

# Board Composition and Corporate Performance: how the Australian experience informs contrasting theories of corporate governance\*

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In many respects, Australian boards more closely approach normative “best practice” guidelines for corporate governance than boards in other Western countries. Do Australian firms then demonstrate a board demographic-organisational performance link that has not been found in other economies? We examine the relationships between board demographics and corporate performance in 348 of Australia’s largest publicly listed companies and describe the attributes of these firms and their boards. We find that, after controlling for firm size, board size is positively correlated with firm value. We also find a positive relationship between the proportion of inside directors and the market-based measure of firm performance. We discuss the implications of these findings and compare our findings to prevailing research in the US and the UK.

**Keywords:** Corporate governance, organisational networks, organisational performance, boards of directors

## Introduction

Corporate governance has never been so topical or important. The Enron failure, together with other high profile corporate collapses, has resulted in calls for better corporate governance (Lavelle, 2002). As well as high profile corporate collapses (Clarke *et al.*, 1998), there are many debates concerning the efficiency of corporate governance. These include controversy concerning director and CEO remuneration (Grossman and Hoskisson, 1998; Nichols and Subramaniam, 2001), increasing compliance (Stiles and Taylor, 1993) and performance pressures (Pound, 1995), along with calls for a greater “stakeholder” approach to governance (Wheeler and Sillanpaa, 1998). While much corporate gov-

ernance debate and research activity has focused on the US, there is a growing international literature on corporate governance (e.g. Hossain *et al.*, 2001; Bianco and Casavola, 1999; Conyon and Peck, 1998a).

Our objectives in this paper are to advance the international corporate governance research agenda by describing the corporate governance environment for Australia’s largest companies and to examine the board composition and firm performance, and any relationship between them, in an Australian context. We begin with an overview of research relating to board composition and firm performance and then develop specific hypotheses before outlining our methodology and results. Finally, we discuss the implications of our findings for theory and practice.

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## Board structure

There is an important need for research to inform current corporate governance debates. Yet the study of corporate governance is complicated by the fact that the structure, role and impact of boards have been studied from a variety of theoretical perspectives, which in turn have resulted in a number of sometimes competing theories concerning corporate governance. Scholars from the disciplines of law (Richards and Stearn, 1999), economics (Tirole, 2001; Jensen and Meckling, 1976), finance (Fama, 1980), sociology (Useem, 1984), strategic management (Boyd, 1995) and organisation theory (Johnson, 1997) have all made contributions to the corporate governance research agenda. From these disciplines we have numerous governance theories, including agency theory, stewardship theory, resource dependence theory, institutional theory and stakeholder theory, to name but some of the more dominant theoretical perspectives.

A common aim of many of the theories of corporate governance has been to posit a link between various characteristics of the board and corporate performance. Agency theory (Eisenhardt, 1989; Jensen and Meckling, 1976) has been a dominant approach in the economics and finance literatures (Hermalin and Weisbach, 2000). Agency theory is concerned with aligning the interests of owners and managers (Fama and Jensen, 1983; Fama, 1980; Jensen and Meckling, 1976) and is based on the premise that there is an inherent conflict between the interests of a firm's owners and its management (Fama and Jensen, 1983).

The clear implication for corporate governance from an agency theory perspective is that adequate monitoring or control mechanisms need to be established to protect shareholders from management's conflict of interest – the so-called agency costs of modern capitalism (Fama and Jensen, 1983). Agency theory leads to normative recommendations that boards should have a majority of outside and, ideally, independent directors and that the position of chairman and CEO should be held by different persons (OECD, 1999; Bosch, 1995; Toronto Stock Exchange Committee, 1994; Committee on the Financial Aspects of Corporate Governance, 1992).

In contrast, stewardship theory claims that managers are essentially trustworthy individuals and therefore good stewards of the resources entrusted to them (Donaldson and Davis, 1991, 1994; Donaldson, 1990). Proponents of stewardship theory contend that superior corporate performance will be linked to a majority of inside directors as they work

to maximise profit for shareholders. This is because inside directors understand the business they govern better than outside directors and so can make superior decisions (Donaldson and Davis, 1991; Donaldson, 1990). Underlying this rationale is the assertion that since managers are naturally trustworthy there will be no major agency costs (Donaldson and Preston, 1995; Donaldson, 1990). Stewardship theorists also argue that senior executives will not disadvantage shareholders for fear of jeopardising their reputation (Donaldson and Davis, 1994). Stewardship theory argues that the board should have a significant proportion of inside directors to ensure more effective and efficient decision making. Similarly, CEO duality is seen as a positive force leading to better corporate performance, because there is clear leadership for the company (Donaldson and Davis, 1991).

While isolated studies can be found to support the predictions of both agency theory and stewardship theory concerning the relationship between, for example, the proportion of outside directors or CEO duality and corporate performance, a recent meta-analysis based on 159 samples of board composition and 69 samples of board leadership structure and their relationships with corporate performance found that there is no substantive relationship between board composition and firm performance (Dalton *et al.*, 1998). On the other hand, in a similar meta-analysis based on 37 samples from previous studies, Rhoades *et al.* (2000) concluded that board composition, or more specifically the proportion of outside directors, had a very small positive relationship with firm performance. Overall there is a general lack of consistent evidence of any significant relationship between the composition of boards of directors and corporate performance (Dalton *et al.*, 1999; Dalton *et al.*, 1998; Johnson *et al.*, 1996; Barnhart *et al.*, 1994).

