac{P_t}{P_{t-1}}\right)\right]$$

where

$$Capital\ Gain_{t+1} = \left[\frac{P_{t+1} - P_t}{P_t}\right]$$

That said, however, the primary coefficient of interest in both Panels A and B of Tables 4.5 is $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ on its own. The results in Panel A indicate that, with a mean (*t*-stat) of 0.183 (*t* = 2.56) and 0.092 (*t* = 2.14) for the Board and Ownership, respectively, the corporate governance change (an improvement — positive change — in both cases) for initial loss firms with *ex-ante* quality low corporate governance is significantly different at the 5.0% level from the control sample. The results in Panel B for the longer test period are even more compelling. These indicate that, with a mean (*t*-stat) of 0.217 (*t* = 2.13), 0.446 (*t* = 4.38), 0.033 (*t* = 2.39), 0.150 (*t* = 2.16) and 0.512 (*t* = 2.50) for each of the Board, Chair, Diversity, Ownership and BSize specifications, respectively, the corporate governance change (a positive change — in all cases) for initial loss firms with *ex-ante* low quality corporate governance is not only significant in its own right (as discussed in the previous paragraph) but is significantly different from the control sample.

For the Chair specification an interesting finding are the significant coefficients on the $D_{LOSS\ t} * D_{HIGHGOV\ t-1}$ variables in both Panels A and B of Table 4.5 with means (*t*-stats) of -0.101 (t = -1.91) and -0.194 (t = -2.13), respectively, indicating that the amount by which initial loss firms with an *ex-ante* high quality Chair change the quality of the Chair in anticipation of (or in response to) the initial loss is significantly lower than the control sample. That is, summing the coefficients, firms with independent chairs actually revert to appointing a current/previous insider as Chair, perhaps because of their being better equipped to lead the firm back to profitability (Brickley *et al*. (1997). However, when Ownership is the dependent variable the significantly negative coefficient on $D_{LOSS\ t} * D_{HIGHGOV\ t-1}$ indicates that the underlying increase in Ownership in response to the initial loss event by the sub-sample of loss firms with high quality *ex-ante* Ownership is lower than that for the control sample. The overall response for the sub-sample itself is still insignificant, i.e. $\beta + \delta_2$ = 0.206 – 0.122 = 0.084 (p = 0.15). This contrasts with the equivalent test for $\beta + \delta_1$ which is invariably positive and significant (see the pre-penultimate rows of Panels A and B of Table 4.5).

The interpretation of the coefficients on the initial loss sub-samples in the BSize specification is slightly different to the interpretation for the other corporate governance specifications. This is because, as discussed in Section 4.5.1, low/high corporate governance in the BSize specification does not necessarily indicate low/high quality governance. Because of the way this variable was constructed in section 4.5.1, the starting point is smaller/larger than the mean rather than worse quality/better quality than the mean. Therefore the coefficient on $D_{LOSS\,t} * D_{HIGHGOV\,t-1}$ for the BSize specification with mean (*t*-stat) equal to -0.319 (*t* = -1.94) and -0.757 (*t* = -3.64) in Panels A and B of Table 4.5, respectively indicates that the amount those initial loss firms with a large board (relative to the mean) decrease the size of their board in anticipation of/in response to the initial loss is significantly different from the statistically significant change (decrease) occurring contemporaneously for the control sample captured by the negative intercept values for both test periods. That is, initial loss firms with relatively small boards *ex-ante* tend to increase the size of their boards and initial loss firms with relatively large boards *ex-ante* tend to decrease the size of their boards in response to the initial loss (this is especially evident in the results for BSize in Panel B of Table 4.5).

Another way to analyse the results in Table 4.5 is to compare the two sub-samples of initial loss firms to one another, i.e. compare the corporate governance changes in the $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ sample with that of the $D_{LOSS\,t} * D_{HIGHGOV\,t-1}$ sample. The two-tailed test of comparison (i.e. a Wald test) necessary to perform this analysis is included at the end of Panels A and B in Table 4.5. These results compare the impact of the initial loss event for these sub samples not to the control sample, but to each other, i.e. to test the hypothesis that $D_{LOSS\,t} * D_{LOWGOV\,t-1}$= $D_{LOSS\,t} * D_{HIGHGOV\,t-1}$. The results in Panel A indicate that for only the Diversity specification is the response of the two sub-samples not different from each other; in all other specification the sub-samples are different from each other at at least the 10% level. The results in Panel B for the longer test period are even more compelling. In only the Board specification (p = 0.28) is the difference not significant at p < 0.05 but this is not a concern given the (more important) significance of the difference between $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ and the control sample for the Board specification and the fact that, as indicated in Table 4.3, the unconditioned initial loss event induces a statistically significant improvement in the Board, i.e. absent any conditioning by *ex-ante* Board quality.

This study also notes that some of the changes in governance such as changing board size and replacing the chairman with and executive chairman can be interpreted as rebalancing governance rather than strictly improving it. This is not surprising since one cannot be definitive about what the optimum governance structure is for a firm. Thus it can be inferred that the loss generally has a far more significant effect on the corporate governance of companies where, *ex-ante*, it might be perceived as relatively poor and this effect is positive and robust to the information environment of the firm. Therefore, this study rejects hypothesis H4.2 and can state that *ex-ante* corporate governance quality has an impact on the association between the impact of an initial loss and corporate governance changes.

It could be argued that the inclusion of contemporaneous Return is not ideal insofar as Return will also reflect the impact of the initial loss event during the period that this study is attempting to isolate, i.e. including both Return and $D_{LOSS\,t}$ might introduce multicollinearity into the equation. Indeed, it could also be argued that the inclusion of *any* control variables is not necessary in a DID analysis. Therefore, in order to test the robustness of the results, equation 4.2 is retested with the exclusion of the Return control variable. That is Table 4.1 is essentially recreated for the test periods Δ1 and Δ2 but instead of a univariate analysis of the average impact of the initial loss event, the results reflect a univariate analysis of the initial loss event conditioned by *ex-ante* corporate governance quality. The results (not tabulated) show that the results in Panels A and B of Table 4.5 are the same for all of the low quality ex-ante governance variables and so robust to the exclusion of Return. In addition when Return is excluded as a control, the anomalous $D_{HIGHGOV\,t-1}$ in the Ownership specification is no longer significant, i.e. the clarity of the results improve.

4.5.3 Alternative Model Specification

Equation 4.2 compares the initial loss firms conditioned by *ex-ante* governance subgroups with the entire control sample. Another approach which could provide additional insights while maintaining the integrity of the DID analysis is to compare initial loss and control firms within each sub-sample, i.e. include *ex-ante* corporate governance quality as a main effect. Table 4.4 showed that there is a good enough spread of firms in each sub-category to per4form this analysis. The equation to perform the analysis in this way is as follows:

$$\begin{aligned}\Delta GOV = {} & \vartheta_1 D_{LOWGOV\,t-1} + \omega_1 D_{LOSS\,t} * D_{LOWGOV\,t-1} \\ & + \vartheta_2 D_{HIGHGOV\,t-1} + \omega_2 D_{LOSS\,t} * D_{HIGHGOV\,t-1} + \theta Return + \varepsilon_i\end{aligned}$$

where all of the variables are as previously detailed. The intercept is omitted to avoid perfect collinearity as the sum of $D_{LOWGOV\,t-1}$ and $D_{HIGHGOV\,t-1}$, the main governance effects, equals one.

The results from this analysis for the test periods Δ1 and Δ2 are included in Panels A and B, respectively of Table 4.6. The results for the shorter time period in Panel A indicate that there is an underlying improvement in governance in the $D_{LOWGOV\,t-1}$ control sub-sample in the Chair, Diversity and Ownership specifications with mean (*t*-stat) equal to 0.106 (*t* = 2.28), 0.018 (*t* = 2.42) and 0.144 (*t* = 4.36), respectively; there is, however, no significant difference between the initial loss and control $D_{LOWGOV\,t-1}$ sub-samples (none of the $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ coefficients are significant). The results also indicate that there is an underlying decrease in corporate governance in the $D_{HIGHGOV\,t-1}$ control sub-sample in the Board and BSize specifications with mean (*t*-stat) equal to -0.133 (*t* = -2.26) and -0.273 (*t* = -1.98), respectively. There is also a significant difference between the loss and control $D_{HIGHGOV\,t-1}$ sub-samples in the Board and Diversity specifications, i.e. the coefficients on $D_{LOSS\,t} * D_{HIGHGOV\,t-1}$ are significant for each of these with mean (*t*-stat) equal to 0.148 (*t* = 1.80) and 0.026 (*t* = 1.71), respectively.

Table 4.6 **Testing the Effect of an Initial Loss Event on Corporate Governance Conditioned by Corporate Governance Characteristics: An Alternative Model Specification**

$$\Delta\, Gov = \vartheta_1 D_{LOWGOV\,t\text{-}1} + \omega_1 D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1} + \vartheta_2 D_{HIGHGOV\,t\text{-}1} + \omega_2 D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1} + \theta Return + \varepsilon$$

Panel A **Test Period Δ1**

Independent Variables	**Board** (***t*** **-stat)**	**Chair** (***t*** **-stat)**	**Diversity** (***t*** **-stat)**	**Ownership** (***t*** **-stat)**	**BSize** (***t*** **-stat)**
$D_{LOWGOV\,t\text{-}1}$	0.086	0.106	0.018	0.144	0.210
	(1.43)	(2.28)**	(2.42)**	(4.36)***	(1.68)
$\boldsymbol{D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1}}$	**0.072**	**-0.003**	**0.005**	**0.053**	**-0.012**
	(0.88)	**(-0.05)**	**(0.45)**	**(1.12)**	**(-0.07)**
$D_{HIGHGOV\,t\text{-}1}$	-0.133	0.002	-0.015	0.046	-0.273
	(-2.26)**	(0.05)	(-1.30)	(1.16)	(-1.98)**
$D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1}$	0.148	-0.05	0.026	0.072	-0.051
	(1.80)*	(-0.83)	(1.71)*	(1.36)	(-0.27)
Return	0.030	-0.106	0.002	-0.115	0.032
	(0.42)	(-1.96)*	(0.17)	(-2.70)***	(0.21)
n	276	276	276	276	276
R^2	5.5%	4.5%	6.7%	18.9%	5.6%
<u>Two-Tailed *p* -values for Tests of Significance:</u>					
$D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1} = D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1}$					
	0.51	0.60	0.24	0.78	0.88

(Continued)

Table 4.6 Continued

Panel B Test Period Δ2

Independent Variables	Board (*t*-stat)	Chair (*t*-stat)	Diversity (*t*-stat)	Ownership (*t*-stat)	BSize (*t*-stat)
$D_{LOWGOV\ t-1}$	0.126	0.201	0.015	0.328	0.200
	(1.48)	(2.59)***	(1.38)	(6.45)***	(1.22)
$\boldsymbol{D_{LOSS\ t} * D_{LOWGOV\ t-1}}$	**0.109**	**0.306**	**0.022**	**0.028**	**0.167**
	(0.94)	**(2.71)*** **	**(1.48)**	**(0.39)**	**(0.73)**
$D_{HIGHGOV\ t-1}$	-0.099	-0.087	-0.025	0.008	-0.519
	(-1.14)	(-1.11)	(-1.54)	(0.12)	(-3.06)***
$D_{LOSS\ t} * D_{HIGHGOV\ t-1}$	0.204	-0.047	0.002	0.077	-0.382
	(1.67)*	(-0.45)	(0.09)	(0.92)	(-1.63)
Return	0.021	-0.060	0.004	-0.083	0.061
	(0.38)	(-1.16)	(0.48)	(-2.24)	(0.56)
n	238	238	238	238	238
R^2	5.8%	16.4%	7.7%	26.1%	16.4%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t} * D_{LOWGOV\ t-1} = D_{LOSS\ t} * D_{HIGHGOV\ t-1}$	0.57	0.02	0.46	0.66	0.09

This table reports the results of testing the effect of a loss on corporate governance. The test (loss sample) consists of 119 firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of 119 firms matched for industry and market value which reported a profit in each of year *t* - 2 to *t* + 2. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively.

(Continued)

Table 4.6 Continued

Variable Definitions:

Δ *Gov* =	the change in governance during the test period (i.e. $\Delta 1$ or $\Delta 2$). The method by which the governance variables are calculated is detailed in Chapter 3.
$D_{LOSS\ t}$ =	a dummy variable equal to one for firms that report a loss, and zero otherwise.
$D_{LOWGOV\ t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value below the mean in the year before the loss, and zero otherwise
$D_{HIGHGOV\ t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value above the mean in the year before the loss, and zero otherwise.
Return =	the stock market return over the test period calculated for test period $\Delta 1$ as:

$$r_t = \left[\frac{P_t - P_{t-1}}{P_{t-1}}\right] + D_t$$

where D_t is the twelve month forward dividend yield and for test period $\Delta 2$ as:

$$r_t = \left[\frac{P_{t+1} - P_{t-1}}{P_{t-1}}\right] + [D_t * \ (1 + Capital\ Gain_{t+1})] + \left[D_{t+1} * \left(\frac{P_t}{P_{t-1}}\right)\right]$$

where

$$Capital\ Gain_{t+1} = \left[\frac{P_{t+1} - P_t}{P_t}\right]$$

The results in Panel B of Table 4.6 for the longer $\Delta 2$ test period indicate that there is a significant difference (at the 1% level) between the loss and control $D_{LOWGOV\ t-1}$ subgroups for the Chair specification indicating that, even though the coefficient for the $D_{LOWGOV\ t-1}$ for the control sample is itself significant at the 10% level (mean = 0.201, *t*-stat = 2.59), the loss sample experiences and even greater improvement (mean = 0.306, *t*-stat = 2.71) in Chair quality. There is no such difference between loss and control samples for the $D_{HIGHGOV\ t-1}$ in the Chair specification. There is also no difference between the loss and control samples for either the $D_{LOWGOV\ t-1}$ or $D_{HIGHGOV\ t-1}$ in the Ownership specification. The coefficient on $D_{LOWGOV\ t-1}$ is significant at the 1% level (mean = 0.328, *t*-stat = 6.45) indicating that, given the $D_{LOSS\ t} * D_{LOWGOV\ t-1}$ coefficient is also negative, all firms in the sample (initial loss and control) with ex ante low Ownership improve their Ownership during the test period. There is also no difference between the initial loss and control samples for either the $D_{LOWGOV\ t-1}$ or $D_{HIGHGOV\ t-1}$ in the BSize specification. The coefficient on $D_{HIGHGOV\ t-1}$ is significant at the 1% level (mean = -0.519, *t*-stat = -3.06) indicating that, given the $D_{LOSS\ t} * D_{LOWGOV\ t-1}$ coefficient is also negative, all firms in the sample (initial loss and control) with an *ex-ante* high number of board members decrease board size during the test period.

The results indicate a difference between the initial loss and control groups for Board, Chair and Diversity. For Diversity and Board the significant difference is that initial loss firms with high quality *ex-ante* governance do not lower the quality of that governance over the period (high quality *ex-ante* governance control firms do) in the Δ1 and Δ2 periods, respectively. For Chair the impact of the loss is that initial loss firms with a low-quality Chair make significant improvements supplemental to those improvements evident in the control sample over the same period. That said, the initial loss and control samples were no matched for ex-ante governance quality and given that the control sample was shown to exhibit no change in corporate governance, on average, across both of the Δ1 and Δ2 periods in Table 4.1, it is the analysis in Table 4.5 which are more meaningful.

4.5.4 A Further Analysis of Ownership

This section includes a more thorough analysis of the Ownership construct. In line with Table 4.1, the % Tot. Prof. Own. and % Tot. Dir. Own. variables are analysed separately to test for the differing impact of the *ex-ante* levels of these variables on any subsequent changes in the variables which is masked by the opposite signs of inside and outside ownership variables during the construction of the Ownership variable in Chapter 3. Specifically, equations 4.1 and 4.2 are retested using % Tot. Prof. Own. and % Tot. Dir. Own. as representative outside and inside ownership variables.

The results from estimating equation 4.1 for these variables are included in Table 9.3 in the Appendix, Panels A and B for the test periods Δ1 and Δ2, respectively; the first column, Ownership, is simply a repeat of the results for this variable in Table 4.5 and are included for comparison purposes. The results largely confirm those for the univariate analysis results in Panels A and B of Table 4.1. To test equation 4.2 the % Tot. Dir. Own. and % Tot. Prof. Own. variables are partitioned based on pre-period mean values. The means of the entire sample for these two variables were calculated in chapter 3 as 15.0% and 31.0%, respectively. The interpretation of the partitioned % Tot. Dir. Own. groups is slightly different to that of the Ownership variable described previously. Specifically, per the entrenchment hypothesis, levels of director ownership lower than the mean of 15.0% are "better" than levels higher than this value. Therefore the pre-period variables are grouped as follows:

(1) A high quality % Tot. Dir. Own. group with a value of 1 if % Tot. Dir. Own. < 15.0% in time (t – 1), otherwise 0, and a low quality % Tot. Dir. Own. group with a value of 1 if % Tot. Dir. Own. ≥ 15.0% in time (t – 1), otherwise 0, and

(2) A high quality % Tot. Prof. Own. group with a value of 1 if % Tot. Prof. Own. ≥ 31.0% in time (t – 1), otherwise 0, and a low quality % Tot. Prof. Own. group with a value of 1 if % Tot. Prof. Own. < 31.0% in time (t – 1), otherwise 0.

The results of the test of these variables using equation 4.2 are included in Panels A and B of Table 9.4 in the Appendix. As discussed previously, the $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ variable is significantly positive for Ownership in both time periods. When % Tot. Dir. Own. and % Tot. Prof. Own. are analysed separately it is evident that there is a difference in the change in inside ownership between initial loss firms with high quality *ex-ante* inside ownership and the entire control sample. However, as previously detailed in Table 4.1, and reaffirmed by the negative significance of the intercept, the underlying trend in inside ownership is significantly downward across the Δ2 test period such that these results are interpreted as initial loss firms with high quality *ex-ante* inside ownership increasing their inside ownership in response to the initial loss but by an amount significantly less than the control sample.

4.5.5 Alternative Conditioning Variable Specification

Equation 4.2 compares the initial loss firms conditioned by *ex-ante* corporate governance subgroups, partitioned at the mean, to the entire control sample. Another approach is to partition the sample into quintiles (or as close as is feasible to do so) such that the $D_{LOWGOV\,t-1}$ group now represents the bottom two quintiles, a $D_{MIDGOV\,t-1}$ group represents the middle quintile, and the $D_{HIGHGOV\,t-1}$ now represents the top two quintiles. The variables are separated as follows:

(1) A high quality Board group with a value of 1 if Board ≥ 0.2585415 in time (t – 1), otherwise 0, a medium quality Board group with a value of 1 if 0.2585415 < Board > -0.2418628 at time (t – 1), otherwise 0, and a low quality Board group with a value of 1 if Board ≤ -0.2418628 in time (t – 1), otherwise 0,

(2) A high quality Chair group with a value of 1 if Chair ≥ 0.954266 in time (t – 1), otherwise 0, a medium quality Chair group with a value of 1 if 0.954266 < Chair > -1.093777 in time (t – 1), otherwise 0, and a low quality Chair group with a value of 1 if Chair ≤ -1.093777 in time (t – 1), otherwise 0,[12]

(3) A high quality Ownership group with a value of 1 if Ownership ≥ 0.2610014 in time (t – 1), otherwise 0, a medium quality Ownership group with a value of 1 if 0.2610014 < Ownership > -0.11971170 at time (t – 1), otherwise 0, and a low quality Ownership group with a value of 1 if Ownership ≤ -0.11971170 in time (t – 1), otherwise 0,

(4) A high quality Diversity group with a value of 1 if Diversity ≥ 0.231111 in time (t – 1), otherwise 0, a medium quality Diversity group with a value of 1 if 0.231111 < Diversity > 0 at time (t – 1), otherwise 0, and a low quality Diversity group with a value of 1 if Diversity = 0 in time (t – 1), otherwise 0,[13] and

(5) A high BSize group with a value of 1 if BSize ≥ 8 in time (t – 1), otherwise 0, a medium BSize group with a value of 1 if 8 < BSize > 5 at time (t – 1),

[12] For logistical reasons the high quality Chair group is partitioned at the thirty fifth percentile instead of the second quintile.
[13] The low quality Diversity group is identical to that when the partitioning is at the mean and, for logistical reasons, the high quality Diversity group is partitioned at the third decile instead of the second quintile.

otherwise 0, and a low BSize group with a value of 1 if BSize ≤ 5 in time (t – 1), otherwise 0.[14]

The equation to perform the analysis is the similar to equation 4.2 except for the inclusion of the $D_{MIDGOV\ t-1}$ subgroup such that the new equation is now

$$\Delta GOV = \beta + \delta_1 D_{LOSS\ t} * D_{LOWGOV\ t-1} + \delta_2 D_{LOSS\ t} * D_{MIDGOV\ t-1} + \delta_3 D_{LOSS\ t} * D_{HIGHGOV\ t-1} + \theta Return + \varepsilon \quad 4.3$$

where the variables are as previously specified. The results from this analysis for the test periods Δ1 and Δ2 for the $D_{LOSS} * D_{LOWGOV\ t-1}$, $D_{LOSS} * D_{MIDGOV\ t-1}$ and $D_{LOSS} * D_{HIGHGOV\ t-1}$ variables are included in Table 9.5 in the Appendix and are the same as those in Table 4.5 but with higher significance. It is noted that in all cases, the improvement in the corporate governance conditioning variable (from low through mid to high) is monotonic.

4.6 Summary and Conclusions

The empirical analysis in this Chapter examines the corporate governance response to the reporting of (or anticipation of the reporting of) an initial loss. Extant research has provided evidence of management changes as a result of poor performance and corporate governance changes following accounting misstatements

[14] For logistical reasons the low BSize group is partitioned at the sixty eighth percentile instead of the fourth quintile and the high BSize group is partitioned at the first quartile instead of the second quintile.

or fraud. There is also evidence that corporate governance influences the relation between management turnover and performance. This chapter is different in that it examines corporate governance changes associated with unambiguous evidence of underperformance. Our analysis is based on a sample of UK companies which incur their first loss in three years during the years 2004 to 2006. An industry- and size-matched control sample of profit firms is used as a benchmark against which to compare the results of the initial loss sample so as not to inadvertently attribute any underlying corporate governance changes to the initial loss event. Using these samples a difference-in-difference model is used to test if incurring a loss is associated with corporate governance changes.

The initial analysis reveals that corporate governance changes are associated with the initial loss and mainly occur before the loss is announced. There are clear differences in the initial loss sample relative to the control sample for the board of directors and ownership. A conditioned multivariate analysis, which controls for other information and the level of corporate governance ('high' or 'low' quality) before the initial loss, produces stronger results, especially when the longer 24-month period ($\Delta 2$) surrounding the loss is considered. There are clear changes in the initial loss sample relative to the control sample with respect to all aspects of corporate governance under consideration. When the conditioning analysis is extended to include a 'mid' quality subgroup the results are even more significant and the change in response to the initial loss event for these *ex-ante* corporate governance subgroups is monotonic. In addition Board size regresses toward its mean following an initial loss.

The results in this chapter contribute to the literature which asserts that although a firm's corporate governance can be sticky and slow to change it is not entirely fixed and responds to negative shocks. The evidence suggests that an initial loss motivates an improvement in corporate governance particularly where relative weakness existed prior to the loss. This study can now add incurring an initial loss to accounting misstatements, fraud and the revelation of ICMWs as a type of event that may precipitate changes in corporate governance.

The next chapter further explores the role of an initial loss event as a change agent, examining the impact of initial losses on the earnings management behaviour (i.e. abnormal accruals) of initial loss firms.

Chapter 5

Initial Losses and Abnormal Accruals

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5.1 Introduction

This chapter extends the empirical findings of the loss and abnormal accruals literature by analysing the relationship between initial losses and earnings management, specifically abnormal accruals. The literature analysed in Section 2.5 of Chapter 2 documented that companies manage earnings to, *inter alia*, avoid reporting losses. This chapter builds on this literature by examining earnings management behaviour in situations where the loss is incurred rather than avoided. Using the same sample detailed previously in Chapter 3, this chapter also utilises severity of loss conditioning variables to test for the exacerbating/mitigating impact of more/less severe losses on earnings management behaviour at initial loss firms.

The first test period (Δ1) for these analyses is, as in Chapter 4, time (t – 1) to t. The second test period (Δ2) is slightly different from that outlined in Chapter 4. For this Chapter Δ2 is from time (t – 1) to *either* (t + 1) *or* (t + 2) depending on whether or not the initial loss firm returns to profitability in year (t + 1) or (t + 2) after the initial loss event; for initial loss firms that are liquidated or acquired in (t + 2), the default post period is (t + 1). The final analysis in this chapter is a loss reporting analysis which tests the ability of prior year abnormal accruals to predict an initial loss.

