

Regulatory Requirements and Board Composition

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CERTIFICATE OF AUTHORSHIP/ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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ABSTRACT

This thesis addresses the research question of regulatory requirements and board composition. Specifically it has two objectives: first, to provide evidence of the impact of the Principles of Good Corporate Governance and Best Practice (PGCG&BP) introduction in 2003 by the Australian Stock Exchange (ASX) on board composition. Second, to examine the association between board composition and continuous disclosure as a measure of governance effectiveness. Two of the main principles of the PGCG&BP were independent boards and greater accountability, and Australia provides a unique institutional setting to test accountability with the Continuous Disclosure Regime (CDR) because of the single portal announcement repository and the almost universal single topic announcements. This latter feature removes the confounding effect found in many other studies using annual reports. From a sample of 450 firms in 2001 and 2007, I find the number of firms with (majority) independent boards and committees increased following the PGCG&BP regulation (substantially in the case of the nomination committee), however the percentage of independent directors on boards increased only marginally, with firms that initially had a high percentage of independent directors often reducing their level of independence (mean reversion). Using ordinary least squares regression (OLS) I find the relation between board composition and firm characteristics reduced after the introduction of the regulation, adding weight to the proposition that boards were forced to become less ‘efficient’ or ‘optimal’. Further testing with OLS and two-stage least squares regression to control for potential endogeneity issues finds more independent boards do not appear to be associated with more continuous disclosures but the association is significant with other corporate governance factors. These results bring into question some of the expected outcomes of this corporate governance regulation.

Chapter One

Introduction

There are two main objectives of this thesis. First, to examine the impact of the Principles of Good Corporate Governance and Best Practice (PGCG&BP) introduced by the Australian Stock (subsequently Securities) Exchange (ASX) in 2003 on board and committee composition. Further, to present descriptive evidence on the changes observed by examining any change in the relation between board composition and firm characteristics. Second, to determine if the regulation leads to a closer relation, and more ‘efficient’ (optimal) board composition. Third, as a measure of board effectiveness, to determine if more independent boards (as encouraged by PGCG&BP) have resulted in not only more continuous disclosure, but disclosure that may indicate a higher level of accountability.

Corporate failures around the world at the beginning of this century were accompanied by a flurry of corporate governance regulations in a number of market-based economies. In Australia, the liquidation of HIH insurance in March 2001 led to a Royal Commission and some company directors’ imprisonment. The name Enron has become synonymous with corporate excess. Enron’s bankruptcy in late 2001 has been captured in main stream culture through the 2003 McLean and Elkind book *The Smartest Guys in the Room* and the subsequent 2005 Gibney directed film of the same name. The collapse of the giant food company Parmalat was accompanied by a warning from the Italian Finance Minister, Tremonti, in December 2003 that it could lead to ‘general corporate insolvency’ in Italy. In Australia, like many economies with highly developed

capital markets, the interest in corporate governance predates the above-mentioned collapse. In 1995 the 'Bosch Report' *Corporate Practices and Conduct* called for more independent directors and in the same year the Australian Investment Managers' Association *A Guide for Investment Managers & A Statement of Recommended Corporate Practice* echoed similar views. Consistent with Watts (1977), I would contend that although the seeds of corporate governance reform were sown several years before, the political and broader public interest in the corporate governance regulation in the early part of this century, the desire to regulate and acceptance of that regulation was a result of the corporate failures discussed above.

In Australia the PGCG&BP (March 2003), the UK *The Combined Code on Corporate Governance* (July 23, 2003), and in the US the NYSE *Corporate Governance Rules* (November 3, 2003) are examples of this regulation. Although the Australian regulation allowed non compliance through the 'if not why not' provision (comply or explain why you did not comply), the requirements would have been seen as being in the public good rather than bureaucratic interference subsequent to the corporate failures, and thus more likely to be implemented by company boards.

Given the concerns expressed about the imposition of the PGCG&BP the first motivation for this thesis is to assess the impact of this regulation in Australia on board composition. While the ASX has some data on compliance with the 'if not why not' provision of the regulation, little is known of the overall impact on boards and committees. Further good corporate governance is not an end in itself; it should lead to positive outcomes. One specifically covered in the PGCG&BP (Principle 5) was increased accountability: 'companies should promote timely and balanced disclosure of

all material matters concerning the company'. The second motivation therefore is to explore the accountability aspect of the regulation through different types of continuous disclosures and the relation to board composition. Australia provides a unique institutional setting in which to test accountability with the Continuous Disclosure Regime (CDR) requiring the release of information by firms into a single portal. Unlike Regulation Fair Disclosure in the US, which may be characterised as designed to prevent information asymmetry between outside parties, the CDR in Australia aims as far as commercially possible to reduce the information asymmetry between the company and investors. ASX Listing Rule 3.1 requires: 'Once an entity is or becomes aware of any information concerning it that a reasonable person would expect to have a material effect on the price or value of that entity's securities, the entity must immediately tell ASX that information'. Some 'commercial in confidence' exemptions are available.

In this thesis I use a sample of 450 Australian listed firms from 2001 to 2007 drawn from the UTS Who Governs Australia Database.¹ Continuous Disclosure data has been provided through Data Consult at SIRCA (Securities Industry Research Centre of Asia-Pacific) and firm financial data is from Aspect Fin Analysis.

The key findings in this thesis are as follows: First, subsequent to PGCG&BP, the number of companies with an independent board increased by 9 percentage points to 85%. There was also a significant increase in the number firms with independent committees (audit, remuneration and especially nomination), which given a sufficiency of independent directors was achieved relatively easily and at low cost. While the level

¹ In August 2007 the ASX introduced Revised PGCG&BP that may be expected to have an effect on boards in 2008.

of compliance was highest for large firms, the impact was greatest on the smaller firms, as they were least likely to have the recommended board structure prior to the regulation. These results suggest a significant regulatory impact and firms focusing on the need to demonstrate compliance, notwithstanding the ‘recommendation’ status of the regulation. While there was an increase in number of firms with majority board independence, the mean (median) level or percentage of board independence increased more modestly from 68% (67%) to 71% (75%) and in a number of cases (35%) the level of independence decreased. This somewhat surprising result arose as a consequence of mean reversion, which is consistent with the regulation inferring a sufficient level of independence (73%), comfortably above the recommended level. Critically, this reveals a regulatory impact that is not consistent with its ‘aspirational’ objectives. Furthermore, the association between board composition and firm characteristics declined which suggests that firms departed from ‘efficient’ governance choices and incurred unnecessary governance costs. As the impacts were greatest for smaller firms, these increased costs were born primarily by smaller firms.

Notwithstanding the regulation identifying a range of factors as potentially impairing director independence, there is evidence that executive/non executive designation is the dominate determinate of independence. Consideration also appears to be given to affiliations with substantial shareholders, but tenure greater than 10 years appears to be ignored as an impediment to independence.

Second, I find continuous disclosure appears to be significantly associated with other corporate governance characteristics but not board independence. The only significant association found is between board independence – observed and the proportion of price

sensitive disclosures that are non-procedural. In only three of twenty main tests conducted was there a statistically significant relation between different categories of continuous disclosures and board independence. Further these results are consistent for different designations of independence, including the dichotomous (majority/minority) boards independence category. These results bring into question the regulatory requirement for independent boards and the perception that the more independent the board the better.

This thesis contributes to the academic debate and provides evidence to regulators and policy makers in the following four ways: First, this thesis provides insight into how independence appears to be interpreted and applied by listed firms in Australia. It is the only Australian research, that explores different definitions of ‘independence’ based on standard reported information. This allows the application of factors such as ‘substantial shareholding’ that may impinge upon independence to be used to further refine the classification of non-executive directors. In 2007 these classifications are also able to be compared to the firms’ self-classification. Second, I document the impact of the PGCG&BP regulation on listed firms. Further the use of medium and small companies in corporate governance research provides insights into the impact of the regulation on a sample rarely included in Australian research. Third, the use of ‘price sensitive’ and ‘sub-code’ classification from the continuous disclosure regime (CDR) has not been previously explored in Australian research. This rich source of data provided by the CDR and accessible through SIRCA’s ‘Signal G’, provides an extensive database to test board effectiveness through the voluntary disclosure in the CDR.

Finally, this thesis provides evidence supporting the removal of the ‘best practice’ part of the ASX regulation in August 2007 as acknowledgement that the ‘one size fits all’ corporate governance model was inconsistent with theory and the resulting empirical analysis, and also provides information on the impact of the PGCG&BP on the board composition and continuous disclosure to inform the corporate governance debate.

The remainder of this thesis is organized as follows. The Chapter Two examines the impact of the PGCG&BP on board and committee composition and the association between board composition and firm characteristics. Chapter 3 provides evidence on the association between board composition and continuous disclosure in Australia while Chapter 4 draws the conclusions and reviews the limitations.

Chapter Two

Was corporate governance regulation really the answer?

1. Introduction

This chapter investigates the impact of the Principles of Good Corporate Governance and Best Practice (PGCG&BP), issued by the Australian Stock Exchange (ASX) in 2003, on the composition of boards of directors and provides evidence on changes in the relation between firm characteristics and board composition between 2001 and 2007.² The regulation made recommendations in relation to board independence, the independence of the chairman, and the existence and composition of board committees. Additionally, it provided guidance on the determination of independence. However, the regulations were only recommendations, with firms simply required to provide an explanation for any departure from them. Accordingly, there are two issues require address: how the regulation impacted the composition of boards and committees of directors for Australian listed firms, and how it changed the relation between firm characteristics and board composition.

Consequent to high profile corporate failures in Australia and around the world, including HIH Insurance Ltd and Enron Corporation, the governance of corporations received increased scrutiny and many regulatory responses. These included regulations issued by market operators, such as the PGCG&BP.³ The ASX was primarily concerned

² In July 2006 with the merger of the Sydney Futures Exchange and the Australian Stock Exchange a new entity, the Australian Securities Exchange was created. The use of the initials ASX refers to the Stock Exchange prior to July 2006 and the Securities Exchange after that date.

³ The US response was similar with the New York Stock Exchange and Nasdaq issuing corporate governance regulations in 2002.

with the structure and operation of boards of directors, and addressed issues such as board independence, the operation of committees and the determination of independence. There were also legislative responses such as the Corporate Law Economic Reform Program (Audit Reform and Corporate Disclosure) Act 2004 (also known as CLERP 9).⁴ While these regulatory developments were generally in response to the failures, there was little empirical evidence on whether the governance problems were endemic, and there was no support, theoretically or empirically for the regulations averting similar problems in the future, in fact the reverse was true (Jensen and Meckling 1976; Hermalin and Weisback 1988; Arthur 2001).

Doubtless reflecting this lack of support, there has been much criticism of the regulations. Probably the most vocal of the critics in Australia has been Gerry Harvey, the executive chairman of Harvey Norman. Arguing that his high percentage ownership in the company was all the corporate governance needed to align his actions as manager with the interests of all shareholders, Harvey has derided the regulations as imposing a costly uniform governance structure on all listed companies – whether it is needed or not. After improving his ‘rating’ (in the Horwath Corporate Governance Rating) in 2004 he was reported as saying:⁵

*Whoo-hoo! We’re going well, three out of five. The independent board member was appointed simply “because I get all this bad publicity”.*⁶

⁴ This regulation focuses more on auditors and rather than the operation of boards of directors. Accordingly, evaluating the impact of this regulation is beyond the scope of this study.

⁵ Howath Rating Report (in conjunction with the University of Newcastle) uses an undisclosed formula on corporate governance to rate Australian companies. The formula appears to penalize companies without independent chairs and majority independent boards. The ratings are reported in the media and have been used by Beekes and Brown 2005.

⁶ Reported in the Sydney Morning Herald September 7, 2004. Business Section, page 1.

Accordingly, the primary motivation for this study is to provide empirical evidence of the change in board composition and the relation to firm characteristics pre- and post-regulation in Australia. This is an important issue as the available empirical evidence, such as Arthur (2001) and Cotter and Silvester (2003), pre-date the present regulatory regime. This is the first study to document the composition of boards of directors under the present regulatory regime with a broad sampling of firms. Further, the effect of the relation between firm characteristics and board composition has not, to my knowledge, been examined in pre- and post-corporate governance regulatory environment. Empirical evidence (Hermalin and Weisbach 1988, Boone, Field, Karpoff and Raheja 2007) has found board composition to be associated with firm characteristics, but it is unclear if firm characteristics drive the level of board independence for all size firms and for various designations of independence. While board composition and its impact on firm outcomes would appear to be both the original motivation for regulation and extensively researched post-regulation (see Coles, Daniel and Naveen et al 2008), there is relatively little analysis of how regulation has impacted board composition and any changes in the relation to firm characteristics (see Linck, Netter and Yang 2008). This paper extends current research by examining the relation in a pre- and post-regulatory environment including medium and small companies in the sample, which have not been scrutinized in previous Australian research.

A second motivation for this paper is to evaluate the impact that the PGCG&BP has had on the structure and operation of boards of directors. These regulations make a number of recommendations with respect to boards, ranging from board independence to the establishment and composition of committees. However, the regulations are only

recommendations, and companies are simply required to provide a justification for any instances of non-compliance. Accordingly, have firms complied with the recommendations, and has there been an impact on boards which is inconsistent with the extant empirical literature on the relation of board composition and firm characteristics?

Finally, while independence is the cornerstone of the ASX corporate governance reform and the PGCG&BP identifies factors relevant that may impinge on independence, there is no empirical evidence of how firms are designating independence. To remedy this, we use information on related parties, substantial shareholdings and other relations disclosed by the firm beyond the reports on the board and directors to objectively define independence and compare these to the firm's self-classification.

Based on a sample of 450 firms, from the years 2001 and 2007 we provide evidence of changes in the structure and operation of boards of directors. First, it is notable that subsequent to PGCG&BP, the number of companies with an independent board increased by 9 percentage points to 85%. There was also a significant increase in the number firms with independent committees (audit, remuneration and nomination), which, given sufficient independent directors, may be achieved easy and at relatively low cost. While the level of compliance was highest for large firms, the impact was greatest on small companies as they were least likely to have the recommended board structure prior to the regulation. These results suggest a significant regulatory impact, and firms focusing on the need to demonstrate compliance, notwithstanding their 'recommendation' status. Second, while there was an increase in the number of firms with majority board independence, the mean (median) level of board independence

increased more modestly from 68% (67%) to 71% (75%) and in a number of cases (35%) the level of independence decreased, predominately companies with high levels of independence pre-regulation. This somewhat surprising result arose as a consequence of mean reversion, which is consistent with the regulation inferring a sufficient level of independence (73%) comfortably above the recommended level. Critically, this reveals a regulatory impact that is not consistent with the ‘aspirational’ objectives of the PGCG&BP. Furthermore, the association between board composition and firm characteristics declined which suggests that firms departed from ‘efficient’ governance choices and incurred unnecessary governance costs in complying with the regulation and moving away from the efficient or ‘ideal’ board composition. Further the increase in committees would have resulted in higher fees as directors undertook additional work. As the impacts were greatest for smaller firms, these increased costs were born primarily by smaller firms. Finally, notwithstanding the regulation identifying a range of factors as potentially impairing director independence, there is evidence that executive/non executive is the factor most relevant to the classification of most director’s independence. Consideration also appears to be given to affiliations with substantial shareholders, but board tenure greater than 10 years appears to be ignored as an impediment to independence.

This study contributes further to our understanding of the relation between board composition and firm characteristics, by the analysis of this relation in a pre- and post-regulatory environment. By including in the sample medium and small firms we are able to contribute to the regulatory debate, providing data on firms targeted in the

regulation and firms outside the regulation.⁷ Further, the testing of different definitions (designations) of ‘independence’ shows the commonly used Australian definition of excluding of non-executive directors with related party transactions (see Lim, Matolcsy and Chow 2007, Kent and Stewart 2008) does not result in a classification as consistent with self-classification as does the exclusion of non-executive directors with or related to substantial shareholdings.

The remainder of this paper is organized as follows. Section Two examines the regulatory requirements for the boards of directors, discusses the prior literature and predicts firm reactions. Section Three sets out the research design and Section Four describes the data. Section Five presents evidence on the structure of boards and the regulatory impact. Section Six concludes and suggests further research.

2. Regulatory developments and prior literature on board structure

Regulatory development: The ASX’s PGCC&BP

High profile corporate failures around the world, including HIH Insurance Ltd in Australia, have focussed attention on corporate governance (and in particular boards of directors) provided a catalyst for regulatory reform.⁸ While there appears no empirical evidence identifying the perceived failures in corporate governance as endemic, or there being widespread inefficiency in corporate governance choices, politicians and market regulators responded to these crises with a range of regulatory reforms. The

⁷ PGCG&BP were applied to the ‘Top 500’ Companies, with the requirement for an independent audit committee later relaxed and applied to the ‘Top 300’.

⁸ Internationally this would include Enron Corporation, WorldCom Inc and Global Crossing Ltd ,

PGCG&BP, which was issued by the ASX in 2003 and addresses the structure and operation of boards of directors, was typical.

First, it prescribed independent boards of directors as the foundation stone of good corporate governance. Doubtless this was influenced by the recommendations in reviews of corporate governance in the 1990's in Australia (The Bosch Committee), the United Kingdom (The Cadbury Report) and the United States (The Blue Ribbon Committee). Second, the regulations were (at least initially) uniformly prescribed for all 'Top 500' listed firms, a 'one size fits all' approach, with little consideration being given to differences in firms characteristics.⁹ The major recommendations of the PGCG&BP for the structure and operation of boards of directors are listed below:

- i. A majority of the board should be independent directors;
- ii. The chairman should be an independent director;
- iii. The board should establish (an independent) nomination committee;
- iv. The board should establish (an all non-executive and majority independent) audit committee;¹⁰ and,
- v. The board should establish (an independent) remuneration committee.

It is notable that the regulation was aspirational, and while establishing a minimum standard it encouraged higher levels of independence.

From the above recommendations it is clear that independence is critical, and to aid the determination of independence the following definition was provided:

An independent director is independent of management and free of any business or other relationship that could materially interfere with – or

⁹ The Top 500 firms listed on the Australian Securities Exchange represent approximately 30% of listed firms but over 90% of the market capitalization.

¹⁰ The requirement for only non-executive and majority independent was introduced in 2004 but only for the top300 firms.

*could reasonably be perceived to materially interfere with – the exercise of their unfettered and independent judgement.*¹¹

Application of this subjective definition may present difficulties and guidance was provided on how this might be evaluated. In determining independence it was noted that directors should be non-executive and consideration given to factors that may reduce independence such as: being a substantial shareholding or affiliated therewith, employment by the company or provision professional services either presently or in the past three years, being a material supplier or customer, having a material contractual relationship with the firm, being a director for an extended period, and any other interest or business relationship that might interfere with independence.

This suggests evaluation of how the structure and operation of boards of directors was impacted by the regulation. In this regard it should again be noted that the regulations are only recommendations and companies are simply required to provide a justification for any instances of non-compliance.

The first recommendation identified above relates to boards being comprised of a majority of independent directors. As this is the recommendation that has received the greatest attention, it is expected that there will be an increase in the number of boards having a majority of independent directors. Furthermore, the aspirational nature of the regulation needs to be acknowledged, and it is expected that the level of board independence will also increase. Increased numbers of independent directors can be achieved either by increasing the board size, adding new independent directors or

¹¹ PGCG&BP, p19.

replacing non-independent with independent directors. The former may be easier, at least in the short term. First, while directors may resign at any time, directors cannot easily be dismissed.¹² Second, the Corporations Law does not specify the tenure of directors. Third, the ASX Listing Rules require directors to be elected every three years and while the firm may be able to manage the process and stop most potential candidates (especially executives) from nominating, directors are at the end of the day elected by shareholders. This will be problematic as existing directors commonly renominate. Accordingly, it is expected that increases in the number of independent directors to achieve independent boards will be achieved by increasing board size.

The second recommendation relates to the independence of the chairman. An issue in complying with this recommendation is that an incumbent chairman is likely to be resilient, and any change is unlikely until the end of their tenure as a director. Compounding this problem in Australian is the likelihood that a non-independent chairman is often an executive other than the CEO.¹³ Replacing the chairman in these situations would result in a significant downgrading in the status of the executive. Accordingly, it is not expected that there will be a significant reduction in non-independent chairman.

The remaining recommendations relate to the establishment of independent committees (audit, nomination and remuneration). Subject to there being sufficient independent directors on the board, compliance with these recommendations would have been easier

¹² For example, ‘NAB Chairman Kraehe states “every one of Mrs Walter’s fellow directors is unable to work with her” – he is leading the rest of the board in an effort to have shareholders sack Catherine Walters’. Transcript of The 7.30 Report ABC Television 31/03/04

¹³ For example Frank Lowy (Westfield,) Kerry/James Packer (PBL), Kerry Stokes (Seven Network) and Rupert Murdoch (News Corp) all hold, or represent large shareholdings in their companies. Other executive chairs such as David Clark at Macquarie Bank, may not have held a controlling or significant influencing shareholding, but had a long history with the firm.

and incurred relatively low compliance costs, beyond additional director fees. Furthermore, the requirement for independent directors may have been anticipated and/or common practice before 2003, but committees and the independence of committees may not, especially for small firms. It is noted that auditors, especially big 4/5/6 auditors, may have required audit committees (preferably independent) more than a decade before, but other committees were less in vogue.¹⁴ This is reflected in the academic literature evaluating the operation of audit committees, including Klein (2002a, b) and Hamilton and Thomas (2008). It is also reflected in professional activities, with KPMG in Australia operating an ‘Audit Committee Institute’ allowing directors to ‘keep up to date on current and emerging issues’.¹⁵ Accordingly it is expected that the greatest changes in the operation of boards of directors resulting from the regulations will be an increase in the incidence of independent committees, especially the remuneration and nomination committees, which are achieved at the lowest cost.

It is likely that the reaction of firms to the regulation will be conditioned by firm size. Large firms will face proportionately lower cost for compliance. The cost of additional independent directors, the replacement of non-independent directors by independent directors and the extra workload of directors serving on committees is likely to be higher for large firms demanding higher quality directors but not in proportion to their size. This was recognised in 2004 by the decision to limit the requirement for an independent audit committee to firms in the Top 300. Furthermore, as a consequence of

¹⁴ In November 1990, the Auditing Standards Board issued ED 35 ‘Communications with Audit Committees’ which became AUP 31 in 1991 (operative January 1, 1992). There was no equivalent IAPC Statement.

¹⁵ <http://www.kpmg.com.au/aci/home.htm>

their public profile it is expected that larger firms are more likely to comply with the recommendations. Accordingly, for larger firms there is expected to be greater compliance. However, for these same reasons, large companies were also more likely to have this board structure prior to the regulations being issued, and the likelihood of regulatory impact is low. Additionally, Coles, Daniel and Naveen (2008) found large firms are likely to be more complex and have larger boards, and this is also associated with more outside directors. In contrast, for smaller firms, the regulatory impact is expected to be greatest as they were less likely to have adopted the recommended board structure prior to the issue of the regulation. However, influencing this outcome will be the level of regulatory compliance as small firms generally have neither the resources nor the profile to justify the costs of compliance with the regulations.

A final issue arising consequent to the regulation is how firms operationalised 'independence'. The guidance is at best equivocal and an evaluation of the association between firms 'self-classification' and the characteristics of directors would provide insights into how firms implemented this aspect of the regulation.

Prior literature on board structure and firm characteristics

Smith (1776) quoted by Jensen and Meckling (1976) raises two fundamental issues. The first, commonly referred as the theory of agency, accepts that managers will not act with the same diligence when dealing with another's money as when dealing with their own. To overcome this problem, governance and compensation measures are introduced. The efficient combination of these is likely to be different in different organisations, because of the manager and ownership structure and other firm characteristics. They are also

likely to be different because of the different cost and benefit of the bonding, monitoring and the residual loss functions in different organisations. Therefore the imposition of a ‘one size fits all’ regulatory approach is likely to impose ‘inefficient’ governance solutions. The normative regulatory solution is not unexpected, the political process has long been known to impose solutions which are sub-optimal (Watts 1977).

Second, Smith’s (1776) ‘invisible hand’ would suggest in an unregulated corporate governance environment, board composition (on average) should be optimal. Even in cases where boards are thought to be captured by special interests, if the benefits of changing the board were greater than the cost, the board composition would change. Board composition should be related to firm characteristics, including other governance mechanisms employed by the firm to control agency conflicts (Bathala and Rao 1995). Given the firm characteristics and the costs and benefits of other mechanisms, boards may be expected to be so composed as to provide efficient corporate governance (Linck, Netter and Yang 2008). Further, simply because a better outcome is associated with a particular governance attribute fails to consider why the particular attribute was chosen in the first place (Adams, Hermalin and Weisbach 2010).

While determining how the regulation changed the structure and operation boards of directors is of interest, a major concern arising from this is whether firms departed from ‘efficient’ governance choices and incurred unnecessary governance costs. In evaluating this attention is focused on board structure as it is readily observable, there is likely to be a deterministic relation between board structure and operation, and there is a substantial literature evaluating the determinants of board structure (see Linck, Netter and Yang 2008).

Corporate governance is the label generally applied to the mechanisms employed by shareholders (and possibly other stakeholders) to address problems arising consequent to the separation of decision-making and risk-bearing functions (control and ownership) in corporations. One such mechanism is the board of directors whose functions include ratifying and monitoring management decision making (exercising ‘decision control’). It has been argued that independent directors will be more effective in performing this function. For example, Fama and Jensen (1983) argues that independent directors are less likely to collude with managers in expropriating shareholder wealth. Similarly, Fama and Jensen (1983) suggest that independent directors with reputational concerns will more effectively exercise decision control. A substantial literature has subsequently evaluated the effectiveness of (independent) boards in a number of contexts. This includes the monitoring and termination of poorly performing CEO’s (Hermalin and Weisbach, 1988), monitoring of the financial reporting process (Beasley 1996) and determination of management compensation (Core, Holthausen and Larcker 1999). These all support a role for independent directors, and are consistent with the major thrust of the regulatory changes.

However, this ignores a potential role for inside directors. Interestingly, Core, Holthausen and Larcker (1999) in addition to finding an association between management compensation and independent directors, consistent with inside directors bringing firm specific information to the board that might not otherwise be available. Further, there is growing support for inside directors having a role in the effective functioning of the board of directors, with this typically being concerned with ensuring information flows to the board (e.g. Harris and Raviv 2006; Adams and Ferreira 2007).

Reflecting concerns that independent directors may not be sufficient for the efficient operation of the board of directors, attention is being focussed on the determinants of board composition. This includes Boone, Field, Karpoff and Raheja (2007) and Linck, Netter and Yang (2008) who identify relations between board composition and firm financial characteristics, with these characteristics reflecting likely agency problems.

Problematically, this suggests potential diversity in board structure which was not recognised or provided for in the regulatory reforms. Thus, an important question requiring address is whether the reforms resulted in firms departing from 'efficient' governance choices and incurring unnecessary governance costs (Coulton and Taylor 2003). This would be assessed by a reduced association between board structure and firm characteristics, and is captured with the following hypothesis:

H₁: Subsequent to regulatory reform (PGCG&BP) the association between board structure and firm characteristics declined.

A reduction in the relation between board composition and firm characteristics might suggest firms are adopting more costly board compositions which do not provide sufficient benefits or board compositions which result in worse outcomes. Furthermore, these problems will be exacerbated in small firms where the relative costs of governance mechanisms are likely higher.

3. Research Design

To evaluate the impact of the regulation on the structure and operation of boards of directors, a comparison of the relevant board characteristics in 2001 and 2007 was undertaken. While the PGCG&BP were issued in March 2003, there had been

significant public discussion prior to this date. Accordingly, 2001 was chosen to ensure that the benchmark year was unlikely to be impacted by anticipation of the regulatory change. To evaluate the impact of the regulation, 2007 was identified as the comparison year as this allowed firms sufficient time to implement change. In this regard it should be noted that the ASX requires directors to stand for re-election every three years and the selection of this date ensures that all directors have been elected subsequent to the regulation.

Detailed information on the structure and operation of the board of directors is available from financial reports. However, a number of issues arise in the classification of directors as independent. First, non-executive is the only absolute requirement for independence. Second, firm self-classification of the independence of directors was not required until 2003. Comparison of board structure across 2001 and 2007 requires a consistent classification basis. Accordingly, director independence is in the first instance determined by executive/non-executive. The adequacy of this is considered by comparing this classification with firms' self-classification in 2007.

Consideration of whether the relation between board structure and firm characteristics changed subsequent to the regulatory change requires the identification of those characteristics that are deterministic of board structure. In the extant literature there is a range of characteristics that have been associated with board structure and these might be generally categorised as capturing firm complexity, information asymmetry and potential agency costs, other governance mechanisms and industry characteristics (Boone, Field, Karpoff and Raheja 2007; Coles, Daniel and Naveen 2007; Linck, Netter and Yang 2008).

Firms with complex business activities, different industries, financing activities or geographical dispersion are expected to have greater monitoring problems. These firms are likely to require more independent boards, with the benefits expected to outweigh the associated costs (Fama and Jensen, 1983). Consistent with the prior literature, proxies used for firm complexity are firm size (Size) measured as the natural log of market capitalisation (due to the highly skewed size of listed firms in Australia Malolcsy, Stokes and Wright 2004), the number of subsidiaries (Subs) and foreign subsidiaries (ForSubs) measured as the natural log of 1 plus the number of subsidiaries, foreign subsidiaries, liquidity (Gul and Leung 2004) measured as current assets divided by current liabilities (Liquid) and leverage (Larcker, Richardson and Tuna 2007) measured as the natural log of debt divided by market capitalisation (Lev). Additionally, recognising a potential mechanical relation between board size and board independence (Lim, Matolcsy and Chow 2007), board size (BrdSize) is also considered.

The requirement for monitoring is also likely to be a function of information asymmetry and agency costs. Information asymmetry is likely increasing with increases in the firm's investment opportunity set, and this is measured with the ratio of the firms market to book ratio (M/B). Additionally to the extent the firm is loss making, current earnings are likely not relevant to the assessment of future earnings and there is a greater likelihood of restructuring. Accordingly, a dummy variable (Loss) is included if the firm is loss-making in the previous year. Agency costs are also likely to increase the requirement for monitoring, and hence the percentage of shares held by the top 20 shareholders (Top20) is included.

Alternative governance mechanisms such as auditors are likely to reflect the need to for monitoring. Hence a dummy variable (*Audit*) for a large or big 4/5/6 auditor is included. Finally, firm characteristics influencing monitoring requirements are likely to be consistent across industries, and for this reason an industry control (*Industry*) is included.

Accordingly, the model to evaluate the relation between board structure and firm characteristics takes the following form:

$$\begin{aligned}
 Board_{it} = & \alpha_0 + \alpha_1 Size_{it} + \alpha_2 Subs_{it} + \alpha_3 ForSubs_{it} + \alpha_4 Liquid_{it} + \alpha_5 Lev_{it} \\
 & + \alpha_6 BrdSize_{it} + \alpha_7 M / B_{it} + \alpha_8 Loss_{it} + \alpha_9 Top20_{it} \\
 & + \alpha_{10} Auditor_{it} + \sum_{j=11}^k \alpha_j Industry_{it} + \varepsilon_{it}
 \end{aligned}$$

In the extant literature, board leadership is also frequently considered as a determinant of board structure. This is not considered here due to the relatively limited instances in Australia where the CEO is also the chairman.

