

RESEARCH REPORT

Do

INDEPENDENT DIRECTORS

ADD VALUE?

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DO INDEPENDENT DIRECTORS ADD VALUE?

EXECUTIVE SUMMARY

I. Introduction

- Board composition is one of the main aspects of the corporate governance debate that has been running for over a decade now.

II. Guidelines on board composition

- Corporate governance guidelines – whether published by an institutional investor organisation, a multinational corporation, a company directors’ association or a stock exchange – consistently recommend independent directors.
- Most of these guidelines also recommend the establishment of various board committees, such as an audit committee, a remuneration committee and a nomination committee. The guidelines then usually recommend that independent directors make up a certain proportion of each committee.

III. The rationale for independent directors

- The use of independent directors to monitor the performance of the executive management is one element of a broader tapestry of monitoring devices and rules which serve to reduce the divergence between the interests of shareholders and management (“agency costs”).
- It appears that those who advocate an increase in the proportion of independent directors on company boards are implicitly, if not explicitly, suggesting that such a development would bring about a net reduction in agency costs.
- A related – but subtly different – rationale for independent directors has emerged from the OECD’s project of preparing corporate governance guidelines aimed particularly at developing countries. The OECD advocates “good” corporate governance structures and practices, such as including independent directors on the board, on the basis of access to international capital markets.

IV. Overseas studies of independent directors

- US and UK studies have produced mixed results on whether independent directors add value.
- Those studies that have sought to find a relationship (direct or indirect) between board composition and corporate performance have, overall, not produced convincing evidence that independent directors enhance corporate performance. This may have implications for the studies that have shown independent directors to add value in

- specific areas – such as in relation to takeovers, executive remuneration and the quality of financial reporting. Namely, boards with a high proportion of independent directors could perform some functions better but other functions worse – resulting in no net advantage for the company.

V. The Australian studies

- Two groups of studies were carried out. The first group of studies searched for a direct relationship between board composition and corporate performance. The second group of studies focused on whether independent directors have a positive influence in the area of executive remuneration.
- On the whole, the studies produced no solid evidence that the proportion of independent directors influences corporate performance (whether measured as share price returns or accounting performance).
- The Australian experience in relation to CEO remuneration and remuneration committee composition appears to differ from that in the US. The remuneration practices of Australian companies do not appear to vary in accordance with the composition of the remuneration committee.
- Similarly, the Australian evidence on CEO influence over the board as a whole, and CEO remuneration, differs from the US evidence. The Australian studies produced no evidence that combining the roles of CEO and chairperson, or having less independent directors on the board, leads to higher CEO pay.

VI. Conclusion

- The studies described in this Research Report have not proven conclusively whether or not independent directors are valuable. What the studies *have* done is fail to produce solid evidence supporting the proposition that independent directors add value (or destroy value).
- Thus, the upshot of the studies is that, as far as Australia's largest listed companies are concerned, independent directors do not appear to have added value over the 1985 to 1995 period.
- The studies highlight the importance of local content research to take account of structural and environmental differences between different countries. Unquestioned acceptance of research results from overseas (particularly the US) will often result in proposals for regulatory reform which are not suited to the local environment.
- Each additional regulatory requirement imposed on companies adds to the compliance costs for those companies (and, indirectly, their shareholders). Therefore, even if the empirical evidence unequivocally indicated that board structure and composition improved corporate performance, it would still be necessary to ask whether the costs of imposing governance regulations on all listed companies would be outweighed by the benefits. However, as the studies' results do not provide any support for the

proposition that independent directors add value in terms of corporate performance or CEO remuneration, we have not reached first base.

- There is no sound body of empirical evidence in Australia supporting the introduction of prescriptive corporate governance requirements.

DO INDEPENDENT DIRECTORS ADD VALUE?

I. Introduction

Board composition is one of the main aspects of the corporate governance debate that has been running for over a decade now. Virtually all corporate governance guidelines say something about board composition. Typically, there is a recommendation that a board of a listed public company should contain a minimum number or proportion of “independent” non-executive directors.

This Research Report describes the first group of Australian studies of the effectiveness of independent directors. The studies revealed no evidence that independent directors either improve corporate performance or are more effective than other directors when it comes to setting the pay of the chief executive officer (CEO).

Section II of the Report summarises the recommendations, in relation to board composition, of several sets of corporate governance guidelines. Section III examines the theoretical rationale for including independent directors on the board. Section IV summarises the results of a range of US and UK studies of the effectiveness of independent directors. These studies have produced mixed results on whether independent directors add value. Section V of the Report details the methodology and results of the Australian studies carried out by the authors. Section VI concludes the body of the Report. It describes several factors that may go some way to explaining the results of our studies. It also discusses the regulatory implications of this research. The Appendix explains some statistical tests that were carried out to ensure that the results of our studies are robust.

II. Guidelines on board composition

Table 1 summarises the recommendations, in relation to board composition, contained in the corporate governance guidelines of a number of bodies from around the world. It reveals that, regardless of whether the guidelines are those of an institutional investor organisation, a multinational corporation, a company directors' association or a stock exchange, independent non-executive directors are consistently recommended. Most of these guidelines also recommend the establishment of various board committees, such as an audit committee, a remuneration committee and a nomination committee. The guidelines then usually recommend that independent directors make up a certain proportion of each committee.

TABLE 1 Corporate governance guidelines: Board composition

Issuing body	Recommendation
AIMA (1997) (Australia)	<ul style="list-style-type: none"> a majority of board members should be independent non-executive directors
Bosch Committee (1995) (Australia)	<ul style="list-style-type: none"> a majority of board members should be non-executive directors at least one-third of board members should be independent non-executive directors
London Stock Exchange (1998) (UK)	<ul style="list-style-type: none"> at least one-third of board members should be non-executive directors a majority of the non-executive directors should be independent
NACD (1996) (US)	<ul style="list-style-type: none"> a substantial majority of a board's members should be independent directors
Business Roundtable (1997) (US)	<ul style="list-style-type: none"> a substantial majority of directors should be outside (non-management) directors
American Law Institute (1994) (US)	<ul style="list-style-type: none"> boards should be composed of a majority of independent directors
CalPERS (1998) (US)	<ul style="list-style-type: none"> a substantial majority of the board should consist of directors who are independent
General Motors (1994) (US)	<ul style="list-style-type: none"> as a matter of policy there should be a majority of independent directors on the GM board
Toronto Stock Exchange (Canada)	<ul style="list-style-type: none"> the board of directors of every corporation should be constituted with a majority of individuals who qualify as unrelated (independent) directors
Viénot Committee (1995) (France)	<ul style="list-style-type: none"> the boards of all listed companies should have at least two independent members
ICGN (1998) (international)	<ul style="list-style-type: none"> boards shall consist of sufficient independent directors to influence the conduct of the board as a whole
OECD (1999) (international)	<ul style="list-style-type: none"> in order for boards to effectively fulfil their responsibilities they must have some degree of independence from management

Corporate governance guidelines are by no means the only proponent of independent directors. In recent years they have become a policy prescription in utility reforms in Australia. The Queensland Electricity Industry Structure Task Force (1997) recommended that the boards of the restructured state-owned electricity distributors contain a majority of independent directors.

III. The rationale for independent directors

In most listed companies there is a division between the shareholders, the board, and management, due to the size and scale of operation of such companies. Although there is usually some overlap between the constituents of each group, it is important to appreciate the division and why it exists:

The corporate form of firm organization has obvious advantages for shareholders (suppliers of capital) and managers. Shareholders can participate in the gains from entrepreneurial ventures even though they lack management skills; managers can pursue profitable business opportunities even though they lack large personal wealth. Both parties benefit from this division of labor. (Fischel 1982, p 1262)

However, as well as benefits from specialisation of function, there are also certain costs inherent in the corporate form of firm organisation (Fischel 1982). The most significant of these are “agency costs” (Jensen and Meckling 1976).¹ Agency costs arise because the interests of shareholders and managers sometimes diverge:

As residual claimants on the firm’s income stream, shareholders want their agents – the firm’s managers -- to maximise wealth. Because managers cannot capture all of the gains if they are successful, and will not suffer all of the losses should the venture flop, they have less incentive to maximise wealth than if they themselves were the principals. Rather, managers have an incentive to consume excess leisure, perquisites and in general be less dedicated to the goal of wealth maximisation than they would be if they were not simply agents. (Fischel 1982, pp 1262-1263)

Agency costs comprise (i) the costs incurred by shareholders in monitoring managers in order to minimise the divergence between their interests; (ii) “bonding” costs incurred by managers; and (iii) the residual loss resulting from the remaining divergence in shareholders’ and managers’ interests (Jensen and Meckling 1976).

Regarding (i) and (ii), there are in fact numerous legal rules, devices and market forces (*eg* the market for corporate control (takeovers), the capital and product markets, and the market for managerial talent) which serve to reduce the divergence between the interests of shareholders and managers (Butler 1989). Where a change in the use of such devices and rules brings about a net reduction in agency costs, corporate financial performance will, in theory, improve. It is significant in the present context that the use of independent non-executive directors to monitor the performance of the executive management is generally treated as an element of this tapestry of monitoring devices and rules. It appears that those who advocate an increase in the proportion of independent non-executive directors on company boards are implicitly, if not explicitly, suggesting that such a development would bring about a net reduction in agency costs.

How might independent directors reduce agency costs? It is accepted widely that the boards of virtually all large Australian (and overseas) public companies do not manage their companies’ day-to-day businesses. This is a task performed by the executive management. The board’s role has instead been referred to by the Cadbury Committee (1992a, para 1.4) as one of

“direction and control of the company”, and by the Bosch Committee (1995, p 7) as “oversee[ing] the management of the business”. It is in the exercise of the oversight – or monitoring – function that a central difference between the roles of executive and non-executive directors becomes clear: executive directors “are responsible (as managers) for activities which it is the duty of the board as a whole to monitor. ... This means that the nature of the monitoring role is *ipso facto* different for non-executive directors” (Charkham 1989, p 13).

This reasoning is usually taken one step further, because there is a distinction between those non-executive directors who are, and those who are not, independent of the executive management and free from any business or other relationship with the company that could compromise their autonomy. The former are known as independent non-executive directors, and the latter are known as affiliated non-executive directors. Clearly, of these two types of non-executive directors, independent non-executives are theoretically in the better position to effectively monitor the executive management.²

The various bodies promoting independent directors through their corporate governance guidelines adopt this agency-cost rationale for independent directors, although some do so more explicitly than others. For instance, the Cadbury Committee (1992, paras 4.4-4.6) views independent directors as particularly useful in reducing agency costs arising in areas such as takeovers, boardroom succession and executive remuneration:

Non-executive directors have two particularly important contributions to make to the governance process as a consequence of their independence from executive responsibility. ... The first is in reviewing the performance of the board and of the executive. ... The second is in taking the lead where potential conflicts of interest arise. An important aspect of effective corporate governance is the recognition that the specific interests of the executive management and the wider interests of the company may at times diverge, for example over takeovers, boardroom succession, or directors’ pay. Independent non-executive directors, whose interests are less directly affected, are well-placed to help to resolve such situations.

Similarly, the OECD’s corporate governance guidelines (OECD 1999) state:

Independent board members can contribute significantly to the decision-making of the board. They can bring an objective view to the evaluation of the performance of the board and management. In addition, they can play an important role in areas where the interests of management, the company and shareholders may diverge such as executive remuneration, succession planning, changes of corporate control, take-over defences, large acquisitions and the audit function.

In Australia, the “Blue Book” guidelines published by AIMA (1997, p 20) (which merged with two other bodies in early 1998 to form the Investment and Financial Services Association (IFSA)) state:

If the majority of the board are genuinely independent they have the power to implement board decisions, even contrary to the wishes of management or a major shareholder, if the need arises. ... The independent board majority is a key mechanism to assure shareholders that their company will be run competently in its own best interests and consequently in the best interests of all shareholders.

¹ These costs are called “agency” costs because the body of shareholders and the executive management are, in a loose non-legal sense, in a principal:agent relationship.

² Nevertheless, even independent non-executive directors face several disincentives to detailed monitoring: see Stapledon and Lawrence (1997), pp 158-161.

A related – but subtly different – rationale for independent directors has emerged from the OECD’s project of preparing corporate governance guidelines aimed particularly at developing countries. The drafting of these guidelines followed the report of the OECD’s Business Sector Advisory Group on Corporate Governance, chaired by Ira Millstein (OECD 1998). As its title indicates (*Corporate Governance: Improving Competitiveness and Access to Capital in Global Markets*), that report advocates “good” corporate governance structures and practices, such as including independent directors on the board, on the basis of access to international capital markets:

Failure to adapt to efficient governance practices may well lead to restricted access to capital markets. ... [T]he current crisis in the East Asian economies provides a stark example. Capital providers increasingly rely on the corporate governance of the corporations they invest in, or lend to, to provide actual accountability and responsibility to investors and lenders.

The preamble to the guidelines (OECD 1999) develops the same theme:

The degree to which corporations observe basic principles of good corporate governance is an increasingly important factor for investment decisions. Of particular relevance is the relation between corporate governance practices and the increasingly international character of investment. International flows of capital enable companies to access financing from a much larger pool of investors. If countries are to reap the full benefits of the global capital market, and if they are to attract long-term “patient” capital, corporate governance arrangements must be credible and well understood across borders.

Indeed, the authors of this Report have observed anecdotal evidence in the Australian market place of US investors turning to Australia during the recent Russian and South American financial crises due to perceived benefits of Australian governance structures.

The logical extension of this approach is that, even if independent directors do not add value, companies should still engage them because investors and potential investors *believe* they add value. And the evidence indicates that important investors *do* believe that independent directors are value-adding: major institutional investors (such as CalPERS) and institutional investor representative bodies (such as AIMA/IFSA) have been high-profile proponents of independent directors.

IV. Overseas studies of independent directors

A. Independent directors and corporate performance

A number of empirical studies have been conducted in the United States in recent years on whether there is any link between independent directors and corporate performance. The main studies are summarised below. It should be noted that in some of these studies the definition of an independent director embodied criteria slightly different to those used in the AIMA / IFSA guidelines (which were used in the Australian studies described later in this Report). This point, together with any structural and environmental differences between the US and Australia (Bird 1995, pp 256-257), should be borne in mind when considering these studies.

1. Direct studies

Some US researchers have looked for direct evidence of a link between board composition and corporate performance. A study by Baysinger and Butler (1985) indicated that the proportion of independent non-executive directors in 1970 was positively correlated with return on equity (an accounting measure of performance) in 1980. On the other hand, studies by Klein (1998), Bhagat and Black (1997, 1998) and Hermalin and Weisbach (1991) have found that a high proportion of independent directors does not predict better future accounting performance. The studies of Klein (1998) and Bhagat and Black (1997, 1998) also found that the proportion of independent non-executive directors had no consistent effect on market-adjusted share-price performance. Then there is the study of Agrawal and Knoeber (1996), which showed that the greater the proportion of independent directors, the slower the company's growth.³ Agrawal and Knoeber interpreted their results as evidence that board independence is *negatively* related to company performance. However, the results of the Agrawal and Knoeber study are also explicable on the basis that a high proportion of independent directors was a response to slower growth rather than the cause of the slower growth (Bhagat and Black 1997). Indeed, the study by Hermalin and Weisbach (1991) showed that the proportion of independent directors tended to increase when a company performed poorly.

The Bhagat and Black (1997) study is particularly important because it was the first large-scale, long-time-horizon study in this area. The authors studied the accounting and share-price performance from 1983 through 1995 for 957 large US companies. They found that the proportion of independent directors, whether measured directly, in log form, or using dummy variables, had no consistent effect on market-adjusted share-price performance. As in the study of Agrawal and Knoeber (1996), the proportion of independent directors was found to be correlated with slower growth, across a variety of accounting variables. However, Bhagat and Black found evidence that it was the slower growth that led to a greater

³ See also Yermack (1996).

proportion of independent directors, rather than the other way around. Further, when they looked at other (non-growth) accounting measures of performance, Bhagat and Black found no solid evidence that independent directors affected firm performance one way or the other. The results persisted after controlling for board size, for company size, and for share ownership by the CEO, executive directors, non-executive directors, and external 5% blockholders.

Interestingly, a study of 100 small listed US companies found that financial performance was better in companies having a relatively large number of independent directors than in those having a relatively small number of independent directors (Daily and Dalton 1992). Recall that Bhagat and Black (1997) used a sample comprising only large listed firms. It may be, therefore, that the effect of independent directors on firm performance differs between small and large firms.

