CORPORATE GOVERNANCE AND EARNINGS MANAGEMENT: AN AUSTRALIAN PERSPECTIVE

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Abstract

This study examines the extent to which the first-time adoption of the Australian Stock Exchange (ASX) Corporate Governance Council's corporate governance principles and recommendations was associated with lower levels of earnings management. Cross-sectional results indicate that the existence of an audit committee was associated with lower levels of earnings management in pre-, but not post-, recommendations. Lower director ownership was associated with higher levels of earnings management pre-, but not post-, recommendations. On the other hand, the existence of a remuneration committee was associated with lower levels of earnings management pre- and post-recommendations. In addition, longitudinal analysis shows that, following the first-time adoption, the only governance mechanism associated with reductions in earnings management was the establishment of a remuneration committee.

Keywords: Corporate Governance, Earnings Management, Stock Exchange

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1 Introduction

The notion that companies should possess strong corporate governance mechanisms in order to enhance the quality of their performance and accounting practices is not new (e.g. Cadbury Report, 1992). Rather, the spate of inappropriate accounting practices in the early 2000s, resulting in the demise of many well-known and large public companies such as Enron and WorldCom in the US and HIH and OneTel in Australia, has resulted in an increased level of awareness and enhancement by legislators and regulators of the importance of corporate governance. For example, the Sarbanes-Oxley Act was passed in July 2002 in the US to strengthen corporate board independence and improve financial reporting quality. Widespread concerns and subsequent responses to inadequate standards and practices of corporate governance have not been confined to North America (Beekes and Brown, 2006). Following the passage of the Sarbanes-Oxley Act (2002), relevant governance codes and principles have also been introduced in other countries[9]. In Australia, the Australian Securities Exchange Corporate Governance Council (ASX CGC, hereafter) published the first edition of best practice recommendations in 2003 as a major step towards enhancing the corporate governance practices of Australian firms. We examine the extent to which adoption of the ASX CGC's corporate governance principles and recommendations was associated with lower levels of earnings management[10] in a large sample of listed Australian companies between 2001 and 2003.

There have been a large number of empirical studies examining the role of corporate governance mechanisms in reducing fraudulent financial reporting practices (Beasley, 1996; Beasley *et al*., 2000; Sharma, 2004; Owens-Jackson *et al*., 2009), in increasing accounting quality (Beekes *et al*., 2004; Kent *et al*., 2010), in enhancing informativeness of corporate disclosures (Beekes and Brown, 2006), in valuing firms (Henry, 2008), and in increasing accounting conservatism (García Lara *et al*., 2009). Another subset of empirical research, which has gained popularity in recent years, is about the potential relationship between corporate governance and

[9] For a complete list of governance codes around the world, see European Corporate Governance Institute's (ECGI) website: http://www.ecgi.org/codes/all_codes.php.

[10] Earnings management is the "purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to merely facilitating the neutral operation of the process)" Schipper (1989).

earnings management. These studies have considered whether corporate governance mechanisms, such as enhanced board independence and audit committees, can lower the level of earnings management (Klein, 2002; Xie *et al*., 2003; Park and Shin, 2004; Davidson *et al*., 2005; Duh *et al*., 2009). Further research is, however, needed to evaluate whether compliance with regulations and recommendations regarding governance mechanisms, such as the ASX CGC recommendations, is in fact associated with reductions in earnings management. Such evidence may have policy implications for regulators in setting future corporate governance regimes.

Our study addresses this issue and makes three contributions to the existing literature. First, we provide both cross-sectional and longitudinal empirical evidence regarding the role of corporate governance mechanisms in relation to earnings management in Australia using a large sample of companies. It has previously been stated that most studies using Australian data have primarily been descriptive (Kiel and Nicholson, 2003), and only a small number of empirical studies have considered whether enhancement of corporate governance mechanisms, such as increasing board independence and introducing board sub-committees, reduces earnings management (He *et al.*, 2009; Kent *et al.*, 2010). Further, these studies have adopted a cross-sectional research design only (Davidson *et al.*, 2005; Hutchinson *et al.* 2008; He *et al*., 2009)[11]. Cross-sectional studies, however, typically have difficulties in drawing causal implications because of the possible endogeneity relationship existing between board/ownership structures, and performance (e.g. Bhagat and Black, 2002; Anderson and Reeb, 2003). Beattie and Jones (2000) suggest that a longitudinal setting is a more efficient context for testing the managerial manipulation hypothesis. In this study, in addition to a cross-sectional design, we adopt a longitudinal approach to consider whether *changes* in the level of corporate governance mechanisms, including board structure and the establishment of audit and remuneration committees, constrain earnings management as measured by discretionary accruals. Thus our selection of 2001 and 2003 financial year-end data enables us to compare corporate governance practices and their effects before and after the release of the first edition of ASX CGC's recommendations (published in March 2003). While reporting requirements of the recommendations applied from the financial year commencing 1 January 2003, companies were strongly encouraged to make early adoption to ease the transition. In addition, a number of high-profile corporate collapses (e.g. HIH, OneTel, etc) in 2002 meant that companies had an additional incentive to voluntarily adopt the recommendations early[12].

Second, our study shows that the existence and establishment of a remuneration committee is consistently associated with lower levels of earnings management. While board structure and audit committees have previously been considered as potential mechanisms to impact on the level of earnings management and accounting quality, few studies have considered the relationship between the establishment of a remuneration committee and earnings management[13]. This is especially interesting for future regulatory debates as the current listing requirements of the ASX mandate only the establishment of an audit committee.

Third, prior studies suggest that director ownership can decrease the incentive to manage earnings but also provides the opportunity and incentive to manipulate earnings (Gul *et al.*, 2003)[14]. While the existing literature has mixed findings on whether such insider ownership is beneficial or detrimental to firm performance and earnings quality, we provide evidence that lower levels of director ownership may not necessarily be beneficial in reducing earnings management in Australian firms.

The remainder of the paper is structured as follows. The next two sections review the existing literature on corporate governance and earnings management, and develop the hypotheses to be tested in this study. This is followed by the methodology section. We then examine and discuss our findings from the study. Finally, conclusions and suggestions for future research are presented.

2 Corporate governance and earnings management in Australia

Corporate governance is the "framework of rules, relationships, systems and processes within and by which authority is exercised and controlled in

[11] Most of the existing studies using data from the US, UK and Canada, also adopt a cross-sectional research design only, the exception being Klein (2002). Klein considers, in addition to the cross-sectional analysis, whether the change in the level of independence over a one-year period had any impact on earnings management and finds some support for the argument.

[12] This is also evident in the 2002 and 2004 Horwath Reports which show that the vast majority of Australian companies made an effort to improve their governance during the financial year ending 2003.

[13] For example, Koh et al. (2007) consider the relationship between abnormal accruals and corporate governance of Australian companies. While they examine the independence of compensation committee members, they do not examine whether the establishment of such a committee is associated with lower earnings management.