To evaluate whether the relation between board structure and firm characteristics has changed, the equation will be separately estimated in 2001 and 2007 and the explanatory power of the models compared. Importantly, this allows the co-efficients of the models to change. However, the model will also be estimated for a combined sample of 2001 and 2007, with a dummy variable (*Regulation*) included for the post regulation period. Also reflecting changes in firm size across this period an interaction of this dummy variable with size will also be included. As the impacts are likely to be greatest for smaller firms, the models will be estimated for the full sample and size-based partitions of firms.

Two further tests undertaken to determine the robustness of the results. First, because the regulation only required a majority of the board to be independent, a dichotomous variable for independence is tested using a logistical regression. Second, while using the same firms in 2001 and 2007 introduces a survival bias, it also provides the opportunity to test changes in the level of board independence and changes in firm characteristics.

4. Sample and data description

To observe the impact of the regulation on the structure and operation of boards of directors a sample of firms listed on the ASX in 2001 was identified and changes were evaluated for these firms between 2001 and 2007. Sample firms for this study comprised all firms in the Top 300, together with a random sample of smaller firms. The inclusion of all firms in the Top 300 was considered appropriate due to the economic significance of these firms (they represented over 90% of market capitalisation in 2001). Furthermore, separate evaluation of the results for a partition of large firms would allow comparison with prior studies that have focussed primarily on large firms. Foreign domiciled firms and trusts were excluded from the sample as these are potentially subject to alternative regulation. Finally, firms for which annual report data was not available in both 2001 and 2007 were deleted, as shown in Table 1.¹⁶

Table 1 **Sample Selection**

Sample firms selected from those listed on the ASX in 2001 with the following selection criteria. All firms in the S&P100 and S&P300, and a random sample of firms outside the S&P300. Firms deleted if foreign domiciled, trusts, financial reports unavailable in either 2001 or 2007

¹⁶ All firms that were in or entered the index during the year are included, leading to more than 100 firms in the 'Top 100' index. Below the Top 300, all firms in the UTS Who Governs Australia Data Base were initially selected.

	2001
Firms in S&P100	111
Firms in S&P300, but outside S&P100	194
Random firms below S&P300	470
Sub-total:	775
Less:	
Foreign-domiciled	22
Trusts	26
Annual reports unobtainable	194
Financial Services firms (GICS industry groups 40XX)	83
Final sample	450

This produced a final sample of 450 firms. All board data for this study was obtained from the UTS School of Accounting Corporate Governance Database.

The requirement for firms to be sampled in both 2001 and 2007 focuses attention on actual changes in boards of directors by those firms. Importantly, this avoids the potential problem of changes in sample composition impacting the results, which would arise if re-sampling occurred. However, this does introduce a survivorship bias. Accordingly, comparisons were made between sample firms in 2001 and 2007, and all other firms on the UTS Corporate Governance Database from these years. The results (unreported) indicate sample firms (n = 450) were not significantly different from the non-sample firms (n = 261 in 2001 and n = 254 in 2007) for board and committee independence. It is also possible that changes in firms' characteristics across this period could be impacting these results. To address this, sample firms were restricted to those in the same size partition and industry in 2001 and 2007. The results (unreported) are essentially the same.

An overview of sample firms is provided in Table 2. In Panel A firms are classified according to market capitalisation in 2001. Importantly, this shows the spread of firms

across the different size partitions (Top 100, 101-300, 301-500 and 501+). The distribution of sample firms across industries is presented in Panel B. Although there is a large representation of firms from the materials sector this is consistent with the distribution of firms in the population (32% for the sample, 37% for the population).

Table 2
Sample Description
 Description of sample firms in 2001 by size (Panel A)
 and industry classification (Panel B).

Panel A: Classification of firms by size (S&P ranking) 2001		
Top 100	50	11%
101-300	109	24%
301-500	84	19%
Below 500	207	46%
Total	450	100%

Table 2		
Panel B: Classification of firms by industry (GICS industry groups) 2001		
	Number	Percentage
Energy (1010)	33	7%
Materials (1510)	142	32%
Capital goods (2010)	39	9%
Commercial services & supplies (2020)	22	5%
Transportation (2030)	9	2%
Automobiles & components (2510)	7	2%
Consumer durables & apparel (2520)	12	3%
Consumer services (2530)	9	2%
Media (2540)	22	5%
Retailing (2550)	16	4%
Food & staples retailing (3010)	4	1%
Food, beverage & tobacco (3020)	22	5%

Household & personal products (3030)	-	
Health care equipment & services (3510)	24	5%
Pharmaceuticals & biotechnology (3520)	21	5%
Software & services (4510)	38	8%
Hardware & equipment (4520)	12	3%
Semiconductors (4530)	-	
Telecommunication services (5010)	14	3%
Utilities (5510)	4	1%
Total	450	100%

5. Results

Impact of the regulation

Initial insights into the impact of the regulations on the structure and operation of boards of directors across the full sample of firms are presented in Table 3. In Panel A there is evidence of the proportion of firms having a majority independent board increasing by 9% to 85%. ($\chi^2 = 25.438$, $p=0.000$). It is difficult to draw direct comparisons with Arthur (2001) who found in his sample of 135 firms drawn from the approximately 750 industrial firms listed on the ASX in 1989, a mean (median) of non-executive directors of 62% (67%). These lower percentages may be due to time, industry or firm size. There is also an increase in the proportion of firms with independent chairman by 3% to 76% ($\chi^2 = 1.949$, $p=0.163$), but this is insignificant, consistent with the expectation that this would be relatively more difficult to increase. Furthermore, there is evidence of significant and larger increases in the proportion of firms having independent committees. Firms with an audit committees that was majority independent increased by 17 percentage points to 79% ($\chi^2 = 63.488$, $p=0.000$), remuneration committees majority independent by 20 percentage points to 65% ($\chi^2 = 86.666$, $p=0.000$) and nomination committees majority independent by 29 percentage points to 38% ($\chi^2 = 556.936$, $p=0.000$). These results all show an overwhelming proportion of firms complying with, or substantially moving towards compliance with

the recommendations of the PGCG&BP. However, compliance was not absolute. Independent nomination committees in particular operate only in a minority of companies.

However, interesting insights into how firms responded to the regulations are provided in Table 3 Panel B. First, it is notable that the mean (median) board size decreased negligibly from 5.56 (5.0) to 5.49 (5.0). This decrease is not significant with either parametric or non parametric tests (t-stat=-0.539, p=0.590, u=98,571, p=0.486) and suggests that firms did not respond to the regulations by appointing additional independent directors, rather by replacing non-independent directors. Second, relative to the increase in majority board independence described above, the increase in mean (median) board independence from 68% (67%) to 71% (75%) while significant (t-stat=2.909, p=0.004, u=90,898, p=0.008) was more modest. Analysis of the changes in board independence reveals that while 50% of firms increased their level of

Table 3
Board Structure in 2001 and 2007: Full Sample (n=450 firms)

Comparison of the structure and operation of boards of directors in 2001 and 2007 (i.e., board independence, chairman independence, committee independence). Discrete measures are presented in Panel A and continuous measures in Panel B.

Panel A: Discrete measures						
	2001	2007	Difference	χ^2 -stat	p-value	
Majority independent board	76%	85%	9%	25.438	0.000	***
Independent chairman	73%	76%	3%	1.949	0.163	
Majority independent audit committee	62%	79%	17%	63.488	0.000	***
Majority independent remuneration committee	45%	65%	20%	86.666	0.000	***
Majority independent nomination committee	9%	38%	29%	556.936	0.000	***

Panel B: Continuous measures														
	2001			2007					Difference in means			Difference in ranks		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Decr	Incr	t-stat	p-value		U-stat	p-value	
Board size	5.56	5.00	2.01	5.49	5.00	2.07	37%	36%	-0.539	0.590		98,571.0	0.486	
Board independence	68%	67%	20%	71%	75%	17%	35%	50%	2.909	0.004	***	90,898.5	0.008	***
Audit committee independence	82%	100%	23%	92%	100%	17%	12%	41%	7.146	0.000	***	47,531.5	0.000	***
Remun committee independence	84%	100%	21%	90%	100%	18%	10%	38%	3.196	0.001	***	30,765.5	0.002	***
Nomin committee independence	81%	83%	22%	89%	100%	18%	3%	36%	2.370	0.019	**	3,761.0	0.023	**

independence, 35% decreased independence. This magnitude of firms reporting decreased board independence is clearly inconsistent with the aspirational nature of the regulations, and will be further considered below. Evidence is also provided on committee independence (audit, remuneration and nomination) and while there was an increase in committee independence (from 82%, 84% and 81% in 2001 to 92%, 90% and 89% in 2007 Table 3 Panel B) the change was clearly secondary to the formation of the committees, especially the nomination committees (from 11% of firms sample firms with a nomination committees in 2001 to 43% in 2007).

Evidence of the differing impact of the regulation on firms, partitioned on the basis of size is presented in Table 4. Subsequent to the regulation, 94% of the Top 100 firms had a majority independent board, 88% an independent chairman, 100% had an independent audit committee, 88% an independent remuneration committee and 78% an independent nomination committee (Panel A).

Table 4
Board Structure in 2001 and 2007: Across size partitions

Comparison of the structure and operation of boards of directors in 2001 and 2007, across firms partitioned on the basis of S&P market capitalization in 2001

Panel A: 2002 and 2007								
	2001				2007			
	Top 100	101- 300	301- 500	500+	Top 100	101- 300	301- 500	500+
Majority independent board	94%	83%	71%	69%	94%	94%	79%	81%
Independent chairman	88%	78%	68%	70%	88%	84%	67%	72%
Majority independent audit committee	94%	83%	65%	43%	100%	95%	81%	65%
Majority independent remuneration committee	90%	67%	43%	23%	88%	84%	62%	50%
Majority independent nomination committee	40%	9%	6%	3%	78%	56%	30%	23%

Table 4				
Panel B: Differences across 2001-2007				
	Top 100	101- 300	301- 500	500+
Majority independent board	0%	11%	7%	12%
Independent chairman	0%	6%	-1%	3%
Majority independent audit committee	6%	13%	15%	22%
Majority independent remuneration committee	-2%	17%	19%	27%
Majority independent nomination committee	38%	47%	24%	20%

Panel C: Differences across firms in 2007 - Top 100 v 101-300 (n = 50 & 109 firms)				
	Diff	X ² -stat	p-value	
Majority independent board	0%	0.033	0.856	
Independent chairman	4%	0.688	0.407	
Majority independent audit committee	5%	3.365	0.067	*
Majority independent remuneration committee	4%	0.688	0.407	
Majority independent nomination committee	22%	13.793	0.000	***

Panel D: Differences across firms in 2007 - 101-300 v 301-500 (n = 109 & 84 firms)				
	Diff	X ² -stat	p-value	
Majority independent board	16%	19.127	0.000	***
Independent chairman	18%	17.979	0.000	***
Majority independent audit committee	14%	17.223	0.000	***
Majority independent remuneration committee	22%	27.260	0.000	***
Majority independent nomination committee	26%	41.708	0.000	***

Panel E: Differences across firms in 2007 - 301-500 v 500+ (n = 84 & 207 firms)				
	Diff	X ² -stat	p-value	
Majority independent board	-2%	0.361	0.548	
Independent chairman	-6%	2.139	0.144	
Majority independent audit committee	16%	14.632	0.000	***
Majority independent remuneration committee	12%	6.911	0.009	***
Majority independent nomination committee	7%	3.081	0.079	*

In comparison, firms outside the Top 500 were less likely to comply with the regulations, although the level of compliance was higher than expected given the likely cost imposition for small firms. For these firms, 81% had a majority independent board, 72% an independent chair, 65% an audit committee that was majority independent and 50% an independent remuneration committee. Independent nomination committees were however relatively uncommon, being present in only 23% of these firms. This is not unexpected given only 38% (Table 3 Panel A) of the sample firms had a nomination committee.

For Top 100 firms, it is apparent in Panel B that there was little change in the incidence of majority board independence, chairman, audit committees or remuneration committees (0%, 0%, 6% and -2% respectively). The largest innovation was independent nomination committees, where the incidence increased by 38%. Clearly, consistent with expectation, firms in the Top 100 had already adopted most requirements of the PGCG&BP and the only significant innovation was an independent nomination committee. The impacts of the regulation on the structure and operation of boards of directors were generally largest for firms outside the Top 500. There was a 12% increase in majority independent boards, a 3% increase in independent chairs, a 22% increase in independent audit committees and a 27% increase in independent remuneration committees. The increase in independent nomination committees was more modest (20%) with the majority of these small firms not electing to have this committee.

Variation in the structure and operation of boards of directors across the size partitions (Top 100, 101-300, 301-500, 501+) of firms in 2007 provides important insights for

researchers. First, a comparison of firms in the Top 100 and 101-300 is presented in Panel C, with this showing relatively little variation. The incidence of majority board independence, an independent chairman and an independent remuneration committee are not significantly different. However, there is a difference with respect to an independent audit committee (100%-95%=5%) and this is weakly significant ($\chi^2 = 3.365$, $p=0.067$). Similarly, there is a difference in the incidence of an independent nomination committee (78%-56%=22%) and this is strongly significant ($\chi^2 = 13.793$, $p=0.000$). There are major differences in the operation and structure of boards of directors across firms in the 101-300 and 301-500 partitions (Panel D). Firms in the partition 101-300 are more likely to have an independent board (94%-79%=15%, $\chi^2 = 19.127$, $p=0.000$), chairman (84%-67%=17%, $\chi^2 = 17.979$, $p=0.000$), audit committee (95%-81%=14%, $\chi^2 = 17.223$, $p=0.000$), remuneration committee (84%-62%=22%, $\chi^2 = 27.260$, $p=0.000$) and a nomination committee (56%-30%=26%, $\chi^2 = 41.708$, $p=0.000$). Again there are relatively few differences between firm 301-500 and 500+ (Panel E), with the only significant difference being with respect to an independent audit committee (81%-65%=16%, $\chi^2 = 14.632$, $p=0.000$) and remuneration committee (62%-50%=12%, $\chi^2 = 6.911$, $p=0.009$).¹⁷

Critically for research on the structure and operation of boards these results suggest that there will be little variation across firms unless the sample includes small firms. Furthermore, there is a high possibility of size as an omitted correlated variable problem as the difference in board composition between size partitions is highly significant for all five independence measures between 101-300 and 301-500 firms. While this might be expected for the audit committee where the PGCG&BP provides some relief for

¹⁷ Differences between percentages and percentage point changes in Table 4 are due to rounding to the closest full percent.

small firms, there are equally differences for all board characteristics. There is more variation in the level of board independence across firms, although again it is notable that this is associated with firm size (not tabulated). For firms in the Top 100 this was 79% while for firms below 500, 68%. However, as this is not a categorical variable there is more variation within these partitions.

An issue identified above is that while there was a material increase in the number of firms with majority independent boards, the increase in the level of board independence was much more modest. Analysis of the pattern of changes showed that 35% of firms actually had a decrease in their level of board independence (Table 3 Panel B). To further evaluate the impact of the regulation on the level of board independence, the relation between board independence across 2001 and 2007 is investigated with the results presented in Table 5 Panel A. This provides evidence of mean reversion, with the co-efficients on the constant ($\alpha_0=0.502$, $t\text{-stat}=19.226$, $p=0.000$) and board independence in 2001 ($\alpha_1=0.308$, $t\text{-stat}=8.288$, $p=0.000$) combining to identify a 73% target level of board independence. This is undertaken separately for the different size partitions in Panel B, and this shows a declining target level of board independence based on firm size (i.e. 76%, 79%, 70% and 69%).¹⁸ Accordingly, the regulation appears to have identified a sufficient level of board independence, comfortably above the prescribed minimum. Accordingly, there is no evidence of the regulation achieving its aspirational aim.

¹⁸ This is confirmed by analysing changes in the level of board independence across firms partitioned on the basis of the independence in 2001. Of the firms in the top quintile of independence in 2001, 67% reported a lower level of independence in 2007. In contrast, for firms in the bottom quintile in 2001, 88% reported an increased level of independence in 2007.

Table 5:**Mean reversion of board independence (2001 - 2007)**

Evaluation of the changes in board independence between 2001 and 2007. Panel A presents the results for the full sample of regressing board independence in 2001 on board independence in 2007, and estimates the point of mean reversion. Panel B presents the results for estimating this across the size partitions

Panel A: Regression results: Full Sample (n=450)				
	Coeff.	t-Stat	p-value	
Constant	0.502	19.226	0.000	***
Board independence (2001)	0.308	8.288	0.000	***
Adj R ²	0.131			
Mean reversion level of board independence	73%			

Panel B: Regression results: Across size partitions				
	Coeff.	t-Stat	p-value	
Top 100 (n=50)				
Constant	0.315	4.404	0.000	***
Board independence (2001)	0.587	6.542	0.000	***
Adj R ²	0.460			
Mean reversion level of independence	76%			
101-300 (n=109)				
Constant	0.535	11.149	0.000	***
Board independence (2001)	0.324	4.811	0.000	***
Adj R ²	0.170			
Mean reversion level of independence	79%			
301-500 (n=84)				
Constant	0.443	7.712	0.000	***
Board independence (2001)	0.370	4.424	0.000	***
Adj R ²	0.183			
Mean reversion level of independence	70%			
500+ (n=207)				
Constant	0.548	13.822	0.000	***
Board independence (2001)	0.203	3.474	0.001	***
Adj R ²	0.051			
Mean reversion level of independence	69%			

The above analysis is based on director independence being determined solely on the basis of executive/non-executive. This was necessary to compare independence across 2001 and 2007 as firms were only required to ‘self-classify’ director as independent or non-independent from 2003. Insights into the impact of this assumption were provided by a comparison of self-classification with alternative classifications in 2007, with the results reported in Table 6. Showing in 2007, of the 2404 directors in the reduced sample of 434 firms, 1,449 or 60% of directors were self-classified as independent.¹⁹ If classification was based solely on executive/non executive 1,751 or 73% of directors would have been classified as independent, with 302 directors being misclassified as independent. Importantly for the above analysis, there is a significant correlation between firms self classification and executive/non executive classification (Pearson Co-eff=0.753, p=0.000; Spearman Rank=0.753, p=0.000). Accordingly, the assumption appears reasonable and does not invalidate the conclusions. Both Arthur (2001) and Cotter and Silvester (2003) subjectively classified directors as ‘outside’ and ‘independent’.²⁰ Arthur (2001) found the mean and median proportion of outside director to be 46% and 50%, Cotter and Silvester (2003) found 50% for both measures. These results are much lower than the 60% for self-classification in Table 6, but could be due to the prior studies drawing their samples 10 and 18 years earlier than this part of this study. Of much greater concern is the fact that these earlier studies had a much higher proportion of independence, than the 41% of the ‘totally’ independent in Table 6. This may be in part due to the less stringent disclosure required previously.

¹⁹ The sample was reduced from 450 to 434 due to 16 firms not complying with the regulation to self classify.

²⁰ Arthur (2001) used both non-executive and outside (‘not a full time employee; are not related to management; do not have business ties to the firm; are not retirees; do not owe money to the company; and are not current or former employees of the firm’s legal council or auditor), while Cotter and Silvester (2003) used the Australian Investment Managers’ Association definition of independence (which is broadly consistent with PGCG&BP).

Table 6**Alternative measures of executive/non executive**

Independence in this study was determined on the basis of directors being executive/non-executive. This table presents the association between self-classification, executive/non executive classification and alternative classification bases. This is based upon the directors of the sample firms in 2007, which were reduced from 450 to 434 due to 16 firms not complying with the requirement to self-classify directors.

	Sample		Comparison with Self Classification			Pearson Correlation	
	Directors	% of Total Directors	Correctly Classified	“Misclassified” Independent	“Misclassified” Non Independent	Coeff.	
Self-classification as independent	1,449	60%	1,449				
Non-Executive	1,751	73%	1,449	302	0	0.753	***
Non-executive and no related party transactions	1,398	58%	1,217	181	232	0.646	***
Non-executive and not affiliated with a substantial shareholder	1,469	61%	1,352	117	98	0.814	***
Non-executive and not an audit partner in last 3 years	1,679	70%	1,420	259	29	0.756	***
Non-executive and not a director for more than 10 years	1,454	60%	1,220	234	230	0.598	***
Totally Independent – Non-executive and no related party transactions, not affiliated with a substantial shareholder, not an audit partner in the last 3 years and not a director for more than 10 years (i.e. all of the above)	982	41%	969	13	480	0.653	***

Comparison of self-classification with other factors potentially impacting independence provides insights into how firms are operationalising the definition of independent. Supplementing non-executive with the requirement for no reported related party transactions identified 1,398 or 58% of directors as independent. Interestingly this results in the misclassification of 181 directors as non-independent, and this together with the reduced correlations (Pearson Co-eff=0.646, p=0.000 Spearman Rank=0.646, p=0.000), suggests that for many directors related party transactions are not considered to impair independence. This may be expected as immaterial transactions are in many cases included with such an absolute rule, notwithstanding that they are unlikely to impair independence. Avoiding this problem would require a materiality rule, which would be arbitrary. Supplementing non-executive with not affiliated with a substantial shareholder resulted in 1,469 or 61% of directors classified as independent. Further the association between this classification and self-classification was greatest (Pearson Co-eff=0.814, p=0.000; Spearman Rank=0.814, p=0.000). The level of misclassification was least, 117 directors being incorrectly classified as independent and 98 as non-independent. Accordingly, this produces a classification closest to self-classification. The impact of having an audit relation was minimal with this likely reflecting the relatively small number of directors impacted (3%). Most notably the impact of supplementing non-executive with not being a director for more than 10 years excluded a material number of directors (13%) from being classified as independent. However, the relatively poor association with self-classification (Pearson Co-eff=0.598, p=0.002; Spearman Rank=0.598, p=0.000) suggests that firms are not considering this an impediment to independence.

Of interest to researchers in this area, classification based on executive/non executive is highly correlated with self-classification and unsurprisingly results in no directors being incorrectly classified as non-independent. Supplementing non-executive with ‘not affiliated with a substantial shareholder’ produced results closest to self-classification and lead to substantially (302 compared to 117) less directors who self classify as non-independent being classified as independent.

Board structure and firm characteristics

From the above analysis it is clear that the structure of boards of directors has changed subsequent to the issuance of the PGCG&BP. Attention is now directed to whether the relation between board structure and firm characteristics changed. Of particular concern is whether the relation weakened, which would suggest that the regulatory reform imposed unnecessary governance costs on firms. The results are presented in Table 8.

In Table 8 the notable feature is the high correlation of most firm characteristics in both 2001 and 2007 for both Pearson (above the diagonal) and Spearman (below). For the full sample of firms in Table 9 it is notable that the adjusted R^2 declined from 16.4% for the equation based on 2001 data to 10.2% for the equation based on 2007 data. This decline in explanatory power is consistent with H_1 and the relation between board structure and firm characteristics diminishing. It is also notable that the constant in the regression increases from 0.362 (t-stat=2.590, p-value=0.010) in 2001 to 0.580 (t-stat=4.469, p-value=0.000) in 2007 which is consistent with a higher level of board independence subsequent to the regulation. However, for the combined sample (2002 and 2007) the co-efficient on the regulatory dummy variable while positive is not significant ($\alpha=0.167$, t-stat=1.359, p-value=0.174). This is not altogether surprising

given the relative instability of the co-efficients on the firm characteristics across the separate year samples that are likely influenced by a combination of co-linearity and mean reversion in the level of board independence.

To evaluate the sensitivity of this result to firm size, the analysis was repeated for each of the size partitions. For firms in the Top 100 (Panel B) it is notable that the explanatory power of the model decreases from 35.0% in 2001 to 28.1% in 2007. There are similar impacts for 101-300 firms (Panel C) with the explanatory power decreasing from 15.0% to 2.3%, while for firms outside the top 500 the explanatory power of the model decreased from 10.3% to 5.9%. It is only for firms 301-500 that the explanatory power increases from 1.9% to 10.0%. Accordingly, there is some support for the proposition that the association between board structure and firm characteristics declined subsequent to the regulation as firms endeavoured to comply with the recommendations. It is also notable the models relating board structure to firm characteristics have the greatest explanatory power for large firms.

No variables are consistently significant across both time periods and firm size. The most consistent result is for ownership concentrated (Top20) where it is negatively and significantly with all but the small and smallest firms in 2007. For the smallest firms board size is highly significant in both years. Small firms tend to have smaller boards and the smaller the board the less opportunity for independent directors.

While the PGCG&BP may encourage a high level of board independence, the regulation requires only a majority of the board members to be independent directors. To test if this distinction is important Table 10 repeats the tests from Table 9 Panel A,

Table 7
Descriptive Statistics

Panel A - Continuous Measures	2001					2007				
	Mean	Median	Std. Dev.	Min.	Max.	Mean	Median	Std. Dev.	Min.	Max.
Board Ind	0.549	0.571	0.230	0.000	1.000	0.595	0.625	0.220	0.000	1.000
Size	17.785	17.467	2.001	10.226	25.192	18.484	18.370	2.264	12.932	25.882
Subs	1.994	1.946	1.266	0.000	6.021	2.334	2.197	1.240	0.000	6.190
ForSubs	0.892	0.693	1.127	0.000	4.466	1.142	1.099	1.171	0.000	4.466
Liquid	0.739	0.528	1.371	-3.314	5.139	0.741	0.560	1.185	-2.813	5.139
Lev	-4.072	-2.708	3.847	-10.335	4.477	-4.349	-2.670	4.054	-10.335	3.116
BrdSize	5.542	5.000	1.949	3.000	11.000	5.464	5.000	1.985	3.000	11.000
M/B	0.760	0.553	1.128	-1.722	3.890	1.071	0.917	1.047	-1.281	3.890
Top20	0.618	0.628	0.201	0.107	0.999	0.639	0.652	0.187	0.136	0.999

Panel B - Categorical Measures	2001	2007
Loss	44%	44%
Auditor	70%	68%

Board Ind = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); Subs = natural log of 1+ number of total subsidiaries; ForSubs = natural log of 1+ number of foreign subsidiaries; Liquid = current assets / current liabilities; Lev = natural log of debt / market capitalisation; BrdSize = number of directors on the board; M/B = natural log of market value of equity / book value of equity; Top20 = percentage of shares owned by the largest 20 shareholders; Loss = 1 if EBIT was negative; 0 otherwise; Auditor = 1 if firm's auditor was top tier, 0 otherwise.

Table 8
Correlation Matrix
PANEL A – 2001

	Size	Subs	ForSubs	Liquid	Lev	BrdSize	M/B	Loss	Top 20	Auditor
Size		.635 ***	.562 ***	-.177 ***	.255 ***	.669 ***	.221 ***	-.462 ***	.102 *	.335 ***
Subs	.553 ***		.756 ***	-.195 ***	.480 ***	.521 ***	-.181 *	-.400 ***	.009	.299 ***
ForSubs	.450 ***	.698 ***		-.084	.316 ***	.441 ***	-.099 *	-.336 ***	-.018	.267 ***
Liquid	-.170 ***	-.252 ***	-.084		-.523 ***	-.143 ***	-.113 *	.262 ***	-.116 *	-.116 *
Lev	.229 ***	.515 ***	.299 ***	-.526 ***		.271 **	-.208 **	-.437 ***	.104 *	.166 ***
BrdSize	.615 ***	.454 ***	.356 ***	-.153 ***	.271 ***		-.023	-.407 ***	.077	.286 ***
M/B	.295 ***	-.183 ***	-.096 *	.002	-.329 ***	-.001		.139 ***	.108 *	.007
Loss	-.470 ***	-.398 ***	-.315 ***	.307 ***	-.451 ***	-.399 ***	.139 ***		-.197 ***	-.213 ***
Top20	.155 ***	.014	-.017	-.108	.092	.109 *	.087	-.200 ***		.044
Auditor	.347 ***	.296 ***	.260 ***	-.144	.167 ***	.287 ***	.012	-.213 ***	.044	

Table 8 - Correlation Matrix**PANEL B – 2007**

	Size	Subs	ForSubs	Liquid	Lev	BrdSize	M/B	Loss	Top 20	Auditor
Size		.614 ***	.525 ***	-.148 ***	.280 ***	.659 ***	.056	-.500 ***	.192 ***	.459 ***
Subs	.592 ***		.727 ***	-.278 ***	.475 ***	.568 ***	-.182 ***	-.477 ***	.218 ***	.348 ***
ForSubs	.464 ***	.668 ***		-.165 ***	.284 ***	.448 ***	-.062	-.356 ***	.184 ***	.263 ***
Liquid	-.187 ***	-.314 ***	-.166 ***		-.573 ***	-.190 ***	-.188 ***	.236 ***	-.150 ***	-.089
Lev	.216 ***	.480 ***	.234 ***	-.560 ***		.348 ***	-.164 ***	-.363 ***	.260 ***	.214 ***
BrdSize	.633 ***	.518 ***	.364 ***	-.206 ***	.326 ***		-.094 *	-.413 ***	.204 ***	.411 ***
M/B	.160 ***	-.165 ***	-.038	-.118 *	-.280 ***	-.048		.220 ***	-.015	-.116 *
Loss	-.513 ***	-.488 ***	-.344 ***	.219 ***	-.332 ***	-.426 ***	.159 ***		-.243 ***	-.289 ***
Top20	.206 ***	.210 ***	.172 ***	-.152 ***	-.249 ***	.217 ***	-.023	-.229 ***		.100 *
Auditor	.474 ***	.353 ***	.243 ***	-.105 *	.189 ***	.437 ***	-.051	-.289 ***	.100 *	

P-values are two-tailed. *** = coefficient is significant at the p = 0.01 level; ** = coefficient is significant at the p = 0.05 level; * = coefficient is significant at the p = 0.1 level.

Size = natural log of market capitalisation; Subs = natural log of 1+ total number of subsidiaries; ForSubs = natural log of 1+ number of foreign subsidiaries; Liquid = current assets / current liabilities; Lev = natural log of debt / market capitalisation; BrdSize = number of directors on the board; M/B = natural log of market value of equity / book value of equity; Loss = 1 if EBIT was negative; 0 otherwise; TOP20 = percentage of shares owned by the largest 20 shareholders; Auditor = 1 if firm's auditor was top tier, 0 otherwise.

Pearson correlation above the diagonal, Spearman correlation below the diagonal.