Millstein and MacAvoy (1998) adopted an unconventional approach in trying to determine whether there is a link between the board of directors and corporate performance. Rather than focusing on board composition, they focused on board behaviour:

Our experience is that boardroom behavior is what is critical, and that the professional board is an active monitoring (but not meddling) organization that participates with management in formulating corporate strategy in the interests of the shareholders, develops appropriate incentives for management and other employees to harness their interests to achieve the agreed-upon strategic plan, and then judges the performance of management against the strategic plan. Given this position, one cannot identify through generic structural characteristics – such as the number of outside directors, the number of board meetings, and the like – whether a board is performing. The only certain way to know whether a board is performing is to be present in the boardroom, and we cannot be present. But certain elements of board process indicate that there is an environment in which active monitoring is present. And to identify well-governing boards, we believe certain process representatives can be used to indicate monitoring performance. (Millstein and MacAvoy 1998, pp 1298-1299)

The process representatives used in the Millstein and MacAvoy study were (i) independent board leadership, whether through a non-executive chairperson or a “lead” independent director;⁴ (ii) periodic meetings of the board’s independent directors without management present; and (iii) formal rules or guidelines for the relationship between the board and management. Although these representatives have structural characteristics, Millstein and MacAvoy (1998, p 1299) considered that they indicated board behaviour from which one could “infer that a board is independent, is likely to have adopted a ‘professional’ culture, and is therefore a well-governing board”.

Millstein and MacAvoy found a substantial and statistically significant correlation between the presence of an active board of directors and superior corporate performance (measured by operating profit in excess of costs of capital over the industry average).⁵ The sample companies having an active board earned, on average over 1991-95, an excess rate of

⁴ The concept of a lead independent director was first recommended by the Cadbury Committee (1992a), para 1.2, for those companies that combine the roles of CEO and chairperson.

⁵ They were, however, unable to prove causation.

return of 3.89%; in contrast, the sample companies having a passive board performed 1.05% below their weighted average industry peers over the same period.

Prior to the present Report, there has been no publicly reported research on the effectiveness of independent directors in Australian companies. However, one recent study (Calleja 1999) looked at the significance of board composition in terms of simply executive and non-executive directors. A limitation of the study is that the non-executive directors in the sample were not classified as independent or affiliated. Nevertheless, it is interesting to note that Calleja's regression analysis found no statistically significant relationship between the proportion of non-executive directors on the board and adjusted shareholder returns.

2. Indirect studies

As well as the studies just discussed that have sought direct evidence of a relationship between board composition and corporate performance, several US studies have looked for indirect evidence on the effectiveness of independent directors. For example, a generally accepted role⁶ for independent directors is in disciplining and/or removing the CEO of an underperforming firm. Weisbach (1988) found that a board composed of at least 60% independent directors was more likely than a board comprising less than 60% independent directors to dismiss an underperforming company's CEO.⁷ These results are limited by the fact that "[t]he economic significance of the additional firings by 60%-independent boards is small" (Bhagat and Black 1997). There is also some concern that "independent directors, who have less detailed knowledge of a firm than [executive] directors, are too cautious in replacing a bad CEO while the firm's stock price performance remains respectable" (Bhagat and Black 1997). It is also important to note that Denis and Denis (1995), in a large study of non-takeover-related top management changes in listed US companies over the period 1985 to 1988, found evidence suggesting that a large proportion of forced resignations were instigated by parties other than the board of directors (including large blockholders, other shareholders, creditors and potential acquirers).

In a different type of indirect study, Rosenstein and Wyatt (1990) examined market reaction to the appointment of independent directors. They found that the share prices of firms which appointed additional independent directors increased by a statistically significant, but economically small, amount (0.2%). However, on one interpretation, the results of this study actually accord with the US studies that have found little or no direct evidence of a link between the proportion of independent directors and corporate performance: appointing "an additional independent director could boost stock prices because it signals that the company is planning to address business problems, even if adding more independent directors *per se* has no effect on the company's ability to address its problems" (Bhagat and Black 1997).

B. Independent directors and takeovers

⁶ See *eg* Bosch Committee (1995), p 9; American Law Institute (1994), pp 112-113.

⁷ See also Scott and Kleidon (1994); Geddes and Vinod (1998).

If independent directors genuinely represent the interests of shareholders, and if they strive to maximise shareholder wealth, then their influence should be reflected in the takeover process. This has been confirmed to some extent by the research of Byrd and Hickman (1992)⁸ who found that, for a sample of 128 takeover bids over the period 1980 to 1987, takeover bidders with a majority of independent directors earned, on average, an announcement-date abnormal return of 0% on their acquisitions, while bidders with a majority of executive and affiliated non-executive directors lost, on average, a statistically significant amount. Importantly, there was no difference in abnormal returns when the independence or otherwise of non-executive directors was disregarded – that is, when takeover bidders were differentiated on the basis of those whose boards had a majority of executive directors versus those whose boards had a majority of non-executive directors. Therefore, independent non-executive directors, while permitting their company to pay too much when acquiring another company, were not prepared to over-pay⁹ as much as affiliated non-executive directors. It should be noted that the relationship between the proportion of independent directors on the board and abnormal returns was found by Byrd and Hickman to be non-linear so that, in relation to their effect on takeover bids, it was possible to have too many independent non-executive directors.

There is also US evidence suggesting that investors perceive a majority of independent directors on a company's board as prima facie proof that the board will use a poison pill defence in the company's constitution to generate a higher takeover offer, rather than to frustrate a takeover altogether. Brickley, Coles and Terry (1994) found that the average share-price reaction to poison-pill adoptions during 1984-86 was significantly positive when the board was controlled by independent directors and significantly negative when independent directors were in the minority. Therefore, putting aside the actual effectiveness or otherwise of independent directors, it may pay a company's shareholders to ensure that the board comprises a majority of independent directors – because they are perceived as maximising shareholder wealth, which perception may well result in a higher share price, thus creating a self-fulfilling prophesy.¹⁰

C. Independent directors and executive remuneration

As mentioned earlier, executive remuneration was cited by the Cadbury Committee as a specific area where independent directors could add value. There is an obvious conflict of interest – and thus agency costs – where executive directors have significant influence over the process by which their pay is determined.

⁸ See also Bange and Mazzeo (1996).

⁹ Of course, the announcement date abnormal return is based upon a price reaction in the marketplace prior to the merger being put into practice. The market reaction is based upon all publicly available information and the perception that a company has "overpaid" for another company may be attributable to the absence of information regarding post-merger benefits in the form of operating synergies or additional revenue growth.

¹⁰ Brickley, Coles and Terry (1994) also found that, for firms that had adopted a poison pill, the probability that the firm would induce an auction among competing bidders during a control contest was positively related to the fraction of independent directors on the board.

In a 1992-93 study involving 161 of the 250 largest US listed companies, Newman and Wright (1995) found that CEO compensation was greater in firms having remuneration committees that included at least one executive director or affiliated non-executive director (“insider-influenced remuneration committees”) than in firms having remuneration committees consisting solely of independent non-executive directors (“independent remuneration committees”), after controlling for company size, performance, share ownership and CEO tenure. On average, the CEO of a company with an insider-influenced remuneration committee received approximately 20% more remuneration than a CEO of a company with an independent remuneration committee, everything else equal. Another finding was that the link between CEO compensation and corporate performance was stronger when there were no executive directors or affiliated non-executive directors on the remuneration committee (ie. independent remuneration committee), especially when corporate performance was unfavourable.

In a study covering 167 US firms over the period 1989-91, Sridharan (1996) found that the greater the CEO influence over the board of directors, the higher the levels of CEO salary and bonuses. The determinants of CEO influence over the board were (i) combination of the roles of CEO and chairperson; and (ii) board composition in terms of executive and non-executive directors.

Several other US and UK studies support Sridharan’s finding of a positive relationship between the level of CEO remuneration and combination of the roles of CEO and chairperson.¹¹ However, four US studies have found, in contrast to Sridharan, that CEO remuneration is on average higher the greater the proportion of independent directors on the board.¹²

D. Independent directors and quality of financial reporting

Several US studies have found a relationship between board composition and the quality of financial disclosure.

Wright (1996) found significant correlations between two measures of financial reporting quality and the composition of companies’ board audit committees. The two measures of financial reporting quality employed in Wright’s study were: (i) analysts’ published evaluations of each sample company’s disclosure practices; and (ii) the existence of a Securities and Exchange Commission (SEC) Accounting and Auditing Enforcement Release against the company or its auditors. The results demonstrated that higher analyst ratings of disclosure practices were associated with firms having lower percentages of affiliated non-executive directors on their audit committees. With respect to SEC Accounting and Auditing Enforcement Releases, the results demonstrated that companies violating SEC reporting standards had a significantly higher percentage of executive and affiliated non-executive

¹¹ See Cyert, Kang, Kumar and Shah (1997); Core, Holthausen and Larcker (1997); Boyd (1994); Main (1991); contrast Conyon and Leech (1995).

¹² See Cyert, Kang, Kumar and Shah (1997); Core, Holthausen and Larcker (1997); Boyd (1994); Lambert, Larcker and Weigelt (1993); contrast Brickley and James (1987).

directors on their audit committees than companies in an industry- and size-matched control sample.

Whereas Wright (1996) focused on the composition of the audit committee, Beasley (1996) examined the relationship between SEC Accounting and Auditing Enforcement Releases and the composition of the board as a whole. Beasley's study revealed that the boards of companies subject to Accounting and Auditing Enforcement Releases had a significantly lower proportion of non-executive directors than the boards of a matched sample of companies not subject to SEC enforcement action.

Dechow, Sloan and Sweeney (1996) studied companies which were pursued by the SEC for allegedly breaching Generally Accepted Accounting Principles (GAAP) in order to overstate their reported profit. They found that these companies were more likely to have boards dominated by executive directors.

Peasnell, Pope and Young (1998) conducted a wide-scale study of British companies, covering the period 1993-95, focusing on more subtle forms of earnings management than the US studies summarised above. Using discretionary accruals as a proxy for the extent of earnings management, they found a statistically significant negative relationship between profit-increasing discretionary accruals and the proportion of non-executive directors on the board. The results suggest that boards with a high proportion of non-executive directors were able to constrain management's ability to make opportunistic accounting choices.¹³

Beasley and Petroni (1998) tested the hypothesis that boards with a higher percentage of non-executive directors are more likely to engage a high quality auditor than boards with a lower percentage of non-executive directors.¹⁴ Their results indicated that this was the case for their sample of 681 US insurance companies during 1991-92.

E. Independent directors and politics

In their study of 264 large US manufacturing companies, Agrawal and Knoeber (1998) found that non-executive directors with political and legal backgrounds were more commonly found on the boards of companies for which politics was particularly important.¹⁵ They also found that companies for which politics was particularly important were more likely to have

¹³ The authors conducted tests to determine whether taking into account the independence of non-executive directors had any impact on the results. No evidence was found to indicate that the independence of non-executive directors had any significant incremental explanatory power.

¹⁴ Beasley and Petroni used a definition of "outside" director that excluded members of management and their families. This definition is essentially a half-way house between "non-executive director" and "independent non-executive director", in that it does not embrace several other criteria of independence such as whether the non-executive director has a customer or supplier relationship with the company, or is a former member of the company's management team.

¹⁵ Agrawal and Knoeber measured the importance of politics to a company in three ways. First, assuming that companies for which politics matters a lot should lobby a lot, the authors constructed measures of companies' lobbying activities. Second, they took account of whether or not government was an important customer of the company. Third, they took account of whether or not environmental regulation imposed high costs on the company. See also Byrne (1998).

larger boards and a higher proportion of non-executive directors. Agrawal and Knoeber then extended their study:

In light of our evidence that some [non-executive] directors are selected because they perform a political role and that boards that include more of these politically useful directors are also larger boards, we propose a different interpretation [of the studies which show no relationship or a negative relationship between the proportion of independent directors and corporate performance].¹⁶ If firms for which politics is more important also perform worse than other firms, then the importance of politics would cause both larger (and more outsider dominated) boards *and* poorer firm performance. The negative relation between firm performance and board ... composition could be spurious. Politics may drive both variables.¹⁷

Tests conducted by Agrawal and Knoeber provided evidence that politics did indeed explain the relationship between board composition and corporate performance.

F. Independent directors and credibility

Kroszner and Rajan (1997) examined two ways in which US commercial banks organised their investment banking operations before the Glass-Steagall Act of 1933 forced commercial banks to cease their involvement in investment banking: (i) as an internal securities department within the bank; and (ii) as a separately incorporated affiliate with its own board of directors. They found that, while internal departments underwrote seemingly higher quality companies and securities than did comparable affiliates, the internal departments obtained lower prices for the issues they underwrote. The higher risk premium associated with the internal department is consistent with investors discounting for the greater likelihood of conflicts of interest when lending and underwriting are undertaken within the same structure.¹⁸ Kroszner and Rajan also found that the improvement in pricing for affiliates was positively related to the proportion of directors on the affiliate's board who were independent of the parent bank. Independent directors appear therefore to have provided an important mechanism by which affiliates could enhance their credibility in the market.

G. Analysis

The US and UK studies described above have produced mixed results on whether independent directors add value. Those studies that have sought to find a relationship (direct or indirect) between board composition and corporate performance have, overall, not produced convincing evidence that independent directors enhance corporate performance. This may have implications for the studies that have shown independent directors to add value in specific areas – such as in relation to takeovers, executive remuneration and the

¹⁶ See the studies summarised at pages 7-9 above.

¹⁷ Original emphasis.

¹⁸ Kroszner and Rajan (1997), p 476, explain the conflict of interest as follows: “Since a commercial bank has loans outstanding to firms, it could favor the interests of its own equity-holders in the following manner: if a bank had private bad news about a firm it had lent to, it could use its underwriting arm to certify and distribute securities on behalf of the firm to an unsuspecting public and have the firm use the proceeds to repay the outstanding bank loan.” Another study of Kroszner and Rajan (1994) found no evidence to support the theory that conflicts of interest led commercial banks to dupe naïve investors, prior to the Glass-Steagall Act coming into operation. It should be noted that the US Government is currently examining the repeal of Glass-Steagall, the only outstanding issues being the extent and form of the repeal.

quality of financial reporting. Namely, boards with a high proportion of independent directors could perform better on particular tasks, such as those just mentioned, but worse on other, unstudied, tasks – leading to no net advantage for the company (Bhagat and Black 1998, p 283).

V. The Australian studies

A. Background

The authors conducted empirical studies using as a data sample the Top 100 Australian companies, ranked by market capitalisation, listed on the Australian Stock Exchange at the end of 1995. The sample covered nearly 700 company directors holding about 900 board seats.

Two groups of studies were carried out. The first group of studies used methodology similar to that of Bhagat and Black (1997), searching for a direct relationship between board composition and corporate performance. The second group of studies used methodology similar to that used in the US studies of Newman and Wright (1995) and Sridharan (1996), focusing on whether independent directors have a positive influence in the area of executive remuneration.

The studies used the AIMA / IFSA definition of an independent director. AIMA (1997, pp 20-21) defines an independent director as “a director who is not a member of management (a non-executive director) and who:

- is not a substantial shareholder of the company or an officer of or otherwise associated directly or indirectly with a substantial shareholder of the company;
- has not within the last three years been employed in an executive capacity by the company or another group member or been a director after ceasing to hold any such appointment;
- is not a principal of a professional adviser to the company or another group member;
- is not a significant supplier or customer of the company or another group member or an officer of or otherwise associated directly or indirectly with a significant supplier or customer;
- has no significant contractual relationship with the company or another group member other than as a director of the company; and
- is free from any interest and any business or other relationship which could, or could reasonably be perceived to, materially interfere with the director’s ability to act in the best interests of the company.”¹⁹

¹⁹ This is an interesting example of the Australian style of precision drafting. In contrast, the Cadbury Committee (1992), para 4.12, and the Hampel Committee (1998), para 3.9, defined an independent director as one who is “independent of management and free from any business or other relationship which could materially interfere with the exercise of their independent judgement”. For analysis of the AIMA / IFSA independence criteria, see Stapledon and Lawrence (1997), pp 169-170.