The chapter is organised as follows: section 5.2 introduces the topic and the primary hypothesis. Section 5.3 provides some univariate statistics pertaining to the levels and changes in abnormal accruals as well as for the control variables used in this chapter for the initial loss and control firm samples. Section 5.4 presents evidence from a DID analysis on the average impact of the reporting of the loss on earnings management at initial loss firms. Section 5.5 presents evidence from a DID analysis on the mitigating impact of the severity of the loss (relative size and market interpretation) on the relationship between initial losses and earnings management behaviour in response to the initial loss. Section 5.6 presents evidence from a logit analysis on whether firms with high prior year signed abnormal accruals are more likely to report an initial loss. Section 5.7 summarises and concludes.

5.2 Earnings Management Behaviour at Initial Loss Firms

The prediction in this chapter is that an initial loss is an exogenous event that motivates a firm to undertake change such that initial loss firms will exhibit different earnings management behaviour to the control sample. Abnormal accruals in the year before the initial loss are analysed in a univariate analysis to test for evidence that initial loss firms manage earnings in an attempt to avoid the loss — larger abnormal accruals imply greater managerial opportunism and lower quality earnings. The change in abnormal accruals in response to the initial loss are also analysed in a multivariate DID analysis to test for evidence of big bath behaviour once the initial loss becomes unavoidable.

The primary multivariate hypothesis in this Chapter, stated in the null form, is:

H5.1: there is no association between the reporting of an initial loss and changes in abnormal accruals.

5.3 Univariate Analysis of Changes in Abnormal Accruals

Chapter 3 provided detailed descriptive statistics of the levels of abnormal accruals and the four control variables used in this study in each of the four years beginning in year (t – 1). However, the primary objective of this Chapter is test for *changes* in abnormal accruals resulting from the initial loss event. To this end the information in Chapter 3 is used to estimate the changes in the abnormal accruals during the test period.

Table 5.1 illustrates the direction and magnitude of changes in abnormal accruals as well as four control variables for the test periods.

Table 5.1 Univariate tests of Preperiod and Postperiod Differences and Difference-in-Differences in Abnormal Accrual and Control Variable Levels and Changes for the Initial Loss and Control Samples

Test Period Δ1

Panel A	**Initial Loss Firms**				**Control Firms**				***p*-value of testing preperiod differences col. (1) minus (5)**	***p*-value of testing postperiod differecnes col. (2) minus (6)**	***p*-value of testing DIDs col. (3) minus (7)**
	n = 138 Preperiod (1) Mean (Median) [st. dev]	**n = 114 Postperiod (2) Mean (Median) [st. dev]**	**n = 114 Change (3) Mean (Median) [st. dev]**	**Sig. of Change (4) Two-tailed *p*-values: *t*-test Signrank**	**n = 138 Preperiod (5) Mean (Median) [st. dev]**	**n = 124 Postperiod (6) Mean (Median) [st. dev]**	**n = 124 Change (7) Mean (Median) [st. dev]**	**Sig. of Change (8) Two-tailed *p*-values: *t*-test Signrank**	**(9) Two-tailed *p*-values: *t*-test Signrank**	**(10) Two-tailed *p*-values: *t*-test Signrank**	**(11) Two-tailed *p*-values: *t*-test Signrank**
AB_ACCR	0.016	-0.006	-0.021	0.27	-0.016	0.003	0.019	0.17	0.08	0.76	0.08
	(0.008)	(0.011)	(-0.002)	0.88	(-0.008)	(0.006)	(0.006)	0.34	0.09	0.84	0.24
	[0.095]	[0.235]	[0.226]		[0.187]	[0.237]	[0.159]				
LMV	3.919	3.832	-0.087	0.08	4.029	4.230	0.196	<0.01	0.42	<0.01	<0.01
	(3.954)	(3.831)	(-0.077)	0.01	(3.807)	(4.071)	(0.209)	<0.01	0.85	0.01	<0.01
	[1.830]	[1.978]	[0.572]		[1.845]	[1.872]	[0.365]				
CFO	0.060	0.018	-0.042	<0.01	0.131	0.109	-0.022	0.04	<0.01	<0.01	0.20
	(0.063)	0.031	(-0.028)	<0.01	(0.117)	(0.095)	(-0.016)	<0.01	<0.01	<0.01	0.31
	[0.107]	[0.108]	[0.126]		[0.119]	[0.108]	[0.123]				
LEV	0.512	0.569	0.057	<0.01	0.502	0.504	0.001	0.84	0.75	0.05	<0.01
	(0.508)	(0.577)	(0.041)	<0.01	(0.482)	(0.478)	(-0.011)	0.72	0.41	<0.01	<0.01
	[0.239]	[0.254]	[0.125]		[0.238]	[0.248]	[0.088]				
GROWTH	0.767	0.748	-0.019	0.58	0.591	0.528	-0.061	<0.01	<0.01	<0.01	0.33
	(0.661)	(0.603)	(-0.039)	0.28	(0.497)	(0.480)	(-0.026)	<0.01	<0.01	<0.01	0.55
	[0.602]	[0.710]	[0.415]		[0.477]	[0.420]	[0.253]				

(Continued)

Table 5.1 Continued **Test Period Δ2**

Panel B	Initial Loss Firms				Control Firms				*p*-value of testing preperiod differences	*p*-value of testing postperiod differecnes	*p*-value of testing DIDs
	n = 138 Preperiod (1) Mean (Median) [st. dev]	n = 114 Postperiod (2) Mean (Median) [st. dev]	n = 114 Change (3) Mean (Median) [st. dev]	Sig. of Change (4) Two-tailed *p*-values: *t*-test Signrank	n = 138 Preperiod (5) Mean (Median) [st. dev]	n = 124 Postperiod (6) Mean (Median) [st. dev]	n = 124 Change (7) Mean (Median) [st. dev]	Sig. of Change (8) Two-tailed *p*-values: *t*-test Signrank	col. (1) minus (5) (9) Two-tailed *p*-values: *t*-test Signrank	col. (2) minus (6) (10) Two-tailed *p*-values: *t*-test Signrank	col. (3) minus (7) (11) Two-tailed *p*-values: *t*-test Signrank
AB_ACCR	0.016	0.008	-0.013	0.66	-0.016	0.006	0.026	0.18	0.08	0.67	0.07
	(0.008)	(0.028)	(0.007)	0.44	(-0.008)	(0.027)	(0.025)	0.09	0.09	0.65	0.10
	[0.095]	[0.305]	[0.315]		[0.187]	[0.276]	[0.212]				
LMV	3.919	3.837	-0.087	0.60	4.029	4.368	0.355	<0.01	0.41	<0.01	0.02
	(3.955)	(3.598)	(-0.003)	0.71	(3.807)	(4.179)	(0.393)	<0.01	0.85	<0.01	<0.01
	[1.830]	[2.026]	[1.965]		[1.845]	[1.926]	[0.561]				
CFO	0.060	0.041	-0.020	0.11	0.131	0.106	-0.018	0.11	<0.01	<0.01	0.48
	(0.063)	(0.052)	(-0.014)	0.04	(0.117)	(0.103)	(-0.008)	0.27	<0.01	<0.01	0.39
	[0.107]	[0.114]	[0.132]		[0.119]	[0.097]	[0.122]				
LEV	0.512	0.632	0.122	<0.01	0.502	0.521	0.023	0.10	0.75	0.04	<0.01
	(0.508)	(0.563)	(0.062)	<0.01	(0.482)	(0.522)	(0.004)	0.40	0.41	0.04	<0.01
	[0.239]	[0.453]	[0.395]		[0.239]	[0.286]	[0.157]				
GROWTH	0.767	0.340	-0.411	<0.01	0.591	0.612	0.018	0.46	<0.01	0.07	<0.01
	(0.661)	(0.471)	(-0.128)	<0.01	(0.497)	(0.502)	(-0.000)	0.37	<0.01	0.45	<0.01
	[0.603]	[1.424]	[1.271]		[0.477]	[0.548]	[0.278]				

This table provides some summary statistics and includes univariate tests of significance for the abnromal accruals and control variables for the loss and control samples for the time periods from time t -1 (Preperiod) to t + 1/t + 2 (Postperiod), as well as tests of the difference in the Preperiod and Postperiod values between the loss and control samples and univariate tests of the difference-in-difference (DID) between the loss and control samples for the Preperiod and the Postperiod. Time t includes panel data from years 2004, 2005 and 2006. The collection and matching of the loss and control samples is detailed in Chapter 3. The decrease in the number of firms (loss and control) across time is due to firms liquidating or being acquired. The variable *AB_ACCR* is the signed abnormal accruals calculated according to a modified DeFond and Park (2001) model with the 'normal' ratio and scaling variable set as of the year before the preperiod (i.e. t - 2), *LMV* is the natural log of market value, *CFO* is the cash flow from operating activities scaled by lagged total assets, *LEV* is the ratio of total liabilities to total assets, and *GROWTH* is the book-to-market ratio, defined as the book value divided by the market value.

The results from Table 5.1, Panel A indicate that initial loss firms report mean (median) abnormal accruals of 1.6 per cent (0.7 per cent) of total assets in the year before the initial loss event. With a standard deviation equal to 9.5 per cent, this mean value is separately confirmed (untabulated) as being significantly different from zero at the 10% level (t = 1.94); the corresponding mean and standard deviation values for the control sample are -1.6 per cent and 18.7%, respectively, resulting in a mean not significantly different from zero (t = -1.00). This is, perhaps, one of the most compelling results from the univariate analysis of abnormal accruals from Table 5.1, i.e. that abnormal accruals for initial loss firms in the year before the initial loss are significantly positive (i.e. different from zero) and, more importantly for this study, per the results in Column 9, are also significantly different from the control sample. This indicates, potentially, that problems related to the decision by initial loss firms to delay or defer the initial loss in the years prior to the initial loss are being stored on their balance sheets and is in line with theory (i.e. Burgstahler & Dichev, 1997; Degeorge *et al.*, 1999; Holland & Ramsay, 2003; and Brown & Caylor, 2005; Mulcahy & Yang, 2013) and our expectation that initial loss firms manage earnings upward in the year before the initial loss in an effort to avoid/defer the initial loss in that year[15]. Theory tells us that accruals must eventually unwind and it is this unwinding (change) that is the next focus of this study.

Although the change in abnormal accruals for initial loss firms (Column 4) is negative for both Δ1 and Δ2, neither is significantly different from zero with p =

[15] It also reinforces the contention in chapter 3 that the causation between initial losses and changes in abnormal accruals in anticipation of the announcement of the initial loss event (and simultaneous with the 'earning' of the initial loss) is in one direction only, i.e. endogeneity is not a problem for this analysis.

0.27/0.88 and p = 0.66/0.44 for the mean/median for each test period, respectively. The change for the control sample (Column 8) in both test periods is positive but is also not significantly different from zero with p = 0.17/0.34 and p = 0.18/0.09 for the mean/median for $\Delta1$ and $\Delta2$, respectively. What is evident though, and the primary focus of this chapter, is the significance of the difference in the changes between the initial loss and control samples (Column 11) across both test periods with p = 0.08/0.24 and p = 0.07/0.10 for the mean/median for $\Delta1$ and $\Delta2$, respectively. Interestingly, despite these differences in changes between the two samples, the results in Column 10 of Panel A show that, on average, there is no evidence of big bath behaviour among initial loss firms, i.e. with p = 0.76/0.84 for the mean/median, there is no difference in abnormal accruals between the initial loss and control firms in the initial loss year. These results confirm that the accruals of initial loss firms are abnormally high in the year before the initial loss but that these reverse to approximately the same level as the control sample post initial loss. The results also reaffirm the decision to use directional rather than absolute abnormal accruals in this study to draw these conclusions. The remainder of this chapter explores, *inter alia*, the *ex-ante* difference in abnormal accruals between the initial loss and control samples and analyses the difference in the difference in abnormal accruals (i.e. any difference in the unwinding of accruals) between initial loss and control firms over the test periods $\Delta1$ and $\Delta2$.

The four control variables included in this study and detailed in Table 5.1 are intended to control for firm-specific factors that can affect a firm's accruals based on prior research (Becker *et al.*, 1998; Frankel *et al.*, 2002). It has been argued that larger firms have more potential for earnings management (Bartov, 1993). Watts and Zimmerman (1990) state that larger firms face higher political costs and hence have a stronger incentive to manage earnings in order to reduce the associated political risk. Pincus and Rajgopal (2002) suggest that large firms have more pressure placed on their management to report more predictable earnings. Even though, by construction, the accruals in this study are scaled by firm size (lagged total assets as at two years before the initial loss) and the comparison of means test from Chapter 3 indicates that (because the secondary selection criterion for matching the control sample was size) there is no difference in firm size between the initial loss and control samples, the log of market value (LMV) is included to control for the potential effects of size on the choice of discretionary accruals because size may surrogate for numerous omitted variables. Table 5.1 indicates that, as expected, there is no difference in LMV between the initial loss and control samples in the year before the initial loss event, i.e. p = <0.01/<0.01 for the mean/median in Column 9 in Panels A and B of Table 5.1. The results also indicate that there is a change in LMV for the both the initial loss and control samples across the test period Δ1. For the initial loss sample the change is significantly negative with p = 0.08/0.01 for the mean/median (Column 4), and for the control sample the change is significantly positive with p = <0.01/<0.01 for the mean/median (Column 8). These results are such that the difference in the post-period values and the difference in the changes between the initial loss and control samples for LMV are significant with p = <0.01/<0.01 (Column 10) and p = 0.02/<0.01 (Column 11) for the mean/median, respectively. The results for the longer test period, Δ2, are similar although there is now no difference in the pre- and post-period values for the initial loss sample, i.e. p = 0.60/0.71 for the mean/median

(Column 4). The results for Δ2 for the post-period differences (Column 10) and the difference in the differences (Column 11) are the same as for Δ1, i.e. initial losses have implications for initial loss firms — the initial loss causes the market value of the firm to fall.

We also control cash flows from operating activities (*CFO*) to capture performance differences across firms in different industries and to control for the association between abnormal accruals and operating cash flow (Dechow *et al.*, 1995). Consistent with prior research (i.e. Peasnell, Pope & Young, 2000), this study define operating cash flows from operating activities divided by lagged total assets because there is a well-documented inverse relation between the cash flows and accruals. Table 5.1, Panels A and B, indicate that there is no change in CFO for the initial loss or the control samples across either test period, such that there is no difference in the changes between the two samples for Δ1 and Δ2. There is, however, a difference in the pre- and post-period values for CFO between the initial loss and control firms in both test periods and these differences are all significant (Columns 9 and 10 in Panels A and B of Table 5.1) with p = <0.01 for the means and medians in all cases. The fact that CFO is lower and abnormal accruals are higher for initial loss firms than control firms in the year before the initial loss suggests that initial loss firms use increased abnormal accruals to, *inter alia*, avoid losses.

Leverage may also be associated with discretionary accruals. High leverage has been found to be associated with closeness to the violation of debt covenants (Press & Weintrop, 1990), and debt covenant violation has been found to be associated with discretionary accrual choice (DeFond & Jiambalvo, 1994). To avoid debt covenant violations, managers of highly leveraged firms have incentives to make income-increasing discretionary accruals. However, high leverage is also associated with financial distress (Beneish & Press, 1995; Ohlson, 1980). According to DeAngelo, DeAngelo, and Skinner (1994), troubled companies have large negative accruals related to contractual renegotiations that provide incentives to reduce earnings. Therefore, to control for the possible effects (either positive or negative) of high leverage on our results, leverage is also included as a control variable (*LEV*). Table 5.1 indicates that there is a significant positive change in *LEV* for the initial loss sample during both the $\Delta 1$ and $\Delta 2$ test periods with p = <0.01/<0.01 for the mean/median in both cases; the control sample does not exhibit the same change with p = 0.84/0.72 and p = 0.10/0.40 for the mean/median for $\Delta 1$ and $\Delta 2$, respectively. There is no difference in *LEV* between the initial loss and control samples in the pre-period (Column 9 in Panels A and B) but there is evidence (as a result of the significant increase in *LEV* for the initial loss sample across the test period) that there is a difference between the two samples at the end of the test period (Column 10) where p = 0.05/<0.01 in Panel A and p = 0.04/0.04 in Panel B for the mean/median for $\Delta 1$ and $\Delta 2$, respectively. These results are such that the difference in the changes in *LEV* (Column 11) is significant with p = <0.01/<0.01 for the mean/median for both $\Delta 1$ and $\Delta 2$ i.e. initial losses have implications for initial loss firms — the initial loss causes the leverage ratio to increase.

The final variable, *GROWTH*, controls for firm growth because the model for expected accruals could be mis-specified for firms experiencing unusual growth. Skinner and

Sloan (2002) found evidence that suggests growth stocks have significantly greater negative market responses to earnings disappointments than value stocks. This result implies that growth firms have greater incentives to avoid negative earnings surprises. Indeed, Matsumoto (2002) documents that firms with higher growth are more likely to manage earnings; other studies which find that growth is related to earnings management include Abdularahman and Ali (2006) and Huang, Louwers, Moffitt and Zhang (2008). *GROWTH* is defined as the book-to-market ratio. Table 5.1, Panel B, indicates that there is a significant change in $GROWTH$ for the initial loss sample across the Δ2 test period with p = <0.01/<0.01 for the mean/median that is not present for the control sample suggesting that the initial loss has serious impact on growth for initial loss firms; there is no evidence of a similar change for the control sample. However, for the shorter Δ1 test period this relationship is reversed, i.e. it is the control sample that exhibits a significant (negative) change that is absent from the initial loss sample. The result is that *GROWTH* is different between the initial loss and control samples in both the pre- and post-periods for both the Δ1 and Δ2 test periods and the difference in the differences between the two samples is significant for the longer Δ2 test period with p = <0.01/<0.01 for the mean/median in Column 11 of Panel B of table 5.1, i.e. initial losses have implications for initial loss firms — the initial loss causes growth to fall.

Overall, the results in Table 5.1 suggest that this study is correct to control for the variables *LMV*, *LEV*, *CFO* and *GROWTH*.

5.4 The Average Effect of an Initial Loss Event on Abnormal Accruals

The univariate analysis in Section 5.3 indicates that the change in abnormal accruals from the pre- to the post-period differs significantly between the initial loss and control samples — it is these results (corresponding to Column 11 in Table 5.1) that are a primary focus of this chapter. As stated previously, the changes in abnormal accruals in the control sample during the test period matter only insofar as they represent a benchmark against which to assess the contemporaneous change for the initial loss sample.

This section uses a multivariate analysis including the control variables previously discussed and detailed in Table 5.1 to examine the change in abnormal accruals for the initial loss sample over and above those observed in the control sample to test whether there is a relationship between the initial loss event itself and the unwinding of abnormal accruals for initial loss firms. *Ex-ante*, on average, the expectation is that the initial loss event will cause a negative change in abnormal accruals during the test period as initial loss firms unwind any positive abnormal accruals built up on the balance sheet in the years prior to the initial loss event. Evidence from the univariate analysis in Table 5.1, Column 4 indicates that initial loss firms reduce positive abnormal accruals during the test period and the results in Column 11 indicate that these reductions are significantly in excess of any changes in the control sample.

Based on the results of the univariate analysis in section 5.3 and the results in Chapter 4 regarding the significant role of initial losses as a change agent for corporate governance, this study conjectures that, controlling for changes in the other variables documented to impact on abnormal accruals, an increase in negative abnormal accruals around an initial loss event is likely to be more pronounced for initial loss firms than the control sample. The multivariate analysis in this section employs the same difference in difference research design described in Chapter 3 to examine H5.1.

To test H5.1, the effect of an initial loss on abnormal accruals for the event window, this study estimates the following equation:

$$\Delta AB\_ACCR = \beta_0 + \beta_1 D_{LOSS\,t} + \beta_j \Delta Controls + \varepsilon \qquad 5.1$$

where

$$D_{Loss\,t} = \begin{cases} 1 & for\ loss\ sample \\ 0 & for\ control\ sample \end{cases}$$

and $Controls$ indicates the control variables (i.e. *LMV*, *CFO*, *LEV* and *GROWTH*) are as previously detailed. The intercept β_0 captures the change around the initial loss event for the control sample. The key coefficient of interest, β_1, captures the difference in the change in abnormal accruals between the initial loss and control firms and, thus, on average, the impact of the initial loss event.

5.4.1 Empirical Results

Table 5.2 reports the results of estimating equation 5.1, which regresses the change in abnormal accruals on a dummy variable indicating initial loss firms ($D_{LOSS\,t}$) and the control variables. The estimated coefficient on $D_{LOSS\,t}$ is -0.044 (t-stat = -1.86) and -0.012 (t-stat = -0.33) for the Δ1 and Δ2 test periods, respectively. These results corroborate the results from the univariate analysis in Column 11 for the shorter test period in Panel A of Table 5.1 but not those for the longer test period in Panel B.

The intercept, which captures the change from control firms only, is not significantly different from zero indicating that control firms experience no significant change in abnormal accruals over the test period (i.e. corroborating the results in Column 8 in Panels A and B of Table 5.1). A Wald test of the significance of the coefficient on the initial loss sample on its own (i.e. $\beta_0 + \beta_1$) has a p = 0.02 for both the Δ1 and Δ2 test periods indicating that initial loss firms experience a statistically significant increase in negative abnormal accruals resulting from the initial loss event (i.e. confirming the univariate results in Column 4 in Panels A and B of Table 5.1).

Table 5.2 **Testing the Average Effect of an Initial Loss Event on Abnormal Accruals**

$$\Delta\ AB\_ACCR = \beta_0 + \beta_1 D_{LOSS\ t} + \beta_j \Delta\ Controls + \varepsilon$$

	Test Periods	
Independent Variables	**Δ 1 (*t* -value)**	**Δ 2 (*t* -value)**
Intercept	0.005	0.031
	(0.33)	(1.28)
$\boldsymbol{D_{LOSS\ t}}$	**-0.044**	**-0.012**
	(-1.86)*	**(-0.33)**
Δ *LMV*	0.017	-0.008
	(0.62)	(-0.65)
Δ *CFO*	-0.538	-0.341
	(-5.96)***	(-2.44)**
Δ *LEV*	-0.053	-0.296
	(-0.48)	(-3.95)***
Δ *GROWTH*	0.022	-0.007
	(0.56)	(-0.28)
n	274	228
R^2	13.18%	10.32%
Two-Tailed *p* -values for Tests of Significance:		
$Intercept + D_{LOSS\ t} = 0$	0.03	0.54

This table reports the average effect of an initial loss on the change in abnormal accruals. For each (test or control) firm, the window is the year before the initial loss event, *t*-1, to either the year of the loss (Δ1) of the year the loss firm returns to profitability (i.e. either year *t*+1 or *t*+2) (Δ2); for those firms that liquidate or are acquired the window is from year *t*-1 to *t*+1. The test (loss sample) consists of 137 (Δ1) and 114 (Δ2) firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t-2* to *t+2*. The difference in the sample sizes in test periods Δ1 and Δ2 is firms (initial loss or control being acquired in the period *t* to *t*+1. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance for two-tailed tests at the 10%, 5%, and 1% levels are indicated with *,**, and ***, respectively.

(Continued)

Table 5.2 Continued

Variable Definitions:

$\Delta\ AB\_ACCR$ =	the change in signed abnormal accruals during the test period (i.e. Δ1 or Δ2). The abnormal accrual model used is a modified DeFond and Park (2001) model detailed previously in the chapter.
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss during the event window, and zero otherwise.
$\Delta\ LMV$ =	the change in the natural log of market value.
$\Delta\ CFO$ =	the change in the cash flow from operating activities scaled by lagged total assets.
$\Delta\ LEV$ =	the change in the ratio of total liabilities to total assets.
$\Delta\ GROWTH$ =	the change in the book-to-market ratio, defined as the book value divided by the market value.

These multivariate regression results for the Δ1 test period confirm the results of the univariate analysis in Panel A of Table 5.1 and provide some evidence to reject H 5.1. There is no difference for the longer test period, Δ2, which suggests that any/all of the unwinding of accruals that initial loss firms engage in occurs in the initial loss year. That is, on average (i.e. unconditioned), initial loss firms exhibit a statistically significant increase in negative abnormal accruals relative to the control firms during the shorter event window — in other words initial losses matter for abnormal accruals.