[14] ASX CGC indirectly recommends a lower level of director ownership via board independence: the definition of independent directors include that they should not be 'substantial' shareholders of the company (Principle 2.1).

corporations"[15]. It can also impact on how the objectives of the company are set and achieved, how risks are monitored and assessed, and how performance is optimised (ASX CGC 2003). As such, good corporate governance structures should encourage companies to create value and improve the quality of earnings and thus constrain earnings management.

Prior research has examined a variety of reasons for earnings management including agency costs, information asymmetries, job security, and avoiding earnings losses and earnings decreases (Fields *et al*., 2001). The examination of the association between corporate governance structures and the practice of earnings management has gained much interest over the last decade, due especially to the events surrounding the demise of US corporations such as Enron. It is generally acknowledged that these corporate failures had worldwide repercussions, both on account of the scope of their commercial activities, and because of the associated demise of the accounting firm, Arthur Andersen (Robins, 2006).

In addition, at the same time in Australia, there also were several noteworthy corporate bankruptcies, including mobile telecommunications company OneTel, retailer Harris Scarfe, and insurance giant HIH, in circumstances similar to those in the US. Public scrutiny regarding the circumstances under which corporations operate and the demand for answers as to how future collapses can be prevented ran high in Australia as well. Consequently, the Australian response to corporate collapse has been influenced by US responses, notably the introduction of the Sarbanes-Oxley Act in 2002. Changes in corporate governance practices were seen to be required (Robins, 2006) and, subsequently, the governance best practice recommendations by ASX CGC were issued in March 2003, with reporting requirement to apply from 1 January 2003[16].

The publication of such recommendations also led to a number of studies which examined the status of corporate governance structures in Australia. For example, Kiel and Nicholson (2003) and Da Silva Rosa *et al*. (2004) provide theoretical discussions on Australian corporate governance practices. In addition, there are several empirical studies using Australian data, which have found mixed results regarding the impact of corporate governance mechanisms on firm performance (Kiel and Nicholson 2003; Linden and Matolcsy 2004), firm value (Matolcsy *et al*. 2004), and accruals quality (Kent *et al.*, 2010).

While existing research on the relationship between corporate governance and earnings management has predominantly used US data, there are now an increasing number of empirical studies examining this relationship in other countries[17]. For example, Bradbury *et al.* (2006) consider data from Singapore and Malaysia, Ahmed *et al*. (2006) analyse data from New Zealand, Beekes *et al*. (2004) consider the association based on UK data, Park and Shin (2004) examine the relationship using data from Canada, and Saleh *et al*. (2007) consider evidence from Malaysia. In Australia, Davidson *et al*. (2005) provide an extensive analysis on the role of corporate governance structure in constraining earnings management by examining board structure and the composition of audit committees (see also Hutchinson *et al.* 2008). These studies, however, are based on a cross-sectional analysis of the relationship. Our study extends the existing literature by applying a longitudinal as well as cross-sectional approach, and also examines the impact of changes in ownership structure and the establishment of a remuneration committee, in addition to board independence and the audit committee, as potential governance mechanisms to constrain earnings management in Australia.

3 Hypotheses

The governance structure of a firm consisting of functions and processes is established to oversee and influence the actions of the firm's management (Davidson *et al*., 2005). While there are many different governance mechanisms which may be associated with earnings management, we examine the association between board structure (including independence and the establishment of audit and remuneration committees), as per the ASX CGC's recommendations, and earnings management. The board of directors and its committees are consistently recognised as the most important control mechanisms available to companies because they form the apex of a firm's internal governance structure (Fama and Jensen, 1983a; 1983b). In addition, we also examine the association between earnings management and the level of director ownership, one of the determinants of director independence, which has also been linked to earnings management on its own.

[15] Justice Owen in the HIH Royal Commission, The Failure of HIH Insurance Volume 1 (2003; p.101)

[16] A maintained assumption in the paper is that, at any time, firms vary in how close they are to their optimum set of corporate governance mechanisms. They work towards that optimum set by trial and error and/or by imitation of perceived best practices in other firms. A regulatory intervention such as the ASX recommendations helps firms to improve their corporate governance arrangements. The 2003 ASX guidelines were revised in August 2007 (2nd edition), with further amendments to the 2nd edition released on 30 June 2010. No major changes from the initial 2003 recommendations were made in either the 2nd edition or in the 2010 amendments.

[17] For a comprehensive review of accounting and finance studies on corporate governance, see Brown et al. (2011).

3.1 Board independence and earnings management

Independence of the board from management is perhaps the most important internal governance condition designed to act as an effective monitoring device (Chandler, 1975; Beasley, 1996). The idea that the board should predominantly comprise outside directors, with a presumed independence from management, is neither new nor unexpected. For example, from an agency perspective, the ability of the board to act as an effective monitoring mechanism depends on its independence from management (Davidson *et al*., 2005). Previous studies have supported the notion that the independence of directors would reduce the likelihood of financial statement fraud (Beasley, 1996; Sharma, 2004), enhance conservatism in accounting earnings (Beekes *et al*., 2004; García Lara *et al*., 2009), and constrain earnings management (Klein, 2002; Xie *et al*., 2003; Davidson *et al*., 2005; Duh *et al*., 2009).

In Australia, Principle 2 of the ASX CGC recommendations specifically deals with "structuring the board to add value" for individual corporations. Within this principle, independence of directors is defined as "being independent of management and free of any business or other relationship that could materially interfere with, or could reasonably be perceived to materially interfere with, the exercise of their unfettered and independent judgement". Board independence should have a negative association with earnings management at any given time. In addition, given these recommendations, it is also expected that the board independence of Australian corporations would increase from the financial year 2001 to 2003 and, subsequently, constrain earnings management. Our first set of hypotheses is therefore stated as:

H1a: There is a negative association between board independence and earnings management.

H1b: An increase in board independence reduces the level of earnings management.

3.2 Director ownership and earnings management

There are competing theoretical viewpoints in the literature on whether higher insider or director ownership is beneficial to the firm's outside shareholders and investors. The alignment theory suggests that a higher insider ownership reduces the conflict of interest between managers and shareholders (Type I agency problem), which in turn leads to lower agency costs and lower earnings management. The results of studies based on US firms show that family firms, which have high insider ownership, are significantly less likely to manage earnings (Wang, 2006; Ali *et al.*, 2007). Higher director ownership may also promote a convergence of interests, because the diversion of a firm's cash flows for private benefits would cost the controlling shareholders more by reducing the value of their own equity. For example, Gomes (2000) shows that concentrated ownership serves as a credible commitment that the controlling owners will not expropriate value from outside shareholders.