In addition to studies of board composition, sociologists have focused on the study of interlocking directorates and their implication for institutional and societal power (Pettigrew, 1992). By utilising network analysis, investigators focus on the social networks in which enterprises are embedded and the importance of these networks for power within society (Scott, 1991). Such studies form the basis of resource dependence theory, which maintains that the board is an essential link between the firm and the external resources that a firm needs to maximise its performance (Pfeffer and Salancik, 1978; Pfeffer, 1972, 1973; Zald, 1969).

The key criticism of resource dependence theory is that empirical findings can be interpreted according to the paradigm of the

researcher. Pettigrew (1992) noted that the empirical findings could be used to offer two different theoretical interpretations depending upon whether the study was based on resource dependence theory (e.g. Pfeffer and Salancik, 1978) or class based theory (Zeitlin, 1974). As with both agency and stewardship theories, by concentrating only on links to the external environment, resource dependence theory ignores alternative activities of the board such as providing advice (Westphal, 1999; Lorsch and MacIver, 1989), monitoring (Johnson *et al.*, 1996; Bainbridge, 1993; Fama, 1980) and strategising (Kesner and Johnson, 1990; Lorsch and MacIver, 1989). The research effort follows the familiar pattern in agency and stewardship theories – a design aimed at uncovering a single segment of the corporate governance mechanism rather than a holistic view of how boards add value.

### Previous Australian studies

Australian research into boards of directors is less developed than that in the US and the UK. The Australian literature on corporate governance has been primarily descriptive, with an emphasis on describing the size and composition of boards and the extent to which board interlocks occur. Only Lawrence and Stapledon (1999), Muth and Donaldson (1998) and Stapledon and Lawrence (1996) have attempted to examine the board demographics–firm performance link.

As Table 1 shows, Australian studies have overwhelmingly concentrated on describing the network of inter-corporate relationships. Of the two previous Australian studies that examined aspects of the board demographics–corporate performance link, Lawrence and Stapledon (1999) used a similar methodology to Bhagat and Black (1998/2000, 2002) and focused on movements in share price as the measure of corporate performance. This study failed to find consistent evidence that a direct relationship exists between board demographics (including the proportion of independent directors) and firm performance in publicly listed Australian companies. Their sample was restricted to the top 100 Australian companies (ranked by market capitalisation), but because they used a longitudinal measure of share price, their effective sample was only around 70 companies. Of interest was their comment that the proportion of independent directors was positively related to company assets, net profit and EBIT. Lawrence and Stapledon (1999) also noted that they could not substantiate the finding of Yermack (1996) and Eisenberg *et al.* (1998) that there is an

inverse association between board size and firm value.

In their study, Muth and Donaldson (1998) investigated the validity of agency theory and stewardship theory as well as considering the implications of resource dependence theory. Their final sample size was 145 companies, based on board structure data for 1992 and including performance measures for 1992, 1993 and 1994. The study revealed that network connections are a separate dimension from board independence and that stewardship theory only holds “where directors are strongly network connected” (Muth and Donaldson, 1998, p. 26). Their results challenge the assumption under agency theory that the monitoring role of the board is valuable and are in direct conflict with Lawrence and Stapledon (1999) in reporting that despite a lack of consistent evidence the proportion of independent directors had a negative effect on shareholder wealth and sales growth.

### Research objectives and hypotheses

Our overall research objective is to review the Australian experience concerning board characteristics and corporate performance in light of alternative theories of the board composition–corporate performance relationship. Australia represents an interesting case study as in many respects it more closely resembles world’s best practice concerning board composition than other comparable countries. This is illustrated in Table 2, which shows that Australia has a higher proportion of independent directors than either the US or UK. In both Australia and the UK, CEO duality is less common than in the US, where this form of leadership structure is predominant. In the US, companies also tend to have larger boards than companies in either Australia or the UK.

Table 3 presents a summary of some of the major reports or guidelines that have made recommendations concerning board composition. While remaining silent on issues of board size, these reports do recommend that the roles of chairman and CEO be separated and that outside and/or independent directors represent at least a majority on the board. Consequently, previous studies of board composition in Australia show that Australian boards more closely follow these normative suggestions than do US or UK boards.

For the purpose of examining this Australian experience, we have three more specific research aims. The first is to describe the board composition of Australia’s major publicly listed companies and examine the correlates of board composition. The second

Table 1: Previous Australian studies

Study	Year of sample	Sample		Mean number of interlocks per firm	Focus of study	Key findings
		No. of companies	No. of directors			
Kiel and Tolhurst (1981)	1978	Top 50 publicly listed companies	–	–	Ownership and control	Found that control of the top 50 companies was in the hands of management.
Hall (1983)	1971–1974	1200 publicly listed companies (excluding mining companies)	2030	5.6	Interlocks	Hall found that there was a significant level of interlocking directorships within the Australian economy.
Stening and Wai (1984)	1959 and 1979	Top 250 publicly listed companies	1599 (1959) 1622 (1979)	2.5 (1959) 6.3 (1979)	Interlocks	Showed that both average board size and proportion of interlocking directorships increased over the study period.
Carroll <i>et al.</i> (1990)	1986	Top 250 publicly listed companies	1640	6.6	Interlocks	Found that the only 14% of companies in their study had no interlocks and that average number was up from Stening and Wai's (1984) figure for 1979 (6.3).
Alexander <i>et al.</i> (1994)	1991	Top 250 publicly listed companies	1755	4.43	Interlocks	Reported that the "big linkers" (people who held four or more directorships) accounted for only 1.8% of the number of directors, but 7.2% of the total director positions.
Stapledon and Lawrence (1996); Lawrence and Stapledon (1999)	1995	Top 100 publicly listed companies	690	5.74	Board composition, structure and corporate performance	Study indicated that the boards of larger firms were likely to be larger and have more non-executive directors. Also found that the number of interlocks was positively related to the market capitalisation of each firm in the Top 100. Proportion of independent directors positively related to assets, net profit and EBIT.
Muth and Donaldson (1998)	1994	Top 145 publicly listed companies	–	–	Board structure and firm performance	Network connections are shown to be a separate dimension to board independence. Board independence has a negative effect on shareholder wealth and sales growth, but not profit performance.
Current study	1996	Top 500 publicly listed companies (460 companies)	2211	6.08	Board demographics and corporate performance	



