

# POST-2001 CORPORATE COLLAPSES: IS EARNINGS QUALITY MORE CLOSELY ASSOCIATED WITH VARIOUS DIMENSIONS OF CORPORATE GOVERNANCE?

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## Abstract

We investigate the association between various dimensions of corporate governance and the quality of reported earnings for Australian companies in 2000 and 2002, before and after a number of large corporate collapses. We create four dimensions of corporate governance (board, committee, ownership and audit quality) using fifteen individual corporate governance attributes. We find only audit quality appears to improve earnings quality, and only in 2002. Further, we find earnings quality is positively related to firm size and information environment, and negatively related to firm leverage, for the combined 2000-2002 sample. We interpret these results as indicative of economic considerations having an overriding impact on earnings quality, compared to corporate governance, despite the shockwaves felt from recent high-profile corporate collapses.

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## 1. Introduction

Recent decades have witnessed, in various nations around the globe, the establishment of bodies for the express purpose of regulating and promoting corporate governance.<sup>7</sup> Inherent in the promulgations of these bodies (e.g. the United Kingdom's Cadbury Report, 1992 and Hampel Report, 1998; Canada's Dey Report, 1994; Italy's Preda Report, 1999; Israel's Goshen Report, 2006; South Africa's King III Report, 2009) is a conviction that the reliability of a firm's financial reports is directly influenced by the effectiveness of its corporate governance.

Various corporate governance mechanisms can be employed to monitor, control and observe the actions of managers in order to identify those who fail to maximise firm value.<sup>8</sup> Indeed, as the corporate

governance framework becomes more effectual, information asymmetry is diminished giving management less opportunity, as well as less incentive, to conceal inside information for its own benefit. In turn, the quality of financial reports may be enhanced through more extensive and valuable disclosures. This view is sustained by the numerous studies documenting positive associations between certain forms of financial reporting quality and standards of corporate governance, a number of which will be discussed later in this paper.

In Australia, the Australian Stock Exchange (ASX) Corporate Governance Council issued, in March 2003, the *Principles of Good Corporate Governance and Best Practice Recommendations*, one of the specified aims of which was to ensure that companies adopt a structure to "safeguard the integrity of the company's financial reporting" (ASX, 2003, p.29). This document was issued following a number of high-profile corporate collapses, both within Australia and elsewhere, that were seen to be

the roles of chief executive officer and chairman of the board, director independence, etc.

<sup>7</sup> Corporate governance may be broadly defined as "the system by which companies are directed and controlled" (Cadbury Committee, 1992).

<sup>8</sup> Examples of corporate governance mechanisms include the establishment of an internal audit committee, separation of

partly attributable to poor governance practices, particularly with respect to financial reporting and disclosure.

In this study we investigate the role played by a firm's corporate governance framework in determining the quality of reported earnings for a sample of Australian companies for the years 2000 and 2002. These two years have been specifically chosen to reflect the corporate governance environments existing immediately prior to and after the 2001 collapses of HIH<sup>9</sup> and One.Tel<sup>10</sup> in Australia, as well as Enron<sup>11</sup> in the United States. The fall-out from these high-profile collapses is expected to have prompted a tightening of the corporate governance mechanisms adopted by many firms, pre-empting the recommendations of the ASX Corporate Governance Council, and providing an excellent opportunity for observing the relationship between corporate governance and financial reporting quality. Specifically, we test for a positive relationship between particular corporate governance mechanisms, as well as the overall standard of corporate governance measured using a corporate governance index, and earnings quality as proxied by the level of total operating accruals embedded in the reported earnings number.

We use total accruals (as a measure of earnings persistence) rather than abnormal accruals (which attempt to capture earnings manipulations) because we interpret earnings quality in terms of informativeness for decision making by investors. This narrow interpretation of earnings quality is consistent with the ASX Corporate Governance Council's focus on corporate governance within the context of "meeting the information needs of a modern investment community" (ASX, 2010, p. 3) and "determining the cost of capital in a global capital market" (ASX, 2010, p. 4). If less persistent earnings are less informative for equity valuation purposes (for example, Kormendi and Lipe, 1987; Easton and Zmijewski, 1989) and are associated with a higher

cost of capital (Francis, LaFond, Ollson and Schipper, 2005), then adopting the argument of Dechow, Ge and Schrand (2010, p. 351) that "extreme accruals are low quality because they represent a less persistent component of earnings" allows us to draw the association between (low) earnings quality and (high) total accruals.<sup>12</sup> We expect good corporate governance to be associated with higher quality earnings that will better inform investor decision making.

We create four dimensions of corporate governance: *board*, *committee*, *ownership* and *audit quality*, using fifteen individual corporate governance attributes adopted from prior literature. The results of our study indicate that only the dimension, *audit quality* (consisting of the presence and independence of the audit committee, its meeting frequency, the use of a Big X auditor<sup>13</sup> and the auditor's independence) appears to improve the quality of financial reports. Further, we find the control variables persist in returning statistically significant results. Specifically, we observe a significant positive relationship between a company's earnings quality and its information environment in 2002 as well as for the combined 2000 and 2002 sample. A significant positive association also exists between earnings quality and firm size for the combined 2000 and 2002 sample, while a significant negative relationship is observed between earnings quality and firm leverage.

The remainder of this paper is organised as follows. The prior research is discussed in section 2 which also provides the hypothesis development, while the method is discussed in section 3. Results are presented in section 4 and section 5 provides the concluding comments.

## 2. Prior Research and Hypothesis Development

Many studies recognise the positive role that corporate governance can play in the financial reporting process. Larcker, Richardson and Tuna (2007) examine the association between a range of corporate governance attributes and certain measures of managerial behaviour and corporate performance. A number of decision specific measures of organisational performance are employed, one of which includes the level of firm accruals, a measure of quality. Larcker *et al.* (2007) report a mixed association between corporate governance indices and

<sup>9</sup> HIH Insurance was Australia's second largest insurance company. Its collapse in 2001 was the largest in Australia's history and resulted in the conviction and imprisonment, on various charges related to fraud, of several members of HIH's executive.

<sup>10</sup> One.Tel was Australia's fourth largest telecommunications company before its collapse in 2001. The Australian Securities and Investments Commission (ASIC) failed in its attempt to prove the directors of One.Tel deliberately withheld information regarding the company's true financial position in the period leading up to its financial demise.

<sup>11</sup> Enron was a United States energy, commodities and services company whose 2001 collapse was the largest (at that time) Chapter 11 bankruptcy in history. It followed revelations of financial fraud that resulted in the conviction and jailing of a number of company executives and the demise of accounting firm Arthur Andersen.

<sup>12</sup> The use of total accruals as a simple measure of earnings quality was initially advocated by Richardson, Sloan, Soliman and Tuna (2001) who claimed that the difference between earnings and free cash flows provides "an intuitive, robust and parsimonious measure of earnings quality" (p. 1).

<sup>13</sup> The term "Big X audit firm" is used as a generic term to cover a period during which the top tier audit firms consisted of the Big 6, the Big 5 and then, from 2002, the Big 4.

abnormal accruals but some ability to explain future operating performance and future excess stock returns.

Leuz, Nanda and Wysocki (2002) investigate the association between corporate governance and the quality of reported earnings. Using four measures of earnings management consistent with extant literature, they find that earnings management is negatively associated with the quality of minority shareholder rights and legal enforcement. These findings highlight a critical link between accounting quality and the level of investor protection afforded by corporate governance. Corporate governance mechanisms, including institutional ownership of shares, institutional representation on the board of directors, and the presence of independent outside directors on the board, are shown to reduce the influence of discretionary accruals in earnings management (Cornett, Marcus, Saunders and Tehranian, 2008).

Earlier studies investigating the role of institutional ownership as a corporate governance mechanism include Bushee (1998) and Jambalvo, Rajgopal and Venkatachalam (2002). Bushee (1998) explores the influence of institutional investors on managers' tendency to tamper with long-term investment for the purposes of managing earnings upwards, finding that managers are less inclined to reduce research and development (R&D) expenditure to reverse an earnings decline when levels of institutional ownership are high. However, he finds that this relationship depends on the type of institutional ownership. A greater proportion of transient institutional owners is associated with managers being more likely to cut R&D spending to enhance earnings. Bushee (1998) concludes that institutional ownership discourages management from partaking in myopic investment behaviour, unless such owners are transient (that is, high portfolio turnover and momentum trading) in which case their presence has the opposite effect of failing to prevent such myopia.<sup>14</sup> Jambalvo *et al.* (2002) also investigate the relationship between institutional ownership and earnings management. They find that the absolute value of discretionary accruals, as a measure of earnings management, decreases as institutional ownership increases. They interpret their

results as evidence of institutional owners thwarting managerial manipulation of earnings.<sup>15</sup>

In an earlier paper investigating the standard of corporate governance associated with earnings manipulation, Dechow, Sloan and Sweeney (1996) find that firms subject to SEC enforcements are more inclined to have weaker governance frameworks. Specifically, such companies are more likely to have a board dominated by insiders and a CEO who founded the company. A dominant personality is also more likely, whereas having an audit committee is less likely.<sup>16</sup> An alternative surrogate for financial reporting quality, this being the likelihood of financial fraud, is investigated by Beasley (1996). This author finds that the appointment of outside members on the board of directors enhances the board's efficacy at monitoring management for the preclusion of financial statement fraud, consistent with a positive relationship between corporate governance and earnings quality. Further, Uzun, Szewczyk and Varma (2004) reveal how several governance attributes influence the incidence of corporate fraud in the United States during the period 1978 to 2001. They report that board composition and the structure of board committees are significantly associated with the occurrence of corporate fraud. Further, as more independent directors are appointed to the board, audit and compensation committees, the probability of corporate transgression diminished.