5.5 A Further Examination of the Effect of an Initial Loss Event on Abnormal Accruals

The previous section analysed the average impact of initial losses on abnormal accruals, hypothesising that, on average, the initial loss event will cause negative abnormal accruals during the test period as initial loss firms unwind any positive abnormal accruals built up on the balance sheet in the years prior to the initial loss event. This study finds evidence to support this hypothesis for the shorter test period. However, not all initial losses are the same, i.e. they are not all represented by the average. The literature analysed in Chapter 2 affirms that the severity of the shock can have a conditioning role to play on the relationship being tested. That is, some initial losses are more egregious than others such that the impact of the initial loss on abnormal accruals could be expected to be different depending on the severity of the initial loss.

The hypothesis to be tested, stated in the null form, is:

H5.2: the severity of the loss has no impact on the association between the reporting of an initial loss and changes in abnormal accruals.

5.5.1 Loss Severity Conditioning Variables

The severity of an initial loss can be determined using a number of decision criteria — this section uses two criteria to partition the initial loss sample in this study in to three subgroups: low severity ($D_{HIGHQUAL}$), medium severity ($D_{MIDQUAL}$) and high severity ($D_{LOWQUAL}$), and examines each separately. These decision criteria are;

1. whether the initial loss is small ($D_{HIGHQUAL}$), medium ($D_{MIDQUAL}$) or large ($D_{LOWQUAL}$). To determine whether a loss is small, medium or large the net income initial loss is scaled by market value. Those loss companies with scaled losses in the lowest two quintiles are deemed to have small losses such

that $D_{HIGHQUAL}$ is 1 for these firms, otherwise 0, those loss firms with scaled losses in the middle quintile are deemed to have medium losses such that $D_{MIDQUAL}$ is 1 for these firms, otherwise 0, and those loss firms with scaled losses in the top two quintiles are deemed to have large losses such that $D_{LOWQUAL}$ is 1 for these firms, otherwise 0, and

2. whether the loss is good ($D_{HIGHQUAL}$), average ($D_{MIDQUAL}$), or bad ($D_{LOWQUAL}$). A good loss is one where the 12-month return around the loss event (calculated as 6-months before and 6-months after the year end of the loss year) is in the top two quintiles of these returns for both the loss and control samples such that $D_{HIGHQUAL}$ is 1 for these loss firms, otherwise 0, those loss firms with a 12-month return around the loss event in the middle quintile of these returns for both the loss and control samples are deemed to have average losses such that $D_{MIDQUAL}$ is 1 for these firms, otherwise , and those loss firms with a 12-month return around the loss event in the bottom two quintiles of these returns for both the loss and control samples are deemed to have bad losses such that $D_{LOWQUAL}$ is 1 for these firms, otherwise 0.

5.5.2 Empirical Results

This section employs the same difference in difference research design to examine hypothesis 5.2. To test the mitigating impact of the severity of the initial loss on the association between the reporting of an initial loss event and changes in abnormal accruals versus the control sample, this study estimates the following equation which is modified for the severity of loss conditioning variables as follows:

$$\Delta AB\_ACCR = \beta_0 + \delta_1 D_{LOSS\,t} * D_{LOWQUAL} + \delta_2 D_{LOSS\,t} * D_{MIDQUAL} + \delta_3 D_{LOSS\,t} * D_{HIGHQUAL} + \beta_j \Delta Controls + \varepsilon \tag{5.2}$$

where

$$D_{LOSS\,t} = \begin{cases} 1 & for\ loss\ sample \\ 0 & for\ control\ sample \end{cases}$$

and $D_{LOWQUAL}$, $D_{MIDQUAL}$ and $D_{HIGHQUAL}$ represent the severity of the initial loss interaction variables partitioned using the three decision criteria outlined in the previous section. $Controls$ indicates the control variables (i.e. *LMV*, *CFO*, *LEV* and *GROWTH*) previously detailed. As before, the intercept, β_0, reflects the underlying change in abnormal accruals for the entire control sample. $D_{LOSS\,t} * D_{LOWQUAL}$ reflects the difference in the differences across the test period in these accruals between initial loss firms with a high severity initial loss and the entire control sample, $D_{LOSS\,t} * D_{MIDQUAL}$ reflects the difference in the differences between initial loss firms with a medium severity initial loss and the entire control sample, and $D_{LOSS\,t} * D_{HIGHQUAL}$ reflects the difference in the differences between initial loss firms with a high severity initial loss and the entire control sample.

The results of estimating equation 5.2 for the test periods Δ1 and Δ2 are included in Table 5.3, Panels A and B, respectively. The coefficient of interest is $D_{LOSS\,t} *$

$D_{LOWQUAL}$ which, for the shorter test period, Δ1, is significant at the 5% level for all loss severity specifications with coefficients (t-stats) of -0.068 (t = -2.10) and -0.057 (t = -1.77) for the large/medium/small and bad/average/good specifications, respectively, indicating that firms with a relatively large or bad initial loss are more likely to reverse positive abnormal accruals/increase negative abnormal accruals in the year of the initial loss. The result for the initial loss sample are also significant at the 5% level for all specifications, i.e. the Wald test included at the end of Panel A of Table 5.3 that $D_{LOSS\,t} * D_{LOWQUAL} + Intercept = 0$ is rejected with p = 0.03 and 0.02 for the large/medium/small and the bad/average/good specifications, respectively.

Table 5.3 Testing the Effect of an Initial Loss Event on Abnormal Accruals Conditioned by the Severity of the Loss

$$\Delta\, AB\_ACCR = \beta_0 + \delta_1 D_{LOSS\,t} * D_{LOWQUAL} + \delta_2 D_{LOSS\,t} * D_{MIDQUAL} + \delta_3 D_{LOSS\,t} * D_{HIGHQUAL} + \beta_j \Delta\, Controls + \varepsilon$$

Panel A Test Period Δ1

Independent Variables	**Large/Medium/Small** (***t*** **-stat)**	**Bad/Average/Good** (***t*** **-stat)**
Intercept	0.007	0.007
	(0.40)	(0.42)
$\boldsymbol{D_{LOSS\,t} * D_{LOWQUAL}}$	**-0.068**	**-0.072**
	(-2.10)**	**(-2.20)****
$D_{LOSS\,t} * D_{MIDQUAL}$	-0.076	-0.012
	(-1.91)*	(-0.34)
$D_{LOSS\,t} * D_{HIGHQUAL}$	-0.012	-0.043
	(-0.41)	(-1.28)
$\Delta\, LMV$	0.010	0.009
	(0.37)	(0.32)
$\Delta\, CFO$	-0.540	-0.532
	(-6.00)***	(-5.88)***
$\Delta\, LEV$	-0.037	-0.036
	(-0.33)	(-0.33)
$\Delta\, GROWTH$	0.019	0.021
	(0.48)	(0.55)
n	274	274
R^2	14.22%	13.93%
<u>Two-Tailed *p* -values for Tests of Significance:</u>		
$D_{LOSS\,t} * D_{LOWQUAL} = D_{LOSS\,t} * D_{HIGHQUAL}$	0.13	0.49
$D_{LOSS\,t} * D_{LOWQUAL} + Intercept = 0$	0.03	0.02
$D_{LOSS\,t} * D_{HIGHQUAL} + Intercept = 0$	0.82	0.25

(Continued)

Table 5.3 Continued

Panel B Test Period Δ2

Independent Variables	**Large/Medium/Small (*t*-stat)**	**Bad/Average/Good (*t*-stat)**
Intercept	0.031	0.031
	(1.27)	(1.32)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL}}$	**-0.069**	**-0.091**
	(-1.41)	**(-1.93)***
$D_{LOSS\ t} * D_{MIDQUAL}$	0.038	0.028
	(0.62)	(0.54)
$D_{LOSS\ t} * D_{HIGHQUAL}$	0.009	0.041
	(0.19)	(0.83)
$\Delta\ LMV$	-0.008	-0.011
	(-0.68)	(-0.87)
$\Delta\ CFO$	-0.349	-0.352
	(-2.49)**	(-2.54)**
$\Delta\ LEV$	-0.296	-0.296
	(-3.96)***	(-3.99)***
$\Delta\ GROWTH$	-0.016	-0.012
	(-0.63)	(-0.48)
n	228	228
R^2	11.54%	12.88%
Two-Tailed *p*-values for Tests of Significance:		
$D_{LOSS\ t} * D_{LOWQUAL} = D_{LOSS\ t} * D_{HIGHQUAL}$	0.17	0.02
$D_{LOSS\ t} * D_{LOWQUAL} + Intercept = 0$	0.29	0.14
$D_{LOSS\ t} * D_{HIGHQUAL} + Intercept = 0$	0.37	0.09

This table reports the effect of an initial loss on the change in abnormal accruals conditioned by the severity of the loss. For each firm, the window is the year before the initial loss event, *t*-1, to either the year of the loss (Δ1) or the year the loss firm returns to profitability (Δ2); for those firms that liquidate or are acquired the window is from year *t*-1 to *t*+1. The test (loss sample) consists of 137 (Δ1) and 114 (Δ2) firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t-2* to *t+2*. The difference in the sample sizes in test periods Δ1 and Δ2 is firms (loss or control) being acquired in the period *t* to *t*+1. Loss firms are partitioned based whether the loss is small/medium/large or good/average/bad. A small loss is one where the scaled (by market value) loss is in the bottom two quintiles of ranked scaled losses, a medium loss is in the middle quintile and a big loss is one in the top two quintiles. A good loss is one with a 12-month return around the financial year end of the loss year (6-months before and after) in the bottom two quintiles of ranked 12-month returns, an average loss is in the middle quintile and a bad loss is in the top two quintiles.

(Continued)

Table 5.3 Continued

Financial information is obtained from Datastream/ Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance at the 10%, 5%, and 1% levels are indicated with *,**, and ***, respectively.

Variable Definitions:

Δ *AB_ACCR* =	the change in signed abnormal accruals during the test period (i.e. $\Delta 1$ or $\Delta 2$). The abnormal accrual model used is a modified DeFond and Park (2001) model detailed previously in the Chapter 3.
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss during the event window, and zero otherwise.
$D_{LOWQUAL}$ =	a dummy variable equal to one for loss firms that report a high severity loss, and zero otherwise.
$D_{MIDQUAL}$ =	a dummy variable equal to one for loss firms that report a medium severity loss, and zero otherwise.
$D_{HIGHQUAL}$ =	a dummy variable equal to one for loss firms that report a low severity loss, and zero otherwise.
Δ *LMV* =	the change in the natural log of market value.
Δ *CFO* =	the change in the cash flow from operating activities scaled by lagged total assets.
Δ *LEV* =	the change in the ratio of total liabilities to total assets.
Δ *GROWTH* =	the change in the book-to-market ratio, defined as the book value divided by the market value.

The results for the longer, $\Delta 2$, test period included in panel B of Table 5.3 show that with coefficient (*t*-stat) of -0.091 (t = -1.93), the results for the $D_{LOSS\,t} * D_{LOWQUAL}$ subsample for the bad/average/good specifications are significant at the 10% level, respectively. The results of the Wald test included at the end of Panel B of Table 5.3 indicate that not only are the results for this variable significantly different from zero but they are also significantly different from the results for the $D_{LOSS\,t} * D_{HIGHQUAL}$ (p = 0.02) subsample.

As a test of robustness, this study also scaled the large/medium/small loss severity specification by sales instead of market value. The results from this alternatively scaled variable (included in Table 9.6 in the Appendix), are even more significant. That is, the coefficient on $D_{LOSS\,t} * D_{LOWQUAL}$, for the shorter test period, Δ1, is significant at the 1% level with a coefficient (*t*-stat) of -0.104 (*t* = -3.32) and for the the longer test period, Δ2, at the 5% level with a coefficient (*t*-stat) of -0.118 (*t* = -2.04).

The results from Table 5.3, corroborated by Table 9.6, indicate that the severity of initial loss has a material impact on the reversal of abnormal accruals in the initial loss year such that there is evidence to reject hypothesis H5.2 and this study can argue that the severity of the initial loss has a conditioning role to play on the impact of an initial loss for abnormal accruals. When the control variables are excluded as it can be argued they can be in a DID analysis, the results (not tabulated here) are the same.

5.5.3 Alternative Model Specification

Equation 5.2 compares initial loss firms from the low, medium and high severity initial loss subgroups with the entire control sample. Because Table 5.1 showed evidence that abnormal accruals are different between the initial loss and control samples in the year before the initial loss, another approach which could provide additional insights with which to interpret the relationship under investigation while maintaining the integrity of the DID analysis is to compare initial loss and control firms within each sub-sample, i.e. include the severity of the loss as a main effect. For this only the bad/average/good quality distinction is analysed —

obviously you cannot partition the control sample by the size of an initial loss which never occurred.

The equation to perform the analysis in this way is as follows:

$$\begin{aligned}\Delta\, AB\_ACCR = {} & \vartheta_1 D_{LOWQUAL} + \omega_1 D_{LOSS\,t} * D_{LOWQUAL} \\ & + \vartheta_2 D_{MIDQUAL} + \omega_2 D_{LOSS\,t} * D_{MIDQUAL} \\ & + \vartheta_3 D_{HIGHQUAL} + \omega_3 D_{LOSS\,t} * D_{HIGHQUAL} + \vartheta_j \Delta Controls + \varepsilon\end{aligned} \qquad 5.3$$

where all of the variables are as previously detailed. The intercept is omitted to avoid perfect collinearity as the sum of $D_{LOWQUAL}$, $D_{MIDQUAL}$ and $D_{HIGHQUAL}$ equals one. The results from estimating equation 5.3 are included in Table 5.4.

The results indicate that in both test periods only the accrual behaviour of those initial loss firms with a low 12-month return around the year end of the initial loss (with mean (t-stat) of -0.070 (t = -1.65) and -0.107 (t = -1.71) for Δ1 and Δ2, respectively) is different from the corresponding control subsample thereby lending further significance to the results in Table 5.3.

Table 5.4 Testing the Effect of an Initial Loss on Abnormal Accruals Conditioned by the Severity of the Loss: An Alternative Conditioning Specification

$$\Delta\, AB\_ACCR = \vartheta_1 D_{LOWQUAL} + \omega_1 D_{LOSS\,t} * D_{LOWQUAL} + \vartheta_2 D_{MIDQUAL} + \omega_2 D_{LOSS\,t} * D_{MIDQUAL} + \vartheta_3 D_{HIGHQUAL} + \omega_3 D_{LOSS\,t} * D_{HIGHQUAL} + \vartheta_j\, \Delta\, Controls + \varepsilon$$

	Test Periods	
Independent Variables	**Δ1 (*t*-stat)**	**Δ2 (*t*-stat)**
$D_{LOWQUAL}$	0.004	0.048
	(0.11)	(1.00)
$\boldsymbol{D_{LOSS\,t} * D_{LOWQUAL}}$	**-0.070**	**-0.107**
	(-1.65)*	**(-1.71)***
$D_{MIDQUAL}$	-0.010	0.037
	(-0.33)	(0.81)
$D_{LOSS\,t} * D_{MIDQUAL}$	0.005	0.024
	(0.12)	(0.36)
$D_{HIGHQUAL}$	0.019	0.020
	(0.79)	(0.58)
$D_{LOSS\,t} * D_{HIGHQUAL}$	-0.055	0.052
	(-1.46)	(0.95)
$\Delta\, LMV$	0.008	-0.010
	(0.25)	(-0.78)
$\Delta\, CFO$	-0.527	-0.350
	(-5.75)***	(-2.52)**
$\Delta\, LEV$	-0.030	-0.300
	(-0.27)	(-4.00)***
$\Delta\, GROWTH$	0.023	-0.013
	(0.59)	(-0.53)
n	274	228
R^2	14.13%	13.13%
Two-Tailed *p*-values for Tests of Significance:		
$D_{LOSS\,t} * D_{LOWQUAL} = D_{LOSS\,t} * D_{HIGHQUAL}$	0.79	0.05
$D_{LOWQUAL} + D_{LOSS\,t} * D_{LOWQUAL} = 0$	0.02	0.15
$D_{HIGHQUAL} + D_{LOSS\,t} * D_{HIGHQUAL} = 0$	0.26	0.10

The information about the data collected and variables constructed in this appendix is the same as that in Table 5.3.

5.5.4 Robustness Tests

In order to test the robustness of the results in Table 5.3, equation 5.2 is reestimated using a modified version of the Francis and Wang (2008) model detailed in Chapter 2. The modification is the same as that for the DeFond and Park (2001) model detailed previously in Section 3.6.3 of Chapter 3, i.e. the 'normal' ratios and scaling variable are those which occurred two years before the initial loss year, i.e. (t – 2) and these ratios and scaling variable are then used to calculate abnormal accruals in each of the subsequent years.

The evidence, reported in Table 9.7 in the Appendix, indicates that the results and sign of the main coefficient of interest is significant for the $\Delta 2$ test period but not the $\Delta 1$ test period. This suggests that the additional depreciation related terms in the calculation of abnormal accruals via the Francis and Wang methodology have a dampening effect on accruals during the initial loss year that is consistent with fixed asset related devaluations/revaluations around the initial loss event. Despite this dampening effect in the shorter test period, initial losses for those firms with a large or bad initial loss are shown to precipitate an increase in negative abnormal accruals during the longer test period.

5.6 Abnormal Accruals and Initial Loss Reporting

The next analysis in this chapter determines the likelihood of a firm reporting an initial loss. There is evidence that firms systematically manage earnings to avoid reporting initial losses (Brown & Caylor, 2005; Burgstahler & Dichev, 1997; Degeorge *et al.*, 1999).

Given the findings in the univariate analysis that abnormal accruals are higher for initial loss firms in the year prior to the initial loss event, this study examines whether the likelihood of reporting an initial loss differs as a function of these prior year abnormal accruals.

The hypothesis to perform this analysis, stated in the null form, is:

> H5.3: there is no association between prior year abnormal accruals and the reporting of an initial loss.

The logit model used to test whether initial loss reporting is affected by a firm's use of abnormal accruals is as follows:

$$P(D_{LOSS\,t} = 1) = \beta_0 + \beta_1 AB\_ACCR_{t-1} + \beta_j Controls_{t-1} + \varepsilon \tag{5.4}$$

where $D_{LOSS\,t}$ = dummy variable = 1 if the firm subsequently reports negative income before extraordinary items in year *t*, 0 otherwise and which, due to the matched sample in this study is = 1 for 50.0% of observations. All other variables are as previously defined. The coefficient of interest, β_1, tests the ability of prior year abnormal accruals to predict the likelihood of an initial loss. The results for the initial loss avoidance analysis are reported in Table 5.5. The coefficient on AB_ACCR_{t-1}

with mean (z-value) of 2.522 (z = 2.16) indicates that the higher are signed abnormal accruals, the more likely is a firm to report an initial loss, i.e. H5.3 can be rejected.

Table 5.5 Testing the Effect of Abnormal Accruals for Initial Loss Reporting

$$P(D_{LOSS\,t} = 1) = \beta_0 + \beta_1 AB\_ACCR_{t\text{-}1} + \beta_j Controls_{t\text{-}1} + \varepsilon$$

Independent Variables	**Coefficient (*z*-value)**
Intercept	-0.870
	(-1.79)*
AB_ACCR $_{t-1}$	**2.522**
	(2.16)**
LMV $_{t-1}$	0.028
	(0.40)
LEV $_{t-1}$	0.532
	(1.00)
GROWTH $_{t-1}$	0.714
	(2.88)***
n	274
Pseudo R^2	3.46%

This table reports the coefficient estimates for probability of reporting an initial loss. The test (initial loss) sample consists of 137 firms which reported a loss in year t following two years of reporting a profit and the control sample consists of 137 firms matched for industry and market value which reported a profit in each of year t-2 to $t+2$. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by z-values (). Significance at the 10%, 5%, and 1% levels are indicated with *,**, and ***, respectively.

Variable Definitions:

AB_ACCR =	the signed abnormal accruals . The abnormal accrual model used is a modified DeFond and Park (2001) model detailed previously in Chapter 3.
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss in the following year and zero otherwise.
LMV =	the natural log of market value.
LEV =	the ratio of total liabilities to total assets.
GROWTH =	the book-to-market ratio, defined as the book value divided by the market value.

5.6.1 Robustness Tests

In order to test the robustness of the results presented in Table 5.4 regression model 5.4 is reestimated using an alternative modified (Francis & Wang, 2008) model to calculate abnormal accruals. The evidence, reported in Table 9.8 in the Appendix, shows that the results for the initial loss avoidance analysis are robust to the alternative specification of abnormal accruals. Further analysis of the relationship between abnormal accruals and initial loss reporting is included in Chapter 6.

5.7 Summary and Conclusions

The empirical analysis in this Chapter examines earnings management behaviour around the initial loss event. Extant research contends that firms manage earnings to avoid, *inter alia*, reporting an initial loss. This chapter is different in that it examines earnings management in situations where the loss is incurred rather than avoided. Firms that subsequently report an initial loss should have higher abnormal accruals in the year before the initial loss when they were attempting to avoid it (but only succeeded in deferring it). The close matching of the control sample in this study by industry and size avoids the criticism that abnormal accruals behaviour varies by industry and size; this study tightly controls for both. The results from the univariate analysis are confirmed by the results from a multivariate logit loss reporting analysis which indicate that firms with high prior year signed abnormal accruals are more likely to report an initial loss. To the best of the author's knowledge, this is the first time that the role of abnormal accruals in initial loss reporting/avoidance has been directly tested (as opposed to indirectly inferred) in this manner.

This research is further extended to explore the change from these pre-period abnormal accrual levels around (in response to) the initial loss event. In that regard, the main empirical analysis examines the impact of an initial loss event on changes in abnormal accruals. A matched control sample is used as a benchmark and a difference-in-differences approach is used to isolate the impact of the initial loss event. There is evidence that the initial loss event precipitates an unwinding of abnormal accruals among loss firms over and above the control sample such that this study can conclude that initial losses matter for the accounting choices of initial loss firms; earnings quality (as represented by abnormal accruals) changes (improves or decreases) in a direct response to the initial loss event. The results of a supplemental multivariate difference-in-difference analysis also indicate that the reversal of abnormal accruals is further accentuated when the severity of the initial loss (as represented by the large/medium/small and bad/average/good criteria outlined previously in the Chapter) is used to condition the model. This study also utilises an alternative specification of the difference-in-difference model and provides additional, albeit indirect, corroborating evidence of the conditioning role played by the severity of the initial loss. The findings are also largely robust to the use of an alternatively modified model to calculate abnormal accruals. Therefore this study can argue that the severity of the loss has, in certain circumstances, a conditioning role to play on the impact of an initial loss on the reversal of abnormal accruals.

At the end of the chapter there is enough evidence to conclude that initial losses matter for the quality of earnings for initial loss firms. That is, from the initial loss reporting/avoidance analysis it is evident that initial loss firms use abnormal prior year accruals in an attempt to avoid (but ultimately succeed in only deferring) the initial loss. It is also evident from the difference-in-difference analysis that initial loss firms unwind these positive abnormal accruals when the loss is unavoidable (i.e. it occurs) and that the extent of unwinding depends on the severity of the loss event. It is also observed that *CFO* does not change any more for initial loss firms than it does for control firms suggesting that the change in earnings over the test period for initial loss firms (not tabulated here) is entirely attributable to the reversal of abnormal accruals. Once again, to the best of the author's knowledge, this is the first time that abnormal accrual behaviour previous to and around a shock event have been analysed in this manner and so the results represent a significant, comprehensive and novel contribution to both the earnings management and loss literatures.

This chapter, in combination with the previous one, raises additional questions. For example, it would be interesting to combine the findings of Chapter 4 regarding corporate governance with those of this Chapter to analyse whether the severity of the initial loss has a conditioning role to play on the observed changes in governance across the test periods and, perhaps more interestingly, whether pre-period corporate governance quality has a mitigating impact on the ability of pre-period abnormal accruals to predict the initial loss and also on the observed earnings management decreases from these pre-period abnormal accruals levels for initial loss firms across the test periods. The next chapter provides significant contributions in addressing these issues.

Chapter 6

Initial Losses, Corporate Governance And Abnormal Accruals

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6.1 Introduction

This chapter extends the empirical findings of the current literature that documents the importance of corporate governance mechanisms for earnings quality in a variety of circumstances. The literature analysed in Section 2.6 of Chapter 2 affirms that the way firms are run and organised is important to preserve the integrity of management and to prevent aggressive accounting manipulation. In fact, when the corporate governance mechanisms are well appointed, they can effectively monitor the actions of management, they cannot easily be overridden and they can better protect shareholders. Using the same sample detailed previously in Chapter 3, this Chapter combines the high, medium and low quality *ex-ante* conditioning corporate governance variables used in Chapters 4 with the abnormal accruals analysis in Chapter 5 to test, *inter alia*, for the mitigating impact of corporate governance on earnings management behaviour at initial loss firms. A combined analysis which examines the change in abnormal accruals for initial loss firms conditioned by *both* the severity of the loss *and* the quality of corporate governance is also performed.