Table 9**Firm Characteristics and Board Independence – Continuous**

The association between firm characteristics and board independence in 2001 and 2007, and consideration of whether the relation has changed. Board Independence is percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders)

Panel A: Full Sample (n=450)													
		2001				2007				Combined			
Variable	Predicted Value	Co-efficient	t-stat	p-value		Co-efficient	t-stat	p-value		Co-efficient	t-stat	p-value	
Constant	+	0.362	2.590	0.010	***	0.580	4.469	0.000	***	0.386	3.335	0.001	***
Size	+	0.017	1.867	0.063	*	-0.002	-0.285	0.776		0.011	1.524	0.128	
Subs	+	-0.014	-0.917	0.360		0.024	1.675	0.095	*	0.006	0.573	0.567	
ForSubs	+	0.018	1.276	0.202		0.011	0.852	0.395		0.013	1.444	0.149	
Liquid	-	-0.004	-0.406	0.685		0.006	0.564	0.573		0.000	0.052	0.958	
Lev	+	0.006	1.743	0.082	*	-0.001	-0.238	0.812		0.003	1.064	0.288	
BrdSize	+	0.015	1.986	0.048	**	0.011	1.503	0.134		0.014	2.633	0.009	***
M/B	+	0.007	0.662	0.508		0.004	0.325	0.746		0.005	0.693	0.488	
Loss	+	0.006	0.250	0.803		-0.021	-0.769	0.443		-0.006	-0.319	0.750	
Top20	-	-0.322	-6.130	0.000	***	-0.184	-3.231	0.001	***	-0.256	-6.685	0.000	***
Auditor	+	0.034	1.464	0.144		0.065	2.669	0.008	***	0.049	2.901	0.004	***
Industry (suppressed)													
Regulation										0.167	1.359	0.174	
Size*Regulation										-0.007	-1.022	0.307	
Adjusted R ²		0.164				0.102				0.140			

Panel B: Top 100 (n=50)									
		2001			2007			Combined	
Variable	Predicted	Co-efficient	t-stat	p-value	Co-efficient	t-stat	p-value	Co-efficient	t-stat

	Value												
Constant	+	0.998	1.560	0.129		2.098	2.996	0.005	***	0.957	1.788	0.078	*
Size	+	0.022	0.659	0.514		-0.036	-1.077	0.289		0.018	0.686	0.495	
Subs	+	-0.064	-1.498	0.144		0.011	0.266	0.792		-0.027	-1.022	0.310	
ForSubs	+	0.088	2.780	0.009	***	0.021	0.612	0.545		0.051	2.339	0.022	**
Liquid	-	-0.075	-1.269	0.214		-0.005	-0.074	0.942		-0.025	-0.644	0.522	
Lev	+	-0.012	-0.466	0.644		0.011	0.302	0.765		-0.004	-0.240	0.811	
BrdSize	+	-0.027	-1.538	0.134		-0.033	-1.748	0.090	*	-0.034	-2.924	0.004	***
M/B	+	-0.052	-1.186	0.245		0.022	0.560	0.579		-0.017	-0.722	0.472	
Loss	+	0.018	0.107	0.916		-0.531	-3.366	0.002	***	-0.311	-3.194	0.002	***
Top20	-	-0.800	-4.611	0.000	***	-0.498	-2.319	0.027	**	-0.559	-4.821	0.000	***
Auditor	+	n/a				n/a				n/a			
Industry (suppressed)													
Regulation										0.864	1.390	0.168	
Size*Regulation										-0.036	-1.286	0.202	
Adjusted R ²		0.350				0.281				0.356			

Panel C: 101-300 (n=109)													
Variable	Predicted Value	2001				2007				Combined			
		Co-efficient	t-stat	p-value		Co-efficient	t-stat	p-value		Co-efficient	t-stat	p-value	
Constant	+	0.736	1.848	0.068	*	0.329	1.175	0.243		0.639	1.928	0.055	*
Size	+	0.001	0.036	0.972		0.026	1.556	0.123		0.006	0.319	0.750	
Subs	+	0.012	0.461	0.646		0.020	0.939	0.350		0.014	0.839	0.403	
ForSubs	+	0.008	0.378	0.706		0.004	0.239	0.812		0.009	0.666	0.506	
Liquid	-	-0.005	-0.223	0.824		0.010	0.474	0.636		0.003	0.201	0.841	
Lev	+	-0.005	-0.753	0.453		-0.002	-0.367	0.715		-0.003	-0.739	0.461	
BrdSize	+	-0.014	-1.027	0.307		-0.012	-1.056	0.294		-0.011	-1.289	0.199	
M/B	+	-0.034	-1.484	0.141		-0.034	-1.625	0.108		-0.033	-2.223	0.027	**
Loss	+	-0.065	-1.506	0.136		0.051	1.203	0.232		-0.014	-0.495	0.621	
Top20	-	-0.264	-2.841	0.006	***	-0.247	-2.562	0.012	**	-0.245	-3.841	0.000	***
Auditor	+	0.074	1.389	0.168		-0.020	-0.411	0.682		0.022	0.623	0.534	
Industry (suppressed)													
Regulation										-0.016	-0.046	0.964	
Size*Regulation										0.004	0.199	0.842	
Adjusted R ²		0.150				0.023				0.130			

Panel D: 301-500 (n=84)												
Variable	Predicted Value	2001			2007				Combined			
		Co-efficient	t-stat	p-value	Co-efficient	t-stat	p-value	Co-efficient	t-stat	p-value	Co-efficient	t-stat
Constant	+	0.475	0.718	0.475	1.150	2.729	0.008	***	0.914	1.730	0.086	*
Size	+	0.025	0.610	0.544	-0.034	-1.362	0.178		-0.012	-0.380	0.704	
Subs	+	-0.010	-0.216	0.829	0.026	0.627	0.533		0.009	0.290	0.772	
ForSubs	+	0.023	0.524	0.602	-0.026	-0.676	0.501		-0.004	-0.160	0.873	
Liquid	-	-0.021	-0.610	0.544	-0.083	-2.276	0.026	**	-0.028	-1.260	0.210	
Lev	+	0.006	0.488	0.627	-0.010	-1.078	0.285		0.005	0.676	0.500	
BrdSize	+	-0.007	-0.334	0.739	0.032	1.788	0.079	*	0.018	1.388	0.167	
M/B	+	-0.009	-0.224	0.823	0.023	0.613	0.542		0.016	0.578	0.564	
Loss	+	-0.008	-0.087	0.931	-0.072	-1.074	0.287		-0.017	-0.348	0.728	
Top20	-	-0.274	-1.850	0.069	*	-0.192	-1.326	0.189	-0.248	-2.526	0.013	**
Auditor	+	-0.037	-0.566	0.574	0.052	0.807	0.422		-0.015	-0.350	0.727	
Industry (suppressed)												
Regulation									-0.079	-0.141	0.888	
Size*Regulation									0.007	0.234	0.815	
Adjusted R ²		0.019			0.100				0.063			

Panel E: 500+ (n=207)													
Variable	Predicted Value	2001			2007				Combined				
		Co-efficient	t-stat p-value		Co-efficient	t-stat p-value			Co-efficient	t-stat p-value			
Constant	+	0.340	1.238	0.217	0.563	2.620	0.010	***	0.276	1.064	0.288		
Size	+	0.008	0.451	0.653	-0.012	-0.939	0.349		0.006	0.396	0.692		
Subs	+	-0.011	-0.456	0.649	0.011	0.463	0.644		-0.001	-0.083	0.934		
ForSubs	+	-0.014	-0.480	0.632	0.012	0.516	0.606		0.000	-0.002	0.998		
Liquid	-	0.003	0.253	0.800	0.019	1.222	0.223		0.008	0.901	0.368		
Lev	+	0.007	1.277	0.203	0.002	0.280	0.780		0.004	1.071	0.285		
BrdSize	+	0.038	2.759	0.006	***	0.040	2.833	0.005	***	0.040	4.094	0.000	***
M/B	+	0.026	1.635	0.104		0.007	0.399	0.690		0.016	1.400	0.162	
Loss	+	0.018	0.458	0.647		-0.006	-0.138	0.890		0.014	0.485	0.628	
Top20	-	-0.275	-3.193	0.002	***	-0.104	-1.157	0.249		-0.186	-3.048	0.002	***
Auditor	+	0.050	1.558	0.121		0.068	1.952	0.052	*	0.060	2.585	0.010	**
Industry (suppressed)													
Regulation										0.210	0.698	0.485	
Size*Regulation										-0.010	-0.531	0.596	
Adjusted R ²		0.103			0.059				0.102				

Where: $Board_{it} = \alpha_0 + \alpha_1 Size_{it} + \alpha_2 Subs_{it} + \alpha_3 ForSubs_{it} + \alpha_4 Liquid_{it} + \alpha_5 Lev_{it} + \alpha_6 BrdSize_{it} + \alpha_7 M/B_{it} + \alpha_8 Loss_{it} + \alpha_9 Top20_{it} + \alpha_{10} Auditor_{it} + \sum_{j=11}^k \alpha_j Industry_{it} + \varepsilon_{it}$

P-values are two-tailed. *** = coefficient is significant at the p = 0.01 level; ** = coefficient is significant at the p = 0.05 level; * = coefficient is significant at the p = 0.1 level.

Size = natural log of market capitalisation; Subs = natural log of 1+ total number of subsidiaries; ForSubs = natural log of 1+ number of foreign subsidiaries; Liquid = current assets / current liabilities; Lev = natural log of debt / market capitalisation; BrdSize = number of directors on the board; M/B = natural log of market value of equity / book value of equity; Loss = 1 if EBIT was negative; 0 otherwise; TOP20 = percentage of shares owned by the largest 20 shareholders; Auditor = 1 if firm's auditor was top tier, 0 otherwise.

To test if this distinction is important Table 10 repeats the tests from Table 9 Panel A, but measures independence as a dichotomous variable (majority/minority independence) rather than a continuous one and using a logistical regression. Unlike the results in Table 9, it is notable that the Nagelkerke (pseudo) R^2 did not decline substantially (16.0% for the equation based on 2001 data to 15.0 % for the equation based on 2007 data). Given the only change in ‘independence’ between 2001 and 2007 were those firms that became majority independent, all other firms that retained their minority or majority independence status did not change the dependent variable. Unsurprisingly this decline in explanatory power provides little support for H_1 and the relation between board structure (majority/minority) and firm characteristics diminishing marginally.

Although not significant and of limited meaning, the constant in the regression increases from -1.771 (Wald-stat=1.602, p-value=0.206) in 2001 to 0.218 (Wald-stat=0.032 p-value=0.859) in 2007 which is consistent with higher number of firms with majority independence boards subsequent to the regulation. However, for the combined sample (2001 and 2007) the co-efficient on the regulatory dummy variable while positive is not significant ($\alpha=0.633$, Wald-stat=0.217, p-value=0.642). Again this might be expected given some instability of the co-efficients on the firm characteristics across the separate year samples that are likely influenced by a combination of co-linearity and a small number of firms changing from majority in 2001 to minority in 2007. While using the same sample firms in 2001 and 2007 introduces a survival bias, a benefit is the opportunity to test the relation between changes in board composition and changes in firm characteristics over the period. Because the regulation only required a majority independent board and results above revealed a substantial move from minority to majority (a nine percentage point increase) a dummy variable was introduced for firms

Table 10**Firm Characteristics and Board Independence - Dichotomous**

The association between firm characteristics and board independence in 2001 and 2007, and consideration of whether the relation has changed using a logistic regression. Board Independence is measured as a **dichotomous** variable majority/minority of independent directors on the board (non-executive with no affiliation with substantial shareholders).

Full Sample (n=450)													
Variable	Predicted Value	2001				2007				Combined			
		Co-eff	Wald-stat	p-value		Co-eff	Wald-stat	p-value		Co-eff	Wald-stat	p-value	
Constant	+	-1.771	1.602	0.206		0.218	0.032	0.859		-1.103	0.853	0.356	
Size	+	0.135	2.147	0.143		0.022	0.092	0.762		0.079	1.117	0.291	
Subs	+	-0.241	2.605	0.107		0.124	0.688	0.407		-0.063	0.360	0.548	
ForSubs	+	0.314	4.851	0.028	**	0.298	4.577	0.032	**	0.295	9.041	0.003	***
Liquid	-	-0.031	0.123	0.726		0.050	0.200	0.655		-0.004	0.003	0.956	
Lev	+	0.031	0.719	0.396		0.005	0.019	0.892		0.012	0.214	0.643	
BrdSize	+	0.145	3.817	0.051	*	0.098	1.528	0.216		0.125	5.436	0.020	**
M/B	+	0.141	1.656	0.198		0.023	0.042	0.838		0.089	1.319	0.251	
Loss	+	0.094	0.138	0.710		-0.181	0.482	0.487		-0.069	0.145	0.703	
Top20	-	-2.266	17.921	0.000	***	-2.110	12.179	0.000	***	-2.106	28.332	0.000	***
Auditor	+	0.404	3.011	0.083	*	0.508	4.264	0.039	**	0.453	7.290	0.007	***
Industry (suppressed)													
Regulation										0.633	0.217	0.642	
Size*Regulation										-0.005	0.004	0.949	
Nagelkerke (pseudo) R2		0.160				0.150				0.165			

$$Board_{it} = \alpha_0 + \alpha_1 Size_{it} + \alpha_2 Subs_{it} + \alpha_3 ForSubs_{it} + \alpha_4 Liquid_{it} + \alpha_5 Lev_{it} + \alpha_6 BrdSize_{it} + \alpha_7 M/B_{it} + \alpha_8 Loss_{it} + \alpha_9 Top20_{it} + \alpha_{10} Auditor_{it} + \sum_{j=11}^k \alpha_j Industry_{it} + \varepsilon_{it}$$

P-values are two-tailed. *** = coefficient is significant at the p = 0.01 level; ** = coefficient is significant at the p = 0.05 level; * = coefficient is significant at the p = 0.1 level.

Size = natural log of market capitalisation; Subs = natural log of 1+ total number of subsidiaries; ForSubs = natural log of 1+ number of foreign subsidiaries; Liquid = current assets / current liabilities; Lev = natural log of debt / market capitalisation; BrdSize = number of directors on the board; M/B = natural log of market value of equity / book value of equity; Loss = 1 if EBIT was negative; 0 otherwise; TOP20 = percentage of shares owned by the largest 20 shareholders; Auditor = 1 if firm's auditor was top tier, 0 otherwise.

with a minority board pre-regulation (Minority 2001). Also observed was the ‘mean reversion’ towards 73% for firms with high levels of board independence pre-regulation (Super Majority 2001). As a consequence a dummy variable for these firms is also introduced. Table 11 Panel A presents the results for the changes in board composition and firm characteristics excluding the two dummy variables. It shows changes in both leverage (ΔLev) and top 20 shareholders (ΔTop20) are significantly associated at the 5% level with changes in board composition.

Changes in firm characteristics have little explanatory power for changes in board composition (ΔBoard) with an adjusted R^2 of only half of 1%. The two variables are not significant in Panel B when the dummy variable for firms with minority board independence (Minority 2001) is introduced. Minority independence pre regulation ((Minority 2001) is significant at the 1% level ($\alpha=0.261$, $t\text{-stat}=11.554$, $p\text{-value}=0.000$). The co-efficient of the constant is negative and significant at the 5% level and for firms with a loss pre-regulation (Loss 2001), also negatively associated with a change in board composition (ΔBoard). Consistent with previous descriptive statistics showing a substantial number of firms changing from minority to majority board independence, the adjusted R^2 of 24% indicates compliance with the letter of the regulation appears to be a major factor in firms changing their board composition. Panel C examines the relation of changes in board composition (ΔBoard) to firms with a level of board independence above 73% pre-regulation (Super Majority 2001). Again consistent with the previous descriptive statistics the co-efficient for Super Majority 2001 is significant and negative indicating firms with high levels of board independence pre-regulation reduced the level of independence ($\alpha= -0.267$, $t\text{-stat}= -10.028$, $p\text{-value}=0.000$). The adjusted R^2 is 19.2% and two variables are significant at the 5% level. The Constant is

Table 11**Changes in Board Independence and Firm Characteristics**

The association between changes in board independence and changes in firm characteristics from 2001 to 2007.

Variable	Predicted Value	Panel A			Panel B			Panel C			Panel D		
		Co-eff	t-values	p-value	Co-eff	t-value	p-value	Co-eff	t-value	p-value	Co-eff	t-value	p-value
Constant		0.057	1.372	0.171	-0.099	-2.540	0.011 **	0.124	3.258	0.001 ***	-0.019	-0.467	0.641
ΔSize	+	-0.006	-0.698	0.485	-0.006	-0.777	0.438	-0.004	-0.505	0.614	-0.005	-0.645	0.519
ΔSubs	+	0.003	0.141	0.888	0.026	1.624	0.105	-0.006	-0.345	0.730	0.015	0.957	0.339
ΔForSubs	+	0.020	1.094	0.275	-0.008	-0.515	0.607	0.022	1.329	0.185	0.000	0.025	0.980
ΔLiquid	-	0.014	1.422	0.156	0.011	1.361	0.174	0.004	0.484	0.629	0.007	0.826	0.409
ΔLev	+	0.004	1.121	0.263	0.000	-0.103	0.918	0.000	-0.054	0.957	-0.001	-0.477	0.634
ΔBrdSize	+	0.015	1.967	0.050 **	0.007	1.008	0.314	0.018	2.582	0.010 **	0.011	1.600	0.110
ΔM / B	+	0.013	1.257	0.210	0.003	0.354	0.724	0.003	0.295	0.768	0.000	0.023	0.982
Loss 2001	+	-0.041	-1.399	0.162	-0.046	-1.786	0.075 *	-0.060	-2.235	0.026 **	-0.055	-2.180	0.030 **
Loss 2007	+	0.025	0.814	0.416	0.015	0.550	0.583	0.009	0.328	0.743	0.009	0.334	0.739
ΔTop20	-	-0.160	-2.343	0.020 **	-0.083	-1.392	0.165	-0.064	-1.025	0.306	-0.051	-0.867	0.386
Auditor 2001	+	0.008	0.242	0.809	0.027	0.959	0.338	0.023	0.775	0.439	0.030	1.091	0.276
Auditor 2007	+	0.007	0.222	0.824	0.045	1.525	0.128	0.025	0.822	0.411	0.044	1.547	0.123
Minority 2001	+				0.261	11.554	0.000 ***				0.190	7.232	0.000 ***
Super Majority 2001	-							-0.267	-10.028	0.000 ***	-0.148	-4.918	0.000 ***
Adjusted R ²		0.005			0.240			0.192			0.279		

$$\begin{aligned} \Delta Board_{it} = & \alpha_0 + \alpha_1 \Delta Size_{it} + \alpha_2 \Delta Subs_{it} + \alpha_3 \Delta ForSubs_{it} + \alpha_4 \Delta Liquid_{it} + \alpha_5 \Delta Lev_{it} + \alpha_6 \Delta BrdSize_{it} + \alpha_7 \Delta M/B_{it} + \alpha_8 Loss\ 2001_{it} \\ & + \alpha_9 Loss\ 2007_{it} + \alpha_{10} \Delta Top20_{it} + \alpha_{11} Auditor\ 2001_{it} + \alpha_{12} Auditor\ 2007_{it} + \alpha_{13} Minority\ 2001_{it} \\ & + \alpha_{14} Super\ Majority\ 2001_{it} + \sum_{j=1}^8 \alpha_j Industry_{it} + \varepsilon_{it} \end{aligned}$$

P-values are two-tailed. *** = coefficient is significant at the p = 0.01 level; ** = coefficient is significant at the p = 0.05 level; * = coefficient is significant at the p = 0.1 level. $\Delta Board$ = change in percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); $\Delta Size$ = change in natural log of market capitalisation; $\Delta Subs$ = change in natural log of 1+ total number of subsidiaries; $\Delta ForSubs$ = change in natural log of 1+ number of foreign subsidiaries; $\Delta Liquid$ = change in current assets / current liabilities; ΔLev = change in natural log of debt / market capitalisation; $\Delta BrdSize$ = change in number of directors on the board; M / B = natural log of market value of equity / book value of equity; Loss 2001(2007) = 1 if EBIT was negative; 0 otherwise in 2001(2007); $\Delta Top20$ = change in percentage of shares owned by the largest 20 shareholders; Auditor 2001(2007) = 1 if firm's auditor was top tier, 0 otherwise in 2001(2007); Minority 2001 = 1 if board independence was 50% or less in 2001, 0 otherwise; Super Majority 2001 = 1 if board independence was greater than 73% in 2001, 0 otherwise; Industry = Supressed indicator variables for GICS sector classification.

positive and significant at the 1% level suggesting the downward pressure on board independence for super independent boards pre-regulation was not as great as the upward pressure for minority boards pre-regulation.

Finally in Panel D includes both dummy variables and both remain significant at the 1% level. The constant, having changed from not significant (Panel A), to significant and negative (Panel B), to significant and positive (Panel C) is now negative but not significant (Panel D). The only firm characteristic that is significant is firms with a loss pre-regulation (Loss 2001) and again the coefficient is negative. These results are not inconsistent with Table 9 and support the descriptive statistics showing substantial change for firms in the tails of the independence distributions pre-regulation.

In summary, there is evidence of an increase in board independence subsequent to the issuance of the PGCG&BP, and consistent with H₁ a reduction in the relation between board structure and firm characteristics. This result is consistent with firms simply complying with the recommendations, and to the extent that the relation with firm characteristics weakened this is likely to have imposed unnecessary governance costs.

6. Conclusion and Limitations

This objective of this study was to investigate the impact of the Principles of Good Corporate Governance and Best Practice (PGCG&BP), issued by the ASX in 2003 on Australian listed firms. Based on a sample of the same 450 firms, from the years 2001 and 2007, I provide recent evidence on the structure and operation of boards of

directors, and the impact of the regulation. The proportion of firms with a majority independent board increased by 9 percentage points to 85% and there was an increase in the number of independent committees operating (i.e. audit – 79%, remuneration – 65%, and nomination – 38%). The level of compliance was greatest for large firms, although the impact was greatest for small companies. This reflected the greater likelihood that small firms were non-compliant prior to the regulatory change. Somewhat surprisingly, while there was an increase in majority board independence, the mean (median) level of board independence increased to a lesser extent. This result arose as a consequence of mean reversion, which is consistent with the regulation inferring a sufficient level of independence (73%) which is comfortably above the recommended level. This reveals a regulatory impact that is not consistent with their ‘aspirational’ objectives. Furthermore, to the extent that the association between board structure and firm characteristics declined, this suggests that the increase in board independence was likely imposing unnecessary governance costs on firms.

The only firm characteristic significantly associated with board independence was Top20. The negative co-efficient indicated as the percentage of shares held by the top 20 shareholders increased, the level of board independence decreased. This was observed in 2001 for all firms and in 2007 for the larger firms (above 300). This is consistent with the earlier results showing the greatest change to majority independent boards was for the smaller firms.

Not directly considered in this chapter was the change in firm characteristics that may have been in response to the new regulation. While the regulation was directed at governance issues, I acknowledge the impact may have extended to firm characteristics,

but believe the impact of changes in the business environment; the macro and micro economic changes would be likely to have a much greater influence over changes in firm characteristics.

Finally, notwithstanding the range of factors identified as potentially impairing director independence, there is evidence that the factor most commonly contributing to the self determination of independence was the executive/non executive dichotomy. Consideration also appears to be given to affiliations with substantial shareholders, but related party transactions appear to be of less importance and tenure beyond 10 years has the lowest impact on the determination of independence. Studies that have relied on 'related party transactions' to remove non-executive directors from the independent category still potentially included 13% of non-independent and incorrectly exclude 16%. While not affiliated with a substantial shareholder incorrectly included 8% and incorrectly excluded 7%.

Additionally, insights are provided into board composition and operation that are relevant to researchers undertaking corporate governance research. There is generally little variation in many characteristics of boards of directors across firms, especially majority independence and independent audit committee. While there is variation observed between 101-300 firms and 301-500 it is likely that this introduces firm size as a potential omitted correlated variable problem in many studies of corporate governance.

Chapter Three

Is Board Independence Associated with Continuous Disclosure?

1. Introduction

The objective of this Chapter is to examine the relation between board composition and continuous disclosures of Australian listed firms. One of the main objectives of the Principles of Good Corporate Governance and Best Practice (PGCG&BP) introduced by the Australian Stock Exchange (ASX) in 2003 was increased accountability. In Australia, the Continuous Disclosure Regime (CDR) provides an extensive database to test the impact of board composition on accountability.

The motivation for this research is twofold. First, there is considerable evidence on voluntary disclosure in annual reports associated with board composition (Brown, Taylor and Walters 1999, Gul and Leung 2004; Lim, Matolcsy and Chow 2007; Kent and Stewart 2008). However there are some inherent difficulties associated with this research. In addition to the mandatory and related disclosures, annual reports often contain information that may be considered public relations or even advertising. This myriad of information makes it difficult to determine what is 'voluntary' disclosure. Further, much of this research develops a voluntary disclosure index based on subjective weightings which may lead to difficulties in interpreting the findings (e.g.

Lim, Matolcsy and Chow 2007).²¹ Given these difficulties it is not surprising conflicting results are found. For example Chen and Jaggi (2000) found a positive relation between board independence and voluntary disclosure but a negative association with family control and financial disclosures in Hong Kong firms; whilst Clarkson, Ferguson and Hall (2003) found big six auditors were associated with increased Y2K disclosures but not board independence. In Singapore Eng and Mak (2003) find an increase in outside directors reduces corporate disclosure. Again in Hong Kong, Leung and Horwitz (2004) analysed voluntary segment disclosure and find non-executive directors enhance disclosure for firms with low director ownership but not for concentrated-ownership firms, whilst in Australia Deegan and Blomquist (2006) find some influence of environmental lobbying on environmental disclosures.

Continuous disclosures provide a relatively 'clean' test of the effect of governance on voluntary disclosure. Continuous disclosures have little if any confounding effects because they are usually single announcements and the timing of the announcements can be clearly identified due to its electronic nature.²² Further, while the voluntary disclosure index implies none of the disclosures are better or worse than any other disclosures, continuous disclosures are not only coded by primary and sub-code, but some are also classified as 'price sensitivity' by the ASX. In this study, sub-codes are dichotomised as 'procedural' and 'non-procedural' where 'procedural' are the sub-codes seen as being disclosures not requiring judgement as to either the kind and

²¹ Lim, Matolcsy and Chow (2007) adapt the Meeks, Roberts and Grey (1995) voluntary disclosure index with three categories see p566 'Not all items are applicable to each firm ... In order to assess this aspect, the entire report is studied and a judgment is made on this matter'.

²² Continuous disclosures made to the ASX are contained in SIRCA Signal G and logged by date, time of announcement, code and sub-code of announcement and price sensitivity.

presentation of information released nor as to option of releasing the information, while non-procedural are voluntary disclosures through the CDR.²³

Second, the CDR in Australia provides a unique institutional setting to test the relation between board composition and voluntary disclosure. Unlike Regulation Fair Disclosure in the US, the Australian regime requires all information to be released (with limited exemptions) if it is likely to have a material effect on the market and, unlike the UK, it requires the release of information into a single portal at the ASX. The CDR in Australia requires immediate disclosure of all information that may affect share price. Although information may be withheld for ‘commercial in confidence’ (proprietary cost) reasons, the aim of the CDR is reduce the information asymmetry between management and investors, not simply between different categories of investors.²⁴ While much of the information released is procedural, there exists an element of judgment that allows boards to deem value relevance to disclosures and selectively release information to reduce the information asymmetry and thus to allow non-procedural disclosures to be used proxy for the level (degree) of accountability of the firm.

The research in this Chapter is based on the same sample of 450 Australian listed firms used in Chapter Two and covers the years 2006 and 2007. While data is available for 2008, in August 2007 the ASX introduced revised PGCG&BP which may be expected to have an effect on boards in 2008.

²³ The most common disclosure is the procedural notification of changes in shareholding by a director, due to dividend reinvestment schemes.

²⁴ Regulation Fair Disclosure in the US has as its primary aim the reduction of information asymmetry between different classes of investors. There is no requirement to disclose information simply because the disclosure would be likely to change the share price, unless some may trade on the ‘insider’ information.

This Chapter finds while other corporate governance characteristics are significantly associated with voluntary disclosure, there is only weak evidence of the association between board independence and voluntary disclosure. The only significant association is between a sub sample of disclosures (the proportion of price sensitive/non-procedural voluntary disclosures), and the ‘observed’ board independence. The results are consistent for different designations of independence.

This Chapter contributes to both the academic and regulatory debate on corporate governance. First it triangulates previous studies to determine which disclosures appear to be relevant and overcomes the experimental difficulties of previous studies (Kent and Stewart 2008; Lim, Matolcsy and Chow 2007; Leung and Horwitz 2004). Second it does not support the regulatory preoccupation for independent directors leading to better accountability and provides evidence that the designation of director independence is relatively unimportant and a simple executive/non-executive dichotomy may be sufficient. Finally it confirms the removal of the ‘best practice’ aspect of the ASX regulation in August 2007 acknowledging the ‘one size fits all’ corporate governance model was inconsistent with theory and the empirical analysis.

The remainder of this Chapter is organized as follows. The next section provides the agency theory development of governance and the propositions regarding disclosure. Section 3 presents the data and describes the research design while the results are analysed and sensitivity testing is undertaken in Section 4. The final section draws the conclusions and reviews the limitations.

2. Institutional setting and theory development

2.1 The Continuous Disclosure Regime (CDR) in Australia

There is over one hundred years of the CDR applying to listed firms by the Australian Stock Exchange (ASX) and its antecedent bodies.²⁵ The statutory provisions mandating continuous disclosure were introduced in September 1994 in response to the corporate ‘excesses’ of the late 1980’s and supported the ASX listing rule 3.1.²⁶ Legislation was updated (with the *Corporations Act 2001*) and amended with CLERP 9 in 2004, which saw the CDR brought further within the Corporations Law (Sections 793C and 1101B). CDR is now jointly administered by the ASX and ASIC.²⁷ The PGCG&BP, while not specifically requiring more continuous disclosure, Principle 5 ‘Make more timely and balanced disclosure’ and Recommendation 5.1 advises, ‘Companies should establish and disclose written policies and procedures designed to ensure compliance with ASX Listing Rule disclosure requirements and to ensure accountability at a senior executive level for that compliance’. Whether this Principle is a ‘stand alone’ regulation or should be enhanced by ‘best practice’ board composition is not clear, but if the board is to ‘add value’ (Principle 2), then voluntary disclosure is one obvious area.

The ASX can impose penalties including suspend or ultimately delist a company not complying with its Listing Rules. Section 1001A of the Corporations Act has a similar

²⁵ Since the 1890’s the Sydney Stock Exchange required listed companies to disclose information to members (Uren 2003).

²⁶ Bond, Rothwells, Tricontinental, Quintex etc.

²⁷ Continuous disclosure obligations of the Australian Stock Exchange (Listing Rule 3.1) for listed companies imposed by the *Corporate Law Reform Act 1994*. (The Newcastle Stock Exchange has similar requirements in its Listing Rule 6.4) Currently section 674 of the Corporations Act 2001 provides legislative support and statutory liability.

disclosure provisions but with the added penalties of fines, or imprisonment, if one with the intention to mislead.²⁸ Contravention may now lead to the Australian Securities and Investments Commission (ASIC) issuing Infringement Notices (‘on the spot fines’) or in more serious cases, may take further legal action as in the case of Fortescue Metals.²⁹ By 2007, a degree of certainty, be it at a relatively low level of enforcement, had entered the market.