The relationship between accounting quality, approximated by timeliness and conservatism in reported earnings, and composition of the board of directors is also examined by Beekes, Pope and Young (2004). They find board composition to be an important factor in determining the quality of U.K. firms' reported earnings. Similarly, Ching, Firth and Rui (2006) find that the prevalence of earnings management around seasoned equity offerings (SEO) is influenced by a firm's corporate governance structure. Their results indicate that firms with larger boards experience a higher degree of earnings management around an SEO.

Yet another measure of financial reporting quality is the rating by analysts of financial reports. Using this proxy, Wright (2001) explores the relationship between corporate governance characteristics and the quality of financial reporting. The results show that financial reporting quality is

<sup>14</sup> Koh (2003) also investigates the relationship between institutional ownership and earnings management. He finds a positive association between institutional ownership and income increasing discretionary accruals for lower levels of such ownership, demonstrating that transient institutional investors pay no heed to upward earnings management. Conversely, a negative relationship is found at high levels of institutional ownership, indicating that long-term institutional owners discourage managerial manipulation of accruals.

<sup>15</sup> Dechow and Schrand (2004) observe that earnings management is less commonplace among firms that employ Big X auditors and have large independent blockholders.

<sup>16</sup> Similarly, Agrawal and Chadha (2005) investigate whether certain corporate governance mechanisms are related to the likelihood of a company restating its earnings. They conclude that the probability of restatement is lower in companies whose boards or audit committees have an independent director with financial expertise. Further, it is higher in firms where the CEO belongs to the founding family.

negatively associated with the proportion of gray<sup>17</sup> or inside directors on the board, and particularly on the audit committee. Peasnell, Pope and Young (2005) also consider the association between the presence of outside directors on the board and earnings management, finding a significant negative relationship between income-increasing accruals and the percentage of outside board members.

Klein (2002) also investigates whether audit committee and board characteristics are related to earnings management. A negative association is found between audit committee independence and abnormal accruals, the measure of earnings management used. A negative relation is also found to exist between board independence and abnormal accruals. Reduced independence of board or audit committees is associated with large increases in abnormal accruals. Further, the most obvious effects occur when either the board or audit committee consists of a minority of outside directors. The authors interpret their results as support for the assertion that the interests of investors are best served by boards that provide corporate governance which ensures the preparation of unbiased and transparent financial reports, thereby preserving the quality of the accounting<sup>18</sup> process.

The impact of audit committees on earnings quality is also examined by Bryan, Liu and Tiras (2004). They reveal that firms with audit committee members that are independent and financially literate exhibit higher earnings response coefficients. Further, when members of the committee meet regularly and are independent, less overpricing of accruals is evident. Bryan *et al* (2004) interpret their findings as evidence of a relationship between audit committee efficacy and independence, and earnings quality, lending credence to the recommendations of the Blue Ribbon Committee (1999) and the Sarbanes-Oxley Act of 2002.<sup>19</sup> Felo, Krishnamurthy and Solieri (2003) also investigate the association between audit committee characteristics and financial reporting quality: specifically, the independence and expertise of members, together with committee size. They find the proportion of audit committee members with

expertise in accounting or financial management to be positively associated with the quality of financial reporting. However, reporting quality is not found to be related to the independence of the committee.<sup>20</sup>

Audit committee expertise is reported by Dhaliwal, Naikar and Navissi (2010) to be positively associated with accruals quality. These authors suggest that the specialised skills possessed by accounting experts make them more effective in executing the audit committee's primary responsibility of ensuring higher quality financial reporting. The importance of having independent audit committee members with financial expertise in mitigating earnings management is also reported in Carcello, Hollingsworth, and Klein (2006). However, they note that alternate governance approaches are equally effective in improving the quality of financial reporting.

Abbott, Parker and Peters (2004) also report a positive association between audit committee characteristics and financial misstatements. In particular, they find audit committee independence and a committee that meets a minimum of four times per annum to be negatively associated with the extent of financial reporting restatements. Further, a positive relationship is found between a lack of financial expertise on the committee and the presence of financial reporting restatements.

The influence of external audit quality, as a form of corporate governance, on earnings management is scrutinised by Becker, Defond, Jiambalvo and Subramanyam (1998). Assuming that Big X auditors are of higher quality than non-Big X auditors, whilst using discretionary accruals to capture earnings management, these authors find that clients of non-Big X auditors report more income increasing discretionary accruals than firms audited by Big X auditors. Zhou and Elder (2004) investigate the association between audit quality (measured by audit firm and industry specialisation) and earnings management (proxied by discretionary accruals) by seasoned equity offering (SEO) firms. They find that Big X auditors are associated with reduced earnings management in the years prior to, during and following a SEO. Further, industry specialist audit firms are also instrumental in mitigating earnings management but only in the year of the offering itself. The authors interpret their results as evidence of a negative relationship between audit quality and earnings management by SEO firms.

Krishnan (2003) investigates the relationship between Big X auditor industry expertise and earnings management, measured by absolute discretionary

<sup>17</sup> Gray directors are outsiders with special ties to the company or management.

<sup>18</sup> Bradbury, Mak and Tan (2006) also find both board size and audit committee independence to be associated with higher quality accounting (i.e., lower abnormal working capital accruals).

<sup>19</sup> The Sarbanes-Oxley Act of 2002 is a key reform package mandating the most sweeping changes that the United States Congress has imposed on the business world in recent times. It seeks to prevent future corporate scandals and "restore investor confidence by, among other things, creating a public-company-accounting-oversight board, revising auditor independence rules, revising corporate governance standards and significantly increasing the criminal penalties for violations of securities laws" (AICPA 2002 in Miller and Pashkoff 2002).

<sup>20</sup> Xie, Davidson III and Dadalt (2003) investigate the role of audit and executive committees, as well as the board of directors, in preventing earnings management. These authors conclude that board and audit committee activity and their members' financial sophistication are important factors in constraining earnings management.

accruals. He finds that absolute discretionary accruals are higher for clients of non-specialist auditors, compared to firms audited by specialists. These results suggest that specialist auditors restrict accruals-based earnings management more so than non-specialist auditors, thereby improving earnings quality. Balsam, Krishnan and Yang (2003) consider the relationship between several earnings quality measures and auditor industry specialization. They compare the absolute value of discretionary accruals (DAC) and earnings response coefficients (ERC) of companies audited by industry specialists with those not audited by such firms. They report that clients with industry specialist auditors have lower DAC and higher ERC than companies without industry specialist auditors. Balsam *et al* (2003) conclude that companies with industry specialist auditors exhibit higher quality earnings than firms with non-specialist auditors.

The proportion of auditors' fees associated with non-audit services arguably reflects audit quality, assuming that such fees have the potential to jeopardise auditor independence and integrity. Frankel, Johnson and Nelson (2002) find that non-audit fees are positively associated with small positive earnings surprises, as well as the absolute magnitude discretionary accruals, while Callaway Dee, Lulseged and Nowlin (2006) also find that firms paying a greater percentage of non-audit fees are more prone to income increasing earnings management.<sup>21</sup> Exploring the association between audit function and earnings management within the U.K., Ferguson, Seow and Young (2004) measure non-audit service fees in three different ways whilst using three separate proxies for earnings management. In all but one instance, a significant and positive association is found to exist between earnings management and non-audit service purchase. Taken together, these studies indicate that less independent auditors are associated with reduced earnings quality.

Australian studies include Davidson, Goodwin-Stewart and Kent (2005) who demonstrate that for the year 2000, a majority of non-executive directors on the board and on the audit committee are significantly associated with a lower likelihood of earnings management, measured as the absolute value of discretionary accruals. Similarly, Hutchinson, Percy and Erkurtoglu (2008) find that for the years 2000 and 2005, board independence and audit committee independence are associated with lower performance-adjusted discretionary accruals. As well, board independence and active and independent audit committees are shown by Koh, Laplante and Tong (2007) to be negatively associated with absolute and

income-increasing accruals, respectively, for Australian firms during the period 1998 to 2002.

Further Australian evidence of a relationship between corporate governance structures and earnings quality is provided by Habib and Azim (2008) who conduct factor analysis to investigate whether board structure and independence, as well as audit quality, influence the value relevance of accounting information, arguing that the extent to which accounting information maps into share prices is a measure of its quality. These authors find that factors relating to board structure and independence, but not audit quality, increase the value relevance of accounting earnings and, to a lesser extent, book values.