The test periods for these analyses correspond with those in Chapter 5, i.e. test period $\Delta 1$ is from time (t – 1) to t and test period $\Delta 2$ is from time (t – 1) to *either* (t + 1) *or* (t + 2) depending on whether or not the loss firm returns to profitability in year (t + 1) or (t + 2) after the loss event. The loss reporting analysis from Chapter 5 is also extended to examine the conditioning impact of corporate governance on the ability of prior year abnormal accruals to predict a loss.

In addition, for completeness, this chapter also undertakes a test for any conditioning role played by the severity of the initial loss for the change in corporate governance at initial loss firms. It is the anticipatory 24-month return variable (18-months before the year end of the loss year, 6-months after) rather than the 12-month variable in Chapter 5 that is used to determine the markets' interpretation of the severity of the initial loss in this chapter. This is because, as discussed in Chapter 4, changes in governance anticipate the initial loss and are calculated from the end of year (t – 1). The 12-month return variable does not overlap the first six months of year (t – 1) and so the wider return measure is used instead. The test periods for this analysis correspond with those in Chapter 4, i.e. test period Δ1 is from time (t – 1) to t and test period Δ2 is from time (t – 1) to (t + 1).

The chapter is organised as follows: section 6.2 presents evidence from a DID analysis on the mitigating impact of the quality of *ex-ante* corporate governance conditioning variables (Board, Chair, Diversity, Ownership and BSize) on the relationship between initial losses and abnormal accruals behaviour in response to the initial loss. Section 6.3 goes one step further by conditioning the analysis on both the quality of *ex-ante* corporate governance as well as the severity of the initial loss to test whether these two conditioning variables, *in combination*, have a mitigating role to play on the abnormal accruals behaviour of initial loss firms. Section 6.4 presents evidence from a logit analysis on the mitigating impact of corporate governance quality on whether firms with high prior year signed abnormal accruals are more likely to report an initial loss. Section 6.5 presents evidence from a DID analysis on the mitigating impact of the severity of the loss (relative size and market interpretation) on the relationship between initial losses and changes in corporate governance in response to the initial loss. Section 6.6 investigates the Ownership variable further by repeating the analysis in section 6.2 for each of the individual variables that make up the Ownership construct. Section 6.7 summarises and concludes.

6.2 The Effect of an Initial Loss Event Conditioned by Corporate Governance Characteristics on Abnormal Accruals

This section formally examines the mitigating role corporate governance plays on the impact of the initial loss event on the abnormal accruals decisions (changes) made by initial loss firms. Based on the results in Chapter 4 and 5, and in line with the extant literature that earnings quality (management) is increasing (decreasing) in corporate governance, the *ex-ante* expectation is that initial loss firms with lower quality corporate governance will unwind positive abnormal accruals (increase negative abnormal accruals) across the test periods by more than loss firms with higher quality corporate governance.

The hypotheses to perform this analysis, stated in the null form, is:

H6.1: *ex-ante* corporate governance quality has no effect on the association between the reporting of an initial loss and changes in abnormal accruals.

6.2.1 Empirical Results

This section employs the same difference in difference research design detailed previously. It is the role of initial losses as a change agent that is conditioned by corporate governance in the analysis to follow to establish whether corporate governance has any mitigating role to play in the already documented changes in abnormal accruals (from Chapter 5) across the test periods.

To test H6.1, the mitigating impact of corporate governance on the association between the reporting of a loss event and changes in abnormal accruals versus the control sample, this study estimates the following equation:

$$\Delta AB\_ACCR = \beta_0 + \delta_1 D_{LOSS\,t} * D_{LOWGOV\,t-1} + \delta_2 D_{LOSS\,t} * D_{MIDGOV\,t-1} + \delta_3 D_{LOSS\,t} * D_{HIGHGOV\,t-1} + \beta_j \Delta Controls + \varepsilon \tag{6.1}$$

where the dummy variables $D_{LOSS\,t}$, $D_{LOWGOV\,t-1}$, $D_{MIDGOV\,t-1}$and $D_{HIGHGOV\,t-1}$ are the loss and corporate governance quality dummies previously outlined. $Controls$ indicates the control variables (i.e. *LMV*, *CFO*, *LEV* and *GROWTH*) and the intercept β_0 captures the change during the test period for the control firms. The key coefficient of interest then is δ_1 which captures the difference in the change in abnormal accruals between the initial loss sample conditioned by low corporate governance; that is, the mitigating impact of low corporate governance on the initial loss event.

Given the responsiveness of the analysis of abnormal accrual changes over the shorter Δ1 test period to the conditioned severity of loss variable in Chapter 5, the results of estimating equation 6.1 for this test period are included in Table 6.1 — the results for the longer test period (untabulated) are not significant. The results show that $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ is significant for the Board, Ownership and BSize specifications with coefficients (*t*-stats) of -0.056 (*t* = -1.82), -0.060 (*t* = -2.02) and -0.057 (*t* = 1.75), respectively. The coefficient for $D_{LOSS\,t} * D_{HIGHGOV\,t-1}$ is also significant for the Ownership variable indicating that this variable requires further analysis; this will be done later in section 6.5. It is also important to note that, based on the results from the Wald tests included at the end of Table 6.1, the coefficients for the loss sample (i.e. that $D_{LOSS\,t} * D_{LOWGOV\,t-1} + Intercept = 0$) are significant for each of the Board, Diversity, Ownership and BSize specifications.

Thus, this study rejects the null hypothesis H6.1 in favour of the alternative that low corporate governance has a material impact on the association between the reporting of an initial loss and changes in abnormal accruals — in certain specifications, initial loss firms with low corporate governance decrease abnormal accruals (i.e. reverse abnormal accruals or increase negative abnormal accruals) by more than the control sample.

Table 6.1 Testing the Effect of an Initial Loss Event on Abnormal Accruals Conditioned by Corporate Governance Characteristics

$$\Delta\ AB\_ACCR = \beta_0 + \delta_1 D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} + \delta_2 D_{LOSS\ t} * D_{MIDGOV\ t\text{-}1} + \delta_3 D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1} + \beta_j \Delta\ Controls + \varepsilon$$

Panel A Test Period Δ1

Independent Variables	**Board** (*t*-stat)	**Chair** (*t*-stat)	**Diversity** (*t*-stat)	**Ownership** (*t*-stat)	**BSize** (*t*-stat)
Intercept	0.006	0.006	0.005	0.007	0.005
	(0.35)	(0.37)	(0.33)	(0.40)	(0.33)
$\boldsymbol{D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1}}$	**-0.056**	**-0.023**	**-0.039**	**-0.060**	**-0.057**
	(-1.82)*	**(-0.70)**	**(-1.47)**	**(-2.02)****	**(-1.75)***
$D_{LOSS\ t} * D_{MIDGOV\ t\text{-}1}$	-0.014	-0.087	-0.018	0.031	-0.053
	(-0.36)	(-2.39)**	(-0.34)	(0.77)	(-1.61)
$D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1}$	-0.049	-0.037	-0.073	-0.066	-0.022
	(-1.57)	(-1.21)	(-1.90)	(-2.11)**	(-0.67)
$\Delta\ LMV$	0.015	0.012	0.018	0.015	0.018
	(0.55)	(0.45)	(0.63)	(0.55)	(0.66)
$\Delta\ CFO$	-0.538	-0.538	-0.537	-0.536	-0.537
	(-5.95)***	(-5.97)***	(-5.94)***	(-5.98)***	(-5.94)***
$\Delta\ LEV$	-0.045	-0.059	-0.067	-0.055	-0.055
	(-0.40)	(-0.53)	(-0.59)	(-0.50)	(-0.50)
$\Delta\ GROWTH$	0.021	0.017	0.023	0.034	0.026
	(0.55)	(0.44)	(0.60)	(0.87)	(0.67)
n	274	274	274	274	274
R^2	13.50%	13.99%	13.53%	14.91%	13.48%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1}$					
	0.85	0.70	0.38	0.87	0.38
$D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} + Intercept = 0$					
	0.05	0.56	0.10	0.03	0.07
$D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1} + Intercept = 0$					
	0.11	0.23	0.05	0.02	0.57

(Continued)

Table 6.1 Continued

This table reports the effect of an initial loss on the change in abnormal accruals conditioned by corporate governance characteristics. For each (test or control) firm, the test period is the year before the loss event, *t*-1, to either the year of the loss (Δ1) or the year the loss firm returns to profitability (i.e. either year *t*+1 or *t*+2) (Δ2); for those firms that liquidate or are acquired the window is from year *t*-1 to *t*+1. The test (loss sample) consists of 137 (Δ1) and 114 (Δ2) firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t-2* to *t+2*. The difference in the sample sizes in test periods Δ1 and Δ2 is firms (loss or control being acquired in the period *t* to *t*+1. The construction of the governance constructs is explained in Chapter 3. The sample is partitioned based upon sample mean values of Board, Chair, Diversity, Ownership and BSize, which are (because Board, Chair and Ownership were normalised in the construction process) 0, 0, 0, 0 and 6, respectively. Firms with ex-ante corporate governance values in the bottom two quintiles are in the *LOWGOV* group, firms in the middle quintile are in the *MIDGOV* group, and firms in the top two quintiles are in the *HIGHGOV* group. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively.

Variable Definitions:

Δ *AB_ACCR* =	the change in signed abnormal accruals during the test period (i.e. Δ1 or Δ2). The abnormal accrual model used is a modified DeFond and Park (2001) model detailed previously in Chapter 3.
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss during the event window, and zero otherwise.
$D_{LOWGOV\,t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the bottom two quintiles mean in the year before the loss, and zero otherwise
$D_{MIDGOV\,t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the middle quintile in the year before the loss, and zero otherwise
$D_{HIGHGOV\,t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the top two quintiles in the year before the loss, and zero otherwise.
Δ *LMV* =	the change in the natural log of market value.
Δ *CFO* =	the change in the cash flow from operating activities scaled by lagged total assets.
Δ *LEV* =	the change in the ratio of total liabilities to total assets.
Δ *GROWTH* =	the change in the book-to-market ratio, defined as the book value divided by the market value.

6.2.2 Robustness Tests

In order to test the robustness of the results in Table 6.1, equation 6.1 is reestimated using unwisnorised variables. The results in Table 9.9 in the Appendix indicate that the results are the same for $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ in the Board specification and for $D_{LOSS\,t} * D_{HIGHGOV\,t-1}$ in the Ownership specification. The other significant variables in the winsorised results in Table 6.1 are no longer significant, indicating the importance of winsorization.

6.3 The Effect of an Initial Loss Event Conditioned by *Both* Corporate Governance Characteristics *and* the Severity of the Loss on Abnormal Accruals

The previous sections merged the analyses in Chapters 4 and 5 by swapping the conditioning variables in each chapter with the other. For completeness, and academic curiosity, this section goes further still, combining the quality of corporate governance and the severity of the loss conditioning variables to test whether both *in combination* have a mitigating role to play on the change in signed abnormal accruals in response to the initial loss.

The hypothesis to perform this analysis, stated in the null form, is:

H6.2: *ex-ante* corporate governance quality and the severity of the initial loss *in combination* have no effect on the association between the reporting of an initial loss and changes in abnormal accruals.

Before testing the combined mitigating impact of both conditioning variables it is important to verify that there are sufficient numbers in each category to make the results of the analysis worthwhile; the results of the distributions of the initial loss firms by both corporate governance and the severity of the loss (included in Table

9.10 in the Appendix) indicates a good spread of initial loss firms across the nine potential categories.

In addition, previous analyses in Chapter 5 and in section 6.2 of this chapter only found evidence for the significance of results for severe losses (i.e. large/bad) and for low quality corporate governance in the Board and BSize specifications and for both low and high quality corporate governance in the Ownership specification. Therefore it is the analysis of these specific categories that are most worthwhile in this section, i.e. high severity loss *and* low quality corporate governance for Board, Ownership and BSize, and high severity loss *and* high quality corporate governance for Ownership. It is also noted from Table 9.10 that some of the initial loss subgroups are of insufficient size to deliver meaningful results for those subgroups and so this more focused approach is appropriate.

6.3.1 Empirical Results

To perform the analysis in this section in a meaningful way this study estimates the following equation:

$$\begin{aligned}\Delta AB\_ACCR = \beta_0 + {} & \varphi_1 D_{LOSS\,t} * D_{LOWQUAL} * D_{LOWGOV\,t-1} \\ & + \varphi_2 D_{LOSS\,t} * D_{LOWQUAL} * D_{HIGHGOV\,t-1} \\ & + \varphi_3 D_{LOSS\,t} * D_{OTHER} + \beta_j \Delta Controls + \varepsilon\end{aligned} \quad 6.2$$

where the intercept β_0, once again, captures the change during the test period for the entire control sample, the dummy variables $D_{LOSS\,t}, D_{LOWQUAL}$, $D_{LOWGOV\,t-1}$ and $D_{HIGHGOV\,t-1}$ are as previously outlined, and $Controls$ represent the control variables (i.e. *LMV*, *CFO*, *LEV* and *GROWTH*). The interpretation of the D_{OTHER} variable depends on whether it is the Board and BSize specifications or the Ownership specification which is being considered. If it is Board and BSize then D_{OTHER} has a value of 1 those loss firms not in the $D_{LOWQUAL} * D_{LOWGOV\,t-1}$ subgroup, otherwise 0 and if it is Ownership then D_{OTHER} has a value of 1 for those loss firms not in either of the $D_{LOWQUAL} * D_{LOWGOV\,t-1}$ and $D_{LOWQUAL} * D_{HIGHGOV\,t-1}$ subgroups, otherwise 0. The key coefficients of interest then are φ_1 in all specifications (Board, Ownership and BSize) and φ_2 for the Ownership specification. These coefficients capture the difference in the change in signed abnormal accruals between the entire control sample and the initial loss sample conditioned by both low quality corporate governance and high severity loss (φ_1) and the loss sample conditioned by both high quality corporate governance and high severity loss (φ_2).

The results for this analysis are included in Table 6.2 where it is evident that the coefficient on $D_{LOWQUAL} * D_{LOWGOV\,t-1}$ is significant in the Board specification for initial loss firms for the bad/average/good and large/medium/small severity of loss specifications at the 5% and 10% levels, respectively, with coefficients of -0.110 (*t*-stat = -2.55) and -0.081 (*t*-stat = -1.73), respectively indicating that the lower the board quality when the loss is severe (i.e. bad/large), the more an initial loss firm unwinds positive prior year accruals The coefficient on $D_{LOWQUAL} * D_{LOWGOV\,t-1}$ is significant in the BSize specification for initial loss firms for only the large/medium/small severity of loss specification at the 10% level, with a coefficient of -0.085 (*t*-stat = -1.94) and -0.081 (*t*-stat = -1.73), indicating that the smaller the board when the loss is severe (i.e. large), the more an initial loss firm unwinds positive prior year accruals. The coefficient for $D_{LOWQUAL} * D_{HIGHGOV\ t-1}$ is significant for the Ownership specification for both severity of loss specifications at the 1% level with coefficients -0.114 (*t*-stat = -2.72) and -0.117 (*t*-stat = -3.02), respectively, indicating that the higher the quality of corporate governance when the initial loss is severe (i.e. bad/large), the more an initial loss firm unwinds positive prior year accruals. This can be preliminarily interpreted (based on the construction of the Ownership variable in Chapter 3) as initial loss firms with higher outside ownership and/or lower insider ownership being more honest about the extent of the loss. Obviously this interpretation is valid if it is shown, via a loss reporting model, that initial loss firms with high quality ownership do not have higher prior year abnormal accruals; if not then this result is anomalous. The loss reporting analysis necessary to tease out these difficult to interpret Ownership results will be examined further in the next section.

Overall, there is some evidence to reject H:6.2 and this study can conclude that, in combination, *ex-ante* corporate governance quality and the severity of the loss have an effect on the association between the reporting of an initial loss and changes in abnormal accruals.

Table 6.2 Testing the Effect of an Initial Loss Event on Abnormal Accruals Conditioned by Both Corporate Governance Characteristics and the Severity of the Loss

$$\Delta\ AB\_ACCR = \beta_0 + \varphi_1 D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1}$$
$$\varphi_2 D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1} + \varphi_3 D_{LOSS\ t} * D_{OTHER} + \beta_j \Delta\ Controls + \varepsilon$$

Panel A Bad/Average/Good

Independent Variables	**Board** (***t*** **-stat)**	**Ownership** (***t*** **-stat)**	**BSize** (***t*** **-stat)**
Intercept	0.008	0.009	0.006
	(0.51)	(0.52)	(0.38)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1}}$	**-0.110**	**-0.071**	**-0.072**
	(-2.55)**	**(-1.60)**	**(-1.60)**
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1}}$		**-0.114**	
		(-2.72)***	
$D_{LOSS\ t} * D_{OTHER}$	-0.033	-0.024	-0.040
	(-1.36)	(-0.93)	(-1.62)
$\Delta\ LMV$	0.002	0.002	0.013
	(0.06)	(0.07)	(0.45)
$\Delta\ CFO$	-0.533	-0.528	-0.533
	(-5.93)***	(-5.87)***	(-5.89)***
$\Delta\ LEV$	-0.055	-0.036	-0.057
	(-0.50)	(-0.32)	(-0.52)
$\Delta\ GROWTH$	0.019	0.022	0.019
	(0.50)	(0.58)	(0.48)
n	274	274	274
R^2	14.25%	14.73%	13.28%
Two-Tailed *p* -values for Tests of Significance:			
$D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{OTHER}$			
	0.07	0.30	0.47
$D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1} = D_{LOSS\ t} * D_{OTHER}$			
		0.03	
$D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1}$			
		0.42	

(Continued)

Table 6.2 Continued

Panel B Large/Medium/Small

Independent Variables	Board (*t*-stat)	Ownership (*t*-stat)	BSize (*t*-stat)
Intercept	0.006	0.007	0.005
	(0.37)	(0.40)	(0.32)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1}}$	**-0.081**	**-0.023**	**-0.085**
	(-1.73)*	**(-0.046)**	**(-1.94)***
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1}}$		**-0.117**	
		(-3.02)***	
$D_{LOSS\ t} * D_{OTHER}$	-0.040	-0.027	-0.037
	(-1.63)	(-1.05)	(-1.49)
Δ *LMV*	0.013	0.014	0.017
	(0.46)	(0.51)	(0.63)
Δ *CFO*	-0.540	-0.533	-0.537
	(-5.98)***	(-5.94)***	(-5.95)***
Δ *LEV*	-0.046	-0.029	-0.044
	(-0.42)	(-0.26)	(-0.40)
Δ *GROWTH*	0.021	0.028	0.019
	(0.55)	(0.73)	(0.48)
n	274	274	274
R^2	13.45%	15.00%	13.58%
Two-Tailed *p*-values for Tests of Significance:			
$D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{OTHER}$			
	0.36	0.93	0.27
$D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1} = D_{LOSS\ t} * D_{OTHER}$			
		0.02	
$D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1}$			
		0.09	

(Continued)

Table 6.2 Continued

This table reports the effect of an initial loss on the change in abnormal accruals conditioned by corporate governance characteristics and the severity of the loss. For each (test or control) firm, the test period is the year before the loss event, *t*-1, to the year of the loss (Δ1). The test (loss sample) consists of 137 (Δ1) firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t*-2 to *t*+2. The construction of the corporate governance constructs is explained in Chapter 3. The sample is partitioned based upon ex-ante corporate governance values. Firms with ex-ante corporate governance values in the bottom two quintiles are in the *LOWGOV* group, firms in the middle quintile are in the *MIDGOV* group, and firms with governance values in the top two quintiles are in the *HIGHGOV* group. The sample is also partitioned based upon the severity of loss; an initial loss firm with a 12-month return around the loss event (6-months before, 6-months after) in the bottom two quintiles of all (loss and control) such returns or a scaled loss in the top two quintiles of all losses is a bad loss (*LOWQUAL*), in the middle quintile is a medium loss (*MIDQUAL*), and in the top two quinitles is a good loss (*HIGHQUAL*). Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively.

Variable Definitions:

Δ *AB_ACCR* =	the change in signed abnormal accruals during the test period. The abnormal accrual model used is a modified DeFond and Park (2001) model detailed previously in Chapter 5.
$D_{LOSS\ t}$ =	a dummy variable equal to one for firms that report a loss during the event window, and zero otherwise.
$D_{LOWGOV\ t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the bottom two quintiles in the year before the loss, and zero otherwise.
$D_{MIDGOV\ t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the middle quintile in the year before the loss, and zero otherwise.
$D_{HIGHGOV\ t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the top two quintiles in the year before the loss, and zero otherwise.
$D_{LOWQUAL}$ =	a dummy variable equal to 1 if the quality of the firms loss in is the bottom two quintiles, and zero otherwise.
$D_{HIGHQUAL}$ =	a dummy variable equal to 1 if a the quality of the loss is in the top two quintiles, and zero otherwise
D_{OTHER} =	a dummy variable equal to 1 for all other subgroups not included in the regression, and zero otherwise.
Δ *LMV* =	the change in the natural log of market value.
Δ *CFO* =	the change in the cash flow from operating activities scaled by lagged total assets.
Δ *LEV* =	the change in the ratio of total liabilities to total assets.
Δ *GROWTH* =	the change in the book-to-market ratio, defined as the book value divided by the market value.

6.3.2 Robustness Tests

In order to test the robustness of the results in Table 6.2, equation 6.2 is reestimated using unwinsorised variables. The results in Table 9.11 in the Appendix indicate that the results are the essentially the same such that the conclusions regarding the joint impact of corporate governance characteristics and loss severity are the same.

6.4 Abnormal Accruals, Corporate Governance Characteristics and Initial Loss Reporting

The next analysis in this chapter examines the mitigating impact of corporate governance characteristics on the likelihood of a firm reporting a loss. As discussed in Chapter 5, there is evidence that firms systematically manage earnings to avoid reporting losses (Brown & Caylor, 2005; Burgstahler & Dichev, 1997; Degeorge et al., 1999; Holland & Ramsay, 2003; Yang & Mulcahy, 2013). Indeed, the results in Chapter 5 for the unconditioned loss reporting analysis indicate that the higher are signed abnormal accruals, the more likely is a firm to report an initial loss in the following year. This section conditions this analysis on corporate governance to test whether high or low quality governance has a mitigating impact on this observed relationship to test whether the way corporate governance is organised is important to prevent aggressive accounting manipulation. The expectation is that the ability of prior year abnormal accruals to predict a loss is exacerbated by low quality corporate governance.

The hypothesis for this analysis, stated in the null form, is:

H6.4: corporate governance has no effect on the association between prior year signed abnormal accruals and loss avoidance.

6.4.1 Empirical Results

The logit model used to test whether initial loss reporting is affected by a firm's signed abnormal accruals conditioned by corporate governance quality in the year prior to the loss year (plus a set of controls for firm size, leverage, and growth that may affect the likelihood of reporting losses) is as follows:

$$\begin{aligned} P(D_{LOSS\,t} = 1) \\ &= \beta_0 + \beta_1 AB\_ACCR_{t-1} * D_{LOWGOV\,t-1} \\ &+ \beta_2 AB\_ACCR_{t-1} * D_{MIDGOV\,t-1} + \beta_3 AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1} \\ &+ \beta_j Controls_{t-1} + \varepsilon \end{aligned} \quad 6.3$$

where $D_{LOSS\,t}$ = dummy variable = 1 if firm subsequently reports negative income before extraordinary items in year *t*, 0 otherwise and all other variables are as defined previously in the chapter. The coefficient of interest is β_1 which tests the exacerbating effect of low quality corporate governance on the ability of prior year abnormal accruals to predict the initial loss. However, given the anomalous result relating to Ownership in the previous section, the coefficient on the $D_{HIGHGOV\,t-1}$

variable, β_3, is also of interest for the Ownership specification. If this variable is insignificant, the result will rule out the change in abnormal accruals for this subgroup in the previous section being due to abnormally high prior year accruals.

The loss reporting analysis is reported in Table 6.3 for five logistic models testing each of the five conditioning corporate governance variables where the significance levels of the individual coefficients are based on two-tailed *p*-values for asymptotic *z*-statistics. Although referred to as a loss reporting analysis here, it could equally be referred to as a loss avoidance analysis because it attempts to assess the degree to which corporate governance exacerbates the propensity of initial loss firms to avoid/defer that loss via the use of prior year abnormal accruals.