The proportion of non-executive directorships in the overall sample was 73% – made up of 43% independent non-executive positions and 30% affiliated non-executive directorships. The proportion of chairpersons who were non-executive was 83% – made up of 45% independent chairpersons and 38% affiliated non-executive chairpersons.²⁰

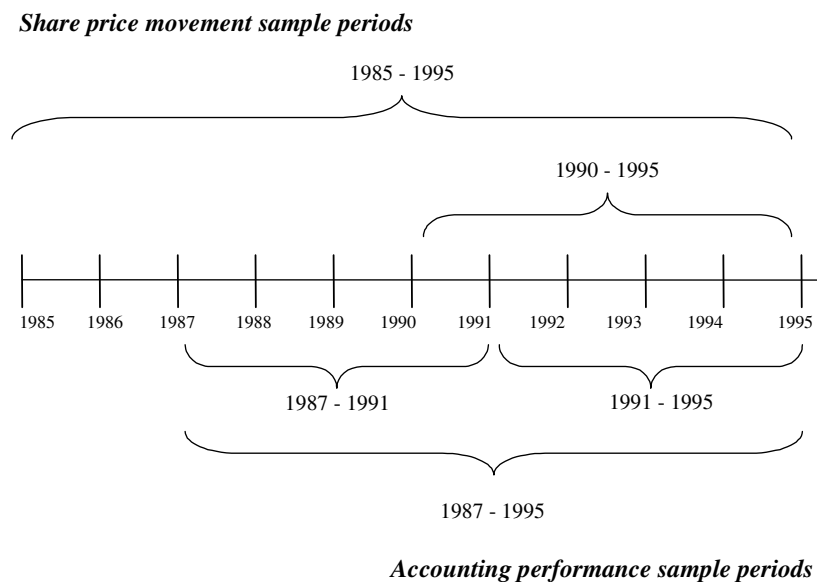
B. Corporate performance

1. Methodology

In measuring the relationship between board composition and corporate performance, board composition was measured at one point in time (mid-1995). Alternatively, board composition would be measured at the beginning and the end of the sample period. This would allow a direct examination of whether *changes* in board composition affect corporate performance. Nevertheless, there is evidence that board composition (in terms of executive, affiliated non-executive and independent non-executive directors) changes only slowly, if at all, over time (Weisbach 1988).

Two broad types of corporate performance measures were used: share price performance and accounting performance. The period of time over which performance measures were gathered spanned 1985 to 1995. This period was subdivided in order to mitigate the influence of economic booms and downturns on the results, and to determine whether certain phenomena persist over longer time periods than others.

FIGURE 1 Research sample periods



²⁰ The most common reason for a chairperson being classified as an affiliated non-executive was that he or she was a retired CEO of the company. For details on how the directors were categorised (including data sources), see Stapledon and Lawrence (1997), pp 170-174.

The share price variables measure the change in the sample company's share price (cumulative stock return) in a particular time period. Four main types of accounting performance variables were used: raw accounting variables, growth variables, ratio variables and ratio growth variables. These are explained further below.

All tests involved ordinary least squares regressions. To determine whether the results are significant (in a statistical sense) it is necessary to choose the level of statistical significance. In accordance with industry practice, the 5% level of significance is adopted.

2. Results based on share price performance

In line with the Bhagat and Black (1997) study, the first question addressed was whether share price performance is dependent upon the proportion of executive directors or the proportion of independent directors. Table 2 reports the results of a regression analysis of this question.

The proportion of executive directors and the proportion of independent directors were insignificant explanatory variables for both sample periods (1985 to 1995 and 1990 to 1995).²¹

Also, in accordance with the findings of Bhagat and Black, there is no share price evidence in the Australian context to support the evidence of Yermack (1996) that larger board size correlates with poorer performance. That is, the board size variable was statistically insignificant in both time periods.

Table 2a repeats the Table 2 regressions (*ie* the effect of board composition and board size on share price performance) but with a logarithmic transformation of the board composition variables.²² In the Bhagat and Black study the logarithmic transformation increased the statistical relationship between the executive directors explanatory variable and the share price returns dependent variable. In our study the transformation increased the significance for the 1990 to 1995 sample regression (R^2 increased from 1.8% to 5.9%) but actually weakened the significance for the 1985 to 1995 regression (R^2 decreased from 6.2% to 1.8%). This suggests that the transformation is particularly inappropriate for the 1985 to 1990 sub-period. It is probably more relevant to focus on the fact that the transformation did not result in the independent directors explanatory variable becoming statistically significant

²¹ At the 10% level of significance (rather than 5%), there was a statistically significant negative relationship between the proportion of independent directors and share price performance over the 1985 to 1995 sample period. However, this relationship was not apparent in the 1990 to 1995 sub-period.

²² This was necessary to make the regression model more closely approximate the assumptions underlying least squares regression. Furthermore, this transformation makes the regression model more responsive to fluctuations in board composition when the proportion of executive/independent directors is very low: Bhagat and Black (1997).

for either 1985 to 1995 or 1990 to 1995.²³ Similarly, board size is consistently insignificant throughout. The adjusted R^2 is never greater than 6.2%.

Bhagat and Black next tested the hypothesis that it is important to have some independent directors on a company board, but not too many of them. Evidence of this phenomenon would provide some support for the view that independent directors – even if they do not improve corporate performance – are useful insofar as they prevent conflicts of interest afflicting the company. Tables 3 and 3a report the results of the study that tested this proposition. These tables show that:

- companies with between 40% and 60% independent directors had lower share price performance over the 1985 to 1995 period but not over the 1990 to 1995 sub-period;
- companies with more than 50% independent directors had weaker share price performance during the 1985 to 1995 period but not over the 1990 to 1995 sub-period;²⁴
- companies with more than 60% independent directors had weaker share price performance during the 1985 to 1995 period but not over the 1990 to 1995 sub-period;
- companies with more than 60% executive directors had, on average, share price returns 31% greater than those of companies with less than 60% executive directors, over the 1990 to 1995 sub-period. This extreme result is almost entirely due to fact that there were only two companies in that sample period which had over 60% executive directors (see Figure 2). One of those two companies experienced a 60.44% share price increase over that period which has obviously biased the results.

Unlike Bhagat and Black, and contrary to the implications to be drawn from the Yermack (1996) study, we find very little evidence that board size affects share price performance.²⁵

On balance, it seems safe to conclude that, in the Australian context, as in the US, share price data offers “little firm evidence that board composition matters” (Bhagat and Black 1997).

²³ However, at the 10% level of significance, there was a statistically significant negative relationship between the proportion of independent directors and share price performance in both periods.

²⁴ Performance was weaker over the 1990-95 sub-period only at the 10% level of significance.

²⁵ At the 10% level of significance, there was a statistically significant – but economically insignificant – relationship between board size and share price performance during the 1985-95 period (adding one board member improved the share price by about 0.9%). There was no statistically significant relationship between these variables during the 1990-95 sub-period.

TABLE 2 Regression: Share price performance on board composition

Dependent variables	Explanatory variables			Adjusted R ²	F	Sample size
	Proportion of executive Directors	Proportion of independent directors	Board size			
Stocks 85-95	0.054 (0.531)	-0.114 (-1.933)**	0.702 (1.529)	0.062	2.253	58
Stocks 90-95	0.178 (1.150)	-0.111 (-1.096)	0.758 (0.943)	0.018	1.405	69

TABLE 2a Regression: Share price performance on board composition (log)

Dependent variables	Explanatory variables			Adjusted R ²	F	Sample size
	Log (proportion of executive directors)	Log (proportion of independent directors)	Board size			
Stocks 85-95	0.866 (0.093)	-17.493 (-1.783)**	0.555 (0.679)	0.018	1.397	65
Stocks 90-95	3.421 (0.578)	-10.587 (-1.7333)**	0.636 (1.327)	0.059	2.137	55

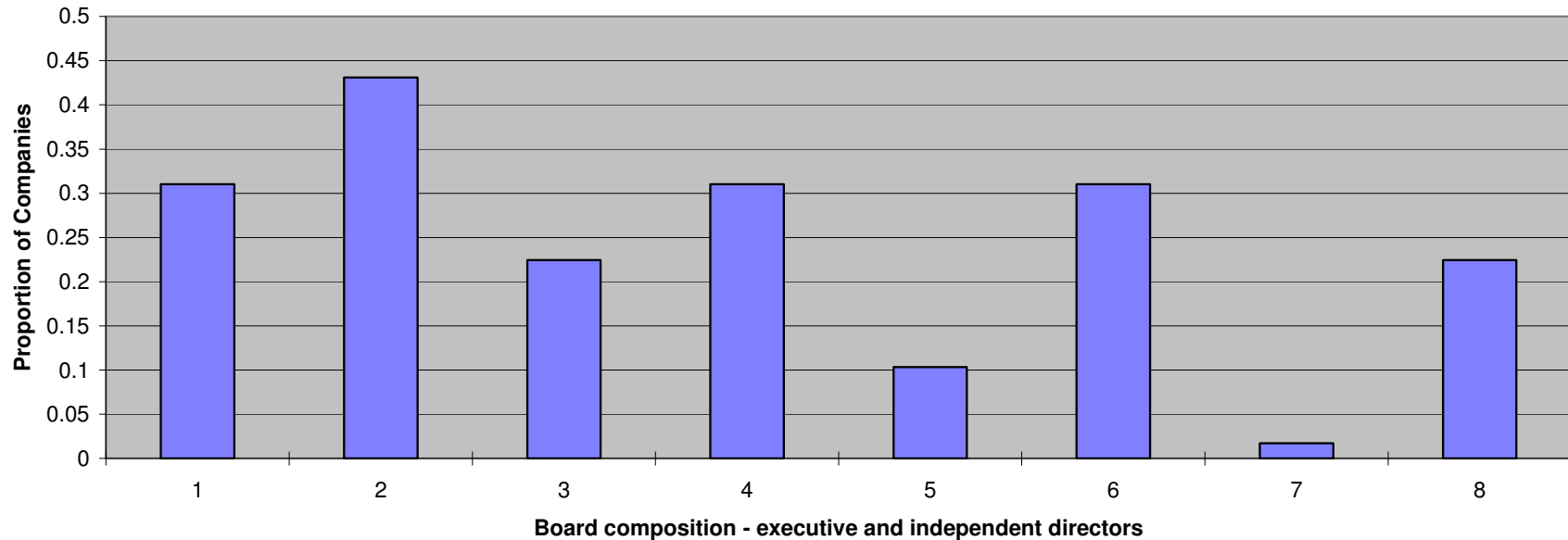
Stocks = the mean percentage change in share price during the relevant period for all companies in the sample.

Board size = the number of directors on the company board.

t-statistics are shown in parenthesis.

** = statistically significant at 10% level of significance.

FIGURE 2 Corporate performance study: Board composition



- 1 - Executive 30 dummy: between 30% and 50% of the company's directors are executive directors.
- 2 - Independent 30 dummy: between 30% and 50% of the company's directors are independent directors.
- 3 - Executive 40 dummy: between 40% and 60% of the company's directors are executive directors.
- 4 - Independent 40 dummy: between 40% and 60% of the company's directors are independent directors.
- 5 - Executive 50 dummy: more than 50% of the company's directors are executive directors.
- 6 - Independent 50 dummy: more than 50% of the company's directors are independent directors.
- 7 - Executive 60 dummy: more than 60% of the company's directors are executive directors.
- 8 - Independent 60 dummy: more than 60% of the company's directors are independent directors.

TABLE 3 Share price performance and board composition dummy variables: 30% and 50% dummy variables

Dependent variables	Executive 30 dummy	Executive 50 Dummy	Independent 30 dummy	Independent 50 dummy	Board size	Adjusted R ²	F	Sample size
Stocks 85-95	-1.682 (-0.686)	5.455 (1.349)	-3.420 (-1.249)	-8.283 (-2.781)*	0.908 (1.996)**	0.109	2.401	58
Stocks 90-95	-0.286 (-0.066)	11.572 (1.680)**	-7.669 (-1.655)	-9.571 (-1.866)**	0.996 (1.235)	0.038	1.530	69

TABLE 3a Share price performance and board composition dummy variables: 40% and 60% dummy variables

Dependent variables	Executive 40 dummy	Executive 60 dummy	Independent 40 dummy	Independent 60 dummy	Board size	Adjusted R ²	F	Sample size
Stocks 85-95	0.445 (0.151)	6.283 (0.709)	-6.434 (-2.485)*	-7.952 (-2.691)*	0.760 (1.617)	0.102	2.292	58
Stocks 90-95	3.604 (0.726)	30.590 (3.087)*	-6.557 (-1.480)	-4.065 (-0.803)	1.258 (1.581)	0.095	2.426	69

Stocks = the mean percentage change in share price during the relevant period for all companies in the sample.

Board size = the number of directors on the company board.

Executive 30 dummy (Independent 30 dummy) is a variable which has a value of "1" if the company has more than 30% but less than 50% executive directors (independent directors), and a value of "0" if the company has less than 30% or more than 50% executive directors (independent directors).

Executive 50 dummy (Independent 50 dummy) is a variable which has a value of "1" if the company has more than 50% executive directors (independent directors), and a value of "0" if the company has less than 50% executive directors (independent directors).

Executive 40 dummy (Independent 40 dummy) is a variable which has a value of "1" if the company has more than 40% but less than 60% executive directors (independent directors), and a value of "0" if the company has less than 40% or more than 60% executive directors (independent directors).

Executive 60 dummy (Independent 60 dummy) is a variable which has a value of "1" if the company has more than 60% executive directors (independent directors), and a value of "0" if the company has less than 60% executive directors (independent directors).

t-statistics are shown in parenthesis.

* = statistically significant at 5% level of significance.

** = statistically significant at 10% level of significance.

3. Results based on accounting performance

Tables 4 to 7 provide the results of the regression analysis of the relationship between board composition and various accounting measures of performance. The accounting measures fall into four groups:

Raw accounting variables: These measure nominal amounts such as revenue, assets and net profit at a particular point in time or over a particular sample period.

Growth variables: These measure the marginal change in raw accounting variables over a defined time period. These variables are supposed to reveal whether board composition influences the rate at which firms grow.

Ratio variables: These involve the division of a raw accounting variable by another raw accounting variable (eg revenue divided by assets or net profit divided by revenue). These variables reflect profitability and the efficient use of corporate resources.

Ratio growth variables: These represent the growth in the ratio variables (eg the marginal change in the ratio of net profit to revenue). These variables provide insights into corporate profitability and the efficient use of resources *over time*.

The accounting performance variables used in the regressions are:

- total assets (A)
- revenue (R)
- net profit (CNP)
- earnings before interest and tax (EBIT)
- total number of employees (Ee)
- gross cash flow (GCF)
- percentage growth in assets (GrA), revenue (GrR), net profit (GrCNP), earnings before interest and tax (GrEBIT) and gross cash flow (GrGCF)
- ratio of revenue to assets (R/A), net profit to revenue (CNP/R), revenue to employees (R/Ee) and gross cash flow to revenue (GCF/R)

The explanatory variables are the same as for the share price analysis, although we also introduce the log(revenue) variable which measures the logarithm of revenue for each company in the sample. This variable captures the effect, if any, that being a larger company has on accounting performance. It also allows for consideration of board size, controlling for the fact that larger companies will, prima facie, have larger boards (Stapledon and Lawrence 1997, p 182). To avoid statistical problems, when the explanatory variable is considering

revenue or growth in revenue, the log(revenue) variable is replaced by the log(assets) variable which also picks up the effect of company size on the other variables.

Board composition and (i) raw variables, and (ii) growth variables

The first accounting performance study (see Table 4) uses proportion of executive directors, proportion of independent directors and number of directors on company board as the explanatory variables. The raw accounting variable regressions are only for 1995, while the raw growth regressions are conducted for the entire sample period (1987 to 1995) and for the sub-periods 1987 to 1991 and 1991 to 1995.

The study did not reveal any significant correlation between the proportion of executive directors and any of the raw variables or any of the growth variables. Furthermore, the sign of the growth variable coefficients change within sub-periods and across time. This accords with the share price results (reported above) which suggest that the proportion of executive directors has little if any influence on company growth.

Unlike the Bhagat and Black study, our Australian study produced no evidence of a negative relationship between the proportion of independent directors and company growth. Rather, the proportion of independent directors appears to be totally unrelated to corporate growth. It is interesting to note, however, that the proportion of independent directors is positively related to a company's assets, net profit and earnings before interest and tax (EBIT) in 1995.²⁶ This is probably indicative of larger companies having more independent directors rather than independent directors contributing to larger assets, net profit and EBIT. Such a conclusion is supported by the fact that the proportion of independent directors does not statistically affect the growth variables.

Board composition and efficiency measures

Table 5 reports the results of a similar test but with the ratio variables. There is no evidence to suggest that companies with a higher proportion of executive directors are better able to manage their resources. There is some evidence that in 1987 a company with more independent directors was *less* effective in producing revenue from a given stock of assets (see R/A 87). However, this result no longer applied by 1991²⁷ and, given that such a relationship is not present for any of the other ratio variables, leads to the inference that R/A 87 is a sampling extremity and not a robust result. Once again, the R² values indicate that these regression models are only explaining a very small part of the changes in corporate performance.

Board composition and (i) raw variables, and (ii) growth variables (controlling for company size)

²⁶ At the 10% level of significance, the proportion of independent directors is also positively related to gross cash flow.