On the other hand, the expropriation theory suggests that higher director ownership intensifies the conflict of interests between managing owners and outside shareholders (Type II agency problem) since higher managerial ownership enables managers to become entrenched and to extract private benefits at the cost of outside shareholders (Fan and Wong, 2002; Anderson and Reeb, 2003). In this case, firms with higher director ownership may use earnings management to camouflage the reported earnings in order to hide expropriation from outside shareholders. The ASX CGC takes this view into account when providing its definition of director independence which is that an independent director should "not [be] a substantial shareholder" of the company. That is, we expect a positive association between director ownership and the level of earnings management. In addition, due to the ASX recommendations, we expect director ownership to have decreased from 2001 to 2003, resulting in a reduction in earnings management. Our second set of hypotheses is therefore stated as:

H2a: There is a positive association between director ownership and earnings management.

H2b: A decrease in director ownership reduces the level of earnings management.

3.3 Establishment of an audit committee and earnings management

According to Xie *et al*. (2003), providing a monitoring function as part of the overall set of corporate governance mechanisms is not restricted to the board of directors as a whole; rather, the corporate board's sub-committees also play an important role in the overall quality and efficiency of corporate governance practices. It has been argued that most important board decisions originate at the sub-committee level (Kesner, 1988). In this study, we consider whether establishment of two of the board sub-committees, audit and remuneration, is associated with lower levels of earnings management.

One of the roles of an audit committee is to monitor the financial discretion of management by maintaining the credibility of a firm's financial statements (Davidson *et al*., 2005). In Australia, the importance of an audit committee has been recognised by ASX CGC and the establishment of an audit committee has been strongly recommended[18]. However, guidelines about the role and functions of

[18] The listing rules of the ASX and Corporate Law Economic Reform Program (CLERP) 9 subsequently mandated the establishment of an audit committee for the top 300 listed companies in Australia from 2004.

audit committees vary across countries and, in Australia at least, the tasks companies see their audit committees fulfilling also varies (Walker, 2004). Nevertheless, that audit committees can serve as a monitor of on management seems clear enough, even though corporate governance, of course, embraces more than just monitoring. In 2003, the Australian Stock Exchange's listing requirements were amended to require listed companies to have an audit committee (Walker, 2004). The existence of an audit committee should provide a firm with a better corporate governance mechanism, since it is the audit committee that is likely to provide shareholders with the greatest protection in maintaining the credibility of corporate financial statements (Davidson *et al*., 2005; Baxter, 2010).

In addition, previous studies examining the effectiveness of an audit committee as a corporate governance mechanism have argued that an active, well-functioning, and well-structured audit committee may be able to constrain earnings management (Xie *et al.*, 2003). Further, the promotion of an audit committee in many countries is premised on its potential for alleviating weaknesses in corporate governance (Turley and Zaman, 2004). This, in turn, should constrain the earnings management behaviour of the management. Based on the above argument, we expect the existence of an audit committee to be associated with lower levels of earnings management. In addition, the establishment of an audit committee as per the ASX recommendations for the first time should constrain earnings management. Our next set of hypotheses is therefore stated as:

H3a: There is a negative association between the existence of an audit committee and earnings management.

H3b: The establishment of an audit committee reduces the level of earnings management.

3.4 Establishment of a remuneration committee and earnings management

Principle 9 of the 2003 ASX CGC recommendations proposes that the level and composition of remuneration should be sufficient and reasonable, and that such composition should be clearly disclosed in the annual accounts. That is, firms need to adopt a remuneration policy that attracts and maintains talented and motivated directors and employees so as to encourage enhanced performance of the company. ASX CGC also recommends the establishment of a remuneration committee; for larger companies in particular, a remuneration committee can be a more efficient mechanism than the full board for focusing on appropriate remuneration policies which are designed to meet the needs of the company, and to enhance corporate and individual performance. The purpose of a remuneration committee is to determine and review the nature and amount of all compensation for senior managers. The committee helps to alleviate the agency problem by constructing and implementing well-designed executive remuneration packages to align the goals of managers and shareholders (Jensen and Murphy, 1990).

Previous studies have shown that the presence of a remuneration committee is positively related to performance. Main and Johnston (1993) find that the existence of a remuneration committee in UK firms was associated with better performance (see also Conyon and Peck, 1998; Weir and Laing, 2000). In addition, Klein (1998) also finds a weak, but positive link between the existence of a remuneration committee and performance in US firms. Further, Sun *et al.* (2009) investigate whether the quality of a compensation committee has an impact on the relationship between future firm performance and CEO stock option grants. They find that the future performance of a firm is positively associated with stock option grants as compensation committee quality increases. That is, while earnings management is more prevalent in firms where CEO's compensation is closely tied to stock options (Bergstresser and Philippon 2006), governance mechanisms, such as remuneration committees, may be able to alleviate these concerns.

Overall, the potential positive effect of a remuneration committee on constraining earnings management is based on the notion that by providing well-designed remuneration packages to senior managers including the CEO, reviewing and approving corporate goals and objectives relevant to CEO compensation, and evaluating the CEO's performance in light of those goals and objectives (NYSE, 2003), the self-interested behaviour of the management can be controlled. Thus, we expect the existence of a remuneration committee to be associated with lower levels of earnings management and that the new establishment of a remuneration committee will constrain earnings management. The following set of hypotheses is therefore proposed:

H4a: There is a negative association between the existence of a remuneration committee and earnings management.

H4b: The establishment of a remuneration committee reduces the level of earnings management.

3.5 Control variables

In our multiple regression analyses, we control for other governance variables examined in prior studies that may potentially affect the level of earnings management. These control variables include board size and the number of board meetings (Xie *et al.*, 2003), CEO/Board Chair duality (Xie *et al.*, 2003; Davidson *et al.*, 2005), and institutional ownership (Koh, 2007). We also control for the following firm characteristics: return on assets, debt to assets ratio, firm size, market to book ratio, and auditor type.

4 Research methodology

As mentioned previously, most of the existing studies on the association between corporate governance and earnings management have adopted a cross-sectional design only. These studies have documented the magnitude of earnings management and its relationship to corporate governance mechanisms at a point in time. However, concerns have been raised about the potential endogeneity problem embedded in cross-sectional studies, especially regarding those examining the relationship between governance mechanisms and firm performance (Kiel and Nicholson, 2003; Linden and Matolcsy, 2004). As such, employing both cross-sectional and longitudinal designs may be more appropriate in testing the effectiveness of corporate governance mechanisms because it allows us to examine via the changes model – the effect of an external "shock" (the guidelines) on an existing situation (captured by the levels model in 2001).

In our study, we use both a cross-sectional and a longitudinal approach to test whether there is an association between corporate governance mechanisms and the level of earnings management, as well as whether improvements in corporate governance mechanisms can reduce the magnitude of earnings management in Australia. For the purpose of our study, we examine the relationship between selected corporate governance mechanisms and earnings management by Australian corporations in 2001 and 2003, and whether enhancements in these governance mechanisms, as proxied by the adoption of the inaugural ASX CGC recommendations, have resulted in a reduction in earnings management as of 2003.