The results indicate that the coefficients on the $AB\_ACCR_{t-1} * D_{LOWGOV\ t-1}$ variable are significant for each of the Board, Diversity, Ownership and BSize with coefficients (*z*-stats) of 6.650 (*z* = 2.92), 4.538 (*z* = 2.86), 2.90 (*z* = 1.94), and 4.720 (*z* = 2.32), respectively. None of the coefficients on $AB\_ACCR_{t-1} * D_{MIDGOV\ t-1}$ or $AB\_ACCR_{t-1} * D_{HIGHGOV\ t-1}$ are significant for any specification and for Board and Diversity the propensity for corporate governance to exacerbate the probability of an initial loss decreases monotonically. The results of the two-tailed tests of significance included at the end of Table 6.4 indicate that not only are the results for firms in the $AB\_ACCR_{t-1} * D_{LOWGOV\ t-1}$ group significantly different from zero, but that these results are also different from those firms in the $AB\_ACCR_{t-1} * D_{HIGHGOV\ t-1}$ group in the Board and Diversity specifications. Specifically, the hypothesis that $AB\_ACCR_{t-1} * D_{LOWGOV\ t-1} = AB\_ACCR_{t-1} * D_{HIGHGOV\ t-1}$ has p-values of <0.01 and 0.01 for Board and Diversity, respectively.

As mentioned above, also noteworthy is the insignificance of the $AB\_ACCR_{t-1} * D_{HIGHGOV\ t-1}$ variable for the Ownership specification which confirms the preliminary interpretation regarding the significant $D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t-1}$ variable in the previous section. In other words, the reason initial loss firms with high quality ownership were shown to change (reduce) abnormal accruals in response to/anticipation of the loss is because they are more honest about the loss when it does occur, not because they had higher prior year abnormal accruals in the first place.

Table 6.3 **Testing the Effect of Abnormal Accruals Conditioned by Corporate Governance Characteristics for Initial Loss Reporting**

$$P(D_{LOSS\,t} = 1) = \beta_0 + \beta_1 AB\_ACCR_{t-1} * D_{LOWGOV\,t-1} + \beta_2 AB\_ACCR_{t-1} * D_{MIDGOV\,t-1} + \beta_3 AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1} + \beta_j Controls_{t-1} + \varepsilon$$

Independent Variables	Board (*z*-stat)	Chair (*z*-stat)	Diversity (*z*-stat)	Ownership (*z*-stat)	Bsize (*z*-stat)
Intercept	-0.946	-0.907	-0.864	-0.884	-0.900
	(-1.89)*	(-1.85)*	(-1.76)*	(-1.81)*	(-1.84)*
$AB\_ACCR_{t-1} * D_{LOWGOV\,t-1}$	6.650	2.012	4.539	2.900	4.720
	(2.92)***	(1.11)	(2.86)***	(1.94)*	(2.32)**
$AB\_ACCR_{t-1} * D_{MIDGOV\,t-1}$	2.336	4.493	1.020	0.676	-0.609
	(1.09)	(1.47)	(0.36)	(0.23)	(-0.27)
$AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1}$	-2.183	2.292	-4.569	2.695	2.316
	(-1.01)	(1.32)	(-1.37)	(1.10)	(1.09)
LMV_{t-1}	0.045	0.031	0.026	0.033	0.036
	(0.63)	(0.44)	(0.37)	(0.47)	(0.51)
LEV_{t-1}	0.454	0.577	0.533	0.514	0.510
	(0.83)	(1.07)	(0.97)	(0.96)	(0.94)
$GROWTH_{t-1}$	0.753	0.715	0.731	0.716	0.739
	(2.94)***	(2.87)***	(2.89)**	(2.88)***	(2.95)***
n	274	274	274	274	274
R^2	5.80%	3.61%	5.43%	3.58%	4.32%
Two-Tailed *p*-values for Tests of Significance:					
$AB\_ACCR_{t-1} * D_{LOWGOV\,t-1} = AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1}$	<0.01	0.91	0.01	0.94	0.42

This table reports the coefficient estimates for probability of reporting an initial loss. The test (initial loss) sample consists of 137 firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of 137 firms matched for industry and market value which reported a profit in each of year *t*-2 to *t*+2. Significance at the 10%, 5%, and 1% levels are indicated with *,**, and ***, respectively. The sample is partitioned based upon ex-ante governance values. Firms with ex-ante corporate governance values in the bottom two quintiles are in the *LOWGOV* group, firms in the middle quintile are in the *MIDGOV* group, and firms in the top two quintiles are in the *HIGHGOV* group. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *z*-statistics ().

(Continued)

Table 6.3 Continued

Variable Definitions:

AB_ACCR =	the signed abnormal accruals. The abnormal accrual model used is the DeFond and Park (2001) model.
$D_{LOSS\ t}$ =	a dummy variable equal to one for loss firms that report a loss and zero otherwise.
$D_{LOWGOV\ t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the bottom two quintiles mean in the year before the loss, and zero otherwise
$D_{MIDGOV\ t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the middle quintile in the year before the loss, and zero otherwise
$D_{HIGHGOV\ t\text{-}1}$ =	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the top two quintiles in the year before the loss, and zero otherwise.
LMV =	the natural log of market value.
LEV =	the ratio of total liabilities to total assets .
GROWTH =	the book-to-market ratio, defined as the book value divided by the market value.

Overall there is evidence that corporate governance characteristics have a mitigating impact on the association between prior year signed abnormal accruals and loss reporting. This study concludes that firms with high quality corporate governance are less likely than firms with low quality corporate governance to report an initial loss as prior year signed accruals increase and so H6.3 can be rejected. These results are also robust to the exclusion of the control variables (results not reported here).

6.4.2 Alternative Model Specification

The logit model used in the previous section does not include the ex-ante corporate governance quality variables as main effects. Consistent with the previous analyses in this study, equation 6.3 can be supplemented to include these main effects. The equation is supplemented as follows:

$$P(D_{LOSS\,t} = 1) = \vartheta_1 D_{LOWGOV\,t-1} + \omega_1 AB\_ACCR_{t-1} * D_{LOWGOV\,t-1} + \vartheta_2 D_{MIDGOV\,t-1} + \omega_2 AB\_ACCR_{t-1} * D_{MIDGOV\,t-1} + \vartheta_3 D_{HIGHGOV\,t-1} + \omega_3 AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1} + \beta_j Controls_{t-1} + \varepsilon \quad 6.4$$

where all of the variables are as defined previously and the intercept is excluded to avoid perfect linear collinearity.

The results from estimating equation 6.4 are included in Table 6.4. Similar to those in Table 6.3, the results indicate that $AB\_ACCR_{t-1} * D_{LOWGOV\,t-1}$ is significant for all corporate governance specifications. None of the coefficients on $AB_ACCR_{t-1} * D_{MIDGOV\,t-1}$and $AB_ACCR_{t-1} * D_{HIGHGOV\,t-1}$are significant in any specification. Also of interest are the significantly negative $D_{LOWGOV\,t-1}$ coefficients in the in the Board, Chair, Diversity and Ownership specifications indicating that in the absence of *ex-ante* high abnormal accruals, firms with low quality corporate governance are less likely to report a loss, perhaps because they are content to build abnormal accruals to defer/avoid it.

Table 6.4 Testing the Effect of Abnormal Accruals Conditioned by Corporate Governance Characteristics for Initial Loss Reporting: An Alternative Specification

$$P(D_{LOSS\,t} = 1) = \vartheta_1 D_{LOWGOV\ t\text{-}1} + \omega_1 AB\_ACCR_{t\text{-}1} * D_{LOWGOV\ t\text{-}1} + \vartheta_2 D_{MIDGOV\,t\text{-}1}$$
$$+ \omega_2 AB\_ACCR_{t\text{-}1} * D_{MIDGOV\,t\text{-}1} + \vartheta_3 D_{HIGHGOV\,t\text{-}1} + \omega_3 AB\_ACCR_{t\text{-}1} * D_{HIGHGOV\,t\text{-}1}$$
$$+ \beta_j Controls_{t\text{-}1} + \varepsilon$$

Independent Variables	**Board (*z*-stat)**	**Chair (*z*-stat)**	**Diversity (*z*-stat)**	**Ownership (*z*-stat)**	**Bsize (*z*-stat)**
$D_{LOWGOV\,t\text{-}1}$	-0.963	-1.005	-0.906	-1.145	-0.809
	(-1.91)*	(-2.01)**	(-1.80)*	(-2.27)**	(-1.59)
$AB\_ACCR_{t\text{-}1} * D_{LOWGOV\,t\text{-}1}$	6.733	2.056	4.557	3.267	4.645
	(2.93)***	(1.12)	(2.86)***	(2.08)**	(2.28)**
$D_{MIDGOV\,t\text{-}1}$	-0.843	-0.840	-0.904	-0.975	-0.748
	(-1.45)	(-1.52)	(-1.26)	(-1.70)*	(-1.30)
$AB\_ACCR_{t\text{-}1} * D_{MIDGOV\,t\text{-}1}$	2.306	4.464	1.034	0.718	-0.584
	(1.07)	(1.46)	(0.36)	(0.24)	(-0.26)
$D_{HIGHGOV\,t\text{-}1}$	-0.772	-0.525	-0.640	-0.392	-0.537
	(-1.34)	(-0.97)	(-1.10)	(-0.75)	(-0.77)
$AB\_ACCR_{t\text{-}1} * D_{HIGHGOV\,t\text{-}1}$	-2.141	2.252	-4.825	3.436	2.259
	(-0.99)	(1.31)	(-1.41)	(1.38)	(1.07)
$LMV_{t\text{-}1}$	0.028	0.002	0.026	0.029	-0.001
	(0.36)	(0.03)	(0.34)	(0.41)	(-0.02)
$LEV_{t\text{-}1}$	0.431	0.579	0.503	0.448	0.448
	(0.79)	(1.07)	(0.91)	(0.83)	(0.82)
$GROWTH_{t\text{-}1}$	0.752	0.695	0.737	0.757	0.717
	(2.95)***	(2.77)***	(2.91)***	(2.98)***	(2.85)***
n	274	274	274	274	274

(Continued)

Table 6.4 Continued

This table reports the coefficient estimates for probability of reporting an initial loss. The test (initial loss) sample consists of 137 firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of 137 firms matched for industry and market value which reported a profit in each of year *t*-2 to *t*+2. Significance at the 10%, 5%, and 1% levels are indicated with *,**, and ***, respectively. The sample is partitioned based upon *ex-ante* governance values. Firms with *ex-ante* corporate governance values in the bottom two quintiles are in the *LOWGOV* group, firms in the middle quintile are in the *MIDGOV* group, and firms in the top two quintiles are in the *HIGHGOV* group. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *z*-statistics ().

Variable Definitions:

AB_ACCR = the signed abnormal accruals . The abnormal accrual model used is the DeFond and Park (2001) model. The method of calculating the abnormal accruals in any year is as follows:

$$AB\_ACCR_t = \frac{WC_t - \left(\frac{WC_{t-1}}{S_{t-1}} * S_t\right)}{TA_{t-1}}$$

where *WC* is the non-cash working capital. *S* is sales. *TA* is total assets.

$D_{LOSS\ t}$ = a dummy variable equal to one for loss firms that report a los in the following year and zero otherwise.

$D_{LOWGOV\ t\text{-}1}$ = a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the bottom two quintiles in the year before the loss, and zero otherwise

$D_{MIDGOV\ t\text{-}1}$ = a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the middle quintile in the year before the loss, and zero otherwise

$D_{HIGHGOV\ t\text{-}1}$ = a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the top two quintiles in the year before the loss, and zero otherwise.

LMV = the natural log of market value.

LEV = the ratio of total liabilities to total assets.

GROWTH = the book-to-market ratio, defined as the book value divided by the market value.

6.4.3 Robustness Tests

In order to test the robustness of the results presented so far, equation 6.3 is calculated using unwinsorised data to verify the findings are not significantly affected by the winsorisation process. The evidence reported in Table 9.12 in the Appendix indicates that with coefficients (*z*-stats) of 6.653 (*z* = 2.82), 3.314 (*z* = 2.26) and 4.375 (z = 2.11) on $AB\_ACCR_{t-1} * D_{LOWGOV\ t-1}$, the results are the same for Board, Diversity and BSize, respectively, such that the conclusions regarding the conditioning impact of these corporate governance characteristics are the same. As before, the results of the two-tailed tests of significance included at the end of Table 9.12 indicate that the coefficients on $AB\_ACCR_{t-1} * D_{LOWGOV\,t-1}$ are also significantly different from those on $AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1}$ in the Board and Diversity specifications with *p*-values of <0.01 and 0.03, respectively.

6.5 The Effect of an Initial Loss Event Conditioned by the Severity of the Loss on Corporate Governance

This section rounds out the DID analyses in this thesis by formally testing the significance of the mitigating role the severity of the loss plays on the impact of the initial loss event on corporate governance changes at loss firms. The literature analysed in Chapter 2 affirms that the severity of the shock can have a conditioning role to play on the relationship being tested. The prediction in this section is that initial loss firms with more severe losses will improve corporate governance most in response to the initial loss. The reasoning is that if the initial loss is viewed as more severe (i.e. as being relatively large or one with a relatively low contemporaneous market return) then it is likely that corporate governance will be under more scrutiny and so more likely to change than if the initial loss is viewed as less severe (i.e. a small business driven event or one with a relatively high contemporaneous market return).

The hypotheses to perform this analysis, stated in the null form, is:

H6.5: the severity of the loss has no effect on the association between the reporting of an initial loss and changes in corporate governance.

6.5.1 Empirical Results

The same difference-in-difference research design detailed previously is employed and the control variable is the all-encompassing Return variable as a compound control variable. To test H6.5, the mitigating impact of corporate governance on the association between the reporting of an initial loss event and changes in abnormal accruals versus the control sample, this study estimates the following equation:

$$\Delta GOV = \beta_0 + \delta_1 D_{LOSS\,t} * D_{LOWQUAL} + \delta_2 D_{LOSS\,t} * D_{MIDQUAL} + \delta_3 D_{LOSS\,t} * D_{HIGHQUAL} + \theta Return + \varepsilon \qquad 6.5$$

where the dummy variables $D_{LOSS\,t}$, $D_{LOWQUAL}$, $D_{MIDQUAL}$ and $D_{HIGHQUAL}$ are the loss and quality of loss dummies previously outlined. The intercept β_0 captures the change during the test period for the entire control sample. The key coefficient of interest is then δ_1 which captures the difference in the change in corporate governance between the high severity loss subsample and the control sample.

Table 6.5 reports the results of estimating equation 6.5 for the large/medium/small severity of loss conditioning variable and Table 6.6 includes those results for the bad/average/good severity of loss conditioning variable. Given the *ex-ante* expectation that it is initial loss firms with severe losses that will increase corporate governance most, the coefficient of interest in both cases is on $D_{LOSS\,t}*\ D_{LOWQUAL}$, which captures the difference between those firms with a severe initial loss versus the entire control sample.

Table 6.5 Testing the Effect of an Initial Loss Event on Corporate Governance Conditioned by the Severity of the Loss: Large/Medium/Small

$$\Delta\ GOV = \beta_0 + \delta_1 D_{LOSS\ t} * D_{LOWQUAL} + \delta_2 D_{LOSS\ t} * D_{MIDQUAL} + \delta_3 D_{LOSS\ t} * D_{HIGHQUAL} + \theta\ Return + \varepsilon$$

Panel A Test Period Δ1

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	-0.025	0.053	0.009	0.104	-0.006
	(-0.57)	(1.56)	(1.32)	(3.91)***	(-0.06)
$D_{LOSS\ t} * D_{LOWQUAL}$	**0.141**	**-0.089**	**0.014**	**0.104**	**-0.105**
	(1.78)*	**(-1.47)**	**(1.18)**	**(2.19)****	**(-0.60)**
$D_{LOSS\ t} * D_{MIDQUAL}$	0.122	-0.022	0.005	0.080	0.151
	(1.19)	(-0.28)	(0.31)	(1.30)	(0.66)
$D_{LOSS\ t} * D_{HIGHQUAL}$	0.083	0.004	0.010	-0.004	-0.517
	(1.08)	(0.06)	(0.89)	(-0.09)	(-0.30)
Return	0.043	-0.103	0.002	-0.110	0.060
	(0.61)	(-1.89)*	(0.17)	(-2.59)***	(0.38)
n	274	274	274	274	274
R^2	1.47%	1.60%	1.00%	5.50%	1.00%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t} * D_{LOWQUAL} = D_{LOSS\ t} * D_{HIGHQUAL}$					
	0.53	0.19	0.79	0.05	0.79
$D_{LOSS\ t} * D_{LOWQUAL} + Intercept = 0$					
	0.08	0.47	0.02	<0.01	0.45
$D_{LOSS\ t} * D_{HIGHQUAL} + Intercept = 0$					
	0.37	0.26	0.05	0.01	0.69

(Continued)

Table 6.5 Continued

Panel B Test Period Δ2

Independent Variables	Board (*t*-stat)	Chair (*t*-stat)	Diversity (*t*-stat)	Ownership (*t*-stat)	BSize (*t*-stat)
Intercept	0.017	0.052	0.002	0.205	-0.146
	(0.26)	(0.83)	(0.23)	(4.67)***	(-1.09)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL}}$	**0.242**	**0.064**	**0.036**	**0.049**	**-0.233**
	(2.09)**	**(0.57)**	**(2.05)****	**(0.61)**	**(-0.96)**
$D_{LOSS\ t} * D_{MIDQUAL}$	0.059	0.106	0.019	-0.068	-0.088
	(0.39)	(0.72)	(0.83)	(-0.66)	(-0.28)
$D_{LOSS\ t} * D_{HIGHQUAL}$	0.124	0.069	-0.004	0.028	-0.014
	(1.13)	(0.65)	(-0.23)	(0.37)	(-0.06)
Return	0.030	-0.040	0.006	-0.079	0.070
	(0.52)	(-0.71)	(0.73)	(-2.02)**	(0.58)
n	238	238	238	238	238
R^2	1.99%	0.73%	2.24%	2.35%	0.67%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t} * D_{LOWQUAL} = D_{LOSS\ t} * D_{HIGHQUAL}$					
	0.38	0.97	0.05	0.82	0.44
$D_{LOSS\ t} * D_{LOWQUAL} + Intercept = 0$					
	<0.01	0.23	0.01	<0.01	0.07
$D_{LOSS\ t} * D_{HIGHQUAL} + Intercept = 0$					
	0.13	0.18	0.91	<0.01	0.41

This table reports the effect of an initial loss event on the change in corporate governance conditioned by severity of the loss. For each (test or control) firm, the test period is the year before the loss event, *t*-1, to either the year of the loss (Δ1) or the year after the loss event (Δ2). The test (loss sample) consists of 137 (Δ1) and 119 (Δ2) firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t-2* to *t+2*. The difference in the sample sizes in test periods Δ1 and Δ2 is firms (loss or control being acquired in the period *t* to *t*+1. The construction of the corporate governance constructs is explained in Chapter 3. The sample is partitioned based upon the severity of the loss; a scaled (by market value) loss in the top two quintiles is a large loss (*LOWQUAL*), in the middle quintile is a medium loss (*MIDQUAL*), and in the bottom two quinitles is a small loss (*HIGHQUAL*). Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively. *(Continued)*

Table 6.5 Continued

Variable Definitions:

Δ *GOV* =	the change in governance during the test period (i.e. Δ1 or Δ2).
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss, and zero otherwise.
$D_{LOWQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a scaled (by market value) loss in the top two quintiles, and zero otherwise
$D_{MIDQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a scaled (by market value) loss in the middle quintile, and zero otherwise
$D_{HIGHQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a scaled (by market value) loss in the bottom two quintiles, and zero otherwise.
Return =	the stock market return over the test period calculated for test period Δ1 as:

$$r_t = \left[\frac{P_t - P_{t-1}}{P_{t-1}}\right] + D_t$$

where D_t is the twelve month forward dividend yield and for test period Δ2 as:

$$r_t = \left[\frac{P_{t+1} - P_{t-1}}{P_{t-1}}\right] + [D_t * (1 + Capital\ Gain_{t+1})] + \left[D_{t+1} * \left(\frac{P_t}{P_{t-1}}\right)\right]$$

where

$$Capital\ Gain_{t+1} = \left[\frac{P_{t+1} - P_t}{P_t}\right]$$

The results for test periods Δ1 and Δ2 in Panels A and B of Tables 6.5 and 6.6 show that Board improves consistently for severe loss firms for both test periods regardless of how the severity of the loss is defined, i.e. the coefficient for $D_{LOSS\,t} * D_{LOWQUAL}$ is significant in all panels indicating that the more severe the loss the more corporate governance (as represented by Board) improves in response to the loss. This is supplemental to the analysis in Chapter 4 that board quality improves, on average (i.e. unconditioned), for all loss firms in response to/anticipation of the loss event. The results are also robust to the exclusion of Return as a control variable.

Table 6.6 Testing the Effect of an Initial Loss Event on Corporate Governance Conditioned by the Severity of the Loss: Bad/Average/Good

$$\Delta\ GOV = \beta_0 + \delta_1 D_{LOSS\ t} * D_{LOWQUAL} + \delta_2 D_{LOSS\ t} * D_{MIDQUAL} + \delta_3 D_{LOSS\ t} * D_{HIGHQUAL} + \theta\ Return + \varepsilon$$

Panel A Test Period Δ1

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	-0.045	0.049	0.007	0.104	-0.032
	(-1.02)	(1.40)	(1.12)	(3.83)***	(-0.32)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL}}$	**0.202**	**-0.008**	**0.015**	**0.062**	**0.085**
	(2.55)**	**(-0.13)**	**(1.29)**	**(1.28)**	**(0.48)**
$D_{LOSS\ t} * D_{MIDQUAL}$	0.230	-0.089	0.019	0.018	0.052
	(2.28)**	(-1.14)	(1.31)	(0.29)	(0.23)
$D_{LOSS\ t} * D_{HIGHQUAL}$	-0.057	-0.043	-0.000	0.065	-0.218
	(-0.65)	(-0.64)	(-0.02)	(1.23)	(-1.12)
Return	0.134	-0.084	0.007	-0.114	0.175
	(1.65)	(-1.33)	(0.58)	(-2.30)***	(0.96)
n	274	274	274	274	274
R^2	3.91%	1.60%	1.03%	4.30%	1.00%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t} * D_{LOWQUAL} = D_{LOSS\ t} * D_{HIGHQUAL}$					
	0.02	0.68	0.34	0.96	0.22
$D_{LOSS\ t} * D_{LOWQUAL} + Intercept = 0$					
	0.01	0.39	0.01	<0.01	0.69
$D_{LOSS\ t} * D_{HIGHQUAL} + Intercept = 0$					
	0.22	0.94	0.56	<0.01	0.18

(Continued)

Table 6.6 Continued

Panel B Test Period Δ2

Independent Variables	Board (*t*-stat)	Chair (*t*-stat)	Diversity (*t*-stat)	Ownership (*t*-stat)	BSize (*t*-stat)
Intercept	0.005	0.062	0.001	0.198	-0.131
	(0.08)	(0.98)	(0.11)	(4.44)***	(-0.97)
$D_{LOSS\ t}$ * $D_{LOWQUAL}$	**0.215**	**0.014**	**0.027**	**0.060**	**-0.232**
	(1.91)*	**(0.13)**	**(1.59)***	**(0.78)**	**(-0.98)**
$D_{LOSS\ t}$ * $D_{MIDQUAL}$	0.262	0.039	0.010	0.037	-0.087
	(1.82)*	(0.28)	(0.46)	(0.37)	(-0.29)
$D_{LOSS\ t}$ * $D_{HIGHQUAL}$	0.021	0.168	0.004	-0.046	0.023
	(0.17)	(1.40)	(0.21)	(-0.54)	(0.09)
Return	0.053	-0.061	0.009	-0.064	0.038
	(0.88)	(-1.03)	(0.94)	(-1.52)	(0.30)
n	238	238	238	238	238
R^2	2.45%	1.21%	1.14%	2.38%	1.00%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t}$ * $D_{LOWQUAL}$ = $D_{LOSS\ t}$ * $D_{HIGHQUAL}$					
	0.19	0.29	0.30	0.30	0.41
$D_{LOSS\ t}$ * $D_{LOWQUAL}$ + *Intercept = 0*					
	0.01	0.38	0.04	<0.01	0.05
$D_{LOSS\ t}$ * $D_{HIGHQUAL}$ + *Intercept = 0*					
	0.82	0.04	0.77	0.05	0.65

This table reports the effect of an initial loss event on the change in corporate governance conditioned by severity of the loss. For each (test or control) firm, the test period is the year before the loss event, *t*-1, to either the year of the loss (Δ1) or the year after the loss event (Δ2). The test (loss sample) consists of 137 (Δ1) and 119 (Δ2) firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t-2* to *t+2*. The difference in the sample sizes in test periods Δ1 and Δ2 is firms (loss or control being acquired in the period *t* to *t*+1. The construction of the corporate governance constructs is explained in Chapter 3. The sample is partitioned based upon the severity of loss; a loss firm with a 24-month return around the loss event in the bottom two quintiles is a bad loss (*LOWQUAL*), in the middle quintile is a medium loss (*MIDQUAL*), and in the top two quinitles is a good loss (*HIGHQUAL*). Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively. *(Continued)*

Table 6.6 Continued

Variable Definitions:

Δ *GOV* =	the change in governance during the test period (i.e. $\Delta 1$ or $\Delta 2$).
$D_{LOSS\ t}$ =	a dummy variable equal to one for firms that report a loss, and zero otherwise.
$D_{LOWQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a 24-month return around the loss event (18-months before, 6-months after) in the bottom two quintiles, and zero otherwise
$D_{MIDQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a 24-month return around the loss event (18-months before, 6-months after) in the middle quintile, and zero otherwise
$D_{HIGHQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a 24-month return around the loss event (18-months before, 6-months after) in the bottom two quintiles, and zero otherwise.
Return =	the stock market return over the test period calculated for test period $\Delta 1$ as:

$$r_t = \left[\frac{P_t - P_{t-1}}{P_{t-1}}\right] + D_t$$

where D_t is the twelve month forward dividend yield and for test period $\Delta 2$ as:

$$r_t = \left[\frac{P_{t+1} - P_{t-1}}{P_{t-1}}\right] + [D_t * (1 + Capital\ Gain_{t+1})] + \left[D_{t+1} * \left(\frac{P_t}{P_{t-1}}\right)\right]$$

where

$$Capital\ Gain_{t+1} = \left[\frac{P_{t+1} - P_t}{P_t}\right]$$

and D_t and D_{t+1} are the twelve month forward dividend yields.