²⁷ In 1995, there was again a negative relationship between the proportion of independent directors and the ratio of revenue to assets (see R/A 95), but only at the 10% level of significance.

The next stage in the study involved re-running the regressions while controlling for company size. Bhagat and Black were concerned to run the regressions with a company size variable because of the indeterminate results they reported in respect of company growth and proportion of independent directors. While this ambiguity was not present in our study, it was decided to re-run the regressions out of an abundance of caution.

The regressions for raw and growth accounting variables when controlling for company size are shown in Table 6. When we controlled for the size of the company the significant relationship between the proportion of independent directors and assets, net profit and EBIT at 1995 disappears.²⁸ This provides strong support for the theory that larger companies and more profitable companies are more likely to have more independent directors rather than the other way around. Furthermore, the significant statistical relationship between board size and the raw accounting measures (see Table 4) is weakened somewhat when we control for company size. Even so, there are still some significant 1995 coefficients for board size. It is also interesting to note that when we control for company size the relationship between board size and growth in gross cash flow becomes significant. However, this significance exists only in respect of the entire sample period and is not present in either the 1987 to 1991 sub-period or the 1991 to 1995 sub-period. This suggests that the significant results are anomalies rather than robust evidence of a relationship between board size and – controlling for company size – profitability. Therefore, while there is some cross-sectional evidence of correlation between board size and corporate profitability as at 1995, this evidence is not robust and it does not substantiate (for Australia) the conclusion of Yermack (1996) – that smaller boards improve corporate profitability.

Board composition and efficiency measures (controlling for company size)

When we measure the effect of ratio variables controlling for company size (see Table 7) the significance between independent directors and the R/A variable not only increases²⁹ but the relationship is now found to exist in 1995 as well as 1987. This may constitute stronger evidence that the proportion of independent directors is negatively related to the effectiveness with which a company can produce a dollar of revenue for each dollar of assets. However, the fact that R/A 91 is insignificant still casts doubt on such a conclusion. If there is a real relationship between independent directors and the R/A variable it is difficult to suggest a rational reason for why that relationship disappeared in 1991. More importantly, if indeed there is a negative relationship between the proportion of independent directors and R/A, shareholders should not be overly concerned with such a seemingly detrimental relationship as independent directors do not have any effect on the ratio of net profit to revenue (CNP/R). In other words, while independent directors *may* adversely affect revenue maximisation there is no evidence that they hinder profit maximisation.

²⁸ Note, however, that the relationship between proportion of independent directors and (i) assets and (ii) EBIT remained significant at the 10% level of confidence.

On the whole, there is no evidence that the proportion of independent directors has any influence on a company's management of its resources. And, contrary to the assertions of Hilmer and Donaldson (1996), there is no evidence that "manager dominated boards could produce superior returns to shareholders" (van Leeuwen 1996).

²⁹ The 1987 t-value increased from 2.039 to 2.343 and the 1995 t-value increased from an insignificant (at the 5% level of significance) 1.785 to a significant 2.787.

TABLE 4 Regression: Raw and growth accounting variables on board composition

Dependent variables	Explanatory variables			Adjusted R ²	F	Sample size
	Log (proportion of executive directors)	Log (proportion of independent directors)	Board size			
Assets 1995	2977915 (0.241)	28068356 (2.276)*	3863905 (3.468)*	0.185	6.669	76
Revenue 1995	1431557 (0.768)	1586331 (0.850)	683870 (4.059)*	0.166	5.975	76
ConNetProfit 1995	69879 (0.454)	309866 (2.012)*	67263 (4.834)*	0.270	10.250	76
EBIT 1995	98812 (0.142)	1601427 (2.292)*	234388 (3.714)*	0.207	7.509	76
Employees 1995	9564 (0.864)	4017 (0.368)	2597 (2.498)*	0.046	2.145	72
GssCashFlow 1995	1750 (0.007)	454008 (1.886)**	93899 (4.317)*	0.238	8.829	76
GrR 87-95	-7.824 (-0.514)	-3.488 (-0.209)	-1.109 (-0.846)	-0.043	0.264	55
GrR 87-91	1.548 (0.217)	-2.017 (-0.258)	-0.981 (-1.594)	0.004	1.077	55
GrR 92-95	1.999 (0.974)	-0.453 (-0.208)	-0.205 (-1.160)	0.012	1.278	69
GrA 87-95	1.305 (0.164)	-1.724 (-0.198)	-0.488 (-0.710)	-0.04	0.250	55
GrA 87-91	0.749 (0.132)	-3.069 (-0.494)	-0.611 (-1.250)	-0.015	0.741	55
GrA 92-95	2.338 (1.418)	-0.075 (-0.043)	-0.077 (-0.542)	0.007	1.164	69
GrCNP 87-95	0.861 (0.039)	13.079 (0.553)	2.433 (1.286)	-0.018	0.684	54
GrCNP 87-91	-2.541 (-0.962)	0.461 (0.163)	0.230 (1.107)	-0.001	0.978	54
GrCNP 92-95	1.373 (0.172)	-0.606 (-0.072)	-0.918 (-1.336)	-0.011	0.748	69
GrEBIT 87-95	-0.983 (-0.031)	21.970 (0.650)	2.935 (1.087)	-0.024	0.589	54
GrEBIT 87-91	-3.434 (-0.618)	-1.880 (-0.316)	-0.294 (-0.618)	-0.047	0.205	54
GrEBIT 92-95	1.058 (0.972)	-0.104 (-0.090)	0.137 (1.464)	-0.007	0.847	69
GrGCF 87-95	-10.630 (-1.036)	8.356 (0.745)	1.651 (1.869)**	0.085	2.670	55
GrGCF 87-91	-4.302 (-1.307)	0.120 (0.033)	0.045 (0.159)	-0.010	0.814	55
GrGCF 92-95	-1.189 (-1.061)	-1.636 (-1.377)	0.076 (0.788)	0.005	1.122	69

Dollar figures are in \$A thousands.
Growth figures are in percentages.
t-statistics are in parenthesis.

* = statistically significant at 5% level of significance.
** = statistically significant at 10% level of significance.

TABLE 5 Regression: Ratio variables on board composition

Dependent variables	Explanatory variables			Adjusted R ²	F	Sample size
	Log (proportion of executive directors)	Log (proportion of independent directors)	Board size			
R/A 87	0.443 (0.948)	-1.041 (-2.039)*	0.035 (0.861)	0.090	2.778	55
R/A 91	0.208 (0.580)	-0.308 (-0.813)	0.000 (0.006)	-0.022	0.550	64
R/A 95	0.201 (0.500)	-0.718 (-1.785)**	-0.008 (-0.216)	0.021	1.529	76
CNP/R 87	-0.024 (-0.217)	0.033 (-0.268)	-0.014 (-1.446)	-0.014	0.760	55
CNP/R 91	-0.048 (-0.504)	-0.419 (-1.488)	-0.012 (-1.382)	0.019	1.403	64
CNP/R 95	0.279 (0.493)	0.624 (1.102)	0.021 (0.405)	-0.022	0.468	76
R/Ee 95	-77.356 (-0.312)	125.757 (0.515)	-39.352 (-1.692)**	0.001	1.030	72
GCF/R 87	-0.095 (-0.746)	0.010 (0.073)	-0.018 (-1.649)	-0.001	0.982	55
GCF/R 91	-0.102 (-0.961)	-0.142 (-1.269)	-0.017 (-1.824)**	0.026	1.562	64
GCF/R 95	0.208 (0.393)	0.614 (1.160)	0.014 (0.286)	-0.021	0.481	76

t-statistics are in parenthesis.

* = statistically significant at 5% level of significance.

** = statistically significant at 10% level of significance.

TABLE 6 Regression: Raw and growth accounting variables on board and firm size variables

Dependent variables	Explanatory variables				Adjusted R ²	F	Sample size
	Log (proportion of executive directors)	Log (proportion of independent directors)	Log (revenue) {Log (assets)}	Board size			
Assets 1995	1808360 (0.150)	23604431 (1.935)**	11268243 (2.171)*	2602726 (2.113)*	0.225	6.438	76
Revenue 1995	1023578 (0.678)	-795386 (-0.511)	4260847 (6.236)*	128370 (0.788)	0.454	16.562	76
ConNetProfit 1995	44609 (0.319)	213414 (1.503)	243472 (4.032)*	40013 (2.792)*	0.398	13.381	76
EBIT 1995	18344 (0.027)	1294301 (1.903)**	775275 (2.680)*	147616 (2.150)*	0.269	7.911	76
Employees 1995	3281 (0.377)	-6856 (-0.789)	25520 (6.557)*	-253 (-0.278)	0.410	13.531	73
GssCashFlow 1995	-42515 (-0.200)	285057 (1.324)	426480 (4.657)*	46166 (2.124)*	0.408	13.995	76
GrA 87-95	1.915 (0.240)	-0.203 (-0.023)	-3.985 (-1.109)	-0.064 (-0.082)	-0.039	0.496	55
GrA 87-91	0.875 (0.152)	-2.755 (-0.434)	-0.823 (-0.318)	-0.524 (0.927)	-0.033	0.572	55
GrA 92-95	2.265 (1.452)	0.805 (0.479)	-2.193 (-2.927)*	0.155 (0.993)	0.111	3.117	69
GrR 87-95	-5.050 (-0.332)	4.512 (0.259)	-9.008 (-1.423)	0.024 (0.015)	-0.022	0.708	55
GrR 87-91	2.330 (0.322)	0.238 (0.029)	-2.539 (-0.844)	-0.661 (-0.914)	-0.001	0.981	55
GrR 92-95	2.090 (1.020)	0.198 (0.088)	-1.043 (-1.133)	-0.072 (-0.338)	0.016	1.284	69
GrCNP 87-95	0.850 (0.038)	13.448 (0.553)	-0.880 (-0.083)	2.537 (1.109)	-0.039	0.504	54
GrCNP 87-91	-2.523 (-0.599)	-0.124 (-0.043)	1.398 (1.118)	0.064 (0.237)	0.004	1.050	54
GrCNP 92-95	1.235 (0.155)	1.066 (0.124)	-4.167 (-1.088)	-0.478 (-0.600)	-0.008	0.858	69
GrEBIT 87-95	-1.005 (-0.032)	22.716 (0.655)	-1.781 (-0.118)	3.147 (0.964)	-0.044	0.437	54
GrEBIT 87-91	-3.416 (-0.610)	-2.488 (-0.408)	1.452 (0.547)	-0.467 (-0.814)	-0.062	0.227	54
GrEBIT 92-95	1.044 (0.956)	0.064 (0.053)	-0.414 (-0.790)	0.181 (1.659)	-0.013	0.788	69
GrGCF 87-95	-9.771 (-0.954)	10.498 (0.928)	-5.609 (-1.216)	2.247 (2.232)*	0.161	2.391	55
GrGCF 87-91	-4.465 (-1.347)	-0.288 (-0.079)	1.068 (0.715)	-0.068 (-0.210)	-0.020	0.732	55
GrGCF 92-95	-1.211 (-1.086)	-1.366 (-1.136)	-0.673 (-1.256)	0.147 (1.320)	0.014	1.244	69

Dollar figures are in \$A thousands.
 Growth figures are in percentages.
 t-statistics are in parenthesis.

* = statistically significant at 5% level of significance.
 ** = statistically significant at 10% level of significance.

TABLE 7 Regression: Ratio variables on board and firm size variables

Dependent variables	Explanatory variables				Adjusted R ²	F	Sample size
	Log (proportion of executive directors)	Log (proportion of independent directors)	Log (revenue) {Log (assets)}	Board size			
R/A 87	0.385 (0.842)	-1.184 (-2.343)*	0.375 (1.819)**	-0.005 (-0.116)	0.129	3.005	55
R/A 91	0.198 (0.580)	-0.516 (-1.392)	0.415 (2.581)*	-0.045 (-1.286)	0.066	2.116	64
R/A 95	0.127 (0.358)	-1.001 (-2.787)*	0.715 (4.678)*	-0.088 (-2.422)*	0.241	6.950	76
CNP/R 87	-0.017 (-0.149)	0.052 (0.419)	-0.050 (-0.986)	-0.009 (-0.783)	-0.014	0.813	55
CNP/R 91	-0.046 (-0.495)	-0.112 (-1.110)	-0.073 (-1.670)**	-0.004 (-0.378)	0.047	1.780	64
CNP/R 95	0.189 (0.364)	0.278 (0.529)	0.874 (3.917)*	-0.077 (-1.455)	0.148	4.256	76
R/Ee 95	-12.124 (-0.050)	237.105 (0.986)	-258.378 (-2.396)*	-10.934 (-0.430)	0.066	2.262	72
GCF/R 87	-0.083 (-0.657)	0.040 (0.284)	-0.077 (-1.354)	-0.010 (-0.793)	0.015	1.207	55
GCF/R 91	-0.099 (-0.968)	-0.089 (-0.800)	-0.105 (-2.187)*	-0.006 (-0.534)	0.084	2.442	64
GCF/R 95	0.129 (0.263)	0.313 (0.629)	0.760 (3.595)*	-0.071 (-1.423)	0.124	3.651	76

t-statistics are in parenthesis.

* = statistically significant at 5% level of significance.

** = statistically significant at 10% level of significance.

Note: The logarithm of assets is used when revenues are part of the dependent variable.

C. Executive remuneration

1. Introduction

Issues concerning executive remuneration are important aspects of the corporate governance debate. The level and manner of compensation of the CEO and other senior executives of listed public companies has been particularly topical in Australia in recent times. In October 1996, for instance, pay rises for senior executives attracted criticism from the Prime Minister and Treasurer (Ellis 1996).

When addressing the matter of executive remuneration, participants in the corporate governance debate in Australia, the US, the UK and elsewhere have tended to focus on two key points: (i) that executive pay should be linked to performance; and (ii) that executive pay should be determined by appropriate persons not being the recipients themselves. The studies described below concern the second point.

2. Studies concerning remuneration committee composition

Introduction

A common feature of corporate governance statements is a recommendation that there should be a “remuneration committee” (or “compensation committee”) made up of some of the company’s directors. The Bosch Committee (1995, pp 30-31), for example, recommended that boards of Australian public companies should have a remuneration committee, at least a majority of whose members should be independent directors. The primary functions of the remuneration committee should, according to the Bosch Committee (1995, p 31), include:

- the remuneration arrangements for the CEO and other senior executives (including incentive plans and executive share option schemes);
- service contracts for the CEO and other senior executives;
- the remuneration policies and practices for the company generally;
- any employee share schemes or other incentive schemes; and
- the remuneration arrangements for directors.

In general terms, the notion is clearly that there is greater accountability if persons independent of the senior executives are responsible for determining their remuneration. There is, therefore, an interesting empirical question as to whether the independence (or lack thereof) of the persons determining the CEO’s pay in large Australian companies affects the amount and/or manner of that pay. The studies described below examined the relationship between remuneration committee composition and the level and manner of remuneration of the CEO of 72 large listed Australian companies in 1995.

Hypotheses

The authors conducted two studies concerning the composition of the remuneration committee. These studies used methodology similar to that used by Newman and Wright (1995) in their US study. The aim of these studies was to determine whether there is any relationship between the composition of the remuneration committee and

- the amount of the CEO's pay; or
- the link (if any) between CEO pay and corporate performance.

Each remuneration committee in these studies was categorised as an "insider-influenced remuneration committee" or an "independent remuneration committee". An insider-influenced remuneration committee is a committee which has at least one member who is not an independent director (being an executive director or an affiliated non-executive director). An independent remuneration committee is a committee made up entirely of independent directors.³⁰

The hypothesis tested in the first study was: CEO remuneration is greater in companies with insider-influenced remuneration committees than in companies with independent remuneration committees (Hypothesis 1).

The hypothesis tested in the second study was: The relationship between corporate performance and CEO remuneration is stronger in companies with independent remuneration committees than in companies with insider-influenced remuneration committees (Hypothesis 2).

There are two theories behind Hypothesis 2. First, CEOs of companies with an insider-influenced remuneration committee can use their influence over the committee in order to receive high pay, regardless of the company's performance. However, CEOs of companies with an independent remuneration committee are less able to influence the committee, and therefore the committee is likely to give greater weight to performance results (Newman and Wright 1995).