The disclosure rules may appear clear but the subjective wording of both the requirements and exemptions allow considerable room for interpretation. Listing Rule 3.1 requires companies to ‘immediately notify the Exchange of any information which a reasonable person would expect to have an effect on the price or value of the securities of a company’. Less onerous listing rules before 1994 required companies to provide the exchange with information necessary to remove a false market or about matters that would result in a material movement in the share price. The requirements

²⁸ By definition, information not disclosed is not in the public domain. Only the actions by those who know the information is likely to alert authorities to non-disclosure. Unexpected share price movements caused by a trader with ‘inside’ information is the most likely cause. It appears noncompliance has a low probability of being detected or successfully prosecuted if detected

²⁹ Although ASIC was given this power in 2004 no fines were issued in the first two years of operation. June 30, 2006 Chemeq pleaded guilty to two contraventions of the continuous disclosure requirements of the Corporations Act. A former shareholder of Jubilee Mines has been awarded nearly \$2 million after alleging the miner failed to disclose a new nickel discovery. Although the CDR requires the disclosure of all price sensitive information, some discretion is retained by the board. Telstra escaped prosecution in 2005 when it briefed sections of the Federal Government on strategic plans without informing the ASX. Other companies involved in CD issues include Multiplex, Harts Australasia, Pan Pharmaceutical, and Southcorp (which was the only company to be penalised by ASIC in the first decade of the CDR legislation). In December 2009 the Federal Court in Perth Western Australia ‘dismissed proceedings brought by the ASIC that claimed, among other allegations that Fortescue had failed to comply with its continuous disclosure obligations against Fortescue (Australian Financial Review December 29, 2009 page 2)

are similar to Regulation Fair Disclosure in the United States but give greater emphasis to reducing information asymmetry between management and investors than between different groups of investors.³⁰

2.2 The Role of Boards and the CDR.

The inclusion of CDR in the Corporations Law has prompted a number of companies to establish continuous disclosure committees, often with company secretary as the continuous disclosure officer.³¹ BHP, Westfield and Perpetual all reveal the existence of continuous disclosure committees on their websites. Other companies disclose it in their annual reports, for example Roc Oil discloses it has a ‘continuous disclosure committee’, Sims Group, Ten Network Holdings and Worley Parsons have ‘disclosure committees’, while CSL has a ‘securities and market disclosure committee’ which ‘is required to undertake any specific continuous disclosure related tasks allocated to it by the board or another committee’. Internal documents from one ‘Top 100’ company list a ‘Group Policy Continuous Disclosure’ which states ‘This policy sets out how the company aims to meet its continuous disclosure obligations’. The committee comprises: managing director (chair), chief financial officer, general council (lawyer) and the company secretary.

Directors do not individually disclose, but regulators appear to have assumed boards with a majority of independent directors disclose more information on a more timely

³⁰ ASX Listing Rule 3.1 was given statutory backing in 1994. The aim was to create a more informed market by requiring disclosure of price sensitive information. ‘Once an entity is or becomes aware of any information concerning it that a reasonable person would expect to have a material effect on the price or value of that entity’s securities, the entity must immediately tell ASX that information’. The immediate disclosure requirement does not apply if a number of conditions are met.

³¹ While the company secretary is rarely a director, they usually attend all board meetings, keep board minutes and have responsibility for all firm compliance issues.

basis (PGCG&BP Principles 2, 'Structure the board to add value' and Principle 5 'Make timely and balanced disclosures'). The influence of the chair would also be expected to change the propensity of boards to continuously disclose. Independent chairs (like independent directors) would be expected to have greater incentives to provide more disclosure and to provide the information earlier than executive chairs. Brown, Taylor and Walter (1999) found little impact of statutory sanctions on the level and information content of voluntary corporate disclosure with the 1994 changes.

A number of studies have shown outside boards better represent shareholders' interests.³² While these studies focused on critical events, they add evidence in support of independent directors reducing contracting cost (by reducing wealth transfer and/or residual loss). It is unlikely independent directors would only act in the shareholders' interest at critical times, but consistently (reducing the information asymmetry between executive directors and shareholders) by providing both more and more timely continuous disclosure. In Australia the law does not appear to distinguish between the duties of executive and independent directors and both face the same liability although independent directors do not receive commensurate compensation.³³ Nevertheless independent directors have incentives to disclose information in a timely manner to

³² Byrd and Hickman (1992) investigated tender offer bid; Lee, Rosenstein, Rangan and Davidson (1992) studied management buyout; Brickley, Coles and Terry (1994) examined the adoption of poison pills; Cotter, Shivdasani and Zenner (1997) looked at target firm responses to takeover offers; Hermalin and Weisbach (1998) studied CEO turnover, Dahya and McConnell (2005) better decision making and Karamanou and Vafeas (2005) greater management earnings forecast disclosure.

³³ Commonwealth Bank of Australia v Friedrich (1991 5 ACSR 115) Tadgell J observed 'there is nothing in statutory company law to suggest that the standard to be expected of a part-time non-executive director of a company not for profit is different from the standard expected of any other director of a profit making company'. But in Elliott v ASIC (2004 VSCA 54) the penalties handed down were different due to the extent of their knowledge. Mandie J said Elliot had 'turned a blind eye' to the details of Water Wheel's liquidity crisis. In breaching section 588G, the managing director was disqualified for 10 years and Elliott, a non-executive director was disqualified for 4 years, both were required to pay pecuniary penalties and compensation.

protect their future reputation. Failure or litigation may arise from information that was known to them or hidden from them by insiders. Regardless, independent directors can protect their reputation as decision control monitors by being seen to provide more and, more timely information. This minimizes the impact of negative outcomes on independent directors' reputations and potential prosecution. Therefore it may be argued independent directors have a greater incentive than executive directors to voluntarily disclose information in a timely manner, thus increasing their value to shareholders and reducing potential litigation against them.

Equally, it may be argued, inside directors have incentives to disclose. Ex-ante executive (inside, non-independent) directors have incentives to incur bonding costs to assure shareholders that they will limit wealth transfers and/or residual losses. Because of the extensive information already required by regulation, one way to signal to shareholders that executive directors are acting in the shareholders' interest is to disclose more information on a more timely basis. Furthermore it could be argued that executive directors have access to more information (there is information asymmetry between independent and executive directors in the executives' favour) and could exploit this to their advantage. Executive directors would increase their reputation, lessen the impact of negative firm outcomes and avoid costly contracting (and potential litigation) with shareholders by disclosing more.³⁴ Finally increased timely disclosure would increase the liquidity of their shares and options and lessen the risk of being accused of insider trading. Notwithstanding the above, executive directors, especially when agency costs are high, have much more to gain than non-executive (outside,

³⁴ Medical interns are said to be told, when examining a patient for the first time to always be pessimistic. If the patient dies then that is to be expected, if they lives, the doctor is a miracle worker. Similarly if the firm has continually disclosed, then the consequences on management of poor performance is likely to be less.

independent) directors in exploiting information asymmetry. In negotiating compensation, perquisite consumption, share trading etc the superior information available to the executive directors provides both a greater opportunity and a greater expected payoff to executive directors than independent directors. There are times when it is not in any of the stakeholders' interest for information to be disclosed, and this is recognised in the regulation with the 'exemption' provisions.

Although theory does not provide a definitive answer to the association between board independence and disclosure, it would suggest the association is likely to be positive. The weight of evidence from the empirical evidence would also support a positive association between board independence and disclosure. Beekes and Brown (2006), using a broad corporate governance quality index (taking into consideration factors beyond board characteristics), found better governed firms did make more informative disclosures (using six indicators of 'informativeness', but not including any direct measures of continuous disclosures). Further Australian evidence from Lim, Matolcsy and Chow (2007) examined the relation between board composition and voluntary disclosure in annual reports. They found a positive association between board independence and forward looking and strategic information but not with nonfinancial and historical information. A number of other studies have also found positive relation between board composition and disclosure. In Hong Kong, Chen and Jaggi (2000) find the percentage of independent directors is positively associated with the 'comprehensiveness' of financial disclosures (but an increase in family control weakening the result) and Gul and Leung (2004) find outside 'expert' directors reduced the negative impact of CEO/chairman duality on voluntary disclosure. Ajinkya, Bhojraj and Sengupta (2005) find US firms with more outside directors and greater institutional

ownership are more likely to issue a forecast and are inclined to forecast more frequently. In addition, these forecasts tend to be more specific, accurate and less optimistically biased. Cheng and Courtenay (2006) in Singapore also find a positive association between firms with a higher proportion of independent directors (or with independent directors being the majority on the board) and higher levels of voluntary disclosure. In contrast Eng and Mak (2003) found a negative association between aggregate voluntary disclosure and the percentage of outside directors on Singaporean firm boards.

While the theory leans towards a positive association between board independence and disclosure, empirical evidence generally finds a positive association between independent boards and disclosure although the factor/s that lead towards more independent boards may also lead to more disclosure (Adams, Hermalin and Weisbach 2010). Further regulators behave as if they believe an increase in the ratio of independent to non-independent directors on the board is positively associated with increased disclosure (PGCG&BP Principle 5).

3. Data and Research Design.

3.1 Sample and Data

This Chapter is based on the same sample firms from Chapter Two, drawn from the pre-regulation year 2001. Table 1 summarises the sample selection and descriptive statistics. The results in this Chapter are based on the same 450 firms in 2006 and 2007 and come from the UTS Corporate Governance Database. The sample includes all firms that were in the S&P Top 300 Index for any month in the pre-regulation period and a random

selection of smaller firms.³⁵ Thus all firms that joined or left the Top 300 Index are initially included in the sample. Only firms listed on the ASX prior to the pre-regulation period are included to avoid the firms that would have had additional pressure to comply with the ASX regulations for listing. For firms already listed, only serious and persistent breaches of the ASX regulations would lead to delisting but for firms seeking listing, rejection of listing could be made for non-perfect compliance. Therefore firms listed after the pre-regulation period are more likely to meet the changing regulatory environment. Board composition is also examined in a pooled sample of 2006 plus 2007. All variables are lagged using the characteristic from the previous year because the effect on the board independence disclosures is not expected to respond instantaneously. Because the PCGC&BP applies to all top 500 (or Top 300 in the case of Audit Committee requirements) there may appear no reason to eliminate any firms, but most prior studies have consistently excluded some firms because of their additional reporting requirements or financial structure.³⁶ In this study financial services firms, foreign domiciled firms and trusts are eliminated because of their special reporting requirements. Financial services firms are also excluded because of their unusual financial characteristics. Firms delisted between the pre-regulation period and the current sample years and firms without annual reports in 2006 and 2007 are also eliminated, leaving 58% of the original sample. Table 1 summarises the sample selection process and descriptive statistics. Unlike previous Australian studies, 62% of the sample is 'small' firms (outside the Top 300) and only 11% are from the Top 100 (Table 2 Panel B). While the sample appears to be dominated (30%) by the materials industry, that CIGS industry group represented 41% of listed firms in Australia

³⁵ Top 300 firms are measured by market capitalization.

³⁶ E.g. Matolcsy and Wright (2007) deleted investment trusts and managed funds because of both their special reporting requirements.

Table 1: Sample Description**Panel A: Sample Selection**

Sample firms selected from those listed on the Australian Stock Exchange with the following selection criteria. In 2001 all firms in the S&P300 (for any month), and a random sample of firms outside the S&P300. Firms deleted if foreign domiciled, trusts, or annual reports unavailable.

Firm-years in S&P100 (2001)	111	14%
Random firm-years in S&P300, but outside S&P100 (2001)	194	25%
Random firm-years below S&P300 (2001)	470	61%
Sub-total:	775	100%
Excluded - Foreign-domiciled	22	3%
Excluded - Trusts	26	3%
Excluded - Annual reports unobtainable	194	25%
Excluded - Financial services firms	83	11%
Final sample (firm-years)	450	58%

Panel B: Classification of firm-years by size (S&P market value of equity ranking)

	2006	2007	Pooled
Top 100	50	50	11%
101-300	122	116	26%
301-500	85	86	19%
Below 500	193	198	43%
Total	450	450	100%

Panel C: Classification of firm-years by GICS industry group

	2006	2007	Pooled	Full ASX
Energy (1010)	42	41	9%	13%
Materials (1510)	138	132	30%	41%
Capital goods (2010)	42	42	9%	7%
Commercial services & supplies (2020)	22	23	5%	4%
Transportation (2030)	8	8	2%	2%
Automobiles & components (2510)	7	5	1%	1%
Consumer durables & apparel (2520)	11	12	3%	2%
Consumer services (2530)	10	10	2%	3%
Media (2540)	20	20	4%	3%
Retailing (2550)	16	16	4%	2%
Food & staples retailing (3010)	4	5	1%	0%
Food, beverage & tobacco (3020)	22	21	5%	3%
Health care equipment & services (3510)	24	26	6%	4%
Pharmaceuticals & biotechnology (3520)	21	22	5%	5%
Software & services (4510)	38	38	8%	5%
Hardware & equipment (4520)	8	9	2%	2%
Semiconductors (4530)	0	1	0%	0%
Telecommunication services (5010)	13	14	3%	2%
Utilities (5510)	4	5	1%	2%
Total	450	450	100%	100%

(Panel C). However to eliminate any bias relating to industry, broad industry groups are control variables in the experimental design.

Continuous disclosure data is shown in Table 2 and is obtained from the Securities Industry Research Centre of Asia-Pacific (SIRCA) Signal G. Signal G contains 19 primary codes and 136 subcategories (see Appendix 1 for a full list). Companies are required by either the Corporations Act or ASX Listing Rules to provide a myriad of information regarding the company, its capital, operations, directors and shareholders etc. Signal G also provides announcements made by the ASX regarding a company, including queries. There were approximately 37,000 announcements for the 450 sample firms in both 2006, 2007 and over one million pages of announcements each year. Characteristics of the announcements (firm name, date, time, code, sub-code, price sensitivity, number of pages etc) are available electronically and therefore can be sorted and filtered. Because of limited prior research (Taylor and Taylor 2003; Gallery, Gallery and Hsu 2006) on the type of continuous disclosures in Australia, this study uses five types of disclosure: (i) total number of continuous disclosures made by a firm in the year, (ii) price sensitive disclosures as categorized by the ASX, (iii) non-procedural disclosures categorized by this study, (iv) the proportion of non-procedural disclosures that are price sensitive (while 36% of all disclosures are price sensitive, 41% of non-procedural disclosures are price sensitive) and (v) the proportion of price sensitive disclosures that are non-procedural (while 27% of all disclosures have been classified in this study as non-procedural 53% of price sensitive disclosures are non-procedural).³⁷ Non-procedural disclosures have been subjectively classified in this

³⁷ Price sensitivity is the technical description given to a continuous disclosure that is accompanied by a ten minute trading halt.

Table 2

Panel A: Number of Total Continuous Disclosure Announcements for Sample Firms					
Primary Code		Description	2006	2007	Pooled
1		Takeover Announcements	628	1,611	3%
2		Shareholder Details	6,374	8,257	20%
3		Periodic Reports	7,330	4,585	16%
4		Quarterly Activities Report	835	854	2%
5		Quarterly Cash Flow Report	305	187	1%
6		Issued Capital	7,258	7,565	20%
7		Asset Acquisition & Disposal	955	1,385	3%
8		Notice Of Meeting	1,346	1,264	4%
9		Stock Exchange Announcement	500	662	2%
10		Dividend Announcement	1,104	559	2%
11		Progress Report	4,420	5,204	13%
12		Company Administration	1,485	1,350	4%
13		Notice Of Call (Contributing Shares)	-	1	0%
14		Other	1,173	888	3%
15		Chairman's Address	504	515	1%
16		Letter To Shareholders	350	346	1%
17		ASX Query	211	189	1%
18		Structured Products	1,340	1,151	3%
19		Commitments Test Entity Quarterly Reports	384	382	1%
		Total Continuous Disclosure	36,502	36,955	100%
Panel B: Number of Announcements by Non-procedural Category for Sample Firms					
Primary Code	Sub Code	Description	2006	2007	Pooled
1	9	Takeover - Other	335	858	6%
2	6	Shareholder Details - Other	357	542	4%
3	14	Periodic Reports - Other	1,288	1,571	14%
3	16	Net Tangible Asset Backing	276	256	3%
7	1	Asset Acquisition	630	1,026	8%
7	2	Asset Disposal	248	250	2%
7	3	Other	77	109	1%
11	1	Progress Report	3,648	4,664	39%
11	2	Progress Report - Other	772	540	6%
14	1	Other	962	677	8%
14	2	Internal	1	-	0%
14	6	Open Briefing	161	156	2%
15	1	Chairman's Address - Other	181	69	1%
15	2	Chairman's Address	323	446	4%
16	1	Letter to Shareholders - Other	21	21	0%
16	2	Letter to Shareholders	329	325	3%
		Non-procedural Continuous Disclosure	9,609	11,510	100%

research as the sub-code disclosures least likely to result in enforcement action under the CDR if they were not disclosed and are shown in Table 2 Panel B (Appendix 1 lists all codes and sub-codes as well as those designated non-procedural disclosures). Non-procedural disclosures represent around 30% of all disclosures for the sample firms.³⁸

3.2 Experimental Design

Continuous disclosures and board composition are likely to be associated with some of the same firm characteristics. The use of ordinary least squares regression when there is a potential endogeneity problem can lead to biased and inconsistent OLS estimates (Greene 2002). To address this issue, in this study the analyses is conducted by adopting a two-stage least squares regression to estimate the effects of firm characteristics on board composition.

Following Greene (2002), Larcker and Rusticus (2008) and Francis and Lennox (2008), the two stage regression requires the inclusion of an instrumental variable which is expected to be associated with the dependent variable (board composition) in the first regression but not associated with the dependent variable (continuous disclosure) in the second. While the existence of a nomination committee and the percentage of independent directors on the nomination committee is likely to be associated with board independence and some of the same firm characteristics, it is not obvious that the nomination committee would have a direct effect on the disclosure policies and practices of a firm. Therefore, in this Chapter, the first stage regression is specified below:

³⁸ Of the 138 sub-codes, 16 are classified as non-procedural, based on a subjective selection after examining the description and reading a sample of all disclosures.

$$\begin{aligned}
\text{BOARD IND}_i = & \alpha_i + \beta_1 \text{NOMIN COM}_{t-1} + \beta_2 \text{NOMIN COM IND}_{t-1} + \beta_3 \text{ROA}_{t-1} \\
& \beta_4 \text{LEVERAGE}_{t-1} + \beta_5 \text{MKTBK}_{t-1} + \beta_6 \text{SIZE}_{t-1} + \beta_7 \text{LOSS}_{t-1} + \beta_8 \text{COMPLEXITY}_{t-1} + \\
& \beta_9 \text{BOARD SIZE}_{t-1} + \beta_{10} \text{TOP 20 SH}_{t-1} + \beta_{11} \text{AGE}_{t-1} + \beta_{12} \text{N-IND DIR SH}_{t-1} + \beta_{13} \text{IND} \\
& \text{DIR SH}_{t-1} + \beta_{14} \text{AUDITOR}_{t-1} + \beta_{15} \text{CHAIR IND}_{t-1} + \beta_{16} \text{ENERGY \& MINING}_{t-1} + \\
& \beta_{17} \text{TELCO \& UTILITY}_{t-1} + \beta_{18} \text{MANUFACTURING}_{t-1} + \beta_{19} \text{RETAIL}_{t-1} + E_i \quad (1)
\end{aligned}$$

Where:

Dependent Variable:

BOARD IND = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders). Many studies have dichotomised board membership (insiders/outside, executive non-executive) e.g. Hermalin and Weisbach (1988) introduced a grouping known as “affiliated” or “grey” directors. This distinction was used in the Australian context by Wright (2005) while others used independent directors; Lim, Matolcsy and Chow (2007), excludes grey directors, non-executive directors with a potential link to management or significant related party transactions (although ‘potential’ and ‘significant’ are not defined) and Kent and Stewart (2008) use firm classification when available and exclude non-executives when they are not specifically designated by the firm as independent. Based on the results from Chapter Two this is the first study to use non-executive with no affiliation with a substantial shareholder because of the closeness to firms’ self-classification. Other designations of director independence are also tested to determine the sensitivity of the results to the definition of independence. Because the PGCG&BP only requires a majority independent

board the dichotomous variable of above 50% and 50% and below is used as a sensitivity test.

Instrumental Variables:

NOMIN COM = the existence of a nomination committee, 1 if the firm has a nominating committee; 0 otherwise. From Chapter Two, Table 3, in 2007, 42% of the sample firms had a nomination committee. The increase in the three board committees between 2001 and 2007 was substantial, but the greatest increase was in the percentage of firms with nomination committees (11% to 42%). As discussed above, the nomination committee has been chosen as the instrumental variable because it is unlikely to have a direct impact on the disclosures or the disclosure policies of the firm but it is expected firms that have a nominating committee (which is the minority of firms in this sample) would be more likely to have a more independent board. The association is not expected to be strong because this group includes firms with minority independent committees.

NOMIN COM IND = the percentage of independent directors on the nomination committee. From Chapter Two it can be seen that by 2007 the majority of nomination committees were 100% independent. Nominating committees of more independent boards are likely to also be more independent.

Financial Variables:

ROA = earnings before interest and tax (EBIT) divided by total average assets. Various measures of profitability have been adopted: Return on equity (Lim, Matolcsy and Chow 2007), loss (Kent and Stewart 2008). Consistent with Giroud and Mueller

(2010) this study adopts return on assets. While regulators may believe more independent boards will result in positive outcomes (presumably including performance) mixed results in empirical studies (see Larcker, Richardson and Tuna 2007) do not provide guidance as to the expected sign of this variable. Therefore no prediction is made as to the expected sign.

LEVERAGE = the natural log of debt minus the natural log of the market value of equity. Again many variables have been used to capture this important firm financing decision characteristic: debt to total assets (Denis and Sarin 1999), total liabilities to book value of equity (Arthur 2001), non-current liabilities to book value of equity (Lim, Matolcsy and Chow 2007). This Chapter adopts the Larcker Richardson and Tuna (2007) measure using log of debt minus log of market value of equity. Leverage may have both a positive and negative influence on board independence. The greater the proportion of debt, the greater the risk debt holders bear (debt covenants typically limit increasing debt levels and higher priority debt). Therefore debt holders might be expected to influence the appointment of more independent directors, alternatively the monitoring of the firm provided by debt holders may substitute for a more independent board. No prediction is made as to the sign in the case of leverage.

MKTBK = the natural log of the market value of equity minus the natural log of the book value of equity. Variations of this variable, attempting to capture the difference between accounting and market measures have been used. Often termed 'growth opportunities' Denis and Sarin (1999) used Tobin's Q, Arthur (2001) and Linck, Netter and Yang (2008) compared market value of equity to

book value of equity (or book value of equity minus intangibles Lim, Matolcsy and Chow 2007) and Arthur (2001) also introduced the income statement by using the P/E ratio. The greater the growth opportunities the more monitoring is required and so more independent directors might be expected. Conversely the more growth opportunities, the more inside experts are required to discover and evaluate the potential projects. Therefore no strong association between the market to book ratio and board composition is expected.

SIZE = the natural log of total assets is used in this study. While many definitions of size have been used: market value of equity (Denis and Sarin 1999; Linck, Netter and Yang 2008; Giroud and Mueller 2010) or total assets (Arthur 2001; Gul and Leung 2004; Lim, Matolcsy and Chow 2007; Kent and Stewart 2008; Linck, Netter and Yang 2008) this study adopts the common measure used in Australia. The larger the firm the broader the expertise the board may seek. Further the larger the firm the lower the relative cost of appointing an outside (potentially independent) director. It is therefore expected size will be positively associated with board independence.

LOSS = 1 if EBIT was negative; 0 otherwise (Kent and Stewart 2008). Loss firms are thought to react differently. While it would appear under-used in corporate governance research, much of financial accounting and audit research has used a dummy variable. Loss firms might be expected to broaden their board expertise by recruiting more outside directors, but independent outside directors may be reluctant to join a loss-making firm. Again the association between loss firms and independent directors is not clear and no prediction is made.

COMPLEXITY = natural log of one plus the number of total subsidiaries. Various measures of complexity have been used in prior Australian studies: (Wright 2005) subsidiaries and foreign subsidiaries, Arthur (2001) and Kent and Stewart (2008) geographic segments, while in the US Denis and Sarin (1999) adopt business segments. The details of each subsidiary are reported in the annual report in Australia and although the number of subsidiaries may not indicate the different business segments it does indicate the level of legal complexity the firm has taken on. More subsidiaries may mean more external experts may be required on the board, but it could advance the argument for more internal directors managers from major subsidiaries. Therefore no attempt is made to predict the association between board composition and complexity.

Governance Variables:

BOARD SIZE = number of directors on the board (Denis and Sarin 1999; Larcker, Richardson and Tuna 2007; Lim, Matolcsy and Chow 2007; Kent and Stewart 2008). As reported in Adams, Hermalin and Weisbach (2010) board size has been extensively examined in the US context, with a trend for larger boards between 1930 and 1960 (average size from 11 to 15) and a decline up to 2000 (back to 11) and increase in board size since SOX due to increased work load and legal liability. What is consistent is the increase in uniformity over time, with a halving in the standard deviation. Chapter Two finds board size to be much smaller in Australia (5.5) and a non significant decrease in size after the introduction of Australian regulations (PGCG&BP and CLERP9). The larger the board, the greater the opportunity to include more independent directors on the

board. Further, a number of executives may be expected to be directors: CEO, CFO and an operations executive, but beyond these a certain amount of duplication of knowledge may occur. Therefore a strong association between board size and board independence is therefore expected.

TOP 20 SH = percentage of shares owned by the largest 20 shareholders (Lim, Matolcsy and Chow 2007). Commonly in the US, block shareholding has been used to capture the discipline that may be imposed on firms by large shareholdings where it is in their interest to expend additional resources monitoring the firm, due to the changes in firm value having a substantial wealth effect on those shareholders. In Australia, ASX Listing Requirements require disclosure of the identity of the Top 20 shareholders and their holdings. Regulators obviously believe this is important information and as such the use of the Top 20 removes subjective judgement as to the measure that should be used to capture this potential governance attribute. Shareholders with large holdings often expect a directorship, but the larger the percentage owned by a concentrated group the easier it is to control the firm in other ways. Therefore it might be expected that the higher the percentage held by the Top 20 shareholders the less independent the board would be. Conversely shareholders with large holdings have wealth incentives to monitor the board more closely by voting for more independent directors. These contradictory effects lead to no prediction as to the association between Top 20 shareholders and board independence.

AGE = natural log of the years since incorporation (Denis and Sarin 1999, Giroud and Mueller 2010). Especially when dealing with smaller firms, the influence of the

original owner/entrepreneur may provide a unique governance environment. Adams, Hermalin and Weisback (2010) report on the effect of venture capitalists as directors of newly listed firms and how this lingers after they cease to be directors. As a firm ages, the influence of the original manager/owners is likely to decrease and we would expect older firms to be more independent. Given the few firms in this sample under a decade old the effect would not be expected to be significant.

N-IND DIR SH = percentage of shares associated with the non-independent directors.

IND DIR SH = percentage of shares associated with the independent directors.

Arthur (2001) and Larcker, Richardson and Tuna (2007) examined non-executive shareholding. Further Larcker, Richardson and Tuna (2007) examines all executive shareholdings and chairman shareholdings. The more shares held by a director the less likely they are to seek outside 'interference'. Therefore a strong negative association is expected between non-independent directors' shareholdings and board independence. Conversely the higher the shareholding by independent directors, who by definition are not large shareholders (independent designated in this Chapter as not associated with a substantial shareholder, i.e. a holder of 5% or more of the share capital) the more likely such shareholders will be represented on the board as an independent director resulting in a positive relation between board composition and independent directors shareholdings.

AUDITOR = 1 if firm auditor was top tier, 0 otherwise. Big 4/5/6 auditor is commonly used to explain many phenomena (almost all economics of auditing research is based on this or the closely related distinction of expertise), in corporate

governance research it has been used by Arthur (2001), Gul and Leung (2004), Lim, Matolcsy and Chow (2007) and Kent and Stewart (2008). Top tier auditors are likely to have a positive effect on corporate governance, require an independent audit committee and may self-select firms that are not dominated by managers (who may have a greater incentive to manage earnings) all lead to the expected strong positive relation between board composition and top tier auditors.

CHAIR IND = 1 if board chairperson is independent, 0 otherwise Adams, Hermalin and Weisbach (2010) reports duality of almost 80% for larger US firms. In Australia the percentage is much lower (Chapter Two found only currently less than 25% of firms do not have an independent chairman – Table 3) but unlike in the US the executive chairman is often not the CEO but another executive. In this Chapter the term ‘independent chairman’ is used rather than duality as tested by Larcker, Richardson and Tuna (2007) in the US and Gul and Leung (2004) in Hong Kong. Independence in this context is different, but similar to the Lim, Matolcsy and Chow (2007) categorization (non-executive without significant related party transactions or potential links to management) used by in the Australian setting. Non-independent chairman are more likely to come from and/or establish less independent boards so a positive relation between chairman independence and board independence is expected.

Industry Controls:

ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise. TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise. MANUFACTURING = 1

if firm is predominantly involved in manufacturing, 0 otherwise RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. Industry classifications were used by Lim, Matolcsy and Chow (2007). Different industries may require different levels of internal versus external expertise. In the US highly regulated industries may find the contacts available through former politicians or senior civil servants advantages, increasing the likelihood of a more independent board. Highly technical industries may benefit from more internal expertise. One of the issues raised in response to PGCG&BP was the limitation of a ‘one size fits all’ corporate governance model for listed firms from diverse industries.

In the second stage using the fitted estimates of board independence derived from the stepwise regression in the first stage, the following regression is estimated:³⁹

$$\begin{aligned}
 CD_{(1 \text{ to } 5)} = & \alpha_i + \beta_1 \text{FITTED BOARD COMP}_i + \beta_2 \text{ROA}_{t-1} + \beta_3 \text{LEVERAGE}_{t-1} + \\
 & \beta_4 \text{MKTBK}_{t-1} + \beta_5 \text{SIZE}_{t-1} + \beta_6 \text{LOSS}_{t-1} + \beta_7 \text{COMPLEXITY}_{t-1} + \beta_8 \text{BOARD SIZE}_{t-1} + \\
 & \beta_9 \text{TOP 20 SH}_{t-1} + \beta_{10} \text{AGE}_{t-1} + \beta_{11} \text{N-IND DIR SH}_{t-1} + \beta_{12} \text{IND DIR SH}_{t-1} + \\
 & \beta_{13} \text{AUDITOR}_{t-1} + \beta_{14} \text{CHAIR IND}_{t-1} + \beta_{15} \text{ENERGY \& MINING}_{t-1} + \beta_{16} \text{TELCO \&} \\
 & \text{UTILITY}_{t-1} + \beta_{17} \text{MANUFACTURING}_{t-1} + \beta_{18} \text{RETAIL}_{t-1} + E_i
 \end{aligned} \tag{2}$$

Where Dependent Variables:

CD₁ = total number of continuous disclosures made by a firm in 2006 and 2007 years

CD₂ = market-sensitive continuous disclosures. Market sensitive disclosures are classified by the ASX and their release is accompanied by a ten minute ‘trading

³⁹ Given the comments of Larcker and Rusticus (2008) this study also uses OLS regression between different disclosure categories and firm (and other) characteristics and report the results with the two stage least squares regression results.

holt' (suspension of trading for ten minutes concurrent with the announcement). Although any 'sub-code' may be price-sensitive, some, such as a takeover announcement are more likely to be so classified.