Of the other governance specifications Ownership is significant for the $D_{LOSS\ t} * D_{LOWQUAL}$ variable for the large/medium/small severity of loss conditioning criterion. The only other significant $D_{LOSS\ t} * D_{LOWQUAL}$ variable is Diversity for the bad/average/good severity of loss conditioning criterion across the $\Delta 2$ test period indicating that initial loss firms reporting a large loss increase the percentage of females on the board in response to the loss.

6.5.2 Alternative Model Specification

The model used in the previous section does not include the severity of the loss in each of the subsamples in the bad/average/good specification as main effects. Consistent with the previous analyses in this study, equation 6.5 can be supplemented to include these main effects. The equation is supplemented as follows:

$$\Delta GOV = \vartheta_1 D_{LOWQUAL} + \omega_1 D_{LOSS\,t} * D_{LOWQUAL} + \vartheta_2 D_{MIDQUAL} + \omega_2 D_{LOSS\,t} * D_{MIDQUAL} + \vartheta_3 D_{HIGHQUAL} + \omega_3 D_{LOSS\,t} * D_{HIGHQUAL} + \theta Return + \varepsilon \quad 6.6$$

where all of the variables are as previously outlined and, once again, the intercept is excluded to avoid perfect linear collinearity. Table 6.6 reports the results of estimating equation 6.6. Given the *ex-ante* expectation that it is initial loss firms with severe losses that will increase corporate governance most, the coefficient of interest is on $D_{LOSS\,t}$* $D_{LOWQUAL}$, which captures the difference in the change in corporate governance between low return initial loss firms and low return control firms.

The results for test periods Δ1 and Δ2 in Panels A and B of Tables 6.7 in the alternative specification are the same for Board across the two test periods. Thus, when considered in conjunction with the results in Tables 6.5 and 6.6, this study rejects the null hypothesis H6.5 in favour of the alternative that, especially for the Board specification, the more severe the loss, the more corporate governance improves for loss firms over and above the control sample.

Table 6.7 Testing the Effect of an Initial Loss Event on Corporate Governance Conditioned by the Severity of the Loss: Bad/Average/Good: An Alternative Specification

$$\Delta\ GOV = \vartheta_1 D_{LOWQUAL} + \omega_2 D_{LOSS\ t} * D_{LOWQUAL} + \vartheta_2 D_{MIDQUAL} + \omega_2 D_{LOSS\ t} * D_{MIDQUAL} + \vartheta_3 D_{HIGHQUAL} + \omega_3 D_{LOSS\ t} * D_{HIGHQUAL} + \theta\ Return + \varepsilon$$

Panel A Test Period Δ1

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
$D_{LOWQUAL}$	-0.085	-0.111	0.004	0.031	-0.398
	(-0.83)	(-1.40)	(0.30)	(0.49)	(-1.74)*
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL}}$	**0.234**	**0.140**	**0.018**	**0.132**	**0.431**
	(2.00)**	**(1.54)**	**(1.06)**	**(1.85)***	**(1.64)***
$D_{MIDQUAL}$	-0.116	0.060	0.022	0.149	0.130
	(-1.30)	(0.87)	(1.64)	(2.74)***	(0.65)
$D_{LOSS\ t} * D_{MIDQUAL}$	0.304	-0.096	0.005	-0.025	-0.101
	(2.38)**	(-0.97)	(0.26)	(-0.33)	(-0.35)
$D_{HIGHQUAL}$	-0.001	0.104	0.002	0.113	0.038
	(-0.01)	(2.24)**	(0.27)	(3.09)***	(0.28)
$D_{LOSS\ t} * D_{HIGHQUAL}$	-0.087	-0.075	0.004	0.063	-0.248
	(-0.96)	(-1.06)	(0.27)	(1.14)	(-1.22)
Return	0.102	-0.137	0.009	-0.129	0.086
	(1.17)	(-2.03)**	(0.74)	(-2.41)***	(0.44)
n	274	274	274	274	274
R^2	4.97%	3.76%	5.35%	15.60%	1.96%

(Continued)

Table 6.7 Continued

Panel B Test Period Δ2

Independent Variables	Board (*t*-stat)	Chair (*t*-stat)	Diversity (*t*-stat)	Ownership (*t*-stat)	BSize (*t*-stat)
$D_{LOWQUAL}$	-0.111	-0.036	-0.007	0.064	-0.858
	(-0.71)	(-0.23)	(-0.31)	(0.59)	(-2.65)***
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL}}$	**0.333**	**0.135**	**0.036**	**0.187**	**0.543**
	(1.86)*	**(0.76)**	**(1.30)**	**(1.51)**	**(1.46)**
$D_{MIDQUAL}$	-0.080	0.072	0.009	0.228	0.016
	(-0.65)	(0.59)	(0.46)	(2.66)***	(0.06)
$D_{LOSS\ t} * D_{MIDQUAL}$	0.356	0.009	0.004	-0.001	-0.249
	(1.98)**	(0.05)	(0.14)	(-0.01)	(-0.66)
$D_{HIGHQUAL}$	0.078	0.016	0.004	0.207	-0.092
	(0.93)	(0.19)	(0.30)	(3.48)***	(-0.53)
$D_{LOSS\ t} * D_{HIGHQUAL}$	-0.044	0.149	0.003	-0.047	-0.117
	(-0.34)	(1.17)	(0.15)	(-0.52)	(-0.43)
Return	0.057	0.051	0.008	-0.094	0.260
	(0.46)	(0.41)	(0.42)	(-1.09)	(1.01)
n	238	238	238	238	238
R^2	5.61%	2.36%	2.43%	17.18%	5.48%

This table reports the effect of an initial loss event on the change in corporate governance conditioned by severity of the loss. For each (test or control) firm, the test period is the year before the loss event, *t*-1, to either the year of the loss (Δ1) or the year after the loss event (Δ2). The test (loss sample) consists of 137 (Δ1) and 119 (Δ2) firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t-2* to *t+2*. The difference in the sample sizes in test periods Δ1 and Δ2 is firms (loss or control being acquired in the period *t* to *t*+1. The construction of the corporate governance constructs is explained in Chapter 3. The sample is partitioned based upon the severity of loss; a loss firm with a 24-month return around the loss event in the bottom two quintiles is a bad loss (*LOWQUAL*), in the middle quintile is a medium loss (*MIDQUAL*), and in the top two quinitles is a good loss (*HIGHQUAL*). Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively. *(Continued)*

Table 6.7 Continued

Variable Definitions:

Δ *GOV* =	the change in governance during the test period (i.e. Δ1 or Δ2).
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss, and zero otherwise.
$D_{LOWQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a 24-month return around the loss event (18-months before, 6-months after) in the bottom two quintiles, and zero otherwise
$D_{MIDQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a 24-month return around the loss event (18-months before, 6-months after) in the middle quintile, and zero otherwise
$D_{HIGHQUAL}$ =	a dummy variable equal to 1 if a firm (loss or control) has a 24-month return around the loss event (18-months before, 6-months after) in the bottom two quintiles, and zero otherwise.
Return =	the stock market return over the test period calculated for test period Δ1 as:

$$r_t = \left[\frac{P_t - P_{t-1}}{P_{t-1}}\right] + D_t$$

where D_t is the twelve month forward dividend yield and for test period Δ2 as:

$$r_t = \left[\frac{P_{t+1} - P_{t-1}}{P_{t-1}}\right] + [D_t * \ (1 + Capital\ Gain_{t+1})] + \left[D_{t+1} * \left(\frac{P_t}{P_{t-1}}\right)\right]$$

where

$$Capital\ Gain_{t+1} = \left[\frac{P_{t+1} - P_t}{P_t}\right]$$

and D_t and D_{t+1} are the twelve month forward dividend yields.

6.6 A Further Examination of Ownership

Ownership has provided mixed results over the course of this study due in no small part to the opposite signs of the inside and outside ownership variables used in its construction in Chapter 3. Chapter 4 explored this complication in the context of corporate governance changes by focusing in on total director and professional ownership (i.e. % Tot. Dir. Own. and % Tot. Prof. Own.) statistics as being representative of inside and outside ownership, respectively, to test for their differing conditional impact on any subsequent changes in corporate governance. This section performs a similar analysis for the change in signed abnormal accruals by retesting equation 6.1 using, for completeness, *all* of the variables that make up Ownership (i.e. % Tot. Dir. Own., % Top Dir. Own., % Tot. Prof. Own., % Top Prof. Own., # Prof. Own. and % Tot. Blk. Own.) in an attempt to better understand the significance of the Ownership results in Table 6.1

The results in Table 9.13 in the Appendix show that the significance of the Ownership variable in Table 6.1 cannot be explained individually by any of the six governance variables from which Ownership is constructed. Similarly, the results in Table 9.13 in the Appendix show that there is no uniform relationship among the high and low quality corporate governance variables that easily explains the relationships observed in Table 6.1. For instance, the variables # Prof. Own. and % Tot. Blk. Own. are both significant for $D_{LOSS\,t} * D_{LOWGOV\,t-1}$ and % Tot. Dir. Own., % Tot. Prof. Own. and % Top Prof. Own. are significant for $D_{LOSS\,t} * D_{HIGHGOV\,t-1}$. This suggests that the construction of the Ownership variable from the principal components analysis in Chapter 3 (and the reason this method was chosen to construct the corporate governance variables) provides real insights about an unobservable underlying structure of corporate governance pertaining to general ownership of a company's shares that cannot be easily explained by the individual variables from which it is distilled.

6.7 Summary and Conclusions

The empirical analysis in this Chapter combines elements previously discussed in Chapters 4 and 5 and examines the impact of corporate governance characteristics and the severity of the loss on abnormal accruals in a variety of circumstances.

The first analysis builds on the results presented in Chapter 5 by examining whether the observed relationship between the initial loss event and changes in abnormal accruals is further accentuated when the quality of corporate governance is used as a conditioning variable. The evidence is that initial loss firms with lower quality *ex-ante* corporate governance decrease abnormal accruals in the loss year and that this decrease is in fact the unwinding of the positive abnormal accruals that were used in an attempt to avoid (and ultimately succeeded in only deferring) the loss. A supplemental model is also used to amalgamate this analysis with that in Chapter 5 to examine the *combined* impact of high severity losses *and* low quality corporate governance on abnormal accruals behaviour of initial loss firms. The evidence is that, when losses are severe *and* corporate governance is of low quality then the abnormal accruals decrease for initial loss firms (versus the entire control sample) is greatest. The only corporate governance specification which seems to provide anomalous result is Ownership. In both the analyses detailed above, there is also evidence that initial loss firms with high quality Ownership also decrease abnormal accruals by more than the control sample. This could indicate, counter intuitively, that initial loss firms with higher quality Ownership engage in positive abnormal accruals behaviour in the year before the loss that is subsequently unwound. This quandary is solved by an the loss reporting analysis conditioned by corporate governance which finds evidence that the ability of higher pre-period abnormal accruals to predict an initial loss in the following year is, in almost all specifications (i.e. Board, Diversity, Ownership and BSize) increasing in low quality corporate governance. Notable is that the coefficients for the high quality corporate governance conditioned variables are not significant for any specification. Therefore this study can conclude that the decrease in abnormal accruals for initial loss firms with high quality Ownership discussed above is not the unwinding of positive abnormal accruals created by these firms in an attempt to avoid the loss, but rather an honest indication about the extent of the loss.

While focusing on the absence of significance for the high quality Ownership subgroup is useful in helping to properly contextualise the anomalous results from the difference in difference analysis for this group, it is the almost universal significance (Chair is an exception) of the low quality corporate governance subgroups which is of primary concern. Indeed, the significance of the conditioning impact of these low quality corporate governance variables in the loss reporting firms is, perhaps, the most important set of results (and hence one of the most important contributions) of this thesis. That is, Chapter 5 found evidence that firms with high prior year signed abnormal accruals are more likely to report an initial loss. This chapter goes further still, conditioning this already novel analysis on corporate governance quality and finds evidence of the exacerbating role that low quality corporate governance plays for loss avoidance — the corollary of which is the relative mitigating role that high quality corporate governance plays for loss reporting. In other words pre-period abnormal accruals only help to predict the initial loss for those firms with low quality corporate governance, i.e. the earnings manipulators. Firms with high quality corporate governance do not manipulate their pre-period abnormal accruals and so these don't help to predict the initial loss for these firms.

These results are related to the univariate signed abnormal accruals analysis in Chapter 5 where it was observed that, on average, initial loss firms had abnormal accruals significantly higher than control firms in the year before the loss and the contention that it is these abnormal accruals which unwind in the initial loss year. That is, it is the avoidance (deferral) of the loss at time (t – 1) via the use of abnormal accruals which is the primary driver of the relationship.

For completeness, a final analysis in this chapter tests whether the relationship between the initial loss event and changes in corporate governance observed in Chapter 4 is further accentuated when the severity of the loss is used as a conditioning variable. The evidence is that the more severe the initial loss the more corporate governance changes in anticipation of/in response to the loss, especially for Board. Similar to the conclusions in Chapter 4, the significance of these results should not be underestimated. Notwithstanding the inherent stickiness and uniformity of corporate governance, the fact that this chapter finds (supplemental to the results in Chapter 4) evidence that the more severe the loss the more corporate governance unsticks (improves) is another significant incremental contribution to the existing literature.

In conclusion, the analyses in this chapter build on the significant results and contributions documented previously in Chapters 4 and 5 to perform a deeper, compound analysis of the interaction between initial losses, abnormal accruals and corporate governance. Based on the results presented in this chapter, and robust to both alternative interaction specifications of the difference in differences model and the winsorisation process, this study concludes, *inter alia*, that corporate governance has a statistically significant impact on earnings quality for initial loss firms. The analyses conducted to come to this conclusion are, in addition to those results already discussed in Chapters 4 and 5, significant additional and novel contributions that further synthesise the loss, earnings management and corporate governance literatures.

Chapter 7

Conclusion

This study is a robust synthesis of the loss, corporate governance and earnings management literatures focusing on the impact of an initial loss event on changes in corporate governance and earnings management behaviour.

The extant research provides evidence of management changes as a result of poor performance and governance changes following accounting misstatements or fraud. There is also evidence that corporate governance influences the relation between management turnover and performance. This study is different in that it examines corporate governance changes associated with unambiguous evidence of underperformance — the reporting of an initial loss.

This study investigates the nuanced role of initial losses as a troubled situation requiring remedial action and one which, *potentially*, may evolve to become a crisis. One way for initial loss firms to signal that the loss is not terminal is to demonstrate that the company is well governed. Accordingly, any firm that incurs or is about to incur a loss will ensure that its governance is of a sufficiently high standard to signal its ability to continue as a going concern. There is also evidence that firms can anticipate incurring and reporting a loss and on occasion can even manage earnings to defer/avoid the loss. It is axiomatic that a sample of loss firms comprises firms that could not avoid incurring losses. It is also likely that these firms will have anticipated the loss before it is announced and evidence of same will be exhibited in the abnormal accrual choices of these firms. It is also likely that these choices will depend on the relative severity of the loss event. An alternative strategy to managing earnings to avoid the consequences of an initial loss is disclosure and timely information management. Thus, it is likely that loss firms will make any necessary corporate governance improvements before announcing the initial loss.

What is obvious is that the reporting of an initial loss should have implications for the corporate governance and earnings management behaviour at those firms. Given the lack of a cohesive literature that extensively explores the intersection between the loss, corporate governance and earnings management literatures, to the best of the author's knowledge, this is the first study that comprehensively combines the three to investigate several gaps in the literature.

To gather evidence and answer the research questions, a sample of initial loss firms in the UK is collected over a three year period from 2004–2006. A control sample matched on industry class and size is also collected. Using these samples a univariate and difference-in-difference analyses are used to test if incurring an initial loss has implications for corporate governance and earnings management at those firms. First of all factor analysis is used to distil corporate governance information into three primary constructs: Board, Chair and Ownership. The use of amalgamations in this manner is justified because underlying corporate governance is made up from a number of individual and interrelated mechanisms which function together. Board Size and Diversity are also used as corporate governance variables throughout the study.

A multivariate difference-in-difference analysis which conditions the analysis by the quality of corporate governance in place before the initial loss, shows that there are clear changes in corporate governance in the initial loss subsamples where relative corporate governance weakness existed beforehand relative to the entire control sample with respect to all aspects of corporate governance considered. In addition Board size regresses toward its mean following an initial loss. The results of multivariate analyses which condition by loss severity also show that relatively more severe losses motivate corporate governance to improve. These results contribute to the literature which asserts that although a firm's corporate governance equilibrium can be sticky and slow to change it is not entirely fixed and responds to negative shocks.

The study also investigates earnings management around initial losses. Studies that have examined the kink in the earnings distribution around zero have focused on deferred or avoided losses. This study analyses the earnings management behaviour of initial loss firms who are unable to defer the loss or unwilling to manage earnings to do so. The sample of initial loss firms in this study clearly could not avoid incurring the loss such that an analysis of the quality of earnings in the year before the initial loss can be used to directly test for evidence of earnings management. The results from a univariate analysis, confirmed by a logit analysis, indicate that initial loss firms have significantly higher abnormal accruals in the year before the loss — i.e. clear evidence of earnings management to avoid the zero benchmark. The results from a multivariate DID analysis indicate that the loss motivates an unwinding of these abnormal accruals among initial loss firms, particularly where loss is relatively severe, although no evidence of big-bath behaviour is found. To the best of the author's knowledge, this is the first time that the role of abnormal accruals previous to and around a shock event have been analysed in this manner and so the results represent a significant, comprehensive and novel contribution to both the earnings management and loss literatures.

The final part of this research investigates, *inter alia*, the mitigating impact that the quality of corporate governance has on the analysis of the earnings management behaviour of initial loss firms discussed above. The evidence is that initial loss firms with a prior weakness in corporate governance decrease abnormal accruals by an amount significantly greater than prior year abnormal accruals alone — initial loss firms with low quality corporate governance are more likely to take the opportunity to make a bad situation worse. Indeed, the unwinding of abnormal accruals is greatest when corporate governance is weak *and* the loss is relatively severe. There is also evidence that the ability of pre-period abnormal accruals to predict an initial loss is dependent on corporate governance quality, i.e. it is those initial loss firms with weak corporate governance that are most likely to manipulate earnings. The results from these conditioned analyses represents a significant additional contribution to the loss, corporate governance and earnings management literatures.

These findings should be of interest to companies that may wish to promulgate the relative improvement in the quality of their corporate governance or the quality of their earnings and the perception of both of these by investors. They should also be of interest to analysts and investors in their effort to value companies by giving them clues as to how well governed a firm is and how reliable are its accounting numbers for valuation purposes. Finally it should be of interest to regulators who may wish to adjust particular aspects or recommendations of the regulatory code to mitigate the loss in information content when the governance of all firms is uniform.

In conclusion, firms are sensitive to how an initial loss will be interpreted and, despite the fact that it can be sticky and slow to change, adjust their corporate governance to signal that the initial loss is temporary. The weaker the corporate governance and the more severe the loss the more likely it is that initial loss firms will make such adjustments. Initial loss firms also attempt to defer the loss by using abnormal accruals, the weaker the corporate governance the more likely they are to do so. In combination, the results in the empirical chapters of this thesis represent a significant contribution to the loss, corporate governance and earnings management literatures synthesising elements of all three to conclude that initial losses can now be added to accounting misstatements, fraud and the revelation of ICMWs as a type of event that may influence and precipitate a changes in corporate governance and earnings management behaviour.

Readers should be aware of some limitations for the research. Academic research is by its nature driven by what went before and, as a result of the investigative process involved, is designed to contribute to what comes after. While research questions are formulated and tested and results are documented, the academic research process often throws up as many questions as it answers. Even though every research thesis has some parameters imposed by the specificity of the research undertaken that enables the research at some point to be "complete", that doesn't mean the research *process* is complete. This is because the questioning involved in the research process brings a deeper understanding of the subject matter and motivates incremental improvements in the information collected, different constructions of the variables used and different specifications of the models implemented. In essence a research study such as this one provides a potential roadmap for an on-going research process into the future.

The first problem for any empirical study in the social sciences is the complexity of the real world system under investigation. While the natural sciences have established methodological processes such that associations between variables can be tested to the exclusion of any other confounding effects in controlled experiments, the social sciences are beset by such confounding problems — the omitted variables problem is omnipresent. This study attempts to control for these implicit problems by structuring the methodological approach to minimise the adverse impact of confounding events and omitted variables. Specifically, a DID approach is used throughout such that relationships between variables can be appropriately tested. While this research methodology (effectively a natural experiment) is much cleaner than simple difference models, much of the extent literature uses such simple difference models to draw conclusions. In that regard, the results in this study are not directly comparable to those from simple difference studies.

Another problem is the lack of comprehensive theoretical frameworks to inform the research process. For this study the lack of a universal agreement on the subject of corporate governance is an example. Corporate governance as an area for academic research is relatively new. Despite the seminal work of Jensen and Meckling (1976) and Fama *et al.* (1983), corporate governance has only really come into sharp focus since the turn of the century and can be traced to the various high profile corporate scandals where shortcomings in corporate governance has been a recurring theme. Because academic research is driven by what went before and, in this case, is restricted by the fact that the issues under investigation (corporate governance and earnings quality) are still open to debate, formulating specific research questions and determining appropriate models is difficult.

The appropriate variables to use for the measurement of corporate governance is also a source of on-going debate in the extant literature, and even when there is agreement that (say) board quality is important, how that quality is captured is another point of debate. While this study attempts to avoid imposing preconceived ideas of what constitutes an appropriate corporate governance measure, this approach also introduces its own problems, i.e. the alternative signs on the outside and inside ownership variables makes the Ownership variable in this study difficult to interpret. So, while on balance it is believed that the factoring of the governance information into amalgamations is appropriate, there is a potential opportunity in future research to also test each of the governance variables individually to tease out specific relationships.

Another problem for this study is what constitutes earnings quality. The extant research is replete with measures of earnings quality; the magnitude of signed abnormal accruals, the likelihood of reporting a loss and earnings conservatism have all been used as measures of earnings quality as have the market's interpretation of those earnings. In other words there is any number of ways to measure managerial choice as it pertains to earnings quality. This study chooses one measure of abnormal accruals and tests for robustness with a second (related) measure. An obvious avenue for future research is to include additional measures of *earnin*gs quality. In reality, given the complexity of the analysis already undertaken in this thesis, the investigation of any additional measures or an investigation of the market's interpretation of those measures is, in effect, a separate research study with altogether different research questions.

The findings presented here also stimulate some interesting questions for future research. First of all, the sample could be extended to include additional loss years. This research was restricted to three years because each loss year required the collection of four years of corporate governance data for the initial loss firms and the control sample. Now that the dynamics of corporate governance changes and the earnings management behaviour around the initial loss event are understood, a more restricted data collection process focusing on the prior year and the loss year would make the inclusion of additional loss years worthwhile. Secondly, a less restricted sample using *all* losses rather than initial losses could be used to analyse abnormal accruals behaviour (general and specific) in the year before the loss. Thirdly, this study is focused on the UK which has a legal system based on common law. The analysis here could be extended to other code law jurisdictions to test whether the changes in corporate governance and the earnings management behaviour in response to the initial loss is the same for both jurisdictions. The mitigating role of corporate governance on earnings management in such a code law setting would be an interesting comparison.