A second argument, formulated by Baysinger and Hoskisson (1990), runs as follows. Members of independent remuneration committees (being independent non-executive directors) are not aligned closely with the company's senior management, and therefore possess less information than do executive and affiliated non-executive directors about the CEO and other senior executives. For this reason, members of independent remuneration committees are likely to judge the performance of the company's management mainly by reference to the company's financial performance. On the other hand, "insider" members of insider-influenced remuneration committees have more information on the CEO's inputs, and

³⁰ Newman and Wright's justification for basing the distinction on just one director having a potential conflict of interest is that the remuneration committee is generally small, and "[e]ven a single individual can have a significant effect on the committee's decision in such a small group, especially if the insider has strong incentives to bias the decision". The average size of the remuneration committees in the present study was three members.

are therefore probably more able to distinguish between that portion of the company's performance which is attributable to CEO decisions and that which is due to forces beyond management's control. The ability of these committee members to "discount" management's responsibility for corporate performance suggests a weaker link between CEO pay and firm performance than in the case of companies with an independent remuneration committee.

Sample, data sources and methodology

The data sample was drawn from the Top 100 companies, ranked by market capitalisation, listed on the Australian Stock Exchange at the end of 1995. Several of the Top 100 companies did not have a remuneration committee and some companies had not released their 1995 results in time for inclusion in the studies. Therefore, the sample consisted of 72 of the Top 100 companies as at the end of 1995.

Figure 3 shows that 93 per cent of the sample companies had an insider-influenced remuneration committee. Indeed, in 72 per cent of sample companies, there was at least one executive director serving on the remuneration committee.

Information on the composition of companies' remuneration committees, together with information necessary to determine the status of each director (as an executive, affiliated non-executive or independent non-executive director), was obtained from several sources.³¹

The remuneration data for this study was derived from 1995 annual reports. The components of CEO remuneration that were included in the study were salary and bonus.³² One-off retirement payments – which would bias the sample data – were excluded. Also, in line with the methodology of Sridharan (1996), the value of options and partly paid shares awarded to the CEO were not included in the study.³³

The methodology of Defina, Harris and Ramsay (1994, p 349) was adopted in identifying the CEO's pay for each sample listed company:

The top income band in the directors' remuneration table [in the annual report] will represent the CEO's income except: (1) when the CEO is not a director; or (2) when a non-executive director is an executive director of an associated company and her or his remuneration from this company is included in the table. In these cases, one can cross-reference the two top income bands in the executive remuneration table; namely, the one for the consolidated figures and the one for the parent company figures, in order to identify the CEO's income.

³¹ The details are set out in Stapledon and Lawrence (1997), pp 167-168.

³² Strictly speaking, the figure used was the annual salary plus bonus of the highest-paid executive director of the listed company (who might sometimes be the executive chairperson rather than the CEO).

³³ This is arguably a limitation of our study. However, a recent US study found that whether executive remuneration was measured as simply cash salary and bonus, or as cash salary, bonus, options and partly paid shares, did not affect regression results: Core, Holthausen and Larcker (1997); see also Lewellen and Huntsman (1970). Also, including long-term remuneration like share option grants can be problematic. The amount of remuneration that will ultimately be received from many types of long-term remuneration is uncertain at the time the option (for instance) is granted: "The ultimate proceeds from a stock option grant ... will depend on the firm's stock price performance after the grant, whether the employee remains with the firm, the employee's risk preferences ... and changes in tax law": Lambert, Larcker and Weigelt (1993), p 444.

Most of the information for variables was obtained from ASX (1996). The only exception was for companies which had a negative return on equity (in which case there was no figure in the ASX publication). Here, the authors calculated the figure using the ASX definition and relevant data in Australian Financial Review (1996).

The model used to test Hypothesis 1 measures:

- LOG CEO SALARY – the logarithm of the CEO’s total salary plus bonus (the logarithm was used, in accordance with previous studies, for consistency and to reduce the distorting effects of outliers);
- 5%RI – a dummy variable with a value of “1” if an entity is entitled³⁴ to 5% or more of the company’s share capital; and a value of “0” if no entity is entitled to 5% or more of that share capital;
- LOG REVENUE – the natural logarithm of revenue for 1995;
- STOCK%95 – the percentage change in the company’s share price over 1994-95;
- RSHF95 – return on shareholder funds (the accounting measure of profitability broadly defined as net profits divided by shareholder equity);
- INSIDER CTTEE – this dummy variable equals “1” if a remuneration committee has at least one executive director or affiliated non-executive director; and equals “0” if the remuneration committee consists solely of independent directors; and
- EXEC CTTEE – this dummy variable equals “1” if the remuneration committee has at least one executive director; and equals “0” if the remuneration committee has no executive members.³⁵

The model used to test Hypothesis 2 also includes the following variables, which measure the interaction effects between CEO pay and company performance, on the one hand, and whether the remuneration committee is insider-influenced, on the other hand:

- STOCK%95*INSIDER
- RSHF95*INSIDER

Results: Hypothesis 1

³⁴ The concept of “entitlement” to voting shares is a *Corporations Law* concept designed to catch persons having power to exercise control over the voting and/or sale of shares: see *Corporations Law*, ss 12, 30-45, 609. A person entitled to at least 5% of the voting shares in a company is a “substantial shareholder” (*Corporations Law*, s 708) and is required to disclose their interest to the company and the ASX: *Corporations Law*, Pt 6.7.

³⁵ Our study was unable to include a variable for the number of years the CEO had held their position. It would have been reassuring to include this variable because a CEO could, ex ante, be expected to be paid more if they have contributed to the company for a number of years. However, data restrictions prevented its inclusion.

To test the hypothesis that companies with an insider-influenced remuneration committee will remunerate the CEO more liberally than companies with an independent remuneration committee, we measured the influence of an insider-committee on LOG CEO SALARY, while controlling for the influence of 5%RI, LOG REVENUE, STOCK%95 and RSHF95. The model revealed that an insider-influenced remuneration committee is not statistically more likely to provide greater remuneration than an independent remuneration committee (see Tables 8, 9 (column B), 10). Taken as a whole the model was significant (F value = 8.599) and did explain a large proportion of the fluctuation in CEO remuneration ($R^2 = 34.5\%$). However, the only variable which significantly influenced CEO remuneration was the LOG REVENUE variable.³⁶ This appears to provide some support for the well-known theory, expounded by Baumol (1967), that directors have an incentive to maximise revenues rather than profits and, more importantly, that directors are rewarded for increasing revenues.³⁷ However, statistics from the CEO influence studies (described below) indicate that the relationship between revenues and CEO pay is actually a case of larger companies paying their CEOs more, rather than growth in revenues positively affecting CEO pay.

The main differences between this study and the US study by Newman and Wright (1995) are that:

- after controlling for company size, company performance and share ownership, the results suggest that Australian companies whose remuneration committees include at least one executive or affiliated non-executive director do not remunerate their CEOs any more liberally than companies with remuneration committees composed entirely of independent directors; and
- the present study did not find a significant relationship (at the 5% level) between corporate performance (as measured by share price change or return on shareholder funds) and CEO remuneration.

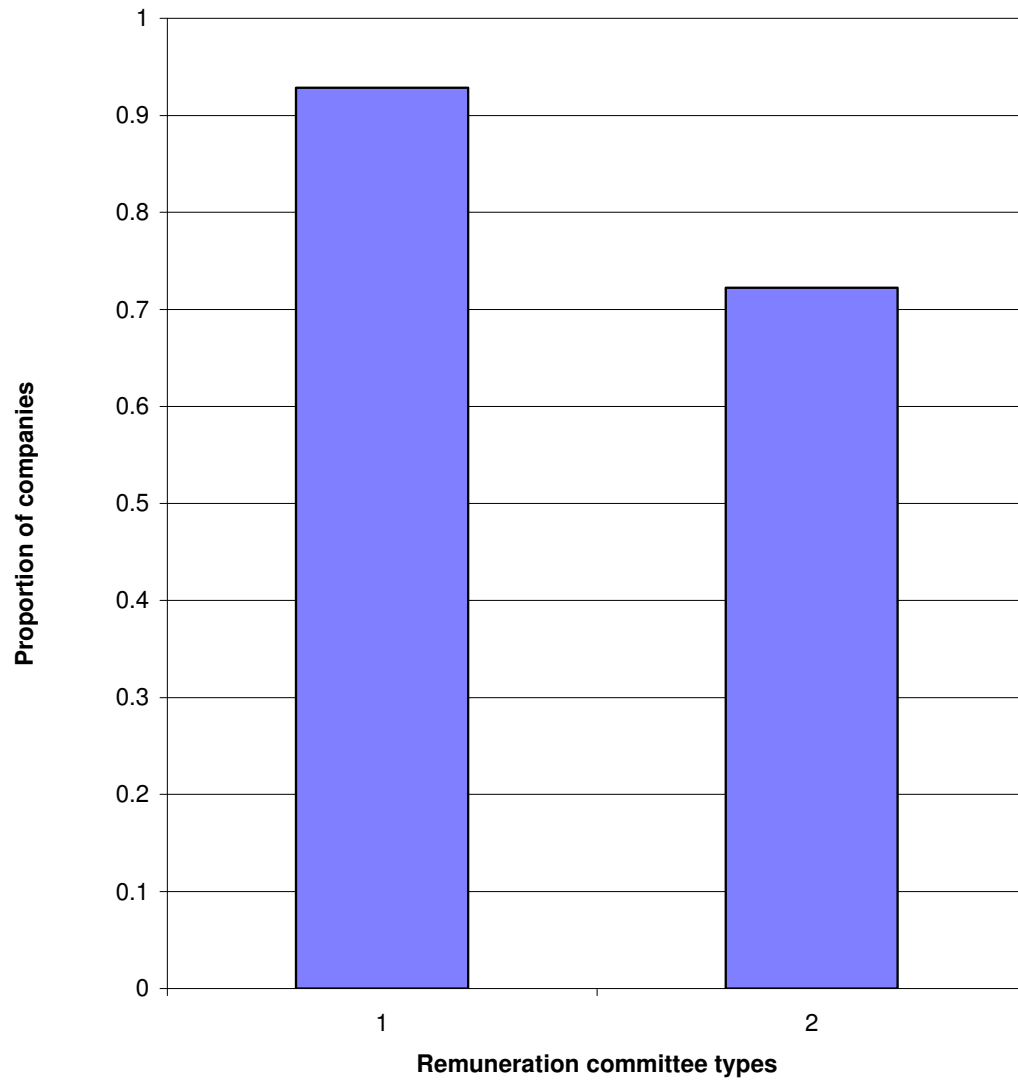
Results: Hypothesis 2

In contrast to the US results of Newman and Wright (1995), the present study found no evidence that companies with an insider-influenced remuneration committee are prone to compensate the CEO any differently to companies with an independent remuneration committee. In particular, the study produced no evidence supporting the hypothesis that the relationship between corporate performance and CEO pay is stronger in companies with an independent remuneration committee compared to those with an insider-influenced remuneration committee (see Tables 8, 9 (column A), 10).

³⁶ The RSHF95 and STOCK%95 variables were significantly related to CEO remuneration only at the 10% level of significance.

³⁷ An Australian study by Defina, Harris and Ramsay (1994), p 351, concluded that “the level of sales is a much more important determinant of CEO remuneration than any of the measures of company performance”.

FIGURE 3 Remuneration committee studies: Incidence of 'insider committees' and 'executive committees'



1 - INSIDER-CTTEE: the company's remuneration committee includes at least one executive director or affiliated non-executive director.

2 - EXEC-CTTEE: the company's remuneration committee includes at least one executive director.

TABLE 8 Remuneration committee studies: Descriptive statistics

Variable	Mean	Median	Minimum	Maximum	St Dev
CEO Remuneration 1995	929,722	705,000	245,000	9,625,000	1,164,886
CEO Remuneration 1994	801,792	625,000	205,000	5,905,000	766,017
5%RI	0.920	1	0	1	0.278
Revenue 1995 (\$'000)	2,737,498	1,228,700	13,228	18,487,000	3,847,157
Revenue 1994 (\$'000)	2,473,299	1,047,270	1,949	17,084,200	3,512,457
Stock%95	5.88%	6.17%	-34.16%	61.54%	21.03%
RSHF95	6.08%	10.76%	-216.21%	72.36%	33.05%
Insider Cttee	0.931	1	0	1	0.256
Exec Cttee	0.722	1	0	1	0.451
Retirement Benefits 1995	3,865,000	1,900,000	575,000	19,055,000	6,157,703
Retirement Benefits 1994	439,000	4,390,000	3,405,000	5,375,000	1,393,000

CEO Remuneration 1995/1994 = total CEO salary plus bonus (but excluding retirement benefits and stock option valuation).

5%RI = a dummy variable equal to "1" if any entity is entitled to 5% or more of the sample company's share capital.

Revenue 1995/1994 = corporate revenue from sales.

Stock%95 = the percentage change in the sample company's share price over 1994-95.

RSHF95 = the accounting measure of the sample company's profitability in terms of net profits as a ratio to shareholder equity.

Insider Cttee = a dummy variable equal to "1" if the sample company's remuneration committee has at least one executive director or affiliated non-executive director (*ie* the remuneration committee does not consist only of independent directors).

Exec Cttee = a dummy variable equal to "1" if the sample company's remuneration committee has at least one executive director (*ie* the remuneration committee does not consist only of non-executive directors).

Retirement Benefits 1995/1994 = the disclosed supplemental payment to the company's CEO on retirement.

TABLE 9 Remuneration committee composition and CEO remuneration

Explanatory variable	(A) LOGSAL	(B) LOGSAL
Intercept	8.841 (10.387)*	8.912 (11.806)*
5%RI	0.254 (1.118)	0.232 (1.042)
RSHF95	-0.005 (-0.149)	-0.004 (-1.802)**
INSIDER CTTEE	0.020 (0.054)	0.013 (0.056)
LOG REVENUE	0.312 (6.327)*	0.309 (6.385)*
STOCK%95	0.015 (1.205)	0.005 (1.793)**
STOCK%95*INSIDER	-0.010 (-0.807)	...
RSHF95*INSIDER	0.002 (0.045)	...
Adjusted R ²	33.2%	34.5%
F-value	6.115	8.599
Durbin-Watson Statistic	2.053	2.058
Sample Size	72	72

Column A = results for study testing Hypothesis 2.

Column B = results for study testing Hypothesis 1.

t-values are in parenthesis.

* = statistically significant at 5% level of significance.

** = statistically significant at 10% level of significance.

TABLE 10 Remuneration committee studies: Correlation coefficients

	Log CEO Salary	5%RI	Stock%95	RSHF95	Insider Cttee	Log Revenue	Stock%95*Insider	RSHF95*Insider
Log CEO Salary	1							
5%RI	-0.007	1						
Stock%95	0.132	-0.061	1					
RSHF95	0.134	-0.010	0.388	1				
Insider Cttee	0.021	0.313	0.047	-0.018	1			
Log Revenue	0.572	-0.162	0.028	0.383	-0.053	1		
Stock%95*Insider	0.127	-0.026	0.974	0.395	0.077	0.049	1	
RSHF95*Insider	0.138	0.013	0.389	0.997	0.043	0.384	0.400	1

Log CEO Salary = the logarithm of total CEO salary plus bonus.

5%RI = a dummy variable equal to “1” if any entity is entitled to 5% or more of the company’s share capital; and equal to “0” if no entity is entitled to 5% or more of that share capital.

Stock%95 = the percentage change in the company’s share price over 1994-95.

RSHF95 = the accounting measure of profitability broadly defined as net profits divided by shareholder equity.

Insider Cttee = a dummy variable equal to “1” if the remuneration committee has at least one executive director or affiliated non-executive director; and equal to “0” if the remuneration committee consists solely of independent directors.

Log Revenue = the natural logarithm of the company’s revenue in 1995.

Stock%95*Insider = the interaction effect between share price performance and whether the remuneration committee is insider-influenced (*ie* whether it has at least one executive director or affiliated non-executive director).

RSHF95*Insider = the interaction effect between accounting performance and whether the remuneration committee is insider-influenced (*ie* whether it has at least one executive director or affiliated non-executive director).

3. Studies concerning CEO influence over the board

Hypothesis

These studies, which are an Australian version of those conducted in the US by Sridharan (1996), tested the “CEO influence hypothesis”. The CEO influence hypothesis is that CEO pay is directly and positively linked to CEO influence over the board of directors. CEO influence over the board is measured by:

- the proportion of executive directors on the board or, alternatively, the proportion of non-independent directors (*ie* executive plus affiliated non-executive directors) on the board; and
- whether the CEO also holds the position of chairperson.

The hypothesis is that the level of CEO remuneration is positively related to those two measures of CEO influence over the board.

Sample, data sources and methodology

The sample and data sources for the CEO influence studies were the same as for the remuneration committee studies.