4.1 Data collection

We initially searched the *Compustat Global Vantage* and *FinAnalysis* databases for Australian listed firms with financial data available for the estimation of Discretionary Accruals (DA), our proxy for earnings management, for the financial years 2001 and 2003. The DA estimation procedure identified 766 Australian companies with the relevant data for both 2001 and 2003.

We then hand-collected, from each sample company's 2001 and 2003 annual reports, relevant information on corporate governance variables including board size, proportion of non-executive directors on boards, CEO/Board Chair duality, existence and structure of audit and remuneration committees, director and institutional ownership, the number of annual board meetings, and auditor type. For the purposes of our study, we adopt the notion that "non-executive" directors satisfy the definition of independent directors; so our proxy differs from an ideal measure of independence. Our decision to use "non-executive" rather than the "independent" definition is based on the fact that we are using a matched sample from 2001 and 2003: in 2001, a widely accepted or recognised definition of independence was not available until it was introduced by the ASX CGC in 2003. That is, in order to provide a consistent definition for both years, we use non-executive directors to proxy independence.

Data on all other control variables in our study were collected from the *Compustat Global Vantage* database. Due to unavailability of data, either on corporate governance or control variables, the final sample comprised a matched sample of 418 Australian companies.

4.2 Discretionary Accruals (DA) – a proxy for earnings management

We use the magnitude of DA as a proxy for earnings management – companies with larger absolute DA are considered more likely to be managing their earnings. Using the modified Jones model to partition total accruals into non-discretionary and discretionary components, we calculate the first DA measure, the Total Discretionary Accruals (TDA).

Previous studies have, however, argued that discretionary accrual estimates are positively correlated with firm performance (e.g. see Ashbaugh *et al.*, 2003; Kothari *et al.*, 2005), and have suggested that the company's performance should be controlled for in calculating DA. In order to improve the robustness of findings, our second DA measure includes a proxy for firm performance (ROA) in the regression model used to estimate DA. That is, consistent with Ashbaugh *et al.* (2003) and Kothari *et al.* (2005), we use the Performance-Adjusted Current Discretionary Accruals (PACDA) as the second measure of DA as the proxy for earnings management. Sections 4.2.1 and 4.2.2 set out how the two proxies of earnings management, TDA and PACDA, are calculated.

4.2.1 Total Discretionary Accruals (TDA) – modified Jones model

Following the modified Jones model, scaled TDA is calculated as the difference between Total Accruals (TA) and Non-Discretionary Accruals (NDA) scaled by total assets at the beginning of the period. TA equals the difference between net income and cash flow from operations. The parameters for calculation of NDA are estimated by fitting, via OLS, the following equation:

$$\frac{TA_{it}}{AT_{it-1}} = a_0\left(\frac{1}{AT_{it-1}}\right) + a_1\left(\frac{\Delta REV_{it}}{AT_{it-1}}\right) + a_2\left(\frac{PPE_{it}}{AT_{it-1}}\right) + \varepsilon_{it} \quad (1)$$

The NDA are calculated using the estimates obtained by fitting the parameters obtained from Equation (1):

$$\frac{NDA_{it}}{AT_{it-1}} = a_0\left(\frac{1}{AT_{it-1}}\right) + a_1\left(\frac{\Delta REV_{it} - \Delta AR_{it}}{AT_{it-1}}\right) + a_2\left(\frac{PPE_{it}}{AT_{it-1}}\right) \quad (2)$$

where:

TA = total accruals, measured as the difference between net income (Earnings before extraordinary items and discontinued operations) and operating cash flows for firm *i* in the year *t*;

ΔREV = change in net revenue for firm *i* from year t-1 to year t;

ΔAR = change in accounts receivable for firm *i* from year t-1 to year t;

PPE = property, plant and equipment for firm *i* in year *t*;

AT= total assets for firm *i* in year *t*;

ε_{it} = error term for firm *i* in year *t*.

Equation (1) was estimated separately for each of two-digit SIC code and year to obtain industry-specific estimates of the coefficients. The minimum number of required observations for each two-digit SIC in the estimation of DA is eight. Change in Accounts Receivable (ΔAR) is not included in estimating the parameters, but in estimating NDA and $\Delta REV_{it} - \Delta AR_{it}$ is change in revenue adjusted for the difference between credit sales and cash received in year t. All variables in our regression models are deflated by lagged total assets to reduce heteroskedascity of residuals (and the intercept is constrained to zero). Total discretionary accruals are calculated as the difference between TA and NDA:

$$\text{Total Discretionary Accruals (TDA)} = \left(\frac{TA_{it}}{AT_{it-1}} - \frac{NDA_{it}}{AT_{it-1}}\right) \quad (3)$$

4.2.2 Performance-Adjusted Current Discretionary Accruals (PACDA)

We adopt the same approach used in Ashbaugh *et al.* (2003) and Kothari *et al.* (2005) to calculate cross-sectional PACDA by including the lagged variable of ROA. The parameters for the calculation of Expected Current Accruals (ECA) are estimated by using the following equation:

$$\frac{TCA_{it}}{AT_{it-1}} = a_0\left(\frac{1}{AT_{it-1}}\right) + a_1\left(\frac{\Delta REV_{it}}{AT_{it-1}}\right) + a_2\left(ROA_{it-1}\right) + \varepsilon_{it} \quad (4)$$

The ECA are then estimated by using the parameters from Equation 4 in the following model:

$$\frac{ECA_{it}}{AT_{it-1}} = a_0\left(\frac{1}{AT_{it-1}}\right) + a_1\left(\frac{\Delta REV_{it} - \Delta AR_{it}}{AT_{it-1}}\right) + a_2\left(ROA_{it-1}\right) \quad (5)$$

where:

TCA = total current accruals are measured as net income (Earnings before extraordinary items and discontinued operations) plus depreciation and amortisation minus operating cash flows for firm *i* in year *t*;

ΔREV = change in net revenue for firm *i* from year t-1 to year *t*;

ΔAR = change in accounts receivable for firm *i* from year t-1 to year t;

ROA = ratio of net income before extraordinary items to total assets for firm *i* in the year *t-1*;
AT= total assets for firm *i* in year *t*;
ε_{it} = error term for firm *i* in year *t*;

Consistent with the models developed by Kothari *et al.* (2005) and Ashbaugh *et al.* (2003), PACDA are therefore defined as:

$$\text{PACDA} = \left(\frac{TCA_{it}}{AT_{it-1}} - \frac{ECA_{it}}{AT_{it-1}}\right) \quad (6)$$

Similar to the estimation procedure for the TDA outlined in Section 4.2.1, the models are estimated separately for each combination of two-digit SIC code and year to obtain industry-specific estimates of the coefficients in Equation (6). In order to test our hypotheses, we use the absolute value of TDA (ABSTDA) and PACDA (ABSPACDA) to measure the extent of earnings management.