Table 2: Australian board characteristics compared with US and UK boards

Sample	Australia		US		UK					
	Stapledon and Lawrence, 1996	Arthur, 2001	Current study	Bhagat and Black, 2002	Barnhart and Rosenstein, 1998	Hanson and Song, 2000	Conyon and Peck, 1998a	Conyon and Peck, 1998b	O'Sullivan, 2000	Weir and Laing, 2001
Year	1995	1989	1996	1991	1990	1981-95	1990-95	1991-94	1995	1995-96
No. of companies	100	135	348	934	321	326	100	2886	175	320
Board size	8.89	5.56	6.6	11.45	12.42	12.38		8.56		
Proportion of outside directors	0.73	0.62	0.69	0.60	0.60		0.47		0.51	0.47
CEO duality	0.17		0.23			0.82	0.47		0.15	0.17

aim is to overview the level of interlocking directorships and to explore the correlates of these interlocks. The third and final aim is to examine the links between board demographics and corporate performance. Given these specific research objectives, hypotheses are developed in the areas of the impact of board size, proportion of outside directors, CEO duality and interlocks with corporate performance.

### Board size and organisational size

Internationally, it is acknowledged that board size and firm size are correlated (Dalton *et al.*, 1999; Yermack, 1996). Such a finding can be explained by at least two of the prevailing governance theories. From an agency perspective, larger companies require a greater number of directors to monitor and control a firm's activities. From a resource dependence perspective, larger companies will require access to a greater range of resources and so will appoint more directors to provide access to those resources. Consequently, we would expect that:

*Hypothesis 1: Company size is positively correlated with board size.*

There is also evidence that company size and diversification are related (Bosworth *et al.*, 1999) and so, using similar logic, we would expect that:

*Hypothesis 2: Board size is positively correlated with company diversification.*

By definition, a board interlock is dependent upon board members. Thus, the greater the number of board members, the more likely that the number of board interlocks will rise, thus we would expect that:

*Hypothesis 3: Number of board interlocks is positively correlated with the size of the board.*

And, similar to Hypothesis 1, larger firms would require greater access to resources. We would expect boards of larger firms to employ more interlocks and thus predict that:

*Hypothesis 4: Number of board interlocks is positively correlated with company size.*

### Size of board and firm performance

From an agency perspective, it can be argued that a larger board is more likely to be vigilant for agency problems simply because a greater number of people will be reviewing management actions. However, agency theorists

Table 3

Country	Guideline/report	Recommendation			
		Size of board	CEO duality	Outside directors	Independent directors
UK	Cadbury Report (Committee on the Financial Aspects of Corporate Governance, 1992)	N/A	The two roles should be separate	Minimum of 3	Majority
US	NACD Blue Ribbon Commission (NACD, 2000)	Board to determine	The two roles should be separate	N/A	Substantial majority
Canada	Toronto Stock Exchange Committee Report (1994)	10–16, board to determine	The two roles should be separate	N/A	Majority must be unrelated
Australia	Bosch Report (Bosch, 1995)	Nomination committee to devise criteria	The two roles should be separate. If combined, an independent non-executive director as deputy chairman is recommended	Majority	One third
International	OECD Principles of Corporate Governance (OECD, 1999)	N/A	N/A	Sufficient number	N/A

recognise that there is an upper limit to boards. Jensen (1993) suggests this limit at around eight directors, as any greater number will interfere with group dynamics and inhibit board performance. Alternatively, it can be argued that it is not the size of the board, *per se*, that is critical, but rather the number of outside members on the board (Dalton *et al.*, 1999).

From a resource dependence theory perspective, it can be similarly argued that a larger board brings greater opportunity for more links and hence access to resources. From a stewardship theory perspective, it is the ratio of inside to outside directors that is of relevance, since inside directors can bring superior information to the board on decisions.

Yermack (1996) reports a strong inverse relationship between board size and firm per-

formance as measured by Tobin's *Q*. Yet Yermack's mean board size is 12.3 compared with the figure of 6.6 that is reported for Australian boards in this study. It is possible that an inverted "U" relationship exists, whereby the addition of directors adds to the skills mix and performance of board and firm till it reaches a point where the adverse dynamics of a large board outweigh the additional benefits of a greater skills mix, as suggested by Jensen (1993).

Canyon and Peck (1998b) cite some weak evidence from European countries of an inverse relationship between board size and market-based firm performance. Chaganti *et al.* (1985) report that in a paired sample of non-failed and failed firms, non-failed firms had larger boards than failed firms. Dalton *et al.* (1999), in a meta-analysis of board size and firm performance, find a positive systematic

relationship, with some evidence that the relationship is stronger for smaller firms.