These studies used ordinary least squares regression. The dependent variable (LOG CEO SALARY) is the natural logarithm of the CEO’s annual salary plus bonus.³⁸ The natural logarithm was used to ensure that the model is, as far as possible, directly comparable with the Sridharan (1996) study, and also to normalise the value of remuneration outliers.³⁹

The following explanatory variables were used to explain variations in CEO remuneration:

- EXEC CHAIR – a dummy variable which indicates whether the company’s chairperson is also the CEO. This variable equals “1” if the CEO is also the chairperson and equals “0” if the CEO and the chairperson are different persons;
- PROP EXEC – the proportion of executive directors on the board;
- PROP INSIDER – the proportion of non-independent directors (*ie* executive plus affiliated non-executive directors) on the board;

³⁸ Again, strictly speaking, LOG CEO SALARY is the natural logarithm of the annual salary plus bonus of the highest-paid executive director of the listed company (in some cases being the executive chairperson rather than the CEO). Also, the methodology of Defina, Harris and Ramsay (1994), p 349, was adopted again to ensure that the remuneration figure obtained was that for the highest-paid executive director of the listed company and not the highest-paid director of a subsidiary.

³⁹ A number of statistical tests were used to detect the presence of heteroskedasticity – none was detected. See Appendix A for more details.

- STOCK%95 – the percentage change in the company’s share price over 1994-95⁴⁰ (this variable is also used to test the profit maximisation hypothesis);⁴¹
- REVENUES CHANGE 1994-95 – the percentage change in a company’s revenue over 1994-95 (this variable also tests the revenues maximisation hypothesis);⁴² and
- LOG ASSETS – the natural logarithm of the company’s assets in 1995 (this relates company size to CEO remuneration (again, the natural logarithm is used to normalise the value of any outliers)).

Results: first model

In the first model, CEO influence was measured by the proportion of executive directors. The initial regression results indicated that the overall model was significant (F-value = 6.375). The model explained about 27.5% of the variation in CEO remuneration (see Tables 11, 12 (columns A and C), 13; Figure 4).

In terms of the CEO influence hypothesis, there at first appeared to be clear support for the proposition that the CEO will be paid more if the CEO is also the company chairperson than if these roles are performed by two persons. The initial regression results suggested that, on average, a sample company which did not separate the roles of chairperson and CEO paid an extra \$489,000 per annum to its CEO. The results also indicated that larger companies were on average more liberal in remunerating their CEO.⁴³

However, once the model was adjusted for heteroskedasticity,⁴⁴ the statistically significant relationship between the level of CEO pay and combination of the roles of CEO and chairperson disappeared (see Table 12 (column C)).

The study produced no evidence supporting the profit maximisation hypothesis (see Figures 7, 8, 8a), nor was there any evidence supporting the revenues maximisation hypothesis (see Figure 9). However, by conducting only a cross-sectional study which covered one year, the sample may have been too selective to detect evidence of these

⁴⁰ Sridharan (1996) tested for the existence of profit maximisation by using a variable measuring the “cumulative monthly excess holding period return” earned by a shareholder holding the company’s ordinary shares over the sample period. The authors were unable to obtain such data and had to rely instead on a simple annual percentage increase in the share price (STOCK%95).

⁴¹ The purpose of the study was to test the CEO influence hypothesis, and not explicitly to test the profit maximisation hypothesis (*ie* the hypothesis that market forces such as the market for corporate control and the market for managerial talent operate to align the interests of managers and shareholders, so that managers act to maximise profits and shareholder wealth).

⁴² Again, the purpose of the study was not explicitly to test the sales maximisation hypothesis (*ie* the hypothesis that, as a result of a separation of ownership and control in large public companies, managers can pursue their own agendas rather than maximising profits, and that they commonly do so by maximising sales so as to grow the size of their firms (Baumol 1967)). Some evidence to support the sales maximisation hypothesis was found in the remuneration committee studies described above.

⁴³ Of course, “large” in this context is a relative term since the sample companies were all Top 100 listed companies.

⁴⁴ Heteroskedasticity is explained in Appendix A.

hypotheses. CEOs may be remunerated in direct proportion to revenues growth but there may be a lag between the change in revenues and the change in salary. Alternatively, CEOs may be rewarded for the *level* of revenues rather than the *growth* in revenues. This alternate explanation is partially supported by the significant relationship between CEO remuneration and the assets variable; as mentioned above, on average larger sample companies paid their CEOs more than smaller companies.⁴⁵

Results: second model

The second model of the CEO influence hypothesis used the proportion of non-independent directors (*ie* executive directors plus affiliated non-executive directors) to measure the CEO's influence over the board. This model was also significant (F value = 6.134) and was able to detect a significant proportion of the CEO remuneration variations ($R^2 = 26.6\%$) (see Tables 11, 12 (columns B and D), 13; Figure 5).

As with the first model, the second model found a positive relationship between combination of the roles of CEO and chairperson and the remuneration of the CEO. But, as with the first model, this relationship disappeared when the model was adjusted for heteroskedasticity (see Table 12 (column D)).

The second model found no significant relationship between the proportion of non-independent directors and CEO remuneration.

There was also no evidence in this second model to suggest that CEO remuneration reflects share price or revenue growth fluctuations.

4. Conclusion: Executive remuneration studies

The Australian experience in relation to CEO remuneration and remuneration committee composition appears to differ from that in the US. The remuneration practices of Australian companies do not appear to vary in accordance with the composition of the remuneration committee.

Similarly, the Australian evidence on CEO influence over the board as a whole, and CEO pay, differs from the US evidence. The Australian studies produced no evidence in support of the CEO influence hypothesis. While there was initially a relationship between, on the one hand, combination of the roles of CEO and chairperson, and, on the other hand, the level of the CEO's pay, this relationship disappeared when the model was adjusted for heteroskedasticity. Also, the studies produced no evidence that the proportion of executive directors (or for that matter the proportion of non-independent directors) influences CEO remuneration.

⁴⁵ This finding supports the view of Michael Porter (1987), p 53, that “[h]uman nature fights economic rationale. Size supplants shareholder value as the corporate goal.”

This research casts doubt on the ability of Australian independent directors to fulfil the monitoring role promoted by many participants in the corporate governance debate. Section VI, below, discusses possible reasons for these results (and those obtained in our study of independent directors and corporate performance). However, it is convenient to mention here one factor specific to the executive remuneration studies.

In Australia (as in the US and the UK), the use of external remuneration consultants to provide advice to remuneration committees and boards of large listed companies is widespread. The UK's Hampel Committee (1998, para 4.4) recognised that this may have given rise to a "ratchet effect":

Remuneration levels are often set with the help of comparisons with other companies, including remuneration surveys. We urge caution in their use. Few remuneration committees will want to recommend lower than average salaries. There is a danger that the uncritical use of comparisons will lead to an upward ratchet in remuneration with no corresponding improvement in corporate performance.

If this factor applies to all (or most) large listed companies – regardless of the composition of the remuneration committee and board of those companies – it would provide a partial explanation for the results of the executive remuneration studies described above.

TABLE 11 CEO influence studies: Descriptive statistics

Variable	Mean	Median	Minimum	Maximum	St Dev
CEO Remuneration 1995	929,722	705,000	245,000	9,625,000	1,164,886
CEO Remun ♦ 1994-95	17.96%	14.06%	-76.28%	208.42%	41.59%
Assets 1995 (\$'000)	9,852,936	1,735,899	195,377	147,077,000	26,941,225
Revenues ♦ 1994-95	18.18%	11.51%	-94.33%	108.41%	12.77%
Stock%95	5.88%	6.17%	-34.16%	61.54%	21.03%
Number of Directors	9.153	9	4	16	2.663
Prop Insider	59%	60%	7%	100%	22%
Prop Exec	29%	29%	7%	75%	15%
Exec Chair	0.150	0	0	1	0.360

CEO Remuneration 1995 = total CEO salary plus bonus (but excluding retirement benefits and stock option valuation).

CEO Remun ♦ 1994-95 = the percentage change in CEO salary plus bonus from 1994 to 1995.

Assets 1995 = the total value of the sample company's assets in 1995.

Revenues ♦ 1994-95 = the percentage change in the sample company's revenue over 1994-95.

Stock%95 = the percentage change in the sample company's share price over 1994-95.

Number of Directors = the number of directors on the sample company's board.

Prop Insider = the proportion of non-independent directors (*ie* executive plus affiliated non-executive directors) on the sample company's board.

Prop Exec = the proportion of executive directors on the sample company's board.

Exec Chair = a dummy variable equal to "1" if the sample company's chairperson is also its CEO; and equal to "0" if the CEO and the chairperson are different persons.

TABLE 12 CEO influence over board and CEO remuneration

Explanatory variable	(A) LOGSAL	(B) LOGSAL	(C) LOGSAL	(D) LOGSAL
Intercept	10.599 (15.188)*	10.063 (15.341)*	10.599 (13.288)*	10.063 (9.051)*
EXEC CHAIR	0.489 (2.546)*	0.349 (2.040)*	0.489 (1.601)	0.349 (1.235)
PROP EXEC	-0.007 (-1.376)	...	-0.007 (-1.607)	...
PROP INSIDER	...	0.003 (1.028)	...	0.003 (1.012)
STOCK%95	0.001 (0.323)	0.000 (0.067)	0.001 (0.234)	0.000 (0.046)
REVENUES • 1994-95	0.000 (0.072)	0.000 (0.002)	0.000 (0.251)	0.000 (0.003)
LOG ASSETS	0.206 (4.620)*	0.240 (5.080)*	0.206 (3.735)*	0.240 (3.647)*
Adjusted R ²	27.5%	26.6%	27.5%	26.6%
F-value	6.375	6.134	6.375	6.134
Durbin-Watson Statistic	2.042	2.211	2.042	2.211
Sample Size	72	72	72	72

Column A = results using proportion of executive directors.

Column B = results using proportion of non-independent directors (*ie* executive directors plus affiliated non-executive directors).

Column C = Column A data modified using the White test to ensure that the standard errors are heteroskedasticity-consistent.

Column D = Column C data modified using the White test to ensure that the standard errors are heteroskedasticity-consistent.

t-values are in parenthesis.

* = statistically significant at 5% level of significance.

TABLE 13 CEO influence studies: Correlation coefficients

	Log CEO Salary	Exec Chair	Log Assets	Prop Exec	Revenues ♦ 1994-95	Stock%95	Prop Insider
Log CEO Salary	1						
Exec Chair	0.144	1					
Log Assets	0.508	-0.143	1				
Prop Exec	-0.149	0.488	-0.262	1			
Revenues ♦ 1994-95	-0.056	-0.037	-0.082	0.050	1		
Stock%95	0.132	0.026	0.214	0.096	-0.082	1	
Prop Insider	-0.076	0.143	-0.378	0.412	-0.006	0.078	1

Log CEO Salary = the logarithm of total CEO salary plus bonus.

Exec Chair = a dummy variable equal to "1" if the sample company's chairperson is also its CEO; and equal to "0" if the CEO and the chairperson are different persons.

Log Assets = the natural logarithm of the sample company's assets in 1995.

Prop Exec = the proportion of executive directors on the sample company's board.

Revenues ♦ 1994-95 = the percentage change in the sample company's revenue over 1994-95.

Stock%95 = the percentage change in the sample company's share price over 1994-95.

Prop Insider = the proportion of non-independent directors (*ie* executive plus affiliated non-executive directors) on the sample company's board.

FIGURE 4 Incidence of executive directors on company board and CEO remuneration in 1995 (excluding outliers)

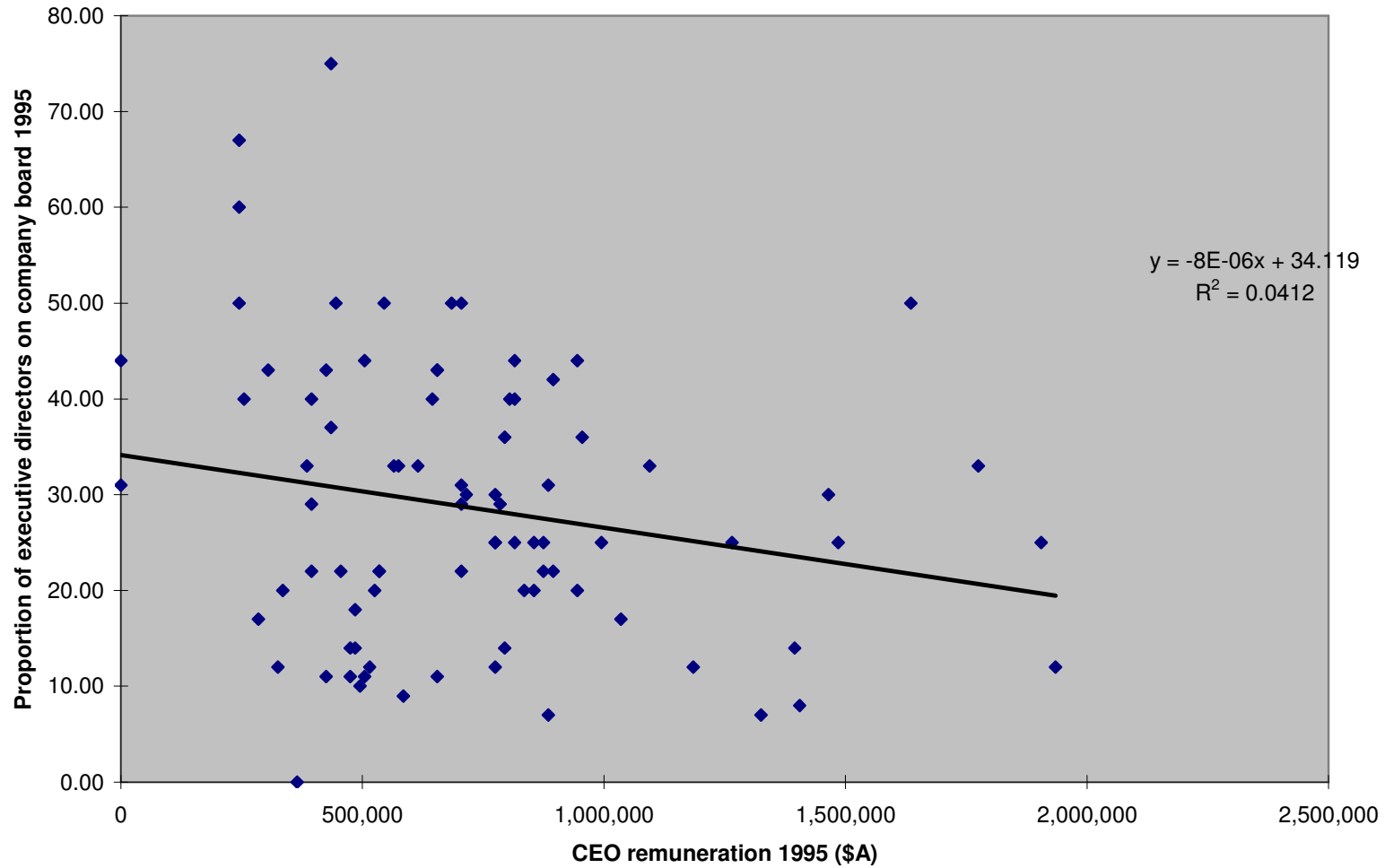


FIGURE 5 Incidence of independent directors on company board and CEO remuneration in 1995 (excluding outliers)