More recently, the Australian study by Kent, Routledge and Stewart (2010) decomposes accrual quality into the two components, discretionary and innate, and then regress these against corporate governance characteristics. They find that the most important governance mechanisms related to accruals quality are use of a Big 4 audit firm and a larger audit committee for discretionary accruals; and an independent board of directors, a larger, more independent and more active audit committee, and the use of a Big 4 audit firm for innate accruals.

Indeed, the corporate governance system, itself, is a manifestation of a number of corporate governance attributes both within and outside the firm. No individual governance attribute should be heralded as a panacea (Arthur, Garvey, Swan and Taylor, 1993) but rather as part of an interwoven system of checks and balances.<sup>22</sup> For example, a hostile takeover is found to be more likely where outside directors hold less equity (Shivdasani 1993). O'Sullivan (2000) also observes interaction among corporate governance attributes. He finds a higher proportion of non-executive directors to be associated with enhanced audit quality. The percentage of equity owned by executive directors is found to be conversely related to audit quality. Hence it is apparent that governance mechanisms either substitute for or complement one another.<sup>23</sup>

With this in mind, in our study we group fifteen individual corporate governance attributes into four categories, these being board autonomy, board committees, the extent of independent ownership and audit quality, to test the following hypothesis:

**Hypothesis: A negative association exists between the corporate governance attributes of a company and its total accruals**

<sup>21</sup> In a similar vein, Menon and Williams (2004) find that firms employing former audit partners as company officers or directors, seen as a potential threat to auditor independence, report larger abnormal accruals than other firms.

<sup>22</sup> Further, firms also have the option of choosing among a variety of internal corporate governance mechanisms. Firms can rely on governance via the market or operationalise through the firm's hierarchy (Williamson 1975).

<sup>23</sup> The substitutive effect occurs when increased corporate governance does not result in additional disclosure because one governance attribute has substituted for another (Ho and Wong 2001).

where total accruals is an inverse measure of the quality of reported earnings.

### 3. Method

Our sample is drawn from the 1422 companies listed on the Australian Securities Exchange (ASX) as at May 2001. We identified the largest (according to net profit for the year 2000) 300 firms to potentially be included in our sample, then eliminated those that were listed property trusts, listed investment funds or trusts, or trustee companies.<sup>24</sup> Firms not having the ASX as their primary stock exchange were also removed from the sample, as were those whose corporate annual reports failed to cover at least 6 months. The remaining 239 firms were approached by fax, requesting copies of their 2000 and 2002 annual reports. Where we were unsuccessful in obtaining annual reports by this method, we sought to download the relevant financial reports from corporate websites. Details of the sample selection process are illustrated in Table 1. Our final sample comprised exactly 200 companies in 2000 and 183 companies in 2002.<sup>25</sup>

#### 3.1 Specification of Dependent Variable

Our dependent variable is earnings quality (ACCRUALS) as proxied by total net operating accruals.<sup>26</sup> This measure of earnings quality is similar to that used by Richardson, Sloan, Soliman and Tuna (2001). Using a more complete measure of accruals improves upon the prior research of Sloan (1996) who only considers current accruals in his investigation of earnings informativeness. However, Richardson *et al.* (2001, 2005) find that both current and non-current accruals provide valuable information about earnings quality. In support of this simple measure of earnings quality are the results of Bayley and Taylor (2007) who find that in moving from a red flag model of identifying upwards earnings management, a simple model of the accrual components of earnings has more power in detecting earnings management than any of the measures of unexpected accruals that they examine. Hence, the more comprehensive definition

<sup>24</sup> These entities were excluded on the basis that they tend to exhibit unique corporate governance structures, and are also subject to additional mandatory accounting requirements that may affect their accounting policy and disclosure decisions.

<sup>25</sup> This reduction in sample size was due to the delisting of 17 of our sample firms between 2000 and 2002.

<sup>26</sup> We use total accruals, rather than abnormal or unexpected accruals, because we associate earnings quality with earnings persistence, rather than absence of managerial manipulation. As argued by Dechow, Ge and Schrand (2010, p. 351): "extreme accruals are low quality because they represent a less persistent component of earnings".

of total net accruals employed by Richardson *et al.* (2001) is employed in this research:

$$\text{Total Net Operating Accruals} = \text{Net Income} - \text{Cash from Operating Activities} - \text{Cash from Investing Activities.}$$

Note that cash from financing activities is not incorporated into the above equation as it is considered to be more reliable than other cash flow figures.<sup>27</sup> Further, in keeping with the approach of Richardson *et al.* (2001, 2005), total net operating accruals is deflated by net operating assets<sup>28</sup> at the commencement of the period pertaining to the accruals. This is to allow for cross-sectional comparison of accruals in sample firms. We define high quality firms as those firms with the lowest accruals, and low quality firms as those with the highest accruals, split on the median.

#### 3.2 Specification of Independent Variables

Figure 1 summarises each of the independent variables together with the corporate governance attributes, the way in which these attributes are measured, and their expected relationship with quality. Corporate governance information able to be gleaned from a firm's financial report was collected and corporate governance attributes evaluated. In total, fifteen individual corporate governance attributes are explored. Each is grouped with other like attributes, to form four summary corporate governance dimensions. We adopt a similar procedure to Brown and Caylor (2006) who used detailed corporate governance data encompassing 51 provisions, spanning eight governance dimensions, to create a broad summary corporate governance measure.<sup>29</sup>

We construct the corporate governance dimension, BOARD, to reflect four individual

<sup>27</sup> Richardson *et al.* (2001, pp. 7-8) argue that accruals pursuant to financing activities relate to financial obligations, involve "deferral of past cash inflows and are carried at no cost". As such, cash from financing activities is thought to be a more objective measure and therefore intrinsically reliable.

<sup>28</sup> "Net operating assets" is the difference between operating assets and operating liabilities. Operating assets are measured as total assets less cash and short-term investments. Operating liabilities are calculated as total assets minus the sum of total debt, book value of common and preferred share capital and minority interest.

<sup>29</sup> Similar studies include Gompers *et al.* (2003) where a "Governance Index" is constructed, using the incidence of 24 governance rules to proxy for the level of shareholder rights at about 1500 large US firms in the 1990s, and Beekes and Brown (2006) which employs a composite governance measure to find that better governed Australian firms make more informative disclosures.

corporate governance attributes: board independence, the absence of a dominant personality within the firm, the independence of the chair and of outside directors. Each attribute is taken into account to calculate the value of BOARD. Board independence is captured by the percentage of non-executive directors comprising the board that are not gray directors. The absence of a dominant personality refers to the separation of the roles of CEO and Chairman. The independence of the chair is concerned with the appointment of a non-executive director to the position of Chairman. Lastly, the percentage of non-executive director share ownership is used to reflect director independence.

Each of the above measures is included within this construct as they are considered to improve board effectiveness. For example, the more independent a firm's board, the less likely corporate transgression becomes (Uzun *et al.*, 2004). Within an Australian setting, Davidson *et al.* (2005) and Koh *et al.* (2007) both demonstrate a negative relationship between earnings management and board independence. Likewise, an independent Chairman is argued to improve board efficacy (Haniffa and Cooke 2000), while separation of the CEO and Chairman roles is advocated (Forker 1992, Blackburn 1994) to prevent managerial domination and preserve board integrity (Molz 1988). Finally, the more independent the outside directors (that is, the lower their shareholdings in the firm), the better the corporate governance as the likelihood of financial statement fraud is reduced (Beasley 1996).

The manner in which all attributes are measured is presented in Figure 1. The corporate governance attributes comprising BOARD are assessed according to whether they are represented by binary or continuous values. In the case of dummy variables, their actual value is added to the score for BOARD. With respect to continuous variables, their impact upon a firm's corporate governance index depends on their magnitude with respect to the average value of that variable for all firms. If a firm exhibits a continuous variable greater than or equal to the mean, one point is added to its corporate governance score. Conversely, if the value of a firm's continuous variable for that governance attribute is lower than the mean, no points accumulate toward the BOARD score.

Given that four internal corporate governance attributes are considered to calculate a score for the first independent variable, the maximum value for BOARD is four. However, in order that no one governance variable is implicitly assumed to have a greater impact on the firm's corporate governance structure than any other, individual scores for each independent variable are standardised to one. This is achieved by dividing each component score by the number of attributes reflected in that component. For example, the score reflecting the variable BOARD is comprised of four governance attributes and is thus divided by four.

The second independent variable relates to board committees (COMMEE) and is comprised of three

separate corporate governance attributes: the appointment of a compensation committee, this committee's independence, and the appointment of a nomination committee. Board committees are considered an integral component of effective governance (Davis 2001). Indeed, the independence of directors appointed to such committees is of interest, as research points to outside directors being more effective monitors of managerial behaviour (Weisbach 1988, Byrd and Hickman 1992). We ascertain the percentage of non-executive directors comprising the compensation committee that are not gray directors to assess the independence of the committee. The methods used to measure these governance attributes are also shown in Figure 1.