4.3 The Regression Model

We use the following regression models to test our hypotheses. Equation (7) is used for a cross-sectional analysis to examine the association between earnings management and the corporate governance mechanisms of 418 matched sample companies (H1a, 2a, 3a, and 4a). We first use a pooled-sample with a year dummy, and then run regressions separately for two sample years, 2001 and 2003:

$$\begin{aligned} DA_{i,j} = {} & a + b_1PNED_{i,j} + b_2DIROWN_{i,j} + b_3AC_{i,j} + b_4REMUN_{i,j} + b_5BDMEET_{i,j} \\ & + b_6BDSIZE_{i,j} + b_7CEO_{i,j} + b_8INSOWN_{i,j} + b_9ROA_{i,j} + b_{10}DTA_{i,j} + b_{11}SIZE_{i,j} \\ & + b_{12}MB_{i,j} + b_{13}BIG4_{i,j} + \varepsilon \end{aligned} \quad (7)$$

Where DA is ABSTDA (ABSPACDA) for firm i in year j. Explanatory variables are for firm i in year j: PNED, DIROWN, AC, and REMUN. Control variables comprise BDMEET, BDSIZE, CEO, INSOWN, ROA, DTA, SIZE, MB, and BIG4. See Appendix A for detailed descriptions.

Equation (8) is used for a longitudinal analysis in order to examine whether an enhanced level of governance mechanisms can constrain earnings management (H1b, 2b, 3b, and 4b):

$$\begin{aligned} DA_i = {} & a + b_1\Delta PNED_i + b_2PNED_{i,2001} + b_3\Delta DIROWN_i + b_4DIROWN_{i,2001} + b_5\Delta AC1_i \\ & + b_6\Delta AC2_i + b_7\Delta REMUN1_i + b_8\Delta REMUN2_i + b_9BDSIZE_i + b_{10}BDMEET_i \\ & + b_{11}CEO_i + b_{12}INSOWN_i + b_{11}ROA_i + b_{12}DTA_i + b_{13}SIZE_i + b_{14}MB_i \\ & + b_{15}BIG4_i + \varepsilon \end{aligned} \quad (8)$$

Where DA is ABSTDA (ABSPACDA) for firm i in 2003. Explanatory variables are ΔPNED (change in the proportion of non–executive directors on the board), ΔDIROWN (change in equity ownership by all directors in fraction), ΔAC1 (dummy variable 1 if AC(2001)=0 and AC(2003)=1; 0 otherwise), ΔAC2 (dummy variable if AC(2001)=1 and AC(2003)=1; 0 otherwise), ΔREMUN1 (dummy variable 1 if REMUN(2001)=0 and REMUN(2003)=1; 0 otherwise), and ΔREMUN2 (dummy variable 1 if REMUN(2001)=1 and REMUN(2003)=1; 0 otherwise). All other variables are control variables. See Appendix A for detailed descriptions.

The specification of two variables regarding the audit committee (ΔAC1 and ΔAC2) and the remuneration committee (ΔREMUN1 and ΔREMUN2) enables us to evaluate the incremental effects of the establishment of board sub-committees, and controls for the effect of (not) having committees throughout the examined period. That is, ΔAC1 (ΔREMUN1) considers firms which have established an audit (remuneration) committee for the first time in 2003. ΔAC2 (ΔREMUN2) controls for those firms with an audit (remuneration) committee in both years.

Table 1[19]. Cross-Sectional Analysis (Panel A: Descriptive Statistics*)

	2001					2003				
	Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max
ABSTDA	0.160	0.071	0.235	0.000	1.417	0.112	0.070	0.124	0.000	0.814
ABSPACDA	0.159	0.096	0.190	0.000	1.165	0.145	0.095	0.155	0.000	0.909
PNED	0.652	0.667	0.198	0.000	1.000	0.666	0.667	0.181	0.000	1.000
DIROWN	0.197	0.134	0.204	0.000	0.843	0.121	0.044	0.162	0.000	0.786
BDSIZE	1.588	1.609	0.341	1.099	2.398	1.579	1.609	0.336	1.099	2.485
BDMEET	2.252	2.303	0.471	1.099	3.178	2.249	2.303	0.447	0.693	3.219
ISOWN	0.112	0.067	0.126	0.000	0.763	0.065	0.014	0.108	0.000	0.578
ROA	–0.170	–0.026	0.434	–4.393	0.275	–0.143	–0.014	0.372	–3.591	0.303
DTA	0.346	0.337	0.251	0.007	1.287	0.383	0.347	0.337	0.005	4.004
SIZE	17.314	17.049	1.951	13.101	22.859	17.376	17.158	2.025	12.665	22.579
MB	2.233	1.325	3.008	–2.330	22.280	2.193	1.445	3.088	–5.680	23.340

	2001				2003			
	AC	REMUN	CEO	BIG4	AC	REMUN	CEO	BIG4
Yes	307	212	348	268	336	257	338	272
	(73.4%)	(50.7%)	(83.3%)	(64.1%)	(80.4%)	(61.5%)	(80.9%)	(65.1%)
No	111	206	70	150	82	161	80	146
	(26.6%)	(49.3%)	(16.8%)	(35.9%)	(19.6%)	(38.5%)	(19.1%)	(34.9%)

* Descriptive statistics are based on 418 matched sample companies. Variables are defined in Appendix A.

[19] The mean value (0.160) of ABSTDA in 2001 is almost exactly the same as that reported by Davidson et al. (2005; Table 2) for Australian companies for the year 2000, and the median value of ABSTDA is also very close to theirs. In addition, our ABSPACDA and ABSTDA means and medians are consistent with those reported for Australian companies between 1999 and 2006 by Sun and Rath (2011). We are therefore confident that our discretionary accrual calculations are credible.