Given the smaller size of Australian boards and the meta-analysis results, we expect that

*Hypothesis 5: The size of the board is positively correlated with firm performance.*

### Proportion of outside directors and firm performance

As discussed earlier, the impact of agency theory on corporate governance research can be observed in the predominance of studies that examine two key questions: how the composition of boards of directors affects firm performance (e.g. Coles *et al.*, 2001; Barnhart and Rosenstein, 1998; Wagner *et al.*, 1998) and how the leadership structure of the company (i.e. the duality of the CEO/chairman role) affects firm performance (Dalton *et al.*, 1998). With respect to board composition, agency theory suggests that a greater proportion of outside directors will be able to monitor any self-interested actions by managers and so will minimise the agency costs (Fama and Jensen, 1983; Fama, 1980). As noted, findings to date have yielded equivocal empirical support.

On the other hand, proponents of stewardship theory contend that superior corporate performance will be linked to a majority of inside directors as they work to maximise profit for shareholders (Donaldson and Davis, 1991; Donaldson, 1990). Given these two contrasting theories and the empirical findings discussed earlier, we will adopt the null hypothesis concerning the proportion of outside directors and firm performance.

*Hypothesis 6: The proportion of outside directors is uncorrelated with firm performance.*

### CEO duality and firm performance

Agency theorists argue that the same person should not hold the CEO and chairman roles simultaneously, as this will reduce the effectiveness of board monitoring (Finkelstein and D'Aveni, 1994). Stewardship theorists argue, however, that one person in both roles may improve firm performance as such a structure removes any internal and external ambiguity regarding responsibility for firm processes and outcomes (Finkelstein and D'Aveni, 1994; Donaldson, 1990). As previously discussed, there is evidence in support of stewardship theory (e.g. Donaldson and Davis, 1991), along with a body of research that finds no impact of leadership structure on firm performance

(e.g. Daily and Dalton, 1992, 1993; Rechner and Dalton, 1989). Boyd (1995, p. 309) suggests that neither agency nor stewardship theory can predict the consequences of CEO duality and that "duality can have a positive effect under certain industry conditions, and a negative effect under other conditions". Overall, we shall again adopt the null hypothesis:

*Hypothesis 7: Firms with a separate chairman and CEO will be uncorrelated with firm performance.*

### Interlocks and firm performance

Finally, resource dependence theory maintains that the board is an essential link between the firm and the external resources that it needs to maximise performance (Pfeffer and Salancik, 1978; Pfeffer, 1972, 1973; Zald, 1969). As noted, unlike agency theory and stewardship theory, resource dependence theory draws from both the sociology and management disciplines (Pettigrew, 1992). Sociologists have tended to concentrate on the links that a board provides to a nation's business elite (Useem, 1984), access to capital (Stearns and Mizruchi, 1993; Mizruchi and Stearns, 1988) or links to competitors (Mizruchi, 1996, 1992). Using a similar methodology, management scholars, through the development of the resource-based view (RBV) of the firm (Barney, 1991; Wernerfelt, 1984), see the board as a potentially important resource for the corporation, especially in linking the firm to external resources (e.g. Hillman *et al.*, 2000). In all cases, more links would provide greater access to resources and so we hypothesise that:

*Hypothesis 8: High levels of board interlocks are positively correlated with firm performance.*

## Methodology

### Sample

Our objective was to carry out the first large-scale investigation of the Australian corporate governance environment and so data were collected on the top 500 companies (as measured by market capitalisation) trading on the Australian Stock Exchange Limited (ASX) in 1996. Data on both the companies and the directors of those companies came from the 11th edition of *Huntley's Shareholder: The Handbook of Australian Public Companies* (Huntley, 1997). These companies represent 97 per cent of the total market capitalisation of the companies listed on the ASX (Huntley, 1997). The actual number of companies in our database is 460.

Forty companies were excluded because they had head offices outside Australia and the majority of their sales were outside Australia.

In addition, because the recorded assets of banking institutions consist of loans, which represent the use of depositors' funds, we removed banks from the analysis. Similarly, mining companies, which have historically had a major presence on the ASX, were also removed from the population, since these companies have a highly speculative focus (Arthur, 2001) and effectively represent a separate population of firms. Therefore, we use the data from 348 companies in our study.

### *Design and procedures*

The information was entered into a relational database and supplemented by data from *Huntley's Financial Database* (Huntley, 2000) and the *Business Who's Who of Australia* (Dun & Bradstreet Marketing, 1997). By utilising a relational database to record this information, we could structure the data in a variety of manners (i.e. by company, by director, by interlock, etc.) The files were exported into a "flat" SPSS file for further analysis. Since many of our hypotheses predict the direction of the correlation, we employed one-tail significance tests to minimise the chance of a type II error.

### *Measures*

#### *Company size variables*

We employed three variables to measure company size, namely total assets, revenue and market capitalisation. Since correlations aim to find linear relationships, the heavy skew in the distribution reported in the Results section for all three measures justified the use of the natural log for all three variables for all analyses.

#### *Diversification*

There are numerous techniques for examining the level of diversification of companies (Rumelt, 1982). In this study we used two measures: (1) The number of SIC codes reported by the company; and (2) a measure of relatedness (Bosworth *et al.*, 1999) which indicates whether companies are: (a) only in one industry (one SIC code); (b) have several businesses, but in the same industry to the second level of SIC code; (c) have several businesses, but in the same industry only at the first level of SIC code; and (d) have several businesses, which are in different SIC codes at the first level of SIC codes.