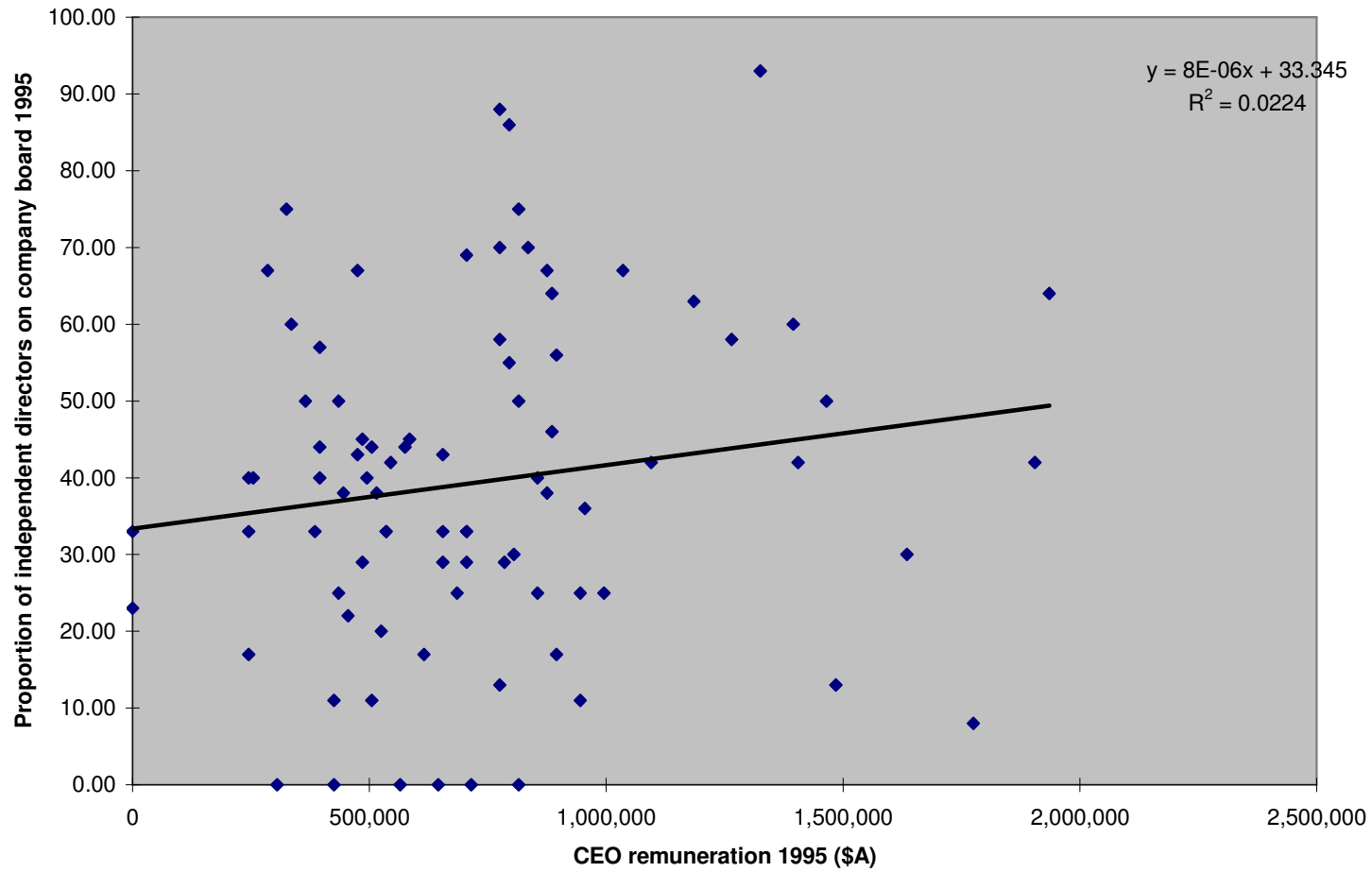


FIGURE 6 Board size and change in CEO remuneration in 1994-95

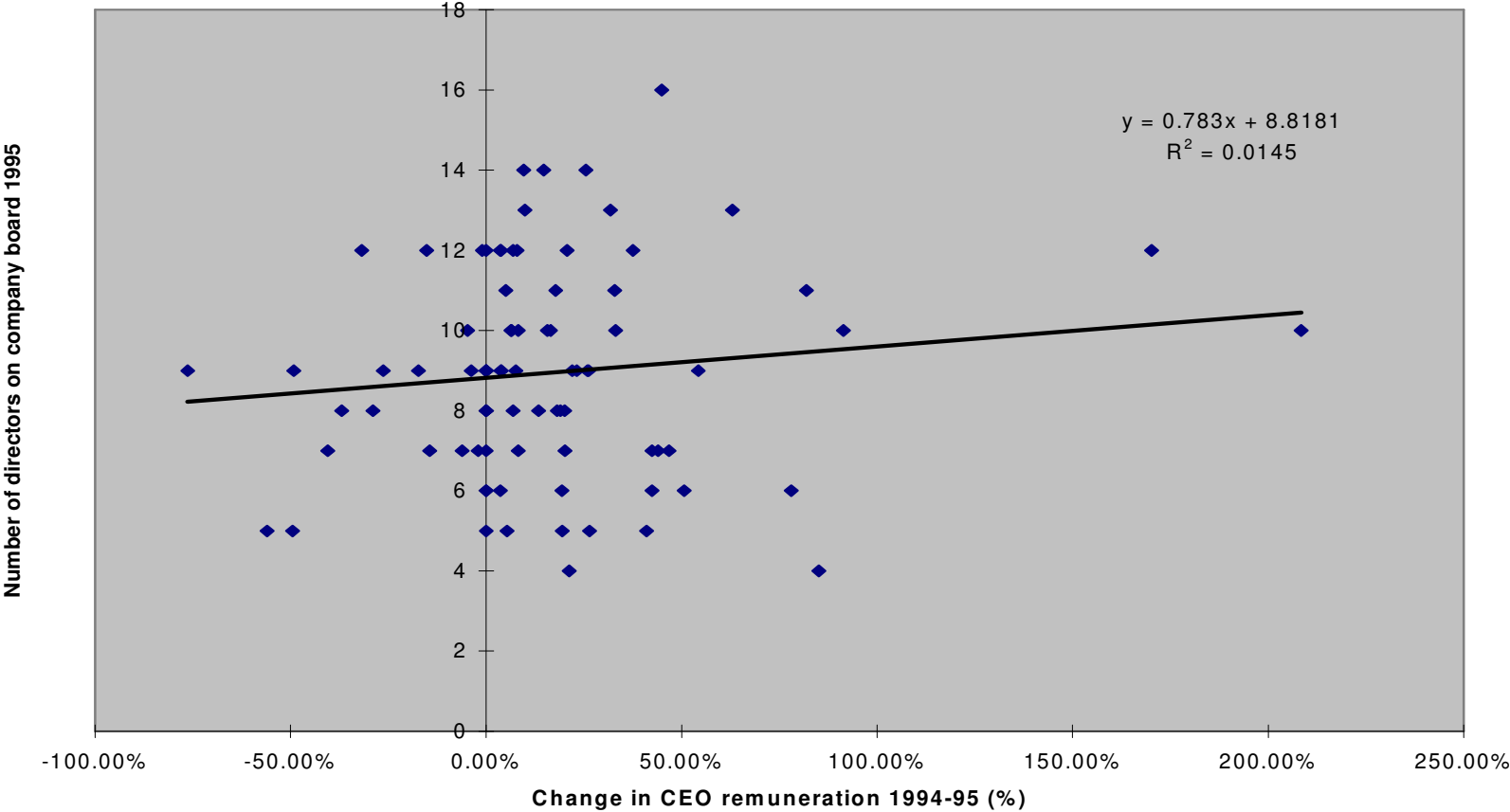


FIGURE 7 Share price variation and variation in CEO remuneration in 1994-95

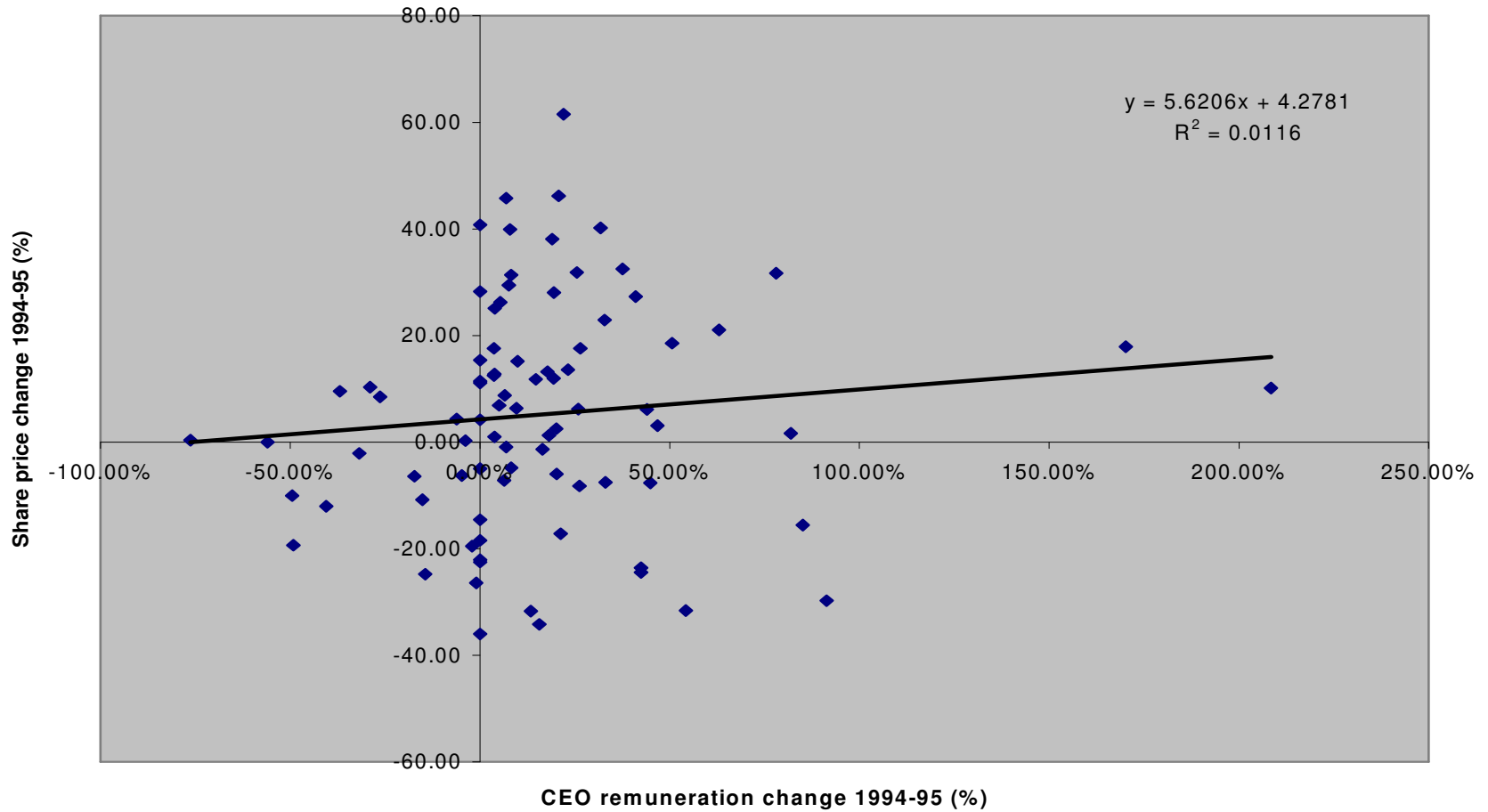


FIGURE 8 Return on shareholder funds and CEO remuneration in 1995 (excluding outliers)

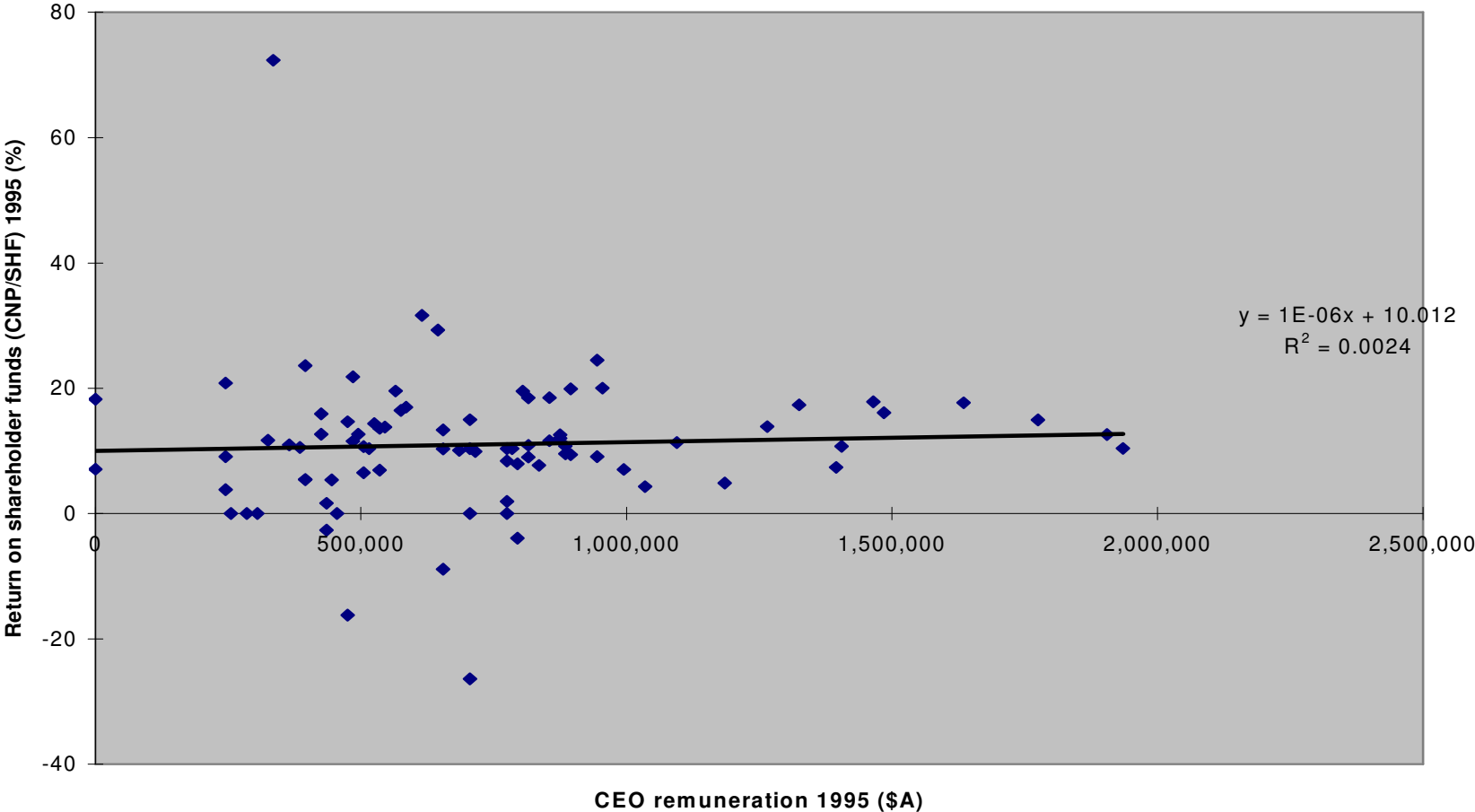
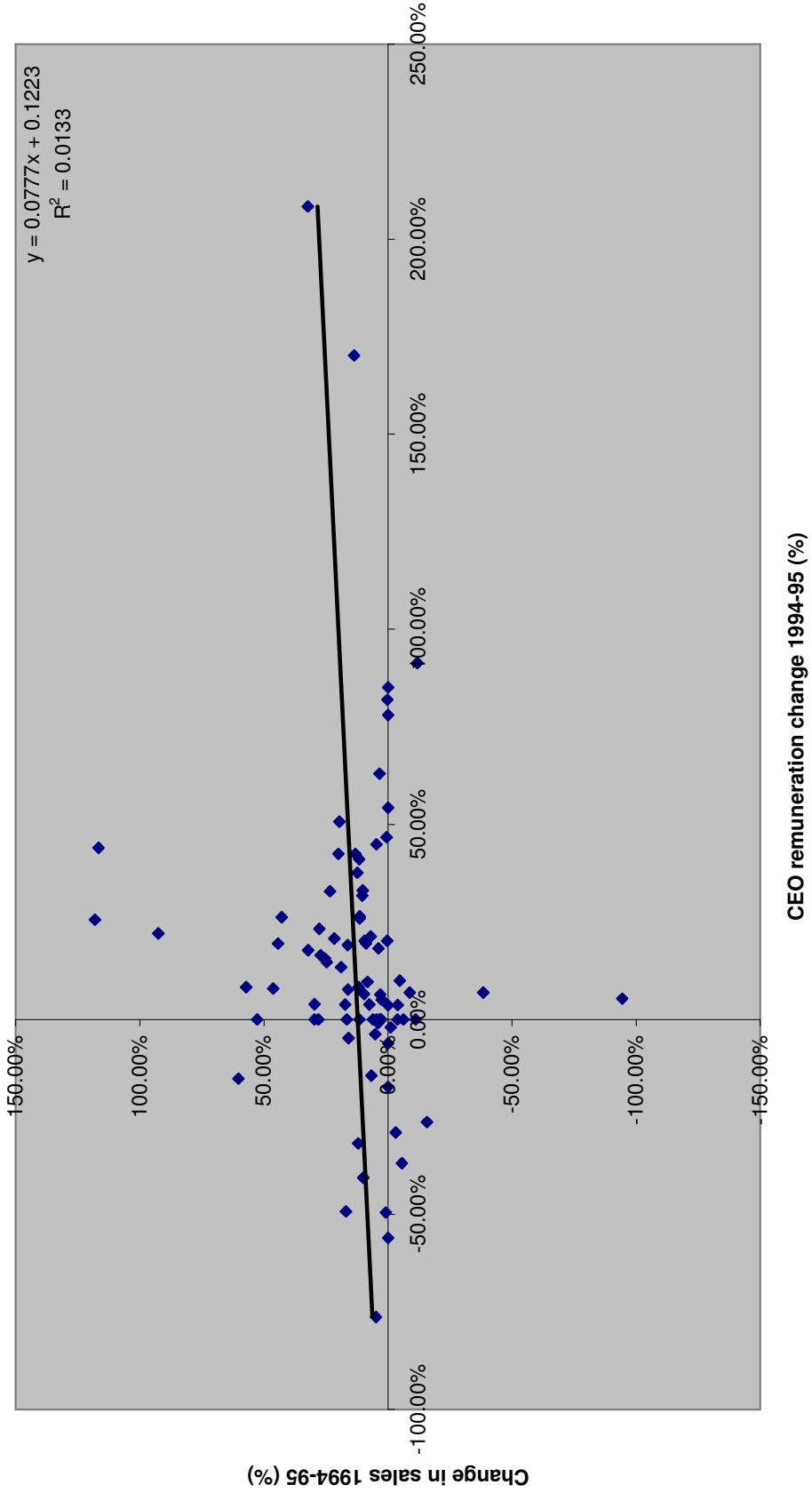


FIGURE 9 Variation in company sales and variation in CEO remuneration in 1994-95 (excluding outlier)



VI. Conclusion

A. Why don't independent directors appear to add value?

Several commentators have identified poor corporate governance practices as the common characteristic in the spectacular corporate collapses of the late 1980s and early 1990s (eg Gaynor 1994). But while poor corporate governance structures and processes may have been – and may still be – a cause of poor performance in some companies, the studies described in this Report suggest that improved corporate governance in terms of board composition would not on average have led to improved performance in large listed Australian companies.