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Appendix

Table 9.1 **Descriptive Statistics of Corporate Governance Variable Levels**

Panel A: All Periods Combined

	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
	Combined Initial Loss and Control Samples								
Board	1,002	0.000	0.885	0.017	-2.178	2.299	-0.167	2.612	0.000
Chair	1,002	0.000	0.900	0.273	-1.094	0.954	0.172	1.279	0.000
Diversity	1,002	0.088	0.135	0.000	0.000	0.500	1.153	2.935	0.000
Ownership	1,002	0.000	0.776	0.056	-2.587	2.086	-0.494	3.251	0.000
BSize	1,002	6.663	2.306	6.000	1.000	15.000	0.859	4.078	0.000
%Tot.Prof.Own.	1,002	0.310	0.199	0.296	0.000	0.947	0.324	2.492	0.000
%Tot.Dir.Own.	1,002	0.150	0.194	0.065	0.000	0.945	1.595	4.852	0.000
	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	492	0.053	0.883	0.089	-2.178	2.044	-0.237	2.656	0.002
Chair	492	0.092	0.898	0.273	-1.094	0.954	-0.343	1.335	0.000
Diversity	492	0.101	0.146	0.000	0.000	0.500	1.020	2.583	0.000
Ownership	492	0.114	0.766	0.218	-2.010	2.086	-0.453	3.046	0.000
BSize	492	6.637	2.064	6.000	1.000	13.000	0.365	2.840	0.002
%Tot.Prof.Own.	492	0.335	0.205	0.329	0.000	0.890	0.228	2.463	0.000
%Tot.Dir.Own.	492	0.125	0.177	0.042	0.000	0.710	1.648	4.735	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	510	-0.051	0.885	-0.067	-2.178	2.299	-0.100	2.597	0.004
Chair	510	-0.089	0.894	0.273	-1.094	0.954	-0.011	1.267	0.002
Diversity	510	0.076	0.123	0.000	0.000	0.480	1.251	3.176	0.000
Ownership	510	-0.110	0.770	-0.046	-2.587	1.776	-0.559	3.402	0.000
BSize	510	6.688	2.519	6.000	2.000	15.000	1.093	4.365	0.000
%Tot.Prof.Own.	510	0.286	0.191	0.280	0.000	0.947	0.394	2.511	0.000
%Tot.Dir.Own.	510	0.174	0.207	0.088	0.000	0.945	1.510	4.615	0.000

(Continued)

Table 9.1 Continued

Panel B: Pre-Period (*t* - 1)

	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	138	-0.037	0.777	-0.067	-2.178	1.665	-0.228	2.868	0.367
Chair	138	0.060	0.891	0.273	-1.094	0.954	-0.281	1.350	0.231
Diversity	138	0.091	0.142	0.000	0.000	0.480	1.177	2.914	0.000
Ownership	138	-0.033	0.758	-0.001	-2.010	2.085	-0.367	3.300	0.208
BSize	138	6.725	2.177	6.000	2.000	13.000	0.582	2.663	0.002
%Tot.Prof.Own.	138	0.294	0.192	0.282	0.000	0.890	0.441	2.834	0.011
%Tot.Dir.Own.	138	0.142	0.189	0.054	0.000	0.701	1.532	4.294	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	138	-0.063	0.853	-0.080	-2.178	2.299	-0.086	2.718	0.505
Chair	138	-0.108	0.903	'0.273	-1.094	0.954	0.037	1.251	0.462
Diversity	138	0.071	0.118	0.000	0.000	0.480	1.261	3.189	0.000
Ownership	138	-0.189	0.785	-0.178	-2.587	1.657	-0.340	3.301	0.126
BSize	138	6.623	2.594	6.000	3.000	15.000	1.214	4.559	0.000
%Tot.Prof.Own.	138	0.266	0.193	0.241	0.000	0.808	0.541	2.595	0.000
%Tot.Dir.Own.	138	0.185	0.210	0.102	0.000	0.945	1.502	4.737	0.000

(Continued)

Table 9.1 Continued

Panel C: Initial Loss Year (*t*)

	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	138	0.051	0.837	0.089	-2.178	1.842	-0.260	2.684	0.024
Chair	138	0.064	0.901	0.273	-1.094	0.954	-0.273	1.321	0.070
Diversity	138	0.108	0.150	0.000	0.000	0.500	0.927	2.380	0.000
Ownership	138	0.114	0.791	0.221	-1.845	2.086	-0.404	2.966	0.006
BSize	138	6.708	2.122	6.000	2.000	13.000	0.460	2.893	0.000
%Tot.Prof.Own.	138	0.337	0.207	0.333	0.000	0.890	0.261	2.463	0.000
%Tot.Dir.Own.	138	0.127	0.184	0.048	0.000	0.710	1.693	4.763	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	138	-0.078	0.860	-0.067	-2.178	1.765	-0.263	2.605	0.143
Chair	138	-0.078	0.904	0.272	-1.094	0.954	-0.020	1.250	0.458
Diversity	138	0.080	0.123	0.000	0.000	0.444	1.073	2.605	0.000
Ownership	138	-0.110	0.768	-0.092	-2.484	1.418	-0.515	3.393	0.021
BSize	138	6.630	2.494	6.000	2.000	15.000	1.068	4.296	0.000
%Tot.Prof.Own.	138	0.284	0.193	0.282	0.000	0.740	0.447	2.423	0.001
%Tot.Dir.Own.	138	0.170	0.206	0.084	0.000	0.893	1.614	4.999	0.000

(Continued)

Table 9.1 Continued

Panel D: Post-Period (*t* + 1)

	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	114	0.115	0.967	0.200	-2.178	2.006	-0.188	2.436	0.534
Chair	114	0.171	0.900	0.614	-1.094	0.954	-0.517	1.485	0.044
Diversity	114	0.104	0.150	0.000	0.000	0.500	0.950	2.470	0.000
Ownership	114	0.161	0.762	0.262	-1.791	1.693	-0.500	2.836	0.024
BSize	114	6.632	1.979	7.000	1.000	12.000	0.093	2.891	0.992
%Tot.Prof.Own.	114	0.348	0.209	0.341	0.000	0.835	0.047	2.247	0.034
%Tot.Dir.Own.	114	0.118	0.169	0.030	0.000	0.696	1.639	4.759	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	124	-0.054	0.908	-0.102	-2.178	1.842	-0.053	2.601	0.294
Chair	124	-0.113	0.893	0.273	-1.094	0.954	0.028	1.274	0.436
Diversity	124	0.076	0.127	0.000	0.000	0.480	1.354	3.501	0.000
Ownership	124	-0.070	0.761	0.019	-2.419	1.776	-0.603	3.638	0.009
BSize	124	6.653	2.541	6.000	2.000	15.000	1.058	4.418	0.000
%Tot.Prof.Own.	124	0.298	0.187	0.294	0.000	0.947	0.444	3.082	0.017
%Tot.Dir.Own.	124	0.173	0.205	0.089	0.000	0.857	1.454	4.308	0.000

(Continued)

Table 9.1 Continued

Panel E: Post-Period (*t* + 2)

	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	102	0.109	0.978	0.164	-2.178	2.044	-0.405	2.522	0.055
Chair	102	0.085	0.912	0.273	-1.094	0.954	-0.343	1.335	0.197
Diversity	102	0.102	0.150	0.000	0.000	0.500	1.022	2.612	0.000
Ownership	102	0.260	0.722	0.398	-1.693	1.677	-0.623	3.255	0.011
BSize	102	6.431	1.932	6.000	2.000	11.000	0.022	2.578	0.875
%Tot.Prof.Own.	102	0.376	0.208	0.385	0.000	0.85	0.077	2.518	0.191
%Tot.Dir.Own.	102	0.106	0.160	0.018	0.000	0.640	1.672	4.867	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
Board	110	-0.000	0.940	-0.003	-2.178	1.842	-0.030	2.392	0.161
Chair	110	0.050	0.880	0.273	-1.094	0.954	-0.103	1.318	0.420
Diversity	110	0.075	0.125	0.000	0.000	0.469	1.321	3.422	0.000
Ownership	110	-0.055	0.768	0.055	-2.426	1.249	-0.854	3.494	0.000
BSize	110	6.882	2.452	7.000	3.000	15.000	1.018	4.146	0.000
%Tot.Prof.Own.	110	0.302	0.189	0.293	0.000	0.731	0.111	2.096	0.026
%Tot.Dir.Own.	110	0.170	0.209	0.068	0.000	0.866	1.461	4.322	0.000

(Continued)

Table 9.1 Continued

Panel A of this table provides detailed descriptive statistics for the corporate governance variables for the initial loss and control samples as well as combined panel of both initial loss and control samples for four year test period from (t - 1) to (t + 2). Descriptive statitics for the loss and control firms in each of the time periods (t - 1) (Panel B: Preperiod), t (Panel C: Loss Year) and (t + 1) (Panel D: Postperiod) and (t + 2) (Panel E: Postperiod) are also included. Time t includes panel data from years 2004, 2005 and 2006. The collection and matching of the initial loss and control samples is detailed in hapter 3. The decrease in the number of firms (initial loss and control) across time is due to firms liquidating or being acquired. Board, Chair and Ownership are corporate governance amalgamations, the construction of which is according to a principal components analysis the workings of which are included in Table 3.11. BSize is the size of the board. %Tot. Prof. Own. and %Tot. Dir. Own. are the percentage owned by professionals and directors, respectively. Diversity is a measure of gender diversity (also known as the Blau Index) calculated according to the formula:

$$Diversity = 1 - \sum_{i=1}^{n} P_i^2 = 1 - \left[P_f^2 + P_m^2\right]$$

where P_i is the proportion in each category (female, f, or male, m).

Table 9.2 Descriptive Statistics of Non-Corporate Governance Variable Levels

Panel A: All Periods Combined

	Obs.	Mean	Std. Dev.	Median	Min	Max	Skewness	Kurtosis	Normality
	Combined Initial Loss and Control Samples								
AB_ACCR	787	-0.005	0.162	0.001	-1.869	0.498	-5.880	69.991	0.000
LMV	824	4.031	1.913	3.919	-0.186	9.494	0.494	3.144	0.000
CFO	785	0.078	0.116	0.076	-0.350	0.504	0.020	5.490	0.000
LEV	785	0.537	0.293	0.523	0.056	2.755	2.733	18.790	0.000
GROWTH	798	0.599	0.744	0.524	-6.569	2.816	-3.734	37.870	0.000
	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
AB_ACCR	388	-0.008	0.176	0.001	-1.869	0.498	-6.102	65.734	0.000
LMV	412	3.862	1.937	3.798	-0.186	9.494	0.409	2.947	0.121
CFO	386	0.039	0.109	0.049	-0.350	0.503	-0.382	6.246	0.000
LEV	386	0.569	0.323	0.556	0.056	2.755	2.616	16.83	0.000
GROWTH	387	0.632	0.958	0.599	-6.569	2.816	-3.727	28.659	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
AB_ACCR	399	-0.002	0.146	-0.000	-1.869	0.498	-5.264	71.087	0.000
LMV	412	4.200	1.876	3.974	-0.186	9.494	0.618	3.306	0.007
CFO	399	0.116	0.11	0.106	-0.268	0.504	0.401	5.031	0.000
LEV	399	0.506	0.257	0.485	0.056	2..755	2.735	20.41	0.000
GROWTH	411	0.568	0.46	0.491	-1.537	2.227	0.217	7.350	0.000

(Continued)

Table 9.2 Continued

Panel B: Pre-Period (*t* - 1)

	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
AB_ACCR	137	0.016	0.095	0.008	-0.366	0.372	-0.034	6.926	0.000
LMV	137	3.922	1.824	3.966	0.588	9.131	0.525	3.132	0.000
CFO	137	0.060	0.107	0.063	-0.266	0.504	0.100	6.645	0.000
LEV	137	0.512	0.239	0.508	0.075	1.553	1.001	5.956	0.000
GROWTH	137	0.765	0.601	0.657	-1.231	2.227	-0.093	4.154	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
AB_ACCR	137	-0.011	0.130	-0.008	-0.505	0.372	-1.148	8.046	0.000
LMV	137	4.014	1.846	3.784	0.588	9.131	0.778	3.290	0.000
CFO	137	0.131	0.119	0.117	-0.266	0.504	0.606	4.719	0.000
LEV	137	0.502	0.238	0.477	0.075	1.553	1.438	7.267	0.000
GROWTH	137	0.589	0.476	0.494	-1.231	2.227	0.695	5.944	0.000

(Continued)

Table 9.2 Continued

Panel C: Initial Loss Year (*t*)

	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
AB_ACCR	137	-0.030	0.257	-0.003	-1.869	0.498	-5.327	39.48	0.000
LMV	137	3.829	1.971	3.780	-0.105	9.195	0.367	2.744	0.000
CFO	137	0.018	0.108	0.031	-0.350	0.312	-1.190	6.046	0.000
LEV	137	0.567	0.255	0.575	0.068	1.787	0.704	5.657	0.000
GROWTH	137	0.748	0.708	0.604	-1.537	2.816	0.296	4.960	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
AB_ACCR	137	0.000	0.194	0.006	-1.869	0.498	-6.299	64.824	0.000
LMV	137	4.215	1.873	4.049	-0.105	9.195	0.573	3.348	0.000
CFO	137	0.109	0.108	0.095	-0.212	0.427	0.433	4.608	0.000
LEV	137	0.503	0.247	0.472	0.068	1.787	2.135	11.794	0.000
GROWTH	137	0.527	0.419	0.477	-1.537	1.774	0.954	10.156	0.000

(Continued)

Table 9.2 Continued

Panel D: Post-Period (*t* + 1)/(*t* + 2)

	Initial Loss Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
AB_ACCR	113	-0.010	0.123	-0.007	-0.474	0.390	-0.988	8.265	0.000
LMV	136	3.835	2.026	3.598	0.186	9.494	0.373	2.947	0.121
CFO	112	0.040	0.109	0.045	-0.276	0.399	-0.037	5.430	0.000
LEV	111	0.642	0.452	0.575	0.056	2.755	2.664	12.368	0.000
GROWTH	111	0.322	1.417	0.464	-6.569	2.174	-3.561	17.113	0.000
	Control Sample								
	Obs.	**Mean**	**Std. Dev.**	**Median**	**Min**	**Max**	**Skewness**	**Kurtosis**	**Normality**
AB_ACCR	123	0.006	0.090	-0.001	-0.218	0.390	1.329	7.617	0.000
LMV	137	4.369	1.906	4.199	-0.186	9.494	0.513	3.360	0.007
CFO	123	0.108	0.01	0.100	-0.268	0.399	-0.204	5.480	0.000
LEV	123	0.515	0.288	0.522	0.056	2.755	3.890	30.98	0.000
GROWTH	136	0.589	0.483	0.497	-1.463	2.174	0.472	6.480	0.000

Panel A of this table provides detailed descriptive statistics for the abnormal accruals and control variables for the initial loss and control samples as well as combined panels of both the initial loss and control samples. Detailed statistics for the initial loss and control samples time periods *t* -1 (Preperiod), *t* (Loss Year) and (*t* + 1)/(*t* + 2) (Postperiod) are included in Panels B, C and D, respectively. Time *t* includes panel data from years 2004, 2005 and 2006. The collection and matching of the initial loss and control samples is detailed in Chapter 3. The decrease in the number of firms (initial loss and control) across time is due to firms liquidating or being acquired. The variable *AB_ACCR* is the signed abnormal accruals calculated according to the DeFond and Park ((2001) model, *LMV* is the natural log of market value, *CFO* is the cash flow from operating activities scaled by lagged total assets, *LEV* is the ratio of total liabilities to total assets, and *GROWTH* is the book-to-market ratio, defined as the book value divided by the market value.

Table 9.3 **Testing the Average Effect of an Initial Loss Event on Corporate Governance: A Further Examination of Ownership**

$$\Delta \, Gov = \beta + \delta D_{LOSS\,t} + \theta Return + \varepsilon$$

Panel A **Test Period $\Delta 1$**

Independent Variables	**Ownership (*t*-stat)**	**% Tot.Dir.Own. (*t*-stat)**	**% Tot.Prof.Own. (*t*-stat)**
Intercept	0.104	-0.017	0.034
	(3.93)***	(-4.23)***	(3.66)***
$\boldsymbol{D_{LOSS\,t}}$	**0.054**	**0.001**	**-0.003**
	(1.51)	**(0.22)**	**(-0.23)**
Return	-0.114	0.011	-0.009
	(-2.67)***	(1.60)	(-0.58)
n	276	276	276
R^2	4.0%	1.0%	4.0%
Two-Tailed *p*-values for Tests of Significance:			
$Intercept + D_{LOSS\,t} = 0$	<0.01	<0.01	<0.01

Panel B **Test Period $\Delta 2$**

Independent Variables	**Ownership (*t*-stat)**	**% Tot.Dir.Own. (*t*-stat)**	**% Tot.Prof.Own. (*t*-stat)**
Intercept	0.205	-0.034	0.059
	(4.68)***	(-5.12)***	(3.62)***
$\boldsymbol{D_{LOSS\,t}}$	**0.017**	**0.017**	**-0.003**
	(0.30)	**(1.83)***	**(-0.13)**
Return	-0.079	0.010	0.003
	(-2.03)**	(1.81)*	(0.19)
n	238	238	238
R^2	1.9%	3.0%	0.0%
Two-Tailed *p*-values for Tests of Significance:			
$Intercept + D_{LOSS\,t} = 0$	<0.01	<0.01	<0.01

The information about the data collected and variables constructed in this appendix is the same as that in Table 4.2.

Table 9.4 **Testing the Effect of an Initial Loss Event on Corporate Governance Conditioned by Corporate Governance Characteristics: A Further Examination of Ownership**

$$\Delta\, Gov = \beta + \delta_1 D_{LOSS\,t} * D_{LOWGOV\,t-1} + \delta_2 D_{LOSS\,t} * D_{HIGHGOV\,t-1} + \theta Return + \varepsilon$$

Panel A **Test Period Δ1**

Independent Variables	**Ownership (*t*-stat)**	**%Tot.Dir.Own. (*t*-stat)**	**%Tot.Prof.Own. (*t*-stat)**
Intercept	0.105	-0.017	0.034
	(3.97)***	(-4.25)***	(3.68)***
$\boldsymbol{D_{LOSS\,t} * D_{LOWGOV\,t-1}}$	**0.092**	**-0.009**	**0.003**
	(2.14)**	**(-1.11)**	**(0.22)**
$D_{LOSS\,t} * D_{HIGHGOV\,t-1}$	0.013	0.005	-0.011
	(0.30)	(0.92)	(-0.68)
Return	-0.117	0.011	-0.009
	(-2.75)***	(1.64)	(-0.62)
n	276	276	276
R^2	5.0%	2.0%	4.0%
Two-Tailed *p*-values for Tests of Significance:			
$D_{LOSS\,t} * D_{LOWGOV\,t-1} + Intercept = 0$			
	<0.01	0.01	<0.01
$D_{LOSS\,t} * D_{HIGHGOV\,t-1} + Intercept = 0$			
	<0.01	<0.01	0.07
$D_{LOSS\,t} * D_{LOWGOV\,t-1} = D_{LOSS\,t} * D_{HIGHGOV\,t-1}$			
	0.10	0.08	0.42

(Continued)

Table 9.4 Continued

Panel B Test Period ∆2

Independent Variables	**Ownership (*t*-stat)**	**%Tot.Dir.Own. (*t*-stat)**	**%Tot.Prof.Own. (*t*-stat)**
Intercept	0.206	-0.035	0.059
	(4.81)***	(-5.17)***	(3.61)***
$\boldsymbol{D_{LOSS\,t} * D_{LOWGOV\,t-1}}$	**0.150**	**0.006**	**0.005**
	(2.16)**	**(0.47)**	**(0.19)**
$D_{LOSS\,t} * D_{HIGHGOV\,t-1}$	-0.122	0.021	-0.013
	(-1.73)*	(2.13)**	(-0.47)
Return	-0.082	0.011	0.003
	(-2.14)**	(1.91)*	(0.18)
n	238	238	238
R^2	6.5%	3.2%	0.0%
Two-Tailed *p*-values for Tests of Significance:			
$D_{LOSS\,t} * D_{LOWGOV\,t-1} + Intercept = 0$	<0.01	0.08	<0.01
$D_{LOSS\,t} * D_{HIGHGOV\,t-1} + Intercept = 0$	0.15	0.02	0.06
$D_{LOSS\,t} * D_{LOWGOV\,t-1} = D_{LOSS\,t} * D_{HIGHGOV\,t-1}$	<0.01	0.27	0.56

The information about the data collected and variables constructed in this appendix is the same as that in Table 4.4.

Table 9.5 **Testing the Effect of an Initial Loss Event on Corporate Governance Conditioned by Corporate Governance Characteristics: An Alternative Conditioning Specification**

$$\Delta\, Gov = \beta + \delta_1 D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1} + \delta_2 D_{LOSS\,t} * D_{MIDGOV\,t\text{-}1} + \delta_3 D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1} + \theta Return + \varepsilon$$

Panel A **Test Period Δ1**

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	-0.027	0.048	0.008	0.106	-0.006
	(-0.62)	(1.46)	(1.31)	(4.01)***	(-0.07)
$D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1}$	**0.221**	**0.022**	**0.014**	**0.084**	**0.172**
	(2.88)* **	**(0.35)**	**(1.42)**	**(1.83)***	**(0.96)**
$D_{LOSS\,t} * D_{MIDGOV\,t\text{-}1}$	0.021	0.116	0.012	0.131	0.248
	(0.21)	(1.67)*	(0.64)	(2.11)**	(1.36)
$D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1}$	0.046	-0.173	-0.001	-0.017	-0.529
	(0.58)	(-3.01)***	(-0.10)	(-0.36)	(-2.91)***
Return	0.053	-0.083	0.002	-0.121	0.060
	(0.74)	(-1.55)	(0.20)	(-2.83)***	(0.39)
n	276	276	276	276	276
R^2	3.1%	6.7%	1.0%	6.1%	5.4%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1} + Intercept = 0$					
	<0.01	0.20	<0.01	<0.01	0.29
$D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1} + Intercept = 0$					
	0.77	0.01	0.60	0.02	<0.01
$D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1} = D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1}$					
	0.06	<0.01	0.32	0.07	<0.01

(Continued)

Table 9.5 Continued

Panel B Test Period Δ2

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	0.016	0.052	0.003	0.207	-0.132
	(0.25)	(0.88)	(0.30)	(4.80)***	(-1.05)
$\boldsymbol{D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1}}$	**0.282**	**0.424**	**0.033**	**0.144**	**0.556**
	(2.62)* **	**(3.79)*** **	**(2.40)** **	**(1.91)* **	**(2.39)** **
$D_{LOSS\,t} * D_{MIDGOV\,t\text{-}1}$	0.060	0.145	0.009	0.039	0.219
	(0.40)	(1.15)	(0.31)	(0.40)	(0.87)
$D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1}$	0.048	-0.244	-0.047	-0.137	-1.016
	(0.41)	(-2.37)**	(-2.11)**	(-1.75)*	(-4.44)***
Return	0.032	-0.041	0.005	-0.083	0.039
	(0.56)	(-0.77)	(0.60)	(-2.16)**	(0.35)
n	238	238	238	238	238
R^2	2.9%	11.0%	5.6%	5.7%	13.3%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1}$ + *Intercept = 0*	<0.01	<0.01	<0.01	<0.01	0.04
$D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1}$ + *Intercept = 0*	0.53	0.03	0.03	0.29	<0.01
$D_{LOSS\,t} * D_{LOWGOV\,t\text{-}1} = D_{LOSS\,t} * D_{HIGHGOV\,t\text{-}1}$	0.08	<0.01	<0.01	<0.01	<0.01

The information about the data collected and variables constructed in this appendix is the same as that in Table 4.4, except that now

$D_{LOWGOV\,t\text{-}1}$ = a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the bottom two quintiles mean in the year before the loss, and zero otherwise

$D_{MIDGOV\,t\text{-}1}$ = a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the middle quintile in the year before the loss, and zero otherwise

$D_{HIGHGOV\,t\text{-}1}$ = a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the top two quintiles in the year before the loss, and zero otherwise.