CD₃ = non-procedural continuous disclosures. Non-procedural disclosures are subjectively classified in this study as the 'sub-codes' judged to be least likely to result in enforcement under the CDR if they were not made.⁴⁰

CD₄ = the proportion of market-sensitive continuous disclosures that are non-procedural

CD₅ = the proportion of non-procedural, continuous disclosures that are market-sensitive

Financial Variables:

ROA = return on assets is defined as earnings before interest and tax (EBIT) divided by total average assets. A number of disclosure studies have used profitability measures including Lang and Lundholm (1993), Ho and Wong (2001), Lim, Matolcsy and Chow (2007). Good news is released in a more timely fashion than bad news and boards are more likely to be willing to share good news than bad news. To reduce liability firms will not withhold bad news, but it is unlikely to be the subject of ongoing announcements. So while there was no prediction made as to the expected relation between ROA and board compensation, the association between ROA and disclosure is expected to be positive..

⁴⁰ Previous studies on the CDR in Australia (Gallery, Gallery and Hsu 2006; and Chan, Ho and Ramsay 2007) examined only earnings forecasts and were more concerned with the regulatory environment than disclosures per se. Given the near 30,000 non-procedural disclosures made by the firms in this study, no attempt has been made to classify individual disclosures. The disclosures code and sub-code classifications made by the ASX were accepted as correct. No attempt was made to read individual disclosures and reclassify. While the ASX sorts disclosures into 137 sub-codes, in this study only 16 are classified as non-procedural (see Table 2 Panel B and Appendix 1).

LEVERAGE = the natural log of debt minus natural log of the market value of equity.

Leverage, because the financing decision is a major board responsibility has long been seen as have a likely impact on disclosure (Meek, Roberts and Gray 1995; Camfferman and Cooke 2002; Lim, Matolcsy and Chow 2007). The level of debt is expected to be negatively associated with disclosure. The lower the proportion of a firms wealth held by equity holders the less power they are likely to have over the firm and the less information they will be supplied.

MKTBK = the natural log of the market value of equity minus the natural log of the book value of equity. The greater the growth opportunities, the more monitoring is required. Wright (2005) found a significant effect of growth opportunities on management compensation type. Current accounting numbers are unlikely to display the future potential of the firm, therefore firms with high market to book are expected to have high levels of disclosure.

SIZE = the natural log of total assets. Watts and Zimmerman (1978) argue larger firms are subject to more political costs and as such are likely to disclose more information to reduce or neutralise these costs. A number of empirical disclosure studies have found this relation to be valid (Cooke 1991; Gul and Leung 2004; Lim, Matolcsy and Chow 2007; Kent and Stewart 2008). Larger firms have more to report, so a positive relation between size and disclosure is expected

LOSS = 1 if earnings before interest and tax was negative; 0 otherwise. Kent and Stewart (2008) used earnings before tax, but in the economics of audit research

EBIT (Ferguson and Matolcsy 2004) is much more common. Loss firms have bad news and are prediction to disclose more to placate stakeholders.

COMPLEXITY = natural log of 1+ number of total subsidiaries. Many measures of complexity have been used in. Denis and Sarin (1999) used business segments while in Australia, Arthur (2001) and Kent and Stewart (2008) adopted geographic segments. Complex firms have more to disclose, therefore the more complex a firm the more disclosures.

Governance Variables:

BOARD SIZE = number of directors on the board (Kent and Stewart 1998). Yermack (1996) found smaller boards had higher market value, but the results indicate the ideal board size may be dependent on the best size for the specific firm due to the performance opportunity set for each firm (Adams, Hermalin and Weisbach 2010). The more directors the greater the different perspectives on the information that different stakeholders may require and the greater the number of directors potentially exposed to legal liability, the greater the information required to be released to minimise that legal exposure. Therefore a positive relation is expected between board size and disclosure.

TOP 20 SH = percentage of shares owned by the largest 20 shareholders. Ownership concentration has been used in governance studies Cooke (1992) and Larcker, Richardson and Tuna (2007). In Australia the easily obtainable measure of Top 20 shareholders was adopted by Lim, Matolcsy and Chow (2007). More concentrated the ownership may lead to a lower need and desire to disclose. Large shareholders

are likely to have better access to a firm's information than small shareholders. Further large shareholders by withholding information are able to take advantage of that information at the expense of the smaller shareholders. The predicted sign is positive.

AGE = the natural log of the years since incorporation (Giroud and Mueller (2010).

Younger firms are more likely to be dominated by the original owner managers (Adams, Hermalin and Weisbach 2010). These directors are more likely to still view the firm as a private business and less inclined to share information with the new investors. The only question is the length of time it takes for this private firm perspective to disappear. Given the likelihood of a lingering culture of privacy the association between age and disclosure is predicted to be both negative and strong.

N-IND DIR SH = percentage of shares associated with the non-independent directors.

IND DIR SH = percentage of shares associated with the independent directors (Denis and Sarin 1999; Arthur 2001; Gul and Leung 2004). Given directors associated with substantial shareholders (holders of 5% or more of the firm) are by definition in this study classified as non-independent, very large shareholders who are also directors are included in the non-independent group along with owner managers. With a concentration of shareholding it is in the interest of those who can obtain private information to withhold it from those who do not have access to that information. Therefore the higher the directors' shareholdings the less disclosure is expected. For independent directors with small shareholdings (many listed

companies expect/require all directors to hold shares in the company) it is unclear the effect this is likely to have on disclosure. Therefore no prediction is made as to the association between independent directors' shareholdings and disclosure.

AUDITOR = 1 if firm auditor was top tier, 0 otherwise (Lim, Matolcsy and Chow 2007; Kent and Stewart 2008). The higher the quality the auditor the more disclosure they are likely to expect from the firm. While most continuous disclosures are not audited, all disclosures subsequent to the annual report are likely to reduce the auditor's liability associated with the audited financial statements in the annual report.

CHAIR IND = 1 if board chairman is independent, 0 otherwise. (Gul and Leung 2004, Kent and Stewart 2008). Non-independent chairman have even stronger reasons not to disclose than non-independent directors. They have their chair as well their executive position to protect. Therefore a strong association between independent chairman and disclosure is expected.

Industry Controls:

ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise. TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. Different industry codes have been adopted in Australian disclosure studies. Lim, Matolcsy and Chow (2007) did not include financial industries and classified the remainder as

‘manufacturing’ ‘service’ and ‘others’, While Kent and Stewart (2008) included ‘financial’ and controlled for ‘extractive’ and ‘consumer staples’. The amount of disclosure by different industries is different. In Australia energy and extractive industries must report quarterly and disclose mineral deposit discoveries. Firms of a similar size and financial profile in different industries are likely to face different political costs, different benefits from disclosing.

4. Results.

4.1 Descriptive Results

The continuous variables are reported in Table 3 Panel A. The natural log of total continuous disclosures (CD’s) is used because while the minimum is 5 and the mean and median both 54 and one firm in the sample had 434 CD’s in one calendar year. On average around 35% of all disclosures by the sample firms were classified (by the ASX) as price sensitivity, while non-procedural disclosures (classified by this study) were around 30%. The remaining two CD types may appear to be the same but the higher percentage of non procedural CD which were price sensitive 41.1% (compared to the 36.0% of all CD’s being market sensitive) and the percentage of price sensitive CD’s that are non-procedural, 53.0% (compared to the percentage of all CD’s that are non-procedural, 26.9%) clearly indicates the non-procedural CD’s are not a random classification. Average board independence is lower than median independence, indicative of a number of firms with a very low percentage of board independence compared to those with a high percentage. The financial characteristic of the sample (ROA to COMPLEXITY) indicates the cross sectional variation across the sample.

Table 3 - Descriptive Statistics (Pooled).

Panel A - Continuous Measures					
	Mean	Median	Std. Dev.	Min.	Max.
Ln TOTAL CD	3.970	3.970	0.594	1.609	6.073
PRICE-SENS CD	36.0%	35.4%	15.3%	0%	100%
NON-PROC CD	26.9%	25.0%	14.6%	0%	87.0%
NON-PROC / PRICE-SENS CD	41.1%	41.7%	22.4%	0%	93.1%
PRICE-SENS / NON-PROC CD	53.0%	53.8%	23.9%	0%	100%
BOARD IND	60.9%	66.7%	21.5%	0%	100%
NOMIN COM IND	32.3%	0%	41.7%	0%	100%
ROA	-6.0%	4.3%	30.5%	-86.5%	80.2%
LEVERAGE	0.239	0.075	0.355	0	1.333
MKTBK	3.717	2.352	3.829	0.241	15.000
Ln SIZE	18.056	17.901	2.372	11.220	24.902
Ln COMPLEXITY	2.296	2.197	1.244	0	6.190
BOARD SIZE	5.531	5	1.997	3	11
TOP 20 SH	63.0%	64.4%	18.7%	12.0%	99.9%
AGE	27.007	19.719	21.141	5.999	96.504
NONIND DIR SH	14.9%	5.4%	20.0%	0%	81.7%
IND DIR SH	0.97%	0.29%	1.46%	0%	5.65%

Panel B - Categorical Measures	
MAJ BOARD IND	67%
NOMIN COM	41%
LOSS	44%
AUDITOR	67%
CHAIR IND	63%
ENERGY & MINING	39%
TELCO & UTILITY	4%
MANUFACTURING	16%
RETAIL	11%

Ln TOTAL CD = natural log of total continuous disclosures; PRICE-SENS CD = percentage of disclosures that are price-sensitive; NON-PROC CD = percentage of disclosures that are non-procedural (items 1-9, 3-14, 3-16, 4-5, 6-9, 7, 8-3, 10-5, 11, 14-1, 14-2, 14-6, 15); NON-PROC / PRICE-SENS CD = Percentage of price-sensitive disclosures that are non-procedural; PRICE-SENS / NON-PROC CD = percentage of non-procedural disclosures that are price-sensitive; BOARD IND = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); NOMIN COM IND = percentage of independent directors on the nomination committee; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; BOARD SIZE = number of directors on the board; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; NONIND DIR SH = percentage of shares associated with the non-independent directors; IND DIR SH = percentage of shares associated with the independent directors; MAJ BOARD IND = 1 if majority of directors on the board are independent, 0 otherwise; NOMIN COM = 1 if firm has a nomination committee, 0 otherwise; LOSS = 1 if EBIT was negative; 0 otherwise; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. Winsorised to 3 standard deviations from the mean.

Turning to the governance characteristics (BOARD SIZE to IND DIR SH) Australian boards appear to be substantially smaller than US boards 5.5 compared to 11 (Adams, Hermalin and Weisbach 2010). Consistent with Lim, Matolcsy and Chow (2007) where 65% of equity was held by the top 20 shareholders, this study finds a mean of 63.0% and a median of 64.4%. Independent directors hold few shares in total (mean 0.97%, median 0.29%) but non-independent directors in a few companies own a large percentage of the equity, accounting for the substantial difference between the mean 14.9% and the median 5.4% and a maximum of 81.9%.

Consistent with total CD's, the natural log is used to counter the effect of long right hand tailed distributions (e.g. SIZE is the natural log of total assets and COMPLEXITY the natural log of the number of subsidiaries) while other variables have a natural limit being ratios. The data has been winsorized, to remove outliers that can disproportionately bias the results.

The categorical variables are generally as expected. The high percentage of firms reporting a loss (in the 2005, 2006 calendar year due to the lagging of these variables) is primarily due to the inclusion of a large number of firms (89%) outside the Top 100. In Australia smaller firms are more likely to report losses.

Table 4 indicates most variables are correlated at the 1% level of significance for both the Pearson and Spearman correlation indices, suggesting multicollinearity may be an issue. Size, as expected is significantly associated with all variables at the 1% level

Table 4 - Correlation Matrix (Pooled).

	BOARD IND	NOMIN COM IND	ROA	LEVERAGE	MKTBK	Ln SIZE	Ln COMPLEXITY	BOARD SIZE	TOP 20 SH	AGE	NONIND DIR SH	IND DIR SH
BOARD IND	.	0.26***	0.133***	0.025	-0.048	0.278***	0.215***	0.272***	-0.075**	0.156***	-0.45***	0.15***
NOMIN COM IND	0.27***	.	0.217***	0.041	-0.067**	0.458***	0.376***	0.413***	0.069**	0.21***	-0.113***	-0.101***
ROA	0.16***	0.248***	.	0.071**	-0.319***	0.592***	0.374***	0.357***	0.221***	0.204***	0.082**	-0.076**
LEVERAGE	0.12***	0.17***	0.199***	.	-0.049	0.225***	0.277***	0.114***	0.177***	0.052	0.16***	0.044
MKTBK	0.005	0.004	-0.045	-0.235***	.	-0.287***	-0.193***	-0.124***	0.04	-0.097***	-0.012	-0.057*
Ln SIZE	0.302***	0.447***	0.62***	0.483***	-0.138***	.	0.739***	0.691***	0.234***	0.397***	-0.068**	-0.221***
Ln COMPLEXITY	0.229***	0.365***	0.414***	0.491***	-0.15***	0.727***	.	0.572***	0.204***	0.312***	-0.021	-0.158***
BOARD SIZE	0.286***	0.411***	0.407***	0.291***	-0.022	0.669***	0.523***	.	0.184***	0.283***	-0.039	-0.057*
TOP 20 SH	-0.07**	0.068**	0.192***	0.205***	-0.011	0.258***	0.204***	0.197***	.	0.084**	0.405***	-0.132***
AGE	0.124***	0.105***	0.175***	0.09***	-0.015	0.269***	0.198***	0.131***	0.058*	.	-0.034	-0.089***
NONIND DIR SH	-0.613***	-0.135***	0.022	0.024	-0.098***	-0.117***	-0.04	-0.078**	0.281***	-0.09***	.	-0.028
IND DIR SH	0.164***	-0.06*	-0.061*	0.003	-0.078**	-0.166***	-0.136***	0.001	-0.158***	-0.13***	0.049	.

Pearson co-efficients above the diagonal, Spearman co-efficients below the diagonal. Ln TOTAL CD = natural log of total continuous disclosures; PRICE-SENS CD = percentage of disclosures that are price-sensitive; NON-PROC CD = percentage of disclosures that are non-procedural (items 1-9, 3-14, 3-16, 4-5, 6-9, 7, 8-3, 10-5, 11, 14-1, 14-2, 14-6, 15); NON-PROC / PRICE-SENS CD = Percentage of price-sensitive disclosures that are non-procedural; PRICE-SENS / NON-PROC CD = percentage of non-procedural disclosures that are price-sensitive; BOARD IND = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); NOMIN COM IND = percentage of independent directors on the nomination committee; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; BOARD SIZE = number of directors on the board; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; NONIND DIR SH = percentage of shares associated with the non-independent directors; IND DIR SH = percentage of shares associated with the independent directors. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

except non-independent directors shareholdings (Pearson's 5%). Directors' shareholdings exhibit the lowest level of correlation. Non-independent directors shareholders are significantly correlated with only seven (Pearson) and six (Spearman) of the other variables, while independent directors shareholding show higher levels of correlation. A stepwise procedure in the first regression is used to address the problem of multicollinearity as well as estimating the VIF (variance inflation factor) to determine how much larger the standard error is compared to what it would have been if the variable was uncorrelated with the other right hand variables.

4.2 Main Results

The main results commence in Table 5. The first regression examines the association between board independence and the financial characteristics, governance variables and the industry controls are reported in this table. Both the full and stepwise regressions provide significant results with an adjusted R^2 of 40.6% (marginally higher than the OLS regression) and an F -statistic of 52.255 (stepwise) all significant at the 1% level. Similar results are shown in 2006 and 2007 (450 sample firms in each year). These results indicate board independence is a function of governance variables but not financial characteristics.

Table 5 column 1 lists the financial characteristics, governance variables and the industry controls from equation 1 and the predicted sign of the association. Panel A displays the results of the ordinary least squares (OLS) regression on the pooled 2006, 2007 sample (900 firm-year observations). The intercept is significant and positive although the sign was not predicted. Also significant are the last four governance

Table 5: The Relation Between Board Independence and Firm Characteristics (450 firms each year).

$$\text{BOARD IND}_{i,t} = \alpha + \beta_j \Sigma \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \gamma_j \Sigma \text{GOV VARIABLES}_{j,i,t} + \delta_j \Sigma \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$$

Variables	Pred. Sign	Panel A: Full 2006-07			Panel B: Step-wise 2006-07			Panel C: Step-wise 2006			Panel D: Step-wise 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	0.342	4.223	***	0.286	4.808	***	0.151	1.660	*	0.399	11.644	***
NOMIN COM #	+	-0.013	-0.390										
NOMIN COM IND #	+	0.057	1.452		0.044	2.894	***	0.044	2.068	**	0.057	2.692	***
ROA	+/-	-0.026	-0.861										
LEVERAGE	+/-	0.009	0.487										
MKTBK	+/-	0.002	1.283		0.002	1.418		0.004	1.745	*			
Ln SIZE	+	0.006	1.084		0.008	2.069	**	0.020	3.318	***			
LOSS	+/-	-0.029	-1.536										
Ln COMPLEXITY	+/-	0.001	0.173					-0.012	-1.304		0.020	2.637	***
BOARD SIZE	+	0.005	1.318		0.005	1.360							
TOP 20 SH	+/-	0.057	1.635		0.060	1.747	*	0.060	1.290		0.071	1.438	
AGE	+	0.000	1.418		0.000	1.433		0.001	1.466				
NONIND DIR SH	-	-0.383	-11.372	***	-0.381	-11.567	***	-0.359	-7.501	***	-0.388	-8.579	***
IND DIR SH	+	2.432	5.982	***	2.455	6.111	***	1.792	3.644	***	3.604	5.475	***
AUDITOR	+	0.048	3.563	***	0.045	3.388	***	0.049	2.741	***	0.049	2.578	**
CHAIR IND	+	0.130	10.167	***	0.130	10.221	***	0.131	7.494	***	0.128	7.105	***
ENERGY & MINING		-0.020	-1.289		-0.021	-1.662	*	-0.034	-2.051	**			
TELCO & UTILITY		-0.015	-0.504					-0.065	-1.612				
MANUFACTURING		-0.015	-0.802										
RETAIL		0.023	1.119		0.029	1.540					0.048	1.811	*
Max VIF		8.854			2.884			3.340			1.369		
Adj. R ²		0.404			0.406			0.426			0.394		
F-stat			33.071	***		52.255	***		28.730	***		37.532	***
Partial R ²		0.028			0.009			0.010			0.016		
Partial F-stat			3.985	**		8.377	***		4.278	**		7.245	***

BOARD IND = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); NOMIN COM = 1 if firm has a nomination committee, 0 otherwise; NOMIN COM IND = percentage of independent directors on the nomination committee; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; BOARD SIZE = number of directors on the board; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; NONIND DIR SH = percentage of shares associated with the non-independent directors; IND DIR SH = percentage of shares associated with the independent directors; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

designates instrumental variable

variables (NONIND DIR SH, IND DIR SH, AUDITOR and CHAIR IND) in the direction predicted. While the NOMIN COM was predicted to be positive the coefficient is negative but not significant. None of the industry controls are significant and all except RETAIL are negative, indicating only retail firms appear to be positively associated with board independence. The Max VIF (the highest VIF value for any of the independent variable, in this case NOMIN COM) of 8.854 being greater than 5, indicating multicollinearity is, as expected high, but being less than 10, may be considered acceptable.⁴¹ The adjusted R^2 of 40.4% and an F -statistic of 33.071 (significant at the 1% level) shows less than half of the variation in board independence can be explained by the variables chosen. This result is much higher than that reported by Lim, Matolcsy and Chow 2007 R^2 of less than 20%. The Partial R^2 is calculated on the instrumental variables and while neither was individually significant, together they are significant at the 5% level.

Table 5 Panel B displays the step wise regression for pooled 2006/07 results (the stepwise regression is calculated using the SPSS statistical package). This has been successfully achieved with the VIF reducing to an acceptable 2.884. Consistent with the OLS regression in Panel A, the intercept and the four governance variables remain significant at the 1% level. With the elimination of the NOMIN COM, the NOMIN COM IND becomes significant at the 1% level. Ln SIZE is significant at the 5% level and both TOP 20 SH and ENERGY & MINING are significant at the 10% level. The adjusted R^2 increases fractionally, but the F -statistic of 52.255 has increased substantially indicating the null hypothesis (that board independence is not associated with the right hand variables) can be rejected with even greater confidence.

⁴¹ Kutner et al 2006 (p409) suggest a VIF of 10 as being the maximum value before excessively high interdependence leads to the interpretation of results becoming suspect.

Panel C and D apply the stepwise regression to the individual years (450 firm year observations in each year). The four governance variables remain highly significant, except in 2007 AUDITOR is reduced to the 5% level of significance. Consistent with Panel B, NOMIN COM IND is significant (5% level in 2006) but Ln SIZE is not significant in 2007. Industry groups are different in the two years: ENERGY & MINING is significant in 2006 at the 5% level (probably driving the pooled 10% significance in Panel B) while RETAIL is significant at the 10% level in 2007. The adjusted R^2 remain around 40% (42.6 in 2006, 39.4% in 2007) and with the reduced sample size the F -statistic also reduces (28.73 in 2006, 37.53 in 2007).

In summary, consistent with predictions, NOMIN COM IND is positive and significant in the pooled, stepwise and both individual years (Panels A – D). Surprisingly size is only significant in 2006. The coefficients for age are small, probably due to the lack of importance of the age difference of a firm that have been incorporation for 20 or more years. Due to the sample selection process no firm is less than 6 years since incorporation, and the major effect of age on board composition is likely to be expected in the first few years (Adams, Hermalin and Weisbach 2010). The results show board independence is associated with both independent and non-independent directors' shareholdings (possibly as a result of the designation of 'independence' adopted) chair independence and top tier auditor, all in the direction as expected. The Partial F -statistics (3.985, 8.377, 4.278 and 7.245) are all significant, at the 1% level for full pooled sample and 2007 and at the 5% level for the pooled stepwise regression and 2006. Board size is not significant which is inconsistent with the results found by Denis and Sarin (1999), Gul and Leung (2004) and Lim, Matolcsy and Chow (2007), and

inconsistent with the prediction that size would be associated with board independence but consistent with Chapter Two (where size was only significant in the pre-regulation period at the 10% level).

Tables 6 to 10 report the results of the ordinary least squares regression (OLS) on the pooled sample (2006 and 2007, with 900 firm years) and two-stage least squares regression (2SLS) on the pooled and individual years (450 firm years in each), where the dependent variable (continuous disclosure) takes five different definitions (types): (i) total CD's, (ii) price sensitive CD's, (iii) non-procedural CD's, (iv) the proportion of non-procedural CD's that are price sensitive, and (v) the proportion of price sensitive CD's that are non-procedural.

Table 6 presents the results for TOTAL CD's. The ordinary least squares and the two stage least squares regression have almost identical adjusted R^2 of 28.9% (F -statistic of 21.32) and R^2 of 28.8% (F 21.21) respectively, lower in 2006, R^2 25.1% (F 9.36) and 2007, R^2 31.9 (F 12.667) all significant at the 1% level, a consistent result. The lower F -statistic in the individual years is at least partially due to the smaller sample size. Lim, Matolcsy and Chow (2007) found (Table 5) the relation between different voluntary disclosure (VDs) measures ranged from an adjusted R^2 of 34.4% (F -statistic of 23.04) for historical financial to R^2 of 6.01% (F -statistic of 3.77) for strategic information. Kent and Stewart (2008) report (tables 4 and 5) adjusted R^2 of 22.3% to 14.7% (F -statistic of 21.94 to 8.195) for the association with 'the number of sentences of disclosure about AIFRS'.

Table 6: The Relation Between Total Continuous Disclosure, Board Independence and Firm Characteristics utilising both OLS and 2SLS (450 firms each year)															
OLS: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Observed} + \gamma_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$															
2SLS: 1 st stage $\text{BOARD IND}_{i,t} - \text{Fitted} = \alpha + \beta_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \gamma_j \sum \text{GOV VARIABLES}_{j,i,t} + \delta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t}$															
2 nd stage: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Fitted} + \gamma_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$															
Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled				Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat			Co-eff	t-stat			Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	2.184	9.001	***	2.289	8.184	***		2.976	8.152	***	1.352	2.417	**	
BOARD IND - Observed	+/-	0.127	1.252												
BOARD IND - Fitted	+/-				-0.253	-0.469			0.289	0.206		0.424	0.347		
ROA	+	0.050	0.543		0.043	0.471			0.132	1.102		-0.031	-0.220		
LEVERAGE	-	-0.042	-0.796		-0.042	-0.798			-0.038	-0.525		-0.037	-0.475		
MKTBK	+	0.007	1.398		0.007	1.521			-0.002	-0.225		0.014	2.080	**	
Ln SIZE	+	0.097	6.135	***	0.100	5.990	***		0.050	1.343		0.133	5.567	***	
LOSS	+	0.177	3.092	***	0.172	2.995	***		0.139	1.847	*	0.204	2.365	**	
Ln COMPLEXITY	+	0.018	0.834		0.019	0.900			0.026	0.793		0.012	0.296		
BOARD SIZE	+	0.051	4.100	***	0.052	4.196	***		0.059	3.755	***	0.041	2.070	**	
TOP 20 SH	+	-0.437	-4.139	***	-0.414	-3.720	***		-0.497	-3.255	***	-0.377	-1.991	**	
AGE	-	-0.002	-2.318	**	-0.002	-2.110	**		-0.002	-1.313		-0.002	-1.632		
NONIND DIR SH	-	-0.479	-4.409	***	-0.625	-2.704	***		-0.317	-0.601		-0.506	-0.997		
IND DIR SH	+/-	-0.381	-0.305		0.549	0.303			-0.936	-0.324		-2.531	-0.515		
AUDITOR	+	-0.045	-1.103		-0.025	-0.506			-0.071	-0.778		-0.045	-0.486		
CHAIR IND	+	-0.072	-1.764	*	-0.022	-0.269			-0.087	-0.451		-0.127	-0.750		
ENERGY & MINING		0.198	4.324	***	0.189	4.009	***		0.199	2.567	**	0.193	2.721	***	
TELCO & UTILITY		-0.057	-0.627		-0.067	-0.724			-0.128	-0.841		0.070	0.513		
MANUFACTURING		-0.176	-3.231	***	-0.179	-3.283	***		-0.158	-2.210	**	-0.189	-2.292	**	
RETAIL		-0.126	-2.062	**	-0.118	-1.889	*		-0.088	-1.132		-0.178	-1.623		
Max VIF		5.012													
Adj. R ²		0.289			0.288				0.251			0.319			
F-stat			21.325	***		21.218	***			9.360	***		12.667	***	

Ln TOTAL CD = natural log of total continuous disclosures; BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; BOARD SIZE = number of directors on the board; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; NONIND DIR SH = percentage of shares associated with the non-independent directors; IND DIR SH = percentage of shares associated with the independent directors; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

In Table 6, Panel A the BOARD IND – Observed with a co-efficient of .127 and a t-statistic of 1.252 is not significant. It represents the actual percentage of independent directors on the board, while BOARD IND – Fitted in Panels B, C and D has a negative co-efficient in Panel B (2SLS Pooled) yet a positive in the two individual years. It represents the percentage of independent directors on the board, as predicted from the 1st stage OLS. However none of these coefficients are significant, indicating board independence is not significantly associated with total CD's.

A number of variables (Intercept, Ln SIZE, LOSS, BOARD SIZE, TOP 20 SH, NONIND DIR SH, ENERGY & MINING, MANUFACTURING) are significant associated with TOTAL CD's at the 1% level for the pooled results for both OLS (Panel A) and 2SLS (Panel B). None are inconsistent with the predicted sign except TOP 20 SH which was predicted to be positive but the coefficient is consistently negative. The higher the percentage of share held by the Top 20 shareholders, the less disclosure made by the firm, inconsistent with the theory; those with access to private information will withhold it from those without. Neither the same level of significance nor many of the same variables were consistently reported in the two individual years (Panel C and D). BOARD SIZE and TOP 20 SH were significant at the 1% level in both OLS Pooled (Panel A), the 2SLS Pooled (Panel B) and in 2006 (Panel C) but only significant at the 5% level in 2007 (Panel D). The two industry groups (ENERGY & MINING and MANUFACTURING) were significant at the 1% level in Panel A and B and D but at the 5% level in Panel C. Both MKTBK and Ln Size were significant in Panel D (2007) and not Panel C (2006). This inconsistency, especially for Ln SIZE is unexpected and also inconsistent over different types of CD's (Tables 7-10). Both Lim, Matolcsy and

Chow (2007) and Kent and Stewart also found inconsistencies for size across different measures of VDs and different models for the amount of AIFRS disclosure respectively.

For price sensitive CD's (Table 7) the adjusted R^2 falls to 19.7% (F -statistic of 13.217) for the pooled OLS. In the 2SLS regressions the results are similar, and consistent with the pattern exhibited for Total CD's where the R^2 are higher in 2007 than 2006. All are significant at the 1% level. MKTBK is significant across the table for all regressions, in contrast to Total CD's where it was only significant at the 5% level in 2007. Unsurprisingly ENERGY & MINING firms were significantly associated with price sensitivity (but not in 2006), given any results from exploration or a major new contracts is likely to have an effect on share price. BOARD SIZE continues to be significant but TOP 20 SH less so. In Panel A the BOARD IND – Observed has a coefficient of 0.048 and a t-statistic of minus 1.741 and is significant at the 10% level, suggesting the higher the actual level of board independence the less price sensitive CD's made. BOARD IND – Fitted in Panels B, C and D are all positive and as in Table 6 none of the coefficients are significant.