Why might the studies have produced these results? Possible reasons include:

1. Independent directors may not have been performing their monitoring role efficiently or effectively at the time of the studies (our performance data, for example, covered the period 1985 to 1995). Board composition and structure became a high-profile issue in Australia only in the early-to-mid 1990s, which lends some credibility to this possible factor. Millstein and MacAvoy (1998, p 1294) speculate that US studies that have produced inconclusive evidence on a link between board composition and corporate performance may be explicable on the basis that they involve “looking at corporate performance and governance through a rear-view mirror. Throughout much of the past half century, the board of directors, as an institution, has in fact been passive to the point of irrelevance to corporate performance. ... A search for proof that good governance improves performance based on data prior to the last decade would encounter almost exclusively the behavior of rubber-stamp boards.” Recent public attention on corporate governance may have increased the effectiveness of independent directors post-1995.
2. Different types of board composition may be appropriate for different types of companies. For example, Bhagat and Black (1998, pp 297, 301) speculate that slowly growing companies may need a high proportion of independent directors to control executive management's incentives to reinvest free cash flow, rather than pay dividends or buy-back shares, even when the company lacks profitable investment opportunities. On the other hand, fast-growing companies may benefit from a relatively high proportion of executive and affiliated non-executive directors – who can provide advice on managing growth. As Bhagat and Black (1998, p 297) hypothesise, board composition could be endogenous – it could be determined by growth or other company characteristics.⁴⁶ However, the results of our corporate performance studies produced no evidence to support the theory that companies appoint more independent directors as their growth slows.

⁴⁶ See also Demsetz and Lehn (1985).

3. A related point: If, as some US evidence suggests (Gertner and Kaplan 1996, Hermalin and Weisbach 1991), boards improve their structures and practices following poor corporate performance, board composition and structure will be partly explained by past corporate performance. This would make it very difficult – even if a statistically significant relationship were found to exist – to determine causation: that is, whether board composition had caused poor corporate performance, or whether poor corporate performance had led to a certain board composition.
4. An optimal board may contain a mix of independent directors, affiliated non-executive directors and executive directors – with the independent directors possibly making up only a minority of the board (Bhagat and Black 1998, p 301). Intuitive support for this possible factor may lie in the ability of executive directors to provide corporate experience and contacts, and to inject new ideas, with independent directors performing an equally useful role of monitoring the performance of senior management and ensuring that they avoid conflicts of interest (Byrd and Hickman 1992, p 199; Weisbach 1988, pp 433-434).
5. The critical factor may well be boardroom *behaviour* rather than any particular board composition. The Millstein and MacAvoy (1998) study of large US companies, summarised above,⁴⁷ provides empirical support for this factor.
6. Some types of independent director may add value while others may not (Bhagat and Black 1998, p 301). CEOs of other listed companies may be more effective non-executive directors than people appointed for their “status” or public profile. Then again, CEOs of other listed companies may: (i) be too busy with their own business; (ii) know too little about a different business in a different industry; (iii) be overly generous in regard to CEO remuneration; or (iv) provide the (low) degree of monitoring that they would prefer at their own company (Bhagat and Black 1998, p 301).
7. While increased monitoring by independent directors may improve the quality of management decisions, it may also complicate and lengthen the decision process. Consequently, monitoring by independent directors may be advantageous in some situations (*eg* ensuring high-quality financial reporting)⁴⁸ but a hindrance in other situations (*eg* decision-making in high-volatility environments) (Boyd 1994, p 342).
8. In relation to the lack of a statistical relationship between board composition and share price performance: If shareholders anticipate the effects of board composition on corporate performance then studies using share returns as the performance measure will not be very useful (Bhagat and Black 1998, p 293). The correlation coefficients would be biased towards zero.

⁴⁷ See pages 8-9 above.

⁴⁸ The US and UK studies discussed above, at pages 11-12, provide uniform evidence that independent directors play a positive role in regard to the quality of financial reporting.

9. In relation to the lack of solid evidence linking board or remuneration committee composition to CEO pay: Executive directors – particularly those considered as possible successors to the current CEO – may fear any appearance of siding with the CEO and alienating independent directors, particularly in relation to a sensitive matter like the CEO's remuneration (Boyd 1994, p 341). Executive directors may therefore be just as effective as independent directors in ensuring that CEO remuneration is appropriate in terms of its amount and its relationship to the company's performance.
10. Non-executive directors who satisfy all of the independence criteria (no business or advisory relationship with the company, not a former executive, etc) may, nonetheless, be relatively ineffective monitors of the CEO and executive management because of a range of other factors. Factors discussed by Stapledon and Lawrence (1997, pp 158-161) include:
 - a personal or social friendship between the independent director and the CEO;
 - in the case of an independent director who is an executive director of another listed company, their propensity to engage in effective monitoring may reflect the (low) level of monitoring that they would wish to see from non-executives on their own board;
 - the fact that an independent director has been on the board for many years;
 - the fact that some independent directors have insufficient time to devote to the company's affairs due to other commitments;
 - independent directors' relative lack of knowledge about the company's business, compared to the executive directors; and
 - the fact that independent directors are "merely ... independent of management, rather than *dependent* on shareholders" (Gilson and Kraakman 1991, p 881).

As these factors are not picked up in the definition of an independent director used in our studies, they may partly explain the lack of statistically significant results in our studies.

11. The range of market forces and other mechanisms that operate to reduce agency costs (*eg* threat of hostile takeover, product market competition, market for managerial talent, CEO share ownership, large block shareholdings, performance-related remuneration for executives, corporate leverage, directors' legal duties and – of course – board structure and composition) may act as substitutes or complements (Bhagat and Black 1998, p 301; Agrawal and Knoeber 1996; Hermalin and Weisbach 1991; Brickley and James 1987). If so, this may reduce or increase the benefits from any one corporate governance mechanism (such as monitoring by independent directors) operating on its own.

12. The share price data and accounting performance data used in our studies regarding corporate performance are “noisy” (Bhagat and Black 1998, p 300). That is, lots of factors contribute to a company’s performance, and the control variables in our regressions may not have covered all of the important contributing factors.

The title of this section asks “Why don’t independent directors appear to add value?” The inclusion of the words “appear to” is important. Our studies have not proven conclusively whether or not independent directors are valuable. What the studies *have* done is fail to produce solid evidence supporting the proposition that independent directors add value (or destroy value). Thus, the upshot of the studies is that, as far as Australia’s largest listed companies are concerned, independent directors do not appear to have added value over the 1985 to 1995 period.

The appearance that there has been no value enhancement may be because independent directors were actually ineffective (or at least no more effective than non-independent directors) *or* because one or more of the factors just summarised masked their effectiveness. If one or more of factors 3, 8, 11 and 12 existed, it may be that independent directors were actually value-adding (or indeed value-destroying) during the period of the studies but the existence of those factors caused our regression studies not to detect the role played by independent directors. Alternatively, if one or more of factors 4, 6, 7 and 9 existed, this would explain our results showing no solid evidence that independent directors either improve or hinder corporate performance and the process of remunerating the CEO. It is impossible to tell. Therefore, we can conclude only that independent directors do not *appear* to have added value over the 1985 to 1995 period.

B. Implications for regulation

As a preliminary point, our studies highlight the importance of local content research to take account of structural and environmental differences between different countries. Unquestioned acceptance of research results from overseas (particularly the US) will often result in proposals for regulatory reform which are not suited to the local environment (Bird 1995, pp 256-257; Stapledon and Lawrence 1997, p 155).

In Australia, corporate governance regulations have tended to involve disclosure requirements. Examples are ASX Listing Rule 4.10.3, which requires listed companies to include in their annual report a statement of their corporate governance practices; and ASX Listing Rule 4.10.2, which requires listed companies to disclose in their annual report whether or not they have an audit committee and, if not, why not.

In some other countries there are requirements that go beyond disclosure. For instance, the listing rules of the New York Stock Exchange (NYSE) require US companies listed on the NYSE to have at least two independent directors, and an audit committee, which must be

composed entirely of independent directors.⁴⁹ The US Internal Revenue Code permits companies to claim a tax deduction for executive remuneration over US\$1 million only if the remuneration is performance-based and determined by a remuneration committee made up entirely of independent directors.⁵⁰ And the Canada *Business Corporation Act* 1985 requires companies that issue shares to the public to have at least two non-executive directors.⁵¹

While there are in Australia no equivalent requirements applying to all listed companies, there are some similar prescriptive rules applying to specific types of organisation. The *Life Insurance Act* 1995 requires every life company to have an audit committee; and executive officers of the company must account for no more than a minority of the committee's membership.⁵² Also, the managed investments provisions in the *Corporations Law* require either that: (i) at least half the responsible entity's board be "external directors"; or (ii) the responsible entity establish a compliance committee for each managed investment scheme under its management, a majority of whose members must be "external members".⁵³

Each additional regulatory requirement imposed on companies adds to the compliance costs for those companies (and, indirectly, their shareholders). Therefore, even if the empirical evidence unequivocally indicated that board structure and composition improved corporate performance, it would still be necessary to ask whether the costs of imposing governance regulations on all listed companies would be outweighed by the benefits (Coase 1960, pp 42-43; Niskanen 1991). However, as the results of our studies do not provide any support for the proposition that independent directors add value in terms of corporate performance or CEO remuneration, we have not reached first base. There is no sound body of empirical evidence in Australia supporting the introduction of prescriptive corporate governance requirements.⁵⁴

⁴⁹ *NYSE Listed Company Manual*, s 303.00.

⁵⁰ *Internal Revenue Code* (US), s 162(m).

⁵¹ *Canada Business Corporation Act* 1985, s 102(1).

⁵² *Life Insurance Act* 1995 (Cth), ss 90, 91(3).

⁵³ *Corporations Law*, ss 601JA, 601JB. The criteria used to define "external director" and "external member" are similar to the criteria adopted by AIMA (1997), the Bosch Committee (1995) and other organisations to define "independent director".

⁵⁴ On the other hand, the ASX's description (Humphry 1998) of the UK corporate governance disclosure model – the "comply or explain" model – as a prescriptive form of regulation is puzzling. The UK model (embodied in rule 12.43A of the London Stock Exchange *Listing Rules*) does not require listed companies to adopt any particular governance structure or practice. It merely requires an explanation of a governance structure or practice that differs from the benchmark set of practices set out in the Combined Code (London Stock Exchange 1998).

Appendix

Australian empirical studies: Statistical issues

1. Introduction

The most common statistical problems in running the type of regression analysis employed in this Research Report are heteroskedasticity, autocorrelation and multicollinearity. Our studies were tested for these problems and the result of these tests means that the conclusions and inferences to be drawn from the studies can be relied on.

2. Heteroskedasticity⁵⁵

The ordinary least squares regression model used in our studies relies on an assumption that the variance of the error terms⁵⁶ is constant – that is, that the disturbances in the regression function are homoskedastic. When the disturbances do not have a constant variance they are said to be heteroskedastic and the reliability of the model will be adversely affected. The presence of heteroskedasticity will often result in t-statistics and F-values that are misleading.

It is generally accepted that heteroskedasticity is more prevalent in cross-sectional data than in time series data. Given that the regression models in our studies rely on cross-sectional data, the possibility of heteroskedasticity was a particular concern.

To detect the presence of heteroskedasticity we compared the squared residuals against the estimated regression dependent variable values. We also used the White general heteroskedasticity test (White 1980). These tests indicated that heteroskedasticity may be present in the model for our CEO influence studies. When we transformed the data to ensure that the standard errors were heteroskedasticity-corrected (using the White test) we found that, except for a variable to be considered in a moment, while some of the standard errors on the explanatory variables increased or decreased, none of the signs on the explanatory variables went from negative to positive, none of the significant t-statistics became insignificant, and none of the insignificant t-statistics became significant.

The one exception was the EXEC CHAIR variable. This variable reflects whether or not the company's chairperson is also the CEO. In the base case model, the regression results for EXEC CHAIR suggested that a combination of the roles of chairperson and CEO has a significant influence on the level of the CEO's pay. However, when we adjusted the model to counteract any possible heteroskedasticity (*ie* when the standard errors were made heteroskedasticity-consistent) the variable EXEC CHAIR became statistically insignificant (t-value = 1.235), indicating that companies which appoint one person as both CEO and

⁵⁵ See Gujarati (1995), pp 355-399.

chairperson do not on average pay their CEO more than companies which separate the roles of CEO and chairperson. The results of the heteroskedasticity adjustments are documented in Table 12, columns C and D.

After making this adjustment for EXEC CHAIR, we were able to conclude that there was no residual heteroskedasticity in our model.

3. Autocorrelation⁵⁷

The term “autocorrelation” refers to a situation where the disturbances (or “error terms”) are correlated when ordered in time. In other words, the disturbance term relating to one observation is influenced by the disturbance term relating to one or more other observations. Although autocorrelation is not common in cross-sectional studies, it is not unheard of. The consequences of autocorrelation for a regression model include inefficient estimators – meaning that the t-statistics and F-values cannot be relied on.

To detect any possible autocorrelation we again observed the residual values from our estimated model, and also performed the Durbin-Watson *d* test (Durbin and Watson 1951). The Durbin-Watson *d* values are reported in the regression tables for the executive remuneration studies (see Tables 9 and 12). We were unable to detect any autocorrelation in our models. Remedial measures to counteract any autocorrelation⁵⁸ did not affect the conclusions from our models, thus confirming that our models are statistically robust.

4. Multicollinearity⁵⁹

The final potential problem with our models was multicollinearity. Put simply, multicollinearity arises when some of the explanatory variables are highly correlated. For example, there might be a strong relationship (or correlation) between movements in the return on shareholder funds (an accounting measure of corporate performance) and movements in share prices. If a model is afflicted by multicollinearity some of the explanatory variables will appear to be insignificant when in fact they exert a significant influence on the dependent variable.

Multicollinearity is often revealed by results which have a high R^2 but very few significant explanatory variables. In our models the R^2 was never an extremely high number. Similarly, most of our models had at least a couple of statistically significant variables. A further indication that multicollinearity is not a serious problem in our models is the low

⁵⁶ The “error terms” or the “disturbances” are the difference between the value of the dependent variable (in this case, corporate performance and CEO remuneration) predicted by the regression model and the actual values observed in practice.

⁵⁷ See Gujarati (1995), pp 400-451.

⁵⁸ In particular, we relied on the Cochrane-Orcutt (1949) iterative procedure; the HILU method (Hildreth and Lu 1960); and the ML method (Beach and MacKinnon 1978). Out of an abundance of caution we also checked the models using the Autoregressive Conditional Heteroskedasticity (ARCH) and GARCH models (Engle 1982, Bollerslev 1986).

degree of correlation between the explanatory variables. The correlation coefficients rarely exceeded 0.4.⁶⁰

On balance, therefore, the models and their outputs are statistically robust and we have reason to be confident in the conclusions derived from the models.

⁵⁹ See Gujarati (1995), pp 319-351.

⁶⁰ Except, of course, for the variables which are generated by the cross products of two explanatory variables (eg the variable RSHF95*INSIDER in the remuneration committee studies is the variable RSHF95 multiplied by the variable INSIDER CTTEE).

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