A value for COMMEE is determined in a manner similar to that employed for BOARD. That is, each of the mechanisms which comprise COMMEE is given a value according to whether it has a dummy or continuous representation. With respect to the binary variables, their actual values of 0 or 1 are added to the score for COMMEE. In relation to continuous variables, their value is compared to the mean value of the variable for all sample firms. If the continuous variable is larger than or equal to the mean, one point accumulates toward the COMMEE score. On the other hand, if the value of the continuous variable is less than the mean, no points are added to the COMMEE score. As three governance mechanisms are evaluated whilst assessing the effectiveness of board committees, the highest possible value for COMMEE will initially be three. As with BOARD, this score is standardised to one, by dividing the total by the number of attributes comprising the variable. Here, as the COMMEE score is an amalgamation of three governance attributes, it is divided by three. As such, the final maximum value for COMMEE is also one.

The next independent variable considers the ownership structure prevalent within the firm. We consider the extent of institutional ownership and block shareholdings within the company, as well as the concentration of firm shareholdings, in order to calculate the value of the third independent variable (OSHIP). To determine the extent of institutional ownership, we ascertain whether or not the largest shareholder within sample firms falls within one of the following three industry groupings: banks, investment and financial services, or insurance. is an institution. is ascertained. The presence of block holdings within firms is captured by the percentage of ordinary shareholders' equity held by block shareholders (where holdings of greater than 5% of ordinary shareholders equity comprise a block holding). Finally, the percentage of shareholdings held by the top twenty investors (identified in a note to the accounts) captures the concentration of firm shareholdings.

These three attributes are considered within this summary measure since more independent owners are seen to be more objective in the fulfilment of their

corporate governance role. For example, institutional ownership within the firm enhances corporate governance by discouraging management from partaking in myopic investment behaviour (Bushee 1998). Similarly, the presence of block shareholdings also improves corporate governance (Coulton, James and Taylor, 2003), as do more concentrated shareholdings (Yeoh and Jubb 2001).

The method of determination for the above governance attributes is summarised at Figure 1. The score for OSHIP is determined in a similar manner to that adopted for BOARD and COMMEE. Standardisation of the total score, by dividing by the number of attributes comprising the variable (i.e. three), results in a maximum value for OSHIP of one.

The final measure of corporate governance pertains to the audit function. Five like attributes are selected to comprise the summary measure of audit quality, given their ability to make a contribution to the efficiency of the external audit process, considered pivotal to effective corporate governance (Cadbury Committee 1992). In particular, a firm's audit quality (AUDIT) is assessed by determining whether the firm has appointed an audit committee and how often that committee meets. In addition, we consider the extent of that committee's independence as reflected in the proportion of non-executive directors comprising the committee, where such directors are not gray. External auditor size and independence are also considered to reflect audit quality.

Indeed, appointing audit committees and restricting their membership to independent directors are moves considered to improve corporate governance (Rosenstein & Wyatt 1990).

Wolnizer (1995) argues that audit committees may improve the accountability of managers and lead to more effective and responsible corporate governance, while Abbott and Parker (2002) claim that active and independent audit committees are more inclined to demand higher audit quality. Furthermore, increased frequency of audit committee meetings is associated with lower levels of earnings management (Xie, Davidson and DaDalt, 2003) and a reduced incidence of financial restatements (Abbot, Parker and Peters, 2004).

Further, the common proxy of audit firm size is also used to gauge audit quality, with reference to whether or not the auditor is a Big X firm. Although the market perceives Big X auditors to be of higher quality (Krishnan and Yang 1999), certain misgivings have emerged regarding the validity of using this proxy to capture audit quality. As a result, a measure of auditor independence as reflected in fees paid for the provision of non-audit services is also incorporated into the AUDIT variable (DeFond, Raghunandan and Subramanyam 2002). Specifically, the lower the fees paid by clients to their auditors for non-audit services, the more independent the auditor is considered to be.

Figure 1 summarises the method for determining each of the five audit quality attributes, with the AUDIT score being calculated as per the other three governance dimensions (BOARD, COMMEE and OSHIP). Again, standardisation results in the maximum value possible for AUDIT being one.

### 3.3 Control Variables and Model

Firm size is expected to be positively related to earnings quality because of the political pressure and investor scrutiny faced by larger firms (Warfield, Wild and Wild, 1995). There is also empirical evidence of firm size being positively related to accrual quality (Dechow and Dichev, 2002). We use the logarithm of sales to base ten as our firm size control variable (SIZE). We also control for firm performance (PERFORM) via the return on assets ratio, given that poorer performing firms are expected to be more likely to manipulate their earnings figures resulting in reduced earnings quality (for example, Burgstahler and Dichev, 1997).

Firms' growth opportunities may also affect earnings quality, since low-growth firms are likely to have fewer investment opportunities and therefore high free cash flows and excess cash. This situation encourages managerial opportunism in the form of excessive perquisite consumption, hiding of non-optimal expenditures, misappropriation of assets and salary enhancement (Jensen, 1986). It has also been suggested (Summers and Sweeney, 1998) that managers of firms experiencing a slowing or reversal of growth may be induced to engage in earnings manipulation in order to maintain the appearance of consistent growth. We use the book-to-market ratio to proxy for growth opportunities (Smith and Watts, 1992) and associated information asymmetry (INFO).

Lastly, the debt-to-total assets ratio is employed as a surrogate for firm leverage (LEVG) which is also expected to impact on earnings quality. While more highly leveraged firms may be motivated to manipulate earnings to avoid debt covenant violations (DeFond and Jiambalvo, 1994), firms approaching financial distress may be more closely monitored by debt-holders resulting in reduced opportunities for manipulation. Hence, the direction of the association between leverage and earning quality is not predicted.

While the aforementioned controls are used in the regressions reported in the following section, we also repeat the regressions using alternative specifications of the control variables. Our model, investigating the relationship between earnings quality and the firm's corporate governance attributes, is shown below:

$$\text{ACCRUALS} = \alpha + \beta_1\text{BOARD} + \beta_2\text{COMMEE} + \beta_3\text{OSHIP} + \beta_4\text{AUDIT} + \beta_5\text{SIZE} + \beta_6\text{PERFORM} + \beta_7\text{INFO} + \beta_8\text{LEVG} + \varepsilon$$



VARIABLE	MEANING
ACCRUALS	Earnings quality as reflected in firm's total net operating accruals
BOARD	Board autonomy
COMMEE	Presence and quality of board committees
OSHIP	Independent ownership
AUDIT	Audit quality
SIZE	Firm size
PERFORM	Firm performance
INFO	Information environment
LEVG	Firm leverage

#### 4. Descriptive Statistics and Results

Table 2<sup>30</sup> summarises the descriptive statistics for the overall governance scores, the four independent variables and the individual governance attributes for the years 2000 and 2002. The table shows that the mean value of the overall governance score for all firms is 2.28 for 2000, increasing to 2.70 for 2002. An ANOVA test reveals that these are significantly different at  $p < 0.001$ . The scores for both years approximate a normal distribution. Three of the four corporate governance variables (BOARD, OSHIP and AUDIT) show significant increases between 2000 and 2002.

Results for t-tests comparing the corporate governance scores of high and low quality firms for the years 2000 and 2002 are presented in Table 3. Sample firms are classified as high quality if their accruals are below the median, while firms that have accruals greater than the median are categorised as low quality. The results indicate that corporate governance does improve from the year 2000 to 2002 for both high and low quality firms; however, neither result is statistically significant.

The distribution of the ACCRUALS variable is summarised in Table 4. Accruals decrease from 2000 to 2002, with reference to both mean and median values, indicating an improvement in earnings quality over time.

##### 4.1 Regression Results for 2000 and 2002

Table 5A contains the results of the linear regression for 2000, which investigates the relationship between a firm's corporate governance and earnings quality for the entire sample. The regression incorporates four standardised independent variables (BOARD, COMMEE, OSHIP, AUDIT) and four control variables (SIZE, PERFORM, INFO, LEVG).<sup>31</sup> Table

<sup>30</sup> This table is also in our paper (O'Sullivan, Percy and Stewart, 2008).

<sup>31</sup> The Pearson Correlation Coefficients (not reported) for the above regression variables indicate that all of the significant associations identified return r values of less than 0.5, indicating little or no correlation between the variables.

5A indicates that none of the predictor variables is statistically significant, with only two returning negative coefficients as anticipated (COMMEE and OSHIP). Similarly, the overall model is statistically insignificant, while the ANOVA results also reveal a statistically insignificant model.<sup>32</sup>

In order to examine high and low quality companies separately, the regression is re-run for firms within the top and bottom halves of the sample, split on median accruals. Specifically, firms with lower accruals (comprising the top half of the sample in the first regression) are considered to have higher quality reported earnings. Conversely, companies with higher accruals (constituting the second half of the sample in the original regression) are assumed to have lower quality reported earnings.