Non-procedural disclosures (Table 8) show a further decline in the association with the adjusted R^2 of 15.3% (F -statistic of 10.0) for both Pooled OLS and 2SLS, still significant at the 1% level. The BOARD IND – Observed (Panel A) with the coefficient and a t-statistic negative and not significant. Similarly BOARD IND – Fitted in Panels B has negative co-efficient and t-statistic, while in Panel C and D the coefficients and t-statistics positive and none are significant. The non significant results limit the interpretation of the change in sign of the co-efficients. Why LEVERAGE now becomes significant may be due to debt holders protecting themselves or additional

Table 7: The Relation Between Price-Sensitive CD, Board Independence and Firm Characteristics utilising both OLS and 2SLS (450 firms each year)

OLS: PRICE-SENS CD_{i,t} = $\alpha + \beta$ BOARD IND_{i,t} - Observed + γ_j Σ FINANCIAL CHARACTERISTICS_{j,i,t} + δ_j Σ GOV VARIABLES_{j,i,t} + ζ_j Σ INDUSTRY CONTROLS_{j,i,t} + $\epsilon_{i,t}$

2SLS: 1st stage BOARD IND_{i,t} - Fitted = $\alpha + \beta_1$ Σ FINANCIAL CHARACTERISTICS_{j,i,t} + γ_1 Σ GOV VARIABLES_{j,i,t} + δ_1 Σ INDUSTRY CONTROLS_{j,i,t}

2nd stage: PRICE-SENS CD_{i,t} = $\alpha + \beta$ BOARD IND_{i,t} - Fitted + γ_j Σ FINANCIAL CHARACTERISTICS_{j,i,t} + δ_j Σ GOV VARIABLES_{j,i,t} + ζ_j Σ INDUSTRY CONTROLS_{j,i,t} + $\epsilon_{i,t}$

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	0.601	9.024	***	0.554	7.219	***	0.655	5.879	***	0.509	3.601	***
BOARD IND - Observed	+/-	-0.048	-1.741	*									
BOARD IND - Fitted	+/-				0.120	0.811		0.113	0.263		0.024	0.078	
ROA	+	0.015	0.592		0.018	0.698		0.072	1.975	**	-0.041	-1.162	
LEVERAGE	-	-0.021	-1.426		-0.021	-1.413		-0.019	-0.852		-0.023	-1.163	
MKTBK	+	-0.005	-4.057	***	-0.006	-4.219	***	-0.006	-2.204	**	-0.006	-3.423	***
Ln SIZE	+	-0.005	-1.162		-0.007	-1.453		-0.013	-1.126		-0.002	-0.317	
LOSS	+	0.034	2.174	**	0.036	2.311	**	0.049	2.151	**	0.019	0.855	
Ln COMPLEXITY	+	-0.003	-0.589		-0.004	-0.706		-0.005	-0.555		0.000	-0.021	
BOARD SIZE	+	-0.014	-4.220	***	-0.015	-4.373	***	-0.011	-2.347	**	-0.018	-3.585	***
TOP 20 SH	+	-0.050	-1.722	*	-0.060	-1.977	**	-0.063	-1.350		-0.036	-0.751	
AGE	-	-0.001	-2.080	**	-0.001	-2.290	**	0.000	-0.890		-0.001	-2.170	**
NONIND DIR SH	-	0.038	1.293		0.104	1.632		0.106	0.660		0.058	0.455	
IND DIR SH	+/-	0.499	1.458		0.086	0.172		-0.124	-0.141		0.880	0.710	
AUDITOR	+	-0.001	-0.053		-0.009	-0.698		-0.005	-0.191		-0.009	-0.387	
CHAIR IND	+	0.000	0.015		-0.022	-0.991		-0.032	-0.551		0.002	0.039	
ENERGY & MINING		0.037	2.984	***	0.041	3.172	***	0.018	0.757		0.068	3.818	***
TELCO & UTILITY		-0.036	-1.441		-0.031	-1.240		-0.015	-0.315		-0.048	-1.398	
MANUFACTURING		-0.013	-0.841		-0.011	-0.758		-0.003	-0.134		-0.014	-0.698	
RETAIL		0.005	0.314		0.002	0.091		0.003	0.134		0.007	0.253	
Max VIF		5.012											
Adj. R ²		0.197			0.194			0.168			0.222		
F-stat			13.217	***		13.050	***		6.032	***		8.115	***

PRICE-SENS CD = percentage of disclosures that are price-sensitive; BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; BOARD SIZE = number of directors on the board; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; NONIND DIR SH = percentage of shares associated with the non-independent directors; IND DIR SH = percentage of shares associated with the independent directors; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

Table 8: The Relation Between Non-Procedural CD, Board Independence and Firm Characteristics utilising both OLS and 2SLS (450 firms each year).

$$\text{OLS: NON-PROC CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Observed} + \gamma_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$$

$$2\text{SLS: 1}^{\text{st}} \text{ stage BOARD IND}_{i,t} - \text{Fitted} = \alpha + \beta_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \gamma_j \sum \text{GOV VARIABLES}_{j,i,t} + \delta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t}$$

$$2^{\text{nd}} \text{ stage: NON-PROC CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Fitted} + \gamma_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$$

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	-0.071	-1.094		-0.061	-0.812		-0.114	-1.153		-0.126	-0.858	
BOARD IND - Observed	+/-	-0.003	-0.103										
BOARD IND - Fitted	+/-				-0.043	-0.294		0.266	0.701		0.202	0.629	
ROA	+	0.001	0.054		0.001	0.041		0.023	0.724		-0.027	-0.734	
LEVERAGE	-	-0.042	-2.973	***	-0.042	-2.984	***	-0.039	-2.010	**	-0.050	-2.422	**
MKTBK	+	0.000	0.139		0.000	0.187		0.000	0.120		-0.002	-0.981	
Ln SIZE	+	0.025	5.851	***	0.025	5.601	***	0.017	1.678	*	0.025	4.055	***
LOSS	+	0.045	2.930	***	0.045	2.919	***	0.069	3.412	***	0.016	0.722	
Ln COMPLEXITY	+	0.003	0.590		0.004	0.623		0.004	0.406		0.001	0.103	
BOARD SIZE	+	-0.001	-0.170		0.000	-0.147		0.006	1.332		-0.006	-1.142	
TOP 20 SH	+	-0.181	-6.396	***	-0.179	-5.991	***	-0.214	-5.203	***	-0.181	-3.635	***
AGE	-	0.000	-1.435		0.000	-1.350		0.000	-1.016		-0.001	-1.484	
NONIND DIR SH	-	0.001	0.036		-0.014	-0.230		0.085	0.596		0.096	0.724	
IND DIR SH	+/-	0.039	0.117		0.138	0.284		-0.345	-0.443		-0.202	-0.157	
AUDITOR	+	-0.007	-0.606		-0.005	-0.343		-0.028	-1.152		-0.012	-0.478	
CHAIR IND	+	0.000	-0.044		0.005	0.220		-0.043	-0.821		-0.018	-0.406	
ENERGY & MINING		0.032	2.579	**	0.031	2.429	**	0.033	1.574		0.045	2.421	**
TELCO & UTILITY		0.042	1.723	*	0.041	1.646		0.054	1.311		0.046	1.288	
MANUFACTURING		-0.019	-1.279		-0.019	-1.286		-0.015	-0.772		-0.020	-0.942	
RETAIL		-0.033	-2.015	**	-0.032	-1.925	*	-0.039	-1.848	*	-0.029	-1.006	
Max VIF		5.012											
Adj. R ²		0.153			0.153			0.175			0.139		
F-stat			10.026	***		10.031	***		6.274	***		5.042	***

NON-PROC CD = percentage of disclosures that are non-procedural (items 1-9, 3-14, 3-16, 4-5, 6-9, 7, 8-3, 10-5, 11, 14-1, 14-2, 14-6, 15); BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; BOARD SIZE = number of directors on the board; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; NONIND DIR SH = percentage of shares associated with the non-independent directors; IND DIR SH = percentage of shares associated with the independent directors; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

information being given to all parties, but released specifically to satisfy the needs of debt holders when default risk is higher.

The proportion of non-procedural, price sensitivity disclosures (Table 9) show a similar result to market sensitive disclosures (adjusted R^2 of 24.7% and F -statistic of 17.344, significant at the 1% level), but for market sensitive, non procedural the association declines substantially (adjusted R^2 of 6.0% and F -statistic of 4.161, still significant at the 1% level). These results, may in part driven by the lower sample size in the latter groups, but it more likely indicates board independence is more strongly associated with total disclosures, but not more accountability. BOARD IND – Observed in Panel A (OLS Pooled) was significant at the 10% level and the co-efficient was negative. Again for BOARD IND – Fitted the co-efficients were insignificant values, but in contrast to Table 8 the sign for Panels B, C and D were reversed,

The lowest association between CD's and the independent variables is when CD is defined as the proportion of price sensitive, non- procedural disclosures in Table 10. Adjusted R^2 of 7% and F -statistic of 4.761 (Panel A) and an R^2 of 3.8% and F -statistic of 1.97 (Panel D) although significant at the 1% and 5% respectively, show little association between these CD's and the right hand variables. In the individual years none were significant at the 1% level (apart from the intercept in 2006 Panel C). The co-efficient on BOARD IND – Observed is negative and significant at the 10% level, on BOARD IND – Fitted they are all negative but not significant

In summary, the results indicate there is a weak relation between board independence and the different types of continuous disclosures, only three of the twenty regressions

Table 9: The Relation Between Non-Procedural Price-Sensitive CD, Board Independence and Firm Characteristics utilising both OLS and 2SLS (450 firms each year).

OLS: $\text{NON-PROC / PRICE-SENS CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Observed} + \gamma_j \sum \text{FIN CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$

2SLS: 1st stage $\text{BOARD IND}_{i,t} - \text{Fitted} = \alpha + \beta_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \gamma_j \sum \text{GOV VARIABLES}_{j,i,t} + \delta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t}$

2nd stage: $\text{NON-PROC / PRICE-SENS CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Fitted} + \gamma_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY}$

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	-0.165	-1.752	*	-0.117	-1.083		-0.254	-1.711	*	-0.179	-0.892	
BOARD IND - Observed	+/-	-0.065	-1.661	*									
BOARD IND - Fitted	+/-				-0.255	-1.220		0.686	1.199		-0.002	-0.005	
ROA	+	0.012	0.335		0.011	0.322		0.042	0.852		-0.013	-0.270	
LEVERAGE	-	-0.071	-3.459	***	-0.072	-3.522	***	-0.071	-2.436	**	-0.080	-2.886	***
MKTBK	+	0.002	0.830		0.002	0.966		-0.001	-0.156		0.000	-0.100	
Ln SIZE	+	0.034	5.545	***	0.036	5.551	***	0.012	0.820		0.038	4.469	***
LOSS	+	0.035	1.562		0.035	1.582		0.070	2.305	**	-0.006	-0.186	
Ln COMPLEXITY	+	0.020	2.480	**	0.021	2.601	***	0.037	2.787	***	0.009	0.660	
BOARD SIZE	+	0.013	2.785	***	0.013	2.801	***	0.018	2.846	***	0.009	1.224	
TOP 20 SH	+	-0.165	-4.039	***	-0.152	-3.534	***	-0.215	-3.460	***	-0.163	-2.410	**
AGE	-	0.000	-1.114		0.000	-0.922		-0.001	-1.196		-0.001	-1.365	
NONIND DIR SH	-	-0.123	-2.921	***	-0.196	-2.185	**	0.124	0.578		-0.082	-0.449	
IND DIR SH	+/-	0.258	0.534		0.732	1.043		-0.999	-0.851		1.091	0.621	
AUDITOR	+	-0.006	-0.390		0.004	0.198		-0.061	-1.648		0.004	0.111	
CHAIR IND	+	0.018	1.164		0.043	1.387		-0.100	-1.271		0.032	0.533	
ENERGY & MINING		0.033	1.845	*	0.028	1.554		0.076	2.419	**	0.020	0.802	
TELCO & UTILITY		-0.053	-1.522		-0.060	-1.682	*	-0.059	-0.949		-0.006	-0.123	
MANUFACTURING		0.000	-0.007		0.000	0.003		0.022	0.752		-0.014	-0.470	
RETAIL		-0.063	-2.637	***	-0.058	-2.409	**	-0.049	-1.566		-0.067	-1.701	*
Max VIF		5.012											
Adj. R ²		0.248			0.247			0.270			0.245		
F-stat			17.440	***		17.344	***		10.225	***		9.111	***

NON-PROC / PRICE-SENS CD = Percentage of price-sensitive disclosures that are non-procedural; BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; BOARD SIZE = number of directors on the board; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; NONIND DIR SH = percentage of shares associated with the non-independent directors; IND DIR SH = percentage of shares associated with the independent directors; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

Table 10: The Relation Between Price-Sensitive Non-Procedural CD, Board Ind. and Firm Characteristics utilising both OLS and 2SLS (450 firms each year)

OLS: PRICE-SENS / NON-PROC CD_{i,t} = $\alpha + \beta$ BOARD IND_{i,t} - Observed + γ_j Σ FIN CHARACTERISTICS_{j,i,t} + δ_j Σ GOV VARIABLES_{j,i,t} + ζ_j Σ IND CONTROLS_{j,i,t} + $\varepsilon_{i,t}$

2SLS:1st stage BOARD IND_{i,t} - Fitted = $\alpha + \beta_j$ Σ FINANCIAL CHARACTERISTICS_{j,i,t} + γ_j Σ GOV VARIABLES_{j,i,t} + δ_j Σ INDUSTRY CONTROLS_{j,i,t}

2nd stage: PRICE-SENS / NON-PROC CD_{i,t} = $\alpha + \beta$ BOARD IND_{i,t} - Fitted + γ_j Σ FIN CHARACTERISTICS_{j,i,t} + δ_j Σ GOV VARIABLES_{j,i,t} + ζ_j Σ IND CONTROLS_{j,i,t} + $\varepsilon_{i,t}$

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	0.805	7.206	***	0.831	6.416	***	0.995	5.393	***	0.598	2.462	**
BOARD IND - Observed	+/-	-0.156	-3.344	***									
BOARD IND - Fitted	+/-				-0.276	-1.104		-0.140	-0.197		-0.109	-0.204	
ROA	+	0.027	0.627		0.029	0.675		0.089	1.463		-0.017	-0.288	
LEVERAGE	-	-0.031	-1.261		-0.033	-1.338		-0.025	-0.697		-0.036	-1.066	
MKTBK	+	-0.004	-1.664	*	-0.004	-1.578		-0.007	-1.573		-0.001	-0.442	
Ln SIZE	+	-0.012	-1.640		-0.010	-1.317		-0.028	-1.478		0.004	0.379	
LOSS	+	0.022	0.829		0.025	0.943		0.037	0.985		0.009	0.244	
Ln COMPLEXITY	+	0.016	1.664	*	0.017	1.755	*	0.025	1.534		0.007	0.396	
BOARD SIZE	+	0.003	0.537		0.003	0.458		0.006	0.739		-0.002	-0.188	
TOP 20 SH	+	-0.022	-0.458		-0.013	-0.251		0.042	0.538		-0.082	-1.003	
AGE	-	-0.001	-2.008	**	-0.001	-1.896	*	-0.001	-0.758		-0.001	-2.040	**
NONIND DIR SH	-	-0.136	-2.711	***	-0.181	-1.693	*	-0.133	-0.498		-0.122	-0.553	
IND DIR SH	+/-	1.180	2.053	**	1.488	1.773	*	0.591	0.405		2.326	1.091	
AUDITOR	+	0.006	0.327		0.012	0.541		0.013	0.279		-0.007	-0.177	
CHAIR IND	+	0.011	0.589		0.027	0.722		-0.007	-0.067		0.020	0.273	
ENERGY & MINING		0.077	3.645	***	0.074	3.387	***	0.096	2.444	**	0.058	1.881	*
TELCO & UTILITY		-0.100	-2.395	**	-0.106	-2.478	**	-0.133	-1.733	*	-0.065	-1.098	
MANUFACTURING		0.012	0.466		0.013	0.529		0.038	1.053		0.000	-0.007	
RETAIL		-0.004	-0.146		-0.001	-0.044		0.006	0.161		-0.012	-0.254	
Max VIF		5.012											
Adj. R ²		0.070			0.060			0.075			0.038		
F-stat			4.761	***		4.161	***		3.020	***		1.974	**

PRICE-SENS / NON-PROC CD = percentage of non-procedural disclosures that are price-sensitive; BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; BOARD SIZE = number of directors on the board; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; NONIND DIR SH = percentage of shares associated with the non-independent directors; IND DIR SH = percentage of shares associated with the independent directors; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

has indicated a statistically significant relation, only one was significant at the 1% level. Given the five different types of CD's tested, a more robust result might have been expected. In contrast TOP 20 SH were significantly associated with CD's in fourteen of the twenty tests (all with a negative sign), ten significant at the 1% level. Board independence not only has a limited relation to CD's, it is comprehensively outperformed by a number of other variables, most notably TOP 20 SH.

4.3 Further Tests

(1) Dichotomous board independence measure (Appendix B):

Although the PGCG&BP were seen as encouraging high percentages of board independence the regulation only stipulated a 'majority of the board should be independent' (Principle 2.1). Panels A and B of Tables 5 to 10 were replicated with boards dichotomously classified; 1 if majority of directors on the board were independent (non-executive with no affiliation with substantial shareholders), 0 otherwise. For Equation (1) a stepwise regression was calculated for the two individual years 2006, 2007. The *Nagelkerke R²* and (χ^2) were calculated providing 42.4% (162.097) for 2006 and 40.7% (156.693) in 2007, both significant at the 1% level. This result using the dichotomous measure of board independence is similar to Table 5 except three more variables were significant in 2006.

In comparing the CD's in Table 6 to 10 a similar pattern is seen with the dichotomous measure. Results for the Logistical and 2SLS regressions are almost identical. Again three of the pooled results produce significant co-efficients. The only one at the 1%

level was again for BOARD IND – Fitted with the Proportion of Price Sensitive Non-procedural CD's.

Using the dichotomous board independence classification Total CD's had an adjusted R^2 of 28.8% (and F -statistic of 21.242) showing a lack divergence from Table 6 continuous board independence variable of R^2 of 28.9% (and F -statistic of 21.325). Similar patterns were exhibited with the other four types of CD's. These results reinforce the conclusion that while CD's are associated with a number of other variables, especially other governance variables and the association is greatest for Total CD's the continuous and the dichotomous designation of board independence has weak association and has minimal effect on the overall power of each regression.

(2) Different designations of 'independence' (Appendices C & D)

Consistent with the different designations of independence in Chapter Two, further testing was undertaken to determine the sensitivity of the results to these alternate designations. Measured as a continuous variable, independence was designated as: (i) non-executive (Appendix C), (ii) non-executive without related party transactions, (iii) non-executive without executive functions in the last three years, (iv) non-executive with less than 10 years tenure (Appendix D), (v) non-executive with neither related party nor substantial shareholder affiliation and (vi) non-executive without any associations or affiliations. The regressions as shown in Tables 5 to 10 are replicated.

In regressing the various designations of director independence against the financial, governance and industry variables (Equation 1), similar relations are found. The greatest explanatory power was for non-executive directors with neither related party nor

affiliation with a substantial shareholder (unreported), adjusted R^2 in 2006 of 43.2% and 38.9% in 2007 (the respective F -statistic were 35.149 and 36.798). Remarkably similar results were also seen when independence was designated as non-executive with no associations or affiliations (unreported): adjusted R^2 in 2006 of 43.2% and 36.6% in 2007 (F -statistic 35.145 and 29.846). The other four designations of director independence had adjusted R^2 around 34% (see Appendix C Tables 1 and Appendix D Table 1 for two of the six results).

Using Equation 2, the association between the five types of CD's, the six designations of director independence and the firm variables, a very consistent set of results was revealed. In all cases, no matter how 'independence' was designated Total CD's had the highest association and Price Sensitive Non-procedural the lowest. This is unsurprising given BOARD IND is usually not significant and the other independent variables do not change.

With six designations of independence (and two regressions for each designation OLS Pooled and 2SLS Pooled) twelve regressions were calculated for each type of CD. BOARD IND was significant in 5/12 of the regressions for Total CD's, 2/12 Price sensitive CD's, 7/12 Non-procedural CD's, 9/12 the proportion of Non-procedural/Price sensitive CD's and 10/12 proportion of Price sensitive/Non-procedural CD's. The most consistent association was for the proportion of Price sensitive/Non-procedural CD's which were significantly and negatively associated with BOARD IND, which also was found in the 'main' and 'dichotomous' results.

Turning to the alternate designations of independence I find, when independence is designated as ‘non-executive’ (Appendix C), only 1/10 of the regressions had a significant result for BOARD IND, but for both ‘non-executive with less than 10 years tenure’ (Appendix D) and ‘non-executive without any associations or affiliations’ 8/10 of the regressions were significant for BOARD IND, half at the 1% level. Given the results for ‘non-executive with less than 10 years tenure’, the results for ‘non-executive without any associations or affiliations’ are not unexpected, because the latter group includes all of the directors in the former, plus some more that also overlap with other designations. For Total CD’s the co-efficients were positive, whereas for all other types of CD’s the co-efficients are negative (except the ‘dichotomous’ designation of independence and ‘non-procedural CD’s where it is positive and significant at the 10% level).

The inconsistencies across different types of CD’s and for different designations of independence, adds confusion rather than clarity to the main results. Why directors with more than ten years of tenure (Appendix D) being excluded from the ‘independent’ designation appears to result in a significant association with most types of CD’s when the association between this designation of independence and the financial, governance and industry variables produced one of the lowest adjusted R^2 is not clear (Appendix D Table 1). This is especially unenlightening given the negative association for most types of CD’s but the positive co-efficient for Total CD’s. One may postulate that the lack of experience as a director allows executives to release more total information but less ‘accountable’ information.

(3) Alternate model specification (Appendix E)

In the main results (Tables 6-10) BOARD IND-Observed is highly significant for only one type of CD and BOARD IND-Fitted is not significant in any of the 2SLS. Therefore an alternate model specification is called for that may produce predicted results.

To increase the power of the 2SLS a third instrumental variable, BOARD SIZE has been chosen. BOARD SIZE is highly correlated with BOARD IND and significant at the 1% level with all other variables except IND DIR SH and NONIND DIR SH. The results in Table 6 for BOARD SIZE and TOTAL CD's, may be due to this correlation. Further while board size may be expected to be associated with board independence (given the larger the board the more room for independent directors as discussed in Chapter Two) a larger number of directors is not likely to affect CD's in the same way. More directors may mean more opinions as to the information to be disclosed, but equally more directors may substitute for more disclosure.

The results in Appendix E, Table 1 show substantially lower adjusted R^2 as expected, but the same pattern with the highest adjusted R^2 on the Stepwise 2006 results; 42.6% for the Main Results (Table 5) and 34.1% for the Alternate Model (Appendix E, Table 1).

Of greater interest is the association between the various types of CD's and BOARD IND-Fitted. In Appendix E, Tables 2-6, six of the fifteen 2SLS regressions have significant results, two at the 1% level. The highly significant results were both for 2SLS in 2006, for TOTAL CD's (Appendix E, Table 2) and the proportion of NON-

PROC/PRICE SENS CD's (Appendix E, Table 5). Why these two results for 2006 are highly significant and the corresponding 2007 results are not significant is unclear. Even the pooled results are only significant for NON-PROC/PRICE SENS CD's (Appendix E, Table 5, Panel B) and only at the 10% level.

The adjusted R^2 for most types of CD's and most of the regressions were marginally lower in the Alternate Model, compared to the Main Results. No consistently different pattern of the variables that were significant was observed. The alternate model, while providing more significant associations between BOARD IND-Fitted and different types of CD's does not appear to have changed the overall results.

5. Conclusion and Limitations

This study examined the association between board independence and five types of continuous disclosures. Based on a sample of 450 firms in 2006 and 2007 and the pooled results, the study has used a two-stage least squares regression model in order to overcome the likely correlation of board independence with not only CD's but also other financial characteristics, governance variables and industry controls, which are also likely to be correlated to CD's. This endogeneity may result in biased ordinary least squares regression estimates. To test for endogeneity, a VIF was calculated and found to be below the critical 10 value. The theory and previous empirical evidence provided little clear guidance as to the firm characteristics and governance variables to be included, the way each should be measured and the expected direction of association.

The significance association between board independence and various types of continuous disclosures in only three of the twenty main regressions brings into question board independence providing the effective PGCG&BP regulatory outcome of firm accountability. Both the main regressions and those using the dichotomous measure of board independence resulted in a significant co-efficient at the 1% level only for the proportion of price sensitive CD's that were non-procedural and the BOARD IND – Observed. The further test results, showing a much larger number of significant co-efficients with BOARD IND (designated as non-executive with less than ten years tenure) and CD's is an anomaly. The change from a positive co-efficient for Total CD's to negative for all other statistically significant associations for other types of CD's, and BOARD IND, further adds to the lack of interpretation from this result. Further the sign of the statistically significant coefficients is consistently negative across all other types of CD's except one (Price sensitive CD's with the dichotomous board independence measure).

While all results indicate a significant relation between firm characteristics, governance variables, industry controls, board independence and total CD's in Table 6 (adjusted R^2 28.9%, and remarkably consistent with unreported results for the years 2005–2007 using a different set of variables, an adjusted R^2 of 27.3%), the results for non-procedural disclosures, where the relation was expected to be strongest are not as high (Table 8) adjusted R^2 of 15.3%.

Further research may examine the other aspects of the CD's such as the number of pages in the CD's, those associated with a long trading halt or the day and time of release. Each disclosure as well as classified by firm, codes, number of pages, price

sensitivity and time also have the actual announcement. Because of the large volume of disclosures and the length of some CD's no attempt in this study was made to read the disclosures except to provide a clearer understanding of codes and sub code descriptions to aid in their classification as procedural and non-procedural.⁴²

⁴² Take over disclosures may exceed 500 pages.

Chapter Four

Conclusion

This thesis has expanded on current knowledge by providing evidence on the relation between regulatory changes and board composition. Specifically, I have examined the impact of the PGCG&BP on boards, both in terms of changes in composition and changes in the relation of board composition and firm characteristics. Further the association between board composition and continuous disclosure has been explored as a measure of governance effectiveness.

Chapter Two provided descriptive evidence on board, chairman and committee independence as well as evidence on the links between firm characteristics and the board composition. Specifically Chapter Two has demonstrated that although the number of firms with independent boards increased substantially, especially amongst smaller firms, the increase in the average independence in the sample firms between 2001 and 2007 was modest. Further, it was observed that the relation between board composition and firm characteristics decreased over the period. This Chapter followed a line of research that had suggested in theory there was an expected association between board composition and firm characteristics (Jensen and Meckling 1976; Watts and Zimmerman 1978; Fama and Jensen 1983; Hermalin and Weisbach 1988) and had shown empirically that relation (Denis and Sarin 1999; Arthur 2001; Klein 2002a; Vassallo 2005; Boone, Field, Karpoff and Raheja 2007; Linck, Netter and Yang 2008).

A number of directors' characteristics including executive status and age have long been required to be reported in the directors' report. Only recently had 'independence' status been added. Prior to 2003 in Australia some listed companies voluntarily revealed the status of directors. Prior studies have subjectively classified directors (e.g. Cotter and Silvester 2003; Lim, Matolcsy and Chow 2007). In this thesis I use information extensively from outside the directors' report to objectively classify directors status. While independence is used in corporate governance regulation and research, little attention has been given to designating independence beyond listing and choosing some aspects that impinge upon a non-executive director's status. By testing various designations of independence, this thesis adds to the understanding of 'independence'.

Chapter Three has investigated whether firms with different levels of board independence disclose more and different types of information in the Continuous Disclosure Regime (CDR). Chapter Three has provided evidence that other governance factors are significant associated with all five categories of continuous disclosure, while industry controls, financial characteristics and board independence, in that order, have a decreasingly significant association. In the main tests of the five types of disclosure tested across four test groups, in only three of these tests was board independence significantly associated with the continuous disclosures and only one of these was at the 1% level. Similar results were seen when the minority/majority board independence dichotomous measure was used. In further testing, this association was not as robust for all designations of director independence, especially 'non-executive with less than ten years tenure'. Thus Chapter Three expanded on the general area of existing research exploring the relation between corporate governance and positive firm outcomes (see Larcker, Richardson and Tuna 2007). Specifically the relation between board

composition and voluntary disclosures was explained by triangulating results from other studies that have been limited by the confounding effect of other information released at the same time as the information of interest to the study, such as Chen and Jaggi (2000), Ho and Wong (2001), Eng and Mak (2003), Gul and Leung (2004), Cheng and Courtenay (2006), Lim, Matolcsy and Chow (2007), Hamilton and Thomas (2008) and Kent and Stewart (2008).

To date, researchers have made little use of the data available from the CDR. Unlike other institutional settings, Australian regulation provides both a requirement to report 'non-commercial in confidence' information and to report it through a single portal. This is in contrast to the US where Regulation FD only requires the removal of information asymmetry between outside parties and the UK which allows public disclosure through a firm-chosen media.

This is the first study I am aware that has attempted to look at the overall disclosures, and as such the classification of disclosures as procedural and non-procedural is an obvious limitation. The classification is subjective and dependent on the judgment of the researcher. Other researches may disagree and to inform debate I have provided the complete list of disclosures by primary and sub-code in Appendix 1 and the list and percentages of CD's in Table 2.

There are many opportunities for further research. First, this thesis examined a limited time period. An assumption was made that 2001 would have predated changes in board composition in anticipation of potential corporate governance regulation, but no attempt was made beyond some comparisons with earlier studies (Arthur 2001; Cotter and

Silvester 2003) to verify this assumption. The mean reversion observed in 2007 supports the view that boards over more than a decade have been en masse moving towards higher levels (percentages) of independence. More analysis into the differences between each of the first ten years of this decade would provide stronger evidence of trends and changes in trends over this period of corporate governance regulation.

Second, due to data limitations this thesis was unable to determine a directors 'true' status as independent. Without access to board minutes including voting records it is impossible to assess independence. A non-executive director without any of the factors that may compromise independence, be totally within the control of management. Equally an executive director may act as a director without fear or favour. Access to currently confidential information would shed more light on the independence debate.

Third, the use of the rich source information associated with each continuous disclosure may shed more light on the level of accountability of firms. Beyond codes, sub-codes and price sensitivity the number of pages in the disclosure, the time of day, day of the week, etc may provide a richer data set for analysis. In this thesis no attempt was made to drill down into individual announcements to determine specific content or informativeness. The use of electronic content analysis may shed more light on firms' accountability.

Fourth, this thesis has made no attempt to measure other characteristics of directors such as qualifications, experience, other directorships (busy), age, gender, etc as none of these, although investigated in other studies and/or discussed in the popular press were requirements of the PGCG&BP.

Finally, the predictive model used in Chapter Three identified the fitted as well as observed board independence may be using the ‘incorrect’ financial, governance and industry characteristics. Reasons for this deviation, such as ‘corporate culture’, could also be studied.

This thesis provides important new evidence on the impact of regulation on board composition. First, it has provided evidence on the change in board composition between 2001 and 2007 and the lower association between board composition and firm characteristics in 2007. Second, it has demonstrated that board composition has little association with continuous disclosure. Finally, the findings have suggested that the PGCG&BP regulation while encouraging some (mainly small) firms with minority independent boards to become majority independent, it only marginally increased the mean level (percentage) of independence. Further the lack of an association between board independence and continuous disclosure brings into question one of the main measures of a boards effectiveness, higher levels of accountability as embodied in Principle 5 of the PGCG&BP.⁴³

⁴³ Principle 5: Make timely and balanced disclosure: Promote timely and balanced disclosure of all material matters concerning the company. This means the company must put in place mechanisms designed to ensure compliance with the ASX Listing Rule requirements such that:

- all investors have equal and timely access to material information concerning the company - including its financial situation, performance, ownership and governance
- company announcements are factual and presented in a clear and balanced way. ‘Balance’ requires disclosure of both positive and negative information.

Commentary and guidance:
There should be vetting and authorisation processes designed to ensure that company announcements:

- are made in a timely manner
- are factual
- do not omit material information
- are expressed in a clear and objective manner that allows investors to assess the impact of the information when making investment decisions.