#### *Board composition variables*

In line with US studies (e.g. Bhagat and Black, 1999; Coles *et al.*, 2001; Daily and Dalton, 1993), we employed three measures of board demographics. First, we calculated the size of each board in our data set. Second, when collecting our data we classified each director as either an executive (inside) director or a non-executive (outside) director. This allowed us to calculate the percentage of outsiders on each board. (We acknowledge that this did not allow us to calculate the presence of "grey" directors). As reported in the results, this distribution was heavily skewed and so we employed a natural log transformation to investigate correlates. Third, we measured CEO duality by classifying chairmen as either an executive chairman (one person in the role of CEO and chairman and coded 1) or a non-executive chairman (coded 0).

#### *Number of interlocks*

The number of interlocking directorships is calculated as the number of additional board positions held by directors in the top 460 companies. We include the financial institutions and mining companies (which are excluded from the other overall study) because it is necessary to consider a director's position in the overall network rather than simply links to other firms in the study. For instance, we excluded banks from our analysis due to their unique asset structure but, considering that access to capital has been seen as a key benefit to a company (e.g. Mizruchi and Stearns, 1988), it is necessary to consider interlocks with these excluded firms if we are to accurately test the resource dependence theory.

#### *Corporate performance*

While there are many measures of firm performance such as stakeholder satisfaction (Clarkson, 1995), we followed the predominant approach and used two financial measures of firm performance, namely Tobin's *Q* and Return on Assets (ROA). Financial measures of firm performance fit into two key categories, accounting-based measures and market-based measures. Accounting-based measures of performance are historical and so experience a more backward and inward looking focus. Developed as a reporting mechanism, they represent the impact of many factors, including the past successes of advice given from the board to the management team and are the traditional mainstay of corporate performance measures. Examples used in the governance literature include



return on assets (Hoskisson *et al.*, 1994; Cochran and Wood, 1984), earnings per share (Pearce and Zahra, 1991), and return on equity (Baysinger and Butler, 1985). In general, the major concern with accounting measures is that they are historical and so lag the actual actions that bring about the results. Nevertheless, we have included ROA as a measure of corporate performance as this is a common measure used in the literature.

In contrast, market-based measures of firm performance relate to the overall value placed on the firm by the market and may not bear any relationship to asset valuations, current operations or even the firm's historical profitability. These valuations emphasise the expected future earnings of the firm and so are considered a forward-looking indicator that reflects current plans and strategies. Measures in this category include market to book ratio, Tobin's *Q* (Barnhart *et al.*, 1994) or constructed indices such as the Sharpe measure (Hoskisson *et al.*, 1994).

Given that there is strong market efficiency in Australia (Kasa, 1992; Ball *et al.*, 1989), it was decided to follow Morck *et al.* (1988), Hermlin and Weisbach (1991) and others in using Tobin's *Q*. Under the strong market assumption, any positive impacts of board demographics would be readily apparent to market participants and so reflected in the market capitalisation of the firm (Fama, 1998).

The unavailability of many of the variables comprising the theoretical Tobin's *Q* used in studies by Lindenberg and Ross (1981) and Morck *et al.* (1988) prevent similar calculations being used in this study. Instead, we employed Chung and Pruitt's (1994) alternative formula for approximating Tobin's *Q*:

$$\text{Tobin's } Q = \frac{\text{market value of common stock} + \text{book value of preferred stock} + \text{book value of long term debt}}{\text{book value of total assets}}$$

Finally, as both ROA and Tobin's *Q* are subject to short term fluctuations, we employed a three year average for the years 1996, 1997 and 1998.

## Results

The results of this analysis are presented under four subheadings. First, the overall size and diversification of the top 348 companies in our study is briefly described. Second, their board composition is described. Third, the issue of director interlocks is explored. Finally, the links between the variables and firm per-

formance are discussed. Table 4 reports the descriptive statistics and correlation matrix of the variables used in the study.

### *The companies*

The overall defining characteristic of the top 348 companies in the Australian Stock Exchange is the very heavy skew in the distribution of measures of company size. A minimal number of companies dominate the population with respect to size of assets, revenue and market capitalisation. This can be seen in Figure 1, which illustrates the cumulative percentage of assets, revenue and market capitalisation for the companies in the study.

Another aspect of interest is the extent of diversification of the larger publicly listed companies. The mean number of SIC codes per company was 3.7, with a median of 2 SIC codes. While the majority of companies we studied were diversified at the first level of SIC code (56 per cent), only a limited number record over 10 SIC codes (5 per cent) and the largest number of codes recorded was 28. Table 5 provides a full breakdown of the relatedness of the companies' SIC codes.

Table 4 shows that there is a strong positive relationship between firm size and greater levels of diversification (as measured by the number of SIC Codes). This result is supported by the ANOVA results reported in Table 6, with an inspection of means showing that highly diversified companies are larger than one-industry companies.

### *The boards*

The average size of our sample of Australian publicly listed companies is relatively small, containing an average of 6.6 directors with a range from 2 to 19. As highlighted in Table 4, there are also strong correlations between the size of the board and company size variables of assets, revenue and market capitalisation (transformed to natural logarithms (ln) unless otherwise stated). Consequently, Hypothesis 1 is supported. Hypothesis 2 is also supported as more diversified companies, as measured by the number of SIC codes, have larger boards. This could, however, be associated with more diversified companies also being larger.