Table 5B presents the results of the linear regression for 2000, which investigates the relationship between a firm's corporate governance and earnings quality for firms of high quality (lower accruals) only.<sup>33</sup> The coefficients for the predictor corporate governance variables are unexpectedly positive, apart from that of the insignificant COMMEE variable. Two of the controls, LEVG and SIZE, are statistically significant at the 5% and 10% levels respectively. The adjusted R Square statistic indicates that the model explains only 8.7% of the firm's earnings quality.<sup>34</sup> The ANOVA results do, however, reflect a statistically significant model ( $p=0.036$ ).<sup>35</sup>

<sup>32</sup> When the summary corporate governance variable (CG) is investigated in the regression analysis, an insignificant t-statistic is returned. Further, when regressions are twice repeated with alternative proxies, controls still fail to return t-statistics greater than two.

<sup>33</sup> The Pearson Correlation Coefficients for the above regression variables (not reported) indicate that all of the significant correlations have associated r values of less than 0.5, indicating minimal or no correlation between the variables.

<sup>34</sup> The regression was repeated with alternative surrogates for the controls. When earnings per share is substituted for PERFORM and earnings-price ratio proxies for INFO, a slightly different result is obtained. SIZE ceases to be significant but LEVG becomes more strongly significant at the 1% level of confidence. Further, AUDIT remains significant and PERFORM is negative and strongly significant at a 1% level of confidence. The explanatory power of the model also rises dramatically to 28.1%. The results for the final regression remain largely unchanged from the second regression, despite changes in the SIZE (log of total assets) and INFO (book to market ratio) control variables. Finally, the overall corporate governance measure (CG) fails to return a significant result.

<sup>35</sup> The skewness and kurtosis of the dependent variable indicate that ACCRUALS is not normally distributed. However, a number of potential transformations were attempted<sup>35</sup>. Given that transformations failed to substantially improve the distribution of ACCRUALS to a

Table 5C presents the results of the second linear regression for 2000, investigating the association between a firm's corporate governance and earnings quality for firms of lower quality only.<sup>36</sup> The above table contains coefficients for the corporate governance variables that are negative as expected in the case of COMMEE and OSHIP only; however none returns significant *t*-statistics. One control, LEVG, is statistically significant at the 5% level. Further, the linear model fails to attain statistical significance.<sup>37</sup> The ANOVA results also indicate a statistically insignificant model ( $p=0.6$ ).<sup>38</sup>

The corresponding 2002 results are presented in Tables 6A, 6B and 6C. Table 6A summarises the results for the sample in its entirety.<sup>39</sup> Only one of the predictor variables is negative and statistically significant at a 5% level, being AUDIT (audit quality). The adjusted R Square (at 7.3%) is lower for the two halves of the sample combined, as compared to the models run for high and low quality firms separately, reflecting a model with low explanatory

point where it more closely resembled normality, the decision was made not to transform the dependent variable. Further, the variance inflationary factors for each predictor variable are below two, which does not suggest the presence of multicollinearity. Finally, the Durbin Watson statistic of 2.165 would indicate that autocorrelation of residuals does not present a problem for the above regression results.

<sup>36</sup> The Pearson Correlation Coefficients for the above regression variables (not presented) indicate that all but one of the significant correlations have associated *r* values of less than 0.5, indicating minimal or no correlation between the variables. However, there is a positive correlation between two control variables (PERFORM and LEVG) with an *r* value of 0.665.

<sup>37</sup> The regression is repeated with alternative proxies for the controls. None of the *t*-statistics are greater than two, for either the independent variables or the controls. However, LEVG continues to produce a strong result. In the next regression, LEVG is significant as is PERFORM (earnings per share), which is positive (1% level). The summary corporate governance measure (CG) is also insignificant.

<sup>38</sup> The skewness and kurtosis of the dependent variable indicate that ACCRUALS is again not normally distributed. However, given that ACCRUALS was not transformed for high quality firms, the raw dependent variable is investigated to maintain consistency. The variance inflationary factors for each independent variable are less than two, which indicates the absence of multicollinearity. Lastly, the Durbin Watson statistic of 2.039 suggests that autocorrelation of residuals is not a concern for the regression results.

<sup>39</sup> The Pearson Correlation Coefficients (not reported) indicate that the *r* values for all significant correlations are below 0.5, apart from two. Again, the associations between AUDIT and COMMEE, as well as SIZE and COMMEE, return *r* values greater than 0.5 (0.511 and 0.529 respectively).

power. However, the ANOVA results are statistically significant ( $p=0.007$ ).<sup>40, 41</sup>

Table 6B reveals that only one of the coefficients for the independent governance variables is negative as predicted, that is AUDIT (audit quality). This indicates the positive relationship of the creation of an audit committee, its independence, the frequency with which it meets, the appointment of a Big X auditor and the independence of the auditor, with earnings quality. Further, this variable is significant at the 5% level of significance. Two of the controls (LEVG and PERFORM) are statistically significant at the 1% and 5% levels, respectively. The adjusted R Square reflects an overall model that explains 15.2% of a firm's earnings quality, which is higher than the corresponding value of 8.7% for 2000.<sup>42</sup> The ANOVA results also indicate a statistically significant model ( $p=0.005$ ).<sup>43, 44</sup>

<sup>40</sup> When the summary CG variable is investigated, a statistically insignificant result is returned. In addition, when regressions are twice repeated with alternative surrogates, all controls fail to return *t*-statistics greater than two.

<sup>41</sup> The normality measures for the above regression indicate, as expected, that the dependent variable (ACCRUALS) is not normally distributed, as reflected in the skewness and kurtosis values. The variance inflationary factors for the independent variable are less than two, which suggests that multicollinearity is not a concern. Finally, the *d* statistic of 1.966 indicates that the residuals are not autocorrelated.

<sup>42</sup> The regression is run again with other proxies for the controls. When earnings per share is used to reflect PERFORM and earnings-price ratio proxies for INFO, the former ceases to be significant. However, INFO approaches significance with a *t*-statistic of 1.671. LEVG also remains significant as do AUDIT and COMMEE. The results for the final regression remain largely unchanged from the first regression, despite changes in the SIZE (log of total assets) and INFO (book to market ratio) control variables. Lastly, the summary corporate governance measure (CG) is insignificant when run in place of the individual governance attributes.

<sup>43</sup> The skewness and kurtosis of the dependent variable indicate that the distribution of ACCRUALS does not approximate normality. The dependent variable though is not transformed, given the sample size and to maintain consistency with the approach to data analysis for 2000. Multicollinearity does not appear to present a problem for the regression results, with the variance inflationary factors for each independent variable being less than two. Similarly, autocorrelation of residuals is not an issue, given the Durbin Watson statistic of 2.051.

<sup>44</sup> The results of the same linear regression for lower quality firms are presented in Table 6B. The Pearson Correlation Coefficients for the regression variables (not reported) indicate that the *r* values for all significant correlations are below 0.5, apart from the association between AUDIT and COMMEE ( $r=0.575$ ), and that of SIZE and COMMEE ( $r=0.511$ ).

The results in Table 6C reveal that the coefficients for three of the four corporate governance variables are negative as anticipated, with the exception being OSHIP. However, none is statistically significant. Two of the control variables (PERFORM and INFO) are significant at the 5% and 10% significance levels, respectively. The relationship between PERFORM (firm performance) and ACCRUALS (earnings quality) indicates that stronger performing firms are more likely to exhibit increased operating accruals, which translates into lower earnings quality. Perhaps such firms are upwardly managing earnings in order to bolster their bottom line, thereby enhancing their reported performance. Conversely, weaker performers are more likely to report lower net operating accruals, representing higher earnings quality. This may be an attempt by firms to convey some good news to the market to compensate for their poor performance. Further, a negative association is identified between the information environment (INFO) of the firm and net operating accruals. This finding suggests that high growth firms report lower net operating accruals, which reflects higher earnings quality. Such firms, which are characterised by fewer assets in place, would be keen to convey to the market their worthiness of future investment. The adjusted R Square indicates that the model explains 29.2% of the firm's earnings quality.<sup>45</sup> The ANOVA results are also statistically significant ( $p=0.00$ ).

#### **4.2 Comparison of Regression Results for 2000 and 2002**

Some interesting results are reported with respect to the examination of quality. Firstly, when only high quality firms are investigated for the year 2000, the gearing of the firm (LEVG) is positively associated with accruals (ACCRUALS), and thus negatively related to earnings quality. Further, the size (SIZE) of the company has a positive relationship with earnings quality.

When considering firms in 2002, a different scenario emerges. Audit quality (AUDIT) is a powerful predictor variable for high quality firms and this time the relationship is as expected, which was not the case in 2000. That is, firms with higher audit quality are more likely to exhibit better earnings quality. Specifically, appointing an audit committee, its independence, how often it meets, the employment

of a Big X auditor and the auditor's independence combine to exhibit a positive association with the earnings quality of the firm. However, COMMEE (presence and quality of board committees) and earnings quality exhibit an unexpectedly negative relationship. Further, as was the case in 2000, LEVG appears to have a negative effect on quality, whereby firms with lower levels of leverage are more likely to exhibit higher earnings quality. Unlike 2000, firm performance (PERFORM) emerges as significant with stronger performing firms exhibiting lower earnings quality, and firm size no longer has any significant effect.