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Appendices

APPENDIX A

Number of Continuous Disclosure Announcements

Primary Code	Sub Code	Description	2006	2007
1	0	Takeover Announcements	439	1,611
1	1	Intention to Make a Takeover offer	37	121
1	2	Bidder's Statement - Off market bid	15	80
1	3	Target's Statement - Off market bid	28	60
1	4	Bidder's Statement - Market bid	-	1
1	5	Target's Statement - Market bid	1	3
1	6	Takeover Offer Document	-	8
1	7	Takeover Offeree Directors' Statement	12	172
1	8	Variation of Takeover Offer	70	181
1	9	Takeover - Other#	211	858
1	10	Supplementary Bidder's Statement	38	88
1	11	Supplementary Target's Statement	27	39
2	0	Shareholder Details	1,969	8,257
2	1	Form 603 - Becoming a substantial s/h	229	1,043
2	2	Form 604 - Change in substantial s/h	597	2,724
2	3	Form 605 - Ceasing to be a substantial s/h	200	800
2	4	Part 6.8 Beneficial ownership	1	1
2	5	Section 689 - Notice	-	-
2	6	Shareholder Details - Other#	134	542
2	7	Section 235 Notice - Director's Interests	-	-
2	8	Initial Director's Interest Notice	94	367
2	9	Change of Director's Interest Notice	621	2,465
2	10	Final Director's Interest Notice	93	315
3	0	Periodic Reports	1,641	4,585
3	1	Annual Report	40	388
3	2	Top 20 Shareholders	43	174
3	3	Preliminary - Final Statement	404	890
3	4	Half Yearly Report	452	904
3	5	Annual Report - continuation of dispatch	-	3
3	6	Trust 6 month accounts	-	-
3	7	Trust 12 month accounts	-	-
3	8	Loan securities on issue	17	28
3	9	Half Yearly Audit Review	1	33
3	10	Half Yearly Director's Statement	1	1
3	11	ASC Annual Audited A/C's	7	152
3	12	ASC Annual Audit Review	1	18
3	13	ASC Annual Directors' Statement	-	16
3	14	Periodic Reports - Other#	575	1,571
3	15	ASC Half Yearly Audited Accounts	7	110
3	16	Net Tangible Asset Backing#	87	256
3	17	Concise Financial Report	3	12
3	18	Daily Fund Update	2	4
3	19	Half Year Director's Report	-	3
3	20	Full Year Director's Report	1	22
4	0	Quarterly Activities Report	627	854
4	1	First Quarter Activities Report	108	134
4	2	Second Quarter Activities Report	238	256
4	3	Third Quarter Activities Report	124	211
4	4	Fourth Quarter Activities Report	151	240
4	5	Quarterly Activities Report - Other	6	13

5	0	Quarterly Cash Flow Report	158	187
5	1	First Quarter Cashflow Report	24	24
5	2	Second Quarter Cashflow Report	54	58
5	3	Third Quarter Cashflow Report	31	46
5	4	Fourth Quarter Cashflow Report	35	56
5	5	Quarterly Cashflow Report - Other	14	3
6	0	Issued Capital	2,423	7,565
6	1	Renounceable Issue	28	81
6	2	Bonus Issue	1	10
6	3	Placement	205	404
6	4	Issues to the Public	-	11
6	5	Capital Reconstruction	5	35
6	6	New Issue Letter of Offer & Acc. Form	1	20
6	7	Alteration to Issued Capital	2	20
6	8	Non-Renounceable Issue	34	155
6	9	Issued Capital - Other	616	1,696
6	10	Prospectus	86	145
6	11	On-Market Buy-Back Scheme	95	160
6	12	Daily Share Buy-Back Notice	348	1,356
6	13	Appendix 3B	1,002	3,472
7	0	Asset Acquisition & Disposal	744	1,385
7	1	Asset Acquisition#	522	1,026
7	2	Asset Disposal#	188	250
7	3	Other#	34	109
8	0	Notice Of Meeting	485	1,264
8	1	Notice Of Annual Meeting	45	253
8	2	Notice of Extraordinary Meeting	7	36
8	3	Results of Meeting	361	641
8	4	Proxy Form	7	117
8	5	Alteration to Notice of Meeting	-	9
8	6	Notice of Meeting - Other	36	106
8	7	Notice of General Meeting	29	102
9	0	Stock Exchange Announcement	404	662
9	1	Suspension from Official Quotation	65	105
9	2	Reinstatement to Official Quotation	48	62
9	3	Removal from Official List	2	18
9	4	Stock Exchange Query	-	1
9	5	Notice Pending	-	-
9	6	Change in Basis of Quotation	-	-
9	7	Trading Halt	222	326
9	8	Admission to Official List	2	11
9	9	Commencement of Official Quotation	4	6
9	10	Stock Exchange Announcement - Other	15	32
9	11	CAP Cancellation	2	13
9	12	CAP Correction	3	6
9	13	End of Day	-	-
9	14	Trading Halt Lifted	41	82
10	0	Dividend Announcement	151	559
10	1	Dividend Books Closing	103	232
10	2	Dividend Pay Date	3	36
10	3	Dividend Rate	4	52
10	4	Dividend Alteration	1	11
10	5	Dividend - Other	40	228
11	0	Progress Report	3,257	5,204
11	1	Progress Report#	2,784	4,664
11	2	Progress Report - Other#	473	540

12	0	Company Administration	490	1,350
12	1	Director Appointment/Resignation	165	605
12	2	Details of Company Address	1	7
12	3	Details of Registered Office Address	17	52
12	4	Details of Share Registry Address	47	33
12	5	Trustee Appointment/Resignation	-	-
12	6	Trust Manager Appointment/Resignation	-	-
12	7	Company Sec. Appointment/Resignation	37	126
12	8	Company Administration - Other	202	482
12	9	Change of Balance Date	2	2
12	10	Trust Deed	4	-
12	11	Articles of Association	1	-
12	12	Constitution	14	43
12	13	Responsible Entity Appointment/Resignation	-	-
13	0	Notice Of Call (Contributing Shares)	-	1
13	1	Announcement of Call	-	-
13	2	Notice of Call to Shareholders	-	1
13	3	Notice of Call - Other	-	-
14	0	Other	488	888
14	1	Other#	317	677
14	2	Internal#	1	-
14	4	Appendix 16A	-	-
14	5	Year 2000 Advice	-	-
14	6	Open Briefing#	134	156
14	11	Overseas Listing	11	15
14	12	Standard & Poor's Announcement	25	40
15	0	Chairman's Address	307	515
15	1	Chairman's Address - Other#	85	69
15	2	Chairman's Address#	222	446
16	0	Letter To Shareholders	67	346
16	1	Letter to Shareholders - Other#	1	21
16	2	Letter to Shareholders#	66	325
17	0	ASX Query	170	189
17	1	ASX Query - Other	-	-
17	2	ASX Query	3	1
17	3	Response to ASX Query	167	188
18	0	Structured Products	140	1,151
18	1	Structured Products - Other	29	134
18	2	Structured Products Issuer Report	1	6
18	3	Structured Products Disclosure Document	10	42
18	4	Structured Products Acceptance	-	3
18	5	Structured Products Trust Deed	1	1
18	6	Structured Products Distribution	45	692
18	7	Structured Products Adjustment	28	194
18	8	Structured Products Supplementary Disclosure	26	79
19	0	Commitments Test Entity Quarterly Reports	272	382
19	1	Commitments Test Entity - First Quarter Reports	38	24
19	2	Commitments Test Entity - Second Quarter Reports	76	91
19	3	Commitments Test Entity - Third Quarter Reports	46	80
19	4	Commitments Test Entity - Fourth Quarter Reports	50	87
19	5	Commitments Test Entity - Other	62	100
		Total Continuous Disclosure	14,232	36,955

designates 'non-procedural' disclosure

APPENDIX B

Dichotomous Specification for Board Independence

Independence = Non-executive with no affiliation with a substantial shareholder

Table 1: The Relation Between Board Independence and Firm Characteristics (450 firms each year).									
$MAJ\ BOARD\ IND_{i,t} = \alpha + \beta_j \Sigma FINANCIAL\ CHARACTERISTICS_{j,i,t} + \gamma_j \Sigma GOV\ VARIABLES_{j,i,t} + \delta_j \Sigma IND\ CONTROLS_{j,i,t} + \epsilon_{i,t}$									
		Panel A: Step-wise Logit 2006				Panel B: Step-wise Logit 2007			
Variables	Pred. Sign	Co-eff	Wald-stat	p-value		Co-eff	Wald-stat	p-value	
Intercept	+/-	-3.641	4.386	0.036	**	-0.321	0.521	0.471	
NOMIN COM	+	-1.351	4.211	0.040	**	0.726	8.571	0.003	***
NOMIN COM IND	+	2.316	7.081	0.008	***				
BOARD SIZE	+	0.141	2.590	0.108					
ROA	+/-	-1.429	5.149	0.023	**				
MKTBK	+/-	0.070	3.360	0.067	*				
Ln SIZE	+	0.201	3.368	0.066	*				
LOSS	+/-	-0.953	6.196	0.013	**				
Ln COMPLEXITY	+/-	-0.270	3.033	0.082	*	0.278	6.928	0.008	***
TOP 20 SH	+/-	-1.313	3.691	0.055	*	-1.646	6.781	0.009	***
AUDITOR	+	0.838	10.149	0.001	***	0.400	2.655	0.103	
CHAIR IND	+	1.696	46.899	0.000	***	1.441	40.529	0.000	***
RETAIL						0.795	3.583	0.058	*
Nagelkerke R ²		0.357				0.278			
χ^2			132.167	0.000	***		101.198	0.000	***

Table 2: The Relation Between Total Continuous Disclosure, Board Independence and Firm Characteristics

OLS: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{MAJ BOARD IND}_{i,t} - \text{Observed} + \gamma_j \sum \text{FIN CHARACT}_{j,i,t} + \delta_j \sum \text{GOV VAR}_{j,i,t} + \zeta_j \sum \text{IND CONT}_{j,i,t} + \varepsilon_{i,t}$									
2SLS: 1 st stage $\text{MAJ BOARD IND}_{i,t} - \text{Fitted} = \alpha + \beta_j \sum \text{FIN}_{j,i,t} + \gamma_j \sum \text{GOV}_{j,i,t} + \delta_j \sum \text{IND}_{j,i,t}$									
2 nd stage: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{MAJ BOARD IND}_{i,t} - \text{Fitted} + \gamma_j \sum \text{FIN}_{j,i,t} + \delta_j \sum \text{GOV}_{j,i,t} + \zeta_j \sum \text{IND}_{j,i,t} + \varepsilon_{i,t}$									
Panel A: OLS Pooled					Panel B: 2SLS Pooled				
Variables	Pred. Sign	Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	2.219	9.211	0.000	***	2.206	9.088	0.000	***
MAJ BOARD IND - Observed	+/-	0.030	0.717	0.474					
MAJ BOARD IND - Fitted	+/-					0.035	0.544	0.587	
ROA	+	0.049	0.533	0.594		0.046	0.505	0.614	
LEVERAGE	-	-0.041	-0.780	0.436		-0.041	-0.767	0.444	
MKTBK	+	0.007	1.417	0.157		0.007	1.454	0.146	
Ln SIZE	+	0.097	6.159	0.000	***	0.097	6.169	0.000	***
LOSS	+	0.176	3.075	0.002	***	0.175	3.049	0.002	***
Ln COMPLEXITY	+	0.018	0.843	0.399		0.017	0.808	0.419	
BOARD SIZE	+	0.051	4.147	0.000	***	0.051	4.176	0.000	***
TOP 20 SH	+	-0.431	-4.088	0.000	***	-0.433	-4.100	0.000	***
AGE	-	-0.002	-2.249	0.025	**	-0.002	-2.140	0.033	**
NONIND DIR SH	-	-0.506	-4.787	0.000	***	-0.499	-4.379	0.000	***
IND DIR SH	+/-	-0.204	-0.165	0.869		-0.217	-0.173	0.862	
AUDITOR	+	-0.042	-1.031	0.303		-0.042	-1.032	0.302	
CHAIR IND	+	-0.062	-1.566	0.118		-0.063	-1.533	0.126	
ENERGY & MINING		0.197	4.301	0.000	***	0.196	4.285	0.000	***
TELCO & UTILITY		-0.060	-0.665	0.506		-0.063	-0.691	0.489	
MANUFACTURING		-0.177	-3.250	0.001	***	-0.178	-3.269	0.001	***
RETAIL		-0.126	-2.050	0.041	**	-0.125	-2.040	0.042	**
Max VIF		5.013				5.011			
Adj. R ²		0.288				0.288			
F-stat			21.242	0.000	***		21.224	0.000	***

Table 5: The Relation Between Non-Procedural Price-Sensitive Continuous Disclosure, etc

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	-0.182	-1.950	0.052	*	-0.190	-2.016	0.044	**
MAJ BOARD IND - Observed	+/-	-0.021	-1.276	0.202					
MAJ BOARD IND - Fitted	+/-					0.011	0.442	0.658	
ROA	+	0.012	0.331	0.741		0.014	0.398	0.691	
LEVERAGE	-	-0.071	-3.478	0.001	***	-0.071	-3.463	0.001	***
MKTBK	+	0.002	0.820	0.412		0.001	0.745	0.457	
Ln SIZE	+	0.034	5.522	0.000	***	0.033	5.430	0.000	***
LOSS	+	0.034	1.546	0.123		0.037	1.672	0.095	*
Ln COMPLEXITY	+	0.020	2.468	0.014	**	0.020	2.427	0.015	**
BOARD SIZE	+	0.013	2.736	0.006	***	0.013	2.699	0.007	***
TOP 20 SH	+	-0.168	-4.107	0.000	***	-0.170	-4.144	0.000	***
AGE	-	0.000	-1.211	0.226		0.000	-1.113	0.266	
NONIND DIR SH	-	-0.113	-2.748	0.006	***	-0.088	-2.002	0.046	**
IND DIR SH	+/-	0.189	0.395	0.693		0.057	0.117	0.907	
AUDITOR	+	-0.007	-0.442	0.659		-0.011	-0.686	0.493	
CHAIR IND	+	0.015	0.953	0.341		0.007	0.470	0.638	
ENERGY & MINING		0.033	1.848	0.065	*	0.034	1.940	0.053	*
TELCO & UTILITY		-0.051	-1.464	0.144		-0.054	-1.518	0.129	
MANUFACTURING		0.000	0.012	0.991		0.001	0.044	0.965	
RETAIL		-0.062	-2.630	0.009	***	-0.064	-2.711	0.007	***
Max VIF		5.013				5.011			
Adj. R ²		0.247				0.245			
F-stat			17.355	0.000	***		17.247	0.000	***

Table 6: The Relation Between Price-Sensitive Non-Procedural Continuous Disclosure, etc

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	0.767	6.926	0.000	***	0.751	6.677	0.000	***
MAJ BOARD IND - Observed	+/-	-0.072	-3.709	0.000	***				
MAJ BOARD IND - Fitted	+/-					0.015	0.518	0.604	
ROA	+	0.024	0.565	0.572		0.032	0.745	0.456	
LEVERAGE	-	-0.032	-1.306	0.192		-0.032	-1.282	0.200	
MKTBK	+	-0.004	-1.621	0.105		-0.004	-1.823	0.069	*
Ln SIZE	+	-0.012	-1.622	0.105		-0.013	-1.826	0.068	*
LOSS	+	0.019	0.713	0.476		0.027	1.030	0.303	
Ln COMPLEXITY	+	0.016	1.649	0.099	*	0.016	1.586	0.113	
BOARD SIZE	+	0.003	0.471	0.638		0.002	0.358	0.720	
TOP 20 SH	+	-0.028	-0.572	0.567		-0.032	-0.659	0.510	
AGE	-	-0.001	-2.218	0.027	**	-0.001	-2.059	0.040	**
NONIND DIR SH	-	-0.127	-2.611	0.009	***	-0.062	-1.181	0.238	
IND DIR SH	+/-	1.109	1.948	0.052	*	0.743	1.281	0.201	
AUDITOR	+	0.007	0.369	0.712		-0.004	-0.209	0.834	
CHAIR IND	+	0.007	0.399	0.690		-0.013	-0.669	0.504	
ENERGY & MINING		0.076	3.593	0.000	***	0.081	3.805	0.000	***
TELCO & UTILITY		-0.094	-2.262	0.024	**	-0.099	-2.351	0.019	**
MANUFACTURING		0.012	0.475	0.635		0.014	0.566	0.571	
RETAIL		-0.002	-0.082	0.935		-0.008	-0.286	0.775	
Max VIF		5.013				5.011			
Adj. R ²		0.073				0.059			
F-stat			4.916	0.000	***		4.104	0.000	***

APPENDIX C

Alternate specification for Board Independence = Non-executive

Table 1: The Relation Between Board Independence and Firm Characteristics (450 firms each year).									
$BOARD\ IND_{i,t} = \alpha + \beta_j \Sigma FIN\ CHARACTERISTICS_{j,i,t} + \gamma_j \Sigma GOV\ VARIABLES_{j,i,t} + \delta_j \Sigma IND\ CONTROLS_{j,i,t} + \varepsilon_{i,t}$									
		Panel A: Step-wise 2006				Panel B: Step-wise 2007			
Variables	Pred. Sign	Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	0.531	16.767	0.000	***	0.520	20.791	0.000	***
NOMIN COM IND	+	0.040	2.304	0.022	**	0.053	3.224	0.001	***
ROA	+/-	-0.055	-1.515	0.130		-0.038	-1.578	0.115	
LEVERAGE	+/-					0.026	1.386	0.167	
LOSS	+/-	-0.051	-2.327	0.020	**				
BOARD SIZE	+					0.010	2.502	0.013	**
TOP 20 SH	+/-	0.071	1.728	0.085	*				
AGE	+	0.001	1.901	0.058	*				
NONIND DIR SH	-	-0.303	-5.209	0.000	***	-0.172	-3.230	0.001	***
IND DIR SH	+	0.255	4.238	0.000	***	0.150	2.975	0.003	***
AUDITOR	+	0.039	2.459	0.014	**	0.035	2.171	0.030	**
CHAIR IND	+	0.125	6.913	0.000	***	0.106	6.113	0.000	***
RETAIL						0.030	1.352	0.177	
Max VIF		2.500				1.411			
Adj. R ²		0.333				0.265			
F-stat			25.887	0.000	***		19.028	0.000	***
Partial R ²		0.012				0.023			
Partial F-stat			5.310	0.022	**		10.397	0.001	***

Table 2: The Relation Between Total Continuous Disclosure, Board Ind and Firm Charact

Table 2: The Relation Between Total Continuous Disclosure, Board Ind and Firm Charact									
OLS: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Observed} + \gamma_j \sum \text{FIN}_{j,i,t} + \delta_j \sum \text{GOV}_{j,i,t} + \zeta_j \sum \text{IND}_{j,i,t} + \epsilon_{i,t}$									
2SLS: 1 st stage $\text{BOARD IND}_{i,t} - \text{Fitted} = \alpha + \beta_j \sum \text{FIN}_{j,i,t} + \gamma_j \sum \text{GOV}_{j,i,t} + \delta_j \sum \text{IND}_{j,i,t}$									
2 nd stage: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Fitted} + \gamma_j \sum \text{FIN}_{j,i,t} + \delta_j \sum \text{GOV}_{j,i,t} + \zeta_j \sum \text{IND}_{j,i,t} + \epsilon_{i,t}$									
Panel A: OLS Pooled					Panel B: 2SLS Pooled				
Variables	Pred. Sign	Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	2.237	9.385	0.000	***	1.930	4.985	0.000	***
BOARD IND - Observed	+/-	0.056	0.479	0.632					
BOARD IND - Fitted	+/-					0.680	1.075	0.283	
ROA	+	0.040	0.435	0.664		0.071	0.736	0.462	
LEVERAGE	-	-0.047	-0.884	0.377		-0.053	-0.993	0.321	
MKTBK	+	0.006	1.318	0.188		0.006	1.335	0.182	
Ln SIZE	+	0.096	6.246	0.000	***	0.095	6.149	0.000	***
LOSS	+	0.168	2.932	0.003	***	0.185	3.096	0.002	***
Ln COMPLEXITY	+	0.019	0.883	0.378		0.018	0.860	0.390	
BOARD SIZE	+	0.051	4.143	0.000	***	0.047	3.638	0.000	***
TOP 20 SH	+	-0.431	-4.106	0.000	***	-0.455	-4.227	0.000	***
AGE	-	-0.002	-2.376	0.018	**	-0.002	-2.548	0.011	**
NONIND DIR SH	-	-0.607	-4.190	0.000	***	-0.069	-1.429	0.153	
IND DIR SH	+/-	-0.539	-3.785	0.000	***	0.193	4.200	0.000	***
AUDITOR	+	-0.043	-1.050	0.294		-0.059	-0.648	0.517	
CHAIR IND	+	-0.044	-0.967	0.334		-0.180	-3.293	0.001	***
ENERGY & MINING		0.191	4.165	0.000	***	-0.135	-2.186	0.029	**
TELCO & UTILITY		-0.059	-0.646	0.519		-0.455	-2.162	0.031	**
MANUFACTURING		-0.179	-3.274	0.001	***	-0.659	-3.548	0.000	***
RETAIL		-0.128	-2.086	0.037	**	-0.119	-1.361	0.174	
Max VIF		4.757				13.566			
Adj R ²		0.289				0.289			
F-stat			21.268	0.000	***		21.342	.000a	

Table 3: The Relation Between Price-Sensitive Continuous Disclosure, etc

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	0.612	9.346	0.000	***	0.683	6.419	0.000	***
BOARD IND - Observed	+/-	-0.025	-0.773	0.440					
BOARD IND - Fitted	+/-					-0.169	-0.971	0.332	
ROA	+	0.015	0.603	0.547		0.008	0.301	0.764	
LEVERAGE	-	-0.019	-1.281	0.201		-0.017	-1.180	0.238	
MKTBK	+	-0.006	-4.239	0.000	***	-0.006	-4.264	0.000	***
Ln SIZE	+	-0.006	-1.498	0.135		-0.006	-1.428	0.154	
LOSS	+	0.036	2.264	0.024	**	0.032	1.930	0.054	*
Ln COMPLEXITY	+	-0.004	-0.661	0.509		-0.004	-0.633	0.527	
BOARD SIZE	+	-0.014	-4.123	0.000	***	-0.013	-3.671	0.000	***
TOP 20 SH	+	-0.053	-1.851	0.065	*	-0.048	-1.621	0.105	
AGE	-	-0.001	-2.069	0.039	**	0.000	-1.805	0.071	*
NONIND DIR SH	-	0.083	2.075	0.038	**	0.005	0.346	0.730	
IND DIR SH	+/-	0.043	1.100	0.271		0.037	2.913	0.004	***
AUDITOR	+	-0.002	-0.140	0.889		-0.035	-1.411	0.159	
CHAIR IND	+	0.003	0.257	0.797		-0.012	-0.773	0.440	
ENERGY & MINING		0.037	2.932	0.003	***	0.005	0.300	0.765	
TELCO & UTILITY		-0.035	-1.414	0.158		0.047	0.822	0.411	
MANUFACTURING		-0.012	-0.786	0.432		0.071	1.389	0.165	
RETAIL		0.004	0.211	0.833		0.020	0.854	0.393	
Max VIF		4.757				13.566			
Adj R ²		0.193				0.194			
F-stat			12.970	0.000	***		12.994	0.000	***

Table 4: The Relation Between Non-Procedural Continuous Disclosure, etc

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	-0.062	-0.973	0.331		-0.069	-0.660	0.509	
BOARD IND - Observed	+/-	0.002	0.060	0.953					
BOARD IND - Fitted	+/-					0.015	0.088	0.930	
ROA	+	0.003	0.132	0.895		0.004	0.150	0.881	
LEVERAGE	-	-0.041	-2.928	0.003	***	-0.041	-2.917	0.004	***
MKTBK	+	0.000	0.039	0.969		0.000	0.041	0.967	
Ln SIZE	+	0.024	5.868	0.000	***	0.024	5.843	0.000	***
LOSS	+	0.045	2.931	0.003	***	0.046	2.828	0.005	***
Ln COMPLEXITY	+	0.003	0.601	0.548		0.003	0.599	0.550	
BOARD SIZE	+	0.000	-0.136	0.892		-0.001	-0.153	0.879	
TOP 20 SH	+	-0.175	-6.222	0.000	***	-0.176	-6.083	0.000	***
AGE	-	0.000	-1.419	0.156		0.000	-1.393	0.164	
NONIND DIR SH	-	-0.017	-0.448	0.655		-0.007	-0.539	0.590	
IND DIR SH	+/-	-0.013	-0.331	0.741		0.031	2.531	0.012	**
AUDITOR	+	-0.006	-0.592	0.554		0.042	1.740	0.082	*
CHAIR IND	+	-0.005	-0.382	0.703		-0.019	-1.315	0.189	
ENERGY & MINING		0.031	2.530	0.012	**	-0.033	-1.994	0.046	**
TELCO & UTILITY		0.042	1.740	0.082	*	-0.014	-0.252	0.801	
MANUFACTURING		-0.019	-1.314	0.189		-0.015	-0.304	0.761	
RETAIL		-0.033	-1.999	0.046	**	-0.006	-0.266	0.790	
Max VIF		4.757				13.566			
Adj R ²		0.153				0.153			
F-stat			10.048	0.000	***		10.049	0.000	***

Table 5: The Relation Between Non-Procedural Price-Sensitive Continuous

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	-0.134	-1.450	0.148		-0.143	-0.951	0.342	
BOARD IND - Observed	+/-	-0.046	-1.021	0.308					
BOARD IND - Fitted	+/-					-0.026	-0.107	0.914	
ROA	+	0.015	0.433	0.665		0.017	0.445	0.657	
LEVERAGE	-	-0.069	-3.396	0.001	***	-0.070	-3.390	0.001	***
MKTBK	+	0.001	0.655	0.512		0.001	0.628	0.530	
Ln SIZE	+	0.032	5.438	0.000	***	0.032	5.406	0.000	***
LOSS	+	0.033	1.495	0.135		0.034	1.465	0.143	
Ln COMPLEXITY	+	0.020	2.451	0.014	**	0.020	2.472	0.014	**
BOARD SIZE	+	0.014	2.869	0.004	***	0.013	2.692	0.007	***
TOP 20 SH	+	-0.161	-3.966	0.000	***	-0.162	-3.890	0.000	***
AGE	-	0.000	-1.154	0.249		0.000	-1.157	0.248	
NONIND DIR SH	-	-0.182	-3.241	0.001	***	-0.008	-0.431	0.666	
IND DIR SH	+/-	-0.086	-1.555	0.120		0.034	1.937	0.053	*
AUDITOR	+	-0.007	-0.467	0.641		-0.051	-1.462	0.144	
CHAIR IND	+	0.005	0.262	0.793		0.001	0.030	0.976	
ENERGY & MINING		0.034	1.904	0.057	*	-0.061	-2.547	0.011	**
TELCO & UTILITY		-0.051	-1.466	0.143		-0.177	-2.168	0.030	**
MANUFACTURING		0.001	0.034	0.973		-0.089	-1.237	0.216	
RETAIL		-0.060	-2.542	0.011	**	0.002	0.068	0.946	
Max VIF		4.757				13.566			
Adj R ²		0.248				0.248			
F-stat			17.509	0.000	***		17.431	0.000	***

Table 6: The Relation Between Price-Sensitive Non-Procedural Continuous

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	0.868	7.872	0.000	***	0.954	5.309	0.000	***
BOARD IND - Observed	+/-	-0.122	-2.280	0.023	**				
BOARD IND - Fitted	+/-					-0.294	-1.002	0.317	
ROA	+	0.026	0.606	0.545		0.018	0.396	0.692	
LEVERAGE	-	-0.027	-1.106	0.269		-0.026	-1.046	0.296	
MKTBK	+	-0.004	-1.944	0.052	*	-0.004	-2.002	0.046	**
Ln SIZE	+	-0.015	-2.161	0.031	**	-0.015	-2.111	0.035	**
LOSS	+	0.020	0.770	0.441		0.016	0.587	0.557	
Ln COMPLEXITY	+	0.015	1.561	0.119		0.016	1.617	0.106	
BOARD SIZE	+	0.004	0.699	0.485		0.005	0.823	0.411	
TOP 20 SH	+	-0.032	-0.658	0.510		-0.026	-0.523	0.601	
AGE	-	-0.001	-2.045	0.041	**	-0.001	-1.869	0.062	*
NONIND DIR SH	-	-0.125	-1.858	0.063	*	0.011	0.504	0.614	
IND DIR SH	+/-	-0.035	-0.534	0.593		0.079	3.700	0.000	***
AUDITOR	+	0.004	0.205	0.838		-0.097	-2.302	0.022	**
CHAIR IND	+	0.010	0.468	0.640		0.016	0.613	0.540	
ENERGY & MINING		0.078	3.670	0.000	***	-0.003	-0.097	0.923	
TELCO & UTILITY		-0.097	-2.316	0.021	**	-0.166	-1.698	0.090	*
MANUFACTURING		0.015	0.610	0.542		-0.001	-0.014	0.989	
RETAIL		-0.004	-0.138	0.890		0.030	0.751	0.453	
Max VIF		4.757				13.566			
Adj R ²		0.061				0.057			
F-stat			4.262	0.000	***		4.010	0.000	***

APPENDIX D

Alternate specification for Board Independence = Non-executive, tenure less than ten years

Table 1: The Relation Between Board Independence and Firm Characteristics (450 firms each year).									
$BOARD\ IND_{i,t} = \alpha + \beta_j \Sigma FIN\ CHARACTERISTICS_{j,i,t} + \gamma_j \Sigma GOV\ VARIABLES_{j,i,t} + \delta_j \Sigma IND\ CONTROLS_{j,i,t} + \varepsilon_{i,t}$									
		Panel A: Step-wise 2006				Panel B: Step-wise 2007			
Variables	Pred. Sign	Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	0.530	16.727	0.000	***	0.396	10.593	0.000	***
NOMIN COMIND	+	0.040	2.309	0.021	**	0.067	3.223	0.001	***
ROA	+/-	-0.055	-1.514	0.131		-0.106	-2.469	0.014	**
LEVERAGE	+/-					0.040	1.610	0.108	
LOSS	+/-	-0.051	-2.313	0.021	**	-0.048	-1.740	0.082	
TOP 20 SH	+/-	0.070	1.703	0.089	*	0.082	1.520	0.129	
AGE	+	0.001	1.916	0.056	*				
NONIND DIR SH	-	-0.293	-5.131	0.000	***	-0.190	-2.925	0.004	***
IND DIR SH	+	0.259	4.236	0.000	***	0.261	3.359	0.001	***
AUDITOR	+	0.039	2.469	0.014	**				
CHAIR IND	+	0.126	6.936	0.000	***	0.206	10.850	0.000	***
Max VIF		2.500				2.394			
Adj R ²		0.332				0.341			
F-stat			25.753	0.000	***		30.026	0.000	***
Partial R ²		0.012				0.023			
Partial F-stat			5.331	0.021	**		10.386	0.001	***

Table 2: The Relation Between Total Continuous Disclosure, Board Ind and Firm Characteristics