Table 1. Cross-Sectional Analysis (Panel B: Pearson Correlations Matrix[#])

	ABSTDA	ABSPACDA	PNED	DIROWN	AC	REMUN	BDMEET	BDSIZE	CEO	ISOWN	ROA	DTA	SIZE	MB
ABSPACDA	0.661**													
PNED	–0.060	–0.067												
DIROWN	–0.030	–0.052	–0.144**											
AC	–0.218**	–0.165**	0.219**	–0.085*										
REMUN	–0.234**	–0.181**	0.218**	–0.103**	0.551**									
BDMEET	–0.060	–0.025	0.066	–0.039	0.233**	0.263**								
BDSIZE	–0.163**	–0.145**	0.279**	–0.042	0.411**	0.455**	0.172**							
CEO	–0.110**	–0.088*	0.252**	–0.089*	0.180**	0.189**	0.157**	0.234**						
ISOWN	–0.105**	–0.075*	0.119**	–0.043	0.119**	0.174**	0.016	0.187**	0.086*					
ROA	–0.271**	–0.286**	0.068	0.062	0.135**	0.118**	–0.011	0.232**	0.056	0.157**				
DTA	–0.089*	–0.005	0.201**	0.013	0.274**	0.258**	0.136**	0.237**	0.101**	0.045	0.074*			
SIZE	–0.250**	–0.226**	0.249**	–0.132**	0.392**	0.437**	0.229**	0.653**	0.159**	0.307**	0.474**	0.342**		
MB	0.020	0.013	–0.044	–0.028	0.056	0.003	–0.028	0.004	0.012	–0.009	–0.186**	–0.047	–0.130**	
BIG4	–0.036	–0.022	0.118**	–0.099**	0.170**	0.298**	0.076*	0.295**	0.058	0.135**	0.137**	0.074*	0.370**	–0.047

[#]Correlations matrix is based on 836 firm-year observations. ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed). Variables are defined in Appendix A.

5 Results

5.1 Descriptive statistics and correlation matrix

Summary statistics for both dependent and independent variables for the years 2001 and 2003 are shown in Table 1 Panel A. The extent of earnings management by the sample companies is lower in 2003 compared to 2001, reflected by a lower mean of ABSTDA and ABSPACDA in 2003. Further, most of the ASX CGC recommendations seem to have been adopted by a majority of the sample companies. This suggests that the initial development of strengthening corporate governance practices may have had a positive overall effect on reducing earnings management in Australia.

More specifically, the mean proportion of non-executive directors (PNED) increased from 65.2% in 2001 to 66.6% in 2003, showing a slightly higher representation of independent directors on corporate boards in 2003. Directors' shareholdings decreased from 19.7% in 2001 to 12.1% in 2003. In 2001, 73.4% of the sample companies had an audit committee and this percentage increased to 80.4% in 2003. We also find a significant increase in the number of companies with a remuneration committee during the sample period: 50.7% of the sample in 2001 to 61.5% in 2003.

Descriptive statistics for the control variables show that the mean institutional shareholding (ISOWN) was reduced from 11.2% in 2001 to 6.5% in 2003. The board size (BDSIZE), on average, as measured by the log of number of directors on board, remained almost unchanged over the examined period, and the number of board meetings remained virtually unchanged as well. Surprisingly, however, the percentage of companies with the separation of CEO and Board Chair (CEO) slightly decreased from 83.3% in 2001 to 80.9% in 2003.

The correlations matrix of the dependent and independent variables is reported in Table 1 Panel B. As expected, the two measures of discretionary accruals, ABSTDA and ABSPACDA, are highly correlated (r=0.661, $p<0.01$): there are no multicollinearity problems between independent and control variables.

Table 2 reports descriptive statistics of the dependent and independent variables used in the longitudinal analysis. As mentioned previously, governance mechanisms seem to have improved in 2003 compared to 2001. Board independence has increased while the percentage of director ownership has decreased as per the ASX recommendations. In addition, 29 companies (6.9%) have established an audit committee for the first time in 2003 and 45 additional companies (10.8%) established a remuneration committee in 2003.

Table 2. Longitudinal Analysis: Changes in Governance Mechanisms (2003-2001)

	Changes between 2003 and 2001 (n = 418)				
	Mean	Median	SD	Min	Max
ΔPNED	0.014	0.000	0.187	–0.744	0.750
ΔDIROWN	–0.076	–0.016	0.178	–0.793	0.435
	Changes between 2003 and 2001 (n = 418)				
	1		0		
ΔAC1	29 (6.9%)		389 (93.1%)		
ΔAC2	307 (73.4%)		111 (26.6%)		
ΔREMUN1	45 (10.8%)		373 (89.2%)		
ΔREMUN2	212 (50.7%)		206 (49.3%)		

Variables are defined in Appendix A.

5.2 Cross-sectional analysis (H1a, 2a, 3a, and 4a)

Table 3 presents results of the cross-sectional pooled sample (836 firm-years) multiple regression analysis. As previously discussed, many companies in the current study have adopted the best practice recommendations from the ASX CGC in 2003 as shown by the changes in corporate governance practices from 2001 to 2003. These changes seem to be associated with a reduction in earnings management in 2003 as shown by the negative association of YEAR2003 dummy variable to ABSTDA. The association is, however, absent for ABSPACDA.

Table 3. Multiple Regression Analysis – Full Sample

Variables		ABSTDA		ABSPACDA	
		Coeff.	t–stat	Coeff.	t–stat
Intercept			4.80***		4.97***
PNED	−	0.021	0.61	–0.018	–0.52
DIROWN	+	–0.077	–2.25**	–0.081	–2.33**
AC	−	–0.090	–2.24**	–0.066	–1.61*
REMUN	−	–0.138	–3.26***	–0.126	–2.95***
BDMEET		0.013	0.38	0.032	0.93
BDSIZE		0.046	1.01	0.045	0.98
CEO		–0.069	–2.00**	–0.051	–1.46*
INSOWN		–0.047	–1.35	0.006	0.16
ROA		–0.192	–5.01***	–0.218	–5.64***
DTA		0.022	0.63	0.101	2.80***
SIZE		–0.123	–2.27**	–0.148	–2.70***
MB		–0.023	–0.69	–0.036	–1.08
BIG4		0.076	2.16**	0.084	2.34**
YEAR2003		–0.125	–3.65***	–0.033	–0.97
N			836 *firm-years*		
Adj. R–SQ			0.136		0.115
F–Value			10.39		8.79
Maximum VIF			2.85		2.85

*, **, *** denote statistically significant at the 10%, 5% and 1% level respectively, 2-tailed test.

Variables are the same as per Table 1 (see Appendix A for definitions); YEAR2003 = dummy variable: 1 if year= 2003; 0 if year = 2001.

Contrary to our expectations (H1a), however, there is no significant association between board independence, measured by PNED, and earnings management, proxied by ABSTDA and ABSPACDA. The results do not provide evidence that board independence, as measured by the proportion of non-executive directors, is associated with lower levels of earnings management. That is, there seem to be doubts as to whether increased board independence can improve firm performance and, therefore, H1a is rejected.

H2a predicted that there is a positive association between director ownership and earnings management. While DIROWN is significantly associated with both ABSTDA and ABSPACDA, it is a negative association, indicating that, contrary to expectations, the higher the level of director equity ownership, the lower is the level of earnings management. Our findings therefore seem to support the alternative alignment theory of converging interests of directors and shareholders in order to reduce earnings management. H2a is therefore also rejected.

H3a and H4a predict that the existence of audit and remuneration committees is associated with lower levels of earnings management. As expected, we find that corporations with an audit committee or a remuneration committee are associated with lower levels of earnings management than those without the two committees. H3a and H4a are therefore supported.