Turning to the use of outside directors, the mean proportion of non-executive directors is 69 per cent, with a median of 75 per cent. Only six companies had fully internal boards, with most of these being the listed property trusts of larger financial corporations. Thirty-five companies had fully external boards. Larger boards are correlated with a greater

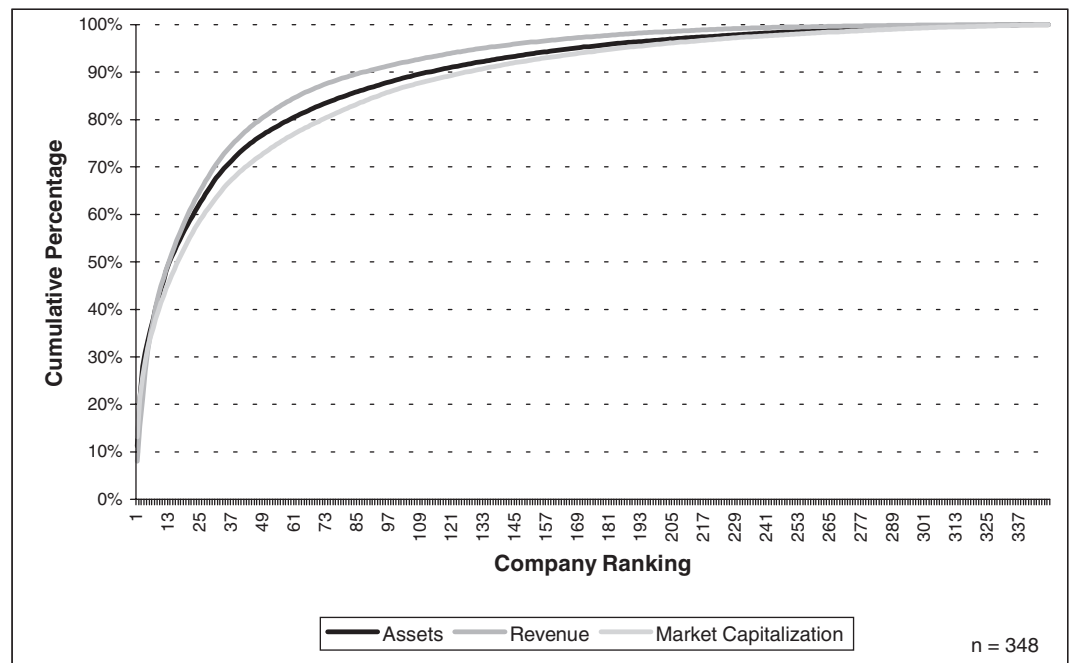


Figure 1: Cumulative percentage of assets, revenue and market capitalisation

Table 4: Descriptive statistics and correlations

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1 Assets (ln)	12.31	1.54	1.000								
2 Revenue (ln)	11.52	2.24	0.807**	1.000							
3 Market capitalisation (ln)	12.37	1.36	0.869**	0.653**	1.000						
4 Number of SIC codes (ln)	0.93	0.81	0.380**	0.527**	0.373**	1.000					
5 Board size	6.58	2.31	0.607**	0.584**	0.597**	0.458**	1.000				
6 Proportion of outside directors (ln)	4.19	0.35	0.146**	0.148**	0.072	0.009	0.112*	1.000			
7 CEO duality	0.23	0.42	-0.132**	-0.156**	-0.100*	-0.110*	-0.138**	-0.510**	1.000		
8 Number of interlocks	6.38	6.08	0.411**	0.208**	0.422**	0.155**	0.346**	0.037	-0.044	1.000	
9 Tobin's Q 3 year average (1996-98) (ln)	0.13	0.57	-0.297**	-0.319**	0.129*	-0.023	-0.059	-0.179**	0.121*	0.110*	1.000
10 ROA 3 year average (1996-98) (ln)	-2.80	0.83	-0.191**	0.008	-0.070	-0.032	-0.066	0.023	-0.067	-0.070	0.319**

\* $p < 0.05$  (one-tailed).

\*\* $p < 0.01$  (one-tailed).

proportion of outside directors, but this is a weak correlation. The relationship strengthens if the natural log of proportion of outside directors is taken. Also, the proportion of outside directors is positively correlated with firm size as measured by assets and revenue, but not with market capitalisation. Also using the measure of number of SIC codes, a greater level of diversification is not associated with a higher proportion of outside directors.

With respect to the chairman, there was a notable lack of CEO duality (23 per cent). Interestingly, having an independent chairman is related to a larger board size and a higher proportion of outside directors and is also associated with larger companies.

### Interlocks

As with the company size distribution, there is a heavy skew in the number of company interlocks. While interlocks range from 0 to 28, the mean number of interlocks is 6.4, while the median is 4. Less than 20 per cent of the firms

have more than ten interlocks. Interlocks are strongly positively correlated with assets, revenue and market capitalisation. In addition, a greater number of interlocks are positively correlated with the number of SIC codes and board size. In short, larger boards are associated with larger companies, more diverse companies and more heavily interlocked boards.