When taking into account firms of lesser quality for 2000, a different set of relationships is revealed.<sup>46</sup> Only leverage factors in the quality of reported earnings for such firms; however quality and leverage now move in the same direction. For lower quality firms in 2002, again corporate governance does not appear to affect the firm's earnings quality. The performance effect persists for firms in 2002, whereby a negative association between PERFORM and earnings quality is revealed.

With respect to all firms for the year 2000, firm size has the strongest association with earnings quality, with SIZE and quality moving in the same direction.<sup>47</sup> The same association was evident among high quality firms, but not lower quality firms. When the entire group of firms for 2002 is investigated, AUDIT (audit quality), PERFORM (firm performance) and INFO (firm's information environment) exhibit significant explanatory power.

Overall then, the results presented above reveal limited support for the hypothesised positive association between corporate governance and earnings quality. Specifically, only audit quality is shown to have a positive relationship with a firm's earnings quality, and only in 2002. The control variables return some significant results, which vary according to the nature of the sample (that is, high quality firms, low quality firms or entire sample) and the period under consideration (2000 or 2002). For example, a positive association is observed between earnings quality and firm size in 2000, and between earnings quality and a firm's information environment in 2002. Further, a negative relationship between earnings quality and firm leverage is reported in both years, but only for high quality firms.

The dominance of the control variables continues when the samples for 2000 and 2002 are combined to test the effect of corporate governance on earnings quality. A logistic regression is performed,<sup>48</sup>

<sup>45</sup> The regression is repeated twice with alternative surrogates for the control variables. The *t*-statistics are all insignificant for the corporate governance variables. Both LEVG (debt to total assets) and INFO (book to market) are significant in the second regression. Further, LEVG continues to produce a strong result in the final regression, with PERFORM (earnings per share) returning a *t*-statistic of 2.225. The overall corporate governance measure (CG) is also insignificant.

<sup>46</sup> Note that some degree of caution should be adopted in interpreting these results due to the low significance of the regression model.

<sup>47</sup> See previous footnote.

<sup>48</sup> The Spearman Correlation Coefficients (not reported) indicate that the highest Spearman's rho recorded is 0.461, relating to the positive association between COMMEE and

delineating between high and low quality firms for the purposes of specifying the dependent variable, with the results summarised in Table 7.<sup>49</sup>

None of the corporate governance variables is significant; however all control variables return significant Wald statistics. In particular, firm size (SIZE) and information environment (INFO) share a positive relationship with earnings quality. However, a negative association is revealed between firm performance (PERFORM) and earnings quality, which is also the case for firm gearing (LEVG). Finally, with respect to the year of the sample (YEAR), a negative relationship is apparent. That is, higher quality firms are more prominent in 2002 than in 2000, indicating a significant improvement in the quality of report earnings across time.

#### **4.3 Implications of Results: Corporate Governance and Earnings quality**

Firstly, AUDIT (audit quality), consisting of the presence and independence of the audit committee, its meeting frequency, the use of a Big X auditor and the auditor's independence, is the one corporate governance dimension that yields a statistically significant result, and only appears to improve earnings quality as expected in 2002. It may be that the high profile corporate collapses occurring in 2001, that saw auditors being held partially responsible for their client's transgressions, resulted in auditors becoming more vigilant in ensuring the integrity of their client's financial reporting process.

The relationship between leverage (LEVG) and quality is predominantly negative, whereby highly levered firms exhibit higher levels of accruals and therefore lower earnings quality. This finding is in keeping with empirical research which indicates that income-increasing accruals may be motivated by a desire to delay or avoid costs associated with debt covenant violation (DeFond and Jiambalvo, 1994). Similarly, the type of management team that is likely to overextend its company financially may also be less inclined to concern itself with the quality of their financial reports, perhaps reflecting a deficient corporate ethos within the firm. This negative association between leverage and firm quality is evident in the complete sample for 2000 and 2002 combined, as well as the 2000 and 2002 sub-samples of firms of higher quality.

Firm performance (PERFORM) also displays significant explanatory power with respect to earnings

quality in 2002. Firms may be using income-increasing accruals to bolster their bottom-line, which in turn enhances their perceived performance. It may also be that poorer performing firms, keen to improve their corporate image, use financial reporting quality to signal their worth to the market. This relationship persists when the samples for 2000 and 2002 are combined.

A firm's information environment (INFO) is another control variable that has a positive association with earnings quality, particularly in 2002. The results show that high growth firms prepare reports higher quality earnings, which may be explained by a desire to reduce information asymmetry in the hope of acquiring lower cost finance to fund future growth (see, for example, Francis *et al.*, 2005; and in an Australian context, Gray, Koh and Tong, 2009). The size of the firm (SIZE) also seems to vary with earnings quality. Specifically, large firms are found to be of higher quality with respect to the combined 2000 and 2002 sample, and the high quality subsample in 2000. This positive association between size and earnings quality may be motivated by a desire to minimise political costs. By enhancing the quality of their financial reporting, large firms may minimise their political sensitivity and enhance their public profile.

Lastly, when the samples are combined in the final regression analysis, the YEAR to which the firm observation belongs has a bearing on quality. Higher quality firms are more apparent in the year 2002 than in 2000, indicative of an improvement in earnings quality over time. This may be a result of the change in the corporate reporting environment following the financial demise of a number of large firms. Companies may have been attempting to meet increased user expectations for timely and accurate financial reporting, to instil confidence regarding their future viability.

#### **5. Conclusion**

We investigate the association between various corporate governance dimensions and earnings quality, measured as total accruals (being the difference between earnings and free cash flows) for the years 2000 and 2002, the years around a number of major corporate collapses. Overall, our results provide limited support for the hypothesised positive association between corporate governance dimensions and earnings quality. Specifically, only audit quality is shown to have a positive relationship with a firm's earnings quality, and only in the year 2002. However, higher quality firms are more prominent in 2002 than in 2000, indicating an improvement in the quality of reported earnings across time. Interestingly, a number of control variables return significant results which suggests that economic considerations (such as firm size, leverage and growth opportunities) may have an

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SIZE. Hence, there is minimal correlation among regression variables, so it is unlikely to threaten the validity of the results.

<sup>49</sup> For the logistic regression, because of the way the dependent variable (ACCRUALS) is specified, the directions of the expected relationships between dependent and independent or control variables are opposite to those expected for the previous linear regressions.

overriding impact on reporting quality, compared to corporate governance.

Finally, the limitations of the research findings presented throughout this study need to be recognised. This study compiles an index of governance mechanisms arriving at an overall corporate governance score. Although superior to a study investigating individual corporate governance mechanisms, attaching an equal weighting to the governance attributes assumes that every attribute is equally important to all firms. Additionally, an amalgamation of corporate governance attributes carries with it the risk that any relationship observed with disclosure or earnings quality may be spurious. Further, using summary independent variables also has the potential to mask major underlying relationships.

Another challenge to the internal validity of the model arises from the selection of the sample on predetermined criteria, subject to data availability. For instance, the sample in this study is selected from the top 300 firms by net profit, for the years 2000 and 2002, subject to certain exclusions. Examining a non-random<sup>50</sup> sample of firms introduces an inherent bias into the study (Watts 1994). As larger firms are expected to disclose more information, the probability of finding what we are looking for is maximised. Similarly, a selection bias may exist if sample firms are selected on a certain variable (such as firm size) and later found to differ from the population (that is, all firms listed on the Australian Stock Exchange) on the basis of other variables. Correlated omitted variables may be driving the sample results.

These limitations notwithstanding, our study contributes to the growing body of earnings quality literature by investigating the role of corporate governance in promoting earnings quality within an Australian context. This role is particularly topical due to recent discoveries of reporting irregularities and related corporate collapses (see, for example, Browning and Weil 2002; Clarke, Dean and Oliver, 2003; Ghosh, 2010). The corporate governance findings are expected to be of international relevance, given the global interest in corporate governance and its role in safeguarding the integrity of financial reports and ultimately preventing momentous corporate failures.

Future research could extend the study by expanding the time period under consideration, given that this study only considers two years (2000 and 2002). It would be interesting to discover whether the findings persist into the present. In particular, it may be worthwhile to consider whether the improvements in corporate governance exhibited from 2000 to 2002 have been sustained, since the political pressure that

came to bear on firms following the spate of high profile corporate collapses, is likely to have eased.

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<sup>50</sup> This is not an epsem sample wherein each element has the same probability of appearing. Given the non-random nature of the sample, the detection of spurious associations arising from the sample design, cannot be prevented.