We also run separate cross-sectional regressions for the years 2001 and 2003. As seen from Table 4, director ownership (DIROWN) and the existence of an audit committee (AC) are no longer associated with earnings management in 2003. Only the existence of a remuneration committee (REMUN) continues to be significantly associated with lower discretionary accruals (ABSTDA and ABSPACDA) in 2003.

Table 4. Multiple Regression Analysis – Matched Sample 2001 vs. 2003

		ABSTDA				ABSPACDA			
		2001		2003		2001		2003	
		Coeff.	t–stat	Coeff.	t–stat	Coeff.	t–stat	Coeff.	t–stat
Intercept			3.48***		2.86***		4.70***		1.92**
PNED	–	0.021	0.42	0.022	0.48	–0.070	–1.43	0.053	1.04
DIROWN	+	–0.126	–2.54***	0.010	0.22	–0.150	–3.10***	–0.003	–0.05
AC	–	–0.119	–2.08**	–0.018	–0.32	–0.118	–2.11**	0.014	0.23
REMUN	–	–0.104	–1.75*	–0.240	–4.10***	–0.071	–1.22	–0.193	–3.05***
BDMEET		0.010	0.21	0.020	0.42	0.066	1.36	–0.012	–0.24
BDSIZE		0.004	0.05	0.124	1.94	0.070	1.10	0.009	0.13
CEO		–0.085	–1.70*	–0.056	–1.23	–0.063	–1.30	–0.042	–0.85
INSOWN		–0.061	–1.25	–0.016	–0.35	0.026	0.55	–0.032	–0.63
ROA		–0.119	–2.19**	–0.366	–6.78***	–0.198	–3.76***	–0.224	–3.86***
DTA		0.015	0.27	0.041	0.89	0.061	1.09	0.155	3.10***
SIZE		–0.121	–1.51*	–0.142	–1.86	–0.227	–2.90***	–0.057	–0.70
MB		–0.015	–0.31	–0.058	–1.27	–0.051	–1.10	–0.016	–0.32
BIG4		0.061	1.20	0.090	1.87	0.017	0.35	0.154	2.97***
N		418		418		418		418	
Adj. R–SQ		0.098		0.225		0.145		0.102	
F–Value		4.50		10.31		6.46		4.64	
Max VIF		2.98		3.10		2.98		3.10	

*, **, *** denotes statistically significant at the 0.1, 0.05 and 0.01 levels respectively, 2-tailed test.

Variables are the same as per Table 1 (see Appendix A for definitions).

In summary, only REMUN is associated with lower levels of earnings management in both years, with the 2003 association becoming more significant. This raises an interesting question concerning the extent to which an increase in governance quality as per the ASX CGC recommendations in 2003 has indeed enhanced the constraints on earnings management. We therefore conduct a longitudinal analysis to examine whether *changes* or improvements in governance mechanisms are associated with lower levels of earnings management.

5.3 Longitudinal analysis (H1b, 2b, 3b, and 4b)

Using Equation (8), we regress the 2003 ABSTDA and ABSPACDA on changes to the four governance variables (PNED, DIROWN, AC, and REMUN) between 2001 and 2003. Table 5 shows the regression results of the effect of changes in governance variables between 2003 and 2001 on the earnings management levels of 2003.

While there is a slight increase in board independence (see Table 2) from 2001 to 2003, consistent with our cross-sectional analysis, the association between improved board independence and earnings management is not significant: H1b is therefore rejected.

As mentioned previously, the percentage of director ownership has decreased from 2001 to 2003, perhaps due to the definition put forward by the ASX CGC regarding director independence. This recommendation is based on expropriation theory, which predicts that a reduction in director ownership should constrain earnings management. Table 4 shows that there is a marginal negative association for the ABSTDA measure of earnings management and no association for ABSPACDA. H2b is therefore rejected as well.

H3b predicts that companies establishing an audit committee as per the ASX recommendations in 2003 should be associated with a lower level of earnings management. As discussed earlier, we consider two measures of audit committee (ΔAC1 and ΔAC2). From Table 5, it can be seen that neither variables are associated with a reduction in earnings management. This is consistent with our cross-sectional analysis where the existence of an audit committee is associated with a lower level of earnings management only in 2001. H3b is therefore rejected.

On the other hand, we find a negative and significant association between the remuneration committee variables (ΔREMUN1 and ΔREMUN2) and both ABSTDA and ABSPACDA. That is, the establishment of a remuneration committee (measured by ΔREMUN1) is associated with a reduction in earnings management and further, the existence of a remuneration committee (controlled by ΔREMUN2) is

also associated with reduction in the magnitude of earnings management. These results indicate that the introduction of a remuneration committee as part of a set corporate governance mechanisms is associated with lower levels of earnings management. H4b is therefore supported.

Table 5. Multiple Regression Analysis – Changes in corporate governance

Variables		2003ABSTDA		2003ABSPACDA	
		Coeff.	t-stat	Coeff.	t-stat
Intercept			2.242**		1.567
ΔPNED	−	0.028	0.502	0.048	0.803
ΔDIROWN	+	–0.063	–1.099	–0.046	–0.733
ΔAC1	−	–0.009	–0.172	0.018	0.318
ΔAC2	−	–0.032	–0.508	0.006	0.093
ΔREMUN1	−	–0.120	–2.285**	–0.114	–2.007**
ΔREMUN2	−	–0.259	–4.095***	–0.197	–2.874***
$PNED_{2001}$		*0.027*	*0.463*	*0.068*	*1.080*
$DIROWN_{2001}$		*0.059*	*1.001*	*0.024*	*0.384*
BDSIZE		0.128	2.018**	0.012	0.180
BDMEET		0.025	0.532	–0.011	–0.218
CEO		–0.040	–0.859	–0.032	–0.649
INSOWN		–0.017	–0.364	–0.034	–0.660
ROA		–0.372	–6.885***	–0.230	–3.926***
DTA		0.030	0.649	0.147	2.905***
SIZE		–0.124	–1.619	–0.049	–0.589
MB		–0.060	–1.307	–0.018	–0.364
BIG4		0.105	2.158**	0.160	3.042***
N		418		418	
Adj. R–SQ		0.231		0.097	
F–Value		8.37		3.65	
Maximum VIF		3.15		3.15	

*, **, *** denote statistically significant at the 10%, 5% and 1% level respectively, 2–tailed test.

5.4 Additional analysis

The results so far indicate that while the existence and the establishment of a remuneration committee is associated with lower levels of earnings management, there appears to be conflicting evidence regarding an audit committee. While our cross-sectional analysis shows that the existence of an audit committee is associated with lower earnings management levels in 2001, there is no evidence of reduced earnings management in the case of companies which established an audit committee in 2003 compared to other sample firms. This finding is at odds with regulators' expectations, because the principal duties of an audit committee are to review and supervise the corporation's financial reporting and internal control processes. This is especially interesting given that only the establishment of an audit committee is now part of the mandatory listing requirements for those companies listed on the ASX.