OLS: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Observed} + \gamma_j \sum \text{FIN}_{j,i,t} + \delta_j \sum \text{GOV}_{j,i,t} + \zeta_j \sum \text{IND}_{j,i,t} + \varepsilon_{i,t}$									
2SLS: 1 st stage $\text{BOARD IND}_{i,t} - \text{Fitted} = \alpha + \beta_j \sum \text{FIN}_{j,i,t} + \gamma_j \sum \text{GOV}_{j,i,t} + \delta_j \sum \text{IND}_{j,i,t}$									
2 nd stage: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Fitted} + \gamma_j \sum \text{FIN}_{j,i,t} + \delta_j \sum \text{GOV}_{j,i,t} + \zeta_j \sum \text{IND}_{j,i,t} + \varepsilon_{i,t}$									
Panel A: OLS Pooled					Panel B: 2SLS Pooled				
Variables	Pred. Sign	Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	2.127	9.080	0.000	***	1.962	7.125	0.000	***
BOARD IND - Observed	+/-	0.269	2.779	0.006	***				
BOARD IND - Fitted	+/-					0.619	1.850	0.065	*
ROA	+	0.057	0.628	0.530		0.095	0.979	0.328	
LEVERAGE	-	-0.051	-0.969	0.333		-0.056	-1.066	0.287	
MKTBK	+	0.006	1.323	0.186		0.007	1.515	0.130	
Ln SIZE	+	0.096	6.277	0.000	***	0.096	6.272	0.000	***
LOSS	+	0.179	3.135	0.002	***	0.203	3.351	0.001	***
Ln COMPLEXITY	+	0.020	0.937	0.349		0.018	0.857	0.392	
BOARD SIZE	+	0.048	3.911	0.000	***	0.047	3.875	0.000	***
TOP 20 SH	+	-0.444	-4.251	0.000	***	-0.470	-4.400	0.000	***
AGE	-	-0.002	-2.497	0.013	**	-0.002	-2.574	0.010	**
NONIND DIR SH	-	-0.522	-3.888	0.000	***	-0.444	-2.905	0.004	***
IND DIR SH	+/-	-0.611	-3.999	0.000	***	-0.701	-4.035	0.000	***
AUDITOR	+	-0.052	-1.290	0.198		-0.060	-1.460	0.145	
CHAIR IND	+	-0.050	-1.152	0.249		-0.118	-1.560	0.119	
ENERGY & MINING		0.192	4.205	0.000	***	0.189	4.128	0.000	***
TELCO & UTILITY		-0.057	-0.632	0.528		-0.059	-0.657	0.511	
MANUFACTURING		-0.180	-3.314	0.001	***	-0.178	-3.276	0.001	***
RETAIL		-0.137	-2.242	0.025	**	-0.131	-2.135	0.033	**
Max VIF		4.768				7.225			
Adj R ²		0.294				0.291			
F-stat			21.838	0.000	***		21.495	0.000	***

Table 3: The Relation Between Price-Sensitive Continuous Disclosure, etc

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	0.640	9.962	0.000	***	0.620	8.187	0.000	***
BOARD IND - Observed	+/-	-0.074	-2.773	0.006	***				
BOARD IND - Fitted	+/-					-0.022	-0.238	0.812	
ROA	+	0.011	0.440	0.660		0.015	0.576	0.565	
LEVERAGE	-	-0.017	-1.167	0.243		-0.018	-1.244	0.214	
MKTBK	+	-0.006	-4.283	0.000	***	-0.006	-4.348	0.000	***
Ln SIZE	+	-0.007	-1.573	0.116		-0.007	-1.583	0.114	
LOSS	+	0.033	2.101	0.036	**	0.035	2.124	0.034	**
Ln COMPLEXITY	+	-0.004	-0.753	0.452		-0.004	-0.662	0.508	
BOARD SIZE	+	-0.013	-3.882	0.000	***	-0.014	-4.026	0.000	***
TOP 20 SH	+	-0.048	-1.681	0.093	*	-0.051	-1.723	0.085	*
AGE	-	0.000	-1.945	0.052	*	0.000	-2.008	0.045	**
NONIND DIR SH	-	0.060	1.626	0.104		0.071	1.703	0.089	*
IND DIR SH	+/-	0.057	1.357	0.175		0.044	0.917	0.359	
AUDITOR	+	0.001	0.099	0.921		0.000	-0.031	0.976	
CHAIR IND	+	0.001	0.067	0.947		-0.009	-0.436	0.663	
ENERGY & MINING		0.037	2.982	0.003	***	0.038	3.046	0.002	***
TELCO & UTILITY		-0.036	-1.432	0.152		-0.035	-1.424	0.155	
MANUFACTURING		-0.012	-0.788	0.431		-0.012	-0.821	0.412	
RETAIL		0.007	0.406	0.685		0.005	0.313	0.755	
Max VIF		4.768				7.225			
Adj R ²		0.202				0.195			
F-stat			13.618	0.000	***		13.081	0.000	***

Table 4: The Relation Between Non-Procedural Continuous Disclosure, etc

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	-0.027	-0.424	0.672		0.095	1.300	0.194	
BOARD IND - Observed	+/-	-0.061	-2.356	0.019	**				
BOARD IND - Fitted	+/-					-0.330	-3.704	0.000	***
ROA	+	-0.002	-0.072	0.943		-0.029	-1.126	0.260	
LEVERAGE	-	-0.039	-2.805	0.005	***	-0.035	-2.453	0.014	**
MKTBK	+	0.000	-0.012	0.991		0.000	-0.320	0.749	
Ln SIZE	+	0.024	5.829	0.000	***	0.024	5.854	0.000	***
LOSS	+	0.043	2.804	0.005	***	0.026	1.645	0.100	
Ln COMPLEXITY	+	0.003	0.478	0.632		0.003	0.535	0.593	
BOARD SIZE	+	0.001	0.232	0.816		0.002	0.491	0.624	
TOP 20 SH	+	-0.171	-6.100	0.000	***	-0.153	-5.384	0.000	***
AGE	-	0.000	-1.216	0.224		0.000	-0.897	0.370	
NONIND DIR SH	-	-0.024	-0.675	0.500		-0.085	-2.084	0.037	**
IND DIR SH	+/-	-0.015	-0.374	0.709		0.054	1.160	0.246	
AUDITOR	+	-0.003	-0.255	0.799		0.004	0.346	0.730	
CHAIR IND	+	-0.006	-0.504	0.614		0.047	2.305	0.021	**
ENERGY & MINING		0.030	2.484	0.013	**	0.031	2.546	0.011	**
TELCO & UTILITY		0.042	1.725	0.085	*	0.043	1.789	0.074	*
MANUFACTURING		-0.020	-1.348	0.178		-0.020	-1.371	0.171	
RETAIL		-0.030	-1.857	0.064	*	-0.032	-1.967	0.050	**
Max VIF		4.768				7.225			
Adj R ²		0.162				0.170			
F-stat			10.671	0.000	***		11.220	0.000	***

Table 5: The Relation Between Non-Procedural Price-Sensitive CDs, etc

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	-0.110	-1.208	0.227		0.127	1.209	0.227	
BOARD IND - Observed	+/-	-0.089	-2.359	0.019	**				
BOARD IND - Fitted	+/-					-0.614	-4.788	0.000	***
ROA	+	0.010	0.293	0.769		-0.043	-1.148	0.251	
LEVERAGE	-	-0.067	-3.313	0.001	***	-0.058	-2.846	0.005	***
MKTBK	+	0.001	0.562	0.575		0.000	0.186	0.852	
Ln SIZE	+	0.032	5.393	0.000	***	0.032	5.448	0.000	***
LOSS	+	0.033	1.471	0.142		0.001	0.028	0.978	
Ln COMPLEXITY	+	0.019	2.360	0.018	**	0.020	2.433	0.015	**
BOARD SIZE	+	0.015	3.179	0.002	***	0.017	3.580	0.000	***
TOP 20 SH	+	-0.160	-3.952	0.000	***	-0.126	-3.071	0.002	***
AGE	-	0.000	-1.031	0.303		0.000	-0.598	0.550	
NONIND DIR SH	-	-0.156	-2.999	0.003	***	-0.274	-4.689	0.000	***
IND DIR SH	+/-	-0.115	-1.948	0.052	*	0.019	0.290	0.772	
AUDITOR	+	-0.004	-0.284	0.776		0.008	0.534	0.594	
CHAIR IND	+	0.002	0.145	0.885		0.105	3.603	0.000	***
ENERGY & MINING		0.032	1.824	0.069	*	0.033	1.887	0.059	*
TELCO & UTILITY		-0.052	-1.495	0.135		-0.050	-1.436	0.151	
MANUFACTURING		0.000	0.001	0.999		0.000	-0.012	0.990	
RETAIL		-0.060	-2.517	0.012	**	-0.062	-2.651	0.008	***
Max VIF		4.768				7.225			
Adj R ²		0.252				0.266			
F-stat			17.826	0.000	***		19.133	0.000	***

Table 6: The Relation Between Price-Sensitive Non-Procedural Continuous

Variables	Pred. Sign	Panel A: OLS Pooled				Panel B: 2SLS Pooled			
		Co-eff	t-stat	p-value		Co-eff	t-stat	p-value	
Intercept	+/-	0.849	7.794	0.000	***	0.904	7.070	0.000	***
BOARD IND - Observed	+/-	-0.088	-1.958	0.051	*				
BOARD IND - Fitted	+/-					-0.205	-1.320	0.187	
ROA	+	0.024	0.570	0.569		0.012	0.259	0.795	
LEVERAGE	-	-0.025	-1.045	0.297		-0.024	-0.961	0.337	
MKTBK	+	-0.004	-2.031	0.043	**	-0.005	-2.165	0.031	**
Ln SIZE	+	-0.016	-2.212	0.027	**	-0.016	-2.217	0.027	**
LOSS	+	0.022	0.834	0.405		0.014	0.512	0.609	
Ln COMPLEXITY	+	0.015	1.498	0.135		0.015	1.552	0.121	
BOARD SIZE	+	0.005	0.803	0.422		0.005	0.808	0.419	
TOP 20 SH	+	-0.034	-0.708	0.479		-0.026	-0.522	0.602	
AGE	-	-0.001	-2.064	0.039	**	-0.001	-1.981	0.048	**
NONIND DIR SH	-	-0.079	-1.266	0.206		-0.105	-1.487	0.137	
IND DIR SH	+/-	-0.084	-1.188	0.235		-0.054	-0.673	0.501	
AUDITOR	+	0.002	0.119	0.905		0.005	0.259	0.796	
CHAIR IND	+	0.008	0.400	0.690		0.031	0.878	0.380	
ENERGY & MINING		0.078	3.664	0.000	***	0.079	3.710	0.000	***
TELCO & UTILITY		-0.098	-2.328	0.020	**	-0.097	-2.306	0.021	**
MANUFACTURING		0.015	0.582	0.561		0.014	0.560	0.575	
RETAIL		-0.005	-0.184	0.854		-0.007	-0.256	0.798	
Max VIF		4.768				7.225			
Adj R ²		0.061				0.058			
F-stat			4.222	.000a			4.096	0.000	***

APPENDIX E

Alternate Model Specification

(Including board size as an instrumental variable and excluding directors' shareholdings.)

Table 1: The Relation Between Board Independence and Firm Characteristics (450 firms each year).

$$\text{BOARD IND}_{i,t} = \alpha + \beta_j \Sigma \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \gamma_j \Sigma \text{GOV VARIABLES}_{j,i,t} + \delta_j \Sigma \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$$

Variables	Pred. Sign	Panel A: Full Pooled			Panel B: Step-wise Pooled			Panel C: Step-wise 2006			Panel D: Step-wise 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	0.350	4.190	***	0.337	4.574	***	0.153	1.352		0.470	12.924	***
# NOMIN COM	+	-0.027	-0.752					-0.060	-1.335				
# NOMIN COM IND	+	0.082	1.896	*	0.053	3.173	***	0.113	2.024	**	0.070	3.029	***
# BOARD SIZE	+	0.007	1.593		0.007	1.683	*	0.008	1.357				
ROA	+/-	-0.058	-1.746	*	-0.060	-1.887	*	-0.074	-1.685	*			
LEVERAGE	+/-	-0.006	-0.303										
MKTBK	+/-	0.002	1.417		0.002	1.464		0.003	1.320				
Ln SIZE	+	0.007	1.220		0.008	1.686	*	0.020	2.791	***			
LOSS	+/-	-0.034	-1.666	*	-0.037	-1.910	*	-0.047	-1.738	*			
Ln COMPLEXITY	+/-	0.000	0.040					-0.018	-1.778	*	0.018	2.141	**
TOP 20 SH	+/-	-0.107	-3.039	***	-0.110	-3.211	***	-0.092	-2.038	**	-0.125	-2.508	**
AGE	+	0.000	0.871										
AUDITOR	+	0.050	3.372	***	0.049	3.390	***	0.056	2.924	***	0.043	2.040	**
CHAIR IND	+	0.182	13.847	***	0.183	14.013	***	0.184	10.495	***	0.174	9.081	***
ENERGY & MINING		-0.008	-0.512										
TELCO & UTILITY		-0.023	-0.699										
MANUFACTURING		0.000	0.016										
RETAIL		0.023	1.040		0.028	1.433					0.040	1.346	
Adj. R ²		0.291			0.295			0.341			0.258		
F-stat			22.735	***		38.655	***		22.167	***		26.988	***
Partial R ²		0.015			0.016			0.019			0.020		
Partial F-stat			4.555	**		7.214	***		2.781	*		9.177	***

BOARD IND = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); NOMIN COM = 1 if firm has a nomination committee, 0 otherwise; NOMIN COM IND = percentage of independent directors on the nomination committee; BOARD SIZE = number of directors on the board; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

designates instrumental variable

Table 2: The Relation Between Total Continuous Disclosure, Board Independence and Firm Characteristics utilising both OLS and 2SLS (450 firms each year).

OLS: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Observed} + \gamma_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$

2SLS: 1st stage $\text{BOARD IND}_{i,t} - \text{Fitted} = \alpha + \beta_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \gamma_j \sum \text{GOV VARIABLES}_{j,i,t} + \delta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t}$

2nd stage: $\ln \text{TOTAL CD}_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Fitted} + \gamma_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t} + \varepsilon_{i,t}$

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	1.704	7.621	***	1.639	6.382	***	2.308	7.622	***	0.793	1.524	
BOARD IND - Observed	+/-	0.301	3.206	***									
BOARD IND - Fitted	+/-				0.565	1.127		2.908	3.069	***	0.799	0.796	
ROA	+	-0.015	-0.158		-0.006	-0.067		0.307	2.133	**	-0.117	-0.824	
LEVERAGE	-	-0.097	-1.836	*	-0.096	-1.803	*	-0.080	-1.127		-0.100	-1.279	
MKTBK	+	0.010	2.052	**	0.010	1.983	**	-0.009	-1.110		0.019	2.692	***
Ln SIZE	+	0.133	9.580	***	0.129	8.151	***	0.021	0.649		0.164	7.806	***
LOSS	+	0.177	3.035	***	0.183	3.029	***	0.275	3.155	***	0.190	2.149	**
Ln COMPLEXITY	+	0.024	1.137		0.024	1.094		0.071	2.256	**	0.016	0.433	
TOP 20 SH	+	-0.598	-5.993	***	-0.569	-4.969	***	-0.337	-2.119	**	-0.502	-2.528	**
AGE	-	-0.002	-2.396	**	-0.002	-2.295	**	-0.002	-1.544		-0.002	-1.655	*
AUDITOR	+	-0.049	-1.198		-0.063	-1.282		-0.219	-2.812	***	-0.071	-0.870	
CHAIR IND	+	-0.031	-0.766		-0.080	-0.797		-0.532	-2.868	***	-0.120	-0.644	
ENERGY & MINING		0.183	4.008	***	0.181	3.946	***	0.191	3.291	***	0.179	2.521	**
TELCO & UTILITY		-0.045	-0.494		-0.054	-0.579		-0.124	-1.027		0.037	0.268	
MANUFACTURING		-0.178	-3.225	***	-0.178	-3.216	***	-0.141	-1.957	*	-0.180	-2.159	**
RETAIL		-0.151	-2.426	**	-0.156	-2.464	**	-0.106	-1.346		-0.213	-2.067	**
Max VIF		3.739											
Adj. R ²		0.264			0.257			0.232			0.287		
F-stat			22.513	***		21.692			10.019	***		13.024	***

Ln TOTAL CD = natural log of total continuous disclosures; BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

Table 3: The Relation Between Price-Sensitive CDs, Board Independence and Firm Characteristics utilising both OLS and 2SLS (450 firms each year).

OLS: PRICE-SENS CD_{i,t} = $\alpha + \beta$ BOARD IND_{i,t} - Observed + γ_j Σ FINANCIAL CHARACTERISTICS_{j,i,t} + δ_j Σ GOV VARIABLES_{j,i,t} + ζ_j Σ INDUSTRY CONTROLS_{j,i,t} + $\epsilon_{i,t}$

2SLS: 1st stage BOARD IND_{i,t} - Fitted = $\alpha + \beta_j$ Σ FINANCIAL CHARACTERISTICS_{j,i,t} + γ_j Σ GOV VARIABLES_{j,i,t} + δ_j Σ INDUSTRY CONTROLS_{j,i,t}

2nd stage: PRICE-SENS CD_{i,t} = $\alpha + \beta$ BOARD IND_{i,t} - Fitted + γ_j Σ FINANCIAL CHARACTERISTICS_{j,i,t} + δ_j Σ GOV VARIABLES_{j,i,t} + ζ_j Σ INDUSTRY CONTROLS_{j,i,t} +

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	0.712	11.708	***	0.764	10.973	***	0.790	8.647	***	0.687	5.275	***
BOARD IND - Observed	+/-	-0.060	-2.355	**									
BOARD IND - Fitted	+/-				-0.265	-1.951	*	-0.532	-1.859	*	-0.066	-0.264	
ROA	+	0.027	1.054		0.017	0.652		0.039	0.891		-0.024	-0.685	
LEVERAGE	-	-0.010	-0.676		-0.011	-0.774		-0.012	-0.555		-0.011	-0.577	
MKTBK	+	-0.006	-4.671	***	-0.006	-4.356	***	-0.004	-1.736	*	-0.007	-4.048	***
Ln SIZE	+	-0.015	-3.871	***	-0.011	-2.685	***	-0.004	-0.369		-0.014	-2.647	***
LOSS	+	0.034	2.168	**	0.028	1.737	*	0.025	0.933		0.021	0.936	
Ln COMPLEXITY	+	-0.005	-0.940		-0.005	-0.843		-0.016	-1.672	*	-0.001	-0.093	
TOP 20 SH	+	-0.040	-1.490		-0.063	-2.043	**	-0.088	-1.832	*	-0.031	-0.627	
AGE	-	-0.001	-2.137	**	-0.001	-2.177	**	0.000	-0.880		-0.001	-2.170	**
AUDITOR	+	-0.001	-0.106		0.010	0.743		0.031	1.307		-0.004	-0.180	
CHAIR IND	+	-0.005	-0.490		0.033	1.201		0.072	1.291		0.005	0.117	
ENERGY & MINING		0.045	3.634	***	0.045	3.583	***	0.014	0.798		0.080	4.488	***
TELCO & UTILITY		-0.040	-1.612		-0.038	-1.530		-0.026	-0.715		-0.054	-1.552	
MANUFACTURING		-0.008	-0.566		-0.009	-0.581		-0.006	-0.277		-0.011	-0.548	
RETAIL		0.011	0.666		0.015	0.879		0.006	0.267		0.018	0.689	
Max VIF		3.739			12.510			29.900			19.197		
Adj. R ²		0.181			0.180			0.165			0.200		
F-stat			14.268	***		14.125	***		6.918	***		8.491	***

PRICE-SENS CD = percentage of disclosures that are price-sensitive; BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

Table 4: The Relation Between Non-Procedural CDs, Board Independence and Firm Characteristics utilising both OLS and 2SLS (450 firms each year).

OLS: $NON-PROC CD_{i,t} = \alpha + \beta BOARD IND_{i,t} - Observed + \gamma_j \sum FINANCIAL CHARACTERISTICS_{j,i,t} + \delta_j \sum GOV VARIABLES_{j,i,t} + \zeta_j \sum INDUSTRY CONTROLS_{j,i,t} + \epsilon_{i,t}$

2SLS: 1st stage $BOARD IND_{i,t} - Fitted = \alpha + \beta_j \sum FINANCIAL CHARACTERISTICS_{j,i,t} + \gamma_j \sum GOV VARIABLES_{j,i,t} + \delta_j \sum INDUSTRY CONTROLS_{j,i,t}$

2nd stage: $NON-PROC CD_{i,t} = \alpha + \beta BOARD IND_{i,t} - Fitted + \gamma_j \sum FINANCIAL CHARACTERISTICS_{j,i,t} + \delta_j \sum GOV VARIABLES_{j,i,t} + \zeta_j \sum INDUSTRY CONTROLS_{j,i,t} +$

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	-0.066	-1.123		-0.025	-0.368		-0.126	-1.561		-0.055	-0.410	
BOARD IND - Observed	+/-	-0.003	-0.114										
BOARD IND - Fitted	+/-				-0.167	-1.270		0.291	1.155		0.135	0.526	
ROA	+	0.002	0.075		-0.007	-0.261		0.044	1.148		-0.021	-0.570	
LEVERAGE	-	-0.042	-3.008	***	-0.043	-3.099	***	-0.041	-2.164	**	-0.045	-2.245	**
MKTBK	+	0.000	0.110		0.000	0.344		0.000	0.215		-0.002	-1.244	
Ln SIZE	+	0.024	6.671	***	0.027	6.491	***	0.018	2.058	**	0.021	3.934	***
LOSS	+	0.045	2.935	***	0.040	2.530	**	0.082	3.537	***	0.017	0.763	
Ln COMPLEXITY	+	0.003	0.578		0.004	0.654		0.006	0.698		0.002	0.197	
TOP 20 SH	+	-0.181	-6.892	***	-0.200	-6.658	***	-0.176	-4.150	***	-0.146	-2.868	***
AGE	-	0.000	-1.444		0.000	-1.423		0.000	-0.728		-0.001	-1.481	
AUDITOR	+	-0.007	-0.610		0.002	0.183		-0.030	-1.462		-0.007	-0.317	
CHAIR IND	+	-0.001	-0.062		0.030	1.135		-0.059	-1.190		-0.019	-0.404	
ENERGY & MINING		0.032	2.661	***	0.031	2.586	***	0.022	1.411		0.048	2.662	***
TELCO & UTILITY		0.042	1.722	*	0.042	1.744	*	0.038	1.173		0.044	1.252	
MANUFACTURING		-0.019	-1.277		-0.019	-1.302		-0.015	-0.762		-0.020	-0.937	
RETAIL		-0.033	-2.010	**	-0.030	-1.807	*	-0.041	-1.950	*	-0.022	-0.843	
Max VIF		3.739											
Adj. R ²		0.156			0.157			0.177			0.141		
F-stat			12.069	***		12.197	***		7.445	***		5.933	***

NON-PROC CD = percentage of disclosures that are non-procedural (items 1-9, 3-14, 3-16, 4-5, 6-9, 7, 8-3, 10-5, 11, 14-1, 14-2, 14-6, 15); BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

Table 5: The Relation Between Non-Procedural Price-Sensitive CDs, Board Ind. and Firm Characteristics utilising both OLS and 2SLS (450 firms each year).

OLS: NON-PROC/PRICE-SENS $CD_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Observed} + \gamma_j \sum \text{FIN CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t} + \epsilon_{i,t}$

2SLS: 1st stage $\text{BOARD IND}_{i,t} - \text{Fitted} = \alpha + \beta_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \gamma_j \sum \text{GOV VARIABLES}_{j,i,t} + \delta_j \sum \text{INDUSTRY CONTROLS}_{j,i,t}$

2nd stage: $\text{NON-PROC / PRICE-SENS } CD_{i,t} = \alpha + \beta \text{BOARD IND}_{i,t} - \text{Fitted} + \gamma_j \sum \text{FINANCIAL CHARACTERISTICS}_{j,i,t} + \delta_j \sum \text{GOV VARIABLES}_{j,i,t} + \zeta_j \sum \text{INDUSTRY}$

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	-0.273	-3.181	***	-0.196	-2.000	**	-0.379	-3.099	***	-0.228	-1.247	
BOARD IND - Observed	+/-	-0.015	-0.409										
BOARD IND - Fitted	+/-				-0.320	-1.675	*	1.038	2.710	***	0.077	0.218	
ROA	+	-0.003	-0.098		-0.019	-0.517		0.106	1.829	*	-0.023	-0.459	
LEVERAGE	-	-0.083	-4.128	***	-0.086	-4.244	***	-0.082	-2.873	***	-0.086	-3.138	***
MKTBK	+	0.002	1.193		0.003	1.470		-0.001	-0.267		0.000	-0.025	
Ln SIZE	+	0.042	7.987	***	0.047	7.826	***	0.012	0.905		0.042	5.714	***
LOSS	+	0.034	1.543		0.025	1.095		0.118	3.348	***	-0.007	-0.210	
Ln COMPLEXITY	+	0.022	2.678	***	0.023	2.775	***	0.046	3.628	***	0.009	0.719	
TOP 20 SH	+	-0.208	-5.444	***	-0.242	-5.561	***	-0.120	-1.871	*	-0.191	-2.742	***
AGE	-	0.000	-1.179		0.000	-1.160		0.000	-0.666		-0.001	-1.301	
AUDITOR	+	-0.007	-0.434		0.010	0.523		-0.083	-2.624	***	0.001	0.042	
CHAIR IND	+	0.029	1.849	*	0.086	2.240	**	-0.183	-2.444	**	0.031	0.478	
ENERGY & MINING		0.028	1.612		0.027	1.523		0.052	2.206	**	0.013	0.530	
TELCO & UTILITY		-0.050	-1.413		-0.049	-1.383		-0.097	-1.982	**	-0.007	-0.151	
MANUFACTURING		-0.001	-0.033		-0.001	-0.063		0.027	0.920		-0.018	-0.618	
RETAIL		-0.069	-2.887	***	-0.063	-2.626	***	-0.055	-1.745	*	-0.074	-2.043	**
Max VIF		3.739											
Adj. R ²		0.237			0.239			0.260			0.240		
F-stat			19.576	***		19.810	***		11.534	***		10.434	***

NON-PROC / PRICE-SENS CD = Percentage of price-sensitive disclosures that are non-procedural; BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.

Table 6: The Relation Between Price-Sensitive / Non-Procedural CDs, Board Ind and Firm Characteristics utilising both OLS and 2SLS (450 firms each year).

OLS: PRICE-SENS / NON-PROC CD_{i,t} = $\alpha + \beta$ BOARD IND_{i,t} - Observed + $\gamma_j \sum$ FIN CHARACTERISTICS_{j,i,t} + $\delta_j \sum$ GOV VARIABLES_{j,i,t} + $\zeta_j \sum$ IND CONTROLS_{j,i,t} + $\varepsilon_{i,t}$

2SLS: 1st stage BOARD IND_{i,t} - Fitted = $\alpha + \beta_j \sum$ FINANCIAL CHARACTERISTICS_{j,i,t} + $\gamma_j \sum$ GOV VARIABLES_{j,i,t} + $\delta_j \sum$ INDUSTRY CONTROLS_{j,i,t}

2nd stage: PRICE-SENS / NON-PROC CD_{i,t} = $\alpha + \beta$ BOARD IND_{i,t} - Fitted + $\gamma_j \sum$ FINANCIAL CHARACTERISTICS_{j,i,t} + $\delta_j \sum$ GOV VARIABLES_{j,i,t} + $\zeta_j \sum$ INDUSTRY

Variables	Pred. Sign	Panel A: OLS Pooled			Panel B: 2SLS Pooled			Panel C: 2SLS 2006			Panel D: 2SLS 2007		
		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat		Co-eff	t-stat	
Intercept	+/-	0.787	7.736	***	0.867	7.454	***	0.919	6.085	***	0.650	2.931	***
BOARD IND - Observed	+/-	-0.092	-2.161	**									
BOARD IND - Fitted	+/-				-0.412	-1.816	*	0.169	0.357		-0.044	-0.103	
ROA	+	0.018	0.432		0.003	0.076		0.093	1.300		-0.019	-0.313	
LEVERAGE	-	-0.035	-1.473		-0.038	-1.562		-0.029	-0.827		-0.037	-1.094	
MKTBK	+	-0.004	-1.697	*	-0.003	-1.449		-0.008	-2.070	**	-0.002	-0.591	
Ln SIZE	+	-0.011	-1.729	*	-0.006	-0.844		-0.031	-1.918	*	0.001	0.074	
LOSS	+	0.022	0.823		0.013	0.459		0.045	1.037		0.009	0.247	
Ln COMPLEXITY	+	0.016	1.669	*	0.017	1.753	*	0.029	1.855	*	0.006	0.360	
TOP 20 SH	+	-0.076	-1.671	*	-0.112	-2.154	**	0.018	0.229		-0.139	-1.646	
AGE	-	-0.001	-2.138	**	-0.001	-2.175	**	-0.001	-1.148		-0.001	-1.993	**
AUDITOR	+	0.005	0.247		0.022	0.984		-0.003	-0.066		-0.009	-0.255	
CHAIR IND	+	0.020	1.082		0.080	1.750	*	-0.043	-0.469		0.024	0.296	
ENERGY & MINING		0.079	3.798	***	0.078	3.749	***	0.102	3.532	***	0.057	1.896	*
TELCO & UTILITY		-0.100	-2.382	**	-0.097	-2.307	**	-0.119	-1.982	**	-0.072	-1.216	
MANUFACTURING		0.016	0.622		0.015	0.606		0.042	1.169		-0.003	-0.078	
RETAIL		-0.006	-0.221		0.000	-0.011		0.005	0.133		-0.016	-0.360	
Max VIF		3.739											
Adj. R ²		0.061			0.060			0.077			0.031		
F-stat			4.901	***		4.803	***		3.489	***		1.957	**

PRICE-SENS / NON-PROC CD = percentage of non-procedural disclosures that are price-sensitive; BOARD IND - Observed = percentage of independent directors on the board (non-executive with no affiliation with substantial shareholders); BOARD IND - Fitted = percentage of independent directors on the board, as predicted from the 1st stage OLS; ROA = Return-on-Assets (EBIT / Average Total Assets); LEVERAGE = debt / market value of equity; MKTBK = market value of equity / book value of equity; Ln SIZE = natural log of total assets; LOSS = 1 if EBIT was negative; 0 otherwise; Ln COMPLEXITY = natural log of 1+ number of total subsidiaries; TOP 20 SH = percentage of shares owned by the largest 20 shareholders; AGE = years since incorporation; AUDITOR = 1 if firm's auditor was top tier, 0 otherwise; CHAIR IND = 1 if board chairperson is independent, 0 otherwise; ENERGY & MINING = 1 if firm is predominantly in the energy or mining sectors, 0 otherwise; TELCO & UTILITY = 1 if firm is predominantly in the telecommunications or utilities industries, 0 otherwise; MANUFACTURING = 1 if firm is predominantly involved in manufacturing, 0 otherwise; RETAIL = 1 if firm is predominantly involved in retail, 0 otherwise. *** = significant at the p=1% level, ** = significant at the p = 5% level, * = significant at the p = 10% level.