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Figure 1. Independent Variables

Independent Variable	Corporate Governance Attribute	Measure	Reference	Expected Relationship: Voluntary Disclosure
<b>Board Autonomy (BOARD)</b>				
Board of directors	Board independence	% of non-executive directors comprising the board that are not gray directors	Forker (1992) Uzun <i>et al.</i> (2004)	+
	Absence of dominant personality	Separation of roles of CEO and Chairman	Blackburn (1994) Molz (1988)	+
	Independence of the chair	Chairman is non-executive director	Coulton <i>et al.</i> (2003) Haniffa & Cooke (2000)	+
	Director ownership	% of outside director share ownership	Beasley (1996)	-
<b>Presence and Quality of Board Committees (COMMEE)</b>				
Board committees	Compensation committee	Firm has compensation committee	Davis (2001)	+
	Independence of compensation committee	% of non-executive directors comprising compensation committee that are not gray directors	Byrd & Hickman (1992) Weisbach (1988)	+
	Nomination committee	Firm has nomination committee	Davis (2001)	+
<b>Independent Ownership (OSHIP)</b>				
Capital market	Institutional ownership	Top shareholder is institutional investor	Bashee (1998)	+
	Block shareholdings	% of ordinary shareholders equity held by block shareholders (where holdings of more than 5% of ordinary shareholders' equity constitute a block holding)	Coulton <i>et al.</i> 2003	+
	Concentration of shareholdings	% of shareholdings held by top 20 investors	Yeoh and Jubb 2001	+
<b>Audit quality (AUDIT)</b>				
Audit quality	Audit committee	Firm has audit committee	Wolnizer (1995)	+
	Independence of audit committee	% of non-executive directors comprising audit committees that are not gray directors	Abbott & Parker (2002) Rosenstein & Wyatt (1990)	+
	Frequency of audit committee meetings	Number of audit committee meetings per year	Xie, Davidson & DaDalt (2010)	+
	Audit firm size	Big X or non-Big X	Kent, Routledge & Stewart (2010) Krishnan & Yang (1999)	+
	Auditor independence	Audit fees as % of total fees paid to auditor	DeFond, Raghunandan & Subramanyam (2002)	+

Table 1. Sample Selection Process

Potential Sample Firms - Top 300	
	300
<b>Less firms ineligible for Sample:</b>	
Funds	4
Investment Trust	4
Property Trusts	24
Trusts	11
Trustee Company	1
Overseas listed companies	13
Annual report not cover at least 6 months	4
<b>Total firms ineligible for sample</b>	<b>61</b>
<b>Total firms eligible for sample</b>	<b>239</b>

**Table 2.** Corporate Governance Variables (2000 v 2002)

Variable	Attribute	2000				2002			
		Mean	Median	Min	Max	Mean	Median	Min	Max
<b>OVERALL CORPORATE GOVERNANCE SCORE</b> (2000 v 2002: $p < 0.001$ ) <sup>1</sup>		<b>2.28</b>	<b>2.35</b>	<b>0.65</b>	<b>3.5</b>	<b>2.7</b>	<b>2.8</b>	<b>1.32</b>	<b>3.5</b>
<b>BOARD</b> (2000 v 2002: $p < 0.001$ )		0.589	0.500	0	1	0.568	0.500	0	1
	Dominant Personality	0.890	1	0	1	0.891	1	0	1
	Chair Independence	0.815	1	0	1	0.842	1	0	1
	Board Independence	0.552	0.600	0	1	0.533	0.563	0	1
	Non-executive Director Ownership	0.056	0.003	0	0.928	0.058	0.004	0	0.661
<b>COMMEE</b> (2000 v 2002: $p = 0.121$ )		0.508	0.667	0	1	0.510	0.667	0	1
	Compensation Committee	0.740	1	0	1	0.796	1	0	1
	Independence of Compensation Committee	0.657	0.667	0	1	0.673	0.750	0	1
	Nomination Committee	0.285	0	0	1	0.320	0	0	1
<b>OSHIP</b> (2000 v 2002: $p < 0.001$ )		0.503	0.667	0	1	0.834	1	0.667	1
	Top Institutional Owner	0.485	0	0	1	0.503	1	0	1
	Block Shareholdings	39.390	37.830	0	97.660	41.834	42.500	0	97.760
	Concentration of Shareholdings	63.748	66.360	0.498	99.460	64.140	65.530	12	99.290
<b>AUDIT</b> (2000 v 2002: $p < 0.001$ )		0.676	0.600	0	1	0.781	0.800	0.200	1
	Audit Committee	0.960	1	0	1	0.978	1	0	1
	Independence of Audit Committee	0.652	0.667	0	1	0.674	0.667	0	1
	Frequency of Audit Committee Meetings	3.599	4	0	14	3.989	4	1	14
	Big X Auditor	0.885	1	0	1	0.907	1	0	1
	Independence of Auditor	0.546	0.533	0.069	1	0.562	0.553	0.087	1

Variable Definitions: BOARD Board autonomy (standardised value)  
 COMMEE Presence and quality of board committees (standardised value)  
 OSHIP Independent ownership (standardised value)  
 AUDIT Audit quality (standardised value)

<sup>1</sup> = ANOVA RESULTS

**Table 3.** Mean Corporate Governance Scores for High Quality Firms and Low Quality Firms

CG	High Quality Firm (Low Accruals)	Low Quality Firm (High Accruals)		One-tailed
Year 2000	Mean	Mean	T-Test	Probability
Corporate Governance Score	2.29	2.24	0.65	0.258
Year 2002				
Corporate Governance Score	2.68	2.70	-0.205	0.419

**Table 4.** Distribution of ACCRUALS

Year 2000		Year 2002	
Maximum	35.824	Maximum	2.346
Minimum	-8.184	Minimum	-4.377
Range	44.008	Range	6.723
Skewness	8.745	Skewness	-2.677
Kurtosis	105.697	Kurtosis	20.906
Mean	0.365	Mean	0.049
Median	0.152	Median	0.071

**Table 5A.** Year 2000. Linear Model of Financial Reporting Quality. All Sample Firms

Dependent variable = Financial reporting quality as indicated by net operating accruals					
$\text{ACCRUALS} = \alpha + \beta_1\text{BOARD} + \beta_2\text{COMMEE} + \beta_3\text{OSHIP} + \beta_4\text{AUDIT} + \beta_5\text{SIZE} + \beta_6\text{PERFORM} + \beta_7\text{INFO} + \beta_8\text{LEVG} + \varepsilon$					
Variable	Predicted Sign	Coefficient	T-Statistic	Significance	
BOARD	-	0.052	0.977	0.330	
COMMEE	-	-0.120	-0.353	0.362	
OSHIP	-	-0.156	-0.390	0.348	
AUDIT	-	0.798	1.387	0.166	
SIZE	-	<b>-0.245</b>	<b>-1.652</b>	<b>**0.050</b>	
PERFORM	?	-1.929E-03	-0.250	0.401	
INFO	-	-0.142	-0.787	0.216	
LEVG	?	-0.120	-0.257	0.398	
	Sample size	199			
	Adjusted R Square	-1%			
	Durbin Watson	2.141			
	F value	0.749	0.648		
***, **, and * indicate one-tailed significance at $p < 0.01$ , $p < 0.05$ and $p < 0.10$ respectively					
Variable definitions:					
ACCRUALS	Financial reporting quality as reflected in firm's total net operating accruals				
Board	Board autonomy (standardised value)				
Commee	Presence and quality of board committees (standardised value)				
Oship	Independent ownership (standardised value)				
Audit	Audit quality (standardised value)				
Size	Firm size: Logarithm of sales (to base 10)				
Perform	Firm performance: Return on assets				
Info	Information environment: Book to market				
Levg	Firm leverage: Debt to total assets				

**Table 5B.** Year 2000. Linear Model of Earnings Quality. High Quality Firms (Low Accruals)

Dependent variable = Earnings quality as indicated by net operating accruals					
$\text{ACCRUALS} = \alpha + \beta_1\text{BOARD} + \beta_2\text{COMMEE} + \beta_3\text{OSHIP} + \beta_4\text{AUDIT} + \beta_5\text{SIZE} + \beta_6\text{PERFORM} + \beta_7\text{INFO} + \beta_8\text{LEVG} + \varepsilon$					
Variable	Predicted Sign	Coefficient	T-Statistic	Significance	
BOARD	-	0.746	1.305	0.196	
COMMEE	-	-0.260	-0.708	0.240	
OSHIP	-	1.173E-03	0.003	0.998	
AUDIT	-	<b>1.308</b>	<b>2.166</b>	<b>**0.032</b>	
SIZE	-	<b>-0.380</b>	<b>-2.248</b>	<b>**0.013</b>	
PERFORM	?	-0.941	0.349	0.174	
INFO	-	0.163	0.990	0.162	
LEVG	?	<b>1.805</b>	<b>2.387</b>	<b>***0.009</b>	
	Sample size	100			
	Adjusted R Square	8.7%			
***, **, and * indicate one-tailed significance at $p < 0.01$ , $p < 0.05$ and $p < 0.10$ respectively					
Variable definitions:					
ACCRUALS	Earnings quality as reflected in firm's total net operating accruals				
Board	Board autonomy (standardised value)				
Commee	Presence and quality of board committees (standardised value)				
Oship	Independent ownership (standardised value)				
Audit	Audit quality (standardised value)				
Size	Firm size: Logarithm of sales (to base 10)				
Perform	Firm performance: Return on assets				
Info	Information environment: Book to market				
Levg	Firm leverage: Debt to total assets				

**Table 5C.** Year 2000. Linear Model of Earnings Quality. Low Quality Firms (High Accruals)

Variable	Predicted Sign	Coefficient	T-Statistic	Significance
BOA	-	0.229	0.285	0.776
RD				
COM	-	-4.424E-02	-0.086	0.465
MEE				
OSHI	-	-0.634	-1.065	0.145
P				
AUDI	-	0.192	0.211	0.832
T				
SIZE	-	-0.102	-0.462	0.322
PERF	?	1.465E-02	1.289	0.101
ORM				
INFO	-	-0.315	-0.755	0.226
LEV	?	<b>-1.342</b>	<b>-2.077</b>	<b>**0.020</b>
G				
	Sample size	99		
	Adjusted R Square	6.7%		
	Durbin Watson	2.039		
	F value	0.805		0.600

\*\*\*, \*\*, and \* indicate one-tailed significance at  $p < 0.01$ ,  $p < 0.05$  and  $p < 0.10$  respectively.