### Correlations

At a simple correlation level of analysis, there is a significant relationship between some of the four board demographic variables, size of board, proportion of outside directors, CEO duality and number of interlocks. Specifically, larger board size is associated with a separate chairman and CEO, a greater proportion of outside directors and a greater number of interlocks, as already noted. A high proportion of outside directors is associated with separation of the chairman and CEO role, but not with a greater number of interlocks. Neither are the number of interlocks and CEO duality related.

As the number of board interlocks is significantly correlated with board size, Hypothesis 3 is supported. Similarly, the number of interlocks is also highly significantly correlated with firm size and so Hypothesis 4 is also supported.

There are three simple correlations between board demographics and Tobin's  $Q$ , namely proportion of outside directors, CEO duality and number of interlocks. This suggests that better performance (as measured by Tobin's  $Q$ ) is related to inside directors, an executive chairman and a greater number of interlocks. Yet, of interest, none of these board demographic variables is significantly related with the average ROA. This is despite their being a strong correlation (0.319) between the

Table 5: Relatedness of a company's SIC codes

Level of relatedness	Percentage of companies
One SIC code	30.2
Multiple SIC codes – same at second level	6.9
Multiple SIC codes – same at first level	6.3
Diversified at first level of SIC Code	56.3

Table 6: ANOVA results. Dependent variable: relatedness

		Sum of squares	df	Mean square	F	Sig.
Assets (ln)	Between groups	33.335	3	11.112	4.812	0.003
	Within groups	789.775	342	2.309		
	Total	823.109	345			
Revenue (ln)	Between groups	237.476	3	79.159	18.052	0.000
	Within groups	1486.490	339	4.385		
	Total	1723.966	342			
Market capitalisation (ln)	Between groups	27.378	3	9.126	5.118	0.002
	Within groups	608.057	341	1.783		
	Total	635.436	344			

three-year average Tobin's *Q* and the three-year average ROA.

Before reviewing the combined impact of these board demographic variables on firm performance, it is instructive to review the correlations between the two performance measures themselves, these board demographic measures and the firm size measures, as shown in Table 4. Firm size, as measured by assets and revenue, is inversely related to the three-year average Tobin's *Q*, but market capitalisation is positively correlated with Tobin's *Q*. Only assets are negatively correlated with the three-year average ROA. As noted above, there is a 0.319 significant correlation between the three-year average Tobin's *Q* and three-year average ROA. This suggests that companies with significant book values or asset bases find it disproportionately more difficult to produce relatively high stock prices, compared to smaller companies. Larger companies, by asset size, also find it difficult to produce a strong percentage return (ROA) on those assets.

Using the two measures of size, assets and revenue in 1996, to predict the three-year average Tobin's *Q* provides a significant result ( $R^2 = 0.109$ ,  $p = 0.000$ ). Board size (positive relationship) and proportion of outside directors (negative relationship) are also significant in predicting the three-year average Tobin's *Q*, as show in Table 7.

When the accounting-based measure of ROA using the three-year average performance is used as the dependent variable, only the two firm size variables of assets and revenue are significant. This relationship is interesting, showing that organisations with low asset bases but with strong revenues predict high return on assets. The result is not hugely surprising given that assets comprise the denominator of the measure, but it indicates that smaller asset-based firms either have a higher profit margin or a higher

turnover to asset ratio than their larger counterparts. However, none of the three measures of board demographics are significant in predicting these historical measures of firm performance.

Hypothesis 5, at a simple correlation level, is not supported. However, after controlling covariance through the regression analysis reported in Table 7, there is a significant correlation between board size and the market-based performance measure of Tobin's *Q*. Since this is a more robust test of the true relationship, Hypothesis 5 is supported in the case of the market-based performance measures. Hypothesis 5 is, however, not supported for the accounting-based measure of performance.

At the simple correlation level, Hypothesis 6 (the null hypothesis that the proportion of outside directors is not correlated with firm performance) is rejected in the case of the market-based measure of performance, but is not rejected for the accounting-based measure of performance. As shown in Table 4, the proportion of outside directors has a significant correlation with the market-based measure of performance, but no significant correlation with the accounting-based measure. These results also hold under the stronger test controlling for covariates in the regression analysis reported in Table 7.

Hypothesis 7 conjectured that the presence of CEO duality would not be correlated with firm performance. At the simple correlation level, this hypothesis is not supported for the market-based measure only. However, it is supported when controlling for covariates using both market-based and accounting-based measures of performance in the regression analysis (i.e. there is no significant correlation).

Hypothesis 8 (high levels of board interlocks are positively correlated with firm performance) is supported at the simple

Table 7: Results of regression analysis

Dependent variable	Predictor variables	$\beta$	Sig.	Adj. $R^2$	Sig.
Tobin's <i>Q</i> 3 year average (1996–98) (ln)	Revenue (ln)	-0.258	0.007	0.144	0.000
	Assets (ln)	-0.225	0.022		
	Proportion of outside directors (ln)	-0.135	0.018		
	Board size	0.243	0.001		
ROA 3 year average (1996–98) (ln)	Revenue (ln)	0.389	0.000	0.105	0.000
	Assets (ln)	-0.502	0.000		



correlation level for the market-based measure, but not for the accounting-based measure. However, the regression analysis, which controls for firm size, reveals that it is not in fact related to either measure of firm performance.