Table 9.6 Testing the Effect of an Initial Loss Event on Abnormal Accruals Conditioned by the Severity of the Loss: Alternative Large/Medium/Small Specifications

$$\Delta\ AB\_ACCR = \beta_0 + \delta_1 D_{LOSS\ t} * D_{LOWQUAL} + \delta_2 D_{LOSS\ t} * D_{MIDQUAL} + \delta_3 D_{LOSS\ t} * D_{HIGHQUAL} + \beta_j \Delta\ Controls + \varepsilon$$

Panel A Test Period Δ1

Independent Variables	**Large/Med./Small by Mkt. Value (*t*-stat)**	**Large/Med./Small by Sales (*t*-stat)**
Intercept	0.007	0.005
	(0.40)	(0.28)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL}}$	**-0.068**	**-0.104**
	(-2.10)**	**(-3.32)*****
$D_{LOSS\ t} * D_{MIDQUAL}$	-0.076	-0.019
	(-1.91)*	(-0.48)
$D_{LOSS\ t} * D_{HIGHQUAL}$	-0.012	-0.006
	(-0.41)	(-0.18)
$\Delta\ LMV$	0.010	0.016
	(0.37)	(0.59)
$\Delta\ CFO$	-0.540	-0.566
	(-6.00)***	(-6.31)***
$\Delta\ LEV$	-0.037	-0.006
	(-0.33)	(-0.05)
$\Delta\ GROWTH$	0.019	0.015
	(0.48)	(0.40)
n	274	274
R^2	14.22%	15.87%
Two-Tailed *p*-values for Tests of Significance:		
$D_{LOSS\ t} * D_{LOWQUAL} = D_{LOSS\ t} * D_{HIGHQUAL}$	0.13	<0.01
$D_{LOSS\ t} * D_{LOWQUAL} + Intercept = 0$	0.03	<0.01

(Continued)

Table 9.6 Continued

Panel B Test Period $\Delta 2$

Independent Variables	Large/Med./Small by Mkt. Value (*t*-stat)	Large/Med./Small by Sales (*t*-stat)
Intercept	0.031	0.017
	(1.27)	(0.56)
$\boldsymbol{D_{LOSS\,t} * D_{LOWQUAL}}$	**-0.069**	**-0.118**
	(-1.41)	**(-2.04)****
$D_{LOSS\,t} * D_{MIDQUAL}$	0.038	0.014
	(0.62)	(0.25)
$D_{LOSS\,t} * D_{HIGHQUAL}$	0.009	-0.005
	(0.19)	(-0.08)
$\Delta\ LMV$	-0.008	-0.002
	(-0.68)	(-0.27)
$\Delta\ CFO$	-0.349	-0.357
	(-2.49)**	(-2.19)**
$\Delta\ LEV$	-0.296	-0.186
	(-3.96)***	(-3.60)***
$\Delta\ GROWTH$	-0.016	0.023
	(-0.63)	(0.84)
n	228	228
R^2	11.54%	14.98%
Two-Tailed *p*-values for Tests of Significance:		
$D_{LOSS\,t} * D_{LOWQUAL} = D_{LOSS\,t} * D_{HIGHQUAL}$	0.17	0.17
$D_{LOSS\,t} * D_{LOWQUAL} + Intercept = 0$	0.29	0.05

This table reports the effect of an initial loss on the change in abnormal accruals conditioned by the severity of the loss. For each firm, the window is the year before the initial loss event, *t*-1, to either the year of the loss ($\Delta 1$) or the year the loss firm returns to profitability ($\Delta 2$); for those firms that liquidate or are acquired the window is from year *t*-1 to *t*+1. The test (loss sample) consists of 137 ($\Delta 1$) and 114 ($\Delta 2$) firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t-2* to *t+2*. The difference in the sample sizes in test periods $\Delta 1$ and $\Delta 2$ is firms (loss or control) being acquired in the period *t* to *t*+1. Loss firms are partitioned based whether the loss is small/medium/large or good/average/bad. A small loss is one where the scaled (by market value) loss is in the bottom two quintiles of ranked scaled losses, a medium loss is in the middle quintile and a big loss is one in the top two quintiles. A good loss is one with a 12-month return around the financial year end of the loss year (6-months before and after) in the bottom two quintiles of ranked 12-month returns, an average loss is in the middle quintile and a bad loss is in the top two quintiles.

(Continued)

Table 9.6 Continued

Financial information is obtained from Datastream/ Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance at the 10%, 5%, and 1% levels are indicated with *,**, and ***, respectively.

Variable Definitions:

Δ *AB_ACCR* =	the change in signed abnormal accruals during the test period (i.e. Δ1 or Δ2). The detailed abnormal accrual model used is a modified DeFond and Park (2001) model previously in the Chapter 3.
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss during the event window, and zero otherwise.
$D_{LOWQUAL}$ =	a dummy variable equal to one for loss firms that report a high severity loss, and zero otherwise.
$D_{MIDQUAL}$ =	a dummy variable equal to one for loss firms that report a medium severity loss, and zero otherwise.
$D_{HIGHQUAL}$ =	a dummy variable equal to one for loss firms that report a low severity loss, and zero otherwise.
Δ *LMV* =	the change in the natural log of market value.
Δ *CFO* =	the change in the cash flow from operating activities scaled by lagged total assets.
Δ *LEV* =	the change in the ratio of total liabilities to total assets.
Δ *GROWTH* =	the change in the book-to-market ratio, defined as the book value divided by the market value.

Table 9.7 **Testing the Effect of an Initial Loss Event on Abnormal Accruals Conditioned by the Severity of the Loss: An Alternative Abnormal Accruals Measure**

$$\Delta\ AB\_ACCR = \beta_0 + \delta_1 D_{LOSS\ t} * D_{LOWQUAL} + \delta_2 D_{LOSS\ t} * D_{MIDQUAL} + \delta_3 D_{LOSS\ t} * D_{HIGHQUAL} + \beta_j \Delta\ Controls + \varepsilon$$

Panel A **Test Period Δ1**

Independent Variables	**Large/Medium/Small (*t*-stat)**	**Bad/Average/Good (*t*-stat)**
Intercept	-0.005	-0.004
	(-0.27)	(-0.24)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL}}$	**0.004**	**-0.005**
	(0.13)	**(-0.16)**
$D_{LOSS\ t} * D_{MIDQUAL}$	-0.021	0.053
	(-0.53)	(1.52)
$D_{LOSS\ t} * D_{HIGHQUAL}$	0.039	0.028
	(0.99)	(0.83)
$\Delta\ LMV$	0.061	0.060
	(2.16)**	(2.00)**
$\Delta\ CFO$	-0.568	-0.558
	(-6.26)***	(-6.10)***
$\Delta\ LEV$	0.057	0.064
	(0.51)	(0.57)
$\Delta\ GROWTH$	0.067	0.070
	(1.66)*	(1.73)*
n	274	274
R^2	16.95%	16.34%
Two-Tailed *p*-values for Tests of Significance:		
$D_{LOSS\ t} * D_{LOWQUAL} = D_{LOSS\ t} * D_{HIGHQUAL}$	0.13	0.42
$D_{LOSS\ t} * D_{LOWQUAL} + Intercept = 0$	0.99	0.73
$D_{LOSS\ t} * D_{HIGHQUAL} + Intercept = 0$	0.03	0.44

(Continued)

Table 9.7 Continued

Panel B Test Period $\Delta 2$

Independent Variables	**Large/Medium/Small (*t*-stat)**	**Bad/Average/Good (*t*-stat)**
Intercept	0.037	0.038
	(1.54)	(1.61)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL}}$	**-0.082**	**-0.096**
	(-1.67)*	**(-2.05)****
$D_{LOSS\ t} * D_{MIDQUAL}$	0.027	0.013
	(0.45)	(0.26)
$D_{LOSS\ t} * D_{HIGHQUAL}$	0.005	0.032
	(0.12)	(0.67)
Δ *LMV*	-0.003	-0.007
	(-0.28)	(-0.55)
Δ *CFO*	-0.389	-0.387
	(-2.82)***	(-2.84)***
Δ *LEV*	-0.236	-0.234
	(-3.21)***	(-3.20)***
Δ *GROWTH*	-0.011	-0.006
	(-0.46)	(-0.23)
n	228	228
R^2	10.03%	11.03%
Two-Tailed *p*-values for Tests of Significance:		
$D_{LOSS\ t} * D_{LOWQUAL} = D_{LOSS\ t} * D_{HIGHQUAL}$	0.13	0.03
$D_{LOSS\ t} * D_{LOWQUAL} + Intercept = 0$	0.30	0.15
$D_{LOSS\ t} * D_{HIGHQUAL} + Intercept = 0$	0.26	0.10

The information about the data collected and variables constructed in this appendix is the same as that in Table 5.3 except that abnormal accruals are now calculated using a modified Francis and Wang (2008) model.

Table 9.8 Testing the Effect of Abnormal Accruals for Initial Loss Reporting: An Alternative Abnormal Accruals Measure

$$P(D_{LOSS\,t} = 1) = \beta_0 + \beta_1 AB\_ACCR_{t\text{-}1} + \beta_j Controls_{t\text{-}1} + \varepsilon$$

Independent Variables	**Coefficient (*z*-value)**
Intercept	-0.895
	(-1.81)*
AB_ACCR $_{t\text{-}1}$	**1.681**
	(1.68)*
LMV $_{t\text{-}1}$	0.032
	(0.45)
LEV $_{t\text{-}1}$	0.534
	(0.99)
GROWTH $_{t\text{-}1}$	0.707
	(2.82)***
n	274
Pseudo R^2	2.87%

The information about the data collected and variables constructed in this appendix is the same as that in Table 5.4.

Table 9.9 Testing the Effect of a Loss Event on Abnormal Accruals Conditioned by Corporate Governance Characteristics: Unwinsorised Variables

$$\Delta\ AB\_ACCR = \beta_0 + \delta_1 D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} + \delta_2 D_{LOSS\ t} * D_{MIDGOV\ t\text{-}1} + \delta_3 D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1} + \beta_j \Delta\ Controls + \varepsilon$$

Panel A Test Period Δ1

Independent Variables	**Board (*t*-stat)**	**Chair (*t*-stat)**	**Diversity (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	-0.009	-0.011	-0.012	-0.010	-0.012
	(-0.33)	(-0.39)	(-0.40)	(-0.34)	(-0.41)
$\boldsymbol{D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1}}$	**-0.101**	**-0.067**	**-0.030**	**-0.065**	**-0.093**
	(-1.84)*	**(-1.15)**	**(-0.65)**	**(-1.22)**	**(-1.62)**
$D_{LOSS\ t} * D_{MIDGOV\ t\text{-}1}$	-0.004	-0.095	0.008	0.048	-0.058
	(-0.06)	(-1.46)	(0.09)	(0.66)	(-0.99)
$D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1}$	-0.031	-0.015	-0.146	-0.092	-0.003
	(-0.55)	(-0.27)	(-2.14)**	(-1.65)*	(-0.05)
Δ *LMV*	0.036	0.043	0.047	0.042	0.050
	(0.73)	(0.86)	(0.95)	(0.86)	(1.01)
Δ *CFO*	-0.722	-0.721	-0.721	-0.720	-0.723
	(-4.49)***	(-4.48)***	(-4.50)***	(-4.49)***	(-4.50)***
Δ *LEV*	-0.115	-0.140	-0.151	-0.113	-0.114
	(-0.58)	(-0.71)	(-0.76)	(-0.57)	(-0.58)
Δ *GROWTH*	0.047	0.040	0.049	0.060	0.054
	(0.69)	(0.58)	(0.71)	(0.86)	(0.79)
n	274	274	274	274	274
R^2	9.12%	8.91%	9.53%	9.51%	9.02%
Two-Tailed *p*-values for Tests of Significance:					
$D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1}$					
	0.27	0.44	0.10	0.67	0.19
$D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} + Intercept = 0$					
	0.02	0.12	0.25	0.09	0.04
$D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1} + Intercept = 0$					
	0.41	0.57	0.01	0.03	0.77

The information about the data collected and variables constructed in this appendix is the same as that in Table 6.1 except that all continuous variables are unwinsorised.

Table 9.10 Distributions of Initial Loss Firms by Corporate Governance Quality and Severity of Loss Characteristics: Partitioning by Quintiles

Corporate Governance		Severity of Loss				Severity of Loss			
		Bad	Average	Good	Total	Large	Medium	Small	Total
Board	Low	33	11	14	58	20	13	25	58
	Mid	13	6	9	28	7	8	13	28
	High	24	10	18	52	28	6	18	52
Total		70	27	41	138	55	27	56	138
Ownership	Low	30	10	17	57	17	12	28	57
	Mid	10	5	11	26	7	7	12	26
	High	30	12	13	55	31	8	16	55
Total		70	27	41	138	55	27	56	138
BSize	Low	22	9	16	47	22	10	15	47
	Mid	27	7	12	46	16	11	19	46
	High	21	11	13	45	17	6	22	45
Total		70	27	41	138	55	27	56	138

This table shows the partitioning of the initial loss ample by ex-ante corporate governance quality and the severity of the loss. An initial loss firm in each category (Board, Ownership, BSize) has low quality corporate governance if governance in that category is in the bottom two quintiles in the year before the loss, mid governance if in the middle quintile and high governance if in the top two quintiles. A loss is bad if the 24-month return around the loss event (18 before, 6 after) is in the bottom two quintiles of all (loss and control) 24-month returns around the loss event, average if in the middle quintile of all 24-month returns and good if in the top two quintiles of all 24-month returns. A loss is large if the scaled loss is in the top two quintiles, medium if in the middle quintile and small if in the bottom two quintiles.

Table 9.11 Testing the Effect of an Initial Loss Event on Abnormal Accruals Conditioned by Both Corporate Governance Characteristics and the Severity of the Loss: Unwinsorized Variables

$$\Delta\ AB\_ACCR = \beta_0 + \varphi_1 D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} + \varphi_2 D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1} + \varphi_3 D_{LOSS\ t} * D_{OTHER} + \beta_j \Delta\ Controls + \varepsilon$$

Panel A Bad/Average/Good

Independent Variables	**Board** **(*t*-stat)**	**Ownership** **(*t*-stat)**	**BSize** **(*t*-stat)**
Intercept	0.013	0.012	0.008
	(0.47)	(0.42)	(0.28)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1}}$	**-0.196**	**-0.108**	**-0.122**
	(-2.73)***	**(-1.44)**	**(-1.62)**
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1}}$		**-0.128**	
		(-1.81)*	
$D_{LOSS\ t} * D_{OTHER}$	-0.004	0.005	-0.016
	(-0.09)	(0.12)	(-0.40)
$\Delta\ LMV$	-0.029	-0.020	-0.004
	(-0.67)	(-0.46)	(-0.09)
$\Delta\ CFO$	-0.424	0.417	-0.417
	(-4.97)***	(-4.85)***	(-4.84)***
$\Delta\ LEV$	-0.678	-0.675	-0.693
	(-4.74)***	(-4.65)***	(-4.80)***
$\Delta\ GROWTH$	0.049	0.052	0.046
	(1.35)	(1.42)	(1.26)
n	274	274	274
R^2	20.16%	19.27%	18.51%
Two-Tailed *p*-values for Tests of Significance:			
$D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{OTHER}$			
	<0.01	0.14	0.15
$D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1} = D_{LOSS\ t} * D_{OTHER}$			
		0.06	
$D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1}$			
		0.83	

(Continued)

Table 9.11 Continued

Panel B Large/Medium/Small

Independent Variables	**Board (*t*-stat)**	**Ownership (*t*-stat)**	**BSize (*t*-stat)**
Intercept	0.007	0.007	0.004
	(0.27)	(0.25)	(0.16)
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1}}$	**-0.117**	**0.049**	**-0.138**
	(-1.46)	**(0.59)**	**(-1.87)***
$\boldsymbol{D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1}}$		**-0.144**	
		(-2.20)**	
$D_{LOSS\ t} * D_{OTHER}$	-0.020	-0.012	-0.011
	(-0.49)	(-0.28)	(-0.27)
Δ *LMV*	-0.003	0.000	0.009
	('-0.06)	(0.01)	(0.23)
Δ *CFO*	-0.425	-0.439	-0.439
	(-4.93)***	(-5.11)***	(-5.08)***
Δ *LEV*	-0.679	-0.673	-0.668
	(-4.66)***	(-4.63)***	(-4.60)
Δ *GROWTH*	0.048	0.051	0.044
	(1.32)	(1.41)	(1.22)
n	274	274	274
R^2	18.36%	19.54%	18.79%
Two-Tailed *p*-values for Tests of Significance:			
$D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{OTHER}$			
	0.21	0.47	0.09
$D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1} = D_{LOSS\ t} * D_{OTHER}$			
		0.05	
$D_{LOSS\ t} * D_{LOWQUAL} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{LOWQUAL} * D_{HIGHGOV\ t\text{-}1}$			
		0.04	

The information about the data collected and variables constructed in this appendix is the same as that in Table 6.2 except that all continuous variables are unwinsorised.

Table 9.12 **Testing Abnormal Accruals Conditioned by Corporate Governance Characteristics and Loss Reporting: Unwinsorised Variables**

$$P(D_{LOSS\,t} = 1) = \beta_0 + \beta_1 AB\_ACCR_{t-1} * D_{LOWGOV\,t-1} + \beta_2 AB\_ACCR_{t-1} * D_{MIDGOV\,t-1} + \beta_3 AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1} + \beta_j Controls_{t-1} + \varepsilon$$

Independent Variables	Board (z-stat)	Chair (z-stat)	Diversity (z-stat)	Ownership (z-stat)	Bsize (z-stat)
Intercept	-0.878	-0.841	-0.779	-0.802	-0.822
	(-1.81)*	(-1.77)*	(-1.64)*	(-1.71)*	(-1.74)*
$AB\_ACCR_{t-1} * D_{LOWGOV\,t-1}$	6.653	'0.992	3.314	2.061	4.375
	(2.82)***	(0.65)	(2.26)**	(1.53)	(2.11)**
$AB\_ACCR_{t-1} * D_{MIDGOV\,t-1}$	1.125	4.570	0.812	-0.049	-1.042
	(0.73)	(1.50)	(0.40)	(-0.02)	(-0.55)
$AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1}$	-2.163	1.652	-4.725	2.040	1.802
	(-1.06)	(1.20)	(-1.40)	(0.99)	(1.00)
LMV_{t-1}	0.035	0.021	0.012	0.023	0.026
	(0.50)	(0.31)	(0.17)	(0.33)	(0.37)
LEV_{t-1}	0.552	0.672	0.650	0.591	0.591
	(1.17)	(1.43)	(1.36)	(1.27)	(1.25)
$GROWTH_{t-1}$	0.634	0.602	0.601	0.602	0.628
	(2.65)***	(2.57)***	(2.55)**	(2.58)***	(2.66)***
n	274	274	274	274	274
R^2	5.35%	3.20%	4.45%	3.04%	4.01%
Two-Tailed *p*-values for Tests of Significance:					
$AB\_ACCR_{t-1} * D_{LOWGOV\,t-1} = AB\_ACCR_{t-1} * D_{HIGHGOV\,t-1}$	<0.01	0.75	0.03	0.99	0.35

The information about the data collected and variables constructed in this appendix is the same as that in Table 6.3 except that all continuous variables are unwinsorised.

Table 9.13 **Testing the Effect of an Initial Loss Event on Abnormal Accruals Conditioned by Corporate Governance Characteristics: A Further Analysis of Ownership**

$$\Delta\ AB\_ACCR = \beta_0 + \delta_1 D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} + \delta_2 D_{LOSS\ t} * D_{MIDGOV\ t\text{-}1} + \delta_3 D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1} + \beta_j \Delta\ Controls + \varepsilon$$

Panel A **Test Period Δ1**

Independent Variables	**%Tot.Dir.Own. (*t*-stat)**	**%Top.Dir.Own. (*t*-stat)**	**%Tot.Prof.Own. (*t*-stat)**	**%Top.Prof.Own. (*t*-stat)**	**# Prof.Own. (*t*-stat)**	**%Tot.Blk.Own. (*t*-stat)**
Intercept	0.005	0.005	0.003	0.006	0.006	0.007
	(0.33)	(0.29)	(0.21)	(0.33)	(0.36)	(0.43)
$\boldsymbol{D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1}}$	**-0.052**	**-0.013**	**-0.042**	**-0.045**	**-0.070**	**-0.052**
	(-1.73)*	**(-0.31)**	**(-1.52)**	**(-1.43)**	**(-2.09)****	**(-1.69)***
$D_{LOSS\ t} * D_{MIDGOV\ t\text{-}1}$	-0.037	-0.058	0.023	-0.032	-0.028	-0.064
	(-0.88)	(-1.80)*	(0.59)	(-1.04)	(-0.90)	(-2.09)**
$D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1}$	-0.039	-0.046	-0.056	-0.066	-0.038	0.009
	(-1.25)	(-1.54)	(-1.74)*	(-1.71)*	(-1.11)	(0.22)
Δ *LMV*	0.017	0.020	0.014	0.017	0.015	0.008
	(0.63)	(0.72)	(0.52)	(0.63)	(0.55)	(0.29)
Δ *CFO*	-0.538	-0.539	-0.533	-0.538	-0.536	-0.528
	(-5.95)***	(-5.95)***	(-5.91)***	(-5.92)***	(-5.93)***	(-5.85)***
Δ *LEV*	-0.061	-0.055	-0.057	-0.057	-0.060	-0.052
	(-0.54)	(-0.49)	(-0.51)	(-0.52)	(-0.54)	(-0.47)
Δ *GROWTH*	0.023	0.021	0.021	0.024	0.023	0.018
	(0.59)	(0.54)	(0.53)	(0.60)	(0.59)	(0.46)

(Continued)

Table 9.13 Continued

Independent Variables	**%Tot.Dir.Own. (*t* -stat)**	**%Top.Dir.Own. (*t* -stat)**	**%Tot.Prof.Own. (*t* -stat)**	**%Top.Prof.Own. (*t* -stat)**	**# Prof.Own (*t* -stat)**	**%Tot.Blk.Own. (*t* -stat)**
n	274	274	274	274	274	274
R^2	13.24%	13.51%	13.46%	13.39%	13.59%	14.03%
Two-Tailed *p* -values for Tests of Significance:						
$D_{LOSS\ t} * D_{LOWGOV\ t\text{-}1} = D_{LOSS\ t} * D_{HIGHGOV\ t\text{-}1}$	0.70	0.76	0.70	0.87	0.28	0.74

This table reports the effect of an initial loss on the change in abnormal accruals conditioned by ownership characteristics. For each (test or control) firm, the test period is the year before the loss event, *t*-1, to the year of the loss (Δ1). The test (loss sample) consists of 137 firms which reported a loss in year *t* following two years of reporting a profit and the control sample consists of the same number of firms matched for industry and market value which reported a profit in each of year *t-2* to *t+2*. The ownership variables are explained in Chapter 3. The sample is partitioned based upon quinitle values of each of %Tot. Dir. Own., %Top. Dir.Own., %Tot. Prof. Own., %Top. Prof. Own., #Prof. Own, and %Tot. Blk. Own. For %Tot. Prof. Own., %Top. Prof. Own., #Prof. Own, and %Tot. Blk. Own., firms with ex-ante values in the bottom two quintiles are in the *LOWGOV* group, firms in the middle quintile are in the *MIDGOV* group, and firms in the top two quintiles are in the *HIGHGOV* group. For %Tot. Dir. Own. and %Top. Dir. Own.,firms with ex-ante values in the bottom top quintiles are in the *LOWGOV* group, firms in the middle quintile are in the *MIDGOV* group, and firms in the bottom two quintiles are in the *HIGHGOV* group. Financial information is obtained from Datastream/Worldscope. All continuous variables are winsorized at the 1% and 99% levels to mitigate the influence of outliers. Estimated coefficients are followed by *t*-statistics (). Significance levels at 10%, 5%, and 1% are indicated by *, **, ***, respectively.

(Continued)

Table 9.13 Continued

Variable Definitions:

Δ *AB_ACCR* = modified	the change in signed abnormal accruals during the test period (i.e. $\Delta 1$ or $\Delta 2$). The abnormal accrual model used is a DeFond and Park (2001) model detailed previously in Chapter 5.
$D_{LOSS\,t}$ =	a dummy variable equal to one for firms that report a loss during the event window, and zero otherwise.
$D_{LOWGOV\,t\text{-}1}$ = the loss,	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the bottom two quintiles mean in the year before and zero otherwise
$D_{MIDGOV\,t\text{-}1}$ = zero	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the middle quintile in the year before the loss, and otherwise
$D_{HIGHGOV\,t\text{-}1}$ = and zero	a dummy variable equal to 1 if a firm (loss or control) has a *GOV* value in the top two quintiles in the year before the loss, otherwise.
Δ *LMV* =	the change in the natural log of market value.
Δ *CFO* =	the change in the cash flow from operating activities scaled by lagged total assets.
Δ *LEV* =	the change in the ratio of total liabilities to total assets.
Δ *GROWTH* =	the change in the book-to-market ratio, defined as the book value divided by the market value.