Variable definitions:	
ACCRUALS	Earnings quality as reflected in firm's total net operating accruals
Board	Board autonomy (standardised value)
Commee	Presence and quality of board committees (standardised value)
Oship	Independent ownership (standardised value)
Audit	Audit quality (standardised value)
Size	Firm size: Logarithm of sales (to base 10)
Perform	Firm performance: Return on assets
Info	Information environment: Book to market
Levg	Firm leverage: Debt to total assets

**Table 6A.** Year 2002. Linear Model of Financial Reporting Quality. All Sample Firms

Dependent variable = Financial reporting quality as indicated by net operating accruals					
$\text{ACCRUALS} = \alpha + \beta_1\text{BOARD} + \beta_2\text{COMMEE} + \beta_3\text{OSHIP} + \beta_4\text{AUDIT} + \beta_5\text{SIZE} + \beta_6\text{PERFORM} + \beta_7\text{INFO} + \beta_8\text{LEVG} + \varepsilon$					
Variable	Predicted Sign	Coefficient	T-Statistic	Significance	
BOARD	-	2.702E-03	0.011	0.990	
COMMEE	-	0.227	1.277	0.202	
OSHIP	-	0.235	0.795	0.426	
AUDIT	-	<b>-0.649</b>	<b>-1.838</b>	<b>**0.034</b>	
SIZE	-	-2.938E-02	-0.393	0.347	
PERFORM	?	<b>5.332E-03</b>	<b>3.607</b>	<b>***0.000</b>	
INFO	-	<b>-5.058E-02</b>	<b>-1.622</b>	<b>*0.053</b>	
LEVG	?	0.263	0.937	0.175	
	Sample size	180			
	Adjusted R Square	7.3%			
	Durbin Watson	1.966			
	F value	2.756		<b>***0.007</b>	
***, **, and * indicate one-tailed significance at $p < 0.01$ , $p < 0.05$ and $p < 0.10$ respectively.					
Variable definitions:					
ACCRUALS	Financial reporting quality as reflected in firm's total net operating accruals				
Board	Board autonomy (standardised value)				
Commee	Presence and quality of board committees (standardised value)				
Oship	Independent ownership (standardised value)				
Audit	Audit quality (standardised value)				
Size	Firm size: Logarithm of sales (to base 10)				
Perform	Firm performance: Return on assets				
Info	Information environment: Book to market				
Levg	Firm leverage: Debt to total assets				

**Table 6B.** Year 2002. Linear Model of Earnings quality. High Quality Firms (Low Accruals)

Dependent variable = Earnings quality as indicated by net operating accruals					
$\text{ACCRUALS} = \alpha + \beta_1\text{BOARD} + \beta_2\text{COMMEE} + \beta_3\text{OSHIP} + \beta_4\text{AUDIT} + \beta_5\text{SIZE} + \beta_6\text{PERFORM} + \beta_7\text{INFO} + \beta_8\text{LEVG} + \varepsilon$					
Variable	Predicted Sign	Coefficient	T-Statistic	Significance	
BOARD	-	0.254	0.668	0.506	
COMMEE	-	<b>0.575</b>	<b>2.422</b>	<b>**0.018</b>	
OSHIP	-	0.107	0.250	0.802	
AUDIT	-	<b>-1.112</b>	<b>-2.286</b>	<b>**0.012</b>	
SIZE	-	4.580E-03	0.039	0.484	
PERFORM	?	<b>2.859E-03</b>	<b>1.814</b>	<b>**0.036</b>	
INFO	-	-4.550E-02	-1.358	0.089	
LEVG	?	<b>1.264</b>	<b>2.817</b>	<b>***0.003</b>	
	Sample size	90			
	Adjusted R Square	15.2%			
	Durbin Watson	2.051			
	F value	2.994		<b>***0.005</b>	
***, **, and * indicate one-tailed significance at $p < 0.01$ , $p < 0.05$ and $p < 0.10$ respectively.					
Variable definitions:					
ACCRUALS	Earnings quality as reflected in firm's total net operating accruals				
Board	Board autonomy (standardised value)				
Commee	Presence and quality of board committees (standardised value)				
Oship	Independent ownership (standardised value)				
Audit	Audit quality (standardised value)				
Size	Firm size: Logarithm of sales (to base 10)				
Perform	Firm performance: Return on assets				
Info	Information environment: Book to market				
Levg	Firm leverage: Debt to total assets				

**Table 6C.** Year 2002. Linear Model of Earnings quality. Low Quality Firms (High Accruals)

Variable	Predicted Sign	Coefficient	T-Statistic	Significance
BOARD	-	-7.529E-02	-0.393	0.347
COMMEE	-	-9.869E-02	-0.602	0.274
OSHIP	-	6.468E-02	0.259	0.796
AUDIT	-	-1.360E-02	-0.043	0.483
SIZE	-	3.082E-02	0.513	0.304
<b>PERFORM</b>	<b>?</b>	<b>2.362E-02</b>	<b>3.974</b>	<b>***0.000</b>
<b>INFO</b>	<b>-</b>	<b>-0.155</b>	<b>-1.764</b>	<b>**0.040</b>
LEVG	?	-0.267	-1.167	0.123
	Sample size	90		
	Adjusted R Square	29.2%		
	Durbin Watson	2.239		
	F value	4.186		***0.000

\*\*\*, \*\*, and \* indicate one-tailed significance at  $p < 0.01$ ,  $p < 0.05$  and  $p < 0.10$  respectively.

Variable definitions:  
 ACCRUALS Earnings quality as reflected in firm's total net operating accruals  
 Board Board autonomy (standardised value)  
 Commee Presence and quality of board committees (standardised value)  
 Oship Independent ownership (standardised value)  
 Audit Audit quality (standardised value)  
 Size Firm size: Logarithm of sales (to base 10)  
 Perform Firm performance: Return on assets  
 Info Information environment: Book to market  
 Levgy Firm leverage: Debt to total assets

**Table 7.** Year 2000 and 2002. Logistic Model of Earnings Quality

Dependent variable =1, if a firm is in the upper 40% of the sample, in terms of quality (**low accruals**) (n=152)  
 =0, if a firm is in the lower 60% of the sample, in terms of quality (**high accruals**) (n=227)

$$\text{ACCRUALS} = \alpha + \beta_1\text{BOARD} + \beta_2\text{COMMEE} + \beta_3\text{OSHIP} + \beta_4\text{AUDIT} + \beta_5\text{SIZE} + \beta_6\text{PERFORM} + \beta_7\text{INFO} + \beta_8\text{LEVG} + \beta_9\text{YEAR} + \varepsilon$$

Variable	Predicted Sign	Coefficient	Wald Statistic	Significance
BOARD	+	0.076	0.018	0.447
COMMEE	+	-0.439	1.294	0.256
OSHIP	+	-0.610	1.455	0.228
AUDIT	+	0.015	0.000	0.492
<b>SIZE</b>	<b>+</b>	<b>0.304</b>	<b>3.221</b>	<b>**0.036</b>
<b>PERFORM</b>	<b>?</b>	<b>-0.039</b>	<b>6.800</b>	<b>***0.005</b>
<b>INFO</b>	<b>+</b>	<b>0.728</b>	<b>9.195</b>	<b>***0.001</b>
<b>LEVG</b>	<b>?</b>	<b>-2.084</b>	<b>8.184</b>	<b>***0.002</b>
<b>YEAR</b>	<b>?</b>	<b>-0.647</b>	<b>4.773</b>	<b>**0.014</b>
	Sample size	379		
	Chi-squared statistic	51.743		
	Significance level	0.000		
	Nagelkerke R square	17.2%		

\*\*\*, \*\*, and \* indicate one-tailed significance at  $p < 0.01$ ,  $p < 0.05$  and  $p < 0.10$  respectively.

Variable definitions:  
 ACCRUALS 0/1 dummy variable set to 1 for firms of higher quality (low accruals) and 0 otherwise  
 Board Board autonomy (standardised value)  
 Commee Presence and quality of board committees (standardised value)  
 Oship Independent ownership (standardised value)  
 Audit Audit quality (standardised value)  
 Size Firm size: Logarithm of sales (to base 10)  
 Perform Firm performance: Return on assets  
 Info Information environment: Book to market  
 Levgy Firm leverage: Debt to total assets  
 Year 0/1 dummy variable set to 1 for the year 2000 and 0 for the year 2002