## Discussion

The results of this extensive study of the top Australian publicly listed companies inform the current debate about corporate governance. Of general interest is the negative relationship between company size as measured by assets and revenue and the market-based performance measure of Tobin's *Q*. Over the period of this study, larger companies, as measured by both their assets and revenue, were penalised by the market compared to their smaller counterparts. Given the timing of this study, it may be argued that the interest in technology and knowledge-based companies drove this result. Similarly, using the accounting-based measure of return on assets, a larger asset base is associated with a poorer relative return, a result which can be partly attributed to the simple mathematical fact that the larger the denominator, the greater the numerator of profit is required to obtain the return. Interestingly, if one controls for asset size, revenue is strongly positively correlated with return on assets. In short, companies that can achieve greater revenues on a lower asset base are more likely to show strong profitability measured in an accounting sense.

There are some very distinct relationships between company size and board composition. We find that larger companies have larger boards, more interlocked boards, a greater proportion of outside directors and are more likely to separate the roles of chairman and CEO. These results can be interpreted in light of two predominant theories of corporate governance. First, they go some way to support the predictions of agency theory. For these larger companies, the greater number of directors is seen as important, with a higher proportion of outsiders and the separation of the roles of chairman and CEO in order to monitor and control the organisation.

Second, these findings also provide support for resource dependence theory as these larger companies see the need for greater links with other organisations. This then translates to these firms appointing more directors and seeking more interlocks. The number of interlocks are related to company size and hence also board size. However, there is no relationship between the number of interlocks and the proportion of outside directors or CEO

duality. There is a weak simple positive relationship between interlocks and the market-based measure of firm performance; however, this could be due to the relationship of board size with firm performance. In short, while the evidence supports the notion that boards will seek to link into the external environment, there does not appear to be any link between this behaviour and firm performance.

Turning to correlates of board demographics and firm performance, different results occur depending on whether the market-based measure of firm performance or the accounting-based measure of firm performance is used. As noted earlier, there are strong links between company size and performance for both these measures. However, with respect to market-based performance, the market rewarded larger boards and also boards with a relatively lower proportion of outside directors, after allowing for the effects of company size. This seems to support the arguments put forward by stewardship theory. On the other hand, no such relationship can be found with respect to the accounting-based performance measure.

These results are consistent with our other findings (Nicholson and Kiel, 2001a, 2001b), which adopted a case study method to investigate the boardroom. In the case-based approach to the relative merits of agency theory, stewardship theory and resource dependence theory, we found that no single theory offers a complete explanation of the corporate governance–corporate performance relationship, but rather elements of each theory can be seen to apply in different circumstances. These empirical results add further weight to our earlier conclusions. It is not a matter of agency theory *or* stewardship theory *or* resource dependence theory. Rather each theory has a contribution to make to the governance debate. There is evidence that boards do need to be alert for agency issues and there is a greater likelihood that this will occur when there are outside directors on the board. Nevertheless, the market also rewards the knowledge that inside directors bring to the board table. This is consistent with our case study reviews of board dynamics that also illustrate examples of inside directors providing strong support to various board roles. In addition, boards appear to seek to link with the environment, particularly in large, complex organisations.

What then are the implications of our findings for the current debates about corporate governance? First, within practical limits, there are benefits to be had from a larger board relative to the size of the company. Given some US results (Yermack, 1996), which suggest an

inverse relationship between board size and firm performance, but given the much larger average size of US boards, as noted above, it is possible that an inverted "U"-shaped relationship exists between board size and firm performance. In short, too few directors could lead to a suboptimal decision-making body. On the other hand, too large a board also may be negatively related to performance.

As boards can play a major value-adding role (Kiel and Nicholson, 2003, 2002), companies should be seeking to maximise the benefits that can come from the correct skills mix on the board. This can add to what we have termed the intellectual capital theory of corporate governance (Kiel and Nicholson, 2001; Nicholson *et al.*, 2000), whereby it is the skills mix on the board that is a major determinant of the value adding that the board brings to the firm. In this light it is not numbers *per se* which are important, but rather the effective integration of the skills and knowledge base of the board with the company's needs at any particular point in time.

These results also support the calls of many expert reports on governance towards a balance of inside and outside directors on the board. The results give support to the approaches that would seek to have a majority of outside directors on the board, but do not support boards solely comprised of outside directors. These results do confirm some of the predictions of stewardship theory in that there is a relationship between market profitability and insiders on the board. Again this is consistent with an intellectual capital theory of governance, which sees the appropriate skill mix as being essential.

Also the results confirm Boyd's (1995) conclusion, which stated that the issue of CEO duality might be contingent on the company's size and challenges. In larger organisations there is often a very clear reason to have these two roles held separately. But in some highly entrepreneurial situations, the market may view having the position of chairman and CEO held by the one person as very positive.

A further implication of these results is that it appears that board composition might be more important from the point of view of the perception of stock markets rather than the more historical accounting-based measures of performance. It is interesting that the results for board demographics are significant using the market-based measure of Tobin's  $Q$ , but are not significant with the historical accounting-based measure of return on assets.

With respect to future research, this study still suffers from the limitation that it is essentially cross sectional, looking at board composition at a particular point in time. Further

research is required to see whether such relationships exist over time. It would also be appropriate to examine the extent to which the composition of boards change, and how those changes in composition are related to changes in the market environment and strategy of the organisation. In summary, research into corporate governance does have a significant contribution to make to the current normative debate about the desirability of various corporate governance practices.

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“Shareholder activism, for too long, has been an *ad hoc* affair. Now, for the first time, there are comprehensive guidelines available, based on best practice and offering, practical, tangible help to institutional investors.” Ken Ayers, *Investment Council Chairman, National Association of Pension Funds on the new ISC Code*