In order to provide additional insight into whether improved governance mechanisms have an impact on earnings management, we also consider the structure of each of the board sub-committees in 2003 and their association with the magnitude of DA. If the committees are effective in their monitoring functions, we would expect to see a positive relationship between some desirable composition features of the committees, as per the recommendations by ASX CGC, and lower levels of DA. For the purpose of our study, we examine the following three aspects of the composition in both audit and remuneration committees: (1) the size of the committee; (2) the proportion of non-executive directors on the committee; and, (3) the number of meetings held by the committee. We regress ABSTDA and ABSPACDA on these three variables and firm-specific control variables including ROA, DTA, SIZE, MB and BIG4 for the audit committee sub-sample and remuneration committee sub-sample individually for

the year 2003. However, no significant association was found between the composition and structure of the board sub-committees and earnings management (not tabulated).

6 Discussion and conclusions

Our paper extends existing studies on the relationship between corporate governance and earnings management in the following ways. We evaluated whether governance mechanisms recommended by the ASX CGC are associated with lower levels of earnings management. We also considered whether increased board independence, the establishment of audit and remuneration committees, and lower director ownership are associated with reductions in the level of earnings management in Australia. To explore these questions, we used both cross-sectional and longitudinal research designs to examine whether corporate governance practices and their enhancement as recommended by the ASX CGC, between the financial years 2001 and 2003, was associated with lower levels of earnings management. Our study examined the practices of a matched sample of 418 Australian listed companies.

Our cross-sectional analysis shows that the existence of audit committees was associated with lower levels of earnings management pre but not post the recommendations. On the other hand, lower director ownership was associated with higher levels of earnings management, especially before the introduction of the ASX CGC recommendations. Board independence, however, was not associated with earnings management. The existence of a remuneration committee was, however, consistently associated with lower levels of earnings management. In addition, our longitudinal analysis indicates that the ASX CGC recommendations resulted in enhanced corporate governance in 2003 compared to 2001 but only to the extent that the establishment of a remuneration committee was associated with reductions in earnings management. Contrary to expectations, the establishment of an audit committee and decreases in director ownership (thereby increasing director independence) were not associated with enhancements in the constraints on earnings management. Our results indicate, therefore, that not all of the recommended governance practices would appear to have generated the benefits anticipated when they were introduced in 2003 at least in respect of their impact on earnings management.

The results suggest that firms with a remuneration committee may be more effective in reducing the incentives to manage earnings than firms that do not. This finding has policy implications, from both the practitioners and academic perspectives, since the establishment of a remuneration committee is still a recommendation rather than a mandatory requirement in Australia.

While there exist two opposing theoretical viewpoints on the effects of director ownership on earnings management, our cross-sectional findings (significant in 2001 though not in 2003) indicates a negative association between increased ownership and earnings management. This suggests that the general perception and the fear of investors about the risk of entrenchment and expropriation problems associated with higher director ownership may not necessarily be well founded.

Board independence is highly recommended by the ASX guidelines, which is based on the premise that independent boards and sub-committees are free of managerial influence and therefore will provide proper monitoring of managers. However, we do not find an association between board independence and a reduction in earnings management. Director independence as defined in the ASX guidelines is controversial (Robins 2006), and as Kiel and Nicholson (2003) point out, Australian boards in many respects seem to be conforming more closely to normative "best practice" guidelines for corporate governance than boards in other Western countries. On average, in respect of the independence of boards in 2001 and 2003, it is significant that there was very little change: in 2001, the average proportion of independent members on corporate boards was 65.2%; in 2003 it was 66.6%. In addition, concerns have been expressed in the literature (Turnbull, 1999; Hall and LeMire, 2006) about the effectiveness of independent board members because of their lack of company-specific knowledge and consequent reliance on insiders for information, plus the risk that they will become acculturated to accept the company's existing governance practices.

Further, it may not be non-executive directors *per se* that can influence earnings management levels. The background of directors, *including* independence, diversity, and experience, may be a more appropriate indicator to consider. For example, Park and Shin (2004) find that while the proportion of outside directors as a whole was not associated with reductions in earnings management, directors from financial intermediaries were influential in this respect.. In addition, they found that the representation of institutional shareholders on boards can also reduce earnings management. Future research could examine the expertise and backgrounds of independent directors and how these might contribute to reducing earnings management.

We also find an association between the existence of audit committees and lower levels of earnings management but only pre the ASX CGC recommendations. There exists an argument that there is no automatic relationship between the adoption of an audit committee and the achievement of particular governance effects (see also Turley and Zaman, 2004). Indeed our longitudinal analysis suggests that there is no evidence that firms adopting the recommendation

to establish an audit committee are likely to have lower levels of earnings management.

Future research could also follow up on issues regarding the substance and quality of the sub-committees of the board of directors. Such research could investigate too whether it is the "voluntary" or "mandatory" adoption of certain corporate governance requirements, e.g. the formation of a remuneration committee, that is effective in improving the quality of financial reporting.

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Appendix A

Table A.1. Variable Definitions

Variable	Definition
ABSTDA	The absolute value of discretionary accruals from the cross-sectional modified Jones model, scaled by lagged total assets
ABSPACDA	The absolute value of performance-adjusted discretionary current accruals, scaled by lagged total assets
PNED	The proportion of non-executive directors on the board
DIROWN	Equity ownership by all directors in fraction
AC	Dummy variable: 1 if an audit committee is present, 0 if committee is absent
REMUN	Dummy variable: 1 if a remuneration committee is present; 0 if committee is absent
BDMEET	The natural log of the number of board of directors' meetings
BDSIZE	The natural log of the number of board of directors
CEO	Dummy variable: 1 if the positions of CEO and board chairperson are held by different persons, 0 otherwise
INSOWN	Institutional equity ownership in fraction
ROA	Ratio of net income before extraordinary items to total assets
DTA	Ratio of total debts to total assets
SIZE	The natural log of the total assets
MB	Ratio of the firm's market value of common equity to book value of common equity
BIG4	Dummy variable: 1 if the firm is audited by a Big4 auditor; 0 if the firm is audited by a non-Big4 auditor
ΔPNED	Differences between the proportion of non–executive directors on the board in 2003 and 2001
ΔAC1	Dummy variable: 1 if AC(2001)=0 and AC(2003)=1; 0 otherwise
ΔAC2	Dummy variable: 1 if AC(2001)=1 and AC(2003)=1; 0 otherwise
ΔREMUN1	Dummy variable: 1 if REMUN(2001)=0 and REMUN(2003)=1; 0 otherwise
ΔREMUN2	Dummy variable: 1 if REMUN(2001)=1 and REMUN(2003)=1; 0 otherwise
ΔDIROWN	Differences between equity ownership by all directors in fraction in 2003 and 2001